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Abbott and Bacon Districts: Education Finances during the Great Recession

Rajashri Chakrabarti
Sarah Sutherland

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Abstract

In the State of New Jersey, any child between the age of five and eighteen has the constitutional right to a *thorough and efficient* education. The State of New Jersey also has one of the country's most rigid policies regarding a balanced budget come fiscal end. When state and local revenues took a big hit in the most recent recession, officials had to make tough decisions about education spending. This paper exploits rich panel data and trend-shift analysis to analyze how school finances in the Abbott and Bacon School Districts, as well as the high-poverty districts in general, were affected during the Great Recession and the American Recovery and Reinvestment Act (ARRA) federal stimulus period. For these groups of districts, the debate over the meaning of *thorough and efficient* has become a perennial courtroom discussion. Our analysis shows downward shifts in revenue and expenditure per pupil during the post-recession era in all three groups of districts. However, the Abbott Districts showed the sharpest declines in both revenue and expenditure relative to preexisting trends. Of importance, the Abbott Districts were the only group in our analysis to show statistically significant negative shifts in instructional expenditure (the expenditure category most closely related to student learning), even with the federal stimulus. Declines in noninstructional categories were also the most prominent in the Abbott Districts. With comparably less declines in state and federal aid, the Bacon Districts maintained spending across the board at higher levels than the other groups. Given the unique role of the Abbott and Bacon Districts in the history of New Jersey education policy, the findings of this paper contribute valuable insight regarding the experience of these high-poverty districts during recessions.

Key words: school finance, recession, ARRA, federal stimulus, Abbott Districts

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Chakrabarti, Sutherland: Federal Reserve Bank of New York (e-mail: rajashri.chakrabarti@ny.frb.org, sarah.sutherland@ny.frb.org). We thank Jason Bram, Erica Groshen, Andrew Haughwout, James Orr, Joydeep Roy, Amy Ellen Schwartz, Leanna Stiefel, Giorgio Topa, and seminar participants at the Federal Reserve Bank of New York and the NYU-FRBNY Fiscal Breakfast for their valuable insight and feedback. We are grateful to Kevin Dehmer, Susan Ecks, Frank Lavdas, and the New Jersey Department of Education for patiently answering numerous questions and providing generous help in acquiring the data. We also thank staff at the U.S. Census Bureau, the U.S. Department of Education, and the New Jersey School Boards Association for answering many questions and providing assistance with different parts of the data. Elizabeth Setren provided excellent research assistance. All errors are our own. The views expressed in this paper are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

1 Introduction

Since state and local governments provide the vast majority of education funding, the fiscal drag from these sectors that we've seen since the Great Recession could have deleterious effects on school finances. To mitigate this risk at the onset of the recession, Congress passed the American Recovery and Reinvestment Act (ARRA), a federal economic stimulus package of which New Jersey appropriated $2.23 billion. This paper examines how school finance in New Jersey's Abbott and Bacon school districts were affected during the Great Recession and the ARRA federal stimulus period. The districts designated as Abbott and Bacon acquired their names from a series of court cases arguing for equitable education, and they host some of New Jersey's poorest and arguably most susceptible students. As such, understanding the role of recession and federal stimulus in the financial well-being of these schools has long term societal and policy implications. It should be noted here though that this study solely pertains to school finances in these districts and educational outcomes (or any other outcomes) in these districts are beyond the scope of this paper.

To examine how school finances were affected, we use rich panel data on a multitude of school finance variables and apply a trend shift analysis. Our analysis shows statewide downward shifts in both revenue and expenditure per pupil during the post-recession era. Both total revenue and total expenditure in the Abbott districts showed considerably sharper declines than in the high poverty districts and the Bacon districts. Their shifts in state aid per pupil for both 2009 and 2010 are negative, significant, and larger in magnitude as compared to other high poverty districts. While state aid declined, the ARRA federal stimulus does present as a positive shift in the federal aid per pupil for all

the above groups in 2010. Despite this, the positive shift in the stimulus is the smallest in the Abbott districts.

The patterns for property taxes and local revenue variables are also interesting. Unlike the rest of the state, as well as any of the other groups analyzed in this paper, the Abbott districts showed a significant upward shift in property taxes and local revenue in 2009. This suggests that property taxes were raised in the Abbott districts as a method of compensating for the substantial decline in state aid. In contrast, the rural Bacon districts show steep declines from trend in both property taxes and local aid per pupil.

We also investigate the patterns in the various components of expenditure in these groups of districts following the recession. With comparably less declines in state and federal aid, the Bacon districts maintained spending across the board at higher levels than the other groups. The Abbott districts were the only group that saw a large statistically significant downward shift in instructional expenditure in 2010, even in spite of the influx of the stimulus funds. Instructional spending includes teacher salaries and classroom spending, and is considered to be the key spending category that matters the most for student learning. These results suggest that while the rest of the state seemed to have avoided cuts in instruction, the Abbott districts' revenues declined enough that no spending category was preserved. Declines in non-instructional categories were also by far the most prominent in the Abbott districts. There is also suggestive evidence that the fiscal strains of recession were associated with reductions in untenured less experienced teachers, especially in the Abbott districts. This paper is related to the literature that studies school funding in general [Baker (2009), Bedard and Brown (2000), Betts (1995), Feldstein (1978), Gordon (2004), Rubenstein et al. (2007, and Stiefel and Schwartz (2011)], and to the literature on New Jersey School finance and Abbott funding in particular [Resch (2008 and Firestone, et

al (1994, 1997)]. However, there is no study so far that seeks to study how school finances in these districts were affected during the Great Recession.[4] This paper begins to fill that gap.

2 Background

2.1 Overview of the Abbott and Bacon Districts' Role in New Jersey's Education History

In the state of New Jersey, any child between the age of five and eighteen has the constitutional right to a "thorough and efficient" education. Long before the start of the most recent recession, the true meaning of these words has been a topic of much public and legal debate. In the 1973 *Robinson v. Cahill* ruling, the State Supreme Court declared the New Jersey's school funding system to have failed to meet the state constitution's requirement of providing a "thorough and efficient" education for elementary and secondary schools. Much like the court orders to follow, this ruling was based on discrepancies in per-pupil spending among the state's school districts.

New Jersey enacted the 1975 Public School Education Act in response to the court's mandate, but there were still concerns relating to equity between rich and poor districts. In fact, the famous *Abbott v. Burke* litigation was first filed in 1981 on behalf of a group of students from four districts arguing that the funding disparities prevented poor, urban districts from receiving an adequate education. In 1985, the court ruled in favor of the plaintiffs, finding that wealthy districts spent an additional 40% more than poor districts. In this ruling, the court expanded the districts covered by the litigation to a group of 28 school districts that to this day are known as the Abbott districts.

The resulting mandate required an immediate and significant increase in funding to these districts.[5] This and the following Abbott court cases forever changed the way school districts were funded in New

[4] The only exception is a companion paper (Chakrabarti and Sutherland (2012)) that studies overall school finance patterns in New Jersey during the Great Recession and the federal stimulus period.

Jersey. In fact, by the time our dataset begins in the 1998-99 school year, the now 31 designated Abbott districts received 45% of the total state aid funds distributed to all 572 districts. Table 1 shows the evolution of this share over the following years—it increased to 51% by 2005 and remains at 50% as of 2010.

The most well known poor, non-Abbott districts are the Bacon districts. These 16 rural, low-income districts have been the center of a separate series of court cases arguing for equitable education. Much of the controversy in the Bacon districts' accusations against the state has surrounded around the fact that the Abbott districts had received special treatment due to their high poverty, urban status. The Bacon districts argue that they are also impoverished, and their rural status should not have prevented them from receiving the same treatment as their urban counterparts. However, unlike the Abbott cases, the Bacon litigations did not precipitate additional funding for its districts. Instead the court ruled that each district faced a unique set of circumstances, and while they were "no less deserving" than the Abbott districts, the solution was for the Department of Education to re-examine the entire education system, citing that it "[was] time to abandon [the state's] reliance on money as a surrogate for either education equity or adequacy".[6]

2.2 Overview of the Interaction of Recession with the United States Education System

During the 2007 recession, state and local governments in the United States experienced significant fiscal stress. The downturn in housing prices, employment, income, and business activity each contributed to smaller tax revenues and larger budget gaps. Since state and local governments provide the vast majority of education funding, the significant fiscal stress on these sectors could have deleterious effects on school finances.

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[5] Resch (2008). Three districts have since been added to the Abbott district definition, totaling 31 as of this writing.
[6] Source: http://caselaw.findlaw.com/nj-superior-court-appellate-division/1225307.html#footnote_7. This court ruling was made in January 2006.

To mitigate this risk at the onset of the recession, Congress passed the American Recovery and Reinvestment Act (ARRA), an economic stimulus package that provided an anticipated $840 billion in new spending, with $100 billion designated for public education. Qualitatively, districts were directed to use the ARRA funds to save and create jobs, to boost student achievement, and to bridge student achievement gaps. The quantitative requirements specify that 81.8% of the stabilization funds in education go toward the support of public education, and that states must restore for FY 2009, 2010, and 2011 support for public education to the greater of the FY 2008 or FY 2009 level.

Of the total $100 billion designated to public education nationally, New Jersey appropriated $2.23 billion. The largest portion of New Jersey's appropriation was used to implement the state's funding formula, and by the end of the 2010 school year, most of these funds had already been spent.

2.3 Overview of New Jersey's Education Policies during the Great Recession and ARRA Stimulus Period

In January of 2008, Governor Jon Corzine's School Funding Reform Act of 2008 (SFRA) was approved by legislature. The formula called for a 7% increase in state funding for K-12 education in the 2008-09 school year, and most noteworthy, it was the first time since 1990 in which the state aid formula did not include a special earmark assigned solely for Abbott districts. Instead, a uniform formula was applied to all districts with the division of funds determined based on the portion of low-income students as well as the number of students requiring special education.

In response to this new legislation, the Abbott plaintiffs yet again challenged the New Jersey education formula, disputing its constitutionality as defined in past cases. In May 2009, the state Supreme Court ruled unanimously that the state's new education funding system indeed did meet the constitutional requirements for thorough and efficient education and allowed the system to continue. According to the New Jersey Department of Education, the new SFRA formula was fully met in the 2008-09 school year,

and budgets were prepared for the 2009-10 school year using the SFRA formula. However, midway through 2009-10, the recession began to show significant strains on education finances. Revenue streams came in at what was projected to be $2.2 billion less than what was necessary to cover the state's budget deficit.

Given the state of New Jersey's constitutional mandate requiring the Governor to maintain a balanced budget, the newly enacted Governor Chris Christie faced some difficult decisions. In an unprecedented movement, education funcing was significantly reduced midyear. The funding caps for district aid were cut, and many districts received less state aid than budgeted and less aid than required under the SFRA formula.

This 2009-10 midyear budget reduction brought New Jersey back to the courtroom with the Education Law Center arguing on behalf of the *Abbott v. Burke* litigants. In March 2011, the New Jersey Supreme Court issued an opinion that the state had yet again failed in its constitutional requirements and ordered a remedy payment of $500 million to the Abbott districts.[7] Knowledge of these court orders leads to a better understanding of our topic at hand; however such debates of wrong or right are beyond the scope of our analysis. Instead we focus our analysis on the financing and expenditure patterns in the Abbott districts following the Great Recession, studying if and how these patterns diverged from that of the other districts.

3 Data

We developed a rich panel dataset that combines annual school district level data from multiple sources. The dataset covers 572 New Jersey districts and school years 1998-99 through 2009-10, which includes

[7] In May 2011, the Court required New Jersey to re-appropriate funds for Abbott districts to the levels required by SFRA, constituting an estimated $500 million increase from the planned levels. Since the 2010-11 school year was nearly complete by the time this ruling was made, this $500 million increase was made in the 2011-12 school year. Interestingly, the Court's order applied only to the 31 Abbott districts, therefore the remaining districts, wealthy or otherwise, did not receive a re-appropriation following the mid-year cuts of 2009-10.

the 31 Abbott districts and 16 Bacon districts.[8] Most of the finance data were obtained from the New Jersey Department of Education's Office of School Finance. We also supplemented this dataset with school finance data from National Center for Education Statistics's (NCES) School Finance Survey (F-33), as well as data from the US Census Bureau. Non-finance data were obtained from New Jersey Department of Education's Office of Data, Research, Evaluation and Reporting, NCES's Common Core of Data (CCD), and the Bureau of Labor Statistics (BLS).

We have data on total revenue, total expenditure, as well as components of total revenue and expenditure. In addition to total revenue, we obtained data on amounts and percentage contributions of federal aid, state aid, and local revenue. Data reporting revenue from property taxes were also collected.

In addition to total district expenditure, detailed data were collected on the various components of expenditure: instruction, instructional support, student services, transportation, student activities, and utilities.[9] Definitions for each of these variables are shown in Table 2. We also obtained data on median salary and median years of experience for teachers.[10]

Non-Finance data include district level data on various socio-economic and demographic variables. These include enrollment, racial composition, and percentage of students eligible for free or reduced price lunches. All revenue and expenditure variables are analyzed on a per pupil basis using each school year's average daily enrollment variable. We deflate all nominal variables to real 2010 dollars using annual values of the Consumer Price Index for all Urban Consumers.

We define the districts as Abbott or Bacon based on the *Abbott v. Burke* and *Bacon v. New Jersey State Department of Education* litigations. We also compare the school finance patterns in the Abbott and

[8] Recall that when referring to the year of the data, this paper uses the spring term, for example 2009-10 is called 2010. Charter districts, non-operating districts, and districts that receive students via tuition only are not included in our analysis.
[9] In the text of the paper, we refer to the variable for "utilities and maintenance" as "utilities" for simplicity.
[10] All calculated district medians are reported in October of each school year, and the years experience variables are based on the total number of years in public education.

Bacon districts with that in the high poverty districts. Our measure of poverty is based on the percentage of students eligible for free or reduced-price lunches, with the top 75% of the districts in our data identified as high poverty. In the pre-recession era, Abbott districts received and spent considerably more than the other districts in New Jersey. For example, in the immediate pre-recession year, the Abbott districts spent $2,328 more per pupil than their high poverty counterparts, and $4,772 more than the Bacon districts.

Basic summary statistics of these three groups of districts is presented in Table 3. As can be seen, the Abbott districts were the poorest of the three groups, and also had the highest percentages of black and Hispanic students. The Bacon districts were closer to the high poverty districts in terms of socioeconomic and demographic status; they were also the most advantaged of the three groups.

4 Empirical Strategy

The goal of this paper is to analyze school finances in the Abbott and Bacon districts during Great Recession and the Federal Stimulus funding period. As a yardstick for comparison, we also investigate the school finance patterns in the high poverty districts during this period. We conduct a trend shift analysis and use specifications (1) and (2) to analyze these patterns in each group of districts.[11]

$$Y_{it} = f_i + \propto_1 T + \propto_2 v_1 + \propto_3 v_2 + \propto_4 X_{it} + \varepsilon_{it} \quad (1)$$

where Y_{it} represents each school finance variable of school district i in year t; T represents the time trend and takes a value of 0 in the immediate pre-recession year (2007-08) and increments by one for each subsequent year and declines by one in each previous year; f_i denotes school district fixed effects; X_{it} denotes controls for racial composition and poverty level (percentage of students eligible for free and

[11] The empirical method used borrows from that shown in our companion paper, Chakrabarti and Sutherland (2012).

reduced price lunches) of the district; v_1=1 if year ≥ 2009 and 0 otherwise; v_2 =1 if year ≥ 2010 and 0 otherwise.

Local, state, and federal governments finalize their budgets in the spring prior to the budgeted year. More specifically, the budgets for the 2007-08 school year were finalized in the spring of 2007, before the recession officially began (December 2007), and before decision makers were aware of the impending recession. Therefore, 2007-08 is taken as the last pre-recession year in this paper.

The coefficient $\propto_1$ represents the overall trend in the corresponding financial variable during the pre-recession period. The coefficients of interest are $\propto_2$, representing the intercept shift at the onset of the recession, and $\propto_3$, representing the additional intercept shift during the federal stimulus period. All regressions include district level fixed effects, f_i and control for the demographic and socio-economic composition of the district. The results are robust to the inclusion and exclusion of these covariates.

While the above specification uses intercept shifts, we also use an alternative specification where we model the shifts as trend shifts.

$$Y_{it} = f_i + \beta_1 T + \beta_2(T * v_1) + \beta_3(T * v_2) + \beta_4 X_{it} + \varepsilon_{it} \quad (2).$$

Here, the coefficients of interest are β_2 and β_3, where β_2 represents the shift in trend (if any) during the recession, while β_3 represents any additional trend shift during the federal stimulus period.

While we estimate both specifications and the results are qualitatively similar, our preferred specification is specification (1), and we report results from this model. This is because data availability constraints cause the later specification to estimate the later trend shift β_2 from a single additional year of data, and we believe that estimation of a differential trend based on a single year of data may not be robust. Rather, intercept shift is a more natural formulation in this case.

While the above coefficients capture actual shifts, we also compute percentage shifts that are obtained by expressing the above shift coefficients as percents of the pre-recession (2008) base of the corresponding financial variable. These percent effects allow for an easier interpretation and are more informative as they give an idea about the size of the effects as well as facilitate comparison between the shifts in the various financial variables. In our discussion, we will focus on the discussion of two percentage shifts: first, the percentage shift immediately following the recession (in 2008-09), and second, the percentage shift in 2009-10 (computed by expressing the sum of the two effects α_2 and α_3 from specification (1) as a percent of the pre-recession base)[12]. The latter captures the combined effect of the recession and the federal stimulus in 2009-10.

4.1 Interpretation of the Treatment Effects

As outlined in section 2.3, apart from the Great Recession and the federal stimulus funding, there were other important changes that took place during the post-recession period (some caused by the recession itself), that might have affected expenditure decisions and patterns in the Abbott districts. Understanding these factors and their potential role in the Abbott districts' expenditure choices are absolutely essential and helps us interpret the results and put them in perspective. We devote this section to the role of the various factors and the corresponding interpretation of the treatment effects.

There are two key statewide factors to consider in addition to the Great Recession and the federal stimulus. First is the implementation of Governor Corzine's new school funding formula, SFRA. Recall that while the formula called for a 7% increase in state funding for K-12 education in the 2008-09 school year, it was the first time since 1990 in which the state aid formula did not include a special earmark assigned solely for Abbott districts. Therefore, in contrast to the rest of the state, the new

[12] For specification 2, the percent trend shift in 2009-10 is obtained by expressing the sum of the two effects β_2 and β_3 in specification 2 as a percent of the pre-recession base.

funding formula acted as a negative shock to the Abbott districts. As such, the 2009 effects in this paper capture a combination of two factors: the impacts of the recession and the effect of the removal of the special earmark for Abbott districts.

In other words, any negative effects for the Abbott districts in 2009 should be regarded as overestimates of recession effects, contributed by a combination of the Great Recession and the SFRA. While we cannot extricate the effects of these two factors, our analysis sheds light on how the Abbott districts responded to declines in revenues by changing their decisions relating to expenditures in various non-instruction and instruction categories. Our analysis contributes important insight regarding the way Abbott districts might choose to change their expenditure composition under future revenue declines, even unrelated to the most recent recession. Moreover, our analysis sheds light on the districts' priorities for spending categories in times of fiscal stress.

Second, while interpreting the 2010 shift, $\propto_3$, we need to consider the impact of Governor Christie's mid-year cuts to the SFRA formula, which in turn were triggered by the revenue shortfalls brought about by the recession.[13] With the negative impact to state aid funding, we would expect a dampening effect on the positive shock from the ARRA federal stimulus. Note, however, that these cuts only came mid-year and did not affect school's planned budgets or their expenditure in the first half of the school year. Any positive additional effects in 2010 (over 2009 effects) can therefore be regarded as underestimates of the stimulus effect. Additional negative effects in 2010, on the other hand, may mean that the recession effects (including the mid-year budget cuts) dominated. However, since these mid-year cuts in 2010 were driven by budget shortfalls brought about by the recession, the 2010 effects ($\alpha_2 + \alpha_3$) still capture the combination of the recession and stimulus funding effects.

[13] Midway through the 2009-10 school year, the funding caps for district aid were cut, and many districts received less state aid than budgeted and less aid than required under the SFRA funding formula.

5 Results

Given the unique role of the 31 Abbott districts in the history of New Jersey education policy, we investigate whether the experience of the Abbott districts following the Great Recession diverged from the other districts. As an interesting comparison, we include the same analysis for the 16 Bacon districts and compare both groups to the high poverty districts. Results are shown in Tables 4 and 5. These results are visually represented in the form of histograms in Figures 1 and 2. In the figures, a star denotes statistical significance at the 10, 5, or 1 percent level.

5.1 Examining the Shifts in the Revenue Components

Relative to pre-existing trends, both total revenue and total expenditure in the Abbott districts showed considerably sharper declines than the high poverty districts and the Bacon districts. Following the multiple Abbott court cases, the Abbott districts had a much higher pre-existing trend in state aid per pupil before the recession. As would be expected, their shifts for state aid per pupil in both 2009 and 2010 were negative, statistically significant, and larger in magnitude as compared to the Bacon districts as well as the high poverty districts.

As discussed above, the strains of recession forced an unprecedented reduction in education funding midyear through the 2010 fiscal year. The funding caps for district aid were cut, and many districts, including the Abbott districts, received less state aid than budgeted and less aid than required under the SFRA formula. This relative decline in 2010 can be seen clearly in both Table 4 and Figure 1.

The federal stimulus led to positive shifts in the federal aid per pupil for all the above groups in 2010. But, of note here is that the positive shift is the smallest in the Abbott districts. This is because the state distributed the stimulus funds according to the state funding formula (SFRA), and the pre-existing trend in the federal aid per pupil in the Abbott districts was also among the highest.

The patterns for property taxes and local revenue variables also show distinct heterogeneity. Unlike other two groups as well as the rest of the state[14], the Abbott districts showed a significant upward shift in property taxes and local revenue in 2009, suggesting that property taxes were raised in these districts as a method of compensating for the substantial decline in state aid. In contrast, the rural Bacon districts show the largest significant declines in local aid per pupil. As expected, these results match the results for property tax revenue.

5.3 Examining the Compositional Shifts in Expenditure Categories

Table 5 and Figure 2 investigate the patterns in the various components of expenditure in these groups of districts following the recession. The results are striking. Across nearly all variables, both instructional, and non-instructional, the Abbott districts suffered the largest declines and the smallest increases, relative to pre-existing trends. The only exception seems to have been utilities where the Abbott districts fared better than the other groups. With comparably less declines in state and federal aid, the Bacon districts maintained spending across the board at higher levels than the other groups[15].

Noteworthy in these results is the fact that the Abbott districts were the only group that saw a large statistically significant downward shift in instructional expenditure in 2010, even in spite of the influx of the stimulus funds. Given that the instructional expenditure is the key expenditure category that most directly interacts with students' learning; this shift may not bode well for students in Abbott districts. These results suggest that while the other two groups seemed to have succeeded in averting statistically significant cuts in instructional expenditure, the Abbott districts' revenues declined enough that no spending category was preserved.

[14] The results for the rest of the state are available on request.
[15] The only exception is expenditure on utilites ; the Bacon districts faced the largest declines in this category.

Of note here is that spending in the non-instruction categories (such as instructional support services, student services and transportation) saw larger declines than in the instructional category. Morever, this is generally true in all three groups of districts. This suggests that school administrators across the board strived to preserve instruction first. But, even in non-instruction categories, the cuts (relative to pre-existing trends) were the largest in the Abbott districts.

The picture for teacher salary and years of experience is also interesting (Table 5 Panel C and Figure 2 last row). The Abbott districts showed the largest upward shifts in teacher salary in both years following the onset of the recession. As Table 5 and Figure 2 show, this was associated with a key change in teacher composition. Along with the steepest increase in teacher salaries, the Abbott districts also witnessed the largest increases in teacher experience following the recession. Since there was no evidence of any increase in the number of teachers following the recession in the Abbott districts (Table 5 Panel C and Figure 2 last row), these patterns suggest that the tighter budget conditions prompted the Abbott districts to shed their untenured less experienced teachers much more than any of the other groups of districts.

6 Conclusion

The number of court cases debating equitable education in the Abbott and Bacon districts has long since hit double digits. The children of these districts come from some of New Jersey's poorest homes and when education spending took a hit in the most recent recession, the Abbott and Bacon districts were no exception.

The results show that the Abbott districts shifted the furthest from pre-recession trends in terms of both revenue and expenditure. Shifts in both Federal and State aid were less favorable for the Abbott districts as compared to both the Bacon and high poverty districts. They experienced the smallest increase in

federal funding (relative to trend), and the negative shift from pre-existing state aid trends were the largest in both 2009 and 2010. Local aid for the Abbott districts showed a significant upward shift in 2009, an increase most likely explained by the increased reliance on spiked property taxes given fiscal constraints. With comparably less declines in state and federal aid, the Bacon districts maintained spending almost across the board at higher levels than the other groups.

The largest differences in this heterogeneity analysis are the shifts in the composition of expenditures. Relative to pre-existing trends, most New Jersey districts either maintained or exhibited small (statistically insignificant) declines in the instructional spending category. This category is considered to be the category most directly related to student learning, and includes teacher salaries and classroom expenditure. In stark contrast to the other groups of districts, the Abbott districts showed both economically and statistically significant declines in instructional spending expenditures in both 2009 and 2010. Most noteworthy, they were the only group that saw a large statistically significant downward shift in instructional spending in 2010, even in spite of the influx of the stimulus funds. In all groups of districts, non-instruction categories such as student services, transportation, and instructional support saw larger declines than in the instructional categories, but these non-instructional expenditure declines were also by far the most prominent in the Abbott districts.

The importance of the investment in the education of children has long since been established in economic research due to its link to human capital formation. This paper is one of the first to assess how these investment decisions evolved in the most recent recession and the stimulus period that followed; it is the first to apply this analysis to two groups of districts so thoroughly intertwined with the history of education funding. The findings contribute to the understanding of how these high poverty districts might react to future fiscal stresses. This insight has immediate relevance to today's education policy makers, as economists continue to predict declining revenues through 2012.

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Table 1: Portion of Revenues Received by 31 Abbott Districts

Spring Term	% of Total State Aid	% of Total Federal Aid
1999	45.1	39.7
2000	46.2	39.9
2001	47.1	42.3
2002	49.8	40.9
2003	49.3	42.2
2004	49.6	40.5
2005	51.0	42.0
2006	51.2	41.6
2007	49.7	41.3
2008	49.4	41.6
2009	49.9	41.0
2010	50.0	37.6

Source: Authors' Calculations using New Jersey Department of Education's Audit Summary data.

Table 2: Definitions for Expenditure Components

Instructional Expenditures

All expenditure associated with direct classroom instruction. Teacher Salaries and benefits; classroom supplies.

Instructional Support

All support service expenditures designed to assess and improve students' well-being. Food services, educational television, library, and computer costs.

Student Services

Psychological and health services; school store.

Utilities and Maintenance

Heating, lighting, water, and sewage; operation and maintenance.

Transportation

Total expenditure on student transportation services.

Student Activities

Co-Curricular activities: physical education, publications, clubs, and band.

Table 3: Demographic Summary Statistics

	Abbott	Bacon	High Poverty
Percent of students on free/reduced lunch	65.65	41.41	48.80
Percent of students male	51.27	51.40	51.64
Student Racial Composition			
Percent White	23.02	61.70	48.10
Percent Black	38.24	20.38	23.72
Percent Hispanic	36.51	14.52	24.35
Percent Asian	1.98	2.46	3.35

Note: Data shown are averages in the 1999 through 2010 school years.

Table 4: Examining Heterogeneities by Legal Designation

Panel A	Total Expenditure Per Pupil			Total Revenue Per Pupil			Federal Aid Per Pupil		
	Abbott	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**
	FE	FE	FE	FE	FE	FE	FE	FE	FE
% Shift in 2008-09	-8.77***	-0.62	-6.23***	-7.19**	-0.34	-5.19***	-15.68***	-18.36	-16.85***
% Shift in 2009-10	-11.0***	4.70	-5.81***	-9.82***	5.71	-5.65***	1.29	15.86	5.37
Pre-Recession Base	23,342	18,570	21,014	25,315	22,969	24,486	1,145	971	994
Trend	903.5***	413.2***	696.8***	880.4***	647.4***	842.3***	51.2***	53.9***	24.1***
	(74.5)	(97.5)	(46.4)	(91.7)	(142.1)	(67.3)	(6.1)	(13.9)	(7.5)
Recession	-2047.4***	-114.4	-1308.9***	-1820.1**	-78.3	-1270.0***	-179.6***	-178.3	-167.6***
	(669.3)	(971.3)	(313.0)	(714.2)	(1830.1)	(421.5)	(37.7)	(111.1)	(52.6)
Stimulus	-519.8	987.2	88.4	-666.7	1390.1	-113.8	194.3***	332.4**	220.9***
	(740.8)	(2149.6)	(374.0)	(756.7)	(2941.5)	(500.2)	(51.2)	(130.4)	(51.4)
Observations	371	191	1711	371	191	1711	371	191	1711
R-squared	0.772	0.51	0.54	0.703	0.458	0.598	0.831	0.795	0.81

Panel B	State Aid Per Pupil			Local Revenue Per Pupil			Property Taxes Per Pupil		
	Abbott	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**
	FE	FE	FE	FE	FE	FE	FE	FE	FE
% Shift in 2008-09	-8.13***	2.24	-3.04**	8.04*	-5.69*	-2.81	8.26*	-8.07***	-2.67
% Shift in 2009-10	-26.53***	-16.26***	-23.21***	9.71**	-8.36**	-4.1*	9.96**	-10.57***	-3.36
Pre-Recession Base	14,995	8,768	9,143	3,112	5,956	7,518	3,033	5,707	7,215
Trend	702.4***	73.7***	324.2***	28.1	131.4***	261.3***	32.2	126.7***	269.9***
	(48.9)	(26.9)	(19.2)	(23.2)	(28.3)	(26.4)	(23.8)	(19.8)	(26.6)
Recession	-1218.8***	196.6	-277.8**	250.2*	-338.8*	-211.3	250.5*	-460.4***	-192.7
	(369.1)	(246.6)	(139.9)	(137.5)	(202.9)	(141.2)	(141.3)	(158.6)	(141.4)
Stimulus	-2759.5***	-1622.4***	-1844.2***	51.9	-159	-96.8	51.4	-143	-49.6
	(436.2)	(269.9)	(157.0)	(162.0)	(191.0)	(150.3)	(167.1)	(200.1)	(147.8)
Observations	371	191	1711	371	191	1711	371	190	1621
R-squared	0.898	0.973	0.886	0.976	0.967	0.721	0.975	0.977	0.729

Table 5: Examining Heterogeneities by Legal Designation (cont.)

Panel A	Instructional Exp. Per Pupil			Instructional Support Per Pupil			Student Services Per Pupil		
	Abbott	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**
	FE	FE	FE	FE	FE	FE	FE	FE	FE
% Shift in 2008-09	-7.12***	-1.31	-3.24***	-15.77***	-3.29	-5.25**	-11.17***	-5.31	-4.69**
% Shift in 2009-10	-9.56***	3.91***	-1.91	-25.59***	2.93	-7.78***	-16.43***	2.42	-5.04**
Pre-Recession Base	9,311	6,956	8,035	3,076	1,691	2,112	2,591	1,425	1,733
Trend	251.9***	124.8***	228.5***	171.2***	42.4***	100.6***	162.5***	49.9***	88.1***
	(27.9)	(14.2)	(14.8)	(23.2)	(7.1)	(7.5)	(10.5)	(7.3)	(5.0)
Recession	-662.5***	-90.9	-260.7***	-485.2***	-55.6	-110.9**	-289.5***	-75.7	-81.3**
	(184.4)	(160.2)	(90.8)	(127.8)	(71.7)	(45.1)	(90.9)	(67.9)	(34.2)
Stimulus	-227.2	362.9*	107.3	-302.1	105.1	-53.5	-136.2	110.1	-6.1
	(192.7)	(185.3)	(97.4)	(223.9)	(91.9)	(58.1)	(107.7)	(84.1)	(36.4)
Observations	371	191	1711	371	191	1711	371	191	1711
R-squared	0.71	0.741	0.444	0.643	0.774	0.634	0.806	0.741	0.693

Panel B	Transportation Per Pupil			Student Activities Per Pupil			Utilities and Maintenance Per Pupil		
	Abbott	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**
	FE	FE	FE	FE	FE	FE	FE	FE	FE
% Shift in 2008-09	-10.69***	-1.92	-6.20***	0.79	-2.75	0.81	-0.35	-4.08*	-2.32
% Shift in 2009-10	-15.85***	-5.91	-10.0***	2.49	5.97	2.92	-3.93	-6.33**	-5.26***
Pre-Recession Base	673	948	742	217	157	196	2,004	1,379	1,723
Trend	24.4***	1.7	28.9***	4.6***	3.6***	4.6***	77.8***	48.8***	64.7***
	(2.4)	(4.7)	(2.7)	(1.4)	(1.0)	(0.5)	(6.9)	(3.7)	(3.9)
Recession	-71.9***	-18.2	-46.0***	1.7	-4.3	1.6	-7	-56.2*	-39.9
	(22.0)	(39.5)	(17.4)	(9.9)	(10.0)	(4.3)	(57.4)	(32.4)	(25.1)
Stimulus	-34.7	-37.8	-28.2	3.7	13.6	4.1	-71.8	-31.1	-50.8*
	(28.2)	(49.3)	(18.7)	(11.9)	(13.5)	(5.0)	(70.7)	(36.5)	(26.7)
Observations	371	191	1711	371	188	1686	371	191	1711
R-squared	0.83	0.934	0.822	0.895	0.964	0.934	0.861	0.867	0.667

Panel C	Median Teacher Salary			Median Teacher Years of Experience			Total Number of Teachers		
	Abbott	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**	**Abbott**	**Bacon**	**High Poverty**
	FE	FE	FE	FE	FE	FE	FE	FE	FE
% Shift in 2008-09	1.78	1.33	0.62	17.84***	7.66	7.81***	-4.28	6.80*	-0.22
% Shift in 2009-10	7.16***	6.17**	5.23***	33.44***	21.07***	14.65***	-5.69	4.62	-0.47
Pre-Recession Base	60,855	53,560	57,374	8.97	10.44	10.24	709	115	243
Trend	-513.4***	-447.3*	-77.4	-0.9***	-0.4***	-0.3***	8.50**	0.45	2.71***
	(148.5)	(251.2)	(87.2)	(0.1)	(0.1)	(0.0)	(3.79)	(0.56)	(0.92)
Recession	1082.4	710.1	358.3	1.6***	0.8	0.8***	-30.32	7.85*	-0.54
	(853.6)	(1200.4)	(427.4)	(0.4)	(0.6)	(0.2)	(26.51)	(4.64)	(5.88)
Stimulus	3275.1***	2593.3**	2644.5***	1.4***	1.4*	0.7***	-10.02	-2.54	-0.61
	(919.3)	(1275.1)	(431.2)	(0.5)	(0.8)	(0.2)	(35.54)	(4.70)	(7.17)
Observations	310	160	1421	310	160	1421	341	176	1577
R-squared	0.897	0.654	0.818	0.811	0.779	0.748	0.980	0.986	0.9854

Notes: *, **, *** denote significance at the 10, 5, and 1 percent level, respectively. Robust standard errors are in parentheses. All regressions control for racial composition, and percent of students eligible for free or reduced price lunch.

Figure 1: Examining the Shifts in Overall Expenditure, Revenue, and Various Funding Sources

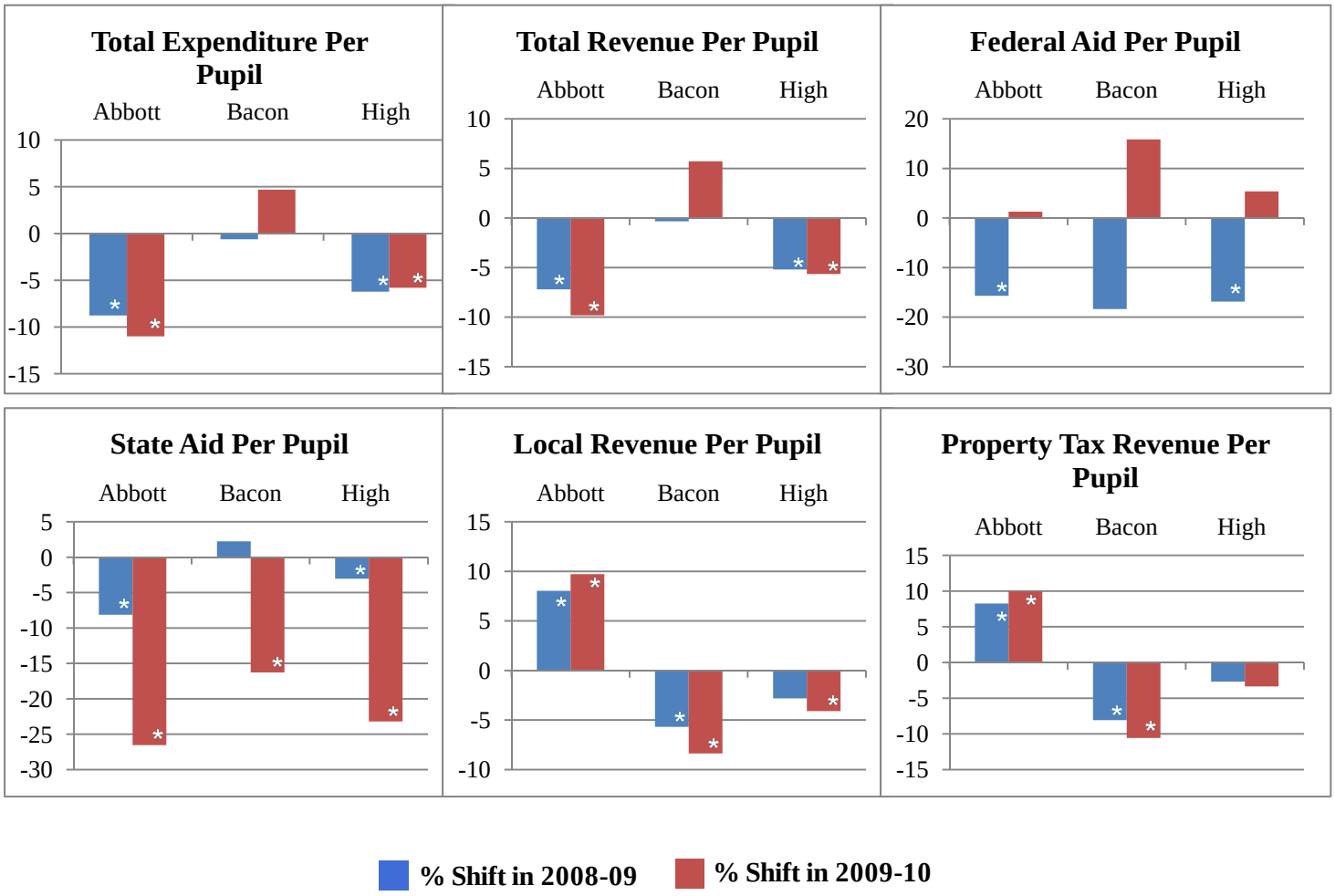

Figure 2: Examining the Compositional Shifts in Expenditure and Teacher Categories