Building Schooling Markets in Chile

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In this document, I explain the construction and show the descriptive statistics of schooling markets built for Chile in the context of *Targeted Vouchers, Competition Among Schools, and the Academic Achievement of Poor Students*. Schooling markets are the unit of analysis in the research in competition I have done, and they have desirable characteristics when studying the relationship between demand and supply in the educational context, because of their consideration of the geographic implications in a school choice scenario.

1 Market Construction

To begin, I provide an outline of the elements that make up a market m, with their corresponding notation:

1. The geographic **boundary** of the market (a polygon) is denoted by B^m.
2. A set of **nodes** inside the market, where students and schools can locate, is denoted by L^m. In particular, this is a grid of squared polygons, centered at evenly-spaced points, that attempts to tessellate the urban market area.
3. The set of **schools** that operate within B^m at any point in time is denoted F^m. Each school j in F^m has an associated location node within L^m, and school characteristics such as price, quality and number of students attending.
4. The set of **students** of K observable types that live inside B^m is denoted S^m. Each student also has an associated location given by a node from L^m, and attends a school in F^m.
    - The set of S^m students in each market defines a **distribution of student types in the market**. This distribution is captured by Π^m, a vector of length K containing the shares of each type of student in the market m. We have that $\sum_k^K \Pi_k^m = 1$ for each market m and $\sum_k^K S_k^m = S^m$.
    - The set of S^m students also defines a **distribution of student types across nodes** of the market. This distribution is captured by w^m, a collection of K vectors w_k^m of length L^m. Each w_k^m contains the share of students of type k of the market m that are located at each node l. We have that $\sum_l^{L^m} w_{lk} = 1$ and $\sum_k^K \sum_l^{L^m} w_{lk}\Pi_k S_k^m = S^m$.

A market m is then defined by $\{B^m, L^m, F^m, S^m, \Pi^m, w^m\}$. I describe how I identify each one of these elements in the subsections to follow.

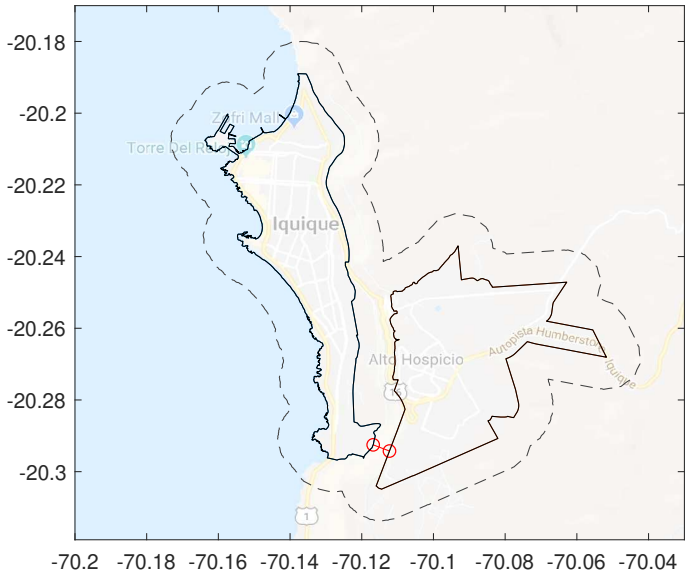
*This document is an accompaning text for *Targeted Vouchers, Competition Among Schools, and the Academic Achievement of Poor Students*. The document has benefited greatly from the help of Claudia Allende, Isabel Jacas and Maria Elena Guerrero.

1.1 Market Boundaries (B^m)

Defining the market is a difficult task in many settings when physical distance is a relevant characteristic. It is generally not easy to find a boundary where one market ends and one begins in broad urban areas. Papers that study retail markets typically have used political or administrative boundaries to define markets. such as cities or counties. An important example is Davis (2006). In some cases, such as small isolated communities, this works well but in large urban areas consumers close to the border of a political unit might also be close to firms in the next one. Therefore, it is possible for consumers to choose to cross market lines to buy from firms in neighboring "markets" in these cases. In this application, I take advantage of the relatively sparse distribution of the population in Chile, where communities tend to be far from each other. This creates a natural definition of a market based on the idea that consumers in one city will not travel very far across rural areas to go to school in another city but may well travel within the same urban area.

There are, however, many cases when urban areas are in close proximity and where one market ends and one begins becomes less obvious. I tackle this problem by defining ex ante a criteria and a procedure that will generate the markets. In practice, I use the Chilean census map data from 2012 of all urban areas to define a starting point. These consist of 499 polygons, which can vary in size from 0.12 km^2 to 121 km^2 (average: 7.7 km^2). I join all urban areas that are at most two kilometers apart at their closest distance. The union of all connected urban areas is defined as one market under the assumption that students could feasibly travel within this set of urban areas due to their proximity. I then add a buffer of one kilometer around the exterior of the joined polygons to include some semi urban areas that may be locations favored by schools given lower prices and that are still accessible by families near the edge of the urban boundary.

Figure 1: Market Definition



Note: This figure shows the map of a market that includes two distinct urban areas that are close to each other. The *comunas* of Iquique and Alto Hospicio illustrate how two urban areas are joined when they are close enough at some point. The outer (dashed) line corresponds to the limit of the buffer, which is added around the joined urban polygons, and defines the borders of the market.

1.2 Assigning schools to markets (F^m)

I use administrative data to collect the list of all schools that are categorized as urban and have matriculation in the first grade between the years 2005-2016. Specifically, I take all urban schools with an educational code *codigo ensenanza* of 110, which indicates regular primary education, that are classified as urban by The Ministry of Education, and have some students matriculated in the first grade. In 2011, for example, there were 7,854 schools that were providers of primary education services and 4,495 were urban and had at least one student in first grade.

Using the data on school addresses, virtually all urban schools identified were geocoded to a location (for example, out of the 4000+ schools in 2011, only four were not geocoded). I then assign schools to markets by their geographic location on the map, given the markets identified in the previous subsection. If the school lies within the boundaries of the market, it is assigned to that market.

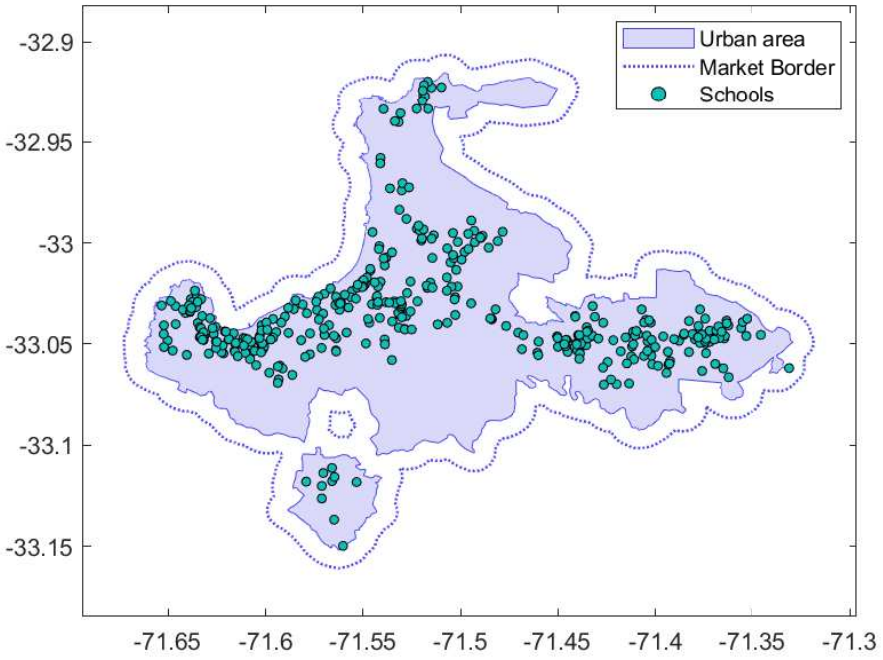
The total number of markets identified using the procedure described in the preceding subsection is 363. The distribution of the number of schools in each market is given by Table 1. It can been seen that there are many markets with only a few schools and a few markets that concentrate most of the schools.

Table 1: Number of schools in markets

Number of schools	
None	63
Between 1 and 2	126
Between 3 and 4	56
Between 5 and 10	56
Between 11 and 20	29
Between 21 and 50	13
Between 51 and 100	14
Between 101 and 1000	5
More than 1000	1

Note: This table shows the number of markets by the number of schools (ever active between 2007 and 2012) located inside its borders. The largest market is the Santiago Metro region. It has over 1500 schools representing approximately 35% of all schools. In the analysis I will focus on markets with at least five schools.
Source: Ministry of Education MINEDUC, own calculations.

Figure 2: Map of Market 52 (Viña del Mar and Valparaiso) with Schools



Note: This figure shows schools (green dots) located in the boundaries of the urban areas of the cities of Viña del Mar and Valparaiso. It can be seen that some schools are located just at the outskirts of the city and are captured by the market boundary given by the buffer zone.
Source: INE, Ministry of Education MINEDUC, own calculations.

1.3 Assigning students to markets (S^m and Π^m)

Students are assigned to markets through their school. In the previous subsection, I described how schools were assigned to markets through their location on the map. To get market shares, I use administrative aggregate data on all students at every school in every grade at a given point in time. Using this, I determine the total number of students in a market and thus the aggregate share of each firm in the market.

If a school has been associated with a particular market, the students at that school are deemed to belong to that market. Since all students must attend some school and we observe the universe of schooling options, the total number of students in the market is then taken to be the sum of all students at all the schools in that market.

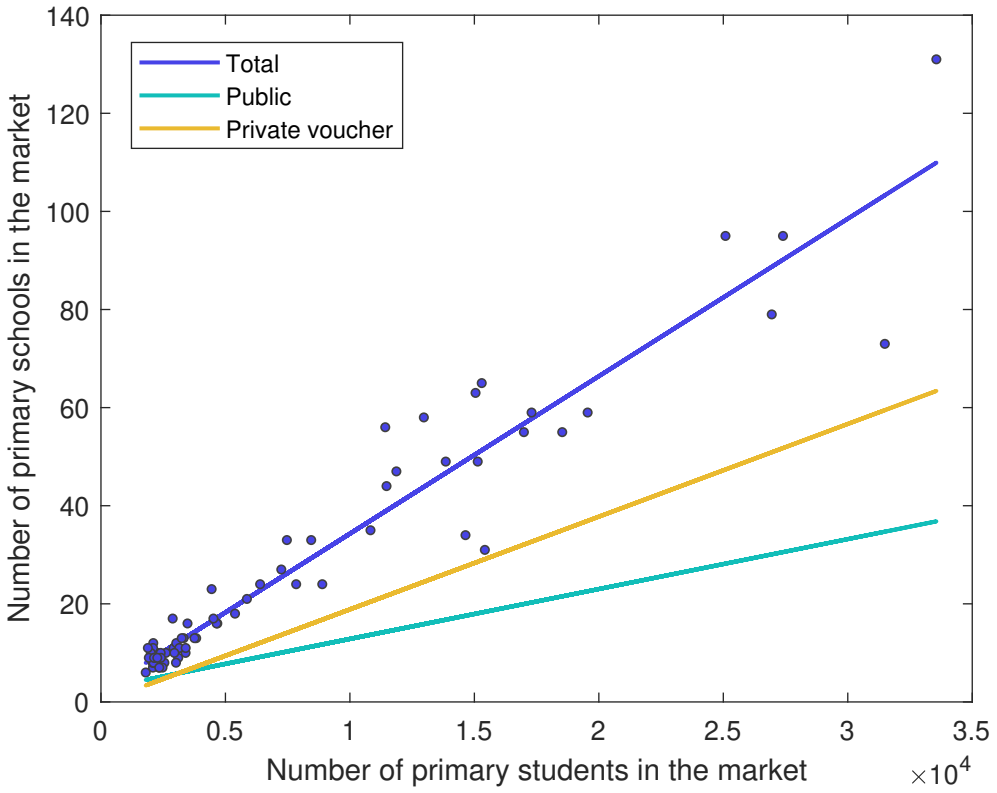
Microdata on student matriculation associates students to schools, indicates what *comuna* they live in as well as their grade level. I take all students who attend schools found within the market buffer zones that are in 1st grade (for school choice micro moments) or in 4th grade (for estimation of school value added). Additional information about the students is available from surveys provided by SIMCE, and socioeconomic status at the time of birth is available from the Ministry of Health.

The administrative microdata on students is used to categorize students into six types given the level of education of the mother and their household income level. The educational attainment of the mother is classified into three groups: less than high school, high school and more than high school. Income levels are given by the bottom 40% or top 60% of the income distribution. Income category is determined using survey data from SIMCE directly. Specifically, it is imputed by eligibility status of families for the SEP program, which is reported in the SIMCE survey.[1] This generates six discrete groups of students. Administrative microdata that associates each student to a school, and thus to a market, is used to identify the number of each type in each market. In terms of the model, in this step I have identified, for every market, the set of students S^m and the vector Π^m, which contains the shares of each type of student in the market.

Having assigned schools to markets, and also students to markets (through their schools), I proceed to filter out some markets based on their size. Size is proxied in two ways: number of schools, and number of students in first grade. Specifically, I will focus on markets that 1) have at least 5 schools, in at least half of the years considered (2005-2016), and 2) have at least 100 students in the first grade of primary. These restrictions reduce our sample size to 74 markets. These markets are used for all estimations in the main paper and are the focus of the remainder of this section. Figure 3 shows the relationship between the number of primary students and the number of primary schools in these markets. As can be seen in Figure 4 and Table 2, the selected markets are larger in physical size, relative to the ones that were filtered out. To save on space, Figure 4 does not show Region XII, the southernmost region of Chile, which has only two very small markets.

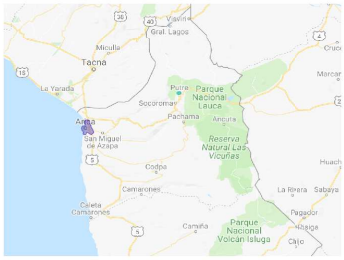
[1] Taking into account all criteria that can make a student eligible for SEP, eligible families belong, in practice, to the bottom 40% of the income distribution

Figure 3: Number of students and number of schools in 74 selected markets



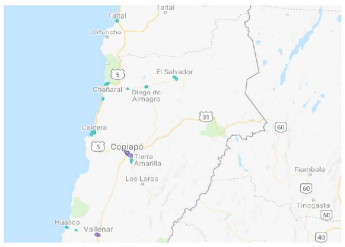
Note: This figure shows the relationship between the number of primary students and the number of primary schools in a market, for the 74 markets that were selected. For a convenient display, the markets of Santiago, Viña del Mar - Valparaiso, and Concepcion (with over 480,000, 70,000 and 55,000 primary students, respectively) were excluded from the graph.

Figure 4: Geographic distribution of markets

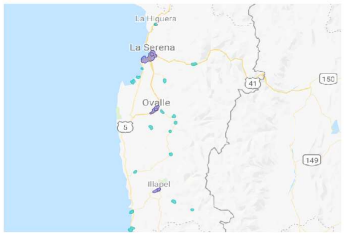


(a) Region XV

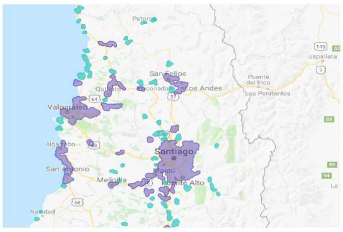
(b) Region I and II



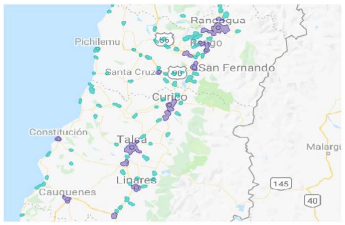
(c) Region III



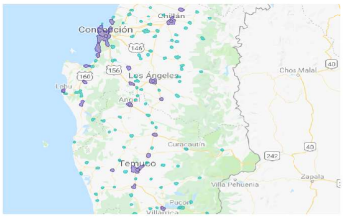
(d) Region IV



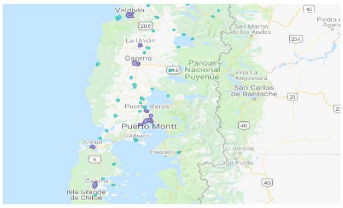
(e) Region V and XIII



(f) Region VI and VII



(g) Region VIII and IX



(h) Region XIV and X

(i) Region XI

These maps show the distribution of the identified markets among the regions of Chile. The 74 selected markets, shown in purple, are also larger in physical size relative to the ones that were filtered out based on criteria such as number of schools and number of students in first grade (colored in green). Region XII, with two very small markets, is not shown to save on space.

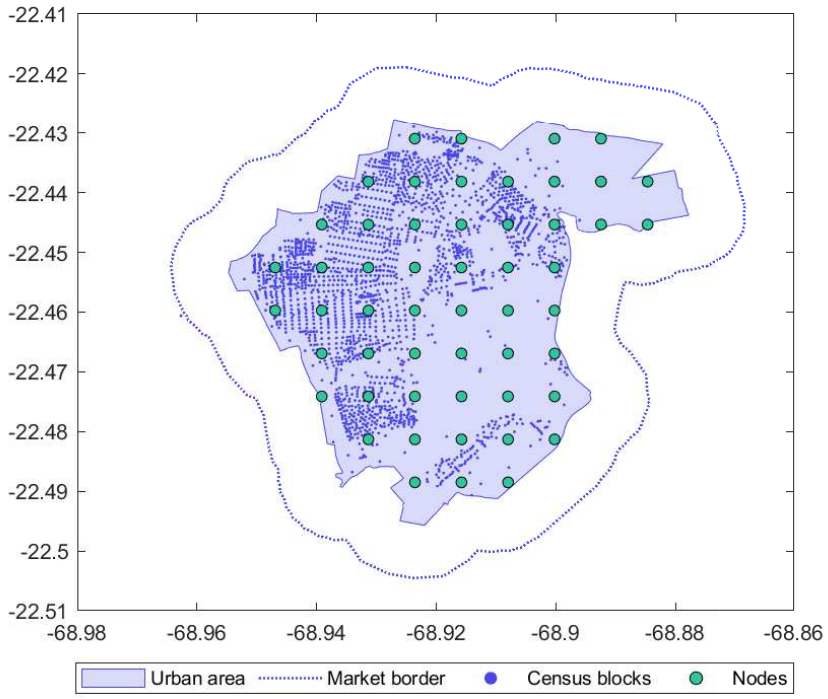
Table 2: Size of markets (km^2)

	Mean	SD	Min	Max	Perc 10	Perc 25	Perc 50	Perc 75	Perc 90
Selected	32.0	56.8	7.1	456.5	9.1	11.0	15.8	32.4	53.9
Not Selected	6.5	3.6	0	25.4	3.4	4.2	5.7	7.4	9.6

1.4 Location of students within markets (L^m)

The Chilean census provides detailed block level data on every urban area and thus on every market I have identified in the previous step. Block level census data is used to describe the distribution of student characteristics in the market across a grid of L_m nodes. I group census blocks into squares approximately 0.8 km wide to define a node and aggregate the block level information to this level. Figure 5 shows one example of spreading nodes across the market. It shows the urban limits, the market boundaries, the centroids of census blocks (that fall within the urban limits), and the centroids of the nodes that were spread evenly on top.

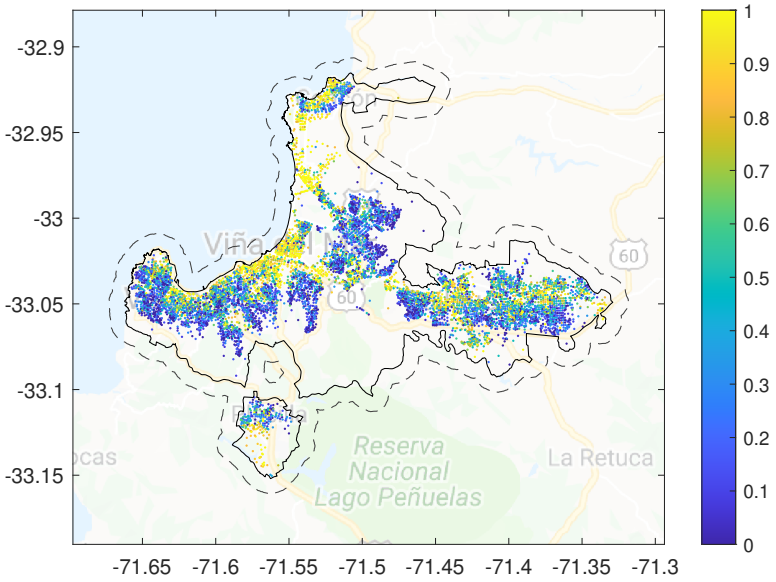
Figure 5: Map of Market 13 (Calama) with Census Blocks and Nodes



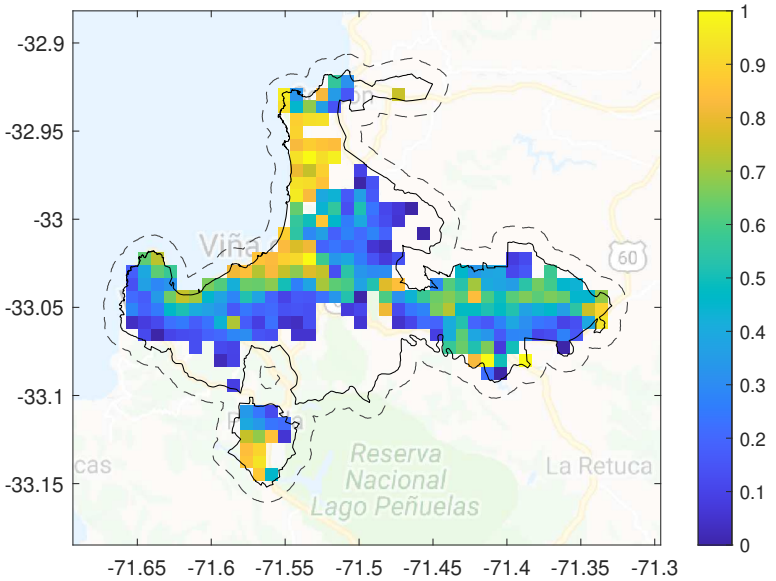
Note: This figure shows the centroids of nodes spread across the market. For each census block, I evaluate which node centroid is closest, and I aggregate demographic information at the node level. On average (considering all markets, not just the one in this figure), one node aggregates information from 26 blocks (standard deviation: 25).

Figure 6 shows how this procedure helps diminish the dimensionality of the demand side problem while still keeping a flexible and detailed description of varying demand across space.

Figure 6: Percentage of mothers with more than a high school education in the 2012 census



(a) At each block



(b) At each node

Note: This figure shows the percentage of mothers with more than a high school education at the block level in panel (a) and at the node level in panel (b). One node is approximately $800m \times 800m$. This market includes the cities of Viña del Mar and Valparaíso.
Source: INE, own calculations.

1.5 Distribution of types within markets (w_k^m)

The model uses as input the distribution of consumer types across nodes within each market. The type of the household is defined by their income (SEP=0,SEP=1) and the education of the mother (E=1,E=2,E=3)[2]. The empirical challenge is that the census does not report eligibility to the voucher program. Administrative data provides the total number of students of each type in the market but not where they live to the block level.

To estimate the distribution (conditional on mother's education) of SEP-eligible students across markets, I use a subsample of geocoded students for whom I do have SEP eligibility. I assign these students to nodes, and attach node-level demographics by aggregating the most recently available census data. I use these node-level covariates and the students' mothers' education to predict their SEP eligibility. I then extrapolate, conditional on a level of mother's education, the proportion of SEP-eligible students at each node in my broader sample. Combining this proportion with the population density at each node allows me to estimate w_k^m, or the proportion of all SEP-eligible students within a market that reside at a given node, given their mothers' education.

The estimation method underlying this process is a random forest. Athey and Imbens suggest using random forests as a flexible, stable nonparametric estimation technique that generally requires little tuning. They suggest thinking of random forests as a nearest-neighbor estimation technique that creates kernel weights based on linear partitions of the covariates rather than on euclidean distance. In practice, I found that using a random forest did not dramatically improve in-sample error over a linear probability model. However, random forests obviate the need to truncate estimates to the $(0, 1)$ interval, which in my case made a tangible difference in "smoothing" the distribution of w_k^m for subsequent stages of my analysis—see Figures 7 and 8 for extrapolated distributions. (One could also argue that random forests are a better approximation of the truth at extrema of the covariate space, and in policy-relevant scenarios they could even be tuned to better approximate a statistic other than the conditional mean of the estimand—see Athey, Tibshirani, Wager, et al., 2019)

[2]For first grade students in 2011, the income groups definition, SEP = 0 and SEP = 1, represent 56% and 44% respectively. Regarding the level of education of the mother for first graders in 2011, 21% has less than high school, 58% has high school and 21% has more than high school.

Figure 7: Share of Highly Educated Adults in block, given Educ. Level of Mother

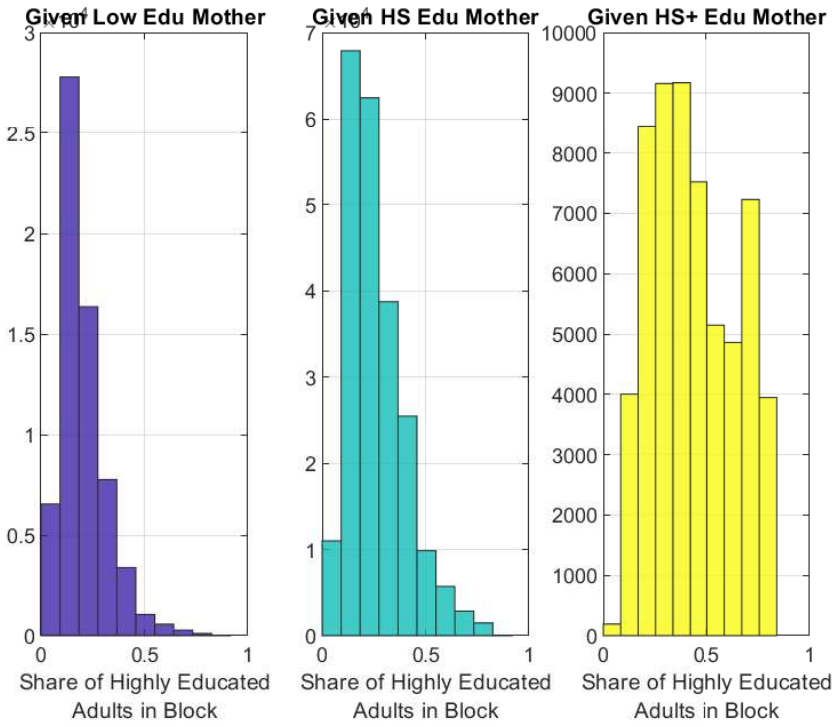
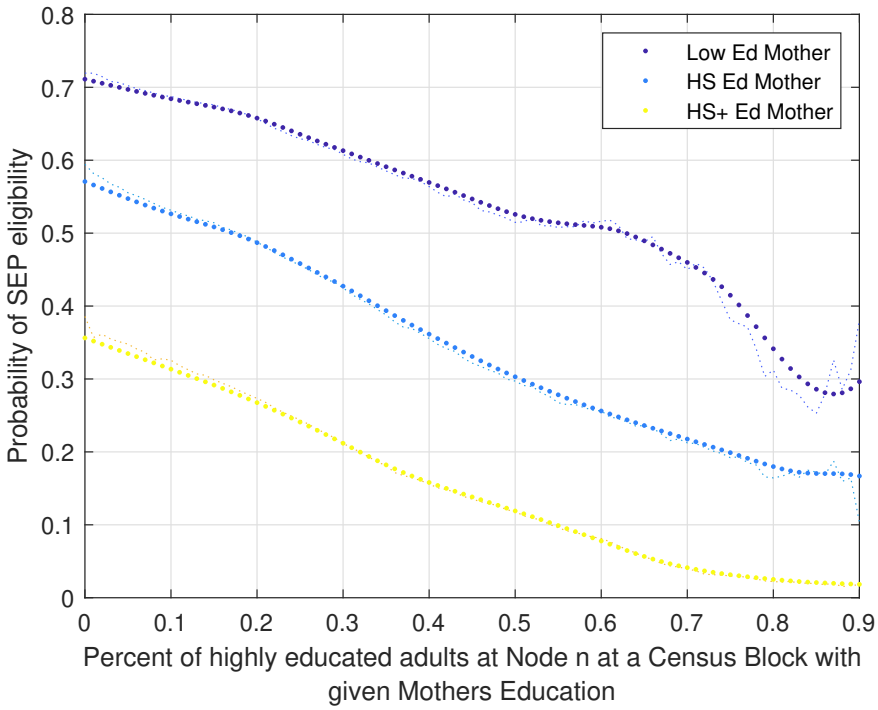


Figure 8: Probability of SEP eligibility given Mother Education and Education of Adults at Node (Nonparametric fit)



2 Markets Descriptive Statistics

Since not all schools in Chile are considered in the markets, it is important to show which subset of the population they represent and why they are chosen. Table 3 shows the total number of elementary schools in the country (that teach first grade), along with their enrollment. When restricted to urban schools, it can be seen that, although the number of schools decreases to 50% of the total, urban schools still represent around 88% of total enrollment. When we focus on schools in the 74 selected markets, we retain an important share of urban enrollment, reaching roughly 90%. Overall, enrollment in the markets considered represents more than 75% of total enrollment. To show this subset of schools is representative of urban elementary schools, Table 4 presents some descriptive statistics comparing both sets. Throughout the period considered they remain very similar in terms of first-grade class size, SEP adoption, private participation and average quality.

Table 3: Total schools, urban schools and schools in markets

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total Elementary Schools	8,179	8,156	8,138	8,097	8,135	8,009	7,854	7,771	7,674	7,552	7,511	7,443
Total Enrollment on 1st grade	234,260	231,367	239,545	236,488	237,991	234,416	231,926	232,473	238,655	247,010	255,695	256,829
Urban Schools	4,258	4,308	4,342	4,388	4,458	4,517	4,495	4,518	4,530	4,567	4,582	4,558
% of Total Schools	52.1	52.8	53.3	54.2	54.8	56.4	57.2	58.1	59.0	60.5	61.0	61.2
Urban Enrollment	203,236	201,431	209,046	207,114	208,728	206,759	204,440	205,622	211,848	220,719	228,894	230,352
% of Total Enrollment	86.8	87.1	87.3	87.6	87.7	88.2	88.1	88.4	88.8	89.4	89.5	89.7
Schools in Markets	3,801	3,840	3,873	3,891	3,919	3,929	3,936	3,937	3,924	3,897	3,876	3,849
% of Urban Schools	89.3	89.1	89.2	88.7	87.9	87.0	87.6	87.1	86.6	85.3	84.6	84.4
Enrollment in 1st grade in Markets	186,107	180,798	186,909	184,075	183,577	181,182	179,910	181,102	185,268	192,033	198,616	199,599
% of Urban Enrollment	91.6	89.8	89.4	88.9	88.0	87.6	88.0	88.1	87.5	87.0	86.8	86.6

Note: This table shows the distribution of schools and enrollment on 1st grade considering all elementary schools, urban schools and schools in markets. Total Schools consider all elementary schools that have 1st grade. Markets contain 4,266 different schools throughout all the period.

Table 4: Urban schools and schools in markets

	Urban Schools				Schools in Markets			
Year	Avg 1st grade Enrollment	SEP Adoption	% Private Schools	Value Added	Avg 1st grade Enrollment	SEP Adoption	% Private Schools	Value Added
2005	47.7	0.0	55.0	-0.15	49.0	0.0	58.1	-0.14
2006	46.8	0.0	56.0	-0.21	47.1	0.0	59.0	-0.21
2007	48.1	0.0	56.6	-0.22	48.3	0.0	59.6	-0.22
2008	47.2	65.7	57.3	-0.15	47.3	63.0	60.1	-0.15
2009	46.8	70.3	58.0	-0.10	46.8	68.3	60.6	-0.10
2010	45.8	72.3	58.1	-0.03	46.1	70.2	61.2	-0.04
2011	45.5	76.6	58.9	-0.03	45.7	73.4	61.7	-0.03
2012	45.5	79.3	59.4	0.01	46.0	76.6	62.0	0.00
2013	46.8	81.4	59.9	-0.10	47.2	78.9	62.3	-0.10
2014	48.3	82.6	59.6	-0.09	49.3	80.3	62.4	-0.09
2015	50.0	83.6	59.3	-0.06	51.2	81.7	62.1	-0.06
2016	50.5	85.9	58.9	-0.02	51.9	84.3	61.7	-0.02

2.1 Entry and exit in urban markets

Having described the main characteristics of the stock of schools in the markets of interest, I turn to explore whether entry was an important margin of change during the period under study. More specifically, I explore if entry and/or exit patterns differ by (1) type of institution, (2) school's exposure to the policy, and (3) quality. I also pay attention to any potential change around 2008, when SEP was implemented.

Table 5 shows, for all schools in urban markets, the entry rate, exit rate, and number of active schools, differentiating by type of school (public, private voucher, or private non-voucher). We can see that, for public schools, entry and exit rates remained stable and low throughtout the period of study. Entry and exit is higher among private voucher and also among private non-voucher schools. However, since private vouchers concentrate a much higher share of enrollment than non-vouchers (52% vs 8% in 2007, for instance), the rest of this analysis regarding entry dynamics will focus on voucher schools only. Table 6 also shows that in terms of the *number* of entries and exits, private voucher schools present more movement than their non-voucher counterparts.

As can be seen in Table 5 and Table 6, there is a downward trend in the entry rate of private vouchers (from 3.17% in 2006 to 0.23% in 2016), while the exit rate presents a small decrease in 2007 and 2008 but stays rather stable in the subsequent years, consistently around 1%. These patterns are still present when we look at the average entry/exit rate by market, differentiating by market size (Table 7).

Table 5: Entry rate, exit rate, and number of active schools, by type of school

	Public			Private voucher			Private non voucher		
Year	% Entry	% Exit	Active	% Entry	% Exit	Active	% Entry	% Exit	Active
2006	0.28%	0.79%	1397	3.17%	1.99%	2014	3.39%	1.46%	410
2007	0.29%	0.72%	1391	2.78%	1.66%	2053	2.93%	3.69%	406
2008	0.43%	0.86%	1389	2.48%	0.91%	2088	2.71%	1.24%	403
2009	0.36%	1.52%	1383	2.25%	1.08%	2129	3.23%	2.45%	408
2010	0.43%	1.54%	1367	2.21%	0.65%	2158	2.45%	2.23%	403
2011	0.44%	1.11%	1351	1.20%	1.38%	2172	2.23%	0.75%	402
2012	0.22%	1.34%	1341	1.57%	1.42%	2185	1.74%	2.47%	405
2013	0.37%	1.28%	1328	1.51%	1.18%	2197	1.48%	1.76%	397
2014	0.68%	0.38%	1317	0.36%	1.24%	2181	1.51%	1.52%	396
2015	0.61%	0.23%	1320	0.23%	1.39%	2162	1.01%	1.02%	394
2016	0.23%	0.30%	1324	0.23%	0.42%	2133	0.51%	0.51%	392

Note: This table shows, for all schools in urban markets, the entry rate, exit rate, and number of active schools, differentiating by type of school (public, private voucher, or private non-voucher). The entry rate in t is defined as the number of schools that appear in the registry of schools for the first time in t over the stock of active schools in $t-1$. The exit rate in t, is defined as the number of schools that appear for the last time in t, over the stock of active schools in t.

Table 6: Entries, exits, and active schools, by type of school

Year	Entry	Exit	Active	Entry	Exit	Active	Entry	Exit	Active
2006	4	11	1397	62	40	2014	14	6	410
2007	4	10	1391	56	34	2053	12	15	406
2008	6	12	1389	51	19	2088	11	5	403
2009	5	21	1383	47	23	2129	13	10	408
2010	6	21	1367	47	14	2158	10	9	403
2011	6	15	1351	26	30	2172	9	3	402
2012	3	18	1341	34	31	2185	7	10	405
2013	5	17	1328	33	26	2197	6	7	397
2014	9	5	1317	8	27	2181	6	6	396
2015	8	3	1320	5	30	2162	4	4	394

Note: This table shows, for all schools in urban markets, the number of entries, exits, and active schools, differentiating by type of school (public, private voucher, or private non-voucher).

Table 7: Average market entry rate, exit rate, and number of active schools, by market size (only private voucher)

Size of market	Year	Entry rate	Exit rate	Active schools
Small	2006	5.07%	0.49%	8
Small	2007	5.00%	0.41%	8
Small	2008	2.30%	1.24%	8
Small	2009	4.16%	0.45%	8
Small	2010	2.46%	0.86%	9
Small	2011	2.74%	0.68%	9
Small	2012	1.72%	1.54%	9
Small	2013	1.48%	0.31%	9
Small	2014	0.48%	0.47%	9
Small	2015	0.23%	0.74%	9
Small	2016	0.00%	0.12%	9
Medium	2006	4.58%	1.86%	39
Medium	2007	3.25%	0.98%	40
Medium	2008	2.63%	0.74%	41
Medium	2009	1.99%	1.00%	42
Medium	2010	2.31%	0.42%	43
Medium	2011	2.09%	1.20%	43
Medium	2012	2.14%	0.21%	44
Medium	2013	1.66%	1.60%	45
Medium	2014	0.92%	0.80%	44
Medium	2015	0.30%	1.14%	44
Medium	2016	0.18%	0.57%	44
Large	2006	2.04%	2.72%	377
Large	2007	3.41%	1.57%	381
Large	2008	3.69%	0.99%	384
Large	2009	1.49%	1.33%	389
Large	2010	2.80%	0.58%	392
Large	2011	0.33%	1.10%	391
Large	2012	1.20%	1.99%	391
Large	2013	1.48%	1.13%	390
Large	2014	0.22%	1.26%	386
Large	2015	0.36%	1.17%	381
Large	2016	0.16%	0.64%	375

Note: This table shows the average entry rate for voucher schools, exit rate for voucher schools, and number of active voucher schools by market, grouping markets into the categories Small, Medium, and Large. Markets with up to 50 active schools in 2007 are classified as "small-sized". Those with more than 50 but less than 150 are classified as "medium-sized". Markets with over 150 schools belong to the "large-sized" category. This last category comprises only three markets: Santiago, Viña del Mar - Valparaiso, and Concepción. The markets are grouped taking into account the total number of schools (not only voucher schools). The entry rate in t is defined as the number of voucher schools that appear in the registry of schools for the first time in t over the stock of active voucher schools in $t-1$. The exit rate in t, is defined as the number of voucher schools that appear for the last time in t, over the stock of active voucher schools in t.

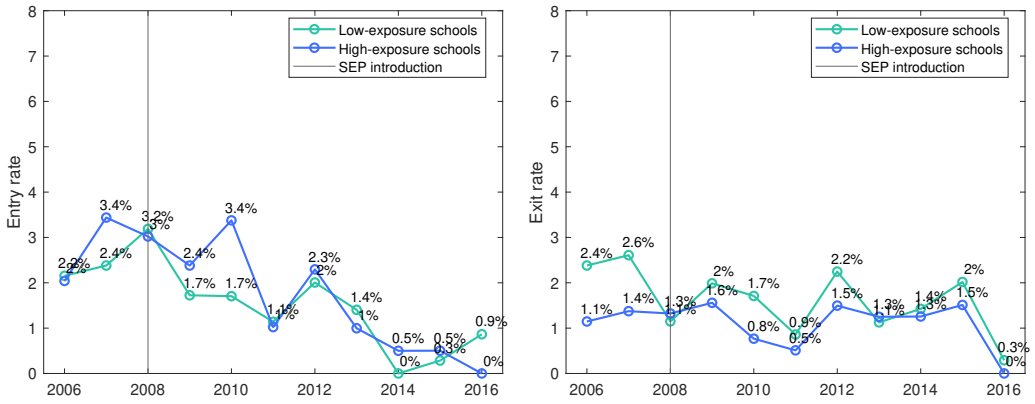
Next, I explore if entry and exit patterns differ by exposure to the SEP policy. Similar to the difference in differences analysis in the paper, high exposure is defined as belonging to the top quintile of exposure to the policy and low exposure is defined as belonging to the bottom quintile of exposure. As can be seen in Table 8 and Figure 9, I find that entry rates evolve very similarly for both groups. Exit rates also follow a similar trend during most of the period under study. Moreover, I do not find any remarkable change around 2008, when the SEP policy was introduced.

Table 8: Entry rate, exit rate, and active voucher schools, by exposure to SEP

	High exposure			Low exposure		
Year	% Entry	% Exit	Active	% Entry	% Exit	Active
2006	2.04%	1.15%	349	2.15%	2.38%	336
2007	3.44%	1.37%	364	2.38%	2.61%	345
2008	3.02%	1.32%	378	3.19%	1.15%	348
2009	2.38%	1.56%	385	1.72%	1.99%	352
2010	3.38%	0.77%	391	1.70%	1.71%	351
2011	1.02%	0.51%	392	1.14%	0.86%	349
2012	2.30%	1.50%	401	2.01%	2.25%	356
2013	1.00%	1.25%	400	1.40%	1.13%	355
2014	0.50%	1.26%	398	0.00%	1.42%	351
2015	0.50%	1.51%	397	0.28%	2.02%	347
2016	0.00%	0.00%	389	0.86%	0.29%	343

Note: This table shows, for *voucher* schools in urban markets, the entry rate, exit rate, and number of active schools, differentiating by degree of exposure to the SEP policy. Similar to the difference in differences analysis in the paper, high exposure is defined as belonging to the top quintile of exposure to the policy and low exposure is defined as belonging to the bottom quintile of exposure (this means that around 40% of voucher schools are accounted for in this table). The entry rate in t is defined as the number of voucher schools that appear in the registry of schools for the first time in t over the stock of active voucher schools in $t-1$. The exit rate in t, is defined as the number of voucher schools that appear for the last time in t, over the stock of active voucher schools in t.

Figure 9: Entry and Exit by exposure to SEP



(a) Entry rate

(b) Exit rate

Note: This figure shows the evolution of the **entry** rate for *voucher* schools in urban markets, differentiating by degree of exposure to the SEP policy. Low exposure is defined as belonging to the bottom quintile of exposure and high exposure is defined as belonging to the top quintile of exposure to the policy.

Note: This figure shows the evolution of the **exit** rate for *voucher* schools in urban markets, differentiating by degree of exposure to the SEP policy. Low exposure is defined as belonging to the bottom quintile of exposure and high exposure is defined as belonging to the top quintile of exposure to the policy.

Finally, I explore entry and exit doing a breakdown by quality. In particular, I categorize

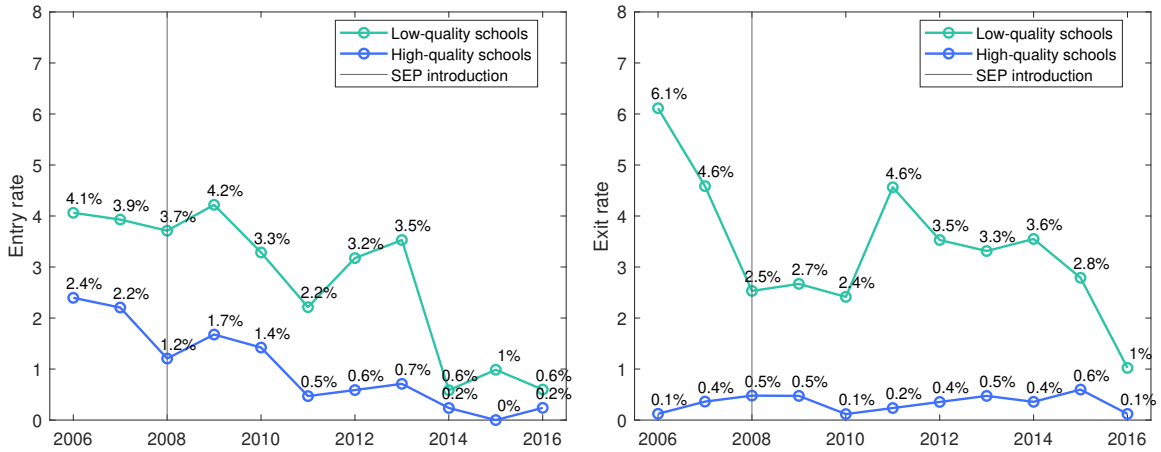
schools into 3 groups according to whether they belong to the (within-market) bottom, middle, or top third of value added. As might be expected, turnover among low-quality schools is higher, with entry and exit rates that are, on average, 1.81 and 3.03 percentage points higher than entry and exit rates of high-quality schools (see Table 9 and Figure 10). Although there is a difference in levels, there is a downward trend in entry rates for both groups (which is consistent with the previous exercises). In terms of exit rates, the evolution is noticeably more erratic for low-quality schools, but it is so across most years, and not only around the year of the introduction of SEP (2008).

Table 9: Entry rate, exit rate, and active voucher schools, by within-market tertile of quality

	Low quality			Medium quality			High quality		
Year	% Entry	% Exit	Active	% Entry	% Exit	Active	% Entry	% Exit	Active
2006	4.06%	6.11%	458	3.48%	1.49%	739	2.40%	0.12%	816
2007	3.93%	4.59%	458	2.71%	1.18%	765	2.21%	0.36%	829
2008	3.71%	2.53%	474	3.14%	0.39%	779	1.21%	0.48%	835
2009	4.22%	2.67%	487	1.67%	0.75%	798	1.68%	0.47%	844
2010	3.29%	2.41%	497	2.38%	0.12%	810	1.42%	0.12%	851
2011	2.21%	4.56%	504	1.36%	0.61%	818	0.47%	0.24%	850
2012	3.17%	3.53%	510	1.59%	1.20%	830	0.59%	0.36%	845
2013	3.53%	3.31%	513	1.08%	0.60%	840	0.71%	0.47%	844
2014	0.58%	3.55%	507	0.36%	0.72%	835	0.24%	0.36%	839
2015	0.99%	2.79%	502	0.00%	1.33%	824	0.00%	0.60%	836
2016	0.60%	1.02%	489	0.00%	0.37%	814	0.24%	0.12%	830

Note: This table shows, for all *voucher* schools in urban markets, the entry rate, exit rate, and number of active schools, differentiating by within-market tertile of quality. Quality is the mean value added (across years). The entry rate in t is defined as the number of voucher schools that appear in the registry of schools for the first time in t over the stock of active voucher schools in $t-1$. The exit rate in t, is defined as the number of voucher schools that appear for the last time in t, over the stock of active voucher schools in t.

Figure 10: Entry and Exit by within-market tertile of quality



(a) Entry rate

(b) Exit rate

Note: This figure shows the evolution of the **entry** rate for *voucher* schools in urban markets, differentiating by within-market tertile of quality. Quality is the mean value added of the school (across years). Low-quality schools belong to their market's bottom third of value added. High-quality schools belong to the top third.

Note: This figure shows the evolution of the **exit** rate for *voucher* schools in urban markets, differentiating by within-market tertile of quality. Quality is the mean value added of the school (across years). Low-quality schools belong to their market's bottom third of value added. High-quality schools belong to the top third.

2.2 Inputs and school quality in urban markets

Now I present some descriptive statistics documenting the evolution of transfers. I keep the focus on the 74 relevant markets, selected according to the criteria previously discussed. In these markets, per capita transfers increased, on average, by 63% (standard deviation: 11%). Figure 12 shows that there is a positive relationship between the percentage of poor students in the market at the beginning of the period, and the percentage change in per capita transfers in the market.

Figure 11: Percentage change in average transfers by student from 2007 to 2012

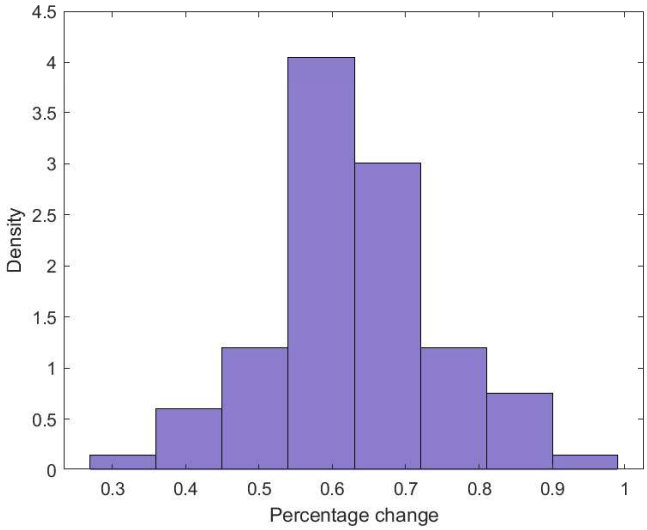
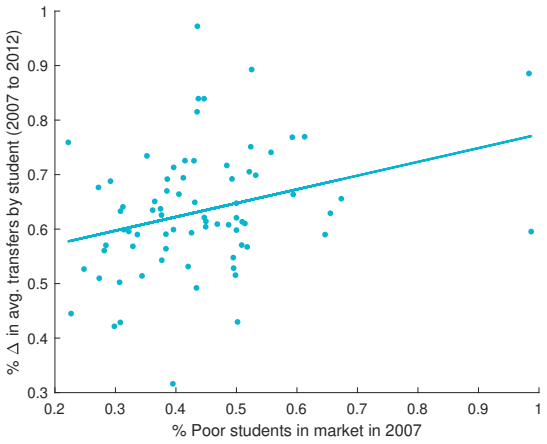
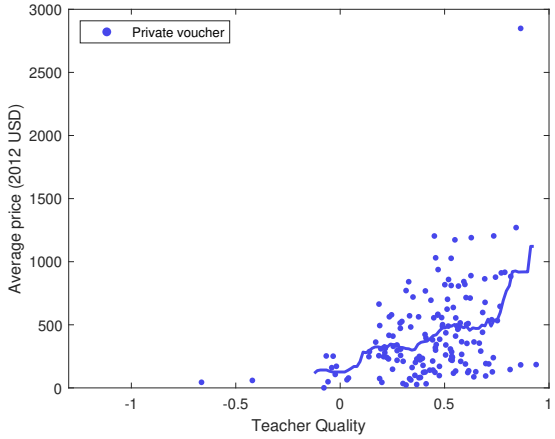


Figure 12: Relationship between share of poor students in the market and percentage change in average transfers by student

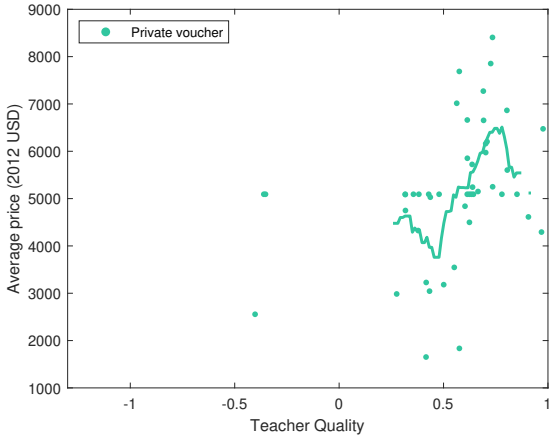


Regarding the inputs and outputs of private schools (both voucher and non-voucher), Figures 13 and 16 show that (1) prices are positively correlated to teacher quality, as measured by average language test scores of teachers in the institution, and (2) prices are also positively correlated to our Value Added Measure.

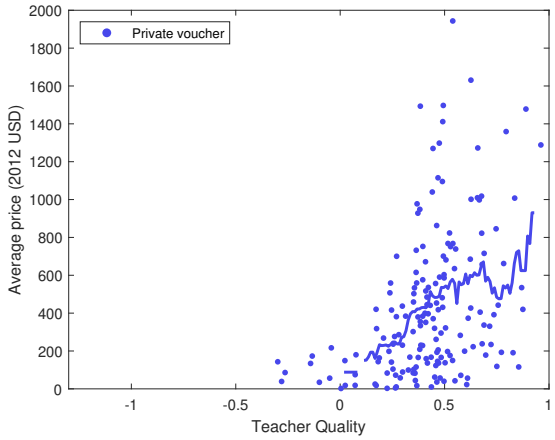
Figure 13: Teacher Quality and Prices in selected markets



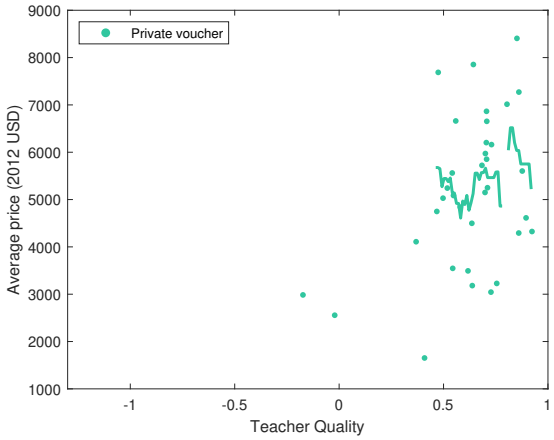
(a) Market 52 - 2007



(b) Market 52 - 2007

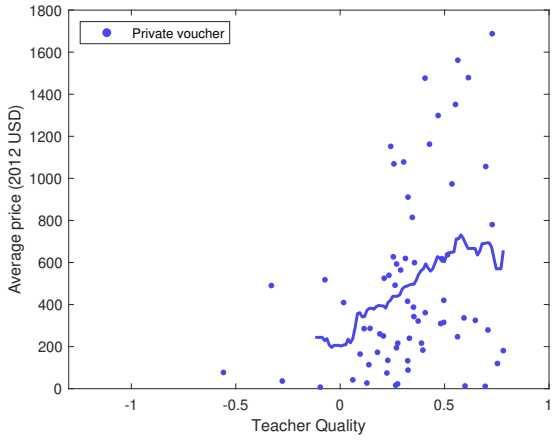


(c) Market 52 - 2012

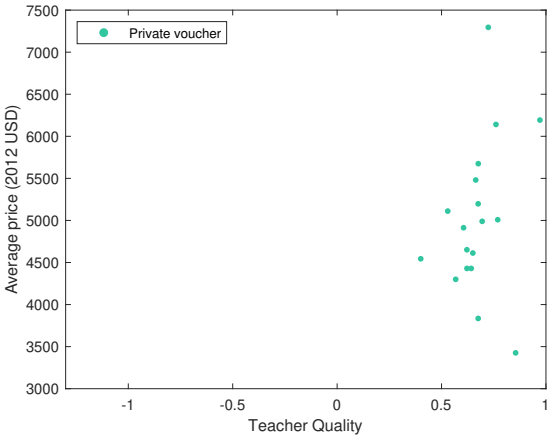


(d) Market 52 - 2012

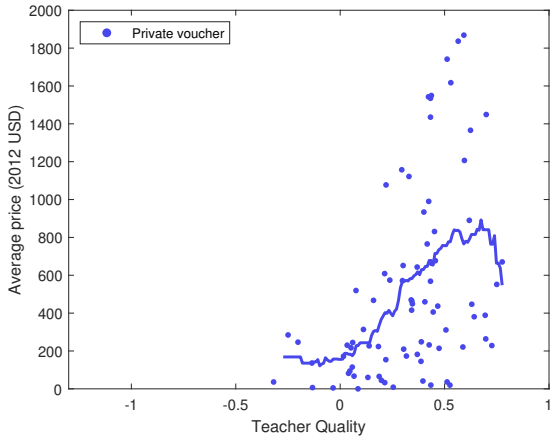
These figures show the relationship between Teacher Quality (as measured by the teachers' weighted average for language score) and the prices charged by schools in the three largest markets (the ones with more schools), which are: Viña del Mar and Valparaiso (Market 52), Concepción (Market 160), and Santiago (Market 312). The line corresponds to the moving average of price. This conditional mean is only computed for windows with more than 4 observations. It is not included for non-voucher schools of Market 160 because they are too few.



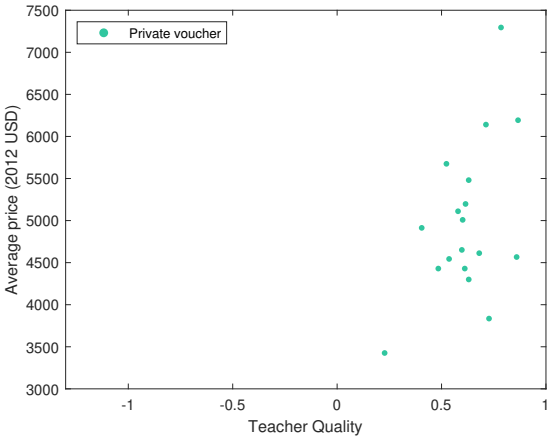
(a) Market 160 - 2007



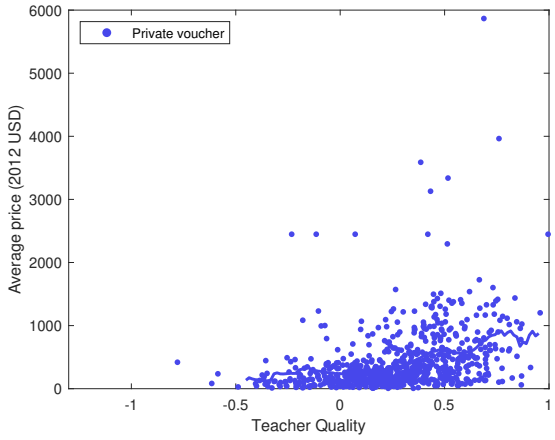
(b) Market 160 - 2007



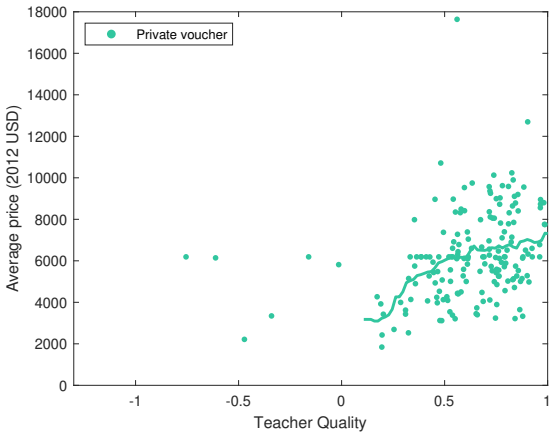
(c) Market 160 - 2012



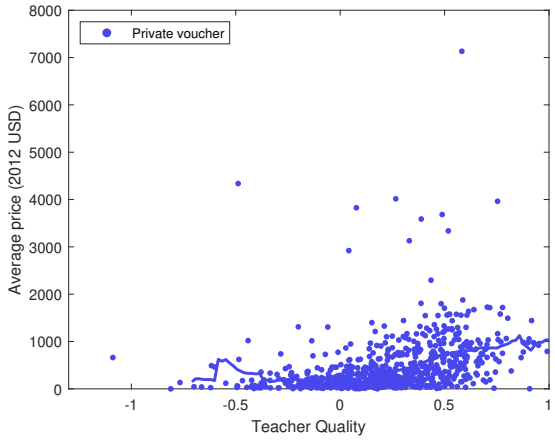
(d) Market 160 - 2012



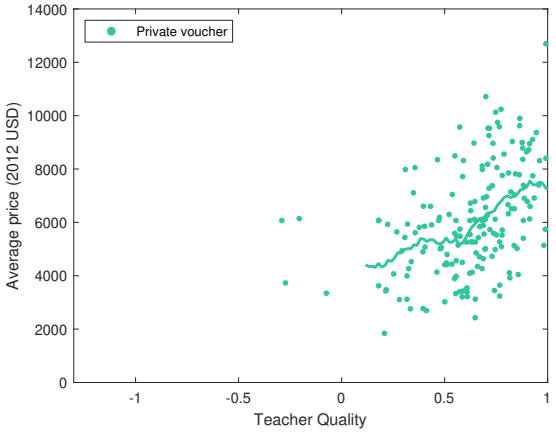
(a) Market 312 - 2007



(b) Market 312 - 2007

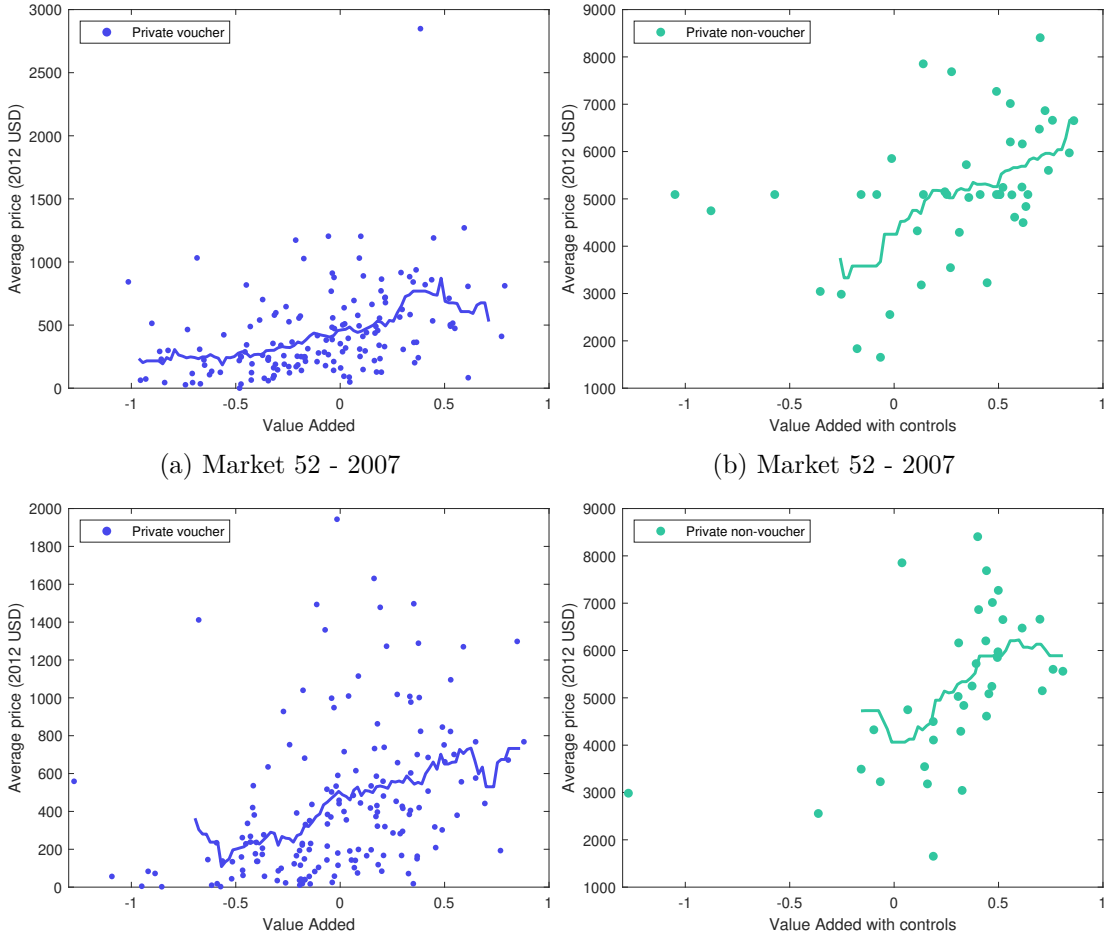


(c) Market 312 - 2012



(d) Market 312 - 2012

Figure 16: Value Added and Prices in selected markets



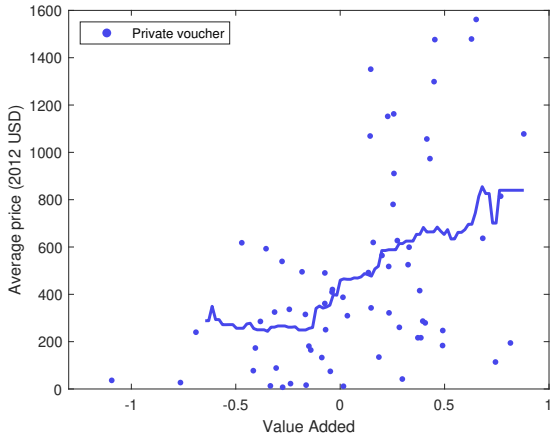
(a) Market 52 - 2007

(b) Market 52 - 2007

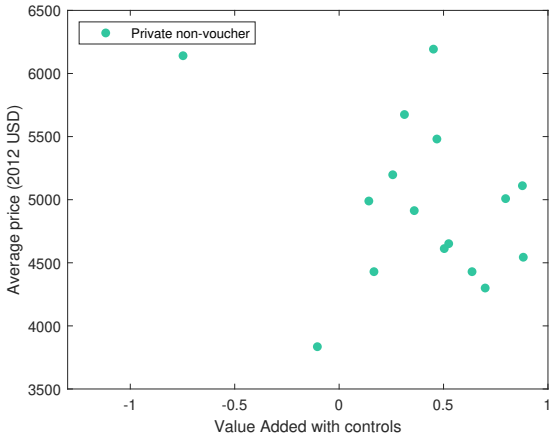
(c) Market 52 - 2012

(d) Market 52 - 2012

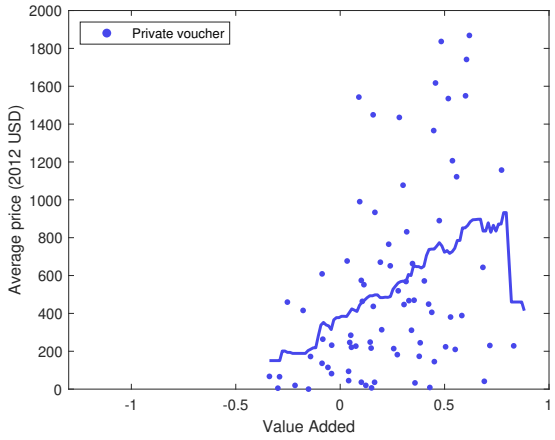
These figures show the relationship between the Value Added Measure and the prices charged by schools in the three largest markets (the ones with more schools), which are: Viña del Mar and Valparaiso (Market 52), Concepción (Market 160), and Santiago (Market 312). The line corresponds to the moving average of price. This conditional mean is only computed for windows with more than 4 observations. It is not included for non-voucher schools of Market 160 because they are too few.



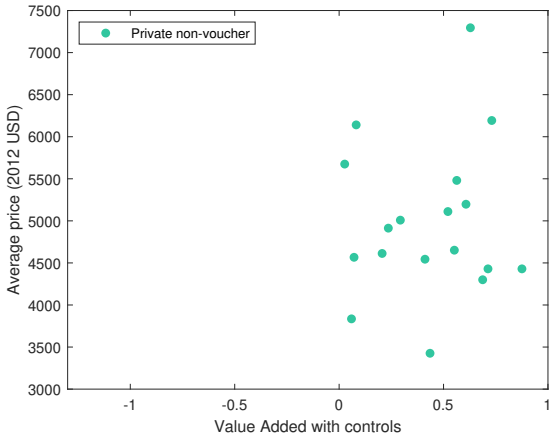
(a) Market 160 - 2007



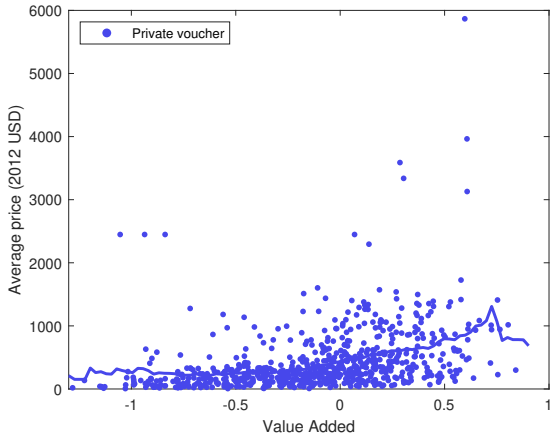
(b) Market 160 - 2007



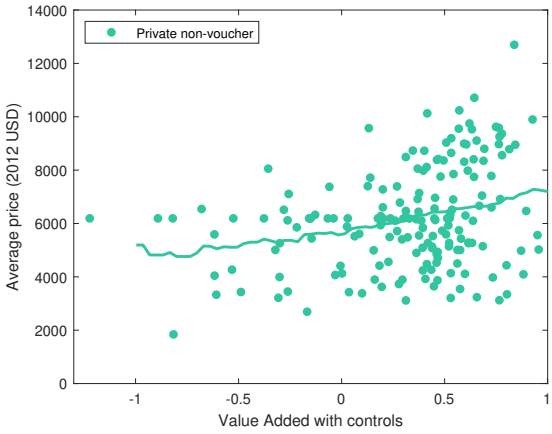
(c) Market 160 - 2012



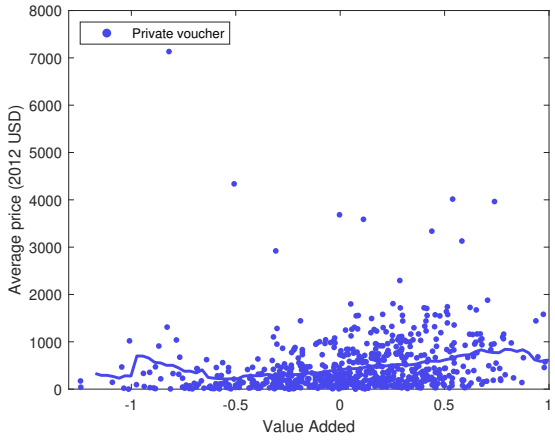
(d) Market 160 - 2012



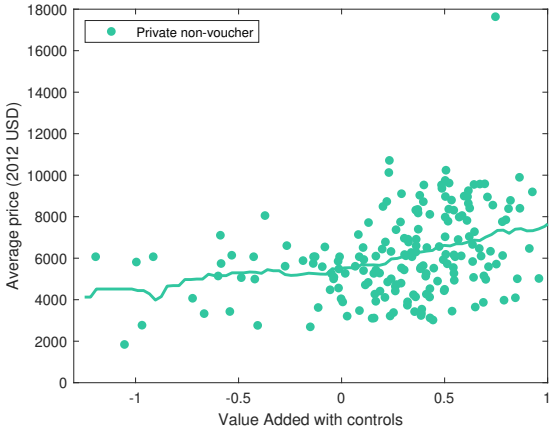
(a) Market 312 - 2007



(b) Market 312 - 2007



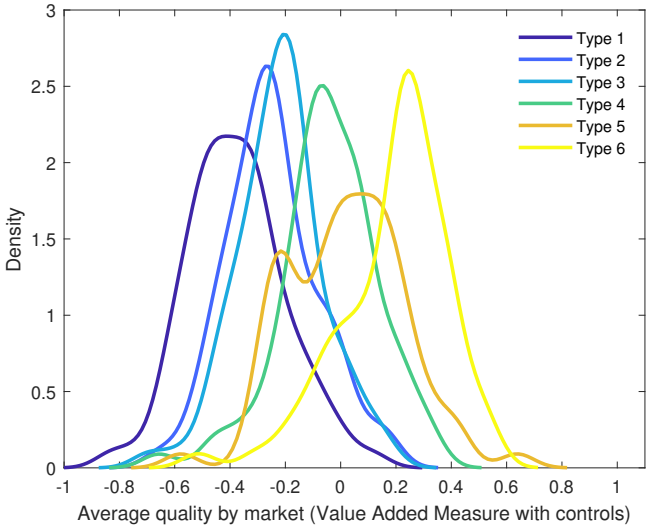
(c) Market 312 - 2012



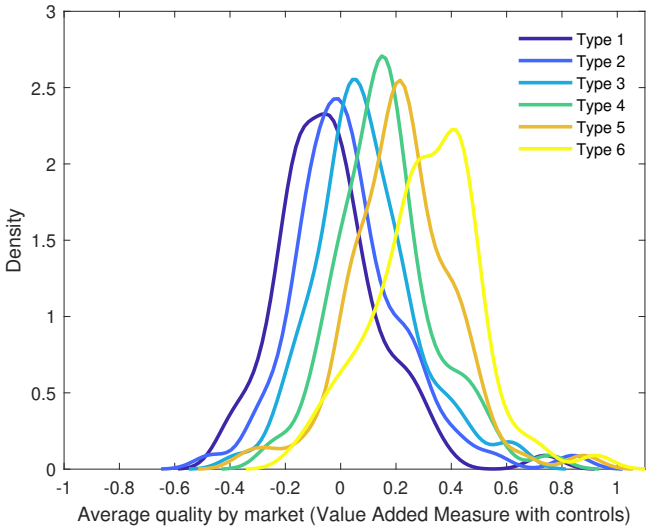
(d) Market 312 - 2012

Finally, Table 10 presents a detailed market-by-market description of relevant characteristics such as the number of schools inside the market, the share of those schools that are private, the enrollment private share, and the average quality received by each type of student in the market. Information is summarized for years 2007 —preceding the implementation of SEP, and 2012. There is a notorious closing of the quality gap in the majority of markets, as measured by the difference in average quality received by students of Type 1 and Type 6.To illustrate this point concisely, I present Figure 19, which further shows that the closing of the gap in average quality goes hand in hand with changes across the entire distribution.

Figure 19: Empirical distribution of average school quality across markets, 2007 and 2012



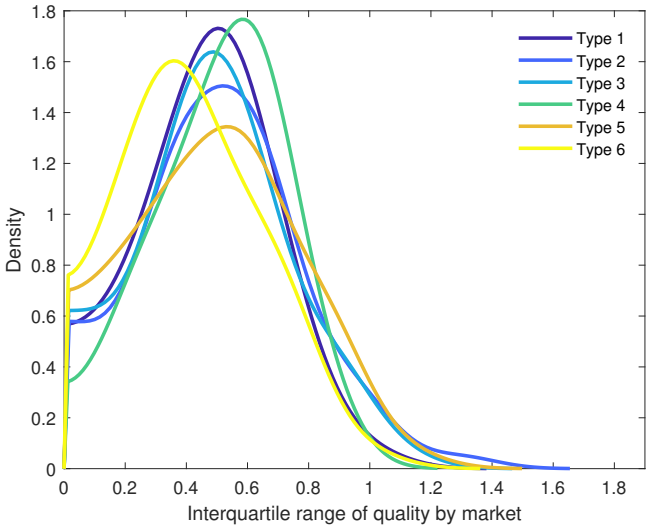
(a) 2007



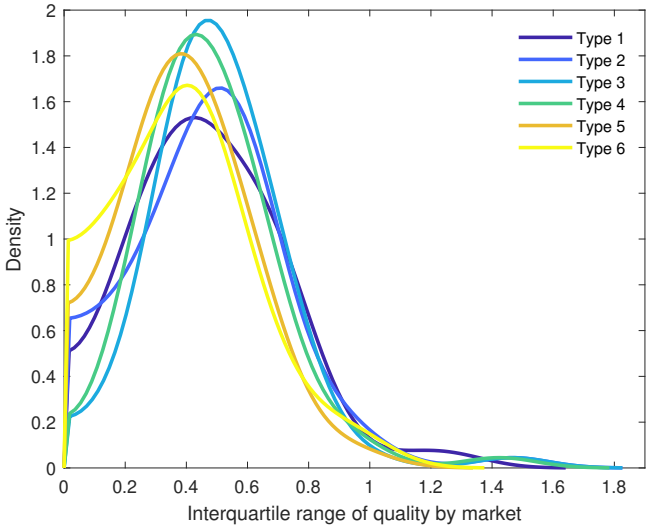
(b) 2012

Note: These figures show the empirical distribution of average quality received by each type of student, across markets. Panel (a) corresponds to year 2007, preceding the implementation of SEP, and panel (b) corresponds to year 2012. Quality refers to our Value Added Measure with controls.

Figure 20: Empirical distribution of interquartile range of school quality across markets, 2007 and 2012



(a) 2007



(b) 2012

Note: These figures show the empirical distribution of the interquartile range of quality received by each type of student, across markets. Panel (a) corresponds to year 2007, preceding the implementation of SEP, and panel (b) corresponds to year 2012. Quality refers to our Value Added Measure with controls.

Table 10: Summary of markets' characteristics, years 2007 and 2012

Region	Market	Year	Schools	Private Schools	Private Enroll.	Average quality by type of student					
						Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
I	1	2007	72	0.75	0.80	-0.63	-0.40	-0.41	-0.12	-0.24	0.21
I	1	2012	79	0.80	0.84	-0.04	0.03	0.08	0.15	0.24	0.35
II	6	2007	72	0.51	0.47	-0.64	-0.51	-0.48	-0.26	-0.26	0.09
II	6	2012	73	0.53	0.55	-0.16	-0.10	-0.04	0.05	0.07	0.27
II	12	2007	7	0.14	0.21	-0.73	-0.66	-0.69	-0.66	-0.58	-0.51
II	12	2012	7	0.14	0.22	-0.40	-0.47	-0.37	-0.25	-0.34	-0.07
II	13	2007	32	0.50	0.45	-0.35	-0.24	-0.24	-0.13	-0.08	0.09
II	13	2012	31	0.52	0.47	0.10	0.15	0.24	0.27	0.35	0.41
III	18	2007	34	0.41	0.38	-0.50	-0.46	-0.39	-0.21	-0.17	0.16
III	18	2012	34	0.41	0.42	-0.17	-0.12	-0.02	0.12	0.20	0.45
III	24	2007	16	0.25	0.24	-0.31	-0.28	-0.27	-0.08	0.09	0.21
III	24	2012	16	0.25	0.25	0.03	0.18	0.14	0.18	0.26	0.36
IV	28	2007	120	0.72	0.71	-0.42	-0.27	-0.26	0.01	-0.02	0.28
IV	28	2012	131	0.74	0.80	-0.07	0.03	0.08	0.15	0.23	0.30
IV	32	2007	9	0.44	0.40	-0.06	-0.03	-0.01	0.07	0.17	0.24
IV	32	2012	9	0.44	0.44	-0.23	-0.15	-0.19	-0.11	-0.09	-0.04
IV	36	2007	23	0.48	0.48	-0.33	-0.22	-0.15	0.07	0.15	0.42
IV	36	2012	24	0.46	0.58	0.06	-0.01	0.09	0.24	0.31	0.52
V	45	2007	52	0.62	0.61	-0.43	-0.26	-0.33	-0.09	-0.19	0.13
V	45	2012	56	0.63	0.64	-0.08	-0.09	0.02	0.10	0.13	0.25
V	48	2007	64	0.63	0.66	-0.50	-0.24	-0.28	-0.07	-0.15	0.29
V	48	2012	65	0.63	0.74	-0.13	-0.10	0.04	0.10	0.18	0.30
V	49	2007	63	0.52	0.58	-0.57	-0.43	-0.43	-0.19	-0.25	0.22
V	49	2012	63	0.52	0.64	-0.23	-0.12	-0.13	-0.02	0.07	0.26
V	51	2007	10	0.70	0.49	-0.50	-0.48	-0.42	-0.35	-0.08	-0.11
V	51	2012	12	0.75	0.61	0.22	0.21	-0.07	0.03	0.24	0.14
V	52	2007	341	0.66	0.68	-0.57	-0.39	-0.38	-0.14	-0.10	0.20
V	52	2012	334	0.67	0.74	-0.26	-0.19	-0.12	0.00	0.07	0.26
V	58	2007	9	0.56	0.51	-0.53	-0.34	-0.24	-0.07	0.05	0.16
V	58	2012	10	0.60	0.57	-0.15	0.06	0.00	0.07	0.23	0.33
V	59	2007	23	0.61	0.61	-0.37	-0.34	-0.32	-0.15	0.03	-0.02
V	59	2012	23	0.61	0.70	-0.19	-0.09	-0.04	0.02	0.08	0.14
V	60	2007	11	0.55	0.60	-0.46	-0.23	-0.23	-0.06	0.23	0.25
V	60	2012	11	0.55	0.64	-0.09	-0.13	0.03	0.11	0.16	0.07
V	70	2007	6	0.67	0.71	-0.31	-0.12	-0.15	-0.05	-0.15	-0.07
V	70	2012	7	0.57	0.68	-0.34	-0.24	-0.21	-0.11	0.01	0.02
VI	77	2007	89	0.64	0.57	-0.62	-0.36	-0.38	-0.16	-0.11	0.25

Table 10 – *Continued from previous page*

Region	Market	Year	Schools	Private Schools	Private Enroll.	Average quality by type of student					
						Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
VI	77	2012	95	0.66	0.65	-0.17	-0.06	-0.00	0.11	0.20	0.45
VI	79	2007	9	0.67	0.66	-0.49	-0.34	-0.33	-0.20	-0.23	-0.05
VI	79	2012	11	0.64	0.67	-0.41	-0.30	-0.23	-0.22	-0.25	-0.09
VI	92	2007	16	0.31	0.24	-0.45	-0.35	-0.35	-0.19	0.00	0.25
VI	92	2012	16	0.31	0.28	-0.18	-0.13	-0.13	-0.07	-0.13	0.02
VI	94	2007	7	0.71	0.52	-0.11	-0.07	0.01	0.19	0.41	0.28
VI	94	2012	8	0.88	0.73	0.01	0.12	0.20	0.26	0.42	0.44
VI	104	2007	26	0.65	0.64	-0.20	-0.18	-0.14	0.05	0.31	0.41
VI	104	2012	24	0.63	0.69	-0.18	-0.01	0.06	0.14	0.31	0.51
VI	116	2007	10	0.70	0.70	-0.24	0.02	0.02	0.18	0.19	0.29
VI	116	2012	9	0.67	0.77	-0.02	-0.03	0.24	0.32	0.39	0.37
VII	117	2007	11	0.27	0.27	-0.34	-0.26	-0.33	-0.13	0.04	0.24
VII	117	2012	11	0.27	0.31	-0.26	0.03	0.01	0.05	0.24	0.21
VII	121	2007	11	0.55	0.51	-0.02	0.16	0.10	0.30	0.64	0.53
VII	121	2012	10	0.60	0.60	0.23	0.55	0.60	0.76	0.88	0.92
VII	125	2007	42	0.62	0.55	-0.38	-0.18	-0.19	0.12	0.13	0.36
VII	125	2012	44	0.61	0.69	-0.01	0.15	0.21	0.35	0.44	0.58
VII	132	2007	33	0.61	0.64	-0.11	0.11	0.04	0.23	0.21	0.48
VII	132	2012	33	0.61	0.69	0.18	0.08	0.26	0.25	0.31	0.45
VII	136	2007	57	0.54	0.56	-0.50	-0.27	-0.21	0.05	0.11	0.33
VII	136	2012	59	0.56	0.60	-0.17	-0.03	0.04	0.12	0.21	0.41
VII	138	2007	10	0.50	0.42	-0.55	-0.43	-0.19	-0.09	0.23	0.19
VII	138	2012	10	0.50	0.58	-0.31	-0.21	-0.13	-0.01	0.12	0.14
VII	140	2007	12	0.42	0.56	-0.20	-0.04	-0.08	0.13	0.07	0.23
VII	140	2012	12	0.42	0.59	0.10	0.22	0.14	0.20	0.28	0.30
VII	152	2007	11	0.64	0.71	-0.29	-0.20	-0.20	-0.04	0.04	0.35
VII	152	2012	11	0.64	0.75	-0.06	0.27	0.24	0.47	0.49	0.46
VIII	160	2007	199	0.57	0.59	-0.47	-0.27	-0.24	-0.02	-0.02	0.25
VIII	160	2012	203	0.61	0.68	-0.10	-0.06	0.05	0.15	0.23	0.32
VIII	161	2007	57	0.56	0.66	-0.41	-0.27	-0.16	0.05	0.19	0.41
VIII	161	2012	59	0.59	0.75	-0.04	0.05	0.08	0.16	0.24	0.31
VIII	166	2007	48	0.44	0.51	-0.48	-0.27	-0.28	-0.07	-0.07	0.19
VIII	166	2012	49	0.45	0.58	0.00	0.11	0.14	0.19	0.20	0.24
VIII	187	2007	13	0.15	0.23	0.12	0.17	0.17	0.20	0.17	0.23
VIII	187	2012	13	0.15	0.25	0.74	0.84	0.63	0.53	0.29	0.27
VIII	193	2007	6	0.50	0.59	-0.44	-0.27	-0.18	0.06	0.27	0.53
VIII	193	2012	6	0.50	0.62	-0.00	0.26	0.38	0.47	0.42	0.67
VIII	195	2007	8	0.25	0.30	-0.35	-0.32	-0.18	0.17	0.28	0.41

Table 10 – *Continued from previous page*

Region	Market	Year	Schools	Private Schools	Private Enroll.	Average quality by type of student					
						Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
VIII	195	2012	8	0.25	0.36	0.30	0.40	0.44	0.47	0.44	0.58
VIII	197	2007	10	0.30	0.25	-0.11	.	-0.08	0.09	-0.00	.
VIII	197	2012	10	0.30	0.30	-0.12	-0.05	-0.01	0.19	0.15	0.27
VIII	198	2007	9	0.11	0.07	-0.34	.	-0.17	0.33	0.09	.
VIII	198	2012	8	0.13	0.05	0.04	0.09	0.08	0.10	0.20	0.20
VIII	205	2007	9	0.56	0.17	-0.22	-0.11	-0.08	0.09	0.18	0.36
VIII	205	2012	8	0.50	0.25	0.11	0.29	0.40	0.41	0.46	0.46
VIII	207	2007	47	0.64	0.60	-0.48	-0.31	-0.28	-0.01	0.07	0.36
VIII	207	2012	49	0.65	0.65	-0.12	-0.04	0.07	0.21	0.30	0.40
VIII	210	2007	9	0.22	0.14	-0.61	-0.48	-0.42	-0.35	-0.17	0.11
VIII	210	2012	10	0.30	0.33	-0.04	0.01	-0.00	-0.02	0.06	0.07
VIII	211	2007	7	0.29	0.36	0.00	-0.00	0.13	0.20	0.32	0.23
VIII	211	2012	7	0.29	0.36	0.36	0.35	0.35	0.44	0.42	0.46
VIII	220	2007	13	0.54	0.67	-0.35	-0.18	-0.01	0.29	0.43	0.40
VIII	220	2012	13	0.54	0.64	0.26	0.43	0.47	0.57	0.65	0.72
IX	221	2007	17	0.53	0.52	-0.31	-0.17	-0.15	-0.06	0.02	0.15
IX	221	2012	17	0.53	0.56	0.13	0.15	0.23	0.21	0.41	0.23
IX	235	2007	8	0.50	0.50	-0.48	-0.42	-0.32	-0.29	-0.19	-0.07
IX	235	2012	8	0.50	0.59	-0.05	0.06	0.19	0.32	0.40	0.47
IX	239	2007	8	0.38	0.47	-0.41	-0.39	-0.28	-0.24	-0.22	-0.18
IX	239	2012	8	0.38	0.45	-0.16	0.05	0.06	0.15	0.15	0.14
IX	248	2007	12	0.75	0.73	-0.31	-0.07	-0.12	0.06	0.09	0.28
IX	248	2012	10	0.70	0.73	0.04	0.06	0.09	0.07	0.03	-0.02
IX	250	2007	96	0.73	0.72	-0.42	-0.24	-0.19	-0.01	-0.01	0.26
IX	250	2012	95	0.76	0.77	0.05	0.05	0.12	0.16	0.24	0.43
IX	264	2007	10	0.50	0.63	-0.83	-0.57	-0.58	-0.45	-0.31	-0.20
IX	264	2012	9	0.56	0.67	-0.11	-0.20	-0.01	-0.08	0.11	0.04
IX	267	2007	15	0.67	0.70	-0.29	-0.31	-0.20	0.00	0.15	0.36
IX	267	2012	16	0.69	0.71	0.25	0.27	0.31	0.36	0.52	0.40
X	270	2007	16	0.69	0.65	-0.19	-0.09	-0.09	0.02	0.03	0.01
X	270	2012	17	0.76	0.77	0.06	0.04	0.14	0.17	0.37	0.39
X	272	2007	11	0.36	0.31	-0.13	-0.02	0.02	0.08	0.10	0.20
X	272	2012	13	0.46	0.40	0.28	0.22	0.20	0.16	0.20	0.24
X	284	2007	54	0.70	0.63	-0.16	-0.08	-0.04	0.08	0.12	0.35
X	284	2012	58	0.69	0.63	0.14	0.23	0.20	0.22	0.15	0.28
X	285	2007	6	0.50	0.30	-0.30	-0.31	-0.21	-0.17	-0.01	-0.13
X	285	2012	7	0.57	0.41	-0.04	-0.07	0.12	0.14	0.01	0.40
X	286	2007	49	0.51	0.53	-0.31	-0.25	-0.14	0.06	0.16	0.30

Table 10 – *Continued from previous page*

Region	Market	Year	Schools	Private Schools	Private Enroll.	Average quality by type of student					
						Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
X	286	2012	55	0.55	0.60	0.05	0.08	0.20	0.29	0.28	0.48
X	287	2007	8	0.63	0.62	-0.38	0.03	-0.17	0.23	0.20	0.37
X	287	2012	8	0.63	0.65	-0.05	-0.01	0.17	0.23	0.34	0.40
X	292	2007	9	0.56	0.53	-0.26	-0.19	-0.18	-0.04	0.09	0.05
X	292	2012	9	0.67	0.60	-0.05	-0.02	-0.06	-0.01	0.03	0.09
XI	301	2007	7	0.43	0.52	-0.24	-0.27	-0.26	-0.11	-0.23	0.05
XI	301	2012	9	0.44	0.60	-0.03	0.01	0.12	0.15	0.06	0.31
XI	305	2007	16	0.69	0.65	-0.28	-0.16	-0.14	-0.06	-0.06	0.19
XI	305	2012	18	0.72	0.78	0.05	0.11	0.15	0.21	0.23	0.23
XII	311	2007	34	0.50	0.42	-0.32	-0.26	-0.22	-0.07	0.15	0.01
XII	311	2012	35	0.51	0.49	-0.16	-0.13	-0.13	-0.01	0.02	0.17
XIII	312	2007	1523	0.71	0.72	-0.51	-0.37	-0.32	-0.10	-0.03	0.31
XIII	312	2012	1504	0.72	0.76	-0.20	-0.13	-0.03	0.08	0.17	0.37
XIII	320	2007	21	0.76	0.75	-0.40	-0.27	-0.26	-0.09	-0.30	0.26
XIII	320	2012	24	0.79	0.82	0.17	0.29	0.34	0.40	0.51	0.44
XIII	324	2007	10	0.80	0.64	-0.57	-0.35	-0.46	-0.08	.	-0.01
XIII	324	2012	13	0.85	0.84	-0.17	-0.16	0.00	0.08	0.22	0.13
XIII	328	2007	15	0.67	0.60	-0.58	-0.21	-0.13	0.05	-0.28	0.50
XIII	328	2012	21	0.76	0.82	-0.27	-0.31	-0.10	0.01	0.04	0.46
XIII	329	2007	9	0.78	0.79	-0.51	-0.43	-0.19	-0.11	0.23	0.23
XIII	329	2012	11	0.82	0.86	-0.10	-0.06	0.05	0.22	0.39	0.37
XIII	336	2007	26	0.73	0.74	-0.61	-0.49	-0.35	-0.21	-0.24	0.10
XIII	336	2012	27	0.74	0.80	-0.14	-0.03	0.01	0.15	0.22	0.25
XIII	338	2007	10	0.70	0.50	-0.29	-0.12	-0.19	-0.07	-0.24	0.04
XIII	338	2012	11	0.73	0.62	-0.16	-0.12	0.00	0.01	0.04	0.16
XIII	340	2007	31	0.65	0.64	-0.40	-0.21	-0.20	-0.06	-0.22	0.23
XIII	340	2012	33	0.67	0.67	-0.18	-0.04	-0.09	0.02	0.18	0.42
XIII	341	2007	7	0.43	0.34	-0.53	-0.43	-0.46	-0.45	-0.05	-0.31
XIII	341	2012	9	0.67	0.67	-0.37	-0.29	-0.18	-0.07	-0.03	-0.16
XIV	346	2007	9	0.33	0.21	-0.20	-0.00	-0.17	0.05	0.40	0.27
XIV	346	2012	9	0.44	0.34	-0.01	0.01	0.03	0.26	0.15	0.49
XIV	361	2007	46	0.63	0.53	-0.42	-0.35	-0.26	0.04	-0.04	0.38
XIV	361	2012	47	0.66	0.63	-0.03	-0.00	0.07	0.15	0.25	0.40
XV	362	2007	47	0.51	0.66	-0.40	-0.25	-0.28	-0.14	-0.23	-0.03
XV	362	2012	55	0.60	0.71	-0.04	-0.10	0.10	0.15	0.17	0.27

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