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# Nuns and the effects of catholic schools. Evidence from Vatican $II^{\scriptscriptstyle{\Leftrightarrow}}$



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#### ABSTRACT

This paper examines the causal effects of Catholic school attendance on educational attainment. Using a novel instrumental-variable approach that exploits an exogenous shock to the US Catholic school system, we show that the positive correlation between Catholic school attendance and student outcomes is explained by selection bias. Spearheaded by the universal call to holiness, the reforms that occurred at the Second Vatican Council produced a dramatic exogenous change in the cost/benefit ratio of religious life in the Catholic Church. Using the abrupt decline in the number of Catholic sisters as an instrument for Catholic school attendance, we find no evidence of positive effects on student outcomes.

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#### 1. Introduction

Several empirical studies attempted to assess whether private schools provide better education than public schools. This question is crucial in the debate on public versus private schools and, more generally, on the effectiveness of school choice. Advocates of school competition and vouchers often rely on research evidence suggesting positive effects of private school attendance on educational outcomes. Most researchers analyzing the effectiveness of private schooling in the US have focused their attention on the role of Catholic schools for two reasons. First, Catholics schools in the US account for the largest share of private schools. In 2014, about 49.8 million children attended public schools; 4.5 million children attended private schools, with 2 million in Catholic schools (source: National Catholic Education Association). Today, Catholic schools account for 41.3% of private school attendance, but in the 1950s, more than 80% of the total number of private schools were Catholic (source: National Center for Education Statistics). As discussed by West and Woessmann (2010), the historical resistance of Catholic church to state schooling had a major role in determining the development of private schools and is an important predictor of the contemporary private competition across countries. Second, the striking findings of James Coleman and coauthors (Coleman et al., 1982) showing that student attending Catholic high-

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schools performed significantly better than public school students on standardized tests – even after controlling for family characteristics – generated great interest and an intense debate in the public arena and among researchers. While most of the studies have focused on the US, similar findings have been found in other countries (Vella, 1999; Bedi and Garg, 2000; Hsieh and Urquiola, 2006; West and Woessmann, 2010). Yet, more than thirty years after the Coleman study, the question of whether these results are entirely explained by selection bias or reflect a causal mechanism remains open.

There is a substantial consensus on the positive correlations between Catholic school attendance and educational outcomes. However, a causal interpretation of these findings has been severely limited by the spurious correlation between Catholic school attendance and other unobserved characteristics that may affect educational outcomes. Most of the previous studies attempted to estimate the effects of Catholic school attendance on student outcomes using different instrumental variable (IV) strategies (e.g., religious affiliation, distance from the Catholic schools, density of Catholic population), and found evidence of positive effects of Catholic school attendance on high school graduation and college attendance rates (Coleman et al., 1982; Neal, 1997; Evans and Schwab, 1995). More recently, Altonji et al. (2005) cast doubt on the holding of the exclusion restrictions for the proposed instruments suggesting to use selection on the observed characteristics to estimate the potential selection on the unobservables. Following this approach, Altonji et al. (2005) found positive effects of Catholic school attendance on high school graduation and college attendance, but their results suggest smaller effects than previous studies and no evidence of significant effects on test scores. Adopting similar techniques, Elder and Jepsen (2014) find evidence of negative effects of Catholic primary school attendance on math scores, while Gibbons and Silva (2011) show that the advantage of pupils in Faith primary schools in the UK is explained by sorting into Faith schools according to pre-existing characteristics. Cohen-Zada and Elder (2009) proposed an alternative instrument based on the historical Catholic concentration in a county. They argued that historical Catholic shares are much more likely to be exogenous to student outcomes than previous instruments used in the literature. Their results are similar to those of Altonji et al. (2005). One of the limits of previous instrumental strategies is that they ultimately rely on cross-sectional variation.

We contribute to the literature using a new strategy which relies on the effects of an important and unexpected event in the history of Catholic Church: the Second Vatican Council (Vatican II). Scholars refer to Vatican II as the most significant institutionalized religious change since the Reformation. Most importantly for our identification strategy, historians agree that not only the announcement of the Council but the changes that came from it were largely unexpected. Indeed, when the Council was announced by John XXIII in 1959, the Roman Curia, the cardinals and bishops in charge of the Church's government, defenders of tradition and status quo seemed to be at the maximum of their power. Furthermore, most of the reforms approved at the Council were irrelevant to the laypersons. Thus, historians have largely ruled-out conventional political and sociological explanations of institutional changes based on power, economic interests, or popular pressure. Among the several documents and dogmatic constitutions approved at the Council, one in particular, the Lumen Gentium, changed the doctrine related to the life of religious men and women substantially nullifying the difference between religious life vocations and lay-life vocations. With the universal call to holiness and the opening to lay leadership, the Vatican II reforms in the early 1960s inadvertently produced a dramatic change in the cost/benefit ratio of religious life and drained Catholic schools of critical human capital. Between 1966 and 1980, the number of Catholic sisters (nuns) was reduced by more than 30%. This unexpected collapse was followed by a parallel decline in the number of Catholic schools in operation.

Following the decline in the number of Catholic sisters, the share of religious teachers in Catholic schools fell by more than 50%. Because religious teachers were paid, on average, one-third the amount that lay teachers were paid, the sudden and rapid shift in personnel imposed severe financial constraints on Catholic schools and forced many schools to close. The closure of Catholic schools was mostly caused by supply effects and was not driven by changes in the demand for Catholic school attendance (Caruso, 2012). Consistent with this, we show that the decline in the number of Catholic sisters is unrelated to changes in the number of Catholic adherents, parishes, and priests. The decline in the supply of Catholic sisters was also more marked in dioceses that were more exposed to the reforms that occurred at the Second Vatican Council. Stark and Finke (2000) suggest that the heterogeneous decline in the number of Catholic sisters is partially explained by the unpredictable reactions of local bishops to the "religious earthquake" occurring in Rome. We use the sudden shock to the supply of Catholic sisters and its heterogeneous impact across US dioceses as an exogenous instrument for Catholic school attendance. Differently from previous instrumental variable strategies adopted in the literature, this approach allows us to control for both local area fixed effects, which account for time-invariant characteristics, and cohort fixed effects, which capture any systematic difference in school outcomes across cohorts. At the same time, we control for a set of local-area time-varying characteristics. In addition, the focus of extant literature has been on the effectiveness of Catholic high schools. However, little is known about the effectiveness of Catholic primary schools. This paper focuses on the effects of Catholic school attendance on grade repetition of students aged 7–15 years of age, and contributes to a recent set of studies on the effectiveness of Catholic primary schools (Elder and Jepsen, 2014; Gibbons and Silva, 2011; Reardon et al., 2009; Lubienski et al., 2009; Carbonaro, 2006).

To conduct this analysis, we assembled a unique dataset based on the diocesan records of Catholic sisters, priests, and schools from 1960 to 1980, which was drawn from the Official Catholic Directory (OCD). We use these data to document the trends in the human assets of the Catholic Church and Catholic schools before and after the Second Vatican Council. We then merge the diocesan data with US Census information for different cohorts of students who were in school between 1960 and

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