Educational Vouchers and Social Cohesion:
A Statistical Analysis of Student Civic Attitudes in Sweden, 1999-2009

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Abstract: This study examines the Swedish national educational voucher scheme and changes in social cohesion. We suspected that social cohesion would decline because vouchers in other countries have typically resulted in segregation, and also because Sweden's private schools were not required to teach civics. We conduct a statistical analysis using data from the 1999 and 2009 rounds of the IEA Civic Education Study of 14-year-old students and their attitudes toward the rights of ethnic minorities and immigrants. Using regression models, we do not find evidence of a decline in civic attitudes and therefore social cohesion. We attribute the results to Sweden's voucher design and context that minimized segregation and preserved civics curricula in all schools.

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Introduction

Educational voucher schemes are one of the more radical policy reforms proposed by critics of traditional public education systems. Though the design of educational voucher schemes can vary, a common feature is that the government provides parents with vouchers (of a certain monetary value) to send their children to private schools (Belfield and Levin 2005). Supporters of vouchers have included libertarians such as the late economist Milton Friedman, who first advocated educational vouchers in his 1962 book *Capitalism and Freedom* (Friedman 1962). Now let us consider this quote:

> "Education is so important that you can't just leave it to one producer. Because we know from monopoly systems that they do not fulfill all wishes."

The above endorsement was not made by Friedman but by Per Unckel of Sweden's Moderate (left-leaning) party, who served as his nation's Minister of Education during the adoption of the nationwide educational voucher scheme in 1992.

The paradox of a large-scale market-oriented policy in the world's best-known social democracy has garnered research inquiry (Carnoy 1998). The general conclusions from quantitative research are that test-scores in English, Swedish, and mathematics improved for children in some grades (e.g., Björklund et al. 2005; Böhlmark and Lindahl 2008). The qualitative research on access, in contrast, suggests that some ethnic minorities and low-income families lacked information about their choices of schools (e.g., Bunar 2012).

In this statistical study, we investigate the implications of the Swedish voucher scheme on a fundamental goal of schooling: social cohesion. As Levin (2002) articulated, schools instill "a common set of values that will orient all students to grow to adults as full participants in the political, social, and economic institutions of their society". Hahn (1998) and other civic education scholars highlight the social cohesion goal by seeing schools as key democratic spaces to promote

intercultural learning among minority and dominant culture students. To measure social cohesion, we use civic attitudes of students towards ethnic minorities and immigrants. We use repeated cross-sectional data of 14-year old students from the 1999 and 2009 *International Civic Education Survey* (CIVED) that was collected by the International Association for the Evaluation of Educational Achievement (IEA).

For at least two reasons, we initially suspected that the expansion of the Swedish voucher scheme would be accompanied by a decline in social cohesion. First, voucher schemes in other countries have been typically associated with ethnic and socioeconomic segregation (Belfield and Levin 2005); thus, social cohesion would fall because a smaller share of students would interact with ethnically and socioeconomically diverse peers. Second, the Swedish voucher scheme did not require private schools to teach civics and other courses and pedagogy that promote social cohesion; if a larger share of students attend private schools that do not teach civics, we would expect social cohesion to decline. Using ordinary least squares (OLS) regression with interaction explanatory variables, we do not find that evidence of decline in social cohesion from 1999 to 2009. We discuss the equitable design aspects of the voucher scheme, parental preferences, and societal improvements that contributed to the preservation of social cohesion.

However, changes in Sweden beginning in the late 1980s complicated any hypothesis about changes in social cohesion during the voucher plan period. We cannot overlook that Sweden became a more diverse society in the late 1980s and early 1990s due to record immigration levels that had not been seen since the 1960s (Statistics Sweden, 2013). The period of 2006 to the present has been another watershed in Swedish immigration. Although immigration has produced social tensions, the Swedish response was to implement an integration policy considered one of the most tolerant and successful in Europe (Wiesbrock, 2011). For youth, this context indicates that youth

have likely had greater interaction with diverse peers. The ultimate effect of these changes on social cohesion remains unobservable but it is likely to have had a notable effect.

To our knowledge, this is the only non-U.S. empirical study to examine the social cohesion implications of educational vouchers (Campbell 2001). In addition, we contribute to the rich but separate empirical literatures on educational vouchers and comparative civic education. Our findings contribute to the debate on whether a democratically enacted voucher scheme may have compromised Sweden's status as one of the world's most cohesive societies (Boli 1992; Rothstein 2008). Before proceeding, we wish to clarify that our objective is to describe the Swedish experience and not provide an endorsement or rejection of the voucher scheme in Sweden or elsewhere.[1]

Background

The Origins of the Swedish Educational Voucher Scheme

Sweden has a history of adopting original education policies. In 1842, in order to improve equity, Sweden became the first country to establish compulsory schooling laws. Exactly 150 years later, Sweden became the second country—after Chile—to adopt a nationwide education voucher system. Unlike the Chilean voucher scheme of 1980, however, the Swedish voucher scheme was adopted in 1992 through a democratic process after economic turmoil.[2] Notably, the Swedish economy suffered a severe recession between 1990 and 1997; unemployment rates spiked from 1.8

[1] For debates on educational vouchers, see Barrera-Osorio et al. 2011; Belfield and Levin 2005; Gill et al. 2007; Lubienski et al. 2009; McEwan 2004; Persell 2000; Wolf and Macedo 2004; Wolfe 2003.For reviews of school choice in the economics of education, see Belfield and Levin (2005) and Zimmer and Bettinger (2010). In comparative education, recent contributions include Hoskins, et al. (2011), Janmaat and Mons (2011), Torney-Purta et al. (1999), Yoon and Gulson (2010). There is an ongoing empirical study of the civic attitudes of private and public school students in rural Punjab province in Pakistan by World Bank economists, as part of its LEAPS project. There are also a number of non-empirical studies in the Wolf and Macedo (2004) volume titled, *Educating Citizens: International Perspectives on Civic Values and School Choice*.

[2] Björklund et al. (2005), Carnoy (1998), Daun (2003), Lundahl (2009), and Wolborg (2010) describe the political, economic and social forces that led to the adoption of the voucher scheme in Sweden.

percent in 1989 to 9.3 percent in 1993, and eventually 10.1 percent in 1997. Consequently, the general public began perceiving government bureaucracies as ineffective and wasteful. Some of the dissatisfaction was directed at the education system, as the public recognized that Sweden's once distinguished position in international math, reading, and science tests was rapidly declining (Björklund et al 2005). Sweden's economic woes also changed the attitudes of major actors in education. In particular, the Swedish Teachers Union, Lärarförbundet, felt mistreated by cuts introduced by the financially constrained Social Democrats. Overall, the public and teachers demanded economic, political, and educational change.

With the growing discontent, the education voucher system was promptly established by a center right coalition that had defeated the incumbent Social Democratic Party in 1991. The motivation behind the reform was equity, efficiency (to be gained through decentralization), and empowering parents with choice. Within a short time, there was a growth in public support for the "quasi-market" voucher system.

The Design of the Swedish Educational Voucher Scheme

The main aspect of education voucher schemes is that there is no single approach or system. Levin (2002) presents a framework where the design of a voucher scheme varies according to finance, regulation, and support services. Finance refers to the value of the voucher and the ability of parents to add-on. Regulation refers to all the rules that must be adhered to by participating students, parents, and schools. Support services include information and transportation services that are necessary to ensure participation in and sustainability of the voucher system.

Finance: The value of a Swedish education voucher is equivalent to the average cost of educating a child in the local public school. Parents use the voucher to secure a place in a school of their choice. A critical aspect is that parents are not allowed to add-on or top-up on the voucher

value. Likewise, participating schools are forbidden to charge tuition and fees that exceed the voucher value. This design aspect rules out schools competing on the basis of price. The regulation against add-ons was supported by the Swedish Teachers Union.

Regulations: The child level regulations of Swedish voucher system include the right for any parent to use the vouchers for elementary and secondary schooling. Private schools must be approved by Sweden's National Agency for Education to receive funding; often, one of the 34 host municipalities may oppose the establishment of private schools on the basis that the new private school would harm existing public schools. To preserve equity, participating private schools can only select students on the basis of first-come-first-served. Furthermore, private schools are prohibited from choosing students on the basis of income, ability, race, ethnicity, and special-needs. Such equity-based regulations were a key reason why the Swedish Teachers Union eventually supported the voucher system.

In other aspects, regulations for participating private schools are lax. There is no requirement for private schools to follow a national curriculum (Wilborg 2010, 10). Teacher or parent cooperatives, non-profit organizations, and for-profit firms can own private schools. There is no rule against denominational schools or schools with a focus on specific ethnic groups. Indeed, there are Jewish, Muslim, and Christian private schools of various denominations (about 15 percent of all private schools are denominational). There are also private schools where there is no uniform, informal discipline and teaching, an open-plan layout, and an emphasis on individualized learning rather than formal classes. About 30 percent of the private schools are "general" schools that are similar in organization and purpose to public schools. Another 30 percent of private schools are characterized by pedagogical orientation such as Montessori, Waldorf, Freinet, or Reggio Emilia. The remaining 25 percent are ethnic schools (some with their own language) or schools specializing in particular subjects (such as arts or science). The lack of regulations can be traced back to the

economic crisis of the early 1990s, when the public perceived the public sector as excessively regulated and inefficient (Bjorklund et al. 2005, 2). Such open regulation is meant to encourage private schools to pursue organizational models that are different from public schools. In contrast, public schools are under tight central and local municipal control over financial resources, national curriculum, and inspections.

Support services. Under the voucher system that was established by the center right coalition, participating private schools did not have to provide students with all the services provided by public schools such as free meals, health care, and transportation. Once the Social Democrats regained the Parliament in 1998, they modified the rules by requiring participating private schools to provide the same support services as public schools.

Prior Research on the Swedish Educational Voucher Scheme

Levin (2002) provides a comprehensive framework for evaluating the goals and outcomes of educational voucher schemes according to four criteria: freedom of choice, productive efficiency, equity, and social cohesion. The freedom of choice criterion addresses the change in parental freedom to choose schools. The Swedish voucher scheme resulted in greater freedom of choice for most urban students and families because of the generous voucher amount and the establishment of many new independent schools. Prior to the voucher scheme in 1992, there were 60 private schools in Sweden (Sandström and Bergström 2005, 352). By 2009, there were 709 schools (Wilborg 2010).

The productive efficiency criterion refers to the extent that the voucher system resulted in academic outcomes, net of students' socioeconomic status and other factors pertaining to family background. There is anecdotal evidence that productive efficiency improved because of money following the child. In a 2004 BBC interview, Anders Hultin, chief executive of the for-profit suburban private school Kista Kunskapsskolan, revealed:

> "It is hard to see any conflict between the company and our parents as our profit comes from good results and satisfying parents and students. If we don't perform well, then we don't make any profit at all…. Of course there are losers because schools which do not attract parents lose out and they should be losers."[3]

Sandström and Bergström (2005) used panel data to examine test-scores in English, Swedish, and mathematics of private and public school students in the ninth grade; they make the case for efficiency gains on the basis of small improvements in test-scores among public school students, holding constant per-student cost. However, a 2006 report by the National Agency for Education showed that municipalities with a high proportion of private schools have experienced significant increases in costs (Wilborg 2010, 15). The twin phenomena of modest outcome gains and increased costs make it difficult to evaluate the Swedish voucher scheme on the basis of productive efficiency criterion.[4]

The equity criterion refers to the extent that the voucher system reduced or exacerbated educational gaps along racial and socioeconomic lines. Björklund et al. (2005) and Böhlmark and Lindahl (2007, 2008) found a small positive impact on Swedish and English attainment for Swedish-born students whose parents are relatively highly educated. Critics, however, have argued that housing segregation increased after the introduction of the voucher scheme (for a discussion, see Wilborg 2010). Although the Swedish voucher scheme does not appear to have led to greater economic segregation (Sandström and Bergström 2005), there is some qualitative evidence that it has produced segregation along academic achievement and, most notably, racial and ethnic lines

[3] BBC (2004). "Swedish parents enjoy school choice. Last Updated: October 4, 2004. Last accessed 26, November 2011. http://news.bbc.co.uk/2/hi/uk_news/education/3717744.stm. According to Wilborg (2010): "The three largest private providers in 2008 were John Bauer Organisation AB (27 schools, 9424 students), Anew Learning AB (19 schools, 5708 students), and AcadeMedia (24 schools, 3795 students). Kunnskapskolan, which has attracted attention by the British Conservative Party, is the sixth largest private provider of education."

[4] Their study, however, found that certain religious schools produced comparable student outcomes but have lower operating costs because of volunteer staff.

(Alexandersson 2011; Bunar 2012). Finally, to our knowledge, this study is the first to examine the Swedish voucher scheme using the social cohesion criterion.

Data

The IEA CIVED Data

The IEA CIVED is an international assessment of the civic knowledge and skills of 14-year-olds (8th and 9th graders). The data were collected in 1999 and 2009 under the auspices of the IEA headquartered in Amsterdam, which since 1958 has been a consortium of educational and social science research institutes in more than 50 countries. The sampling consisted of a two-stage stratified cluster sample design where the first stage consisted of a sample of schools that had been stratified in a number of countries. The second stage consisted of a single civic education class selected from the target grade in sampled schools. The typical sample size for a country ranged from 3000 to 6000 students. For 1999, data was collected from 116 schools, consisting of 95 public schools and 21 private schools in Sweden. In the 2009 sample of Swedish schools, there were a total of 166 schools, consisting of 144 public schools and 22 private schools.

There are five caveats with the data. First, the "public" and "private" coding system provides only limited insight into the varieties of private schools in Sweden. Second, because municipalities and regions are not identified in the CIVED data, we cannot combine the data with other data sets that provide community level data. For example, we are unable to merge data on school cost or whether the municipal government is socialist or non-socialist; Sandström and Bergström (2005) showed that both factors are associated with student outcomes. Third, we are constrained by outcome and explanatory variables that were collected in both the 1999 and 2009 CIVED surveys; indeed, several questions and scores appear in one year but not the other. Fourth, the findings in this study may not hold for students younger or older than the age of fifteen. Finally,

since there are no data on the civic attitudes of family and community members, our results may be over- or under-attributing the role of private and public schools in shaping social cohesion.

The Outcome Variable (CIVICSCORE)

In constructing an outcome variable that measures social cohesion, we consider the available literature on defining social cohesion. There is some agreement that schools build social cohesion by providing a public space in which students of diverse social class, ethnicity, gender, and other differences interact; through the interactions, schools forge a common national identity founded on a collective (and imagined) past and socialize into the norms and values of good citizenship.[5]

For this study, we draw on a definition of social cohesion as "the capacity of a society to ensure the well-being of all its members, minimizing disparities and avoiding marginalization" (Report of the High Level Task Force on Social Cohesion in the 21st Century, 2001). We also follow Emler and Frazer (1999) and the International Association for the Evaluation of Educational Achievement (2009) and measure social cohesion using student attitudes toward ethnic rights and immigrant rights. Accordingly, we use student responses to the following statements posed by the IEA:

a) "All ethnic [racial or national] groups should have equal chances to get a good education in this country"
b) "All ethnic [racial or national] groups should have equal chances to get good jobs in this country"

[5] See Dickes et al. 2010; Finkel 2003; Friedkin 2004; Mirel 2002; Parker 2003; Reuben 2005. A number of scholars are reemphasizing the critical role of schools for promoting social cohesion in Western countries, including Niemi and Junn (1998), Ravitch and Viteritti (2002) and Van Deth et al. (1999). Tinker (2009) showed in her examination of the controversy over publically funded Muslim schools in England that both supporters and critics use social cohesion to support their arguments.

c) "Immigrants' children should have the same opportunities for education, that other children in the country have"

d) "Immigrants should have all the same rights that everyone else in a country has"

For each statement, students chose from 1 ("strongly disagree"), 2 ("agree"), 3("disagree") and 4 ("strongly agree"). We create a dependent variable CIVICSCORE by adding the total scores then dividing by 4; CIVICSCORE is therefore quantitative, continuous, and ranges from 1 to 4.[6]

Descriptive Statistics

Table 1 presents the outcome variable CIVICSCORE for all students across school types and years. The scores are shown for all students and various sub-samples or sub-groups by gender, country of birth, and number of books at home (a proxy for family status and environment). First, scores ranging from 3.32 to 3.54 out of a maximum of 4 indicate that the typical 14-year-old student in Sweden is highly supportive of ethnic and immigrant rights; thus, the distributions of 1999 and 2009 student civic attitude scores are not normal, and negatively skewed. Second, the standard errors are relatively small (approximately 0.5 points), suggesting that most students are supportive or very supportive of ethnic and immigrant rights. Third, civic attitudes have improved over time. Fourth, for any given year, private school students appear to have a small advantage in terms of support for ethnic and immigrant rights. In summary, this basic analysis invalidates our suspicions about a decline in social cohesion (as measured by student civic attitudes). Not only did overall civic attitudes improve but also private school students had better civic attitudes.

[6] Consistent with IEA practices, the "don't know" responses are excluded from the analysis in this study. In addition, we dropped other observations where other key explanatory variables were missing variables. These steps resulted in the sample of students shrinking from 6014 to 4353. In terms of the final sub-samples, the 1999 and 2009 sub-samples consist of 1463 and 2890 observations respectively. The sample of students in private schools shrinks from 20.4 percent to 13.6 percent, which is consistent with the fact that the IEA collected data from 95 public schools and 21 private schools in 1999, and 144 public schools and 22 private schools in 2009.

[Table 1 about here]

It is possible that the likely changes in civic attitudes are attributable to improvements in student, family, peer, and other school characteristics. For example, civic attitudes may have improved over time entirely because parents became richer and were able to buy their children more books, which expanded children's worldview and made them more tolerant. Similarly, a difference in attitudes between the civic attitudes of private and public schools may be entirely attributable to private school parents providing more books to their children. Additionally, broad social transformations, particularly the shift in immigration patterns from the late 1980s, could be responsible for the changes in civic attitudes. We want to hold constant other observable characteristics and examine if the private-public gap and time gap still persist; that would draw future research to unobservable characteristics that explain the gaps by school type and time. The next section develops the methodology to better assess the nature of civic attitudes between private and public school students over time.

Methodology

A simple representation of our conceptual model is:

CIVICSCORE = *F*(School Type, Year, Student Characteristics, Family Characteristics, Peer Characteristics, Pedagogical Characteristics, Other School Characteristics)

The model is a version used in the social science and education literature to describe how various characteristics affect student outcomes. We discuss the details of the model in the remainder of this section.

Covariate Adjustment Regression Model

If students in Sweden were randomly assigned to public and private schools in all years, our methodology could provide causal estimates of the effect of school type and year. In other words, the random placement of students (for example, by sophisticated rounds of national, local, and school lotteries) into school types regardless of student, family, peer, and other school characteristics could allow us to conduct an evaluation of the social cohesion effects of the voucher plan over time. In reality, no such randomization took place, and instead, students and their families self-selected into schools and neighbourhoods. Moreover, school administrators and teachers placed students into classrooms on the basis of peer-characteristics. In short, there is non-randomization because the type of school being attended depends critically on student, family, and various school characteristics. Empirical researchers have several methodologies to overcome the issues of non-randomization to approximate causal estimates such as instrumental variable regression and propensity scoring. As we explain in the Discussion section, data limitations prevent us from pursuing such methodologies.

Since students were not randomly placed, we adopt the traditional strategy of including several observable student-, family-, and school-level control variables. Controlling for these other observable characteristics permits us to isolate the associations between CIVICSCORE, school type, and year. Given the continuous nature of CIVICSCORE, we adopt OLS regression methodology that is sometimes referred to covariate adjustment models. This popular model can be traced back to early studies of Catholic school and public school students in the U.S. (Coleman et al. 1982).

Explanatory Variables

At the heart of our analysis are school type and explanatory variables. The dummy variable PRIVATE indicates that whether the student attends a private school (versus public school). The time trend is captured by YR2009, which is a dummy variable for whether the data was collected in

the year 2009 (versus 1999). The interaction term PRIVATE ×YR2009 is our explanatory variable of interest that explains the change in private-public civic attitude gap over time; its coefficient should be negative and statistically significant if social cohesion declined during voucher expansion. Consistent with covariate adjustment models, we have to include a series of student, family, peer, and other school characteristics. Table 2 presents the variable names and descriptions.

[Table 2 about here]

In accordance with the large share of research that has found that girls have different civic attitudes than boys (Niemi and Junn 1998), we include a gender dummy variable FEMALE. Another student characteristic is a student's country of birth, captured by the dummy variable SWEDEBORN; it is possible that students born in Sweden will empathize less with minorities and immigrants. Following Schütz et al. (2005) and numerous other studies, the family background effect is measured using the number of books at home; specifically, we construct the dummy variable BOOKS100. The family background effect includes the influence of socioeconomic status and social capital within the home (that is, the extent to which parents help with schooling). The expected relationship between BOOKS100 and civic attitudes is positive, such that children with more books may be more tolerant because of greater understanding of the plight of ethnic and immigrant groups.

Most major studies of private-public school student differences have found strong associations between peer characteristics and student outcomes (Vigdor and Ludwig 2010). Accordingly, we include PEER_SWEDEBORN and PEER_BOOKS100. Similar to the explanations behind SWEDEBORN, that PEER_SWEDEBORN is expected to have an inverse relationship with support for ethnic and immigrant rights. Like the case of BOOKS100, the nature of the relationship between PEER_BOOKS100 and support for ethnic and immigrant rights is expected to be positive. Both peer variables are quantitative, continuous, and range from 0 to 1. To

control for school leadership across school types and time, we include the variable PRINCEXP that measures the school principal's years of experience in such a position.

A key advantage of the CIVED is the availability of pedagogical variables. In a seminal book on comparative civic education, *Becoming Political*, Carole Hahn (1998) identifies two pedagogical styles that have a positive effect on students' civic development: encouraging students to make up their own minds, and fostering the expression of student opinions in class. Accordingly, we include the explanatory variables OWNMIND and EXPRESSION, which are quantitative discrete variables that range from 1 to 4.[7]

Summary Statistics

Appendix Table 1 presents the sample summary statistics. The gender gap in private school attendance is reversed by 2009 as girls become over-represented in private schools. The share of students born in Sweden in 1999 is 88.3 percent and 77.5 percent in public and private schools respectively; this public-private gap disappears by 2009 as the share of native-born Swedes in private and public schools increases to about 92 percent. Over half of the students typically have at least one hundred books, but this ratio decreases marginally from 1999 to 2009 in both private and public schools. This suggests that family socioeconomic status of students improved slightly over the 10 years. Moreover, the share of students with at least one hundred books is comparable in public and private schools.

[7] Notably missing as explanatory variables are proxies for civics curricula and student clubs; we omit these variables because there is almost no variation across private and public schools in Sweden. For example, it was found that 100 percent of private and public students in the CIVED data for Sweden have teachers who cover civic education; the data do not permit us explore whether there is variation in the richness of the teaching and curriculum. Because variables on parental involvement in school activities were not collected in both 1999 and 2009 rounds of the CIVED, we also cannot address the assertion of Schneider et al. (2000) that parental involvement should improve under a voucher system.

Appendix Table 1 also illustrates that from 1999 to 2009, a slightly larger share of students are exposed to pedagogy that encourages students to make up their own mind and express their views in class; relative to public school students, a larger share of private school students are exposed to such pedagogical progressive teaching approaches. The CIVED data also show that 100 percent of public and private schools in 1999 and 2009 taught civics; accordingly, we do not include an explanatory variable that indicates whether civics is taught.

The patterns reveal several features about the voucher design and Swedish context. The comparable socioeconomic and ethnic distribution across public and private schools is likely to be the result of the numerous equity-preserving features in voucher design. In particular, the finance aspect ensured that all families received sufficient funds and support services to send children to almost any private or public school. The efforts of Swedish teacher unions on supporting regulations that limited the extent of private schools from discriminating against students belonging to ethnic minority and lower socioeconomic backgrounds. The Swedish context of placing a high value on social cohesion is the likely explanation for our finding that all private schools taught civics—despite not being required to do so by voucher regulations. In short, the potential harm to student civic attitudes should be lower because of voucher design and societal quirks that prevented both segregation and diminished emphasis on civics.

Analysis

Table 3 presents the summary statistics and regression results for the 1999 and 2009 CIVED samples of private and public school students in Sweden; Appendix Table 2 presents the means and standard deviations of the various explanatory variables. The R-square value indicates that PRIVATE, YR2009, and PRIVATE×YR2009 explain only 0.9 percent of the variation in student civic attitudes. The positive and statistically significant PRIVATE coefficient indicates that

regardless of the year, private school students had more supportive civic attitudes than private school students. The positive and statistically significant YR2009 coefficients suggests that irrespective of school type, civic attitudes in the year 2009 are better than in the year 1999; therefore, there is an small upward secular trend. The double-interaction term and key variable of interest in this analysis PRIVATE×YR2009, however, is statistically insignificant. One interpretation of this statistically insignificant coefficient is that the mean private-public gap is the same in the year 2009 as it is in the year 1999. A second interpretation of the statistically insignificant PRIVATE×YR2009 coefficient is that the mean change in attitudes over time is the same for a private school student as it is for public school student.

[Table 3 about here]

The baseline result on PRIVATE×YR2009 reflects the lack of change in the raw gap in civic attitudes. However, the limitation of the baseline analysis is that the differences between school type and year could be attributable to student, family, and other school characteristics. Indeed, the literature on school choice from Sweden and other countries suggest that private and public schools cater to different students and families. If the gap between private and public school students is attributable to observable characteristics, then the pro-private gap in civic attitudes should disappear or diminish considerably.

The R-square value indicates that the explanatory variables explain 14 percent of the variation in student civic attitudes. Though the magnitudes of PRIVATE and YR2009 are smaller, the overall conclusions are the same as the ones derived from the baseline analysis. After holding student, family, and other school level characteristics constant, we find that for any given year, a private school student had slightly better civic attitudes. We also find that regardless of school type, attitudes improved slightly from 1999 to 2009. As for the main variable of interest, the results show that the private-public gap in civic attitudes did not change over time.

Several of the observable student, family, and other school-level characteristics are statistically significant. The positive and statistically significant FEMALE coefficient indicates that female students have much more supportive civic attitudes than boys, holding constant school type, year, and other observable characteristics. The negative and statistically significant SWEDEBORN indicates that students who were born in Sweden have less supportive civic attitudes than students who were born in a different country, holding other factors constant. According to the positive and statistically significant BOOKS100 coefficient, students with at least a hundred books at home are more likely to have supportive civic attitudes than children who have fewer books, holding other characteristics constant. This suggests that higher socioeconomic status is associated with better civic attitudes. Similar to the explanations behind SWEDEBORN and BOOKS100, we find that PEER_SWEDEBORN and PEER_BOOKS100 have positive and negative associations respectively. In other words, students have better civic attitudes when they attend schools with more peers that are Swedish-born and richer, holding other observable characteristics constant.

Continuing with the results in Table 3, the positive and statistically significant OWNMIND and EXPRESSION coefficients provide strong empirical support for the comparative civic education literature on the benefits of encouraging students to make up their own minds, and fostering the expression of student opinions in class (Hahn 1998). The positive and statistically significant coefficients for progressive pedagogy suggest that there is support for the comparative civic education literature on the link between encouraging students to make up their own minds, and fostering the expression of student opinions in class. According to a self-selection explanation of this result (Goldberger and Cain 1982), parents with supportive civic attitudes opted or selected to send their children to school with such pedagogy; in other words, the positive correlation may mostly reflect parental effects rather than school pedagogical effects. The comparative civic

education literature provides an alternative and perhaps complementary explanation that progressive pedagogy has a positive effect on civic attitudes.

Extended Analysis

We now investigate the nature of student civic attitudes changes across school type over time. The purpose of this extended analysis is to address how observable characteristics (such as differences in PEER_SWEDEBORN between private and public schools, or the change in OWNMIND from 1999 to 2009) have contributed to civic attitude changes. In terms of interpretation, a statistically and significant coefficient for a double-interaction term involving YEAR2009 indicates that the association of that characteristic and CIVICSCORE changed over time, holding other factors constant. Similarly, a statistically significant coefficient for a double-interaction term including PRIVATE demonstrates that for any given year, the association between that characteristic and CIVICSCORE is different for private and public school students after controlling for other factors. The relevant interpretation for a triple-interaction term is that there was a change in the public-private gap over time for students of a certain characteristic.

The results of interest in Appendix Table 2 are the various double- and triple-interaction coefficients. We want to investigate if lack of change is attributable to negative and positive effects canceling each other out. The R-square value of 15 percent represents a 1-percentage point increase from Model 1; this is expected because of the increase in explanatory variables.
However, we find no evidence of statistical significance at the 1 percent or 5 percent levels for the triple interaction terms; this rules out the fact that students with a specific characteristic experienced a change in the public-private gap over time, holding other factors constant. For example, there is no evidence that the public-private gap in civic attitudes changed over time for girls.

Discussion

Given the lax voucher regulation on civics and other curricula, we were expecting to find a public school advantage in terms of civic attitudes. Instead, our analysis indicates a slight private school advantage for any given year. A likely advantage for attitudes being at least similar is that all Swedish private schools taught civics, just as all public schools taught civics. The slim private school advantage, however, is attributable to characteristics that we cannot observe. But the prevalence of civics in private schools reveals the importance that Swedish parents place on the social cohesion purposes of schooling.

The improvement over time may be indicative of broader social change in attitudes towards immigrants and ethnic minorities. Using the public opinion data from 1999 and 2006 World Values Surveys, we find evidence of a small improvement in the attitudes of Swedish adults. Specifically, we compared the responses to the question "On this list are various groups of people. Could you please sort out any that you would *not* like to have as neighbors?" The share of Swedes who mentioned "immigrants/foreign workers" fell from 2.8 percent in 1999 to 2.3 percent in 2006; a larger decrease occurred with those mentioning "people of a different race," which dropped from 2.5 percent to 1.8 percent. Such improvements in adult social cohesion may be attributable to effective immigrant integration policies. According to the independent and non-profit Migrant Policy Group, Sweden consistently leads rankings in immigrant integration policies among 28 European nations.[8]

In light of the design aspects and evaluations of the Swedish voucher scheme, the lack of statistical change in the private-public gap in civic attitudes over time makes sense. Recall that the

[8] The Migration Policy rankings were constructed using the following criteria: labor market mobility, family reunion, education, political participation, long-term residence, access to nationality, and anti-discrimination. An example of a labor market mobility program is the 2007 program that allowed combing work and Swedish language learning. Source: Migration Policy Index (http://www.mipex.eu/sweden); last accessed 1 May 2013. For a more critical but nonetheless positive of view of Sweden's integration policies, see Wiesbrock (2011).

results of the Swedish voucher scheme have also been generally positive in terms of equity and freedom of choice, and to a lesser extent productive efficiency. In addition, recall that from the perspective of design, there are a number of elements that encourage the participation of socioeconomically and ethnically disadvantaged students, such as generous financial value of the voucher, regulations prohibiting discrimination, and support services that are comparable to public schools.

Future Research

We have several recommendations regarding future research. First, given that we find that observable characteristics do not fully explain the gaps by school type and time, we encourage qualitative research to understand the differences in social cohesion promotion in private and public schools. For example, what are the characteristics not captured by the CIVED data that contribute to the small private school advantage in Sweden? Second, it is worth exploring the civic attitude differences across the variety of private and public schools in Sweden. Third, the robustness of our findings could be checked using Swedish students in different ages and grades, or the same students once they reach adulthood.

The fourth recommendation builds on our earlier statement that the methodology and data prevent inquiry into the causal effect of private school attendance and the overall voucher expansion. Like the large share of international studies on private-public differences, we use a covariate adjustment model. The shortcoming of covariate adjustment models is that there may be inadequate controls for initial achievement and unobserved selection mechanisms, leading to biased estimates on the PRIVATE coefficient (Goldberg and Cain 1982).[9] To remove selection bias,

[9] Unbiased estimates are unlikely to be the case because the variables that have been collected may be imperfectly measured, and there are a number of unobserved student and family characteristics, such as a student's innate abilities and family income. Since some characteristics are imperfectly measured or

instrumental variable models have emerged. Essentially, rather than use an indicator for private schooling, researchers used variables that predict private school enrollment but are otherwise uncorrelated with student outcomes. For example, Neal (1997) used instruments such as student religion, availability of private schools in the locality, and proportion of the county that shares the religious affiliation of the private school. Altonji et al. (2005), however, have found that the accuracy and validity of commonly used instrumental variables are questionable. A third and more recent model for addressing selection bias involves matching estimators, such as propensity score matching (Reardon et al. 2009). Essentially, matching models assume that the average effect of attending a private school for a student can be obtained by observing a public school student with identical (that is, matched) characteristics.[10] Data limitations, however, restrict us from pursuing instrumental variable model or matching estimators. Finally, had the CIVED data been a panel of the same students over multiple periods, we could have used sophisticated fixed effects and random effects regression techniques to make causal inferences (e.g., Uribe et al. 2006).

In short, further research using richer data is necessary to establish the robustness and causal effect of public or private school on the current and future attitudes of students. Our hope is that a basic empirical assessment using repeated cross-sectional data could provide a starting point for policy discussions and future research on educational voucher schemes in Sweden and other regions.

Conclusion

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unobserved, the results on effectiveness of private and public schools may be confounded with the characteristics of students and families, there is likely to be omitted variable bias.

[10] We cannot pursue an instrumental variables approach because we do not have data on family religious affiliation, local supply of Catholic schools, and concentration of schools in the municipality (Evans and Schwab 1995; McEwan 2001; Neal 1997). CIVED does not contain geographic data and data on household religion for Sweden. We are also unable to use matching estimators because of the limited number of data on child and family characteristics that are collected in CIVED, and also because a good share of the variables are only collected in one survey round (either 1999 and 2009).

The IEA CIVED data provide a broad picture of Swedish public and private secondary school students' attitudes toward ethnic and immigrant rights in 1999 and 2009. Our goal was to shed some light on whether Sweden's voucher system had a tangible impact on the school system's role for social cohesion. The strength of an analysis based on nationally representative data, such as the CIVED, is that the results permit us to make generalizations about the correlations between social cohesion promotion in different public and private schools.

There are three main findings from our regression analysis of 14-year-old students in Sweden. First, overall civic attitudes linked with social cohesion improved slightly after holding school type and other observable characteristics constant. Second, the size of the small private-school advantage in civic attitudes was constant over time after holding other characteristics constant. Third, the private-public gap in civic attitudes remained unchanged from 1999 to 2009. In summary, the 1999 and 2009 CIVED data for Sweden provide no empirical support that social cohesion declined as the voucher expanded in size.

Although one explanation is that societal factors could have been the source of the improvement in social cohesion, we believe that the unique characteristics of the Swedish voucher program also played an important role. Our findings suggest that Sweden's position as a highly cohesive society was not undermined because the Swedish voucher scheme was democratically designed—with strong contributions from teacher unions and parents. In particular, teacher union-endorsed anti-discrimination regulations is likely to have minimized student segregation by ability, ethnicity, and socioeconomic status; the resulting peer diversity likely to contributed to favorable civic attitudes among Swedish students. In fact, it may be that societal factors supporting social cohesion were more powerful than any effect of the voucher program. As a reflection of the Swedish context, all private schools taught civics even though voucher regulations excused private schools from doing so; this reveals the high value Swedish parents place on civics and the role of

schools in promoting social cohesion. Our analysis of World Values Survey data from 1999 and 2006 further suggests that the general improvement in the attitudes of private and public school students may reflect the more favorable attitudes of their parents and other adults toward ethnic minorities and immigrants; we speculate that Sweden's highly ranked immigrant integration programs are partly responsible for such progress. Ultimately, our findings suggest that voucher programs do not innately undermine social cohesion; the way a program is designed, especially in terms of the contributions of civil society and the degree that it reflects and reinforces societal values, are significant factors.

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Table 1: Civic attitude scores of Swedish students towards ethnic and immigrant rights

	Public 1999	Private 1999	Public 2009	Private 2009
	Mean (SE)	Mean (SE)	Mean (SE)	Mean (SE)
All students	3.317	3.436	3.384	3.537
	(.634)	(.583)	(.610)	(.562)
Scores among sub-samples:				
Gender:				
Female students	3.476	3.552	3.239	3.525
	(.511)	(.519)	(.694)	(.476)
Male students	3.152	3.327	3.525	3.426
	(.703)	(.619)	(.476)	(.637)
Country of birth:				
Swedish born students	3.323	3.437	3.367	3.533
	(.629)	(.559)	(.615)	(.569)
Foreign born students	3.270	3.433	3.602	3.580
	(.670)	(.664)	(.498)	(.477)
Number of books at home:				
Fewer than 100	3.282	3.368	3.346	3.504
	(.648)	(.597)	(.609)	(.597)
100 or more	3.342	3.465	3.422	3.554
	(.632)	(.576)	(.609)	(.543)
Students encouraged to make up own mind:				
"Never"	3.027	3.211	3.026	3.050
	(.985)	(.988)	(.881)	(.587)
"Rarely"	3.250	3.173	3.174	2.989
	(.581)	(.713)	(.659)	(.804)
"Sometimes"	3.306	3.456	3.322	3.364
	(.579)	(.487)	(.583)	(.606)
"Always"	3.408	3.530	3.493	3.674
	(.635)	(.539)	(.567)	(.452)
Expression of student opinions encouraged:				
"Never"	2.625	2.179	2.927	2.854
	(1.019)	(1.336)	(.858)	(.843)
"Rarely"	3.129	3.414	3.173	3.444
	(.656)	(.496)	(.692)	(.462)
"Sometimes"	3.319	3.368	3.351	3.420
	(.573)	(.533)	(.564)	(.578)
"Always"	3.450	3.551	3.508	3.647
	(.585)	(.508)	(.557)	(.507)

Source: 1999 and 2009 IEA CIVED for Sweden.

Notes: (1) Possible score range: 1-4; (2) Based on unweighted data.

Table 2: Definition of explanatory variables and summary statistics, pooled sample from CIVED 1999 and 2009 for Sweden

	Description	Mean	(SD)
Outcome variable			
CIVICSCORE	Quantitative and continuous variable that ranges from 1 ("strongly disagree") to 4 ("strongly agree"); computed using student responses to questions on support for ethnic and immigrant rights	3.384	(.6133)
Explanatory variables			
PRIVATE	Dummy variable denoting whether the school is private (vs. public)	.1587	(.3655)
YR2009	Dummy variable denoting year 2009 (vs. 1999)	.6639	(.4724)
FEMALE	Dummy variable denoting whether the student is female (vs. male)	.5091	(.5000)
SWEDEBORN	Dummy variable denoting whether the student was born in Sweden (vs. another country)	.9037	(.2949)
BOOKS100	Dummy indicating whether the student has 100 or more books at home (vs. fewer than 100 books)	.5534	(.4972)
PEER_SWEDEBORN	Mean of SWEDEBORN for a student's class	.9110	(.1169)
PEER_BOOKS100	Mean of BOOKS100 for a student's class	.4676	(.1934)
PRINCEXPER	Principal's years of experience at the student's school	9.2	(6.4)
OWNMIND	Index indicating the extent to which students are encouraged to make up their own minds: 1 ("never"), 2 ("rarely"), 3 ("sometimes"), 4 ("often")	3.256	(.8113)
EXPRESSION	Index indicating the extent to which the expression of student opinions in class is fostered: 1 ("never"), 2 ("rarely"), 3 ("sometimes"), 4 ("often")	3.274	(.8342)
N		4353	

Sources: 1999 and 2009 IEA CIVED for Sweden.

Table 3. OLS regression results: Civic attitude gaps between private and public school students, 1999 and 2009

Outcome variable: CIVICSCORE	Model 1: Baseline		Model 2: Full	
	Coefficient	(SE)	Coefficient	(SE)
PRIVATE	.1197**	(.0396)	.0964**	(.0381)
YR2009	.0681**	(.0217)	.0636**	(.0232)
PRIVATE × YR2009	.0325	(.0517)	-.0093	(.0485)
Control variables:				
BOOKS100			.0621**	(.0187)
FEMALE			.2337**	(.0176)
SWEDEBORN			-.0173**	(.0300)
PEER_SWEDEBORN			-.8545**	(.0809)
PEER_BOOKS100			.1130*	(.0578)
PRINCEXPER			-.0013	(.0014)
OWNMIND			.1294**	(.0128)
EXPRESSION			.0599**	(.0125)
Constant	3.3165**	(.0179)	3.3580**	(.0806)
R-squared	.0093		.1369	
N	4353		4353	

Sources: 1999 and 2009 IEA CIVED for Sweden.
Note: Statistical significance determined using z-distribution. * and ** denote statistical significance at the 5 percent and 1 percent level respectively.

Appendix Table 1. Sample summary statistics by school type and year, Sweden

	Public 1999	Private 1999	Public 2009	Private 2009
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
PRIVATE	.0000	1.0000	.0000	1.0000
	(.0000)	(.0000)	(.0000)	(.0000)
YR2009	.0000	.0000	1.0000	1.0000
	(.0000)	(.0000)	(.0000)	(.0000)
FEMALE	.5073	.4866	.5102	.5242
	(.5002)	(.5007)	(.5000)	(.5000)
SWEDEBORN	.8833	.7752	.9247	.9288
	(.3212)	(.4182)	(.2639)	(.2575)
BOOKS100	.5794	.7013	.5074	.6565
	(.4937)	(.4584)	(.5000)	(.4755)
PEER_SWEDEBORN	.8806	.9216	.9216	.9254
	(.1483)	(.0930)	(.1055)	(.0732)
PEER_BOOKS100	.3235	.4773	.5053	.6483
	(.1563)	(.1909)	(.1736)	(.1392)
PRINCEXPER	7.97	6.78	10.28	8.14
	(5.07)	(4.36)	(6.83)	(6.59)
OWNMIND	3.1674	3.3322	3.2583	3.4529
	(.7975)	(.7744)	(.8244)	(.7549)
EXPRESSION	3.0592	3.1879	3.3424	3.5445
	(.8719)	(.8358)	(.8102)	(.7169)
N	1165	298	2497	393

Sources: 1999 and 2009 IEA CIVED for Sweden.
Note: Standard deviations in parentheses.

Appendix Table 2. OLS regression results using pooled data: Civic attitude gaps between private and public school students, 1999-2009

Outcome Variable: CIVICSCORE	Coefficient	(SE)
PRIVATE	.1427	(.4106)
YR2009	.4667**	(.1834)
PRIVATE × YR2009	-.5445	(.5939)
FEMALE	.2713**	(.0339)
SWEDEBORN	.0399	(.0522)
BOOKS100	.0498	(.0359)
PEER_SWEDEBORN	-.7421**	(.1181)
PEER_BOOKS100	.0882	(.1142)
PRINCEXPER	.0025	(.0033)
OWNMIND	.1568**	(.0229)
EXPRESSION	.0382*	(.0206)
PRIVATE × FEMALE	-.0507	(.0747)
PRIVATE × SWEDEBORN	-.1069	(.0957)
PRIVATE × BOOKS100	.0349	(.0838)
PRIVATE × PEER_SWEDEBORN	-.1525	(.3870)
PRIVATE × PEER_BOOKS100	.0474	(.2175)
PRIVATE × PRINCEXPER	.0052	(.0084)
PRIVATE × OWNMIND	-.0047	(.0518)
PRIVATE × EXPRESSION	.0476	(.0476)
2009 × FEMALE	-.0416	(.0411)
2009 × SWEDEBORN	-.1890**	(.0702)
2009 × BOOKS100	.0259	(.0435)
2009 × PEER_SWEDEBORN	-.1019	(.1768)
2009 × PEER_BOOKS100	-.0089	(.1389)
2009 × PRINCEXPER	-.0066*	(.0037)
2009 × OWNMIND	-.0375	(.0290)
2009 × EXPRESSION	.0172	(.0275)
PRIVATE × 2009 × FEMALE	-.0222	(.0975)
PRIVATE × 2009 × SWEDEBORN	.2194	(.1587)
PRIVATE × 2009 × BOOKS100	-.1335	(.1083)
PRIVATE × 2009 × PEER_SWEDEBORN	-.0806	(.5890)
PRIVATE × 2009 × PEER_BOOKS100	.3950	(.3207)
PRIVATE × 2009 × PRINCEXPER	.0072	(.0097)
PRIVATE × 2009 × OWNMIND	-.0996	(.0746)
PRIVATE × 2009 × EXPRESSION	.1430*	(.0733)
Constant	3.1061**	(.1423)
R-squared	.1473	
N	4353	

Sources: 1999 and 2009 IEA CIVED for Sweden.
Notes: Statistical significance determined using z-distribution. * and ** denote statistical significance at the 5 percent and 1 percent level respectively.