International Tax and Public Finance, 12, 605–625, 2005

The Effects of Catholic Schooling on Civic Participation

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Abstract

The promotion of adult civic engagement is one of the primary goals of public schools. And the putatively negative effects of private schooling on civic engagement provide one of the most fundamental motivations for publicly provided schooling. In this study, I examine the comparative effects of Catholic and public high schools on adult voter participation and volunteering in the United States. I find that students who attended Catholic high schools are actually more likely to vote, though not volunteer, as adults. These estimated effects are robust to conditioning on a rich set of individual, family and community traits. I also present two-stage least squares estimates, which provide suggestive evidence that these results are not due to selection biases.

Keywords: public, private, education, civic, externality

JEL Code: I21, D72, H52

1. Introduction

The nature of government involvement in elementary and secondary education differs markedly across nations. For example, in several developed countries (e.g., Australia, France, Germany and Spain), the government provides a considerable amount of financial support to private schools (Kober, 1999). However, the United States has an extensive network of publicly financed and managed schools and provides almost no financial support to private schools. The relatively unique institutional arrangement in the United States has its origins in the dramatic 19th century expansion of universal, public schooling. In particular, one of the fundamental motivations for public schooling during that period was the concern that publicly managed schools were necessary to assimilate largely Catholic waves of immigrants into the civic culture of the United States. The contemporary debate over educational choice (in particular, publicly financed vouchers for private schools) has turned in part on similar claims. One of the most fundamental justifications for the status quo (i.e., the almost exclusively public production of education) is the hypothesis that the regulation of private schools cannot adequately ensure that the desired social benefits of schooling will be produced (Poterba, 1996).[1] In particular, there is concern that private schools may focus on producing skills and knowledge with clear individual benefits and place less value on the external social benefits that are derived from instilling a variety of civic values and beliefs (e.g., Levin, 1991; Kremer and Sarychev, 2000; Rosen, 2002,

p. 70). Similarly, the sectarian and possibly segregated nature of private schooling could also harm future civic engagement (e.g., Levin, 1991, 1998). However, since private schools may be more efficient at producing human capital and may simultaneously increase student exposure to social capital (e.g., shared norms, social cohesion and trust), it is also possible that they are more effective than public schools at promoting civic engagement (Bryk, Lee and Holland, 1993; Campbell, 2001).

The relative effects of private schooling on individual student achievement (i.e., test scores, educational attainment) have received considerable attention. Yet, surprisingly, there is relatively little evidence on how private and public schools compare with regard to the promotion of civic engagement, another central goal of schooling. And the limited evidence that does exist generally suggests that private schools (Catholic schools, in particular) are often better at promoting civic participation and political tolerance than public schools (e.g., Greeley and Rossi, 1966; Greene, 1998; Campbell, 2001; Wolf et al., 2001). However, the contemporary empirical evidence is based on youth, not adult, behaviors. Furthermore, a widely appreciated problem from empirical studies of student achievement is that conventional inferences about the effectiveness of private school may be contaminated by selection biases. In particular, because students whose families choose to send them to Catholic schools may have an unobserved propensity for civic participation, these results may overstate the true civic returns to Catholic schooling.

In this study, I present new empirical evidence on these issues by evaluating the relative effects of Catholic schooling on civic participation as an adult. This evidence is based on High School and Beyond (HS&B), a nationally representative longitudinal survey conducted by the U.S. Department of Education. HS&B provides unusually detailed information on the backgrounds of students and also includes follow-up interviews with questions about adult civic participation. I find that students who attended Catholic school in 10th grade were substantially more likely to vote as adults and that this relationship is robust to conditioning on a wide variety of observed demographic, socioeconomic and attitudinal measures. I then attempt to assess whether these results merely reflect undiagnosed selection biases. First, I examine whether these effects differ across Catholic schools with different levels of selectivity (e.g., those with and without waiting lists). Second, I present 2SLS estimates which rely on the geographic availability of a Catholic high school to identify the comparative effects of Catholic schooling. I also assess the validity of this identification strategy in a number of ways, including an approach recently introduced by Altonji, Elder and Taber (2002). The results of this analysis suggest that attendance at a Catholic high school does significantly increase adult voter participation relative to attending a public high school. However, I also acknowledge that this assessment of potential selection biases relies on important, maintained assumptions and, therefore, is not definitive.

Nonetheless, I also argue that, despite these important qualifications, the evidence presented here makes an important contribution to the extant literature. The notion that private schools are at a comparative disadvantage with regard to promoting civic engagement clearly motivated the historical development of the United States' extensive system of publicly provided elementary and secondary education. And the contemporary debate over school choice, combined with a growing interest in fostering civic engagement, has brought those concerns to the center of public debate. For example, Barber (2004) recently argued

that the current efforts to expand private schooling are undesirable because they may create a "republic of privately school narcissists blind to what they share." The results presented here imply that this conjecture is unsubstantiated, at least with regard to Catholic schools and voter participation. In other words, these results indicate that there is no evidence that Catholic schools are *inferior* at promoting voter participation. And there is some qualified evidence that they may actually be better than public schools in this regard. However, in all likelihood, the U.S. will retain its largely public system of elementary and secondary schooling. Therefore, the more practical upshot of these results is to suggest that, under current practice, public schools have been relatively ineffective at achieving one of their fundamental goals.

2. The Consequences of Catholic Schooling

In a widely discussed and controversial analysis of data from High School and Beyond (HS&B), Coleman, Hoffer and Kilgore (1982) presented evidence that, conditional on background measures, students who attended Catholic schools had higher test scores than students attending public schools. The authors attributed the relative success of Catholic schools to school-specific traits like higher academic expectations and stricter discipline. However, critics suggested that apparent effectiveness of Catholic schools merely reflected the fact that students with higher but unobserved propensities for academic achievement were more likely to attend Catholic schools (e.g., Cain and Goldberger, 1982; Murnane, Newstead and Olsen, 1985). More recent studies have examined the effects of Catholic schooling on educational attainment instead of test scores and have also attempted to correct for possible selection biases. For example, Evans and Schwab (1995) find that the HS&B respondents attending Catholic schools were substantially more likely to graduate from high school and to enter college (approximately 13 percentage points). They present evidence that these results are not contaminated by selection bias by relying on two variables that may generate exogenous variation in Catholic-school attendance: whether the student is Catholic and the county-level percent of Catholics. Neal (1997) also concludes that Catholic schooling appears to have causal effects on educational attainment and wages, particularly for urban minorities.[2] His assessment of possible selection biases turns on similar instrumental variables: Catholic religious affiliation, the county-level percent Catholic and the county-level density of Catholic high schools. In another recent contribution, Figlio and Ludwig (2000), relying on measures of the size of the local mass-transit system as an instrument for the probability of attending Catholic schools, conclude that Catholic schooling may reduce some risky youth behaviors (e.g., sexual activity, drug use).

The most fundamental concern with these results is that they may overstate the returns to Catholic schooling because the instrumental variables (i.e., Catholic religious affiliation, measures of the local availability of Catholic schools) influence student outcomes as well as school choice. Altonji, Elder and Taber (2002) address this concern in the context of student achievement and conclude that Catholic religious affiliation and measures of the proximity of Catholic schools do not provide a valid basis for identification. Their conclusions are based on two types of evidence. First, they assess the amount of bias that might be

due to contaminated instruments by using the relationship between the instruments and the observed determinants of student achievement ("selection on observables") as a guide to how the instrument varies with the unobserved determinants of student achievement ("selection on unobservables"). Second, they estimate the amount of bias in 2SLS estimates by examining the reduced-form effects of the instruments on a sub-sample of respondents for whom the availability of Catholic schools is largely irrelevant: those who attended 8th grade in a public school.[3] They find that instruments for Catholic schooling often appear to have large effects on academic outcomes among these students, which clearly suggests that the exclusion restrictions are invalid. However, in an earlier, related study, Altonji, Taber and Elder (2000) also show that, to eliminate the apparent effect of Catholic schooling on high school graduation, the degree of selection into Catholic schools on unobservables would have to be several times larger than the degree of selection on observables. Since that seems highly unlikely, they conclude that the apparent effects of Catholic schooling on high school graduation (and, to a lesser degree, college entrance) are largely real.[4]

Though the promotion of civic engagement is widely viewed as one of the fundamental goals of schooling, there is surprisingly little evidence on the comparative effects of public and Catholic schools. The limited empirical evidence that is available actually suggests that Catholic schools may be relatively effective at promoting civic engagement. For example, in an early empirical study, Greeley and Rossi (1966) found that Catholics who attended Catholic schools, particularly those from more recent birth cohorts, were more tolerant of civil liberties than Catholics who did not. They also found that a Catholic education was unrelated to community involvement and attitudes towards other groups. In a more recent study, Greene (1998) finds that 12th graders in private schools (which are predominantly Catholic) have higher levels of racial tolerance, volunteering and commitment to community than those in public schools.[5] Campbell (2001) also analyses recent survey data and finds that, relative to public school students, those in Catholic high schools have higher levels of civic participation and exhibit better civic attitudes and knowledge. His analysis is based on the 4,213 high school students who participated in the 1996 National Household Education Survey and conditions on a fairly extensive set of individual, family and school-level controls. In another multivariate analysis, Wolf et al. (2001) find that college students in Texas who had attended private schools exhibited significantly more political tolerance than their peers who had attended public schools.

The literature on student achievement clearly suggests why many researchers are likely to view any positive, partial correlations between Catholic schooling and civic outcomes with considerable skepticism. There are a variety of inherently unobservable variables that are likely to positively influence a family's choice to pay for Catholic schooling (e.g., shared norms and beliefs, community attachment). Since those same variables are also likely to promote the development of civic engagement, the apparent effects of Catholic schooling could actually be quite misleading. An informal assessment with the HS&B suggests that this concern is a valid one. Specifically, with respect to adult voter and volunteer participation, I find consistent evidence of strong, positive selection into Catholic schools.[6] In the next section, I present a conventional, multivariate analysis of the effects of Catholic schooling on adult civic participation. This analysis exploits the unusually rich set of background controls that are available in the High School and Beyond (HS&B) longitudinal study as

well as several merged controls reflecting county and state-level traits. This study also improves upon the prior empirical evidence by analyzing adult, not teen, outcomes.[7] I find that, conditional on these controls, Catholic schooling appears to have a positive effect on adult voter turnout, but not volunteering. In the subsequent section, I assess whether these results reflect undiagnosed selection biases. The final section discusses the implications of these results as well as several important caveats.

3. A Multivariate Analysis

The data for this section are drawn from High School and Beyond (HS&B), a major longitudinal study conducted by the U.S. Department of Education. This detailed study began with a cohort of high school sophomores in 1980. A final follow-up interview of roughly 12,000 members of the sophomore cohort occurred in 1992 when most respondents were 26 years old.[8] In this interview, respondents were asked four civic-related questions: whether they were currently registered to vote (mean = .66), whether they had voted in a local, state or national election within the past year (mean = .35), whether they had voted in the 1988 Presidential election (mean = .54) and whether they had volunteered in the last month (mean = .37). Nineteen percent of these HS&B participants attended Catholic schools as sophomores.[9]

The basic linear specification I use to assess the effects of attending a Catholic high school on the 1992 outcomes takes the following form:

$$Y_i = \beta CS_i + X_i'\gamma + \varepsilon_i \tag{1}$$

where CS is a binary indicator for sophomore-year attendance at a Catholic school and X′ is vector of control variables. I present both probit and 2SLS estimates of equation (1).[10] Because the sampling design of HS&B selected schools first and then students within schools, I allow the error term, ε, to have a school-specific heteroscedasticity. In the sparsest versions of equation (1), X′ only includes six demographic controls for gender, age, race/ethnicity and being Catholic. However, other models introduce 17 other variables reflecting the family income, parental education and family structure of each respondent and two dummy variables reflecting the urbanicity of the base-year schools (see appendix). Subsequent models also introduce six controls that vary at the county or state level. One of the county-level variables is a well-measured proxy for the civic attitudes of the community in which the respondents grew up: the county-level voter turnout in the 1980 Presidential election. Three other county-level variables reflect other possibly relevant community traits: the percent of adults aged 25 or older with high school degree, the percent of the population that is Catholic and the percent of workers using public transportation.[11] And two state-level variables reflect influential voter regulations defined as of 1992 (Knack, 1995). One is a binary indicator for whether the state had an active policy of allowing voter registration by mail. The second is the number of years the state had active "motor-voter" regulations in place.[12] The available evidence suggests that a years-based measure is the appropriate variable for identifying the early effects of "motor-voter" policies because state drivers licenses are renewed in cycles as long as six years (Knack, 1995). Finally, some models

Table 1. Estimated marginal effects of Catholic schooling on adult civic behaviors, single-equation probits.

Dependent variable	(1)	(2)	(3)	(4)	(5)	Sample size
Registered to vote	.112‡	.086‡	.089‡	.093‡	.086‡	12,159
	(.014)	(.014)	(.014)	(.014)	(.014)	
Psuedo-R^2	.0149	.0317	.0319	.0347	.0412	
Voted in last 12 months	.089‡	.067‡	.072‡	.075‡	.071‡	12,225
	(.015)	(.015)	(.016)	(.016)	(.014)	
Psuedo-R^2	.0105	.0210	.0216	.0241	.0275	
Voted in 1988 Presidential election	.149‡	.112‡	.113‡	.115‡	.109‡	12,159
	(.015)	(.015)	(.016)	(.015)	(.015)	
Psuedo-R^2	.0247	.0518	.0520	.0544	.0579	
Volunteered in last 12 months	.018	−.007	−.005	.015	.010	12,284
	(.015)	(.014)	(.014)	(.014)	(.014)	
Psuedo-R^2	.0039	.0153	.0156	.0180	.0205	
Family/parental controls (17)	no	yes	yes	yes	yes	
Urbanicity dummies (2)	no	no	yes	yes	yes	
State/county-level controls (6)	no	no	no	yes	yes	
Census division dummies (8)	no	no	no	no	yes	

All models include binary indicators for gender (1), age (1), race/ethnicity (3) and Catholic religion (1). Standard errors, adjusted for school-level clustering, are reported in parentheses.
*Statistically significant at the 10-percent level.
†Statistically significant at the 5-percent level.
‡Statistically significant at the 1-percent level.

also introduce 8 fixed effects for the Census division in which the base-year school was located.

The key results from single-equation probits based on these controls are presented in Table 1. The results suggest that attending a Catholic school has large, positive and statistically significant effects on voter participation. More specifically, these results suggest that attending a Catholic school increased adult voter registration and turnout by roughly 7 to 11 percentage points. Given that the mean levels of these outcomes vary from 35 to 66 percent, these marginal effects are quite large. However, the estimated effects of Catholic schooling on volunteer participation are much smaller, sometimes negative and statistically insignificant.[13] Interestingly, the estimated effects of Catholic schooling on voter participation are at least somewhat sensitive to the introduction of the family and parental controls, suggesting the existence of some positive selection. However, the marginal effects were largely invariant to the introduction of the remaining school, county and state-level controls.

In Table 2, I present further information on the robustness of these estimates by replicating them in specifications that introduce a variety of other individual-level control variables. These controls include measures of religiosity (i.e., 3 fixed effects for attendance at religious services), a measure of peer quality, base-year predictors of future civic engagement

Table 2. Estimated marginal effects of Catholic schooling on adult civic behaviors, single-equation probits with alternative controls.

Additional controls	Registered to vote	Voted in last 12 months	Voted in 1988 Presidential election	Volunteered in last 12 months
Base specification: Model (5), Table 1	.086‡ (.014)	.071‡ (.014)	.109‡ (.015)	.010 (.014)
Fixed effects for attendance at religious services	.077‡ (.014)	.060‡ (.015)	.097‡ (.015)	−.002 (.014)
Mean socioeconomic status of base-year school peers	.083‡ (.014)	.067‡ (.015)	.093‡ (.016)	−.002 (.014)
Attitude towards social/economic inequality	.083‡ (.014)	.065‡ (.015)	.104‡ (.015)	.009 (.015)
Score on base-year civics test	.078‡ (.015)	.060‡ (.016)	.096‡ (.016)	.004 (.015)
Score on base-year test composite	.081‡ (.014)	.066‡ (.014)	.101‡ (.015)	.004 (.014)
Educational attainment as of 1992	.066‡ (.014)	.053‡ (.015)	.078‡ (.015)	−.001 (.014)
All of the above	.062‡ (.016)	.041† (.016)	.060‡ (.018)	−.023 (.015)

Standard errors, adjusted for clustering, are reported in parentheses.
*Statistically significant at the 10-percent level.
†Statistically significant at the 5-percent level.
‡Statistically significant at the 1-percent level.

(i.e., a scale measure on attitudes towards inequality and a standardized score on a civics exam), the base-year composite test score in academic subjects and controls for highest subsequent educational attainment (i.e., 3 fixed effects for high school graduate, associate's degree, bachelor's degree).[14] The results based on these controls should be interpreted with some caution because any of these variables could be reasonably viewed as endogenously determined outcomes of Catholic schooling. However, these variables may also provide valid controls for many of the difficult-to-observe factors that influence a possibly confounding pattern of selection into Catholic schools. The results in Table 2 indicate that Table 1's results are generally quite robust to conditioning on these variables. Even the final specification, which includes all of the control variables, suggests that the effects of Catholic schooling on voter participation, though smaller, are still quite large and statistically significant.

A potentially important concern with the results in Tables 1 and 2 involves the quality of the self-reported data on civic participation. Comparisons of self-reported and validated measures of voting indicate that respondents often overstate their voter turnout (e.g., Silver, Anderson and Abramson, 1986). The basic understanding of this phenomenon is that factors associated with pressure and guilt about civic responsibilities increase the probability of over-reporting. Not surprisingly, this reporting bias is particularly acute in surveys that focus

on political values and behavior. But particularly relevant in this context is the evidence that religiosity is positively associated with the probability of over-reporting (Bernstein, Chadha and Montjoy, 2001). The existence of that sort of reporting bias suggests that the effects of Catholic schooling on voter turnout may be biased upwards. In other words, Catholic schooling may simply create civics-related guilt that leads respondents to say they have voted even when they have not.

This issue cannot be addressed definitively in this context since HS&B did not validate self-reported voting. However, the available evidence suggests that this is not particularly problematic. First of all, the HS&B respondents had comparatively little incentive to over-report since the survey instrument focused almost exclusively on labor-market and educational experiences, not political values and participation. The November voter supplements to the Current Population Surveys shared this feature and the aggregate voter-participation rates implied by those self reports are relatively close to the actual rates (Teixeira, 1992, Appendix A). Furthermore, the voter-registration rate implied by the HS&B responses (67 percent) is similar to the contemporaneous CPS-reported rate for 25–34 year olds (61 percent, U.S. Census Bureau, 1996). And the percent of HS&B respondents who reported voting in the past year (36 percent) is actually lower than the CPS-reported turnout rate for 25–34 year olds in the 1992 Presidential election (53 percent).[15] However, further comparisons with the CPS data suggest that the HS&B respondents' 1992 recall of having voted in 1988 may be more biased. In the 1988 CPS survey, approximately 38 percent of 21–24 year olds reported voting in the Presidential election while the 1992 HS&B survey suggests that 55 percent of respondents did. So, a caveat about this particular variable is appropriate.

Second, the relationship between Catholic religious affiliation and voter turnout also suggests the absence of confounding reporting biases. Specifically, if Catholic schooling created substantive reporting biases, it would seem reasonable to expect there to be similar reporting biases associated with Catholic religious affiliation. However, estimates based on self-reported voter turnout from HS&B and on actual county-level turnout in the 1980 election both suggest that Catholic religious affiliation has small and statistically insignificant effects. Finally, it should be noted that, even if attending Catholic schools did increase over-reporting, that would necessarily imply that Catholic schooling has a type of structural effect (i.e., instilling a sense of civic obligation) that should also generate true increases in civic engagement. In other words, though these evaluations would not identify the true effect of Catholic schooling on civic participation, the very existence of such reporting biases would suggest the existence of true civic benefits to Catholic schooling.

4. Is it Just Selection Bias?

The results from the multivariate analysis suggest that Catholic schooling may have surprisingly large, positive effects on voter participation. However, attending a Catholic high school is a choice, not a random assignment. Despite the exhaustive set of controls, it is entirely reasonable to be concerned that these results may reflect undiagnosed selection biases. More specifically, the students whose parents sent them to Catholic schools could

quite plausibly have an unobserved propensity for higher levels of voter participation in adulthood. Furthermore, Catholic schools have more latitude than public schools with regard to accepting and expelling students. To the extent that Catholic schools are more likely to admit students with a propensity towards future engagement (and expel those who don't), the results in Tables 1 and 2 could be highly misleading.

One fairly compelling, ad-hoc way to evaluate this critical concern is to consider how the effects associated with Catholic schooling vary with school selectivity (Evans and Schwab, 1995). For example, the school survey in HS&B solicited information on whether the school had a waiting list. The Catholic-school students in HS&B were split roughly evenly between schools with and without waiting lists (see appendix). However, the Catholic schools with waiting lists were substantially more likely to describe their program as focusing on academics and college preparation. If the civic effects of Catholic schooling were similar across these very different Catholic schools, it would suggest that selection bias is not particularly important in explaining the apparent differences between Catholic and public schools. However, if more selective Catholic schools (i.e., those with waiting lists) appear to be significantly better at promoting civic participation, it would imply the possibility of selection bias or simply that more selective schools are better in this regard.

The results in the top panel of Table 3 indicate that the civic effects associated with Catholic schooling are statistically indistinguishable across this measure of school selectivity. However, in the bottom panel of Table 3, I report the results from models that use a

Table 3. Estimated marginal effects of Catholic schooling on adult civic behaviors by school selectivity.

	Dependent variable			
Independent variables	Registered to vote	Voted in last 12 months	Voted in 1988 Presidential election	Volunteered in last 12 months
Catholic school with waiting list	.080‡ (.019)	.080‡ (.019)	.109‡ (.020)	−.006 (.019)
Catholic school without waiting list	.085‡ (.019)	.054‡ (.019)	.091‡ (.020)	.012 (.019)
p-value	.8359	.2876	.5206	.6025
Catholic school with entrance exam	.100‡ (.015)	.079‡ (.017)	.115‡ (.017)	−.007 (.015)
Catholic school without entrance exam	.038 (.034)	.038 (.028)	.062† (.026)	.043 (.032)
p-value	.0814	.1771	.0704	.1331

All specifications include the same controls as Model (5) in Table 1. Standard errors, adjusted for school-level clustering, are reported in parentheses. The *p*-value refers to a log-likelihood test of the null hypothesis that the effects associated with each type of Catholic school are equal.

*Statistically significant at the 10-percent level.

†Statistically significant at the 5-percent level.

‡Statistically significant at the 1-percent level.

different measure of school selectivity: whether the Catholic school had an entrance exam (Evans and Schwab, 1995). Unfortunately, these results are not entirely dispositive. More specifically, these estimates suggest that Catholic schools with entrance exams are better than Catholic schools without them at promoting two of the three measures of voter participation. However, these two differences are only weakly significant and could reflect the relative inferiority of unselective Catholic schools as well as the existence of selection bias. Furthermore, the entrance-exam requirement may be a poor measure of Catholic-school selectivity since so few of the HS&B respondents are from schools without entrance exams (i.e., only about 330 observations from 20 schools). Furthermore, these observations are substantially less likely to be from suburban settings and 59 percent of these observations were concentrated in just 5 states.[16]

Altonji, Taber and Elder (2000) argued that one way to limit the pernicious influence of selection bias is to focus only on respondents who attended Catholic schools for 8th grade. I estimated models like those in Table 1 using the sub-sample of respondents who said they attended a Catholic school for 8th grade. However, the estimates based on this smaller sample were generally imprecise. Nonetheless, the estimated effect of attending a Catholic high school on adult voter registration was weakly significant (t-statistic $= 1.74$) for this sub-sample.

4.1. 2SLS Estimates

The similarity of the estimated effects associated with Catholic schools with and without waiting lists suggests that the results in Table 1 do not merely reflect selection bias. A more direct way to address this issue would be to exploit an instrumental variable that generated plausibly exogenous variation Catholic school attendance. However, the recent literature on Catholic schools and student achievement has underscored the difficulty of identifying a credible instrumental variable. For this study, I evaluated two of the instrumental variables that have been used in recent studies: a binary indicator for self-reported Catholic religious affiliation (Evans and Schwab, 1995; Neal, 1997) and a county-level measure of the availability of mass transit: the percent of workers using public transportation in 1980 (Figlio and Ludwig, 2000). I found that, while both of these variables are strongly correlated with Catholic school attendance, they also appear to have independent effects on civic participation. Therefore, I included both variables as controls.

The 2SLS results presented here rely on an alternative instrumental variable, a binary indicator for whether there was any Catholic high school in the respondent's base-year county. This variable is similar to the density index used by Neal (1997). However, this simple measure has more precisely estimated effects on Catholic school attendance. And it captures what may be a more exogenous component of Catholic school availability (i.e., the mere presence instead of the density). More specifically, historical accounts of the development of Catholic schooling indicate that the current geographic pattern of Catholic schooling was largely established in the late 19th and early 20th centuries in response to the large waves of European immigration (e.g., Hunt and Kunkel, 1984). In 1980, the top 20 dioceses in the United States had roughly 45 percent of all Catholic-school enrollments

Table 4. OLS estimates from linear probability models of Catholic school attendance.

Independent variable	(1)	(2)	(3)	(4)	(5)
Catholic high school in county	.180‡	.165‡	.173‡	.184‡	.179‡
	(.016)	(.015)	(.024)	(.028)	(.028)
R^2	.2251	.2454	.2554	.3127	.3212
Family/parental controls (17)	No	Yes	Yes	Yes	Yes
Urbanicity dummies (2)	No	No	Yes	Yes	Yes
State/county-level controls (6)	No	No	No	Yes	Yes
Census division dummies (8)	No	No	No	No	Yes

The sample size is 12,289. All models include binary indicators for gender (1), age (1), race/ethnicity (3) and Catholic religion (1). Standard errors, adjusted for school-level clustering, are reported in parentheses.
*Statistically significant at the 10-percent level.
†Statistically significant at the 5-percent level.
‡Statistically significant at the 1-percent level.

(McLellan, 2000). The communities with Catholic high schools readily available appear to be well-represented in the HS&B data; 72 percent of respondents were from counties with at least one Catholic high school.

In Table 4, I present OLS estimates of how this variable influenced the probability of attending a Catholic high school. These estimates indicate that the respondents in counties with any Catholic high school were 17 to 18 percentage points more likely to attend a Catholic high school. These point estimates are precisely estimated and statistically distinguishable from zero. Interestingly, these estimates are largely invariant across specifications that dramatically increase the set of control variables (Table 4). The results in Table 4 clearly demonstrate that this instrument appears to generate substantial variation in the choice to attend Catholic schools. However, a second and more controversial maintained assumption is that this variable does not also reflect other determinants of adult civic engagement (i.e., that they can be legitimately excluded from the outcome equations).

I turn to this question in detail below. But, assuming for now that these exclusion restrictions are valid, I present, in the first column of Table 5, 2SLS estimates based on this instrument. These estimates are based on the fully saturated specification (i.e., as in Model (5), Table 4). The results suggest that attending a Catholic high school significantly increased the adult probability of being registered to vote and having voted in the last 12 months. The estimated effect on having voted in 1988 is positive but small and statistically indistinguishable from zero. The estimated effect on adult volunteering is negative and statistically indistinguishable from zero.

These 2SLS estimates suggest that Catholic schooling does have a positive, causal effect on adult voter participation. Furthermore, these results suggest that these effects are actually substantially larger than those implied by single-equation probits (i.e., Table 1). One possible explanation for these large point estimates is that they reflect the particularly large benefits of Catholic schooling for the respondents whose "treatment status" was switched by having

Table 5. 2SLS estimates of the effects of Catholic schooling on civic participation.

Dependent variable	2SLS estimate	p-value: H_0: $\beta_{OLS} = \beta_{2SLS}$	Bias 1	Bias 2	Bias 3	Bias 4
Registered to vote	.187†	.2054	.065	.018	.066	.020
	(.089)		(.099)	(.100)	(.097)	(.098)
Voted in last 12 months	.195†	.1462	.144	.108	.146	.113
	(.090)		(.100)	(.101)	(.098)	(.099)
Voted in 1988 Presidential election	.015	.3451	−.106	−.158	−.097	−.151
	(.092)		(.105)	(.106)	(.105)	(.107)
Volunteered in last 12 months	−.058	.4326	−.019	−.052	−.019	−.053
	(.089)		(.095)	(.096)	(.095)	(.096)

All models include binary indicators for gender (1), age (1), race/ethnicity (3), Catholic religion (1), family/parental controls (17), urbanicity dummies (2), state/county-level controls (6) and Census division dummies (8). Standard errors, adjusted for school-level clustering, are reported in parentheses. Bias 1 is based on those who reported attending a public 8th grade ($n = 8{,}308$); bias 2 also excludes those who did not attend a Catholic high school ($n = 7{,}869$). Bias 3 is based on those who reported attending a public 5th grade ($n = 8{,}228$); bias 4 also excludes those who did not attend a Catholic high school ($n = 7{,}708$).

*Statistically significant at the 10-percent level.

†Statistically significant at the 5-percent level.

‡Statistically significant at the 1-percent level.

a Catholic high school within the county (i.e., a local average treatment effect, Imbens and Angrist, 1994). However, the relevance of these differences should not be overstated since they are small relative to the sampling variation. More formally, Hausman tests indicate that none of the 2SLS estimates in Table 5 are statistically distinguishable from the corresponding OLS estimates.

4.2. Assessing the Exclusion Restrictions

The key maintained assumptions of the 2SLS results presented in Table 5 are that the instrument influences the decision to choose Catholic schools (e.g., through lowering the effective costs) but is otherwise unrelated to adult civic outcomes. The latter assumption is particularly critical; these inferences will be inconsistent to the extent that the instrumental variable reflects unobserved determinants associated with these outcomes. The basic anecdotal case for the exogeneity of the instrumental variable is that the historical factors determining whether HS&B respondents lived in a county with a Catholic high school generally preceded those students by several decades. However, there are several reasons to be suspicious of this line of reasoning.

For example, the Tiebout-style mobility of families could confound this identification strategy. More specifically, if families with an unobserved propensity for civic engagement are also more likely to move to communities with Catholic high schools, these inferences would overstate the civic benefits of Catholic high schools. Furthermore, despite its long historical origins, the presence of a Catholic high school in a county may indicate that a

community independently has a relatively high level of civic engagement. One reason to suspect that such orthogonality violations may have limited consequences is rooted in the highly precise first-stage effects of the instrument. Specifically, Bound, Jaeger and Baker (1995, equation (7)) show that the inconsistency in IV estimates relative to OLS estimates is decreasing in the correlation between the IV and the endogenous regressor. This implies that minor orthogonality violations won't generate substantive biases in the presence of an IV with a good deal of first-stage explanatory power. The F-statistic for the first-stage significance of this IV is slightly over 40.

However, I directly assessed the empirical relevance of these concerns in three ways. First, I evaluated the robustness of the 2SLS results in Table 5 across specifications that incrementally introduced the additional controls. The results indicated that the estimated effects of Catholic schooling the first two measures of voter participation were quite similar across the five specifications. Second, an ad-hoc way to examine the quality of the instrument is to assess how it varies with other prominent determinants of civic participation. The nature of this "selection on observables" may suggest how the instrument varies with the unobserved determinants of adult civic participation (Altonji, Elder and Taber, 2002). Perhaps the most obvious choice of an observable is the 1980 voter turnout in the county of each respondent's high school. I estimated an auxiliary regression where this turnout rate was the dependent variable and which included the full set of controls (e.g., as in model (5) in Table 1). The results indicated counties with a Catholic high school had a weakly significant, *negative* relationship with the turnout rate (t-statistic = 1.87). Similar auxiliary regressions indicate that the instrument has a negative (but insignificant) relationship with other strong predictors of future civic engagement (e.g., attitudes towards inequality, scores on base-year civics exam). The signs of these estimates suggest that violations of the exclusion restrictions may actually impart a negative bias to the estimates in Table 5 (which would not confound the voting results).

Recent research by Altonji, Elder and Taber (2002) suggests a third and relatively straightforward way to assess the size and significance of the 2SLS bias generated by a possibly contaminated instrument. This approach is motivated by the observation that, for students who attended a public school for 8th grade, the availability of Catholic high schools is largely irrelevant. Very few students who attended public schools for 8th grade went on to attend Catholic high schools.[17] If we ignore momentarily the non-random nature of the public-school 8th graders, we can use this sub-sample to estimate the bias associated with poor instruments. More specifically, among the public 8th graders, the reduced-form effect of a candidate instrument, Z, should be zero if the exclusion restriction is valid. However, if an instrument appears to have a large reduced-form effect, it would clearly imply that the instrument influences adult civic participation independently of its effects on Catholic-school attendance (i.e., $\text{cov}(Z, \varepsilon) \neq 0$). A straightforward way to assess the direction and magnitude of the bias in a 2SLS estimate is to recognize that the IV estimate in a just-identified models like these equals the ratio of the reduced-form and first-stage effects of Z (i.e., $\beta_{IV} = \beta_{RF}/\beta_{FS}$). The 2SLS bias can, therefore, be calculated by dividing the reduced-form effect based on the public 8th grade sample by the first-stage estimate. Alternatively, the amount of bias can be identified more directly by the estimating the parameter, δ, in the

following, stylized, reduced-form model:

$$Y_i = X_i'\alpha + (Z_i\hat{\beta}_{FS})\delta + \nu_i \quad (2)$$

As suggested above, the key practical problem with this type of bias calculation is that the reduced-form estimates may be biased by the non-random selection of students out of public schools. Altonji, Elder and Taber (2002) argue that, in the context of student achievement, this pattern of selection should impart a downward bias to the bias estimates. A similar argument is likely to apply here. More specifically, the positive selection of students into Catholic schools implies that those who remain in the public 8th grade sample despite a large Z have an unobserved propensity for lower civic participation. This non-random selection implies that the estimates of δ from equation (2) will be negatively biased and, therefore, imply a lower bound on the 2SLS bias. Since the choice of a middle school and a high school may often be viewed as a single choice, I also construct these bias estimates using the respondents who attended public schools for 5th grade. Another complication is that roughly 5 percent of those who said they attended a public 8th or 5th grade also attended a Catholic high school as sophomores. Because these respondents actually attended a Catholic high school, they may impart a large positive bias to the bias estimates. Therefore, I also report bias estimates based on equation (2) and samples that exclude these respondents.

The results of these bias estimates are reported in the right-hand columns of Table 5. For the first two measures of adult voter participation (voter registration and voted in the last 12 months), the estimated biases in the 2SLS estimates are positive and, in some cases, fairly large, suggesting that the 2SLS results may overstate the civic benefits of Catholic schooling. However, none of these estimates are statistically distinguishable from zero. And the suggested 2SLS bias for the estimated effect on having voted in 1988 is negative.

5. Conclusions

The promotion of adult civic engagement is widely viewed as one of the fundamental goals of public schooling in the United States. Yet we have had surprisingly little evidence on the relative effectiveness of public schools in fostering important civic outcomes. In this study, I presented new, empirical evidence on this issue by assessing the effects of Catholic schooling on measures of adult civic participation. I found that students who attended Catholic high schools were substantially more likely to vote, though not volunteer, as adults and that these relationships were robust to conditioning on an unusually rich set of control variables. I also presented 2SLS estimates that relied on the geographic availability of Catholic high schools as an instrumental variable. The 2SLS estimates based on this identification strategy suggested that Catholic schooling had large effects on adult voter participation.

However, the lack of a truly incontrovertible instrument for Catholic school attendance implies that this study's evidence about the civic benefits of Catholic schooling is necessarily qualified. Nonetheless, I would still argue that this study's findings make a substantive

contribution to the extant literature and ongoing policy debates. The value of this evidence turns on the importance of "knowing what we do not know." For example, the critical assumption that has historically motivated the United States' extensive system of publicly produced schooling is that private schools would harm civic engagement. Similarly, critics of voucher initiatives and charter schools have alleged such policies would create a "republic of privately school narcissists blind to what they share" (Barber, 2004). The results presented here indicate that this assumption is at best unsubstantiated, at least with regard to the most prevalent type of private schools (i.e., Catholic schools) and the most commonly used measure of civic engagement (i.e., voter participation).

The evidence presented here also has policy implications in light of society's resurgent interest in fostering civic engagement. An assumption that has motivated policy-making in this area is that public schools have become ineffective at promoting civic engagement. For example, in introducing "The American History and Civics Education Act," Senator Lamar Alexander recently suggested that public schools have abandoned their traditional function of promoting shared civic norms and noted the evidence from national exams suggesting that that a third of students are "civic illiterates." The evidence presented here is consistent with the notion that public schools are not as effective as they should be with respect to their fundamental civic goals.

However, three additional caveats should also be noted. First, this study examined the effects of Catholic schooling on adult civic participation but not on civics-related attitudes. A reasonable concern is that this study's inferences may be misleading since Catholic schooling could promote civic participation but simultaneously reduce political tolerance and respect for democratic pluralism. The lack of a large, nationally representative survey that simultaneously provided data on Catholic school attendance and such adult outcomes meant that this issue could not be addressed directly. However, the limited evidence available from recent studies of student-level data suggests that this concern is not empirically relevant. In particular, Campbell (2001) presents weakly significant evidence that, conditional on an extensive set of individual, family and school-level controls, students at Catholic schools actually exhibit more political tolerance than students in public schools (i.e., more support for free speech against religion, less support for banning books).

A second caveat is that these results do not provide evidence on exactly why attending a Catholic high school might promote adult civic engagement. However, some simple calculations suggest that the civic benefits of Catholic schooling are not simply due to additional human capital. For example, Altonji, Elder and Taber (2000) present evidence Catholic schools increase the likelihood of attending college by 15 percentage points at most and probably by much less. And Dee (2004) presents evidence that college attendance increases adult voter participation by as much as roughly 20 percentage points. These combined results suggest that the additional human capital generated by Catholic schooling would increase adult voter participation by 3 percentage points (i.e. 0.15×0.20) at most. The estimated reduced-form effects of Catholic schooling on adult voter participation are at least twice as large (Table 1). This suggests that a substantial amount of the Catholic-school effect is due to other factors (e.g., increased exposure to social capital, changes in adult peers or more successful school indoctrination in civic responsibility).

A third and especially important caveat is that the apparent civic consequences of Catholic schooling documented would not necessarily generalize to other types of private schools. In particular, there is suggestive evidence that private, religiously affiliated, non-Catholic schools simultaneously promote civic participation but reduce political tolerance (Campbell, 2001). The low enrollment shares of such schools imply that their possibly pejorative civic consequences are attenuated. Nonetheless, this evidence suggests comparisons of public and private schools should be careful to acknowledge the heterogeneity among private schools.

Data Appendix: High School & Beyond (HS&B)

HS&B, one of the U.S. Department of Education's major longitudinal studies (Ingels and Baldridge, 1995), began with 1980 high school sophomores and seniors. The base-year samples were based on a two-stage, stratified, probability design. In the first stage, high schools were chosen. Certain types of schools (e.g., those with large Hispanic enrollments, Catholic schools with large minority enrollments) were oversampled (Zahs et al., 1995). In the second stage, as many as 36 sophomores were randomly chosen from participating schools. The initial HS&B sample included over 30,000 high school sophomores from 1,105 schools. Follow-up interviews of a stratified sample of the original sophomore cohort occurred in 1982, 1984, 1986 and 1992. This study is based on the 12,640 respondents from the sophomore cohort who participated in the fourth (1992) follow-up interview. The interviews for the fourth follow-up occurred from February 1992 through January 1993. Some observations were deleted because they attended non-Catholic private schools ($n = 351$). Of the remaining 12,289 respondents, almost all answered the 4th follow-up questions on voting and volunteering (see Table A1). The extract includes basic information on the gender, race/ethnicity, age, and religious affiliation of the respondents. This extract also includes base-year information for each respondent on family income (9 categories), highest parental education (5 categories), family structure (6 categories) and the urbanicity of the high school area (3 categories). The other base-year variables are a standardized score on a civics test, a question about inequality, the mean SES of sampled peers in each base-year school and four binary indicators for frequency of attendance at religious services. The 1980 attitudinal question on the importance of correcting social/economic inequality has three possible responses: not important (1), somewhat important (2) and very important (3). These HS&B respondents were also matched by the location of their base-year school to 1980 county-level data on voter turnout, adult educational attainment and the percent of county workers using public transportation, which were drawn from ICPSR study number 8314. The 1980 data on Catholic adherents by county are described in Quinn et al. (1982) and were combined with 1980 Census data to calculate percent Catholic. Data on Catholic high schools by county were drawn from a 1979 directory published by the National Catholic Educational Association (see Neal, 1997; Grogger and Neal, 2000) and matched to county-level data on land area (ICPSR study number 8314). Data on state-level voter regulations in 1992 were taken from Knack (1995, Appendix B).

Table A1. HS&B variables and means.

Variables (Survey year)	Mean	Sample size
Currently registered to vote (1992)	.66	12,159
Voted in past 12 months (1992)	.35	12,225
Vote in 1988 Presidential election (1992)	.54	12,159
Any volunteer work in last 12 months (1992)	.37	12,284
Attended Catholic school (1980)	.19	12,289
Attended Catholic school with waiting list (1980)	.09	11,436
Attended Catholic school without waiting list (1980)	.09	11,436
Attended Catholic school with entrance exam (1980)	.15	11,283
Attended Catholic school without entrance exam (1980)	.03	11,283
Attended public school in 8th grade	.79	10,469
Female	.52	12,289
Black	.13	12,289
Hispanic	.21	12,289
Other Race	.05	12,289
Older (Born before 1964)	.29	12,289
Catholic	.39	12,289
Family income missing	.23	12,289
Family income <$8,000	.06	12,289
Family income $8,000 to $14,999	.12	12,289
Family income $15,000 to $19,999	.10	12,289
Family income $20,000 to $24,999	.11	12,289
Family income $25,000 to $29,999	.13	12,289
Family income $30,000 to $39,999	.13	12,289
Family income $40,000 to $49,999	.07	12,289
Family income $50,000 or higher	.08	12,289
Parent education missing	.17	12,289
Parent high school dropout	.29	12,289
Parent high school graduate	.20	12,289
Parent some college	.21	12,289
Parent college graduate	.14	12,289
Single mother	.14	12,289
Single father	.03	12,289
Natural mother/stepfather	.06	12,289
Natural father/stepmother	.02	12,289
Other family structure	.11	12,289
Both parents	.66	12,289
Urban school	.23	12,289

(*Continued on next page*.)

Table A1. (*Continued*).

Variables (Survey year)	Mean	Sample size
Suburban school	.51	12,289
Rural school	.26	12,289
Attends religious services at least once a week	.41	12,289
Attends religious services at least a few times a year	.31	12,289
Never attends religious services	.14	12,289
Attendance at religious services missing	.15	12,289
Mean SES of base-year school peers	−.09	12,288
Community orientation score	.02	11,121
Civics standardized score	50.6	10,366
Highest attainment—High school graduate	.49	11,775
Highest attainment—Associate's degree	.09	11,775
Highest attainment—Bachelor's degree	.28	11,775
1980 County-level percent Catholic	.24	12,289
1980 County-level votes for President ÷ 18 + population	.53	12,289
1980 County-level percent high school graduates among 25+ population	.66	12,289
1980 County-level percent workers using public transportation	.08	12,289
1979 Catholic high school in county	.72	12,289

Acknowledgments

I would like to thank Cecilia Rouse, seminar participants at Princeton, the National Young Faculty Leaders Forum at Harvard and the National Academy of Education and three referees for helpful comments. I would also like to thank Derek Neal for providing data on Catholic high schools and the National Academy of Education, the Spencer Foundation and the Center for Information and Research on Civic Learning and Engagement (CIRCLE) for their financial assistance. The usual disclaimers apply.

Notes

1. Furthermore, the public production of schooling may reduce possibly wasteful private-sector competition (Frank, 1996) as well as limit normatively undesirable private-sector responses to the negative externalities created by unruly or low-achieving children (Poterba, 1996). Fischel (2002) argues that public schools also promote valuable and community-specific social capital.
2. Grogger and Neal (2000) find similar results in an analysis based on more recent data from the National Education Longitudinal Study of 1988 (NELS88).
3. Very few of the students who attended public 8th grade went on to attend a Catholic high school. Furthermore, Altonji, Elder and Taber (2002) argue that the possible selection biases created by looking at this non-random sub-sample make the case against the conventional instruments even stronger.
4. In that analysis, the authors limit the variation in possibly confounding unobservables by focusing on the sub-sample of respondents who attended a Catholic school for 8th grade.

5. This analysis was based on data from the National Education Longitudinal Study of 1988 (NELS88) and controlled only for socioeconomic status and class racial composition.
6. Specifically, I found that, conditional on the set of individual, family and community observables introduced below, the predicted likelihood of voter participation was 6 to 10 percentage points higher among those who chose to enter Catholic schools. To the extent that this selection on observables has the same sign as the selection on unobservables, positive selection biases are indicated.
7. This distinction may be an important one if Catholic schools exert more coercive effects on student activity and attitudes that do not necessarily persist into adulthood.
8. See the data appendix for further information on the study and the extract used here.
9. This percentage is high because Catholic schools with large minority enrollments were oversampled (Zahs et al. 1995).
10. Bivariate probits generate results similar to 2SLS models. However, I focus on the 2SLS results since they correspond more directly with the bias estimates (Altonji, Elder and Taber, 2002).
11. Several of these variables have been used as instrumental variables for attending Catholic school. However, I found that, in this context, these candidate instruments violated the exclusion restriction.
12. "Motor-voter" regulations bundle an application for voter registration with those for driver licenses. All states were required to institute "motor-voter" policies by 1995 as part of the National Voter Registration Act. It should also be noted that North Dakota does not have voter registration. The results reported here are robust to excluding observations from respondents who attended high school in that state.
13. One concern with this result is that it reflects a downward bias due to lower levels of church-related volunteering among those who attended Catholic schools. However, I find similar results (Table 7) in models based on NELS88 data, which discriminated between types of volunteering (e.g., youth organizations, civic organizations and political volunteering).
14. Because data are missing for some of these variables, the sample sizes vary across these models. See the appendix for details on each variable.
15. That difference is reasonable since nearly all of the HS&B responses occurred before the November 1992 general election.
16. And, in models that include state fixed effects, the effects associated with Catholic schools with and without entrance exams are not significantly different. However, the waiting-list results from such specifications are entirely similar to those reported in Table 3.
17. Though HS&B began with sophomores, the first follow-up interview included a retrospective question about the type of school attended for 8th grade. Altonji, Elder and Taber (2002) report that only 0.3% of NELS88 respondents who attended a public 8th grade went on to Catholic high schools. In HS&B, which over-sampled Catholic schools with large minority enrollments, this percentage is higher (i.e., 5%).

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