

# Finding the Fat: The Relative Impact of Budget Fluctuations on African-American Schools

Richard B. Baker, Vanderbilt University\*

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## Abstract

On average, per pupil expenditures were much lower in schools attended by African-American children than in schools attended by whites during the period of de jure segregation. Little is known, however, about how southern school boards divvied up the proceeds of exogenous shifts in school budgets by race. I use data from the early twentieth century on schools in Georgia to answer this question. In Georgia, a county's share of the State School Fund was set every five years based on the proportion of the school-age population residing in the county. Infrequent adjustments to changes in the distribution of school-age children resulted in significant shocks to per pupil expenditures in the adjustment years in some counties. Exploiting this exogenous source of variation in school revenues, I employ a differences-in-differences strategy to investigate how the relative quality of education for African Americans changed with the level of state funding for education. The results suggest whites, rather than African Americans, bore the brunt of budget cuts, perhaps because there was little fat to trim from the budgets of black schools.

## 1 Introduction

The 1896 Supreme Court ruling on *Plessy v. Ferguson* constitutionally sanctioned the segregation of schools by race, as long as schools were “equal.” Despite the prevailing doctrine of “separate but equal,” it is well known that African-American schools in the South were substantially inferior in measured school quality to white schools during the early twentieth century (see, for example, Collins and Margo 2006; Margo 1990). The racial gap in school quality and expenditures is suggestive evidence of the bias of school boards in supporting white schools.

While it is known that school boards spent less per pupil on average in the African-American schools than in the white schools, little is known about how these school boards reacted to changes in their budgetary environment. To further illuminate how school boards made funding decisions with regard to race in the early twentieth-century South, this paper considers the following questions: When faced with budget cuts, or surpluses, how were funds reallocated? And in particular, in times of budget distress, did school boards

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cannibalize the quality of African-American schools to prop up white schools? Or, was there simply no fat to be found in African-American school budgets?

Several economic historians have analyzed the effect of suffrage restrictions intended to limit the political participation of African Americans, commonly referred to as disfranchisement, on the apportionment of public school resources by race (Kousser 1980; Margo 1982, 1990; Pritchett 1985). The general consensus of this literature is that local school boards diverted to white schools funds that were appropriated by the state for the education of African Americans. This is evidenced not only by higher per pupil expenditures for whites relative to blacks, but it has also been shown that per pupil expenditures for whites were increasing in the proportion of African-American children of school age in the locality. Thus, whites in predominantly African-American counties benefited the most from “disfranchisement.”

This study builds on the above literature by examining how school boards responded to exogenous shocks to their budgets. Specifically, I exploit a funding discontinuity resulting from the rules regarding the apportionment of the School Fund for the state of Georgia. The law required that the State School Fund be distributed from the treasury to the counties in proportion to the school-age population of each county. However, the official figures for the school-age population were infrequently updated. In Georgia, a census of the school-age population was conducted every five years by law beginning in 1888. Thus, apportionments from the School Fund changed discretely at five-year intervals. My identification strategy is a regression discontinuity approach since the actual school-age population likely changes only slightly from year to year but the official school-age population may show large changes in adjustment years.

This approach takes the literature beyond cross-sectional analyses to explore the issue of racial bias in school finance. Given that the electorate was predominately white, it might be expected that budget cuts would be met disproportionately with reductions in expenditures on schooling for African Americans. However, such a finding would run counter to the view that African-American schools were already kept at some minimally acceptable level of quality. As Margo (1982) points out, school boards had an incentive to spend as little as possible on the education of African Americans. The lower bound was perhaps determined by a desire to avoid legal action or the need to maintain a local labor supply (Margo 1991). If this was the case, then expenditures on African-American schools should be relatively unaffected by county-level budget shocks.

I begin by analyzing the impact of budget shocks on overall expenditures at the county level. The results reveal that a reduction in state appropriations caused a decrease in total expenditures approximately dollar for dollar. Additionally, I show that instructional expenditures are the most sensitive to funding discontinuities, which is not surprising as they account for more than half of county school board expenditures in early twentieth-century Georgia. I next test for differential changes in expenditures by race in response to budget

shocks, finding that whites, rather than African Americans, bore the brunt of budget cuts. This suggests that there was little fat to trim from the budgets of African-American schools.

## **2 Background on School Finance in Georgia and the South**

Three characteristics of school law in Georgia provide the conditions necessary for substantial funding discontinuities, which I use to examine the impact of budget shocks on expenditures. First, in contrast to early school finance in most of the United States, revenues for education in Georgia were primarily raised at the state level. Second, the State School Fund was distributed to the counties based on the share of their school-age population in relation to that of the state as a whole. Third, the reported school-age population was updated infrequently, only every five years. Together these produced significant shocks to county school revenues in adjustment years, that is in the calendar year directly following each school census.

### **2.1 State versus Local School Finance**

Not until after the Civil War was the idea of free public schooling for all children widely adopted in the South. In Georgia, the Constitution of 1868 first mandated the creation of a state-wide public school system.<sup>1</sup> To finance this endeavor, the constitution required that the proceeds of several state taxes be set aside to constitute a State School Fund. These included the poll tax, a tax on shows and exhibitions, and a tax on the sale of spirits. Moreover, the General Assembly was given the power to levy additional taxes on property as necessary.<sup>2</sup> Thus, from inception the public schools in Georgia were intended to be centrally funded by the state, rather than by municipalities.

As prescribed by the Georgia Constitution of 1868, the General Assembly passed legislation in 1870 providing for a state-wide system of public schools. The following year 1,352 schools for whites and 221 schools for African Americans, together enrolling 70,035 students, were put into operation. The monies accruing to the State School Fund over the three years preceding amounted to approximately \$400,000, enough to keep schools in operation for three months, as mandated by law. Unfortunately, it was discovered that much of the State School Fund had been misappropriated by the General Assembly and replaced with bonds that were illiquid (Georgia Department of Education 1871).<sup>3</sup> Unable to pay the \$300,000 Georgia owed its teachers, the public schools were closed for the 1872 school year, in order to replenish the State

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<sup>1</sup>Free schooling is perhaps one positive legacy of Reconstruction, for the majority of the 169 delegates attending the constitutional convention were northerners or northern sympathizers, who were “greatly influenced by radical Republicans,” which led some to call it the “Unconstitutional Convention” (Hill 2011, 11).

<sup>2</sup>See the *Georgia Constitution of 1868*, Article 6, Secs. 1 and 3.

<sup>3</sup>The details of this case are well described in a letter published at the end of the *First Annual Report of the State School Commissioner of the State of Georgia*, which can be viewed at [http://dlg.galileo.usg.edu/ggpd/docs/1871/ga/e300/\\_pa1/1871.con/1.pdf#page=91](http://dlg.galileo.usg.edu/ggpd/docs/1871/ga/e300/_pa1/1871.con/1.pdf#page=91).

School Fund (Georgia Department of Education 1872).

Immediately following the end of Reconstruction in 1877, Georgia adopted a new constitution that seemingly favored more local autonomy in the financing of education. However, the exact wording of the Georgia Constitution of 1877 made it all but impossible to raise local taxes in support of education in any school district.<sup>4</sup> While local taxation was not prohibited, the new constitution required that the power of local school authorities to levy taxes be “approved by a two-thirds vote of *persons qualified to vote*.”<sup>5</sup> This bar proved too high for any county.<sup>6</sup> Indeed, the author, Robert Toombs, proudly boasted after the constitutional convention that he had “locked the door of the treasury and thrown away the key” (quoted in Northen 1911, 3). Not until a constitutional amendment approved in 1904 did local taxation become a realistic option. The amendment changed the wording to require only the approval by “two-thirds majority of *persons voting*.”<sup>7</sup> While the difference in wording is subtle, the effect was significant. The importance of local taxation increased rapidly after 1905 as more and more counties and school districts voted in favor of funding education locally. Figure 1 shows the sources of all school revenues from 1902 to 1922. The dramatic increase in the contribution of local taxation is clear, making up 18.5 percent of revenues in 1902 and 44 percent by 1922. Still, in 1922, appropriations from the State School Fund remained an important part of school finance, making up over a quarter of all receipts.

While other southern states established public school systems in the later half of the nineteenth century, there was not a consensus among them over how schools should be financed. Alabama, like Georgia, favored a central approach, establishing a state school fund and greatly limiting the potential role of local taxation. Legislation required three-fifths of those voting to approve local taxation, with the tax rate not to exceed one mill (Alabama Department of Education 1895-1915). By contrast, South Carolina followed a decentralized plan, mandating that each county levy a three mill tax on property to support its schools (South Carolina Department of Education 1896-1919). Tennessee, favored a mixed approach, with some funds provided by the state and the remainder necessary to run schools for the minimum term length being collected by local taxation (Tennessee Department of Education 1901-1915). Yet, in every southern state, at least some educational funds were provided by the state government.

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<sup>4</sup>As the new constitution contained a grandfather clause for schools in localities governed by special legislation, the counties of Bibb, Richmond, Glynn, and Chatham, as well as several city school systems, could raise local taxes for schools under special laws passed prior to 1877.

<sup>5</sup>See the *Georgia Constitution of 1877*, Article 8, Sec. 4.

<sup>6</sup>The fact that, prior to 1908, many African-American men over 21 years of age were legally eligible to vote but were de facto disfranchised may have prevented counties from meeting this requirement.

<sup>7</sup>*Local Taxation for Public Schools*, GA No. 471, Sec. 1, August 17, 1903, in *Acts and Resolutions of the General Assembly of the State of Georgia 1903*, Part 1, Title 3, p. 23.

## 2.2 Apportionment of State Funds and the School Census

Throughout the late nineteenth and early twentieth centuries the distribution of Georgia's State School Fund to the counties followed a quite simple and seemingly equitable rule. Disbursements from the School Fund were "based upon the proportion which the school population in each county bears to the school population in the State as shown by the last school census."<sup>8</sup> This was the most common method of disbursement in the United States, as 36 other states had similar apportionment rules (Neystrom 1910). In the South, the notable exceptions were South Carolina, which disbursed its school funds on the basis of enrollment, and Florida, which apportioned funds on the basis of average attendance (South Carolina Department of Education 1896-1919; Florida Department of Education 1911).

Using the school-age population as the basis of apportionment initially made sense in Georgia as it conducted an annual enumeration (or, at least, it was legally required to do so). However, this changed in the late nineteenth century as the General Assembly ordered, "the enumeration of the children between six and eighteen years taken under instructions from the State School Commissioner, in the year 1888, and every ten years thereafter." Also, a census could optionally be ordered "in the year 1893, and every ten years thereafter," at the discretion of the State Board of Education.<sup>9</sup> The result of this law was a school census every five years from 1888 until 1948.<sup>10</sup> This made Georgia fairly unique in that only five other states took school censuses less frequently than biennially, with the majority conducting an annual enumeration. In the South, Florida took a school census decennially; Virginia quinquennially; Louisiana and Mississippi quadrennially; Alabama biennially; and the remainder annually, if at all (Neystrom 1910).<sup>11</sup> In combination with the large contribution of Georgia's State School Fund to local education revenues, it becomes clear how the infrequent enumeration of the school-age population created the potential for significant shocks to school

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<sup>8</sup>*To Systematize the Finances and Increase the Efficiency of the Common Schools*, GA No. 137, Sec. 2, December 13, 1894, in *Acts and Resolutions of the General Assembly of the State of Georgia 1894*, Part 1, Title 6, p. 60.

<sup>9</sup>*An Act to provide a more correct and efficient mode of taking the enumeration of the school population and to supersede existing laws upon that subject*, GA No. 420, Secs. 1 and 2, September 28, 1883, in *Acts and Resolutions of the General Assembly of the State of Georgia 1882-3*, Part 1, Title 6, p. 84.

<sup>10</sup>While Georgia continued to take a census of the school-age population into the mid-twentieth century, it moved away from distributing funds on this basis starting in the mid-1920s. Beginning in 1926, an equalization fund was administered by the Department of Education "for the purpose of more nearly equalizing the educational opportunities." These funds were distributed in addition to funds apportioned according to the school-age population. By 1938, Georgia had completely abandoned the practice of distributing school funds in proportion to the school-age population. See *Extra Appropriation to Common School Fund*, GA No. 2, Sec. 1, March 13, 1926; and *Equalizing Opportunities*, GA No. 33, February 10, 1937.

<sup>11</sup>Given the infrequent school censuses in Florida, Virginia, Louisiana, and Mississippi, these states were also considered as candidates for this analysis. Recall that Florida did not use the school-age population as the basis of apportionment, so census updates would not have generated budget shocks. Unfortunately, the Department of Education reports for Mississippi do not include any information on expenditures by race. The corresponding reports for Virginia and Louisiana provide only expenditures on teachers by race, permitting only a limited analysis. While an examination of Virginia and Louisiana may be instructive, Georgia provides the richest source of data for this project.

revenues at the county level.

### 2.3 Local Distribution of School Board Receipts

At the state level, this system of distribution seems quite egalitarian, and was certainly in compliance with the Fourteenth Amendment. However, it is important to note that there was little legislation regarding how funds were to be distributed by county school boards. The law was silent on how the County Board of Education should distribute revenues to school districts. Indeed, the Georgia Attorney General opined that it was the policy of the legislature to bestow “the several Boards of Education in this State with almost supreme power in the administration of the public school fund” (Brittain 1912, 81). With regard to the distribution of funds by race, the law only required that the County Board of Education “shall, as far as practicable, provide the same facilities for both races in respect of attainments and abilities of teachers and length of term-time.”<sup>12</sup> Unfortunately, the phrase “as far as practicable” gave county boards significant discretion. It is clear from Table 1 that in practice county boards did not provide the same facilities to both races. Instructional expenditures per pupil for African-American schools amounted to approximately a quarter of instructional expenditures per pupil on white schools, over the period 1912 to 1922. Given the substantial racial differential in enrollment rates, this likely underestimates the degree of inequality. No doubt this arrangement was convenient since the state could claim perfect compliance with separate but equal, while the counties could follow a policy of separate and unequal.

Since the law provided little guidance on how funds should be distributed at the county level, it then becomes important to understand the motivations of the members of the County Boards of Education. If school board members were popularly elected, then they would be considered to represent the values of the median voter. However, the members of the County Board of Education were not held accountable to the voters. Rather, each County Board of Education was composed of five residents selected by a grand jury to serve a four year term.<sup>13</sup> The grand juries, in turn, were composed of between 18 and 23 jurors selected from a list of “the most experienced, intelligent and upright men,” containing not more than two-fifths of eligible voters. This list was made by jury commissioners, who themselves were appointed by the Superior Court Judge.<sup>14</sup> Therefore, the members of the County Boards of Education were representatives of the local elite, almost certainly upper-class, white men.

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<sup>12</sup>*Revising, Amending and Consolidating the Common School Laws*, GA No. 587, Sec. 21, October 27, 1887, in *Acts and Resolutions of the General Assembly of the State of Georgia 1886-7*, Volume 2, Part 1, Title 8, p. 74.

<sup>13</sup>*Revising, Amending and Consolidating the Common School Laws*, GA No. 587, Sec. 16, October 27, 1887, in *Acts and Resolutions of the General Assembly of the State of Georgia 1886-7*, Volume 2, Part 1, Title 8, p. 71.

<sup>14</sup>*Georgia Code of 1895*, Article 7, Secs. 812, 813, and 818.

### 3 Why Fund African-American Schools?

Given that the County Boards of Education represented the interests of local white elites, it is reasonable to think that they would spend as little as possible on African American schools. This is well illustrated by the superintendent of Newton County, who in his annual report to the grand jury claimed:

The average salary paid our negro teachers is \$12.08 per month, or a little more than half the average salary paid negro teachers in the whole State.... Only three other counties in the State pay as low salaries to the negro teachers as do our board of education.... Only one negro school in the county ran for the full term of five months, and not a single one received a cent for added time taught. The average term for the negro schools of the county is 75 days, or nearly exactly three-fifths of the term for the white children. So far as I am able to learn no county in the State shows such a record in favor of her white boys and girls. (Georgia Department of Education 1907, 125-127)

To which the grand jury responded by praising the superintendent's efficiency and "interest manifested in the cause of education" (Georgia Department of Education 1907, 128).

The superintendent of Newton County was not alone in his preoccupation with the division of school funds between the races. That same year, another county superintendent felt it necessary to defend the school board, stating:

I have gone to some detail in my statement and in this narrative report to clear away a very general misapprehension in regard to the division of the fund between the races. The most casual examination of these figures will convince any fair-minded person that the negro is not receiving more of the benefits of the school fund than he is reasonably and justly entitled to receive. (Georgia Department of Education 1907, 133-134)

If this was the prevailing sentiment, then why did they fund African-American schools at all? The desire to avoid legal action would provide sufficient motivation. Avoiding litigation would require African-American schools to be funded to, at least, some minimally acceptable level of quality. The courts provide some idea of what might have been perceived as minimally acceptable.

#### 3.1 Decisions of the State Supreme Courts

To understand what constituted minimally acceptable it is necessary to examine how the courts interpreted Georgia's equality clause, and the Fourteenth Amendment more generally. Only once between 1896 and 1925, to my knowledge, did the Supreme Court of the State of Georgia hear a case regarding racial inequality in the provision of schooling. That case was *Board of Education v. Cumming* of 1898.

In 1897, the Richmond County Board of Education closed the only public high school serving African Americans in the county. In response, Cumming, and other parents of African-American high school students, petitioned against the use of their tax dollars to support the high school serving whites, which remained open. In a progressive ruling, the Superior Court of Richmond County enjoined the board from using any of its funds to support the white high school, until the board provided equal high school facilities for African Americans. The case was then appealed to the Supreme Court of Georgia, which unanimously reversed the lower court's ruling. The justices interpreted the law as giving broad discretion to the county board in establishing high schools, and not requiring equal high school facilities for both races. However, in regards to the state's equality clause, which they found only pertained to grammar schools, the justices wrote in their opinion: "This section gives the board no discretion. It is compulsory upon it to establish proper arrangements to educate the children of both races, and to provide the same facilities for each as to schoolhouses, fixtures, and the various other matters pertaining to education."<sup>15</sup> While the meaning of "same" may be debated, this opinion makes clear that a complete lack of provision or elementary education for African Americans, where there was demand, would not be tolerated.

Cases from other southern states, while not setting precedent in Georgia, are instructive as to the broader interpretation of such laws in the region. In 1871, *Union City v. Robinson* established in Arkansas that separate schools for African Americans and whites were required as long as children of both races resided in the school district.<sup>16</sup> This issue was again addressed in Arkansas in 1885 with *Maddox v. Neal*, which resulted in the court compelling the school board to open schools for African Americans.<sup>17</sup> In 1898, West Virginia courts found that the law required white and African-American schools to open for the same term length.<sup>18</sup> A decade later, the Supreme Court of Mississippi ruled on *McFarland v. Goins* finding that a special tax on all citizens to support an agricultural high school for whites was in violation of the Fourteenth Amendment.<sup>19</sup> The courts of Oklahoma also addressed the lack of schools for African Americans, mandating in *Guthrie v. Excise Board* that tax revenues must be distributed so as to provide adequate facilities for African Americans equal to the white schools.<sup>20</sup> While the southern courts did not always rule in favor of African Americans, they objected to complete negligence in the provision of schools for them.<sup>21</sup> The steady occurrence of such cases would have provided a constant reminder to the County Boards of Education that they could not cut funding for African-American schools to zero.

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<sup>15</sup>Board of Education v. Cumming, 103 Ga. 641 (1898).

<sup>16</sup>County Court of Union City v. Robinson, Trustee, 27 Ark. 116 (1871).

<sup>17</sup>Maddox v. Neal, 45 Ark. 121 (1885).

<sup>18</sup>Williams v. Board of Education of Fairfax District, 45 W. Va. 199 (1898).

<sup>19</sup>McFarland v. Goins, 96 Miss. 67 (1909).

<sup>20</sup>Guthrie v. Excise Board of Logan County, 86 Okla. 24 (1922).

<sup>21</sup>Risen (1935) provides an extensive review of cases pertaining to race and public schooling.



### 3.2 Decisions of the State Superintendent and State Board of Education

While the court's opinions are instructive, most issues with respect to school administration would have been handled outside of the courts. The Georgia legislature declared that issues of school law and administration be adjudicated within the Department of Education. To this end, the County Board of Education served as "a tribunal for hearing and determining any matters of local controversy in reference to the construction or administration of the school law." The decision of the County Board of Education was "binding upon the parties to the controversy; provided, that either of the parties shall have the right to appeal to the State School Commissioner."<sup>22</sup> In turn, the State Board of Education constituted "a body in the nature of a court, to which appeals shall be from the decision of the State School Commissioner upon any question touching the construction or administration of the school laws, and the decision of the State Board, when rendered, shall be final and conclusive upon the matter in issue."<sup>23</sup> What constituted a minimally acceptable level of funding for African-American schools, then, was decided by the State Superintendent of Education and the State Board of Education.

The record suggests that Marion Luther Brittain, State Superintendent of Schools (1910-1922), was more progressive than his local counterparts with respect to the education of African Americans. Shortly after he took office, Brittain labored to provide a state supervisor for African-American schools, to supplement the three state supervisors that oversaw the white schools. After failing to secure funds from the General Assembly, Brittain appealed to the General Education Board of New York, a philanthropic organization for the promotion of education, who provided \$3,500 annually to cover the salary and expenses of a state supervisor for African-American schools. In justification for this, Brittain wrote: "We could, of course, neglect these schools and allow the money spent upon them to be largely wasted. It is better, however, to supervise them properly and to increase the productive power of this large proportion of our population" (Georgia Department of Education 1914, 54).

Brittain later progressively campaigned for the establishment of a normal school for African Americans, stating:

As a matter of common justice and equity, as well as law, the State should do more for its colored population. We devote considerable money to the education of the negro children and yet pay very little attention to the sort of training which they ought to have.... [W]e have left this matter too much to chance and northern philanthropists. It is time that we should take a more direct and positive interest in the preparation of negro teachers ourselves. I recommend, therefore, that

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<sup>22</sup> *Revising, Amending and Consolidating the Common School Laws*, GA No. 587, Sec. 22, October 27, 1887, in *Acts and Resolutions of the General Assembly of the State of Georgia 1886-7*, Volume 2, Part 1, Title 8, p. 74.

<sup>23</sup> *Revising, Amending and Consolidating the Common School Laws*, GA No. 587, Sec. 5, October 27, 1887, in *Acts and Resolutions of the General Assembly of the State of Georgia 1886-7*, Volume 2, Part 1, Title 8, p. 69.

the Legislature make an appropriation looking toward the establishment of a Normal School for negro teachers to emphasize instruction in agriculture, cooking, sewing, hygiene and the essentials of elementary education.... If we are to keep contented the best labor a country ever had upon its farms, we must give more attention and preparation to these teachers and schools. (Georgia Department of Education 1917, 10-11)

It should be noted that neither Brittain nor the Department of Education would have gained directly from the establishment of such a normal school. Any new normal school would have been governed by the University of Georgia Trustees, as were all state supported institutions of higher education in Georgia.

Brittain was not alone in making progressive statements with regards to the education of African Americans. His predecessors also made remarks similar in sentiment. As part of an appeal for greater taxation to support schools, Gustavus Richard Glenn, State School Commissioner (1895-1903) and State Board of Education Member (1911-1923), argued:

As I see the case of the negro, his real and trustworthy friend, the friend upon whom he must rely, the only friend who can and will understand him, is the white man here in the South. If we abandon him his case is hopeless. If we cannot apply right processes to education to save him, and make him a skillful producer of wealth and a useful citizen, then God have mercy upon his children and our own. (Georgia Department of Education 1902, 26-27)

While these words and actions do not provide evidence of their opinions in the manner of a court decision, they do suggest that the state-level administrators were more liberal in mind than were local school officials. Thus, they likely held a higher standard as to what constituted a minimally acceptable level of school quality for African Americans, and they had the power to enforce that standard.

#### **4 Data**

In the early twentieth century, the departments of education of most Southern states annually, or biennially, issued reports on the status of schools. These reports provide a rich source of statistics on the quality and quantity of schooling at the local level, often by race and sex. This study focuses on the case of Georgia in order to take advantage of the funding discontinuity created by the infrequent taking of the school census. Fortunately, Georgia was among the best at consistently providing detailed statistics by race in its annual reports.

*The Annual Report of the Department of Education to the General Assembly of the State of Georgia* provides race-specific county-level data on expenditures by type (including expenditures on teachers, buildings, and supplies), average monthly salary paid to teachers, number of teachers, enrollment, and the school-age

population. The reports also provide county-level data on the apportionment of the State School Fund and school board receipts by type (including receipts from the state, local taxation, and tuition). I have collected these data for all counties for the years 1910 to 1924, surrounding the 1913, 1918, and 1923 school censuses.<sup>24</sup>

Table 2 presents summary statistics for school revenues and expenditures for 1912, 1917, and 1922, the years prior to school censuses of interest. For each year, statistics are reported separately by whether the counties would gain or lose state appropriations due to the proximate updating of the school-age population. For example, a county is included in the “losers” sample in 1912 if its appropriation from the State School Fund in 1914 was less than its appropriation in 1912, in absolute terms. This divides the sample into roughly equal groups in 1912. However, the majority of counties gained funds following the 1918 school census, and a majority lost funds following the 1923 school census. The two groups are comparable in size, or enrollment, in all years, but the “losers” have a statistically higher enrollment rate on average in 1912 and 1922. Additionally, relative to “gainers,” appropriations and state receipts per pupil are greater on average for those counties that lost state funds as a result of the census update. Since the school census has an equalizing effect on appropriations, this difference is expected as the “losers” were over-funded with respect to their actual school-age population in the year prior to the school census.<sup>25</sup> Other differences across groups in receipts and disbursements are small.

## 5 Estimation

A standard analysis to determine how the marginal dollar of education revenue was spent would exploit longitudinal changes in county school board receipts to estimate the effect of a change in receipts on various local school expenditures. The following ordinary least squares specification illustrates this approach:

$$\Delta Teacher\ Exp\ PP_c = \alpha + \beta \Delta Receipts\ PP_c + \varepsilon_c \quad (1)$$

<sup>24</sup>Data for the years surrounding the school census of 1908 is currently being collected. Unfortunately, data on expenditures were not separated by race prior to 1906. Additionally, beginning in 1926, the Georgia Department of Education published a biennial report, making a similar analysis around the school census of 1928 impossible.

<sup>25</sup>Notice that appropriations per pupil differ from state receipts per pupil. In 1912 state receipts per pupil are slightly below appropriations per pupil. This is likely due to the fact that appropriations were paid by the State Treasury to the County Board of Education on a reimbursement basis, with any unused funds carrying over to the next year. The difference, however, is small as State Attorney General John C. Hart warned against taking advantage of this as a savings device as he argued, “using money appropriated for one year for another, would run counter to the legislative scheme and would be an abuse of discretion” (Brittain 1912, 81). In 1922, state receipts are slightly greater than appropriations on average because, in addition to the foundation grant that appropriations represent, the state also disbursed \$100,000 to incentivize four-year high schools and school consolidation (Georgia Department of Education 1923, 465).

where  $\Delta Teacher Exp PP_c$  is the change in per pupil expenditures on teachers and  $\Delta Receipts PP_c$  the change in per pupil receipts in county  $c$  over a given period of time. The problem with this approach is that changes in receipts and expenditures are likely correlated with concurrent shifts in the demand for education (for example, the actual school-age population). Thus, the endogeneity of receipts would lead Equation 1 to yield biased estimates.

Instead, my identification strategy relies on the laws regarding the allocation of the State School Fund to the counties. In early twentieth-century Georgia, the apportionment of the State School Fund was entirely dependent on quinquennial census data on the school-age population. While the amount of education revenue raised locally varied annually and in a contemporaneous fashion with population changes, the official school-age population figures jumped discretely. This caused appropriations from the State School Fund to change discretely every five years. Additionally, there was approximately a one year delay in incorporating the new school census data into the apportionment formula.<sup>26</sup> Thus, adjustments in state funds were not a function of contemporary changes in population but of prior population change. Because of the infrequent update of the school-age population figures used to apportion the State School Fund, the above endogeneity problem can be addressed by considering changes in revenue and expenditures surrounding census years.

The appropriation for county  $c$  from the State School Fund ( $State$ ) in a given year  $t$  can be written as a function of latest school-age population figures:

$$Appropriation_{ct} = State_t * \frac{Population_{cs}}{State Population_s}, \quad (2)$$

where  $s$  is the year in which the last school census was taken.<sup>27</sup> The school-age population of county  $c$  is given by  $Population_{cs}$  and the total school-age population of the state is given by  $State Population_s$ , as reported by the school census taken in year  $s$ . Therefore, the change in appropriations for county  $c$  from 1912 to 1914, for example, is written as follows:

$$\begin{aligned} \Delta Approp_c &= Appropriation_{c,1914} - Appropriation_{c,1912} \\ &= State_{1914} * \frac{Population_{c,1913}}{State Population_{1913}} - State_{1912} * \frac{Population_{c,1908}}{State Population_{1908}}. \end{aligned} \quad (3)$$

Each school census had a substantial impact on the distribution of the State School Fund to the counties. County-level changes in state appropriations surrounding the school census years of 1913, 1918, and 1923

<sup>26</sup>Apportionments for the next school year were decided in January of each year. The school census was taken in April/May in census years. Thus, for example, the 1913 school census, taken in Spring, 1913, was first used in January, 1914, to set apportionments for the 1914 school year.

<sup>27</sup>The relevant school census year,  $s$ , is a piecewise function of  $t$ , which can be expressed as  $s(t) = 3 + (5 \times \lfloor \frac{t-4}{5} \rfloor)$ , where  $\lfloor x \rfloor$  gives the floor of  $x$ .

are displayed in Figure 3. There is significant variation in the extent to which counties gain and lose funds as a result of school census updates, driven by differences in relative population growth rates during the preceding five years. For example, after the 1913 census, the appropriation for one county fell by 20.8 percent, while the appropriation of another increased by 36.3 percent. The standard deviation in the percent change in appropriations around 1913 is 9.33 percent, around 1918 is 10.47 percent, and around 1923 is 10.18 percent.

For comparability across counties, I analyze changes in state appropriations per pupil (that is, per enrolled student). The change in appropriations per pupil from 1912 to 1914 is expressed as follows:

$$\Delta Approp PP_c = \frac{Appropriation_{c,1914}}{Enrollment_{c,1914}} - \frac{Appropriation_{c,1912}}{Enrollment_{c,1912}}. \quad (4)$$

Table 3 shows the county-level distribution of the change in appropriations per pupil surrounding school census years. From 1912 to 1914, state appropriations per pupil fell by 56 cents on average, which is likely driven by increasing enrollment rates.<sup>28</sup> Due to a significant increase in total disbursements from the State School Fund between 1917 and 1919, nearly every county experienced an increase in appropriation, with a median increase of \$1.15. The mean and median change in state appropriations per pupil from 1922 to 1924 was close to zero. The changes in the tails, however, were substantial surrounding each of the census years. These counties that gain or lose state funding in adjustment years provide exogenous variation school funds.

As described above, the State School Fund was distributed in the form of flat grants, or foundation grants, to the counties on a per school-age child basis without regard to race, or any other characteristics. The County Board of Education was instructed to distribute these funds to the schools or districts “as may be for the best interests of the district and county as a whole” (Brittain 1912, 77). To examine how school funds were actually allocated at the margin, I assess the impact of the exogenous change in appropriations per pupil on a variety of school board expenditures: total expenditures, expenditures on teachers, support expenditures (administration), and capital expenditures (building and repairs). Equation 5 shows the regression specification for the effect of changes in per pupil appropriations ( $\Delta Approp PP$ ) on changes in per pupil expenditures on teachers ( $\Delta Teacher Exp PP$ ):

$$\Delta Teacher Exp PP_c = \alpha + \beta \Delta Approp PP_c + \eta \Delta X_c + \varepsilon_c \quad (5)$$

where  $c$  indexes the county and  $\Delta X$  is a vector of county specific controls, described below. The specification remains the same for other dependent variables. Rather than pooling the data, I run a separate set of regressions for each census year. By using a first-differences estimation strategy, I am controlling for time

<sup>28</sup>The total amount of school funds disbursed annually by the state remained unchanged at \$2,550,000 from 1912 to 1914 (Georgia Department of Education 1915, 507).

invariant county-level characteristics.

One concern with the first-differences framework is that differencing does not control for contemporaneous county-specific trends that might impact expenditures, but are unrelated to the impact of changes in appropriations. As I have shown, the use of local tax revenues to support schooling was rapidly expanding during the early twentieth century in Georgia. If local tax revenues were positively correlated with population growth rates, then the estimates of the impact of population driven changes in state appropriations on school expenditures might be upward biased. To address this concern, I include as a control the lagged, three-year change in local tax revenues per pupil ( $\Delta Local Tax PP$ ). I also include the lagged, five-year change in enrollment ( $\Delta Enrollment$ ) and the change in the share of the school-age population that is African American ( $\Delta Percent Black$ ).

While the county school boards were also instructed to “provide the same facilities” for the education of both African Americans and whites, large gaps in school quality and expenditures persisted across race. However, it is unclear how school boards reacted to budget shocks. Therefore, I further analyze differential effects of changes in appropriations on expenditures across race. In this analysis, I focus on expenditures on teachers and capital expenditures, as these are available for both races. I, therefore, modify equation (5) to analyze the impact of appropriations on expenditures for each race separately,

$$\Delta Teacher Exp PP_{c,r} = \alpha + \beta \Delta Approp PP_c + \gamma \Delta X_{c,r} + \varepsilon_{c,r} \quad (6)$$

where  $r$  indexes race. Rather than controlling for the lagged trend in total county school enrollment, the lagged, five-year changes in both own race enrollment and other race enrollment are included as controls.

## 6 Results

Using this framework, I examine short-run responses to budget shocks around school census years. I focus primarily on the effects of two-year changes in appropriations around the school census of 1913, from the year before the census (1912) to the year after (1914), on various school receipts and expenditures.<sup>29</sup>

To verify that changes in state appropriations were realized as shocks to county school budgets, I first estimate the relationship between appropriations and various school revenues. The results are shown in Table 4. The coefficient on appropriations in column (1) suggests that total school board receipts per pupil

<sup>29</sup>Examining one-year changes in expenditures would be ideal from the standpoint of assuming no population change, but the timing of the release of census figures makes this less informative. Take for example the school census of 1913. The new census figures became known in May of 1913, allowing county school boards to predict their state appropriation for the 1914 school year. They likely used the 1913 school year to smooth their expenditures. Thus, comparing 1913 to 1914 would bias estimates of the effect of budget shocks toward zero. I consider two-year changes in order to avoid such bias.

increased by \$1.32 in response to a one dollar per pupil increase in appropriations. While the coefficient is greater than one, it is not statistically different from one at the 10 percent confidence level. Not surprisingly, receipts from the state increased approximately one-to-one with appropriations, as shown in column (2). This suggests that the funds appropriated for each county were in fact transferred to the school boards. Columns (3) and (4) show that changes in appropriations had little to no impact on school revenues from local taxation and tuition, suggesting that school boards were not using these devices as a way to smooth their budgets, at least in the short run. Most importantly, I find no evidence that school boards ameliorated state budget cuts by increasing local taxation. Together, these estimates confirm that changes in state appropriations were felt as real shocks to the size of county school budgets. This suggests a classic “flypaper effect” (Hines and Thaler 1995; Fisher and Papke 2000).<sup>30</sup> However, given that the County Board of Education in Georgia was quite insulated from the demands of the median voter, this is perhaps not as surprising as modern evidence.

Table 5 presents estimates of the effects of changes in appropriations per pupil on various school expenditures. The effect of changes in state appropriations on total expenditures is positive, as shown in column (1). A one dollar increase in state appropriations per pupil caused an increase in total school expenditures per pupil by 84 cents around 1913. This estimate is statistically different from zero and insignificantly different from one. Column (2) shows that the change in state appropriations has the strongest effect on instructional expenditures. The effect of a one dollar per pupil increase in state appropriations is a 57 cent per pupil increase in expenditures on teachers around 1913. The effect is positive and statistically significant. The conclusion that expenditures on teachers are most affected by budget shocks is no surprise since they represent three-quarters of all school expenditures in 1912, as shown in Table 2.

The effect on support expenditures, which includes the salaries and expenditures of county-level administrators, is a statistically-significant, 6-cent-per-pupil increase in response to a one dollar increase in per pupil appropriations, shown in column (3). I also separately consider the impact of budget shocks on the County Superintendent’s salary, a component of support expenditures. The results shown in column (4) indicate that a large part of the increase in support expenditures per pupil can be accounted for by the increase in the salary of the County School Superintendent. If the effect is symmetrical for budget gainers and losers, which is tested next, then this just shows that the County Superintendent’s salary is responsive to budget shocks. The impact of budget shocks on capital expenditures, shown in column (5), is less clear, possibly due to the fact that capital expenditures are very lumpy during this period.<sup>31</sup>

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<sup>30</sup>The term flypaper effect refers to the empirical observation that the marginal propensity to spend income from a lump-sum grant on the targeted service (education in this case) is greater than the marginal propensity to spend income from other sources on that service. This has been described as an anomaly because theory predicts that a lump-sum grant will be spent just like any other income, with only a fraction spent on the targeted service and the remainder spent on tax reduction or other services (Gordon 2004).

<sup>31</sup>By lumpy, I mean that county school boards spend zero dollars on new buildings in most years punctuated by years of large expenditures.

I next consider whether the effects of budget shocks are symmetrical around zero. To test this, I group counties by whether they gained or lost state funds as a result of the update in official school-age population figures. Table 6 presents results in the same fashion as Table 5, but each regression now includes an indicator variable for the counties that gained state funds (*Gainers*) and its interaction with per pupil appropriations, as well as its interaction with each of the controls. Only the relationship between changes in appropriations and support expenditures differs significantly by whether the county gained or lost state appropriations. Other effects on expenditures do not significantly differ across the two groups.

Anecdotal evidence of how school boards economized in times of budget distress is consistent with these results. County School Superintendents most often cited teacher salaries and length of the school term as margins for trimming the budget. This is evidenced by the Clarke County School Superintendent, who stated: “After this year we shall have only the school fund received from the State to depend on, and unless some plan is devised to supplement this, we shall be compelled to shorten our school term, or so reduce salaries as will drive away our best teachers” (Georgia Department of Education 1910, 86). The effect of both courses of action is to reduce instructional expenditures.

### **6.1 The Effect of Budget Shocks on Expenditures by Race**

I now analyze the impact of budget shocks on expenditures by race utilizing the specification shown in Equation 6. Table 7 presents the results of regressions of change in instructional expenditures per pupil on change in appropriations per pupil. The estimates shown in columns (1) through (3) pertain to the full sample of counties, while those in columns (4) through (6) pertain to “losers” only and columns (7) through (9) to “gainers.” The coefficient 0.094 in column (1) suggests that a one-dollar increase in appropriations per pupil increased expenditures on teachers per pupil in African-American schools by 9 cents, but this result is not statistically significant with a standard error of 0.08. By contrast, instructional expenditures per white pupil increased by \$1.13 in response to a one dollar increase in appropriations per pupil, as shown in column (2). This result is highly significant, with a standard error of 0.21. The dependent variable in column (3) is the two-year change in the racial differential (African-American minus white) in instructional expenditures per pupil. The results confirm that the difference in the estimates by race is statistically significant.

The results for “losers,” or those counties whose appropriations from the state fell following the census, are quite similar to those found when utilizing the full sample. I find no evidence that instructional expenditures in African-American schools respond to budget cuts. Moreover, the coefficient -1.437 in column (6) suggests that the racial gap in instructional expenditures per pupil decreased by \$1.44 for every dollar per pupil cut in state appropriations, and it is highly significant.

The above estimates show that in the short run budget cuts were met through cuts to expenditures on



white teachers. However, in the longer run school boards would have more flexibility to adjust by both increasing revenues and shifting cuts in expenditures. To examine the effect of budget shocks over time, Table 8 compares the results from the analysis of two-year changes in instructional expenditures to three-year, four-year, and five-year changes. I find the effect of a cut in appropriations following the 1913 school census to be quite persistent. The five-year change, that is the change from 1912 to 1917, shows that the reduction in instructional expenditures remained four years after the cut in appropriations from the State School Fund took effect (in 1914). Specifically, the five-year change estimates for “losers” shows that the racial gap in instructional expenditures per pupil decreased dollar-for-dollar with state appropriations. This shows that school boards did not shift cuts in expenditures to African-American schools in the long run. Moreover, school boards were either unwilling or unable to make up for reduced state appropriations with other revenues, even in the long run.

While the analysis has thus far focused on the effect of budget shocks around the school census of 1913, significant budget shocks also followed other school censuses. Table 9 compares the effect of two-year changes in appropriations around 1913 to analogous budget shocks around the school censuses of 1918 and 1923.<sup>32</sup> As for 1913, budget shocks following the 1918 school census have no impact on instructional expenditures per pupil for African-American schools, but rather they are absorbed by instructional expenditures per white pupil, as shown in the middle panel of Table 9. The bottom panel of Table 9 displays the results for the 1923 school census. The coefficient 0.419 in column (1) indicates that instructional expenditures per African-American pupil increased by 42 cents as a result of a one-dollar increase in appropriations per pupil. This suggests that expenditures on African-American teachers became responsive to budget shocks by the 1920s. Still the results presented in column (3) show that the differential in instructional expenditures per pupil across race decreased dollar-for-dollar with state appropriations.

The other category of expenditures reported separately by race during this period was capital expenditures, which includes funds spent on buildings, equipment, supplies, and repairs. Table 10 presents the results of regressions of change in capital expenditures per pupil on change in appropriations per pupil, by race and sign of budget shock. I find no evidence that appropriations impacted capital expenditures for either race. As stated before, the lack of an effect might be due to the lumpiness of capital expenditures. However, it could also be that new schools were funded primarily by other means, such as private donations, bond sales, property sales, and local taxation (see Carruthers and Wanamaker 2013).

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<sup>32</sup>The number of counties in the sample changes over time because several new counties were created from parts of existing ones in Georgia in the early twentieth century. And counties with border changes during the relevant time period were dropped from the regressions.

## 7 Concluding Remarks

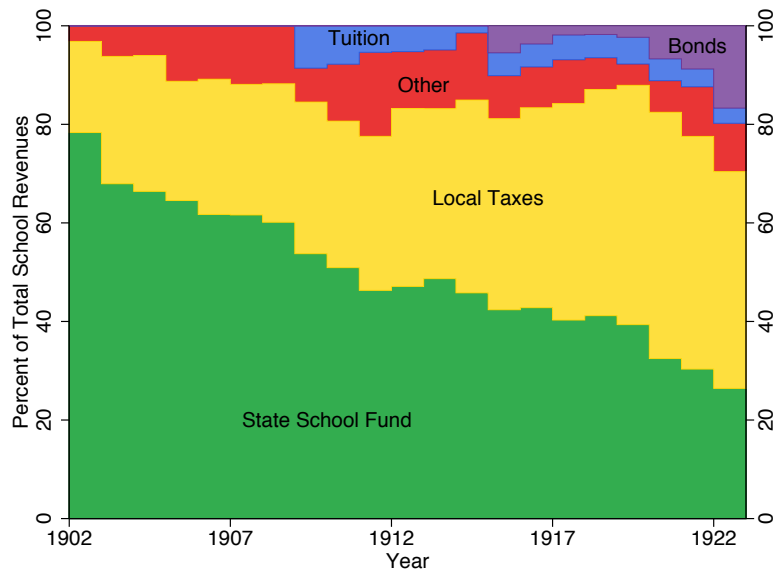
This paper provides new insight into the behavior of county school boards in the South after the de facto disfranchisement of African Americans. School board expenditures responded approximately one for one to adjustments in revenue. This provides historical evidence of a flypaper effect in the school finance context. An analysis of differential effects in expenditures by race suggests that African-American schools were little affected by budget shocks, in comparison to white schools. This result suggests that there was little fat to trim from the budgets of African-American schools, implying that school boards kept them close to whatever was the perceived lower bound of quality.

Important questions remain regarding the physical impact of these budget shocks. Future work will consider how changes in appropriations affected measured school quality, such as term length, the qualifications of teachers, number of teachers, and number of schools. This will provide further insight into the margins along which expenditures were reduced in response to budget cuts.

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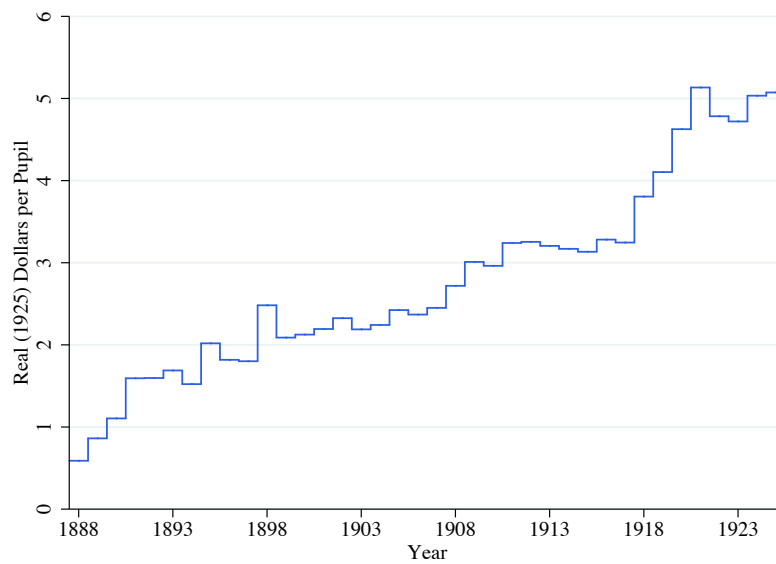
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Figure 1: Sources of School Revenues by Year, 1902–1922



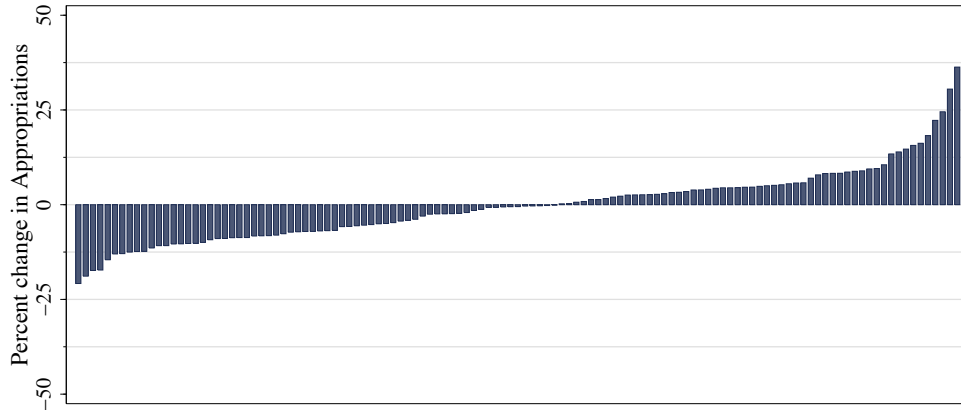
Notes: Displays the relative contribution of various sources to total school revenues. Source: Reports of the Georgia Department of Education, various years.

Figure 2: Disbursements from the State School Fund per Pupil (1925\$), 1888–1926

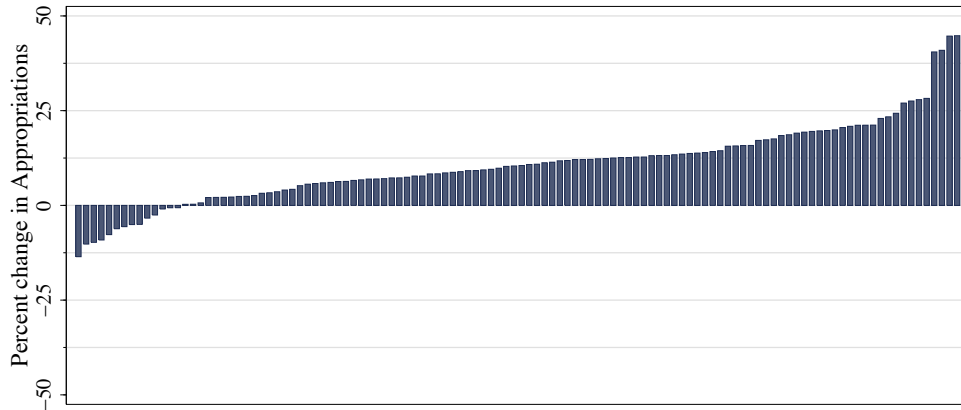


Source: Reports of the Georgia Department of Education, various years.

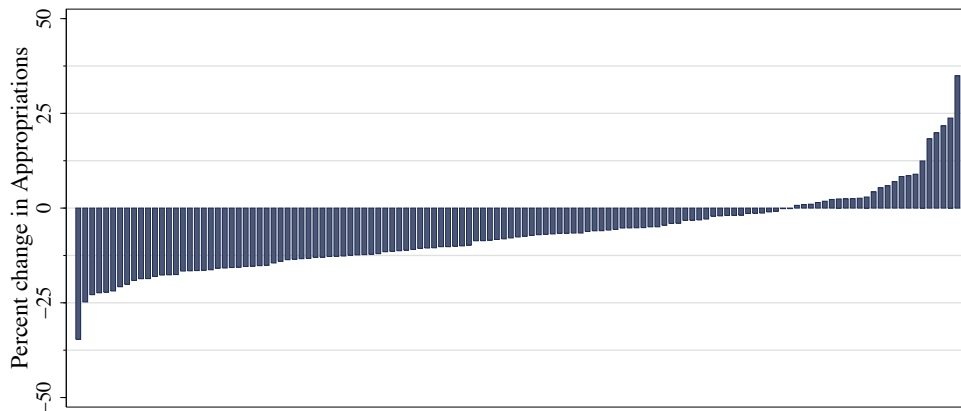
Figure 3: Percent Change in County-Level Appropriations around Census Years



(a) 1912 to 1914



(b) 1917 to 1919



(c) 1922 to 1924

*Note:* Each new school census caused varied changes in appropriations from the State School Fund at the county level in adjustment years. Each bar represents the percent change in state appropriations received by a county as a result of the relevant census update. Counties are rank ordered by percent change in appropriations in each adjustment year.  
*Source:* Reports of the Georgia Department of Education, various years.

Table 1: Mean County-Level School Expenditures by Race

<i>1912</i>						
	Black		White		Difference	
Enrollment	1322	[979]	1840	[1165]	-518	(140)
Enrollment rate (%)	61	[15]	80	[12]	-19	(2)
Teacher salary per pupil (¢)	234	[132]	803	[380]	-570	(37)
Capital expenditures per pupil (¢)	6	[11]	109	[161]	-103	(15)
Total expenditures per pupil (¢)	239	[134]	913	[486]	-673	(46)
Number of counties	118		118			
<i>1917</i>						
	Black		White		Difference	
Enrollment	1622	[1152]	2153	[1235]	-531	(157)
Enrollment rate (%)	76	[16]	86	[10]	-10	(2)
Teacher salary per pupil (¢)	204	[96]	828	[461]	-624	(44)
Capital expenditures per pupil (¢)	11	[27]	91	[136]	-80	(13)
Total expenditures per pupil (¢)	215	[107]	920	[546]	-704	(52)
Number of counties	115		115			
<i>1922</i>						
	Black		White		Difference	
Enrollment	1518	[1071]	2412	[1544]	-894	(167)
Enrollment rate (%)	78	[17]	90	[9]	-12	(2)
Teacher salary per pupil (¢)	385	[208]	1469	[673]	-1083	(63)
Capital expenditures per pupil (¢)	25	[57]	451	[1110]	-426	(99)
Total expenditures per pupil (¢)	410	[224]	1920	[1284]	-1509	(116)
Number of counties	127		127			

Notes: The columns labeled “Black” and “White” report means for the respective race with standard deviations in brackets. The column labeled “Differences” reports differences in means estimated from regressions and presents standard errors in parentheses. All monetary figures are in nominal cents.

Table 2: Summary Revenue and Expenditure Statistics for 1912, 1917, 1922

<i>1912</i>						
	Losers		Gainers		All	
Enrollment	3239	(1697)	3068	(1387)	3162	(1561)
Enrollment rate (%)	73	(12)	69	(11)	71	(12)
Appropriation per pupil	482	(123)	443	(73)	465	(105)
<b>Receipts and Expenditures:</b>						
State receipts per pupil	471	(145)	428	(102)	452	(129)
Local tax receipts per pupil	117	(189)	144	(210)	129	(198)
<b>Total receipts per pupil</b>	715	(323)	726	(284)	720	(305)
Teacher salary per pupil	498	(185)	493	(133)	496	(163)
Support expenditures per pupil	40	(18)	43	(20)	42	(19)
Superintendent pay per pupil	32	(13)	34	(14)	33	(14)
Capital expenditures per pupil	49	(58)	65	(88)	57	(73)
<b>Total expenditures per pupil</b>	657	(305)	664	(271)	660	(289)
Number of counties	65		53		118	
<i>1917</i>						
	Losers		Gainers		All	
Enrollment	3604	(1663)	3798	(1693)	3774	(1683)
Enrollment rate (%)	82	(11)	81	(9)	81	(10)
Appropriation per pupil	449	(54)	385	(45)	393	(50)
<b>Receipts and Expenditures:</b>						
State receipts per pupil	462	(68)	388	(60)	397	(66)
Local tax receipts per pupil	155	(143)	200	(212)	194	(205)
<b>Total receipts per pupil</b>	721	(232)	715	(388)	715	(372)
Teacher salary per pupil	487	(80)	488	(182)	488	(173)
Support expenditures per pupil	37	(12)	38	(16)	38	(15)
Superintendent pay per pupil	30	(10)	30	(11)	30	(11)
Capital expenditures per pupil	49	(58)	50	(77)	50	(74)
<b>Total expenditures per pupil</b>	696	(239)	664	(348)	668	(336)
Number of counties	14		101		115	
<i>1922</i>						
	Losers		Gainers		All	
Enrollment	3957	(1992)	3816	(1680)	3930	(1931)
Enrollment rate (%)	85	(10)	78	(10)	83	(10)
Appropriation per pupil	598	(88)	537	(82)	586	(90)
<b>Receipts and Expenditures:</b>						
State receipts per pupil	622	(144)	542	(141)	607	(146)
Local tax receipts per pupil	564	(464)	692	(380)	588	(451)
<b>Total receipts per pupil</b>	1604	(839)	1722	(752)	1627	(822)
Teacher salary per pupil	917	(300)	1005	(311)	934	(303)
Support expenditures per pupil	55	(25)	54	(18)	55	(24)
Superintendent pay per pupil	45	(20)	47	(16)	46	(19)
Capital expenditures per pupil	262	(589)	278	(380)	265	(555)
<b>Total expenditures per pupil</b>	1470	(793)	1631	(749)	1500	(785)
Number of counties	103		24		127	

Notes: Means are reported by whether counties gained or lost state funds after the respective school censuses of 1913, 1918, and 1923. Standard deviations are in parentheses. All monetary figures are in nominal cents. A light gray background denotes the difference in means across groups is statistically significant at the 95-percent confidence level, while a dark gray background denotes significance at the 99-percent level.

Table 3: Distribution of Change in State Funds per Pupil

	1912 to 1914	1917 to 1919	1922 to 1924
1st percentile	-320	-9	-196
5th percentile	-210	26	-133
10th percentile	-128	49	-94
25th percentile	-78	80	-57
50th percentile	-42	115	-2
75th percentile	-11	147	62
90th percentile	11	185	135
95th percentile	33	198	208
99th percentile	61	261	278
Mean change	-56	115	9
Standard deviation of $\Delta$	95	53	98
Number of counties	118	115	127

Notes: All figures are in nominal cents.

Table 4: Estimates of the Effect of Budget Shocks on School Revenues, 1912–1914

	(1) $\Delta Receipts PP$	(2) $\Delta State PP$	(3) $\Delta Local Tax PP$	(4) $\Delta Tuition PP$
$\Delta Approp PP_t$	1.329*** (0.20)	1.045*** (0.08)	0.085 (0.12)	0.046 (0.05)
$\Delta Enrollment_{t-2}$	0.030 (0.03)	-0.007 (0.01)	-0.008 (0.02)	-0.003 (0.01)
$\Delta Local Tax PP_{t-2}$	-0.472*** (0.11)	-0.020 (0.04)	-0.483*** (0.06)	-0.003 (0.03)
$\Delta Percent Black_{t-2}$	-12.363* (7.07)	-1.823 (2.86)	-6.799 (4.19)	0.632 (1.69)
Constant	58.955*** (21.65)	2.917 (8.76)	42.160*** (12.82)	0.932 (5.17)
R-squared	0.450	0.650	0.342	0.010
Counties	118	118	118	118
Dependent Variable:				
Mean	-28.333	-56.950	17.863	-2.354
Std. Dev.	237.127	120.460	128.445	42.192

Notes: Standard errors are reported in parentheses. All monetary figures are nominal. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.



Table 5: Estimates of the Effect of Budget Shocks on Various Expenditures, 1912–1914

	(1)	(2)	(3)	(4)	(5)
	$\Delta Total\ Exp\ PP$	$\Delta Teacher\ PP$	$\Delta Support\ PP$	$\Delta Super.\ PP$	$\Delta Capital\ PP$
$\Delta Approp\ PP_t$	0.843*** (0.20)	0.574*** (0.10)	0.055*** (0.01)	0.042*** (0.01)	0.035 (0.11)
$\Delta Enrollment_{t-2}$	0.027 (0.03)	0.011 (0.02)	-0.001 (0.00)	-0.001 (0.00)	-0.005 (0.02)
$\Delta Local\ Tax\ PP_{t-2}$	-0.465*** (0.11)	0.002 (0.06)	-0.013** (0.01)	-0.008** (0.00)	-0.086 (0.06)
$\Delta Percent\ Black_{t-2}$	-15.533** (7.23)	-4.420 (3.59)	0.096 (0.39)	0.116 (0.24)	-0.824 (3.99)
<i>Constant</i>	48.709** (22.12)	13.373 (10.97)	1.102 (1.20)	1.646** (0.72)	3.210 (12.20)
R-squared	0.311	0.297	0.239	0.332	0.018
Counties	118	118	118	118	118
Dependent Variable:					
Mean	-9.675	-15.741	-2.689	-1.230	-2.768
Std. Dev.	216.573	106.329	11.129	7.190	100.088

Notes: Standard errors are reported in parentheses. All monetary figures are nominal. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 6: Estimates of the Effect of Budget Shocks on Expenditures by Direction of Shock, 1912–1914

	(1)	(2)	(3)	(4)	(5)
	$\Delta Total\ Exp\ PP$	$\Delta Teacher\ PP$	$\Delta Support\ PP$	$\Delta Super.\ PP$	$\Delta Capital\ PP$
$\Delta Approp\ PP_t$	0.782*** (0.24)	0.644*** (0.11)	0.048*** (0.01)	0.039*** (0.01)	-0.030 (0.14)
<i>Gainers</i> X $\Delta Approp\ PP_t$	0.479 (0.47)	-0.267 (0.22)	0.049** (0.02)	0.022 (0.01)	0.179 (0.26)
<i>Gainers</i>	3.881 (46.81)	-79.461*** (21.78)	-5.255** (2.37)	-3.090** (1.46)	31.606 (26.34)
<i>Constant</i>	42.903 (32.31)	55.937*** (15.03)	4.282** (1.64)	3.453*** (1.01)	-12.670 (18.18)
R-squared	0.347	0.413	0.365	0.420	0.032
Counties	118	118	118	118	118

Notes: Standard errors are reported in parentheses. All monetary figures are nominal. *Gainers* is an indicator variable for those counties whose appropriations from the state increased following the school census of 1913. All specifications include controls for lagged trends in enrollment, local tax revenues, and percentage of African-American children in the school-age population and the interaction of each with *Gainers*. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 7: Estimates of the Effect of Budget Shocks on Instructional Expenditures per Pupil by Race, 1912–1914

	All			Losers			Gainers		
	(1) Black	(2) White	(3) Difference	(4) Black	(5) White	(6) Difference	(7) Black	(8) White	(9) Difference
$\Delta Appropriation_{PP_t}$	0.094 (0.08)	1.134*** (0.21)	-1.040*** (0.21)	-0.004 (0.11)	1.433*** (0.27)	-1.437*** (0.27)	0.305*** (0.10)	0.241 (0.30)	0.063 (0.32)
$\Delta Enrollment_{r,t-2}$	0.037* (0.02)	0.041 (0.05)	0.015 (0.05)	0.041 (0.03)	0.055 (0.07)	0.036 (0.06)	0.032 (0.02)	0.020 (0.05)	-0.014 (0.06)
$\Delta Enrollment_{-r,t-2}$	0.056*** (0.02)	-0.025 (0.06)	0.062 (0.06)	0.091*** (0.03)	-0.028 (0.08)	0.069 (0.08)	0.006 (0.02)	-0.073 (0.07)	0.105 (0.07)
$\Delta Local Tax PP_{t-2}$	-0.014 (0.04)	0.053 (0.11)	-0.067 (0.12)	-0.059 (0.11)	-0.218 (0.27)	0.159 (0.27)	-0.008 (0.03)	0.151 (0.10)	-0.159 (0.10)
$\Delta Percent Black_{t-2}$	1.854 (2.87)	-1.662 (7.50)	3.516 (7.64)	8.708* (5.00)	5.412 (12.04)	3.296 (12.02)	-4.929* (2.83)	11.577 (8.67)	-16.506* (9.00)
Constant	-26.203*** (8.65)	52.236** (22.58)	-78.440*** (23.00)	-22.927 (14.91)	127.807*** (35.89)	-150.734*** (35.81)	-9.836 (8.36)	-32.956 (25.63)	23.120 (26.59)
R-squared	0.195	0.267	0.193	0.284	0.435	0.371	0.247	0.106	0.140
Counties	118	118	118	65	65	65	53	53	53
Mean	-26.974	-4.746	-22.228	-31.536	15.097	-46.632	-21.379	-29.081	7.702
Std. Dev.	77.928	213.346	207.062	95.407	258.552	244.403	49.017	137.988	145.923

Notes: Standard errors are reported in parentheses. All monetary figures are nominal. are counties whose appropriations from the state decreased following the school census of 1913, while appropriations for increased. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 8: Persistence of the Effect of Budget Shocks on Instructional Expenditures per Pupil Following the School Census of 1913

	All				Losers			Gainers		
	Black	White	Difference		Black	White	Difference	Black	White	Difference
<i>1912 to 1914</i>										
$\Delta Approp PP_t$	0.094 (0.08)	1.134*** (0.21)	-1.040*** (0.21)		-0.004 (0.11)	1.433*** (0.27)	-1.437*** (0.27)	0.305*** (0.10)	0.241 (0.30)	0.063 (0.32)
R-squared Counties	0.195 118	0.267 118	0.193 118		0.284 65	0.435 65	0.371 65	0.247 53	0.106 53	0.140 53
<i>1912 to 1915</i>										
$\Delta Approp PP_t$	0.194** (0.09)	0.892*** (0.22)	-0.698*** (0.23)		0.000 (0.11)	1.019*** (0.31)	-1.018*** (0.31)	0.596*** (0.18)	0.646* (0.32)	-0.050 (0.37)
R-squared Counties	0.146 117	0.161 117	0.080 117		0.190 64	0.210 64	0.175 64	0.218 53	0.135 53	0.074 53
<i>1912 to 1916</i>										
$\Delta Approp PP_t$	0.240*** (0.08)	0.638*** (0.24)	-0.398* (0.24)		0.179 (0.11)	0.750** (0.34)	-0.571* (0.33)	0.306** (0.13)	0.658* (0.35)	-0.352 (0.36)
R-squared Counties	0.216 115	0.072 115	0.046 115		0.269 64	0.123 64	0.099 64	0.181 51	0.092 51	0.048 51
<i>1912 to 1917</i>										
$\Delta Approp PP_t$	0.148 (0.09)	0.920*** (0.25)	-0.772*** (0.26)		0.119 (0.11)	1.122*** (0.36)	-1.003*** (0.36)	0.256 (0.19)	0.584 (0.37)	-0.329 (0.38)
R-squared Counties	0.168 118	0.147 118	0.085 118		0.224 65	0.193 65	0.140 65	0.166 53	0.153 53	0.097 53

Notes: Standard errors are reported in parentheses. Specifications include controls for lagged trends in enrollment, local tax revenues, and percentage of African-American children in the school-age population. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 9: Comparing the Effect of Budget Shocks on Instructional Expenditures per Pupil by Race around the Census Years of 1913, 1918, and 1923

	Black (1)	White (2)	Difference (3)
<i>1912 to 1914</i>			
$\Delta Appropri PP_t$	0.0938 (0.079)	1.1342*** (0.205)	-1.0404*** (0.209)
R-squared	0.195	0.267	0.193
Counties	118	118	118
<i>1917 to 1919</i>			
$\Delta Appropri PP_t$	0.0111 (0.159)	1.7610*** (0.429)	-1.7499*** (0.446)
R-squared	0.006	0.187	0.172
Counties	115	115	115
<i>1922 to 1924</i>			
$\Delta Appropri PP_t$	0.4185*** (0.145)	1.3642*** (0.448)	-0.9457** (0.447)
R-squared	0.083	0.101	0.076
Counties	127	127	127

Notes: Standard errors are reported in parentheses. All monetary figures are nominal. All specifications include controls for lagged trends in enrollment, local tax revenues, and percentage of African-American children in the school-age population. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 10: Estimates of the Effect of Budget Shocks on Capital Expenditures per Pupil by Race, 1912–1914

	All						Losers			Gainers		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	White	Black	Difference
	Black	White	Difference	Black	White	Difference	Black	White	Difference			
$\Delta Appropriation PP_t$	0.020 (0.03)	0.076 (0.24)	-0.056 (0.24)	0.011 (0.03)	-0.072 (0.19)	0.083 (0.19)	0.005 (0.05)	0.440 (0.66)	-0.435 (0.65)			
$\Delta Enrollment_{r,t,t-2}$	-0.019** (0.01)	0.029 (0.05)	-0.011 (0.05)	-0.033*** (0.01)	0.018 (0.05)	0.022 (0.05)	-0.009 (0.01)	0.045 (0.12)	-0.058 (0.11)			
$\Delta Enrollment_{-r,t,t-2}$	0.018*** (0.01)	-0.061 (0.07)	0.041 (0.06)	0.040*** (0.01)	-0.045 (0.05)	0.013 (0.06)	-0.013 (0.01)	-0.070 (0.14)	0.060 (0.14)			
$\Delta Local Tax PP_{t-2}$	0.012 (0.02)	-0.169 (0.13)	0.181 (0.13)	0.005 (0.03)	-0.208 (0.19)	0.213 (0.19)	0.019 (0.01)	-0.167 (0.21)	0.186 (0.21)			
$\Delta Percent Black_{t-2}$	0.993 (1.00)	-1.318 (8.78)	2.311 (8.72)	0.205 (1.50)	-7.081 (8.35)	7.286 (8.47)	1.541 (1.30)	-1.284 (18.70)	2.825 (18.39)			
Constant	3.022 (3.02)	-2.406 (26.44)	5.427 (26.26)	0.222 (4.47)	-30.204 (24.88)	30.426 (25.24)	6.268 (3.85)	24.850 (55.24)	-18.582 (54.33)			
R-squared	0.124	0.021	0.019	0.340	0.046	0.043	0.121	0.028	0.034			
Counties	118	118	118	65	65	65	53	53	53			
Mean	3.633	-11.322	14.955	2.298	-21.766	24.064	5.270	1.487	3.783			
Std. Dev.	26.113	216.083	214.356	29.796	137.929	139.699	20.896	285.199	281.307			

Notes: Standard errors are reported in parentheses. All monetary figures are nominal. are counties whose appropriations from the state decreased following the school census of 1913, while appropriations for increased. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.