FROM SEPARATE AND UNEQUAL TO INTEGRATED AND EQUAL? SCHOOL DESEGREGATION AND SCHOOL FINANCE IN LOUISIANA

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Abstract—School desegregation might have induced unintended behavioral responses of white families as well as state and local governments. This paper examines these responses and is the first to study the effects of desegregation on the finances of school districts. Desegregation induced white flight from blacker to whiter public school districts and to private schools, but the local property tax base and local revenue were not adversely affected. The state legislature directed significant new funding to districts where whites were particularly affected by desegregation. Desegregation therefore appears to have achieved its intended goal of improving resources available in schools that blacks attended.

I. Introduction

THE decentralized nature of education in the United States can frustrate federal policies to reduce school quality inequities, as individuals and lower levels of government may undermine federal efforts. The desegregation of southern education was perhaps the largest twentieth-century policy aimed at eradicating educational inequality. Improving school quality for blacks by tying their fate to that of whites was an important motivation for desegregating public schools.[1] This paper uses newly collected data to analyze a variety of responses, intended and unintended, to school desegregation in Louisiana and is the first to examine fiscal responses to this important policy.

Southern school districts desegregated quickly in the late 1960s. Desegregation had two key goals: increasing interracial contact in schools and reducing black-white school quality gaps. But whites resisted these changes, and behavioral responses by a variety of actors could have undermined these goals. White families might have left public schools or reduced their support for education at the ballot box. Local and state governments might have altered school funding, and prices—particularly property values—might have adjusted.

I show that whites did express dissatisfaction with desegregation by moving from blacker to whiter public school

districts and enrolling in private schools. Surprisingly, though, the local property tax base and local revenue raised were not adversely affected by desegregation. An influx of new state funding was directed disproportionately to districts where whites were particularly affected, allowing funding in integrated schools to be leveled up to the level that previously only white schools experienced. White flight likely would have been even more extensive without these compensating increases in state aid. In other work (Reber, 2010), I show that the increased funding for blacks' schools that accompanied desegregation increased black educational attainment.

Previous work has examined southern school finance before 1960 (see Margo, 1990; Card & Krueger, 1992; Bond, 1934) and later in the 1970s, but the period of desegregation has gone unexplored, largely because the relevant data were unavailable. This study helps fill this gap, showing that desegregation was effective in increasing funding for blacks' schools by eliminating black-white school quality gaps in Louisiana. The analysis also has implications for the school finance literature more generally. Although the increasing role of state governments in school finance is widely acknowledged, much of the literature on school finance employs a Tiebout-style local finance framework. This paper shows that sorting did occur in response to desegregation (white flight), but this did not adversely affect the finances of school districts. Rather, the response of state funding was a more important consideration. The state government was able to redirect substantial funding by subtly changing the parameters of the existing school finance formula rather than with a major reform. Most existing work on the role of state funding, however, focuses on state school finance "reforms," where the states explicitly change the policies governing the allocation of state funds to local school districts (Card & Payne, 2002, and Murray, Evans, & Schwab 1998).[2]

II. Background

Desegregation was a large-scale policy likely to have induced responses in a variety of actors. Rather than develop a general model incorporating all of these actors, I simply describe how they might be expected to respond to desegregation qualitatively.[3] First, white families might respond to desegregation by enrolling their children in private schools or moving from blacker to whiter school dis-

[1] Within the leadership of the National Association for the Advancement of Colored People (NAACP) and later the NAACP Legal Defense and Education Fund (LDF), significant debate started in the 1930s about whether to pursue equality for black schools under the separate-but-equal doctrine or by attacking segregation itself. By 1950, the LDF pursued the latter strategy; the legal argument in *Brown* proposed that the stigma associated with state-sanctioned segregation harmed black children. Practical issues in enforcing separate but equal were also at play (Greenberg, 1994).

[2] Hoxby (2001) makes a similar point, arguing that analysis of school finance (and finance reforms) requires knowledge of not only the basic structure of the system but also the specific parameters over time.

[3] A Tiebout-style model of local public goods is often used in studies of school finances; however, local finance was relatively unimportant compared to state finance in this context, so I do not pursue such a model here.

tricts. In addition to voting with their feet, whites might change their literal votes in support of education.
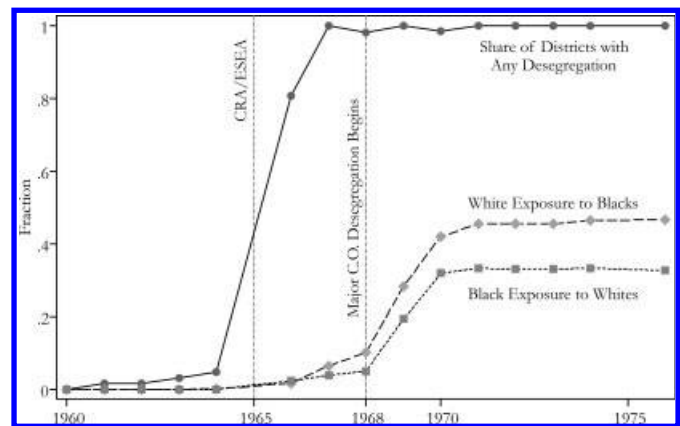
The state legislature and local school boards might change funding, depending on the political economy of school finance. On the one hand, desegregation could reduce the value of the public schools for potential home owners, reducing demand for housing and ultimately the local property tax base. Clotfelter (1975) finds evidence of declining property values in Atlanta, relative to the suburbs, when that district desegregated. Desegregation could affect the taste for education of the median voter if families with the highest taste for education leave public schools. Both of these forces would tend to decrease local funding. The potential for desegregation to adversely affect school expenditure through this channel was mitigated, however, by the relatively small share of funding from local sources: the average district raised only 23% of its revenue locally in 1965. On the other hand, in the early 1960s, segregated white schools were better funded than black schools in the same district. Thus, without additional funding for schools, the average funding in whites' schools would fall as they combined with black schools. Desegregation would therefore have put pressure on state and local governments to increase overall funding for schools in order to prevent whites from experiencing a drop in school quality.

Starting in 1965, Title I of the new federal Elementary and Secondary Education Act (ESEA) provided grants to local school districts based on the number of poor children in residence, particularly increasing funding in blacker districts that had higher poverty rates. The coincident introduction of this program complicates the analysis of funding from other sources somewhat. While neoclassical models predict that state and local governments offset increases in funding from federal sources, a substantial literature suggests that local governments tend not to fully offset increases in federal aid (Hines & Thaler, 1995). In the analysis, I control for the share of students eligible for the new Title I program to separate the effects of racial composition from the effects of new federal funding.

Figure 1 shows the rapid desegregation of Louisiana schools between 1965 and 1970. Segregation remained high more than a decade after *Brown* v. *Board of education* in 1964, less than 5% of Louisiana districts had any desegregated schools and the average black child was in a school that was only about 1.5% white. By 1966, 80% of districts had at least some desegregation; and between 1968 and 1970, segregation fell substantially as districts across the state implemented more substantial plans following the Supreme Court's decision in *Green* v. *New Kent County*.[4]

FIGURE 1.—TRENDS IN SEGREGATION, LOUISIANA SCHOOL DISTRICTS

"White exposure to blacks" is the black share of enrollment in the average white's school, and vice versa for "Black exposure to whites". Author's calculations based on Office of Civil Rights (1967–1976) and Southern Education Reporting Service data (1960–66). Trends reported are averages for all counties. Results are similar if sample is limited to the counties with data available in all years reported. CRA - Civil Rights Act; ESEA - Elementary and Secondary Education Act; C.O. - Court-ordered.

Schools in states classified as border states during the Civil War desegregated somewhat earlier, but trends in segregation look similar in other states of the former Confederacy (Cascio et al., 2008).

III. Methods and Data

A. Black Enrollment Share and the Intensity of Desegregation Treatment

Desegregation was concentrated in the late 1960s across Louisiana, so identifying its effects from variation in the timing of desegregation is not possible. Instead, I use variation in the intensity of desegregation due to initial conditions. From the perspective of whites,[5] the effects of desegregation policy were larger the higher the black enrollment share on two margins: both the potential for contact with blacks in school and whites' class sizes would increase more in blacker districts. Figure 2 relates the 1961 black enrollment share to the change in white exposure to blacks—the black enrollment share in the average white's school—from 1964 to 1970.[6] If all districts integrated fully and their black share of enrollment did not change, the points would lie on the 45-degree line. Most are below the 45-degree line, suggesting that integration was incomplete or white flight was more pronounced in blacker districts, but the black share of enrollment before desegregation is a strong predictor of whites' subsequent exposure to blacks.

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[4] Together with 1965 ESEA, the 1964 Civil Rights Act (CRA) gave southern school districts a financial incentive to desegregate (Cascio et al., 2008). In *Green* v. *New Kent County* (1968, 391 U.S. 430), the Supreme Court found that freedom-of-choice plans did not produce sufficient desegregation. Following this decision, more desegregation plans with mandatory reassignments, sometimes facilitated by busing, began to be required by the courts.

[5] Although blacks' presence on school boards increased, whites continued to control southern school boards in the late 1960s. In 1969, only eight school board members statewide were black; that number rose to 41 by 1974 (in 66 school districts).

[6] Formally, white exposure to blacks for a district is the weighted average of the black share of enrollment in each school, where the weights are white enrollment. Data for 1965 are not available, so I report the change from 1964.

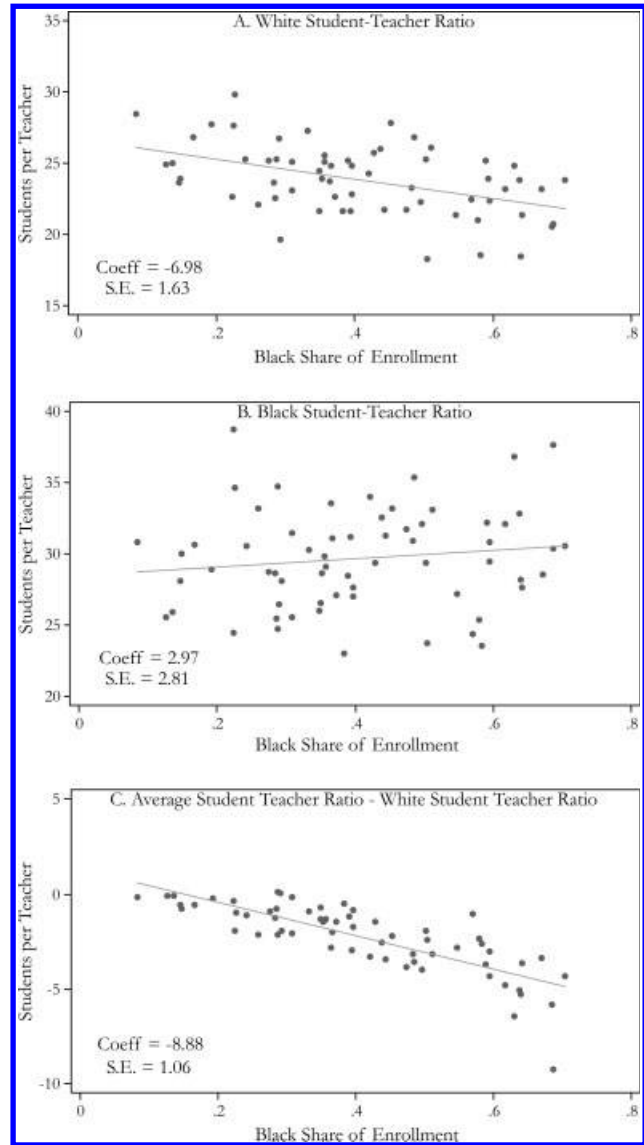FIGURE 2.—BLACK ENROLLMENT SHARE AND CHANGE IN WHITES' EXPOSURE TO BLACKS
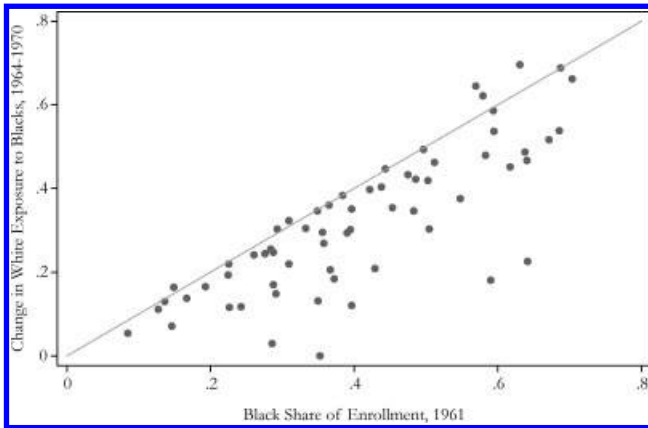
Black share of enrollment from Louisiana Department of Education, *Annual Financial and Statistical Report*. Change in white exposure to blacks calculated from Office of Civil Rights and Southern Education Reporting Service data.

FIGURE 3.—BLACK ENROLLMENT SHARE AND STUDENT-TEACHER RATIOS, 1961

Black share of enrollment from Louisiana Department of Education, *Annual Financial and Statistical Report*. Students and teachers were segregated by race, so the white student-teacher ratio is the total number of white students divided by the total number of white classroom teachers at the district level; black student-teacher ratio is calculated similarly. Panel C shows the white student-teacher ratio less the average student-teacher ratio (total students divided by total teachers). OLS coefficients with robust standard errors are reported.

Before desegregation, black-white gaps in financing and class size were larger in blacker districts. This relationship arose as blacks were disenfranchised around the turn of the century and was prevalent throughout the South during the first half of the twentieth century.[7] The Supreme Court's 1896 separate-but-equal ruling in *Plessy* v. *Ferguson* made it difficult for state governments to discriminate in the allocation of funding to local school districts, and southern state governments typically allocated revenue without regard to race. However, local school boards did discriminate, disproportionately directing funding to the white schools. This meant that whites in districts with many blacks could finance better schools without raising much revenue locally by diverting a portion of state funding for black students to white schools, producing the strong, positive relationship between the black-white funding gap and black enrollment share documented by Margo (1990). During the fifty years leading up to *Brown*, these black-white gaps narrowed substantially (Margo, 1990; Card & Krueger, 1992), but even in 1959, the last year the data were reported by race, the average Louisiana district spent 72 cents per pupil on instruction in the black schools for every dollar spent in the white schools.

Figure 3A shows that in the early 1960s, whites in blacker districts enjoyed smaller class sizes compared to whites in whiter districts, while black class size was variable but unrelated to black enrollment share (see figure 3B). Without additional resources, whites would experience the average student-teacher ratio after desegregation. The final panel of figure 3 shows that the difference between the average student-teacher ratio and the white student-teacher ratio was negatively related to black enrollment share, indi-

cating that whites in blacker districts would be more affected by desegregation through the resource channel.[8]

B. Estimation

To estimate the effects of desegregation on outcomes, I first estimate the simple correlation of changes in the dependent variables of interest around the time of desegre-

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[7] See Margo (1990) and Bond (1934) for a detailed analysis of southern school finance before desegregation.

[8] See the working paper version of this paper for a more detailed discussion of the pre-desegregation school finance system in Lousiana (Reber, 2007). Student-teacher ratio is just one measure of school quality gaps. Other race-specific measures are not available for this period, but such measures would arguably be more unequal due to their lower visibility.

gation (1965–1970) with the 1961 black share of enrollment (early enough so that it was unaffected by desegregation):

$$\Delta y_i = \beta_0 + \beta_1 FractionBlack61_i + \varepsilon_i, \qquad (1)$$

where Δy is the change in an outcome, such as per pupil revenue, from 1965 to 1970, $FractionBlack61$ is the black share of public enrollment in 1961, and ε is an error term.

These regressions establish descriptively whether changes in key variables differed by black enrollment share. Of course, blacker districts might have experienced different changes in outcomes for reasons unrelated to desegregation. I add controls to equation (1) for observable preexisting characteristics of districts. The new federal Title I program targeted significant funding to poor districts, so I control for the share of enrollment eligible for Title I in 1966.[9] This is particularly important for the revenue variables, as districts with more Title I eligibles per pupil saw larger increases in federal, and therefore total, funding. I also include pre-desegregation per pupil current expenditure (averaged from 1960 to 1963) as well as demographic and socioeconomic indicators from the 1960 Census: per capita income, the percentage of households with complete plumbing, percentage of households with income below $3,000, the (log of) total population, and the percentage of the population living in urban areas:

$$\begin{aligned} \Delta y_i = \beta_0 &+ \beta_1 FractionBlack61_i \\ &+ \beta_2 FractionTIEligible66_i \\ &+ \beta_3 InitialExpenditure_i + X_i\theta + \varepsilon_i. \end{aligned} \qquad (2)$$

This list of observables is far from exhaustive, but it is reassuring that the results are similar with and without the controls.[10] After presenting the main results, I also show that the differential changes in outcomes by black enrollment were concentrated during the period of desegregation and not simply part of a long-term trend.

C. Data

The analysis uses a new data set collected from administrative reports published by the Louisiana Department of Education for 1955 to 1975. The data cover Louisiana's 64

parish and 3 city districts and include the number of classroom teachers by race, public and private student enrollment by race, revenue by source, current expenditure, and details about funding under the state minimum foundation program. Cameron Parish, a relatively small district, was excluded from the analysis because it had significant revenue from oil discovered on school district property, making it an extreme outlier in local revenue. Data for the three city districts were combined with those of their respective parishes (counties) and matched to demographic data from the 1960 Census and data on total assessed valuation (the local property tax base) published by the Louisiana Tax Commission for 1955 to 1975. Finally, data on the number of students eligible for Title I funding in 1966 were taken from a Congressional Report (U.S. Senate, 1967). A district's Title I eligible count was determined based primarily on data from the 1960 Census, so this can be considered a "preprogram" variable. The segregation measures were calculated from Office of Civil Rights (OCR) data and reports of the Southern Education Reporting Service. (See the data appendix for more detail.) Summary statistics for the dependent variables are reported for 1965, 1970, and the change from 1965 to 1970 in table 1A. Table 1B reports summary statistics for the preexisting characteristic control variables.

IV. Results

A. White Flight: Public and Private Enrollment Responses

Figure 4 shows statewide trends in public and private enrollment by race, highlighting the shift of enrollment from public to nonpublic schools around the time of desegregation, especially between 1968 and 1970. These students appear not to have returned to the public system, as white private school enrollment remained elevated throughout the 1970s. These trends can also be seen in table 1A: white public enrollment fell by 8 log points on average between 1965 and 1970, while the share of white students in private schools rose by 8 percentage points.

The reductions in white public and increase in nonpublic enrollment were larger in blacker districts. Table 2 reports results of estimating equations (1) and (2) with the change from 1965 to 1970 in several enrollment measures as dependent variables. I report similar specifications for other outcomes, so I walk through the specifications for the enrollment variables in some detail. The first column of each panel reports the results without controls. In the second specification, controls for the share of students eligible for Title I are added; the sociodemographic controls from the census and initial per pupil current expenditure (1961) are added in the third specification. Finally, for the enrollment variables only, I include the change in (the natural log of) lagged births in the parish. Lagged births is the sum of births (separately by race where appropriate) for all the cohorts that would be in first through twelfth grades during

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[9] The number of Title I eligibles in 1965 was based on data from earlier in the 1960s and could not have been affected by districts responses to desegregation. See Cascio et al. (2010) for details.

[10] The Voting Rights Act was passed around the same time (1965) and increased black voter registration substantially, especially in blacker districts. However, it is unlikely that blacks gained the influence in the state legislature to effect the subtle changes to the state aid formula that brought more revenue to their districts; the state House of Representatives had only one black member in 1969 (of 105), and the Senate had none. In 1974, the House had eight black members, while the Senate remained all white (Joint Center for Political Studies, 1969, 1972). Further, controlling for the change from 1964 to 1968 in the share of the black voting age population registered to vote in each county does not alter the coefficients on black enrollment share. (I am grateful to Jim Alt for providing the voter registration data; see Alt, 1995.)

TABLE 1.—SUMMARY STATISTICS

	1965		1970		Change	
	Mean	s.d.	Mean	s.d.	Mean	s.d.
A: Dependent Variables						
Enrollment variables						
ln (white public enrollment)	8.50	0.94	8.41	1.10	−0.08	0.25
ln (white public and private enrollment)	8.60	1.02	8.62	1.09	0.02	0.16
White private share of enrollment	0.09	0.11	0.18	0.14	0.08	0.14
ln (total enrollment)	9.05	0.81	9.04	0.89	−0.02	0.16
Property tax base variables						
ln (Assessed valuation)	12.30	1.01	12.33	1.02	0.03	0.13
ln (Real assessed valuation)	11.41	1.07	11.39	1.09	−0.02	0.09
ln (Non-real assessed valuation)	11.72	0.99	11.77	1.00	0.05	0.19
ln (Per pupil assessed valuation)	3.24	0.38	3.29	0.40	0.05	0.18
Revenue variables						
Total revenue per pupil (thousands of 2007$)	3.06	0.35	4.23	0.49	1.17	0.51
Local revenue per pupil (thousands of 2007$)	0.71	0.27	1.07	0.36	0.36	0.26
State formula aid per pupil (thousands of 2007$)	1.89	0.30	2.34	0.32	0.45	0.19
Federal ESEA revenue per pupil (thousands of 2007$)	0.06	0.10	0.33	0.22	0.27	0.22
Other state and federal aid per pupil (thousands of 2007$)	0.39	0.11	0.49	0.13	0.10	0.11
Educational inputs						
Current expenditure per pupil (thousands of 2007$)	2.67	0.30	3.76	0.42	1.09	0.43
Teachers per 100 students	4.10	0.32	4.71	0.40	0.61	0.41
Transportation aid per pupil (thousands of 2007$)	0.27	0.11	0.33	0.13	0.06	0.05
Number of observations: 63						

B: Independent Variables		
	Mean	s.d.
Fraction black, 1961	0.39	0.16
Per capita income, thousands of dollars (1960 Census)	1.07	0.28
Share of households with complete Plumbing (1960 Census)	0.48	0.14
Share of households with less than $3,000 income (1960 Census	0.46	0.14
ln (total population) (1960 Census)	10.34	0.86
Urban share of population (1960 Census)	0.36	0.25
Current expenditure per pupil (1961)	2.32	0.32
Share of enrollment eligible for title I (1966)	0.32	0.16
Number of observations: 63		

Cameron Parish had unusually high local revenue due to the discovery of oil on school property and is excluded from the analysis.

FIGURE 4.—TRENDS IN PUBLIC AND PRIVATE ENROLLMENT BY RACE, LOUISIANA
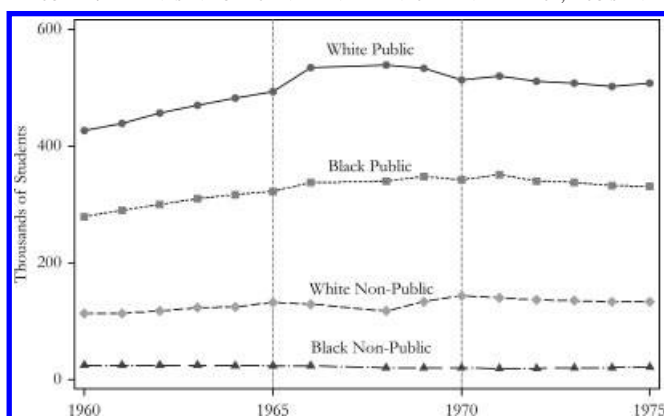
Author's calculation based on Louisiana Department of Education, *Annual Financial and Statistical Report*. Nonpublic school enrollment included state-accredited enrollment only; the increase in nonpublic enrollment around the time of desegregation may be underestimated if new unaccredited schools opened.

the current school year. These data are available for only 52 counties, so the sample is slightly smaller in these specifications.

The results for the log change in white public enrollment are reported in table 2A. The coefficients are consistently negative and significant, indicating that relative to whiter districts, blacker districts lost more white enrollment. In the first specification with no controls, the coefficient on black enrollment share is −1.1; including all controls reduces the coefficient to −0.76, indicating that a 10 percentage point increase in 1961 black enrollment share was associated with an additional reduction in white public school enrollment of 7.6 to 11 log points between 1965 and 1970. (The standard deviation of initial black enrollment share is 16 percentage points.) I also experimented with including the square of black enrollment share in some specifications to capture nonlinearities in the response of whites; the quadratic term was generally not significant or large, so I do not report the results.

The existing literature documents white flight from public schools, but generally cannot distinguish between flight to alternative public schools or private schools (Reber, 2005; Welch & Light, 1987). The detailed data for Louisiana allow me to distinguish white flight on these two mar-

TABLE 2.—EFFECTS OF DESEGREGATION ON PUBLIC AND PRIVATE ENROLLMENT

	A: ln (White Public Enrollment)				B: ln (White Public + Private Enrollment)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black share of enrollment (1961)	−1.108***	−0.858***	−0.792***	−0.756***	−0.521***	−0.466***	−0.426***	−0.337*
	(0.141)	(0.163)	(0.191)	(0.213)	(0.111)	(0.135)	(0.156)	(0.168)
Fraction eligible for Title I (1966)		X	X	X		X	X	X
Census controls			X	X			X	X
Initial per pupil current expenditure			X	X			X	X
Change in ln (lagged births)				X				X
Observations	63	63	63	52	63	63	63	52
R^2	0.503	0.557	0.629	0.672	0.265	0.271	0.412	0.494
	C: White Percentage Private				D: ln (Black and White Public Enrollment)			
Black share of enrollment (1961)	0.452***	0.301***	0.277**		−0.609***	−0.391***	−0.351***	−0.443***
	(0.0901)	(0.105)	(0.128)		(0.0976)	(0.109)	(0.129)	(0.139)
Fraction eligible for Title I (1966)		X	X			X	X	X
Census controls			X				X	X
Initial per pupil current expenditure			X				X	X
Change in ln (lagged births)								X
Observations	63	63	63		63	63	63	52
R^2	0.291	0.360	0.418		0.390	0.495	0.564	0.652

Robust standard errors in parentheses. Dependent variables are changes from 1965 to 1970. Lagged births calculated by adding the number of births for all cohorts who would be aged 6–18 in the fall of the school year and were born in the parish, separately by race where appropriate. Birth data are available for only 52 parishes. Census controls are county-level variables from the 1960 Census: per capita income, percentage of households with complete plumbing, percentage of households with less than $3,000 in annual income, the natural log of population, and the share of population in urban areas. Cameron Parish excluded. *Significant at 10%; **significant at 5%; ***significant at 1%.

gins. If all the response was on the private school margin, the coefficient on initial black enrollment share would be 0 with the change in total (private plus public) white enrollment as the dependent variable. Instead, the coefficient is negative and significant in all three specifications, suggesting that not all of the white flight was to private schools (See table 2B). With all the controls, the coefficient on black enrollment share is −0.33, compared to −0.78 for the change in public enrollment; this suggests that increases in private school enrollment accounted for about 60% of the differential decline in public school enrollment in blacker districts. Table 2C indicates that the change in the share of white students enrolled in private schools also increased more in blacker districts; a 10 percentage point increase in initial black enrollment share is associated with an additional 2.8 to 4.5 percentage point increase in the fraction of students in private schools.[11]

These results suggest that there was white flight out of districts with high black enrollment shares to both whiter public school districts and private schools. On the one hand, this raises concerns about the potential for declining property values and support for public schools; on the other hand, lower enrollment meant that districts had fewer stu-

[11] Clotfelter (1976) finds a larger effect on the statewide share of private enrollment in Mississippi between 1966 and 1970, but his estimates of the relationship between counties' black enrollment share and changes in white private enrollment share are similar. He does not report the results from linear models, but his figure 4 suggests a slope around 0.4 when black enrollment share is less than 0.6 and a larger slope for blacker counties. Ninety percent of Louisiana counties were less than 60% black; the presence of more heavily black counties in Mississippi may explain the larger overall increase in private school enrollment there. In contrast, Baum-Snow and Lutz (2008) find no evidence of a private enrollment response to court-ordered desegregation in southern metropolitan areas, but the estimates are imprecise.

dents to support. Figure 2D shows results with the (log) change in the total (black and white) public enrollment as the dependent variable. The coefficient on initial black enrollment share is statistically significant and ranges from −0.35 to −0.61, confirming that the total number of students supported in the public schools declined more in blacker districts.

B. Local Property Tax Base Responses

Table 3 reports results of estimating equations (1) and (2) with (log) changes in total assessed valuation (AV) overall and separately for real estate (real AV) and other property (nonreal AV), as well as total assessed valuation per pupil. The standard errors are large, and the coefficients are more sensitive to the inclusion of controls, but the results do not point to larger declines in the property tax base in districts more affected by desegregation. The results for per pupil AV (see table 3B) show that the per pupil property tax base increased more in blacker districts, reflecting the relative decline in total enrollment.

Given the clear dissatisfaction with desegregation among whites, why didn't the property tax base suffer? One possibility is that residential property values did decline, but the assessed valuation data are too noisy to pick up the effect. Indeed, the estimates in table 3 are sufficiently imprecise that I cannot rule out large negative or positive effects. Changes in residential real estate prices are also reflected in assessed valuation only imperfectly and with a lag; assessments often do not reflect changes in market prices. Further, residential real estate is only a portion of total assessed valuation. In 1965, real property—residential and commercial—averaged about 42% of total assessed valuation.

TABLE 3.—EFFECTS OF DESEGREGATION ON THE PROPERTY TAX BASE

	A: ln (Total Assessed Valuation)			B: ln (Per Pupil Assessed Valuation)		
	(1)	(2)	(3)	(4)	(5)	(6)
Black share of enrollment (1961)	−0.00366	0.161	0.212	0.606***	0.553***	0.563***
	(0.103)	(0.120)	(0.128)	(0.122)	(0.148)	(0.177)
Fraction eligible for Title I (1966)		X	X		X	X
Census controls			X			X
Initial per pupil current expenditure			X			X
Observations	63	63	63	63	63	63
R^2	0.000	0.089	0.375	0.289	0.294	0.387
	C: ln (Real Assessed Valuation)			D: ln (Non-Real Assessed Valuation)		
Black share of enrollment (1961)	−0.111	0.0122	−0.00757	0.0196	0.212	0.286
	(0.0703)	(0.0813)	(0.100)	(0.148)	(0.176)	(0.192)
Fraction eligible for Title I (1966)		X	X		X	X
Census controls			X			X
Initial per pupil current expenditure			X			X
Observations	63	63	63	63	63	63
R^2	0.040	0.142	0.209	0.000	0.059	0.318

Robust standard errors in parentheses. Dependent variables are changes from 1965 to 1970. Real assessed valuation includes the value of real property; non-real assessed valuation includes the value of all other property. Initial per pupil current expenditure is the average from 1960 to 1963. Census controls are county-level variables from the 1960 Census: per capita income, percentage of households with complete plumbing, percentage of households with less than $3,000 in annual income, the natural log of population, and the share of population in urban areas. Cameron Parish excluded. *Significant at 10%; **significant at 5%; ***significant at 1%.

FIGURE 5.—TRENDS IN PER PUPIL REVENUE BY SOURCE
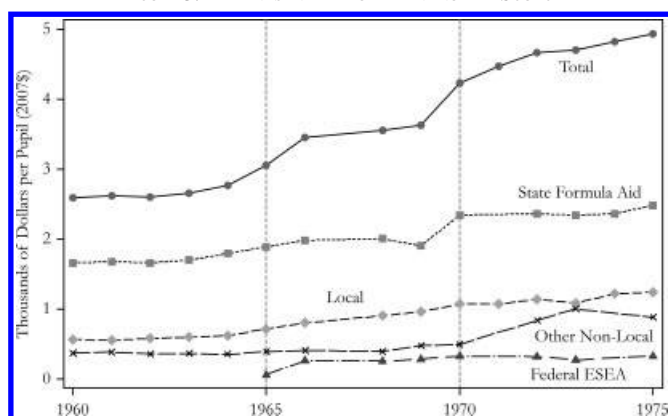
Author's calculation based on Louisiana Department of Education, *Annual Financial and Statistical Report*.

Even if property values and the local tax base had been affected but the estimates were too imprecise to pick it up, any effects on total revenue would have been mitigated by the relatively small local contribution to total revenue (as was common in the South), with the average district raising just 23% of its revenue locally in 1965. And as shown below, desegregation did not reduce local revenue per pupil. Overall, concerns about desegregation reducing local districts' willingness or ability to fund schools seem not to have been borne out in Louisiana.

C. Revenue Responses: Per Pupil Revenue by Source

Figure 5 shows trends in average per pupil revenue for four mutually exclusive categories: local (primarily property and sales taxes), state formula aid (the state minimum foundation program is described in more detail in the data appendix), federal ESEA program funds, and other state

and federal revenue. Local revenue and state formula aid began rising around 1963 and 1965, respectively, and continued to increase in most years through the mid-1970s. The structure of the state minimum foundation formula did not change during this period, although some of the parameters of the formula and the total revenue distributed did change. Federal ESEA revenue jumped substantially following the introduction of the program in 1965 and remained around that level into the 1970s. The combination of these trends meant that total revenue began to increase substantially after 1965, around the time districts took their first steps toward desegregation.

Table 4 shows the results of estimating equations (1) and (2) for total revenue per pupil and separately for the categories described above. Per pupil revenue increased more in every category (with the exception of a small decline in other state and federal in one specification). The inclusion of controls tends to increase the standard errors, but with the exception of federal ESEA revenue, the results are qualitatively similar across specifications. As expected, the inclusion of the fraction of students eligible for Title I reduces the coefficient on fraction black substantially in the federal ESEA regressions (table 4B). That is, the relationship between black enrollment share and the change in federal ESEA funding is due mostly to the correlation between race and poverty and the fact that Title I eligibility was based on low-income status.

In the specification with all the controls, the point estimates suggest that a 10 percentage point increase in initial black enrollment share was associated with an additional $109 increase in total per pupil revenue (table 4D) between 1965 and 1970: $44 from local sources (table 4A), $13 from Federal ESEA (table 4B), $55 from state formula aid (table 4C), and a small decline of $3 per pupil from other state and federal programs (table 4C). A district at the 90th

TABLE 4.—EFFECTS OF DESEGREGATION ON PER-PUPIL REVENUE BY SOURCE

	A: Local Revenue per Pupil			B: Federal ESEA per Pupil			C: State Formula Aid per Pupil		
Black share of enrollment (1961/62)	0.203	0.490*	0.437	0.667***	0.142	0.133	0.609***	0.629***	0.554***
	(0.207)	(0.245)	(0.302)	(0.151)	(0.141)	(0.173)	(0.126)	(0.154)	(0.160)
Fraction eligible for Title I (1966)		X	X		X	X		X	X
Census controls			X			X			X
Initial per pupil current expenditure			X			X			X
Observations	63	63	63	63	63	63	63	63	63
R^2	0.016	0.081	0.154	0.243	0.560	0.596	0.277	0.278	0.529

	D: Other State and Federal Revenue per Pupil			F: Total Revenue per Pupil		
Black share of enrollment (1961/62)	0.158*	0.0426	−0.0325	1.637***	1.303***	1.092**
	(0.0878)	(0.104)	(0.130)	(0.341)	(0.410)	(0.482)
Fraction eligible for Title I (1966)		X	X		X	X
Census controls			X			X
Lagged change (1961–1964)			X			X
Observations	63	63	63	63	63	63
R^2	0.051	0.108	0.160	0.274	0.298	0.411

Robust standard errors in parentheses. Dependent variables are changes from 1965 to 1970 in thousands of 2007 CPI-adjusted dollars. Initial per pupil current expenditure is the average from 1960 to 1963. Census controls are county-level variables from the 1960 Census: per capita income, percentage of households with complete plumbing, percentage of households with less than $3,000 in annual income, the natural log of population, and the share of population in urban areas. Cameron Parish excluded. *Significant at 10%; **significant at 5%; ***significant at 1%.

percentile of the black enrollment share distribution (64% black) would have expected to see an increase in total per pupil revenue that was about $495 more than that experienced by a district at the 10th percentile (19% black), controlling for other factors, compared to the 1965 average of $3,060.

State formula aid was the largest contributor to differential increases in per pupil revenue in blacker districts, so I discuss this category in more detail. While the controls, particularly the control for the share of students eligible for Title I, knocked out the coefficient on black enrollment share for federal ESEA funding (as expected), this is not the case for state formula aid. This suggests that the changes in state formula aid related to race rather than poverty.[12] What accounts for this differential increase in state formula aid? Did the state legislature reallocate state aid in response to desegregation? The state aid formula did not consider racial composition—or even the economic status—of districts explicitly, and there were no identifiable reforms to the system of state aid during this period. Further, the legislature did not make a single identifiable change to the formula to provide more revenue to predominantly black districts. Instead, based on an analysis of each component of the formula, I find that blacker districts benefited disproportionately from virtually every change in the calculation of total grants between 1965 and 1970.[13] It would be useful to know the legislative history of the state

aid program during this period—for example, whether desegregation was discussed as the parameters of the formula were determined. Unfortunately, the budget process in Louisiana at this time was secretive, and records of legislative debates for this period do not exist.

D. Changes in Educational Inputs

Total revenue per pupil increased substantially more in districts that were more affected by desegregation, but did this new funding improve the quality of education for blacks? Data on exactly where the new money went are limited, but the results in table 5 suggest that the additional revenue went to current expenditure, especially to reduce class size, and somewhat for additional transportation costs. Table 5A shows the results with the change in current expenditure per pupil from 1965 to 1970 as the dependent variable; with the full set of controls, the coefficient on black enrollment share is 1.1, the same as the coefficient for the total revenue per pupil regressions, confirming that, not surprisingly, the new revenue was spent on current operations.

To the extent that busing was required to integrate schools, transportation costs may have risen more in more affected districts. Table 5B shows the results with the change in per pupil state transportation aid as the dependent variable. The coefficients are statistically significant and stable across specifications; with all controls, the coefficient is 0.17, equivalent to about 15% of the increase in current expenditure.

Table 5C shows the results with the change in the teacher-student ratio as the dependent variable. (I use the teacher-student rather than student-teacher ratio so that the coefficient can be scaled by teacher salaries and compared to per pupil expenditures.) The coefficient is positive and highly significant, indicating that blacker districts increased the ratio of teachers to students more. The average teacher

[12] I include a number of income measures that would be expected to capture different parts of the income distribution: per capita income, percentage of households with complete plumbing, share eligible for Title I, and the share of households with less than $3,000 in income. Still, it is possible that the controls for income are not the right ones for per pupil state aid, whereas the Title I variable is the correct measure for federal ESEA revenue, and the changes in state aid are explained by a correlation of income with black enrollment share not captured by the controls.

[13] Further details on the analysis of changes in state aid are available from the author.

TABLE 5.—EFFECTS OF DESEGREGATION ON EDUCATIONAL INPUTS

	A: Current Expenditure PP			B: State Transportion PP			C: Teachers per 100 students		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Black share of enrollment (1961/62)	1.371***	1.082***	1.091***	0.161***	0.155***	0.171***	1.281***	1.122***	1.133***
	(0.290)	(0.348)	(0.408)	(0.0344)	(0.0421)	(0.0458)	(0.279)	(0.339)	(0.362)
Fraction eligible for Title I (1966)		X	X		X	X		X	X
Census controls			X			X			X
Initial per pupil current Expenditure			X			X			X
Observations	63	63	63	63	63	63	63	63	63
R^2	0.269	0.294	0.411	0.263	0.264	0.471	0.257	0.266	0.491

Robust standard errors in parentheses. Dependent variables are changes from 1965 to 1970. Per pupil current expenditure and state transportation aid are in thousands of 2007 CPI-adjusted dollars. Student-teacher ratio is total classroom teachers divided by total enrollment. Initial per pupil current expenditure is the average from 1960 to 1963. Census controls are county-level variables from the 1960 Census: per capita income, percentage of households with complete plumbing, percentage of households with less than $3,000 in annual income, the natural log of population, and the share of population in urban areas. Cameron Parish excluded. *Significant at 10%; **significant at 5%; ***significant at 1%.

salary according to the salary schedule, was about $40,000 in 1970 (in 2007 dollars). Translated into expenditure per pupil, the coefficient would be about 0.45, so additional spending on teachers explains about 40% of the differential increase in current expenditure.

Recall that if additional resources had not been disproportionately made available to heavily black districts, whites in those districts would have seen their class sizes rise (teacher-student ratios fall) relative to whites in less black districts due to the large gap between the white class size and the average (black and white) class size. Regressing the gap between white and average teacher-student ratios in 1965 on initial black enrollment share and the other controls, the coefficient on black enrollment share is −1.10 (statistically significant at the 1% level, not reported). The fact that the coefficient on black enrollment share with the change in teacher-student ratios from 1965 to 1970 as the dependent variable is similar in magnitude but opposite in sign (table 5C), suggests that the differential increase in teacher-student ratios was enough to bring the average ratio up to the level previously experienced only by whites.

It is interesting to note that before desegregation, inequality among districts in spending on whites was significant as whites in blacker districts enjoyed smaller classes. After desegregation, this within-race, between-district inequality remained, but students in blacker districts of both races had smaller class sizes.

E. Specification Checks: Timing

The results show that between 1965 and 1970, blacker districts—where whites were more affected by desegregation—saw larger declines in white public enrollment and increases in white private enrollment, as well as larger increases in per pupil revenue, instructional spending, and teachers per student. If these changes were due to desegregation, the changes should be concentrated between 1965 and 1970. I pursue two related approaches to pinpoint the timing of these changes and show that they were indeed concentrated between 1965 and 1970.

First, I estimate versions of equation (2) with changes in the key outcome variables before desegregation as depen-

TABLE 6.—EFFECT OF FRACTION BLACK ON PRE PROGRAM TRENDS

Dependent Variable (Change 1960–1964)	Coefficient on 1960 Fraction Black
ln (white public enrollment)	0.0258
	(0.108)
ln (white public and private enrollment)	−0.00569
	(0.0956)
White fraction private	−0.0206
	(0.0260)
ln (black and white public enrollment)	−0.0407
	(0.0902)
ln (total assessed valuation)	−0.0566
	(0.308)
ln (per pupil assessed valuation)	−0.0159
	(0.291)
ln (real assessed valuation)	−0.0503
	(0.426)
ln (non–real assessed valuation)	−0.0938
	(0.264)
Total revenue per pupil	−0.0518
	(0.191)
Local revenue per pupil	−0.0971
	(0.162)
State formula aid per pupil	0.179
	(0.107)
Nonlocal revenue per pupil	−0.134**
	(0.0595)
Current expenditure per pupil	−0.0204
	(0.126)
Teachers per 100 students	0.122
	(0.231)
Per pupil state funding for transportation	0.0385
	(0.0270)

Robust standard errors in parentheses. Dependent variables are changes from 1960 to 1964 school year. Coefficient on 1960 fraction black is reported; robust standard errors in parentheses. All regressions include the fraction of enrollment eligible for Title I in 1966, per capita income (1960), share of households with complete plumbing (1960), share of households with less than $3,000 annual income (1960), natural log of population (1960), the urban share (1960), and per pupil current expenditure (1960). Cameron Parish excluded. *Significant at 10%; **significant at 5%; ***significant at 1%.

dent variables (placebo outcomes) with the change in outcome from 1960 to 1964 and the black share of enrollment is measured in 1960.[14] The controls are the same as in equation (2). The coefficient on 1960 black enrollment share is expected to be small and insignificant. The results of these placebo regressions are reported in table 6. The coefficients on 1960 fraction black are generally small relative to the

[14] I use 1960 black enrollment share (rather than 1961) so that it is measured before the change, and I do not use the change to 1965 due to the introduction of Title I in that year. The results are not sensitive to these choices.

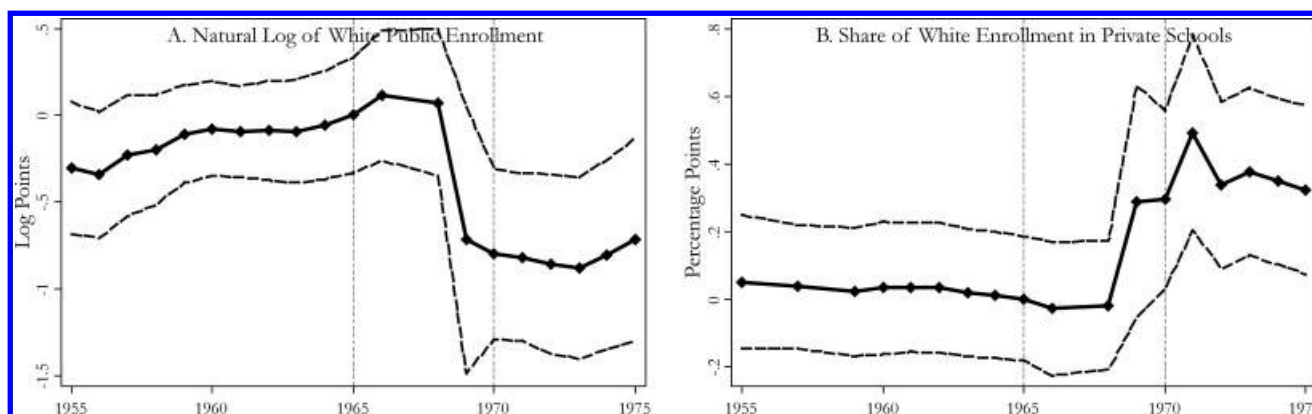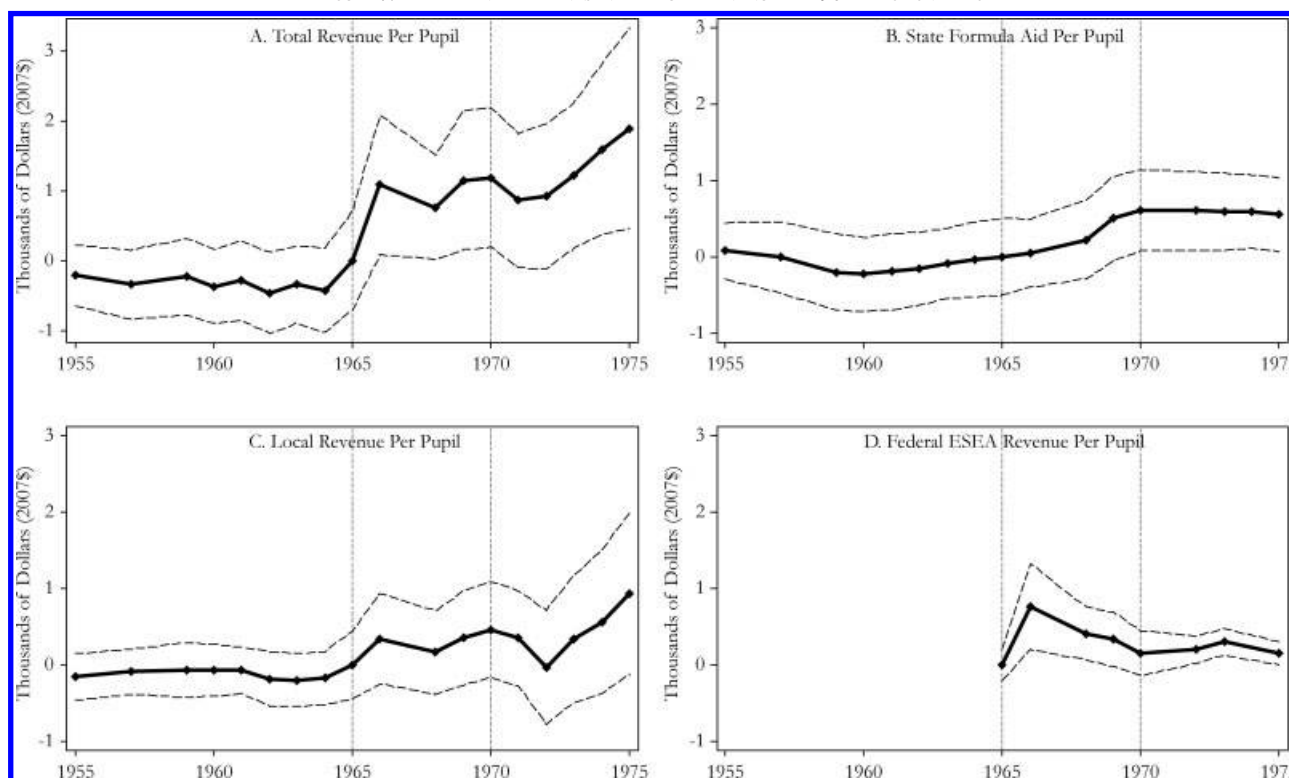Figure 6.—Differential Trends in White Enrollment by 1961 Fraction Black

Figure plots coefficient on 1961 fraction black (and 95% confidence interval) from year-by-year regressions of outcome variable on 1961 fraction black, census controls, initial expenditure, and the share of enrollment eligible for Title I. Coefficients are rescaled so that the coefficient is equal to 0 in 1965.

Figure 7.—Differential Trends in Per Pupil Revenue by 1961 Fraction Black

Figure plots coefficient on 1961 fraction black (and 95% confidence interval) from year-by-year regressions of outcome variable on 1961 fraction black, census controls, initial expenditure, and the share of enrollment eligible for Title I. Coefficients are rescaled so that the coefficient is equal to 0 in 1965.

coefficients in tables 4 and 5 and imprecisely estimated; the coefficient is statistically significant for only one outcome, suggesting that the results above do not reflect the continuation of a preexisting trend.

To trace out changes in the relationship between the outcome variables and black enrollment share year by year, I estimate regressions of the outcomes on 1961 fraction black and the same control variables separately for most years between 1955 and 1975. The trend in the coefficient on fraction black over time shows the differential trend in the outcome for higher and lower black enrollment share dis-

tricts, controlling for other factors. I report the results graphically, plotting the coefficients on fraction black from these regressions with 95% confidence intervals. Because I am interested in how the coefficient on fraction black changed over time, rather than its level, I normalize so that the coefficient is 0 in 1965.

Figure 6 shows the differential trend in the log of white enrollment and the share of whites in private schools, indicating that the differential reduction in white public and increase in white private enrollment were concentrated during the period of desegregation, especially after 1968. Figure 7

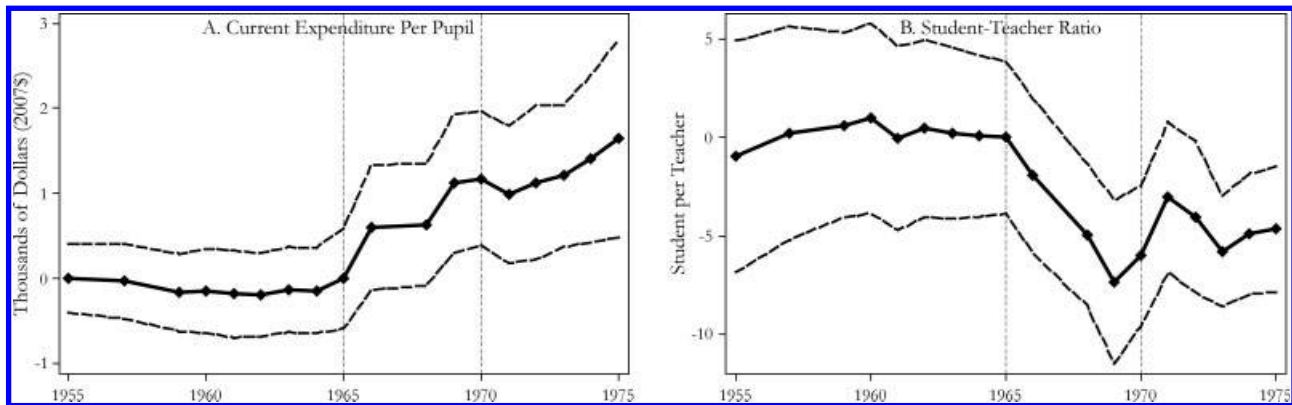FIGURE 8.—DIFFERENTIAL TRENDS IN EDUCATIONAL INPUTS BY 1961 FRACTION BLACK

Figure plots coefficient on 1961 fraction black (and 95% confidence interval) from year-by-year regressions of outcome variable on 1961 fraction black, Census controls, initial expenditure, and the share of enrollment eligible for Title I. Coefficients are rescaled so that the coefficient is equal to 0 in 1965.

shows differential trends in per pupil revenue by source. Although there was a slight upward trend before and after the period of desegregation, the differential increase in total revenue per pupil was particularly sharp during the period of desegregation. State formula aid accounted for most of the differential increase in total revenue between 1965 and 1970. Figure 7B shows that was not a gradual trend, and the differential increase between 1968 and 1970 is particularly sharp. The estimates are less precise, but local revenue also increased more in blacker districts during the period of desegregation (figure 7C).[15] ESEA revenue increased more in blacker districts between 1965 and 1966, but this effect disappears by 1970 due to the control for the share of Title I eligibles (figure 7D). (The graph for other nonlocal revenue is omitted to save space.) Finally, figure 8 shows that differential increases in current expenditure per pupil and teachers per student were also particularly sharp between 1965 and 1970.

V.   Conclusions

Equalizing school quality has been an important goal of policymakers, and the hope was that desegregation would improve the resources available in blacks' schools by tying their fate to that of whites. While a significant literature examines the effects of desegregation on white flight and other outcomes, there is little evidence on its fiscal effects. Across the South, the Jim Crow system produced substantial black-white gaps in school resources, which were especially large in blacker districts, throughout the first half of the twentieth century. Using newly collected data, this paper shows that in Louisiana, this system finally unraveled as schools desegregated in the late 1960s. It is difficult to know whether the results apply to other southern states. On

the one hand, the history of segregation and desegregation in Louisiana was similar to that of other states in the Deep South; on the other hand, black-white gaps in school spending were particularly large and persistent in Louisiana in 1950 (Margo, 1990), so the funding-gap-closing role of desegregation may have been less important in other states.

Districts that were more affected by desegregation did experience more white flight to both whiter public school districts and private schools, but the property tax base was not adversely affected. Despite the potential for unintended responses on the part of whites—voting with their feet or expressing their disapproval at the ballot box—to undermine the ability of desegregation policy to increase resources available in the schools blacks attended, desegregation instead led to large increases in per pupil funding. The analysis points to a general increase in demand for resources in local school districts, especially blacker districts, to which the legislature responded, if not transparently. Given the large increases in class size after years of decline that whites in blacker districts would have seen in integrated schools, it is plausible that the state legislature would be persuaded to increase aid to such districts. The changes were also closely timed with desegregation, pointing to desegregation as a likely cause of increasing revenue and spending in blacker districts. Of course, the late 1960s was a period of great social and political change, and other policies or changes in racial attitudes may have contributed to the demise of Jim Crow school finance. But resistance to desegregation among southern whites remained strong and black representation in the state house scarce into the 1970s.

Although there was no state school finance reform, substantial redistribution of aid occurred under the existing formula. Most of the literature on state school finance has focused on school finance reforms or major changes in the law. The experience of Louisiana during this period suggests that significant reallocation of funding across districts can occur more quietly, without a major reform.

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[15] The upward trend in the fraction black coefficient for local revenue after 1972 is striking, but the standard errors are large, and I do not reject the hypothesis that all of the coefficients from 1970 to 1975 are the same.

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DATA APPENDIX

A. Data on Segregation

The exposure of blacks to whites is the percentage white in schools, weighted by black enrollment, and vice versa for exposure of whites to blacks. Data on racial composition at the school level are required to calculate these indexes. I use school-level data from the Office of Civil Right Surveys (OCR) for 1968 to 1976 to calculate the exposure index and determine whether a district had any blacks in school with whites (figure 1).[16] For earlier years, school-level data on enrollment by race are not available; I therefore use data from the Southern Education Reporting Service's (SERS) *Statistical Summary, State by State, of School Segregation-Desegregation in the Southern and Border Area from 1954 to the Present* (1967) to estimate exposure for the earlier years. See Cascio et al. (2008) for detail on the segregation data and imputation methods.

B. Louisiana Administrative Data

The following variables were collected at the district level for the 1955 to 1975 school years and published in the *Annual Financial and Statistical Report* by the Louisiana Department of Education:[17] public and non-public fall registration (enrollment) by race, total classroom teachers by race, current expenditure, and revenue by source—local revenue, state formula aid, federal ESEA revenue, and other nonlocal revenue. Federal ESEA includes all revenue received through ESEA programs; the largest component was Title I. Other nonlocal revenue includes revenue received through other state, federal, or mixed programs and accounted for about 17% of nonlocal revenue in 1965. I also collected detailed data on program costs by category and required contributions under the state minimum foundation program for key years, including state aid for transportation, from this source. Real, nonreal, and total assessed valuation at the parish level were taken from the *Biennial Report of the Louisiana Tax Commission*.[18]

C. Estimating Race-Specific Student-Teacher Ratios

According to the SERS, students and teachers were completely segregated by race through 1965, so the average student-teacher ratio for the district is the total number of black students divided by the total number of black teachers. To calculate the black (white) student-teacher ratio for 1970 to 1972, I calculated the student-teacher ratio in every school. I then calculated the weighted average student-teacher ratio for schools in each district, with black (white) enrollment in the school as weights. The school-level data on students and teacher by race are taken from the OCR Surveys.

D. Preexisting Parish Characteristics

Per capita income, the percentage of households with complete plumbing, the percentage of households with less than $3,000 annual income, the natural log of population, and the percentage of the population living in urban areas at the county level, originally from the county tabulations of the 1960 Census, were taken from the City and County Databook.

[16] The OCR surveys were not comprehensive in all years, but the large size of Louisiana's school districts and the heavy involvement of the courts ensured that Louisiana districts were well represented in the data. Of the 66 districts in Louisiana, 45 were included in the 1967 survey, 61 in the 1969 survey, and all of the districts were included in the remaining years. The trends presented in figure 1 look similar if the sample is limited to districts that had data available in all years.

[17] All years refer to the fall of the school year. A few years are missing because the relevant reports were not available.

[18] Real assessed valuation includes country and city lots and improvements on country and city lots, agricultural lands, timberlands, marshland, and manufacturing plant buildings; country and city real estate and improvements are the largest component of real assessed valuation. Nonreal assessed valuation includes public service corporations, manufacturing plants and equipment, inventories, machinery and equipment, business furniture and fixtures, watercraft, aircraft, credits (insurance and finance companies), financial institutions, leasehold improvements, drilling rigs, pipelines, oil and gas equipment, and miscellaneous property.