Private School Enrollment in an Italian Region after Implementing a Change in the Voucher Policy

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INTRODUCTION: MOTIVATION AND RESEARCH QUESTION

Private schooling provision is not a massive phenomenon in the Italian educational system: according to The Organization for Economic Cooperation and Development (OECD), the proportion of students in Italian private schools in 2012 was well below the average of OECD countries (indeed, almost half of it) and well lower than that observed in the other four big European economies of France, Germany, Spain, and the United Kingdom—see Table 1.

One exception to this general picture is represented by one region, Lombardy, where a series of factors contributes to determine a higher proportion of enrollments in the private educational segment: a larger proportion of religious families (most private schools are religiously affiliated), the availability of high-quality private schools,[1] and a larger number of private schools available, given a long tradition in this stream.

TABLE 1 Enrollment in Private Schools, Selected Countries (2012)

	Primary		Lower secondary		Upper secondary	
Country	Public	Private	Public	Private	Public	Private
France	85	15	78	22	69	31
Germany	96	4	91	9	92	8
Italy	93	7	96	4	91	9
Spain	68	32	69	31	79	21
United Kingdom	93	7	55	45	33	67
OECD average	89	11	86	14	81	19

Note. OECD = Economic Cooperation and Development. Authors' elaboration on OECD (2013), Table C7.1.

The column "Private" sums the values of government-dependent and government-independent schools. The proportion of students in private schools reported by OECD is slightly (sometimes substantially) higher than that resulting from data by the Ministry of Education (the latter are those used for this research). Therefore, the numbers reported here cannot be straightforwardly confronted with those used in the article, which come from the Ministry of Education, because of three main reasons: In this article, we do not include also the "pure private" schools, which instead are counted by OECD. We do not have private schools from Autonomous Provinces and Regions in our dataset (i.e., Aosta, Trento and Bolzano)—all the schools in these areas would be considered as private. In the present article, we just consider first-year students (a measure of flow), while OECD considers the stock of all the students enrolled in private schools. In OECD data, also courses for adults are counted for, and many of them are provided by private institutions.

The Regional Government launched a voucher program called *Buono Scuola* in 2000 with the aim of increasing the enrollment rate in private schools. In its first application, the voucher covered around 25% of the school fees (to a limit of 1,250 €/child per annum), and was subjected to a means test, even though it was not stringent. Indeed, administrative data show that the voucher had been assigned to more than 60% of students attending a private school (source: Agasisti, Catalano, & Sibiano, 2012), so it resulted in a massive financial support involving the majority of families who opted for private schools. In 2008, the policy was modified; in particular financial support was also extended to poorer students going to public schools to cover part of their educational expenses for supplies. According to Agasisti and colleagues (2012), the average amount of the voucher did not change for students in private schools substantially between 2007, the last year of the "old" voucher system, and the two subsequent years.[2] At the same time, however, a major change in the intervention was related to a substantial simplification of the administrative procedures required when applying for the voucher (see section 2).

The aim of this article is to answer the following research question: *Did the change in the voucher policy affect the proportion of first-year students who enrolled in private schools in Lombardy?* The importance of private school enrollments—and more in general of competition between private and public schools—has been made clear by Couch and colleagues (1993, p. 309): "educational achievement in the public schools is higher in those counties where a larger percentage of school-age children are enrolled in private schools" (see also the various empirical evidence and discussions in Hoxby, 2007).[3] To explore this topic, we conduct an analysis of the demand and supply-driven factors that are statistically associated with the proportion of first-year students enrolled into private schools at the provincial level, before and after the year in which the voucher policy changed in Lombardy (2008) and we check whether, among the 100 Italian Provinces,[4] the 11 ones located in Lombardy show a different pattern—both in absolute terms and over time. We also use an alternative identification strategy to control for a potential neighborhood influence in school choice policies (Rincke, 2006). The decision to limit the study to first-year students is because this indicator measures the flux of families opting for private schooling, while the proportion of all students in private schools represents a stock influenced by past decisions, which are unlikely to be affected by current policy. We found that the policy change did not affect the proportion of students enrolled in private schools, across primary, junior, and upper secondary educational levels.

The article is organized as follows. The next section, Section 2, describes the background of the article: private schooling in Italy, the details of the voucher policy, and some previous literature. Section 3 illustrates the methodology and dataset, while Section 4 contains the results. Section 5 presents our conclusions.

BACKGROUND

The Private School Sector in Italy: An Overview

In Italy, education is provided by State schools (93% of the total), and non-State (private) schools, called *"paritarie"* (i.e., "having the same legal status")—hereafter, we refer to these simply as private schools. The dual system of state and private schools has always been a typical feature of the Italian school system. Private schools, which were usually founded and managed by holy orders, especially the Catholic Church, in the past, were mainly chosen by families who wished to have more extracurricular activities and longer school days for their children, as well as a safe and stimulating school environment, and a clear educational orientation favorable or at least not hostile to religious faith. However, over the years the situation has changed, because more families in the state schools also sought enhanced and wider educational pathways.

In 2000, in order to bring order to the wide panorama of non-state schools—which in the meanwhile had been developing in different organizational settings—the Parliament approved the Law n. 62/2000 entitled "Regulations about school equality and instructions on the right to study."[5] The purpose of the law is to enrich the educational offerings, by explicitly recognizing the equal value of public and private schools. Specifically, private schools were entitled to issue diplomas with the same legal value as state schools; since 2000, then, these private schools have been called *"paritarie."* In order to be fully accredited and become an integral part of the national education system, private schools have to meet the same requirements and rules adopted for state schools, especially, average and medium sizes of classes, general teaching programs, and so forth.[6] Specifically, the aforementioned Law n. 62/2000 about school equality established the following principles for all levels:

- Private schools and schools run by municipalities and provinces are recognized as *"paritarie"* schools, upon request and provided the following conditions are met:
  - (o) they offer an educational program according to the Constitution and to current regulations and provisions;
  - (o) admission is open to everybody who accepts the school educational offer, including disadvantaged pupils or pupils with special needs;
  - (o) schools have a budget and a financial report which has to be made public;
  - (o) rooms, furnishings and equipment are adequate—according to standards set by the Ministry;
  - (o) their governing bodies are based on a democratic representation;

  - members of the teaching staff have the required professional qualifications and requirements and the staff is hired according to the national labor contracts;
  - schools provide courses and grades appropriate to a complete educational level (i.e., they are not allowed to have partial grades such as only the first two—out of five—classes of primary or secondary educational level); and
  - schools adhere to the national assessment system according to the standards established for state schools.
- *"Paritarie"* private schools are able to issue diplomas with the same legal value as state schools of the same school level; they are free to choose their cultural orientation and their educational-didactical approach.
- Nonprofit-making schools benefit from special tax concessions, as regulated by the Italian fiscal norms; moreover, special funds can be allocated by the state for implementing a student support system for disadvantaged families.
- *"Paritarie"* nonstate schools, offering a public service, must accept registrations from any applicants—requiring only that applicants approve the school's learning program and academic orientation.

Excluding, for a moment, the issue of vouchers, the main difference between public and private schools is that while the former are paid by general taxation, the latter are funded by fees paid by the families. The limitation of some families' ability to pay for an education is the main economic explanation for the low number of students enrolled in private schools. Cost pressure also explains why the proportion of students in private schools is higher in northern Italy, where Gross Domestic Product (GDP) per capita is substantially higher, than in the south. Thus, although *"paritarie"* private schools are legally equal to public ones, they are not economically equal, as they are not funded by the state and are not free of charge for all families, as instead is true of public ones. Clearly, publicly funded vouchers soften this dichotomy.

In Table 2, we report the number—and the proportion—of first-year students enrolled in public and private schools, in all the Italian provinces, in the last year considered in the analysis in this article (2012). Looking at the table, we see the level of heterogeneity with some provinces where the share of students enrolled in private institutions is particularly high (>12%) and others where there are no students in private schooling. A graphical illustration in Figure 1 also shows the degree of geographical heterogeneity within Italy, with a concentration of private school enrollment in the north of Italy, especially at the primary schooling level.

TABLE 2 Enrollment of First-Year Students in Private Schools, by Province 2012

Macroarea	Prov	Primary (%)	Middle (%)	High (%)
South	AG	1.6	0.0	2.5
North	AL	4.1	5.4	2.3
Central I.	AN	1.1	0.6	0.5
Central I.	AP	3.6	1.8	2.2
South	AQ	7.9	2.1	0.7
Central I.	AR	4.2	0.7	0.5
North	AT	2.7	1.0	3.2
South	AV	3.7	0.0	2.5
South	BA	2.6	0.5	1.2
North	BG	9.8	11.0	5.3
North	BI	4.4	2.0	0.0
North	BL	3.8	3.9	3.9
South	BN	3.4	1.2	2.4
North	BO	6.5	6.2	3.0
South	BR	2.2	0.0	0.5
North	BS	6.2	7.1	4.4
South	CA	5.9	2.5	1.3
South	CB	1.3	0.0	0.0
South	CE	9.7	0.8	3.8
South	CH	3.1	0.7	1.9
South	CL	3.4	0.6	1.3
North	CN	1.1	0.9	0.3
North	CO	7.3	8.7	9.6
North	CR	7.3	4.8	2.9
South	CS	1.8	0.5	1.0
South	CT	6.5	1.8	4.1
South	CZ	1.9	1.1	0.9
South	EN	0.0	0.0	9.1
North	FE	3.8	0.7	0.0
South	FG	5.5	0.3	0.4
Central I.	FI	9.5	5.2	2.0
North	FO	4.1	2.5	0.7
Central I.	FR	3.7	1.6	0.9
North	GE	12.8	7.4	6.3
North	GO	3.0	0.6	3.2
Central I.	GR	2.2	0.8	0.7
North	IM	6.9	5.3	0.6
South	IS	0.0	0.0	0.0
South	KR	1.5	1.0	0.6
North	LC	10.1	11.0	5.2
South	LE	3.0	0.7	1.1
Central I.	LI	7.4	1.6	0.8
North	LO	7.6	5.3	0.8
Central I.	LT	4.6	0.9	0.8
Central I.	LU	3.4	1.2	0.2
Central I.	MC	0.8	1.1	1.4
South	ME	3.9	2.4	3.6
North	MI	10.4	10.1	9.1
North	MN	1.4	1.4	0.5
North	MO	4.9	2.5	1.1
Central I.	MS	7.1	0.0	0.7

(*Continued*)

TABLE 2 (*Continued*)

Macroarea	Prov	Primary (%)	Middle (%)	High (%)
South	MT	1.6	0.0	2.1
South	NA	13.9	2.0	4.4
North	NO	7.7	8.9	4.9
South	NU	0.0	0.0	0.3
South	OR	2.3	0.0	0.0
South	PA	5.6	1.7	7.2
North	PC	2.0	1.1	0.7
North	PD	6.1	3.7	2.3
South	PE	7.1	2.5	3.1
Central I.	PG	2.2	0.9	0.7
Central I.	PI	1.8	0.4	0.4
North	PN	2.2	4.6	3.6
Central I.	PO	10.2	1.8	0.8
North	PR	7.1	8.2	1.4
Central I.	PS	2.7	1.2	1.4
Central I.	PT	3.3	1.4	1.0
North	PV	5.5	3.8	2.2
South	PZ	1.2	0.0	1.0
North	RA	6.5	4.6	1.1
South	RC	4.5	0.9	1.6
North	RE	5.1	3.5	0.8
South	RG	2.8	0.0	3.4
Central I.	RI	1.1	0.7	0.0
Central I.	RM	12.4	6.5	4.7
North	RN	9.0	5.7	3.9
North	RO	2.1	0.0	0.0
South	SA	4.0	0.6	3.4
Central I.	SI	2.7	0.9	0.6
North	SO	1.7	1.0	0.8
North	SP	8.2	1.4	0.0
South	SR	2.6	0.6	1.8
South	SS	2.5	0.0	0.7
North	SV	5.0	3.7	2.2
South	TA	2.6	1.6	1.6
South	TE	0.0	0.0	3.1
North	TO	7.6	6.0	3.5
South	TP	1.6	0.0	2.6
Central I.	TR	1.4	0.4	0.0
North	TS	8.1	0.7	0.0
North	TV	6.1	6.4	4.6
North	UD	3.8	4.8	2.4
North	VA	7.5	10.2	5.4
North	VB	4.6	3.0	2.0
North	VC	3.9	0.0	0.0
North	VE	4.4	3.4	1.5
North	VI	4.6	3.2	1.3
North	VR	5.6	6.7	7.6
Central I.	VT	4.7	2.5	1.5
South	VV	1.8	0.0	1.0
Italy	**Italy**	**6.5**	**3.6**	**3.2**

Note. Authors' elaborations on data provided by the Ministry of Education.

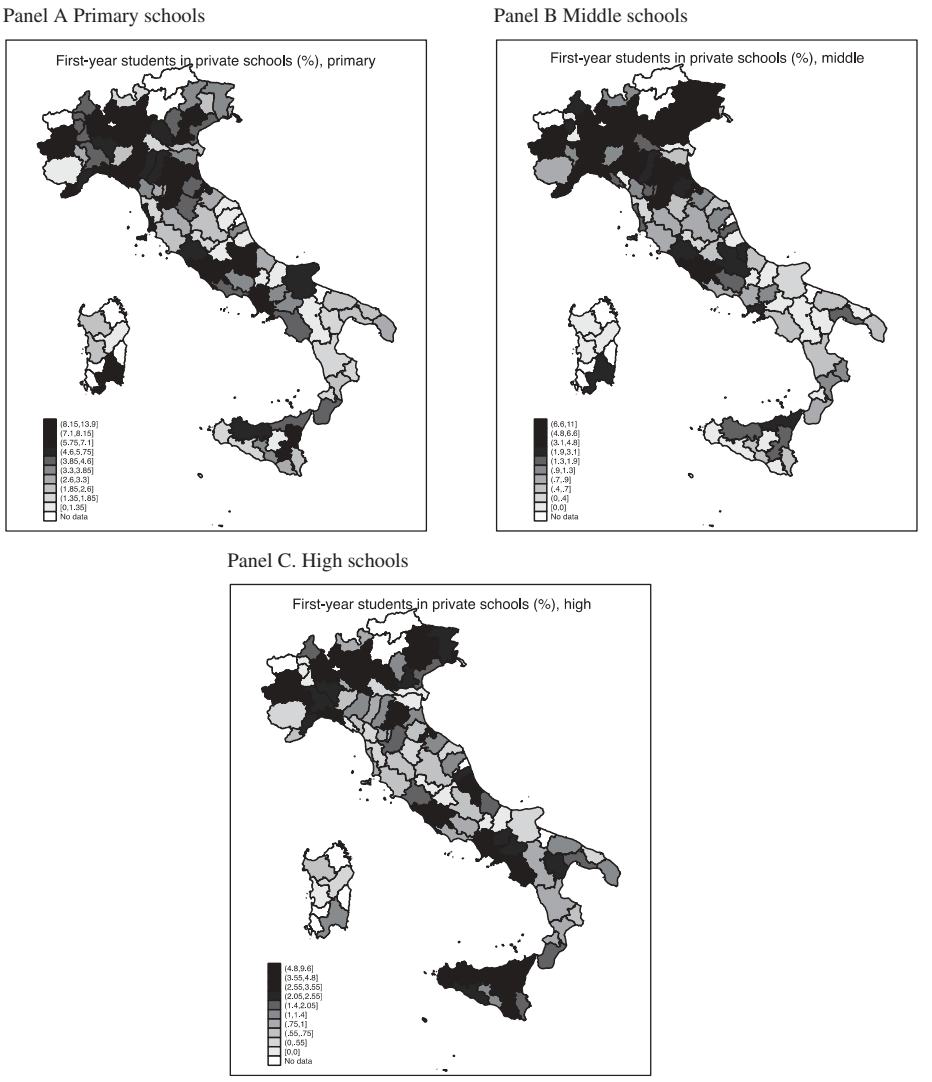

FIGURE 1 Enrollment of first-year students in private schools, by Province 2012—a graphical illustration.

More particularly, we look for changes in the enrollment of first-year students in private schools before and after the voucher policy changes in 2008, focusing on the Lombardy region compared with the other five regions in northern Italy, namely Emilia-Romagna, Friuli Venezia-Giulia, Liguria, Piedmont, and Veneto, and the national average (Figure 2). With the only exception of primary schooling, Lombardy is the region with the highest proportion of students enrolled in private schools. Moreover, although the evolution over time is quite flat in all the regions, some patterns can be detected, such as a general tendency for private enrollments to decline, a trend that likely was accelerated by the 2009 financial crisis.

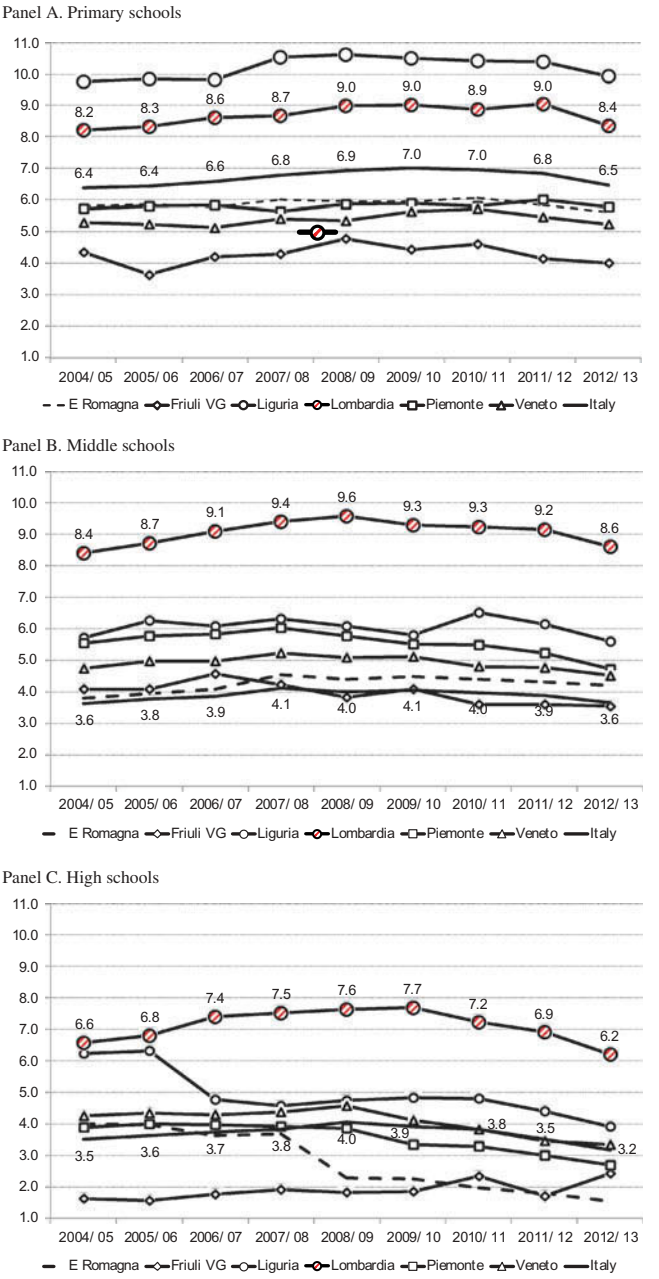

FIGURE 2 The proportion of first-year students enrolled in private schools, from 2004 to 2012—selected Regions (Northern Italy).

Source: Authors' elaborations on data provided by the Ministry of Education.

The Voucher Policy in the Lombardy Region (2000) and Its Change in 2008

The government of the Lombardy region first implemented a voucher policy in 2000 (called *"Buono Scuola"*), with the aim of stimulating families to enroll their children in private schools. The political rationale behind the launching of such a policy was twofold. First, in Italy, public authorities are not allowed to fund private schools directly; indeed, a constitutional provision (Article 33) states that private schools can be established, but without receiving public funding (Ribolzi, 2004). As a consequence, the government of the Lombardy region, which was positively oriented towards private schooling, saw the voucher provided to parents as a viable instrument for financially supporting private schools without violating the constitutional norm. Second, the regional government intended to raise the public debate about the lack of parity between private and public schools; it argued that less affluent families were actually not free to choose their desired schools, because of unequal financial constraints.

Some specific features characterized the initial voucher scheme. The voucher could be requested only *ex-post*, as a reimbursement. In other words, the family applied for a payment to cover some of the private school expenses that had been already paid by the family in the past school year. The reimbursement had the form of a cash payment, and, apart from the *ex-post* nature of the payment, the public officers exercised no control to guarantee that the money was spent for educational purposes. The voucher was means-tested. If a family's indicator of income was lower than about €46,000 in the reference year, the voucher covered 25% of the documented expenses, to a maximum of €1,250. For disadvantaged families (income < €8,500), the voucher covered 50% of the expenses (but again with the limit of €1,250). Some descriptive data reported by Agasisti and colleagues (2012) indicate that the average contribution received by families was around €700 per child in the last year of the old policy (2007).

In addition to the voucher, with the limitations described previously, disadvantaged families have access to a grant that is completely means-tested (*"borse di studio"*), and can be obtained by students in either public or private schools.[7] However, for the latter a different administrative process was required to apply for the grant. The amount of the grant was very limited (on average, €150) because mainly students from public schools requested it, and they have only small amounts of expenditures to cover (such as transportation, meals at school, etc.). Many families whose students were in private schools did not even know about the existence of this grant. The necessity of filling out a different form from that required for vouchers discouraged them from applying. In the last year in which the old voucher policy operated (2007), the main numbers of the voucher policy were: Around 64,000 students obtained it, which represented around 60% of

all students enrolled in the private sector in the region, and they received on average a voucher of €703. Albeit micro-data on single students are not available, it can be estimated that only a few thousand of these students also obtained the additional *"borse di studio"* grant.

In 2008, the policy was substantially amended, after a diagnosis that identified three main problems: (a) an excessive fragmentation of the instruments (voucher and grant, with two different administrative processes); (b) the *ex-post* functioning of the process, that *de facto* prevented families with financial constraints from enrolling their children in private schools; and (c) the use of cash transfers instead of pure vouchers, that was seen as possibly leading to a misuse of the resources, that is, toward noneducational purposes. The new policy scheme, called *"Dote Scuola"* has three main characteristics:

- An unique administrative process, through which the family can ask both for the voucher and, if in a situation of financial disadvantage, an additional grant, the amount of which is predetermined and rises, from €120 to €220 to €320 for primary, middle, and high school students, respectively.
- The application for the voucher is received in January for the school year starting in September, and the award is received before the school year starts.
- Lastly, the money flows directly to the schools—not passing through the hands of families as cash—so it can only be used for a discount on the school fee. Also the families who obtain the *borse di studio* grant do not receive money, but spending vouchers that can be used in accredited shops for buying educational supplies.

Overall, the changes were promoted to make the policy more in line with its first aim: to support the families who are considering the option of private schools.

Why Do Families Choose Private Schools? Evidence from Previous Literature

Much literature in the fields of educational economics and educational science explores the factors behind families' choice to send their children to private schools. In general terms, three groups of factors have been identified: (a) preferences toward private schooling (i.e., religious affiliation, adherence to specific teaching methodologies, etc.); (b) economic determinants (presence of financial constraints); and (c) availability of private schools, possibly of various kinds. In this section, we discuss some previous contributions that have influenced the formulation of our research questions, as well as the modeling of our empirical setting.

Long and Toma (1988) analyzed the data from the U.S. Census of Population, years 1970 and 1980, with the aim of investigating the determinants of private school attendance. Their results highlighted that supply factors matter, for instance, the density of private schools in an area stimulates local private school enrollment. Also, socioeconomic characteristics of families play a role, in that richer families have a higher propensity to enroll their children in private schools. The "income effect" is the most substantial, while White families are more likely to go private than non-White counterparts. The income effect was larger in 1970 than in 1980, and slightly larger for secondary than primary schooling, probably due to higher fees for secondary private schools.

Buddin, Cordes, and Kirby (1998) studied the profile of families who chose private schools in California in 1990, and stated that: "the propensity of families to choose private schooling rises with family income for both elementary and high school students" (p. 123). Income is not the only variable that plays a role. For instance, if public school test scores are lower than those of private schools, more families elect private schooling, all else equal. These findings are confirmed through an international comparison provided by Rutkowsky and colleagues (2012), who also questioned whether there is a higher propensity for high achievers to select private schools. No clear evidence has emerged. Indeed, the authors employing data from The Program for International School Assessment (PISA, 2006) conclude that:

> SES, rather than achievement or attitude, is the strongest, most consistent international predictor of attendance at a school managed or funded by the private sector. Given our findings, it does not appear that private schools are skimming off the highest achieving students, but rather, they are skimming off the most affluent students. (Rutkowsky et al., 2012, p. 387)

In the U.S. context, ethnicity also is a good predictor of families' choices. For instance, analyzing the choices of families who enrolled their children in charter schools in Texas, Weiher and Tedin (2002) study the choices of families who remove their children from public schools, and enroll them in a public charter school: They show that racial composition of the student body is more homogeneous in charter schools of choice than in previous public schools.

When considering the Italian case, some previous scholars have argued that private schools are of lower quality than their public counterparts. Bertola, Checchi, and Oppedisano (2007) analyzed three cohorts of sec-ondary school graduates, and found that Italian private schools attract children from more affluent families, but with lower levels of academic talents. This evidence is consistent with other studies that consider the role

of private education in Italy as "remedial," in the sense of being targeted at students who do not succeed in public schools (e.g., Brunello & Checchi, 2005). Nevertheless, OECD data (from various PISA editions) demonstrate that there is a lot of heterogeneity in the relative quality of private schools, with their average test scores being higher than those of public schools in many regions, including Lombardy. Thus, any conclusive statement about the relative performance of public and private schools in Italy is difficult to accomplish at this stage. Also in the Italian case, all the existing evidence suggests that students in private schools have a higher socioeconomic background.

In this article, we assume also that policy initiatives can be included among the various factors that will have an effect on families' choices toward private schools. This idea is supported by previous studies. For example, Downes and Schoeman (1998) argued that the rapid growth in the private school sector followed the implementation they are of reforms in response to some Supreme Court decisions, which attempted to equalize the per pupil funding of public schools. Indeed, the reaction of some families was to enroll their children in private schools because not subjected to "equalization," so have higher levels of resources available for instructional activities. In her theoretical analyses and simulations, Ferreyra (2007) demonstrates that private school vouchers can increase enrollment rates in private schools in metropolitan areas, in particular the city of Chicago in the United States.

DATA AND METHODS

Description of Data

Our analysis is conducted at the province level. Italian provinces are intermediate geographical and administrative entities that group some municipalities together; groups of provinces constitute the regions. Data cover the time period between 2004, which we refer to as 2004, and 2012 (2012). We split the analysis by the three educational levels: primary, middle, and high schooling—under the idea that the determinants of choice can be somehow different for each level.

Our dependent variable is the percentage of all first-year students who enroll in a private school at the provincial level (*% enrolled*). For each of the three models our independent variables are as follows.

1. The percentage of foreign first-year students at the provincial level (*% immig*). This indicator controls for the lower propensity of immigrant

families to send their children to private schools, albeit immigrant families concentrate in the North, where the propensity of enrolling students in private schools is higher.

2. The teachers/students ratio in primary, junior, and upper secondary public schools at the province level (*stratio*). Controlling for this variable is important if we believe that the quality of public schools does influence the demand for private schooling in a certain area, and that teachers/students ratio is a good proxy measure of quality (Couch et al., 1993).
3. Three indicators of the wealth and general socioeconomic condition of the geographical area in which schools operate: the unemployment rate at the province level (*unemp*), the female employment rate at the province level (*fem_emp*)—which is a more direct indicator of local wealth and development than the male employment rate, and the GDP per capita (in €1,000). Previous theoretical models of school choice highlight that families' socioeconomic background—and especially income wealth—would be positively correlated with the choice of private schooling (Cohen-Zada & Justman, 2003). Thus, the proportion of students in private schools should be higher in provinces where the average wealth of families is higher.
4. While all of the previous variables are related to demand factors, we also included a variable that represents an important supply-side characteristic, namely the number of private schools per 1,000 students in a given province (*dens_privschools*).[8]

All the empirical elaborations include a series of year indicator variables, with the aim of controlling for potential structural differences across years in the enrollment rate to private schools.

Data about school variables were extracted from different administrative school registers at the Italian Ministry of Education. These registers are regularly updated directly by the schools: these submitted data are then collected and checked by the Ministry. The first register is the school database, including records that are essentially linked to the characteristics of the school (location, structure of the managing institution, school level, learning pathways, etc.). Through the school "identifier" (code), we were able to link the school register to a database containing information on students at every school level. They are systematically collected at specific times by the schools and continuously updated over the school year. The variables that measure the various socioeconomic characteristics of the province (unemployment rate, GDP, etc.) are instead extracted by the dataset of the Italian Institute of Statistics (regional statistics) and by the Eurostat database (subdata at NUTS-3 level).

TABLE 3 Descriptive Statistics—Primary Schools

Variable	Mean	Median	Std Dev	Min	Max
Panel A1. Year 2004–18 regions					
% enrolled	4.688	4.25	3.015	0	13.3
% immig	5.931	6.55	3.915	0.3	13.4
Stratio	10.761	10.8	0.867	8.9	13.1
Unemp	8.192	5.8	5.144	2.2	21.6
fem_emp	45.584	49.45	11.296	23.9	63.7
GDPpc	22.971	23.8	6.909	12.7	65.4
dens_privschools	0.398	0.4	0.2478	0	1.2
Panel A2. Year 2011–18 regions					
% enrolled	4.85	4.4	3.209	0	15
% immig	10.232	11.3	5.904	1.5	23.1
Stratio	12.763	12.7	1.122	10.5	15.4
Unemp	8.637	7.3	3.788	3.7	17.8
fem_emp	47.104	52	11.617	21.7	64.7
GDPpc	24.462	24.5	7.889	13.1	77.1
dens_privschools	0.397	0.4	0.2439	0	1.3

Variable	Mean	Median	Std Dev	Min	Max	T-test
Panel A3. Year 2004—Lombardy						
% enrolled	6.709	7.5	3.174	1.1	10.2	2.0211*
% immig	8.755	9.2	2.877	3.1	13.4	2.8235***
Stratio	10.982	11.1	0.574	10	11.7	0.2208
Unemp	3.773	3.6	0.583	2.7	4.6	−4.4193***
fem_emp	54.009	53.4	3.192	48.7	59	8.4251***
GDPpc	30.4	27.8	11.794	23.3	65.4	7.429*
dens_privschools	0.4727	0.5	0.1954	0.1	0.7	0.0747
Panel A4. Year 2011—Lombardy						
% enrolled	7.318	7.9	3.528	1	11.2	2.4682**
% immig	15.627	16.3	4.650	6.9	21.2	5.3953***
Stratio	12.527	12.9	0.608	11.4	13.1	−0.2357
Unemp	5.873	5.8	1.001	4.1	7.7	−2.7643***
fem_emp	53.718	54.8	3.623	47.4	59.7	6.6142***
GDPpc	31.7	27.9	15.292	22.8	77.1	7.238
dens_privschools	0.4455	0.5	0.1635	0.1	0.6	0.0485

Note. T-tests refer to the difference between the mean scores of variables in Lombardy's provinces, when compared to other Provinces in the other 18 Regions.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Descriptive Statistics

Before looking at the descriptive statistics, it is important to recall that our primary research hypothesis is that the policy changes in 2008 would generate a clear change in enrollment in private schools in subsequent years—but just in the Lombardy region. Tables 3–5 contain the descriptive statistics for the variables used in the empirical analysis, for primary, junior secondary, and upper secondary educational levels, respectively. Lombardy data are

reported also separately, to show the differences from the national average. T-tests are performed to check whether such differences are statistically significant or not. Descriptive statistics are presented for the first (2004) and last (2011) year of the available panel.

TABLE 4 Descriptive Statistics—Middle Schools

Variable	Mean	Median	Std Dev	Min	Max
Panel B1. Year 2004–18 regions					
% enrolled	2.661	1.6	2.790	0	11.1
% immig	5.478	6	3.702	0.3	14.1
Stratio	10.932	11	0.933	7.9	13.1
Unemp	8.192	5.8	5.144	2.2	21.6
fem_emp	45.584	49.45	11.296	23.9	63.7
GDPpc	22.971	23.8	6.909	12.7	65.4
dens_privschools	0.291	0.2	0.2539	0	1
Panel B2. Year 2011–18 regions					
% enrolled	2.707	1.55	2.976	0	12.3
% immig	10.044	11.3	5.751	1.4	21.9
Stratio	13.127	13.1	1.220	10.2	15.8
Unemp	8.637	7.3	3.788	3.7	17.8
fem_emp	47.104	52	11.617	21.7	64.7
GDPpc	24.462	24.5	7.889	13.1	77.1
dens_privschools	0.292	0.2	0.2465	0	1

Variable	Mean	Median	Std Dev	Min	Max	T-test
Panel B3. Year 2004—Lombardy						
% enrolled	6.555	6.6	3.868	0	11.1	3.8935***
% immig	7.955	8.7	2.902	2.7	13.1	2.4765**
Stratio	10.945	10.9	0.347	10.4	11.7	0.0135
Unemp	3.773	3.6	0.583	2.7	4.6	−4.4193***
fem_emp	54.009	53.4	3.192	48.7	59	8.4251***
GDPpc	30.4	27.8	11.794	23.3	65.4	7.429*
dens_privschools	0.5182	0.6	0.2857	0	0.8	0.2272**
Panel B4. Year 2011—Lombardy						
% enrolled	7.218	8.2	3.974	1.2	12.3	4.5112***
% immig	15.145	15.5	3.955	7.1	20.8	5.1015***
Stratio	14.182	14.1	0.708	13	15.6	1.0548***
Unemp	5.873	5.8	1.001	4.1	7.7	−2.7643***
fem_emp	53.718	54.8	3.623	47.4	59.7	6.6142***
GDPpc	31.7	27.9	15.292	22.8	77.1	7.238
dens_privschools	0.5727	0.6	0.2533	0.2	0.8	0.3198***

Note. T-tests refer to the difference between the mean scores of variables in Lombardy's provinces, when compared to other Provinces in the other 18 Regions.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

TABLE 5 Descriptive Statistics—High Schools

Variable	Mean	Median	Std Dev	Min	Max
Panel C1. Year 2004–18 regions					
% enrolled	2.574	1.85	2.488	0	10.4
% immig	2.744	2.85	2.007	0.1	9
Stratio	10.974	11	0.522	9.5	12.2
Unemp	8.192	5.8	5.144	2.2	21.6
fem_emp	45.584	49.45	11.296	23.9	63.7
GDPpc	22.971	23.8	6.909	12.7	65.4
dens_privschools	0.412	0.3	0.3063	0	1.5
Panel C2. Year 2011–18 regions					
% enrolled	2.35	1.5	2.170	0	9.5
% immig	6.837	7.5	4.107	1	14.9
Stratio	13.033	13.1	0.788	11.1	15.8
Unemp	8.637	7.3	3.788	3.7	17.8
fem_emp	47.104	52	11.617	21.7	64.7
GDPpc	24.462	24.5	7.889	13.1	77.1
dens_privschools	0.476	0.4	0.3593	0	1.6

Variable	Mean	Median	Std Dev	Min	Max	T-test
Panel C3. Year 2004—Lombardy						
% enrolled	4.7	4.3	2.936	0.9	8.9	2.126**
% immig	3.745	3.4	1.316	1.3	5.4	1.0015**
Stratio	11.336	11.3	0.191	11	11.6	0.3624***
Unemp	3.773	3.6	0.583	2.7	4.6	−4.4193***
fem_emp	54.009	53.4	3.192	48.7	59	8.4251***
GDPpc	30.4	27.8	11.794	23.3	65.4	7.429*
dens_privschools	0.7273	0.8	0.4002	0.1	1.5	0.4432**
Panel C4. Year 2011—Lombardy						
% enrolled	4.773	5.7	3.113	0.8	9.5	2.4227**
% immig	9.227	9.9	2.466	3.7	12.2	2.3903**
Stratio	13.755	13.5	0.886	12.5	15.8	0.7215**
Unemp	5.873	5.8	1.001	4.1	7.7	−2.7643***
fem_emp	53.718	54.8	3.623	47.4	59.7	6.6142***
GDPpc	31.7	27.9	15.292	22.8	77.1	7.238
dens_privschools	0.8727	0.9	0.4585	0.3	1.6	0.5153**

Note. T-tests refer to the difference between the mean scores of variables in Lombardy's provinces, when compared to other Provinces in the other 18 Regions.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

In all three educational levels, the proportion of students enrolled in private schools (*% enrolled*) in the group of the 18 regions (100 provinces) has been stable in the period considered—around 4.7% in primary schools, 2.7% in middle schools, and 2.5% in high schools. The corresponding numbers are not only higher in Lombardy, but also show a (slightly) growing tendency in primary and middle schools (from 6.7% to 7.3% for the former, and from 6.6% to 7.2% in the latter). The same path does not hold for high schools, where the private enrollment rate is stable in the region, around 4.7%.

In terms of contextual factors that are important to consider as part of our analysis of private school enrollments, the proportion of immigrant students (*% immigrants*) almost doubles in all regions, in all levels of education, in the nine years considered. The relevance of the phenomenon, in absolute terms, is much marked in Lombardy—where, in primary and middle schooling, more than 15% of students were immigrants in 2011. *Students/teachers ratio* increased over time in all the regions, given the policies of containing costs in the years under analysis that reduce the total number of teachers over time.

Turning to the province-level variables, unemployment rates (*unemp*) and female employment (*fem_emp*) both grew in the period when considering the 18 regions. As to the Lombardy region, there is the same tendency for increased *unemp* but a slowdown in female employment. Lastly, GDP per capita (*GDPpc*) was always higher in the Lombardy provinces (> €30,000) than in the remaining part of Italy (< €25,000), but the growth was slower.

Lastly, the number of private schools every 1,000 students (*dens_privschools*) in Italy was substantially stable over time for the primary educational level, slightly growing in middle education, and increased in the high school level. The absolute value of the indicator is higher for high schools than primary schools. In all educational levels, density of private schools is higher in the Lombardy Region than in the rest of Italy.

Methods

For each dependent variable, we estimate the following full model:

$$y_{it} = \alpha_0 + \alpha_1 \overline{X_{it}} + \delta_t + \beta_1 Lombardy_{it} + \beta_2 Lombardy_{it}{}^{*}\delta_t + \varepsilon_{it} \qquad (1)$$

where y_{it} is the dependent variable *% enrolled*, the vector $\overline{X_{it}}$ contains the independent variables listed above (*% immig, stratio, unemp, fem_emp, GDPpc, dens_privschools*), *Lombardy* is an indicator variable that takes the value 1 if the focal province is in Lombardy and 0 otherwise—this latter captures the structural difference in private schooling enrollment between Lombardy and the other regions, $Lombardy^{*}\delta_t$ is a vector of the cross-products between the year indicator variables and the variable *Lombardy*—the latter are included to capture whether the time trend in private schooling enrollment has been statistically different in Lombardy. The parameter of interest for measuring the potential effect of the change in voucher policy is β_2.

More specifically, to test whether the change in the voucher policy in Lombardy affected the proportion of first-year students who enrolled into private schools, we performed a series of Wald tests on:

1. The potential joint statistical significance of the coefficients of the interaction terms between the year indicators and the variable *Lombardy* in

the 3 years after the year in which the policy change was introduced (i.e., 2009, 2010, and 2011)—thus testing if the cumulative trend after the policy change is significantly different from the first year of the time span, 2004;
2. The difference between the coefficients of the interaction terms between the year indicators and the variable *Lombardy* in the first year after the introduction of the policy change (i.e,. 2009) and the year before the policy change (i.e., 2007);
3. The difference between the coefficients of the interaction terms between the year dummies and the variable Lombardy in the first 2 years after the introduction of the policy change (i.e. 2009 and 2010) and the 2 years before the policy change (i.e., 2006 and 2007); and
4. The difference between the coefficients of the interaction terms between the year dummies and the variable Lombardy in the first 3 years after the introduction of the policy change (i.e., 2009, 2010, and 2011) and the 3 years before the policy change (i.e., 2005, 2006, and 2007).[9]

The previously explained model is estimated separately by including: (a) all the 100 provinces in the 18 regions; and (b) only the 35 provinces in Lombardy and the three regions that are at the border with it (Piedmont, Emilia-Romagna, Veneto), respectively. This latter identification strategy allows us to control for a potential neighborhood influence in school choice policies (Rincke, 2006), and thus, to have a more precise counterfactual.

To estimate our models, we resort to pooled OLS estimates that control for time shocks and panel random-effects estimators, which assume that the correlation between the province-level component of the model and the independent variables is zero.

RESULTS

We report the baseline results in Tables 6–8—one for each educational level. We estimated three models for each level, the first one where only covariates and year dummies are inserted (reference year: 2004), the sec-ond one where the dummy Lombardy is included to capture the structural difference between Lombardy and other regions, and the third one where interactions between Lombardy and years (*Lombardy*year*) are included—reference year: *2004*Lombardy*. All three models were estimated separately when using all 100 provinces in the 18 regions (results in columns a–c) and when including in the analysis only 35 provinces, namely those in Lombardy and in the three regions that are at the border with it (Piedmont, Emilia-Romagna, Veneto; results in columns d–f). At the end of each table, after

having reported the coefficients for the covariates' impact on the dependent variable, we also inserted the results of a test for whether the coefficients for the interaction terms *Lombardy*year* are jointly statistically significant for the years 1–3 after the year in which the policy change was introduced (i.e., 2008, so years 1–3 correspond to 2009, 2010, and 2011). Our main results refer to the last three columns of each table, as the group of the four selected regions in northern Italy are considered as the best control group for studying the phenomenon of interest.

When concentrating on primary and middle educational levels, year dummies reveal that the proportion of first-year students enrolled in private schools in the four northern regions—where the initial level was higher—decreased over time. Instead, the trend is positive when looking at the proportion of first-year students in private high schools, especially from 2009 onward.

TABLE 6 Results: Determinants of % Enrolled, Primary Schools—with the Inclusion of Supply Side Variable

Dependent variable: % enrolled	18 regions (a)	18 regions (b)	18 regions (c)	4 regions (d)	4 regions (e)	4 regions (f)
% immig	**0.0603*****	**0.0509*****	**0.0378***	0.0474	0.0449	0.0076
	(0.0191)	*(0.0189)*	*(0.0199)*	*(0.0415)*	*(0.0407)*	*(0.0435)*
Stratio	−0.0493	−0.0530	−0.0359	0.2094	0.1894	**0.3124****
	(0.0656)	*(0.0644)*	*(0.0669)*	*(0.1463)*	*(0.1444)*	*(0.1593)*
unemp	0.0062	0.0119	0.0076	**0.1116***	**0.1221****	0.0942
	(0.0160)	*(0.0161)*	*(0.0162)*	*(0.0575)*	*(0.0571)*	*(0.0577)*
fem_emp	−0.0136	−0.0119	−0.0094	−0.0163	−0.0076	−0.0058
	(0.0095)	*(0.0094)*	*(0.0096)*	*(0.0204)*	*(0.0204)*	*(0.0207)*
GDPpc	**0.0835*****	**0.0720*****	**0.0729*****	**0.0791*****	**0.0707*****	**0.0710*****
	(0.0151)	*(0.0149)*	*(0.0150)*	*(0.0196)*	*(0.0193)*	*(0.0192)*
dens_privschools	**7.6860*****	**7.9703*****	**7.9786*****	**7.5045*****	**7.4322*****	**7.5386*****
	(0.3263)	*(0.3149)*	*(0.3154)*	*(0.8685)*	*(0.8586)*	*(0.8600)*
Lombardy		**1.3681*****	**1.0079*****		**1.1504*****	0.5570
		(0.3459)	*(0.3808)*		*(0.3922)*	*(0.4398)*
2005*Lombardy			0.2635			0.3604
			(0.2406)			*(0.2892)*
2006*Lombardy			**0.4637***			**0.6554****
			(0.2419)			*(0.2890)*
2007*Lombardy			**0.4055***			**0.6343****
			(0.2432)			*(0.2900)*
2008*Lombardy			**0.4284***			**0.6544****
			(0.2447)			*(0.2936)*
2009*Lombardy			**0.5147****			**0.7919*****
			(0.2476)			*(0.2986)*
2010*Lombardy			0.3328			**0.6676****
			(0.2490)			*(0.3020)*
2011*Lombardy			**0.5928****			**0.7858****
			(0.2523)			*(0.3087)*

(Continued)

TABLE 6 (Continued)

Dependent variable: % enrolled	18 regions (a)	18 regions (b)	18 regions (c)	4 regions (d)	4 regions (e)	4 regions (f)
Year dummies	Y	Y	Y	Y	Y	Y
Obs.	800	800	800	280	280	280
Provinces	100	100	100	35	35	35
R^2	0.8514	0.8653	0.8675	0.7447	0.7394	0.7584
Z[t + 1; t + 2; t + 3]			**1.4403****			**2.2454*****
Z[t − 1; t + 1]			0.1093			0.1576
Z[t − 2; t − 1; t + 1; t + 2]			−0.0217			0.1698
Z[t − 3; t − 2; t − 1; t + 1; t + 2; t + 3]			0.3077			0.5952
% immig	**0.0524*****	**0.0434****	**0.0349****	0.0080	0.0120	0.0138
	(0.0174)	*(0.0170)*	*(0.0176)*	*(0.0500)*	*(0.0491)*	*(0.0508)*

Note. % enrolled = proportion of students enrolled in private schools; % immig = proportion of immigrant students; stratio = ratio between students and teachers; unemp = unemployment rate; fem_emp = female employment rate; GDPpc = GDP per capita; dens_privschools = the number of private schools every 1,000 students. Lombardy is an indicator variable that takes the value 1 if the focal province is in Lombardy. 2005*Lombardy, 2006*Lombardy, 2007*Lombardy, 2008*Lombardy, 2009*Lombardy, 2010*Lombardy, and 2011*Lombardy are the cross-products between the year indicator variables and the variable Lombardy. Z[t+1;t+2;t+3] is a Wald test on the joint statistical significance of the coefficients of the interaction terms between the year indicators and the variable Lombardy in the three years after the year in which the policy change was introduced (2009, 2010 and 2011). Z[t-1;t+1] is a Wald test on the difference between the coefficients of the interaction terms between the year indicators and the variable Lombardy in the first year after the introduction of the policy change (2009) and the year before the policy change (2007). Z[t-2;t-1;t+1:t+2] is a Wald test on the difference between the coefficients of the interaction terms between the year dummies and the variable Lombardy in the first two years after the introduction of the policy change (2009 and 2010) and the two years before the policy change (2006 and 2007). Z[t-3;t-2;t-1;t+1;t+2;t+3] is a Wald test on the difference between the coefficients of the interaction terms between the year dummies and the variable Lombardy in the first three years after the introduction of the policy change (2009, 2010 and 2011) and the three years before the policy change (2005, 2006 and 2007).

$^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

TABLE 7 Results: Determinants of % Enrolled, Middle Schools—with the Inclusion of Supply Side Variable

Dependent variable: % enrolled	18 regions (a)	18 regions (b)	18 regions (c)	4 regions (d)	4 regions (e)	4 regions (f)
stratio	**0.1505*****	**0.1498*****	**0.1284*****	**0.2584*****	**0.2495****	**0.2340****
	(0.0350)	*(0.0345)*	*(0.0358)*	*(0.0990)*	*(0.0977)*	*(0.1102)*
unemp	0.0116	0.0162	0.0109	0.0591	0.0694	0.0685
	(0.0138)	*(0.0136)*	*(0.0136)*	*(0.0634)*	*(0.0627)*	*(0.0637)*
fem_emp	−0.0096	−0.0099	−0.0107	**−0.0518****	**−0.0446****	**−0.0486****
	(0.0082)	*(0.0080)*	*(0.0081)*	*(0.0225)*	*(0.0223)*	*(0.0227)*
GDPpc	**0.0884*****	**0.0741*****	**0.0772*****	**0.0774*****	**0.0682*****	**0.0682*****
	(0.0148)	*(0.0144)*	*(0.0144)*	*(0.0259)*	*(0.0254)*	*(0.0256)*
dens_privschools	**4.2339*****	**4.1829*****	**4.1159*****	**5.0017*****	**4.8330*****	**4.8325*****
	(0.3151)	*(0.3085)*	*(0.3096)*	*(0.6483)*	*(0.6417)*	*(0.6706)*

(Continued)

TABLE 7 Results: Determinants of % Enrolled, Middle Schools—with the Inclusion of Supply Side Variable

Dependent variable: % enrolled	18 regions (a)	18 regions (b)	18 regions (c)	4 regions (d)	4 regions (e)	4 regions (f)
Lombardy		**2.9703*****	**2.7366*****		**2.0624*****	**2.0015*****
		(0.4263)	*(0.4463)*		*(0.6218)*	*(0.6542)*
2005*Lombardy			−0.0495			−0.1048
			(0.1958)			*(0.3068)*
2006*Lombardy			0.2575			0.0822
			(0.1971)			*(0.3070)*
2007*Lombardy			0.1761			−0.1449
			(0.2003)			*(0.3130)*
2008*Lombardy			**0.5502*****			0.2946
			(0.1988)			*(0.3090)*
2009*Lombardy			**0.5445*****			0.2088
			(0.2027)			*(0.3251)*
2010*Lombardy			**0.4791****			0.1949
			(0.2026)			*(0.3206)*
2011*Lombardy			0.1676			−0.1110
			(0.2076)			*(0.3341)*
Year dummies	Y	Y	Y	Y	Y	Y
Obs.	800	800	800	280	280	280
Provinces	100	100	100	35	35	35
R^2	0.7304	0.7471	0.7447	0.7059	0.6665	0.6666
Z[t + 1; t + 2; t + 3]			**1.1911****			0.2927
Z[t − 1; t + 1]			**0.3684***			0.3537
Z[t − 2; t − 1; t + 1; t + 2]			**0.5900****			0.4663
Z[t − 3; t − 2; t − 1; t + 1; t + 2; t + 3]			**0.8071****			0.4601

Note. % enrolled = proportion of students enrolled in private schools; % immig = proportion of immigrant students; stratio = ratio between students and teachers; unemp = unemployment rate; fem_emp = female employment rate; GDPpc = GDP per capita; dens_privschools = number of private schools every 1,000 students. Lombardy is an indicator variable that takes the value 1 if the focal province is in Lombardy. 2005*Lombardy, 2006*Lombardy, 2007*Lombardy, 2008*Lombardy, 2009*Lombardy, 2010*Lombardy, and 2011*Lombardy are the cross-products between the year indicator variables and the variable Lombardy. Z[t+1;t+2;t+3] is a Wald test on the joint statistical significance of the coefficients of the interaction terms between the year indicators and the variable Lombardy in the three years after the year in which the policy change was introduced (2009, 2010 and 2011). Z[t-1;t+1] is a Wald test on the difference between the coefficients of the interaction terms between the year indicators and the variable Lombardy in the first year after the introduction of the policy change (2009) and the year before the policy change (2007). Z[t-2;t-1;t+1:t+2] is a Wald test on the difference between the coefficients of the interaction terms between the year dummies and the variable Lombardy in the first two years after the introduction of the policy change (2009 and 2010) and the two years before the policy change (2006 and 2007). Z[t-3;t-2;t-1;t+1;t+2;t+3] is a Wald test on the difference between the coefficients of the interaction terms between the year dummies and the variable Lombardy in the first three years after the introduction of the policy change (2009, 2010 and 2011) and the three years before the policy change (2005, 2006 and 2007).
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Across all educational levels, the dummy Lombardy is statistically significant and positively related with the dependent variable (*% enrolled*), confirming that in the provinces of the region the proportion of first-year students enrolled in private schools is higher indeed, all else equal. The

coefficient is quite stable, and ranges between 1% and 2.06%. Also, many of the interaction terms *year*Lombardy* are positive and statistically significant, especially for primary schooling, highlighting that the propensity to enroll in private schools grew over time in the Lombardy provinces, considering 2004 as the base year.

For analyzing the potential effect of the policy change in the voucher design after 2008, considered as the year t, we first tested whether the coefficients *Lombardy*[t + 1], Lombardy*[t + 2],* and *Lombardy*[t + 3*] are statistically significant or not. It turns out that this is the case indeed, and the magnitude of this effect is 2.25% for the primary school level, and 1.74% for the high school level. The magnitude must be interpreted as a cumulative boost of the enrollment rate in private schools across the years in the data, when compared with 2004. The relationship was not statistically significant for middle schools, however. Put simply, these findings suggest that after the reform, the proportion of first-year students enrolled in private schools in the Lombardy provinces grew more than in other provinces, all else equal—that is, controlling for other potential factors that can affect the propensity to enroll in private schools—compared to 2004. However, if we control for the prereform trend—that is to say, we subtract the coefficients of *year*Lombardy* before 2008—the coefficients remain positive but lose statistical significance for primary schools. However, in our robustness test where the provinces of Lombardy are benchmarked against the 17 other regions of the country, the estimated effect when considering the 6-years span (t − 3; t + 3) is statistically significant for middle schools (+0.8%).

TABLE 8 Results: Determinants of % Enrolled, High Schools—with the Inclusion of Supply Side Variable

Dependent variable: % enrolled	18 regions (a)	18 regions (b)	18 regions (c)	4 regions (d)	4 regions (e)	4 regions (f)
% immig	**−0.0636****	**−0.0679****	**−0.0823*****	0.0593	0.0775	0.0656
	(0.0301)	*(0.0298)*	*(0.0301)*	*(0.0656)*	*(0.0656)*	*(0.0653)*
stratio	**−0.1990****	**−0.2269*****	**−0.1790****	**−0.4685*****	**−0.5025*****	**−0.4078*****
	(0.0830)	*(0.0824)*	*(0.0829)*	*(0.1523)*	*(0.1538)*	*(0.1556)*
unemp	0.0098	0.0156	0.0033	−0.0194	−0.0021	−0.0324
	(0.0215)	*(0.0213)*	*(0.0213)*	*(0.0784)*	*(0.0787)*	*(0.0788)*
fem_emp	−0.0106	−0.0105	−0.0139	−0.0041	0.0055	−0.0045
	(0.0120)	*(0.0119)*	*(0.0119)*	*(0.0277)*	*(0.0280)*	*(0.0283)*
GDPpc	**0.0795*****	**0.0626*****	**0.0655*****	**0.0768*****	**0.0712*****	**0.0717*****
	(0.0192)	*(0.0195)*	*(0.0194)*	*(0.0246)*	*(0.0244)*	*(0.0244)*
dens_privschools	**2.4564*****	**2.3215*****	**2.3315*****	**3.9879*****	**3.8397*****	**3.7796*****
	(0.1985)	*(0.1991)*	*(0.1987)*	*(0.4203)*	*(0.4318)*	*(0.4478)*
Lombardy		**1.9006*****	**1.3298*****		**1.0077****	0.5190
		(0.4629)	*(0.5078)*		*(0.5019)*	*(0.5674)*
2005*Lombardy			0.0755			−0.0815
			(0.3077)			*(0.3992)*
2006*Lombardy			**0.7253****			0.5224
			(0.3087)			*(0.3994)*

(*Continued*)

TABLE 8 (Continued)

Dependent variable: % enrolled	18 regions (a)	18 regions (b)	18 regions (c)	4 regions (d)	4 regions (e)	4 regions (f)
2007*Lombardy			**0.8018*****			0.5145
			(0.3097)			*(0.4012)*
2008*Lombardy			**0.8417*****			**0.7757***
			(0.3108)			*(0.4035)*
2009*Lombardy			**1.0693*****			**0.9911****
			(0.3130)			*(0.4053)*
2010*Lombardy			0.4716			0.5782
			(0.3115)			*(0.4019)*
2011*Lombardy			0.3003			0.1688
			(0.3146)			*(0.4174)*
Year dummies	Y	Y	Y	Y	Y	Y
Obs.	800	800	800	280	280	280
Provinces	100	100	100	35	35	35
R^2	0.5828	0.5071	0.5100	0.7470	0.7024	0.7090
Z[t + 1; t + 2; t + 3]			**1.8413****			**1.7382***
Z[t − 1; t + 1]			0.2675			0.4766
Z[t − 2; t − 1; t + 1; t + 2]			0.0138			0.5324
Z[t − 3; t − 2; t − 1; t + 1; t + 2; t + 3]			0.2387			0.7827

Note. % enrolled = proportion of students enrolled in private schools; % immig = proportion of immigrant students; stratio = ratio between students and teachers; unemp = unemployment rate; fem_emp = female employment rate; GDPpc = GDP per capita; dens_privschools = number of private schools every 1,000 students. Lombardy is an indicator variable that takes the value 1 if the focal province is in Lombardy. 2005*Lombardy, 2006*Lombardy, 2007*Lombardy, 2008*Lombardy, 2009*Lombardy, 2010*Lombardy, and 2011*Lombardy are the cross-products between the year indicator variables and the variable Lombardy. Z[t+1;t+2;t+3] is a Wald test on the joint statistical significance of the coefficients of the interaction terms between the year indicators and the variable Lombardy in the three years after the year in which the policy change was introduced (2009, 2010 and 2011). Z[t-1;t+1] is a Wald test on the difference between the coefficients of the interaction terms between the year indicators and the variable Lombardy in the first year after the introduction of the policy change (2009) and the year before the policy change (2007). Z[t-2;t-1;t+1:t+2] is a Wald test on the difference between the coefficients of the interaction terms between the year dummies and the variable Lombardy in the first two years after the introduction of the policy change (2009 and 2010) and the two years before the policy change (2006 and 2007). Z[t-3;t-2;t-1;t+1;t+2;t+3] is a Wald test on the difference between the coefficients of the interaction terms between the year dummies and the variable Lombardy in the first three years after the introduction of the policy change (2009, 2010 and 2011) and the three years before the policy change (2005, 2006 and 2007).

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Among the control variables, *GDPpc* is statistically significant in all models, indicating that in more wealthy provinces there is a higher propensity to enroll children in private schools. This finding is consistent with previous studies that found wealth is a predictor of propensity to enroll in private schools in many countries (Rutkowski et al., 2012). In our context of interest, this means that fees at private schools cannot be afforded by all families, but only by the wealthier ones. As to the variable *dens_privschools*, this turns out to be highly statistically significant, and contributes to the high explanatory power of the models, as demonstrated by the values of R^2.

Taken together, the results of the empirical analysis do not highlight any clear and consistent effect of the policy modification on the propensity of families to enroll their children in private schools. In Lombardy, the trend of private schooling enrollment, controlling for demand and supply-driven observable characteristics, is positive, as testified by the positive coefficients of *year*Lombardy* dummies, but has not been boosted by the reform in 2008—at least, not in a statistically relevant way.

CONCLUDING REMARKS

The empirical analysis presented here suggests that the policy instrument, reducing the administrative and financial burden of applying for a school voucher by the Lombardy regional government in 2008, did not significantly increase the proportion of students who attend private schools in the region. Private school enrollment was already higher in Lombardy than in the rest of the country, perhaps due to the voucher policy launched in 2000. The policy change was associated with a cumulative increase in private school enrollment in the period 2009–2012 of between 0.4% and 0.7%, depending on the educational level, when compared with the 3 years before the reform. This change, however, is not statistically different from zero in any of the estimates that use the preferred comparison group of the three regions bordering on Lombardy.

It is worth noting that in our main results, the provinces of Lombardy are only benchmarked against the provinces in the three closest and most similar regions. We acknowledge that, even though this setting is the most suitable for studying the phenomenon of interest, the smaller sample size in those preferred comparisons as opposed to the 18-region comparisons might lead to a lack of statistical significance in the impacts of the program due to lower statistical power.

Moreover, it is not certain that the objective of the reform was to increase the number of children in the private school sector. Indeed, it is likely that the main purpose was to make the process easier for the families who already chose private schools. In a previous study conducted through phone interviews, Colombo (2012) already pointed out that families in Lombardy appreciate the voucher policy, but do not consider it as crucial for their deci-sions. The reform in 2008 has been implemented at zero cost, and was based on a simplification of bureaucratic and administrative procedures. Thus, any improvement of families' satisfaction should be welcomed as a net social welfare gain. In this sense, future research should investigate the opinions of families who benefited from the new policy regime, and not only if the new scheme was able to quantitatively affect families' choices.

To conclude, the findings presented in the article must be interpreted in the light that administrative details—and not only policy strategies—can have

practical effects. Indeed they can eventually act together with the policy features to pursue the expected objectives. In this sense, school choice can be favored also by fine-tuning details of procedures within existent "choice programs," and this certainly could be the case for the school voucher program of the Lombardy region of Italy.

NOTES

1. See the OECD statistics about the differences in achievement scores between public and private schools across different regions.

2. The average amount of vouchers for students in private schools remained almost unchanged because the extension of vouchers for public school students was funded with additional resources, part of which obtained as transfers from the central State (see Agasisti et al., 2012 for details).

3. In the same vein, see Agasisti and Murtinu (2012). For an opposite view on similar data as those used by Couch et al. (1993), see Newmark (1995). See also the reply to this latter by Couch and Shughart (1995).

4. In the empirical analysis, we focus on 18 Regions, leaving apart Valle d'Aosta and Trentino Alto Adige, because they have an autonomous educational system, which cannot be compared along the dimensions of public/private school types.

5. For the full text of the Law, see: http://www.camera.it/parlam/leggi/00062l.htm.

6. Completely private schools, those without equal status, are those schools that did not request it or that did not meet the specific requirements. They are not allowed to issue officially recognized diplomas, they cannot be called "schools" and they are not entitled to fulfill the right/duty to education. However, the number of such schools is negligible, and we do not include them into the analysis.

7. Today, in the Lombardy region many tools were available for student support, especially for students in public schools. However, describing these tools is not the primary objective of this article, so the interested reader can look at Agasisti and colleagues (2012) for this purpose.

8. Obviously, this variable is likely to be endogenous with the proportion of students enrolled in private schools, so we interpret the relationships between the two indicators as correlational, and not causal.

9. The results of these tests are reported at the end of the tables that display the results from the regressions commented previously.

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