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# Papers, please! The effect of birth registration on child labor and education in early 20th century USA



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#### Abstract

A birth certificate establishes a child's legal identity and age, but few quantitative estimates of the significance of birth registration exist. Birth registration laws were enacted by U.S. states in the 19th and early 20th centuries. Using 1910–1930 census data, this study finds that minimum working age legislation was twice as effective in reducing under-aged employment if children had been born with a birth registration law, with positive implications for school attendance. There is some evidence that registration laws also improved the enforcement of schooling laws for younger children. A retrospective analysis with the 1960 census shows that the long-term effect of registration laws was to increase educational attainment by approximately 0.1 years. © 2013 Elsevier Inc. All rights reserved.

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#### 1. Introduction

"The necessity for vital statistics is felt in nearly every phase of human existence. Especially is this true in matters of demography, in that of estates, in establishing property rights of inheritance, insurance and pensions. They are important factors in medico-legal sense, i.e. in their bearing upon the laws governing child labor, the age of consent etc." (State of Nevada, 1912, p. 37). This quote from a Nevada Board of Health report for 1912 illustrates the growing recognition of the multiple uses and importance of records on vital events, such as birth certificates, in early twentieth century USA.

State-level laws and institutions for birth registration were established across U.S. states in the 19th and early

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20th centuries. The purpose of these laws was to ensure that births were registered, records existed centrally and that certificates of birth were made available. Today, in most developed countries, the registration of native births is taken for granted. However, in many developing countries, a significant proportion of children are born and live unregistered (see e.g. UNICEF, 2011).

A birth certificate establishes a person's legal identity and functions as official proof of age (see e.g. Todres (2003)). Historians have discussed the significance of birth registration as an important, but neglected institution for economic development. Szreter (2007) describes the importance of parish registers in England between the 17th and 18th centuries in the process of verifying property and inheritance rights as well as social security claims (the Poor Laws). Higgs (1996) suggests that the need to clarify property rights lies behind the establishment of civil registration systems in Britain in the 19th century. The

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timely registration of births and deaths generates accurate figures on the population and the prevalence of disease and mortality and is therefore considered important from a medical perspective (see e.g. Mahapatra et al., 2007). However, statistical studies establishing causal connections between registration systems and economic and social outcomes hardly exist (see Corbacho et al., 2012 for a recent exception).

This study provides a quantitative analysis of the relevance of birth registration laws for the enforcement of child labor and schooling laws in a historical context, focusing on early 20th century USA. It examines whether legal age requirements were more effective in reducing under-aged employment and in raising school attendance of school-aged children, when birth certificates were available as proof of age.

The incidence of child labor in the U.S. declined significantly in the early 20th century. The roles played by compulsory schooling laws and child labor laws in either educational attainment, or in the incidence of child labor in the U.S., have been studied previously (see e.g. Angrist and Krueger, 1991; Brown et al., 1992; Goldin and Katz, 2011; Lleras-Muney, 2002; Manacorda, 2006; Margo and Finegan, 1996; Moehling, 1999; Osterman, 1979). Econometric studies indicate that the laws may have been relevant for raising education levels, or for reducing child employment, but that their contribution was not large. Child labor and schooling laws have also been used as instrumental variables for education in studies on the effects of education on outcomes such as crime, mortality and voting (e.g. Lleras-Muney, 2005; Lochner and Moretti, 2004; Milligan et al., 2004). However, the economic literature on these laws has so far ignored the role of birth registration in the enforcement of such legislation.<sup>2</sup>

The core part of the analysis in this study utilizes individual-level data from 1% samples of three U.S. federal censuses: for 1910, 1920 and 1930 (IPUMS-USA, Ruggles et al., 2010). The 1960 census is also used to study the longer term implications for educational attainment. The census does not contain information on whether the birth of an individual had been registered. However, support for the argument that individuals were significantly more likely to have had their births registered if they had been born after the enactment of a state birth registration law, can be found in historical documents. At this point in time, if births were registered,

this happened early in the child's life. Delayed registration of births was not a standard practice until the early 1940s in the U.S., when economic necessities led to states adopting standard procedures for delayed birth registration (see Hetzel, 1997; Landrum, 2010).

The econometric analysis exploits the difference in the timing of the enactment of state birth registration laws across states. Whether a child was born with a registration law in place depended on his, or her, year of birth and state of birth. The minimum working age and compulsory schooling age varied depending on the child's state of residence and sample year. The effects of registration laws are identified using models that control for state and cohort specific effects as well as linear state-specific trends. Therefore, the identifying assumption is that non-linear trends in unobservable state-specific variables are not correlated with the timing of birth registration laws. Models with additional time-varying control variables are estimated and specific falsification tests conducted to analyze the validity of the assumption.

The analysis on child labor focuses on the 1910–1930 census data and on 12–15 year old children. The findings suggest that the minimum working age legislation did reduce the tendency of under-aged children to work in relation to the work-eligible. However, the law was at least twice as effective when children had been born during or after the year when their state of birth had enacted a birth registration law. Those below the minimum working age were also more likely to report having attended school when they had been born with rather than without a birth registration law in place.

The compulsory schooling age is not found to be a relevant factor for child employment, or school attendance for 12–15 year olds, after minimum working age is controlled for. The inclusion of birth registration laws in the analysis does not change the conclusion. However, in the case of younger children (6–11 year olds), those who had reached the compulsory schooling age were more likely to report attending school if they had been born with a registration law in place. Finally, the 1960 U.S. census is used to show that among individuals born between 1896 and 1925, those born with a birth registration law had approximately 0.1 more years of education than those born before a birth registration law.

# 2. Birth registration laws and child labor and schooling laws in the U.S.

#### 2.1. Development of birth registration systems

The roots of modern registration systems in the USA lie in the need for statistics for medical purposes in the

<sup>&</sup>lt;sup>2</sup> In this connection it should be noted that the author is aware of an unpublished study by Puerta (2010) on the effects of child labor laws on the value added in the U.S. manufacturing sector, where a robustness check takes into account whether the child labor law required documentary proof of age.

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