

How do Federal Dollars Spent Impact Returns to Primary and Secondary Education?

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Abstract

This study examines the impact of federal dollars spent on education. Using National Income and Product Accounts education spending data and Integrated Postsecondary Education Data demographic college enrollment indicators from 2000-2017, this research will employ an event – study, panel Vector – Auto regression to determine the recursive impact of federal education spending on college enrollment. Specific aims in this project involve analyses demarcated by advantages resulting from race and gender. Further, this study analyzes the Elementary and Secondary Education Act, and Common Core State Standards as random shocks to federal spending to see whether policy or state standard have been helpful in aiding educational disparities. Findings indicate decentralized policies or standards must necessarily be aligned with centralized policy in order to be effective in the U.S.; moreover, there is work to be done to help improve outcomes for all demographic groups.

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Introduction

Social justice reform is ever more prevalent since the 2020 death of George Floyd, and undoubtedly reform in United States’(US) education system can foster at least one needed aspect of social change within society. An economy where opportunities in education thrive is attractive. Specifically, prevailing as a nation where education is easily accessible for all has the potential to reduce crime rates, lower health care costs, increase voter participation and civic engagement, foster rapid economic growth (Grosskopf, Hayes, & Taylor, 2014), and change wealth and income expectations for minorities (Francis & Weller, 2021).

Recently, the “Accountability Movement” (AM) has had strong impact on local government spending and education support, but is it working? The “No Child Left Behind Act” (NCLB, 2002 – 2007) later replaced by “Every Student Succeeds Act” (ESSA, 2017 – 2021) coupled with Common Core State Standards (CCSS, 2014 – Present), has induced funding allocations at the state level that places accountability squarely on the shoulders of parents and teachers of public-school students. These programs are assumed to be successful as they have improved Adequate Yearly Progress (AYP) among minorities (Hemelt 2011). However, some unintended consequences from these policies and standards are: parents do not always have access to information about school choice (Lovenheim, & Walsh, 2018), and neighborhood flight from poorly performing schools redistribute local talent and resources (Bogin, & Nguyen-Hoang, 2014). In addition, accountability and accessibility are constantly at odds (Aske, Connolly, & Corman, 2013), while disgruntled politicians and parents (Wang, Fikis 2019) lament over decentralized standards set by “the wealthy” (Rogers, 2015).

An appropriate way to measure the effectiveness of the AM is to measure returns to the education investment resulting from federal education funding. One implicit return is a student’s

ability to enroll in college. That is, if a student is adequately supported in their formative years, then it is reasonable to expect they can go on to attend college regardless of their demographic differences. Still, Hanson (2017) reports:

While 66.6% of whites age 18 – 24 report either having attended, being currently enrolled, or already completed college, only 51.6% of African American young adults report the same. The difference between genders is nearly as stark, with 66.2% of females age 18–24 reporting either having attended, being currently enrolled, or already completed college, and only 54.9% of male young adults reporting the same.

Hanson (ibid) also asserts:

... pre-existing group characteristic differences (including income, preparation, prior schooling, etc.), application and search differences, institutional experience differences, societal events, social norms, and policy impact a student's ability to enroll in college.

These declarations are supported by evidence that merit-based state aid does not increase enrollment (Gurantz, & Odle, 2021); whereas, merit-based achievement is likely a function of adequate environmental support in a student's formative years. Also, evidence on disparities in enrollment arising from free and reduced lunch (Bloem, Pan, & Smith, 2021), can be easily be attributed to demographic differences during the same period.

Insofar as formative years education and support can be captured in federal education spending, the purpose of this study is to measure its impact on accessibility to higher education in the US. The contribution of this study is it assesses the transmission channel resulting from a shock to education spending and assumes it can produce adequate conditions for college enrollment as a return. This can be explained as $\frac{\partial \text{Enrollment Activity}}{\partial \text{Federal Education Spending}}$, which in summary states that, for every

additional billion dollars of state education spending distributed at the federal level, there is an additional incurrence of enrollment among demographic groups. The recursive impacts of federal spending on enrollment should tell a story about realized returns to the AM.

This paper is organized as follows. The next section will provide a brief economic model and briefly mention the data. The subsequent section will summarize results. The final section will discuss and conclude.

Economic Model and Data

To identify policy shocks impacting education spending the following structural panel vector auto-regression (PVAR) is estimated:

$$Y_{it} = \beta_{it} + A(L)Y_{it-1} + e_{it}$$

Y_{it} is the vector of economic variables including a binary AM event variable, a state education spending variable in 2012 dollars (National Income and Product Accounts data), as well as a college enrollment demographics variable available by state (Integrated Postsecondary Education Data). The latter is in first differences for Blacks and Hispanics and in log first differences, scaled by 10,000 for Whites. β_{it} is a deterministic vector containing the constant term in each regression. $A(L)$ is a polynomial lag operator with 1 to 2 distributed lag (i.e. PVAR (1) or PVAR(2)) as is deemed necessary for a stable PVAR. The vector e_{it} is the vector of VAR residuals from which the shocks are recovered. The VAR is estimated using a Cholesky or recursive decomposition with the event variable ordered first. With this ordering the exogenous impact from a one standard deviation shock to the policy change event recursively impacts real education expenditures, and then college enrollment numbers. This methodology follows Ramey (2011), Christiano, Eichenbaum, and Evans, C. (1999) and Sims (1976). One hundred bootstrapped impulse responses are presented with 95% confidence bands for 6 steps/years after the impact of the spending shock.

Finally, the data ranges from 2000 – 2017; however, the spending data remains the same for each of the 50 states and the District of Columbia within the panel, while enrollment numbers do not. In addition, the data does not include years during the adoption of the ESSA. The next section summarizes key findings.

Results

Table 1 presents the responses of enrollment to federal spending after a one standard deviation AM event shock occurs. The left column presents enrollment responses to federal spending due to enactment of NCLB and the right column presents responses to federal spending due to enactment of CCSS. In response to federal spending increase followed by a shock to the NCLB centralized federal policy, there is an insignificant decline in average state enrollment incurred by both Hispanic men and women, while an insignificant increase is incurred by White women. Meanwhile, average state college enrollment increases by 61 black male pupils 6 years later, by 70 black women pupils 5 years later and by 82 white male pupils 4 years. NCLB appears to significantly support White men as well as Black men and women, but has no significant positive impact for the other demographic groups; moreover, the response of federal spending (not shown) is significantly and permanently positive after a shock to NCLB.

In response to federal spending followed by a shock to the CCSS decentralized state policy, Hispanic men, Hispanic women and Black men see a maximum average state enrollment decline of 778 pupils after 4 years, 717 pupils after 4 years and 48 pupils at the time of the shock, respectively. On the other hand, there is no significant response to federal spending after the CCSS shock for Black women, White men and White women. CCSS seems to significantly and negatively impact average state enrollment, for Hispanic men and women as well as Black men;

moreover, the response of federal spending (not shown) is significantly and permanently negative after a shock to CCSS.

Together these findings indicate that neither NCLB nor CCSS has been particularly helpful for the Hispanic community in the United States. Also, enrollment responses to federal spending resulting from the enactment of CCSS have been muted at best. These results suggest not only that federal the NCLB policy needs to be more inclusive, but also that CCSS compete with education spending efforts.

Conclusion

This paper addresses the impact of federal education dollars spent on returns to primary and secondary education on enrollment. Results suggest the recent federal policy of NCLB, (and perhaps its revision policy ESSA) would do well to provide inclusive measures that help enrollment for Hispanics. Now clearly, there are some drawbacks to this finding as enrollment is not only impacted spending and a period of time; however, if policy was helpful during that NCLB era for all other demographic groups across 50 states and the District of Columbia, then surely the number of observations in this study should suffice in showing it. As politicians address this issue of inclusion, more research should be done to see if ESSA is truly more inclusive than NCLB; furthermore, research should reflect the factors that make Hispanics less likely to enroll in college.

Results here also suggest that CCSS cannot exist in isolation from centralized policies affecting federal education spending as they appear to be competing efforts. It is imperative that the goals of CCSS be aligned with federal education spending efforts. For instance, primary and secondary school teachers often complain of “teaching to the standard”, which is usually in reference to standardized state tests and school grading systems. This concept of “teaching to the standard”

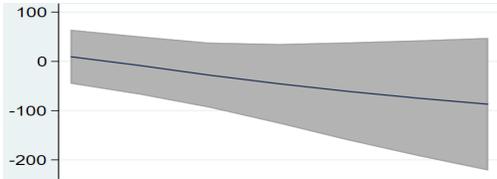
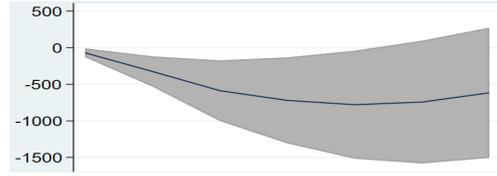
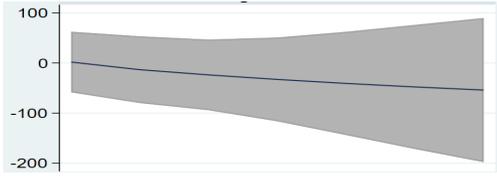
seems to be completely at odds with delivering excellent instruction; therefore, CCSS must be revised to compliment federal policy.

Citations

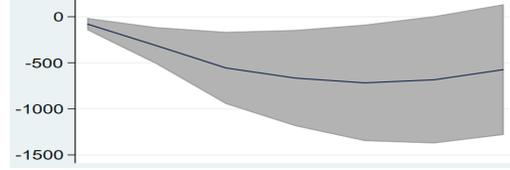
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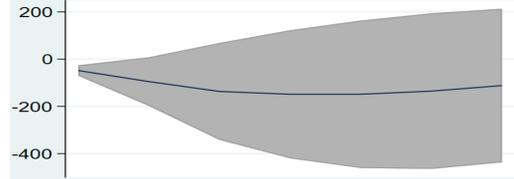
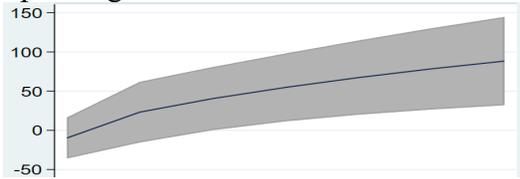
Table 1. Responses to Federal Spending After an Accountability Movement Event



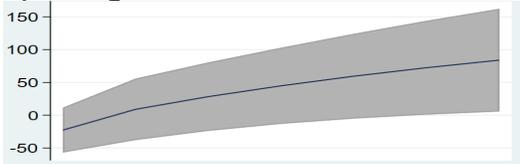
Hispanic Women Enrollment Response to Fed Spending from CCSS Shock



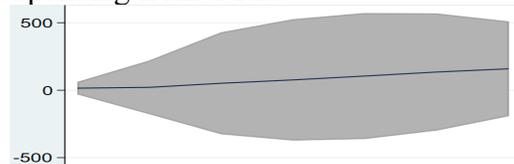
Black Men Enrollment Response to Fed Spending from NCLB Shock



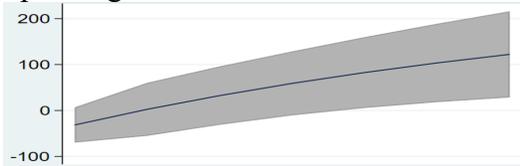
Black Women Enrollment Response to Fed Spending from NCLB Shock



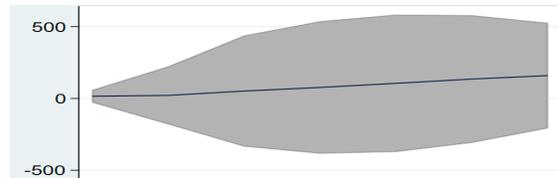
Black Women Enrollment Response to Fed Spending from CCSS



White Men Enrollment Response to Fed Spending from NCLB Shock



White Men Response to Fed Spending from CCSS Shock



White Women Response to Fed Spending from CCSS Shock

