

The Impact of the Great Recession on School District Finances: Evidence from New York¹

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Abstract

There is a slowly emerging literature that seeks to understand how the Great Recession affected different parts of our economy; however, there is very little research that examines the effect of the Great Recession (or any other recession) on schools. Given the fundamental role of education in human capital formation and growth, it is essential to understand the effect of recessions on schools. This paper contributes to filling this gap. Exploiting detailed panel data on a multitude of school finance indicators and a trend shift analysis, it examines how the Great Recession affected school finances in New York. While we find no evidence of effects on either total funding or expenditures, there were important compositional changes to both. There is strong evidence of substitution of funds on the funding side---the infusion of funds with the federal stimulus occurred simultaneously with statistically and economically significant cuts in state and local financing, especially the former. On the expenditure side, instructional expenditure was maintained, while several non-instruction categories like transportation, student activities and utilities suffered. Important heterogeneities in experiences are also observed by poverty, metro areas, and urban status. Affluent districts were hurt the most, while analysis by metro areas reveals that the New York City metropolitan area, and especially Nassau county, sustained the largest reductions in most expenditure categories. The findings of this study promise to enhance our understanding of how recessions affect schools and the role policy can play to mitigate the consequences.

Keywords: School finance, Recession, ARRA, Federal Stimulus

JEL Classifications: H4, I21, I28

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1 Introduction

The financial crisis and the Great Recession that followed led to declining tax revenues, which in turn strained state and local government finances. The bursting of the housing bubble and a weakened labor market led to lowered property, income, and sales tax revenue. This limited state and local governments' ability to fund school districts. The federal government allocated \$100 billion to states for education starting in the fall of 2009 through the American Recovery and Reinvestment Act (ARRA) to stave off serious budget cuts. New York received \$5.6 billion under ARRA and an additional \$700 million from the Race to the Top Competition. The stimulus funding was intended to lessen the impact of decreased state and local funding on school spending.

Schools are an indispensable part of our economy and society. They have an undisputed role in human capital formation and building the nation's future. Therefore, it is essential to understand how the Great Recession affected schools and what, if any, repercussions the recession might have on the delivery of education services and student learning. While there is a slowly emerging literature that seeks to understand how the Great Recession has affected other parts of the economy, surprisingly, there is very little literature on how the Great Recession affected schools (Chakrabarti and Sutherland (2013)). This paper starts to fill this gap.

This paper focuses on the state of New York. New York is of interest because of New York City, the country's largest school district. In addition, New York is the third largest state school system, serving 5.6% of the nation's students.⁵ Also notable is New York's diversity--it contains a range of urban, suburban, and rural districts, with a wide distribution of income levels. In this

⁵ Authors' calculations using the Common Core of Data of the National Center for Education Statistics for the 2008-09 school year.

paper, we study how school funding and expenditure as well as their compositions were affected by the recession and the federal stimulus. In addition to investigating aggregate trends, we also analyze whether there were variations in these patterns across metro areas, poverty levels, district size, and urban status.

Some interesting findings emerge. There is no evidence of any statistically significant shift—relative to trend—in either total funding per pupil or total expenditure per pupil after the recession.⁶ While there is no evidence of overall shifts, there is robust evidence of compositional shifts within both funding and expenditures. With the infusion of federal stimulus funds, state aid shifted downwards (relative to trend), and so did local funding. Meaningful shifts are also observed in the composition of expenditures. Instructional expenditures, the key category that most directly affects student learning, remained on trend. In contrast, non-instruction categories such as transportation, utilities and maintenance (“utilities”), student activities, and student services received cutbacks (relative to trend), although the effects are not always statistically significant. See Table 1 for descriptions of the various expenditure categories.

In addition to these overall patterns, we also find considerable variations within the state. The affluent districts were the worst hit in terms of both funding and expenditure (relative to trend). Non-instructional expenditures fell the most in these districts, and unlike high and medium poverty districts, they exhibited a fall in instructional expenditures as well. Analysis by metro areas reveals that Nassau county experienced sizable downward shifts both in total expenditures as well as in its various components. New York City also experienced some declines, though they were less widespread and economically considerably smaller than Nassau. There were

⁶ While there is evidence of small declines in total funding per pupil (especially in the 2009-10 school year), these effects are never statistically different from zero.

heterogeneities by urban status as well. Urban districts exhibited the largest declines in both instructional and non-instructional expenditures, although these declines were not always statistically significant. (Note that all these changes are relative to trend of the corresponding variable.)

The patterns suggest that, in the face of budget cuts, school districts tried to maintain instructional expenditures on trend. Across the board, non-instruction categories were affected much more adversely than instructional expenditures. Instructional expenditures were maintained on trend in most cases. In the small number of cases where there were declines, these were either economically small and/or statistically not different from zero.

A caveat relating to our analysis is worth noting here. We use a trend shift analysis--- we look for a shift in various school finance indicators from their pre-existing trends just after the recession (2008-09) and during the period when school districts received the infusion of federal stimulus funds (2009-10). We attribute any such shifts in the year just after recession to the recession and any shift in the following year to a combination of recession and federal stimulus. Note, though, that if there were shocks during these two years that affected our school finance indicators independent of the recession our estimates would be biased. So we look upon our estimates as strongly suggestive but not necessarily causal. This caveat should be kept in mind while interpreting the results of this paper. However, we did an extensive search for such potentially confounding “shocks” and did not find any. Moreover, the Great Recession was not a marginal shock at all, but rather a highly discontinuous one. So even if there were small shocks during these two years, they would be by far overpowered by as gargantuan a shock as the Great Recession.

This paper is related to the literature that studies school district funding. Stiefel and Schwartz (2011), analyzing school finance patterns in New York City during 2002-2008, find evidence of large increases in per pupil funding during this period. Rubenstein et al. (2007), studying schools in NYC, Cleveland, and Columbus, find that higher poverty schools received more funding per student. Baker (2009), studying schools in Texas and Ohio, finds that resources vary according to student needs within districts. But this paper is most closely related to the literature that studies the impact of recessions on schools. Studying the 2001 recession and regressing percentage change in property taxes per capita on change in state aid per capita as percent of property taxes per capita, Reschovsky and Dye (2008) find that state funding cuts were associated with partial offsets by increased property tax funding. Studying funding and expenditure patterns for New Jersey following the Great Recession, Chakrabarti and Sutherland (2013) find that New Jersey districts faced declines in state funding (relative to trend). Interestingly, this prompted compositional shifts in expenditures in favor of categories linked most closely to instruction, while expenditures in several non-instruction categories including transportation and utilities declined.

It follows from the above discussion that while there is research on school funding and resource allocation within and across districts, literature on the impact of recessions, and especially the Great Recession, on schools is woefully sparse. This paper takes a step forward in that direction by studying the impacts on school finances in New York. Understanding how school districts fared during the Great Recession promises to improve current understanding of schools' financial situations, as well as how schools respond under financial duress, and will aid future policy decisions.

2 Background

2.1 Financial Crisis and Federal Stimulus Funding

The bursting of the housing bubble and the onset of the recession in 2007 strained state and local government finances as their funding slowed. The housing market began slowing in 2005 and 2006, as foreclosures increased. In 2007, as subprime lenders declared bankruptcy and credit for home equity loans dried up, the housing market crashed. According to the CoreLogic Home Price Index, the U.S. as a whole saw a 29.4% drop in housing values from October 2006 to February 2009. The decline in New York State was less drastic, at 13.5%. Local governments, which typically derive a large percentage of their total revenue from property taxes, faced falling revenues due to declines in the housing market.

State governments also saw a decline in funds due to both reduced income tax revenues from increased unemployment and reduced sales tax revenues from lower consumption. New York's unemployment rate increased from 4.6% in 2006 to 8.5% in 2010, faring better than the nation which had the same unemployment rate in 2006 and 9.6% unemployment in 2010.⁷ State tax revenue fell 8% in New York from 2007 to 2009, similar to the national state average, which declined 9%.

The financial downturn limited state and local government's ability to fund school districts and resulted in difficult budget decisions. According to the Center on Budget and Policy Priorities, at least 46 states and the District of Columbia worked to close budget shortfalls entering the 2011 fiscal year. K-12 education derives more than half of its funding from state revenue, resulting in serious implications for its financing. To stave off serious budget cuts, the federal government

⁷ Bureau of Labor Statistics, Haver Analytics

allocated \$100 billion to states for education through the American Recovery and Reinvestment Act (ARRA). The funds were available for the 2009-10 school year through the fall of the 2011.

The ARRA money lessened the impact of decreased state and local funding on school budgets.

ARRA provided approximately \$5.6 billion to New York Schools.⁸ Districts were directed to use the ARRA funds to save and create jobs, to boost student achievement and bridge student achievement gaps, and to improve accountability and performance reporting. The funds were distributed using the states' formulas for distributing education aid. New York won an additional \$700 million from the Race to the Top Competition for the 2010-11 school year to fall of 2014.

2.2 Budget Cuts

When faced with tight budgets, school districts tend to trim spending that does not affect core subjects (Cavanagh 2011). Common cuts include extracurricular activities, art and music programs, maintenance, purchases, and transportation, as well as delaying equipment upgrades. After these initial cuts, more severe options are visited, such as increased class size and decreased staff, instruction hours, benefits, professional development, and bonuses.

2.3 School Funding Overview

Funding for public schools comes from three main sources: the federal government, the state government, and local funding. The latter is locally-raised revenue within a school district, mostly from property taxes. Prior to the financial crisis in the 2007-08 school year, New York State districts received approximately 3% of their funding from federal aid, 40% from the state, and 57% from local funding. By 2009-10, reliance on federal aid increased to approximately 7%

⁸ These estimates include State Fiscal Stabilization Funds, Title I Part A – Supporting Low-Income Schools, IDEA Grants, Part B & C – Improving Special Education Programs, and Education Technology Grants. This number does not include competitive grants such as Race to the Top. Source: <http://www2.ed.gov/policy/gen/leg/recovery/state-fact-sheets/index.html>

and the percent of funding from state and local sources fell to 38% and 55% respectively. The bulk of federal school aid goes to Title I funding to support low-income students and students with disabilities.

State aid for education primarily comes from the State General Fund, financed by state income and sales taxes. Some additional funding comes from the Special Funding account supported by lottery receipts (The State Department of Education, 2009). State aid to school districts is determined based on a variety of characteristics of the school districts, including enrollment, regional labor market costs, percentage of low income students, and percentage of limited English proficient students in the district.

In New York, 90% of local funding comes from residential and commercial property tax receipts. The largest school districts, consisting of Buffalo, New York City, Rochester, Syracuse, and Yonkers, fund their schools from their city's budgets instead of linking funding directly to property tax revenue. New York City, which comprises about half of the New York State student population, has undergone important finance policy changes in recent years. The Children's First initiative, which started in 2003, increased teacher salaries and financial incentives to work in high-need schools and subject areas with teacher shortages (Goertz et. al 2011). In 2008, the Fair Student Funding program aimed to improve the distribution of resources by allocating school funds based on the number of low income, special education, low achieving, and English Language Learners. According to some, but not all measures, this policy resulted in increased spending on students with greater needs (Stiefel and Schwartz 2011).

3 Data

We utilize school district financial report data from the New York Office of the State Comptroller. The data covers the 2004-05 to 2009-10 school years and the 714 school districts of New York State. Student demographic data and the percentage of students eligible for free or reduced price lunches from 2004-05 to 2009-10 are available from the New York State Department of Education.

The school finance dataset includes funding, expenditure, and enrollment information, as well as components of funding and expenditure. We have data on total funding, as well as the amount of aid received from federal and state sources, and local funding as well as property tax funding. The dataset includes total fall student enrollment. In addition to total expenditures, detailed data are available on the various components: instructional expenditures, instructional support expenditures, student services, transportation, and utilities. The definitions of each of these variables are shown in Table 1.

We categorize districts into high poverty, medium poverty, and low poverty districts based on the percent of free/reduced price lunch students in the 2007-08 school year. Districts that fall within the top 75th percentile (that is, have 42% or more free/reduced price lunch students) are categorized as high poverty districts. We categorize the bottom 25th percentile, with 13% or fewer students in the lunch program, as low poverty. The rest of the districts are referred to as medium poverty.

We use the National Center for Education Statistics Common Core of Data (CCD) designations of urban status in 2007-2008 to categorize districts as urban, suburban, or rural. Districts inside urbanized areas or inside urban clusters less than 35 miles from urbanized areas are categorized as urban. Districts outside principal cities and towns but close to urbanized areas comprise the

suburban districts. NCES categorizes areas with fewer than 2,500 inhabitants outside of an urban area as rural. In the rest of the paper, we refer to school years by the year of the spring semester.

We perform heterogeneity analysis by metropolitan areas. We consider the following metro areas: Albany, Buffalo, Rochester, Syracuse, Ithaca, New York City, and Nassau County. The first four are Metropolitan Statistical Areas (MSA). Since Ithaca's MSA has only a few school districts, we study the Binghamton, Cortland, Elmira, and Ithaca MSAs together and refer to them as the Ithaca Metropolitan Area. While New York City and Nassau County comprise one MSA, due to their differences, we study them separately as the New York – White Plains, and Nassau County Metropolitan Divisions.⁹ See Figure 1 for a map of the areas we examine.

4 Interpretation of the Post-Recession Effects

The goal of this paper is to investigate whether the Great Recession and the federal stimulus funding period that followed were associated with shifts in New York education financing. We conduct a trend shift analysis and use specification (1) in Box 1 to analyze these effects. The reasoning behind this methodology is that we expect school finances would have continued growing at their pre-recession rate had there been no recession. Thus, post-recession effects (α_2 and $[\alpha_2 + \alpha_3]$ in Box 1) capture shifts from this trend in the post-recession period in 2009 and 2010 respectively.

To quantify the relative change in each finance variable, we also compute percentage shifts that are obtained by expressing the shifts α_2 and $\alpha_2 + \alpha_3$ from specification (1) as percentages of

⁹ We utilize ArcGIS mapping technology to visualize changes in financial variables spatially. The district and MSA shape files come from the Census.

the pre-recession (2008) base of the corresponding financial variable (Y_{it}). This pre-recession base is simply the average across districts of each Y_{it} in the 2008 school year. As stated previously, local, state, and federal governments finalize their budgets in the spring prior to the budgeted year. More specifically, the budgets for the 2008 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, 2008 is taken as the last pre-recession year in this paper.

These percent effects allow for an easier interpretation and are more informative than simply looking at the coefficients (α_2 and α_3). This is because they give an idea about the size of the effects, and are more easily comparable with each other. In our discussion, we will focus on the discussion of two percentage shifts. First, the 2009 percentage shift immediately following the recession, calculated as $\frac{\alpha_2}{\text{pre-recession base}}$ for each finance variable (Y_{it}). Second, the percent shift in 2010, calculated as $\frac{\alpha_2 + \alpha_3}{\text{pre-recession base}}$ for each finance variable (Y_{it}). The first percent shift captures the effect of the recession in 2009 and the latter captures the combined effect of the recession and the federal stimulus in 2010.

An important caveat relating to the above strategy should be mentioned here. The estimates from the above specification capture shifts from the pre-existing trend of the corresponding financial variables. However, these specifications do not control for any other shocks that might have taken place in the two years following the recession that might have also affected these financial variables. To the extent that there were such shocks that would have affected our outcomes even otherwise, our estimates would be biased. As a result, we would not like to portray these estimates as causal effects, but as effects that are strongly suggestive of the effects of recession

and stimulus on various school finance variables. However, we did some research to assess the presence of shocks (such as policy changes etc.) that might affect our outcome variables of interest independently of the recession and stimulus. We did not find any evidence of such shocks during this period.

5 Results

5.1 Overall Patterns

Figure 2 shows trends in various aggregate school finance variables. The dotted vertical line marks the immediate pre-recession (2007-08) school year. There is not much evidence of shifts in per pupil expenditure or revenue; both remained on trend. As expected, the federal aid per pupil and the federal share in total funding show a steep increase in 2009-10, the year of the federal stimulus funding. State aid per pupil, as well as the share of state aid, exhibit a decline in 2009-10 as the federal stimulus came in. Local funding per pupil, as well as its share, declined after the recession (relative to trend).

Figure 3 focuses on the various components of expenditure. There is no evidence of effects on instructional expenditure, however several non-instruction categories (transportation, student services per pupil, student activities per pupil) show some flattening after the recession. Next we investigate whether these patterns hold up in a more formal trend shift analysis.

Table 2 presents results from estimation of specification (1). The setup of each table in the paper is similar. The top part of each panel of all tables presents the percent shifts, while the lower part presents the regression estimations from which the percent shifts were derived. Our discussion of results will focus on these percent shifts. The first row presents the percent shift in 2009

$\left(\frac{\alpha_2}{\text{pre-recession base}}\right)$ and captures the effect of the recession. The second row gives the percent shift in 2010 $\left(\frac{\alpha_2 + \alpha_3}{\text{pre-recession base}}\right)$ and captures the combined effect of federal stimulus funding and the recession. The third row shows the district average pre-recession base of the relevant dependent variable. The bottom section of each panel shows the regression estimation results that are used to calculate the percent shifts. “Trend” corresponds to α_1 , “Recession” to α_2 , and “Stimulus” to α_3 . For ease of comparison these percent shifts are also presented in bar charts.

Table 2 and Figure 4 show that, overall, New York state school districts maintained the trend of total funding and total expenditure per pupil during the recession. The composition of funding changed following the recession. In 2008-09, local funding shifted downwards and state aid filled in the gap by shifting upwards. Federal aid per pupil more than doubled in the 2009-10 school year relative to the pre-recession trend. This coincided with downward shifts in state and local funding per pupil (relative to pre-recession trend). Thus, there seems to have been a substitution of funds away from state and local funds and towards federal funds. The increased reliance on federal aid is also evidenced by the maps in Figure 5. On average New York districts received 3% of their funding from federal sources in 2007-08. However, they received over 7% of their funding from federal sources after the start of the ARRA money in 2009-10. This uptick and increased reliance on federal aid is due to the fiscal stimulus, which sought to prevent serious budget cuts given falling state and local funding.

While overall expenditure remained on trend, the composition of expenditure shows interesting changes (Table 3 and Figure 6). Districts maintained instructional and instructional support expenditures on trend.¹⁰ Since classroom expenditures and teachers most directly affect student

¹⁰ Note that while some of the percent shifts are negative, they are small and never statistically different from zero.

learning, they are likely undesirable targets for budget cuts. Additionally, teacher salaries comprise a large portion of instructional spending and reducing expenditures in these areas is difficult since it involves renegotiating contracts or layoffs.

The non-instructional expenditures per pupil, especially transportation, utilities and maintenance, and student activities per pupil faced cuts in both years after the onset of the recession (relative to pre-recession trend), especially in 2010. Student services also trended downwards, but not statistically significantly.^{11,12}

5.2 Examining the Heterogeneity of Effects by Poverty Level

While the above analysis focuses on aggregate patterns, the rest of the paper investigates whether there were differences in impacts within the state by various characteristics such as poverty status, location, and urbanicity. To save space, this analysis focuses only on a subset of the finance indicators analyzed above—the indicators that are of most interest—the various components of expenditure. This analysis provides valuable insight on how the different types of districts allocated funds, and how the students in these districts were affected. Results for the other indicators are available on request.

¹¹ Note that it is not inconsistent that relative to corresponding pre-existing trends, several non-instructional expenditure categories shifted down but the overall expenditure did not. This is because these shifts are relative to the corresponding variables' pre-existing trends which in turn differed between variables. Additionally, we do see a positive change in instructional expenditure in 2009-10, although it is not statistically significant. Instructional expenditure plays a much larger role in total expenditure than most of the non-instructional components, so when considering the overall effect we cannot treat the sub-components equally.

¹² It is worth thinking why spending in multiple non-instructional categories showed declines (relative to trend), although total expenditure was maintained on trend. This is likely because school districts anticipated future declines in funding and expenditure. Revenues from state and local funding sources declined drastically due to the Great Recession, and the primary reason their overall funding was maintained on trend was because of the influx of the federal stimulus aid from ARRA funding. It was widely known that the stimulus funding was temporary and will dry up in a couple of years (which it did). Thus, it is plausible that districts anticipated sharp funding cuts in the near future and responded by cutting spending in non-essential non-instructional categories.

In this section, we investigate whether there were variations in effects across different poverty levels. As Table 4 and Figure 7 show, instructional expenditure did not experience declines (relative to trend), except in the low poverty districts (and this was statistically significant only in 2009). In contrast, cuts to non-instructional spending occurred and were much more widespread. Transportation and utilities both suffered significant decreases in both 2009 and 2010 in medium-poverty and low-poverty districts. Student services also decreased in low-poverty districts in both years, but not statistically significantly. Surprisingly, medium poverty districts experienced statistically significant increases in student services in both years. None of the three groups of districts experienced a statistically significant shift in instructional support per-pupil. To summarize, high-poverty districts were relatively unaffected, and did not experience a statistically significant change in any expenditure category. Districts in the middle had mixed experiences, overall increasing instructional expenditure and student services while cutting spending for transportation, student activities, and utilities. Low poverty districts were the most affected with economically significant declines evidenced in all categories, many of which were statistically significant.

5.3 Did Urbanicity Matter?

There were marked differences in how school finances in urban, suburban, and rural districts were impacted by the Great Recession. As Table 5 and Figure 8 show, all district types maintained instructional spending—while some of the shifts were negative, they were never statistically different from zero. Additionally, there were no statistically significant shifts in instructional support or student services. Transportation spending fell by a large and statistically significant amount in both urban and rural districts for both years but did not change

significantly for suburban districts. Spending on utilities fell for both years in urban and rural districts (although only the 2009 fall was significant in rural districts). Urban school districts additionally saw a drop in student activities expenditure in both years (significant only in the latter year). Overall, it seems that urban and rural districts experienced stronger declines in non-instructional spending compared with suburban districts.

5.4 Examining Spatial Heterogeneities – Were there Variations Across Metropolitan Areas?

Next, we investigate whether there were variations in experiences across metropolitan areas. The results are presented in Tables 6-7 and Figures 9-10. All metropolitan areas maintained or increased instructional spending except Nassau, where instructional spending shifted downwards. However, while almost all metro areas' instructional expenditures were not hurt, the metro areas experienced significant declines in various non-instructional categories. All metro areas experienced economically significant declines in transportation expenditure, and most of these declines were statistically significant. Nassau was particularly hard-hit in non-instructional expenditure as well. It experienced the largest decline in transportation and utilities spending in both years among any of the seven metro areas we analyzed. Its expenditures on student activities and student services saw a small and non-significant increase.

After Nassau, New York City experienced the biggest declines in some of the non-instructional expenditure categories, particularly in student activities and utilities. New York City also experienced a small (statistically insignificant) decline in instructional expenditure in 2009. In 2010, while NYC saw an increase in instructional expenditure relative to trend like the other metro areas, this increase was not as large as most other metro areas and was not statistically

different from zero. Rochester fared relatively well; with a modest (but statistically significant) increase in instructional spending and a significant (both economically and statistically) increase in instructional support in 2010. It also did not experience a statistically significant decline in any of its other non-instructional expenditure categories.

6 Conclusion

This paper investigates school finance patterns in New York during the Great Recession and federal stimulus period using a trend shift analysis. We do not find evidence of shifts in total school district funding or expenditure following the Great Recession. However, the composition of funding changed—the share of federal funding increased dramatically, while shares of state and local funding fell when ARRA funding began. The federal stimulus appears to have helped maintain total expenditure and instructional expenditures in the 2009-10 school year. While total expenditure does not show a shift, the composition of total expenditure changed in interesting ways. Instructional expenditure (which includes teacher salaries and other spending that directly impacts classroom learning) was maintained on trend while declines occurred (relative to trend) in non-instructional expenditures, especially in transportation, utilities, and student activities. Thus, districts seem to have protected expenditures that matter most for student learning, while expenditures in non-instructional categories suffered. In addition to these overall trends, our analysis revealed interesting variations within the state, by poverty, metro areas, and urban status. Studying variations by poverty, we find that low poverty districts were the most affected in both instructional and non-instructional expenditures. Studying patterns by metro areas revealed that New York, and especially Nassau were badly hit. Additionally, urban districts suffered the largest declines in funding.

Investing in education is essential to building human capital and improving the future prospects for children. Recessions can have widespread and long-lasting effects in many different aspects of life, far beyond the immediate short-term impact. How exactly the recession will affect the economy in the long-run remains to be seen, but one aspect of that is how it affects human capital development and investment. The findings of this study promise to facilitate our understanding of how recessions affect schools, and the role policy can play to mitigate the consequences.

References

Bruce D. Baker, (2009), "Within District Resource Allocation and the Marginal Costs of Providing Equal Educational Opportunity: Evidence from Texas and Ohio," *Education Policy Analysis Archives* 17, no. 3:1–31.

Cavanagh, Sean, (2011), "Educators Regroup in Recession's Aftermath," Education Week.

Chakrabarti, Rajashri and Sarah Sutherland (2013), "Precarious Slopes? The Great Recession, Federal Stimulus, and New Jersey Schools" *Economic Policy Review* 19 (2), 41-65.

Goertz, Margaret, Loeb, Susanna, and Wyckoff, Jim (2011), "Recruiting, Evaluating, and Retaining Teachers: The Children First Strategy to Improve New York City's Teachers," *Education Reform in New York City*, 157-180.

The New York State Council of School Superintendents (2011), "At the Edge: A Survey of New York State School Superintendents on Fiscal Matters."

Klein, Joel, (2010), "May 6, 2010 Memo to New York City School Principals."

Reschovsky, Andrew and Richard Dye (2008), "Property Tax Responses to State Aid Cuts in the Recent Fiscal Crisis", *Public Budgeting & Finance* 28 (2), 87-111.

Roza, Marguerite, Lozier, Chris, and Sepe Cristina (2010), "K-12" Job Trends Amidst Stimulus Funds," Center on Reinventing Public Education.

Ross Rubenstein et al., (2007), "From Districts to Schools: The Distribution of Resources across Schools in Big City School Districts," *Economics of Education Review* 26, no. 5: 532–545.

Stiefel, Leanna and Schwartz, Amy Ellen (2011), “Financing K-12 Education in the Bloomberg Years, 2002-2008,” Education Reform in New York City, 55-86.

The State Education Department, Office of State Aid (2009), “2009-10 State Aid Handbook,” Albany, New York.

***** EMPIRICAL STRATEGY BOX BEGINS HERE*****

Empirical Strategy

We analyze whether the recession and federal stimulus periods were associated with shifts in various school finance indicators from their pre-existing trends. We use the following specification for this purpose:

$$Y_{it} = \alpha_1 t + \alpha_2 v_1 + \alpha_3 v_2 + \alpha_4 X_{it} + f_i + \varepsilon_{it} \quad (1)$$

where Y_{it} is a financial indicator for school district i in year t ; t is a time trend variable which equals 0 in the immediate pre-recession year (2008) and increments by 1 for each subsequent year and decreases by 1 for each previous year; v_1 is the recession dummy, $v_1 = 1$ if year >2008 and 0 otherwise; v_2 is the stimulus dummy, $v_2 = 1$ if year >2009 and 0 otherwise; X_{it} represents the school district demographic characteristics---racial composition and percentage of students eligible for free or reduced price lunches; f_i denotes district fixed effects.

The coefficient on the time trend variable, α_1 , denotes the overall trend in the financial indicator in the pre-recession period. The intercept shift coefficient, α_2 , denotes whether there was an intercept shift (from the pre-recession trend) in the first year after recession; α_3 captures any additional shift in 2009-10, the year ARRA was implemented and school districts received an infusion of funds under the federal stimulus. In Tables 2 through 7, we define α_2 as “Recession” and α_3 as “Stimulus”. The shifts relative to pre-existing trends in 2009 and 2010 are captured by α_2 and $(\alpha_2 + \alpha_3)$, respectively.

All financial variables are inflation-adjusted to 2009 dollars. All regressions reported in the paper include district fixed effects. Demographic controls and robust standard errors are used in all regressions. The results are robust, to the inclusion or exclusion of covariates.

*******BOX ENDS HERE*******

Table 1: Definitions for Expenditure Components

<p style="text-align: center;"><u>Instruction</u></p> <p>Instructional Expenditures All expenditure associated with direct classroom instruction. Teacher Salaries and benefits; classroom supplies; instructional training.</p> <p style="text-align: center;"><u>Non-Instruction</u></p> <p>Instructional Support All support service expenditures designed to assess and improve students' well-being. Food services, educational television, library, and computer costs.</p> <p>Student Services Psychological, social work, guidance, and health services.</p> <p>Utilities and Maintenance Heating, lighting, water, and sewage; operation and maintenance.</p> <p>Transportation Total expenditure on student transportation services.</p> <p>Student Activities Extra-curricular activities: physical education, publications, clubs, and band.</p>
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Table 2: Examining Patterns in Funding and Expenditures Per Pupil during the Financial Crisis and Federal Stimulus Period

Panel A	Total Expenditure Per Pupil (1)	Total Funding Per Pupil (2)	Federal Aid Per Pupil (3)	State Aid Per Pupil (4)	Local Funding Per Pupil (5)	Property Taxes Per Pupil (6)
% Shift in 2008-09	-0.410	-0.743	5.674	3.377***	-5.060***	-2.517*
% Shift in 2009-10	1.985	-2.348	126.844***	-6.285***	-6.673***	-2.467
Pre-Recession Base	23580.53	22724.17	705.01	7883.87	13914.50	10172.06
Trend	940.3*** (125.4)	1035.8*** (120.0)	-4.3 (12.8)	412.5*** (14.0)	629.632*** (112.738)	420.400*** (92.307)
Recession	-96.7 (310.8)	-168.9 (275.3)	40.0 (42.9)	266.3*** (50.2)	-704.125*** (222.578)	-256.041* (138.652)
Stimulus	564.7 (369.4)	-364.7 (317.7)	854.3*** (63.6)	-761.7*** (59.3)	-224.341 (245.825)	5.074 (185.666)
Observations	4146	4146	4146	4146	4146	4146
R-squared	0.88	0.91	0.85	0.96	0.94	0.96
Panel B	% Federal Aid (7)	% State Aid (8)	% Local Funding (9)	Total Students (10)		
% Shift in 2008-09	-2.134	2.664***	-3.512***	-0.163		
% Shift in 2009-10	126.798***	-5.509***	-3.154***	1.151		
Pre-Recession Base	3.09	39.83	56.00	3889.72		
Trend	-0.229*** (0.018)	0.402*** (0.037)	-0.100*** (0.038)	-37.653*** (9.337)		
Recession	-0.066 (0.053)	1.061*** (0.112)	-1.967*** (0.116)	-6.342 (30.835)		
Stimulus	3.987*** (0.070)	-3.255*** (0.116)	0.201* (0.109)	51.128 (38.394)		
Observations	4146	4146	4146	4146		
R-squared	0.90	0.99	0.99	1.00		

Notes: *, **, *** denote significance at the 10, 5, and 1 percent level, respectively. Robust standard errors are in parentheses. All regressions include school district fixed effects and control for racial composition and percent of students eligible for free or reduced price lunch. Pre-recession base is expressed in 2009 constant dollars.

Table 3: Examining Patterns in the Composition of Expenditures During the Financial Crisis and Federal Stimulus Period

Panel A	Instructional Expenditures Per Pupil (1)	Instructional Support Per Pupil (2)	Student Services Per Pupil (3)
% Shift in 2008-09	-0.245	-0.109	-1.091
% Shift in 2009-10	1.131	-0.785	-0.980
Pre-Recession Base	11064.65	886.47	652.02
Trend	334.9*** (59.6)	28.8*** (3.2)	17.2*** (4.7)
Recession	-27.2 (123.2)	-1.0 (8.7)	-7.1 (12.1)
Stimulus	152.3 (163.0)	-6.0 (14.5)	0.7 (13.6)
Observations	4146	4146	4146
R-squared	0.92	0.88	0.91
Panel B	Transportation Per Pupil (4)	Student Activities Per Pupil (5)	Utilities & Maintenance Spending Per Pupil (6)
% Shift in 2008-09	-4.130	0.151	-3.760**
% Shift in 2009-10	-8.753**	-1.676*	-5.188**
Pre-Recession Base	1198.24	264.17	5692.08
Trend	76.9*** (20.3)	9.7*** (0.6)	272.3*** (63.6)
Recession	-49.5 (43.5)	0.4 (1.8)	-214.0** (98.9)
Stimulus	-55.4 (46.8)	-4.8** (2.0)	-81.2 (117.9)
Observations	4146	4146	4146
R-squared	0.83	0.96	0.95

Notes: *, **, *** denote significance at the 10, 5, and 1 percent level, respectively. Robust standard errors are in parentheses. All regressions include school district fixed effects and control for racial composition and percent of students eligible for free or reduced price lunch. Pre-recession base is expressed in 2009 constant dollars.

Table 4: Examining Heterogeneities by School District Poverty Levels

Panel A	Instructional Expenditures			Instructional Support			Student Services		
	Per Pupil			Per Pupil			Per Pupil		
	High (1)	Medium (2)	Low (3)	High (4)	Medium (5)	Low (6)	High (7)	Medium (8)	Low (9)
% Shift in 2008-09	2.663	0.255	-3.990*	-0.164	0.879	-2.308	0.062	1.554*	-5.020
% Shift in 2009-10	5.126	1.940**	-3.954	-1.149	0.918	-4.332	-2.128	2.371*	-3.781
Pre-Recession Base	11341.13	9390.48	13902.44	924.67	863.43	890.95	719.85	516.88	835.32
Trend	455.4*** (106.3)	214.3*** (17.8)	448.8** (188.9)	26.2*** (5.3)	29.0*** (2.9)	32.3*** (8.4)	37.1*** (13.2)	10.5*** (1.4)	21.3** (10.1)
Recession	302.0 (316.7)	23.9 (48.6)	-554.6* (335.0)	-1.5 (16.7)	7.6 (9.0)	-20.6 (24.4)	0.4 (36.0)	8.0* (4.5)	-41.9 (29.2)
Stimulus	279.3 (474.8)	158.2** (71.0)	5.0 (395.0)	-9.1 (17.5)	0.3 (10.8)	-18.0 (43.7)	-15.8 (46.3)	4.2 (5.5)	10.3 (22.7)
Observations	1059	2010	1077	1059	2010	1077	1059	2010	1077
R-squared	0.86	0.95	0.94	0.85	0.91	0.88	0.88	0.96	0.95
Panel B	Transportation			Student Activities			Utilities & Maintenance Spending		
	Per Pupil			Per Pupil			Per Pupil		
	High (10)	Medium (11)	Low (12)	High (13)	Medium (14)	Low (15)	High (16)	Medium (17)	Low (18)
% Shift in 2008-09	9.609	-4.884***	-15.356***	0.554	-0.468	0.858	0.138	-2.265***	-8.919**
% Shift in 2009-10	-1.169	-5.676***	-22.873**	-1.684	-2.820**	-0.628	0.854	-2.756**	-13.804**
Pre-Recession Base	1119.58	1108.20	1444.92	218.07	262.53	313.60	5703.77	4715.30	7498.22
Trend	62.6** (27.0)	44.4*** (3.4)	144.6** (64.7)	7.1*** (1.5)	10.9*** (0.7)	10.5*** (1.3)	247.3*** (40.8)	180.5*** (14.7)	444.2** (209.1)
Recession	107.6 (144.7)	-54.1*** (11.1)	-221.9*** (79.7)	1.2 (3.5)	-1.2 (2.4)	2.7 (4.2)	7.9 (117.0)	-106.8*** (38.7)	-668.8** (340.2)
Stimulus	-120.7 (145.8)	-8.8 (11.8)	-108.6 (103.3)	-4.9 (3.4)	-6.2** (2.6)	-4.7 (4.6)	40.9 (178.1)	-23.1 (51.6)	-366.2 (422.0)
Observations	1059	2010	1077	1059	2010	1077	1059	2010	1077
R-squared	0.66	0.93	0.89	0.93	0.95	0.97	0.95	0.96	0.95

Notes: *, **, *** denote significance at the 10, 5, and 1 percent level, respectively. Robust standard errors are in parentheses. All regressions include school district fixed effects and control for racial composition and percent of students eligible for free or reduced price lunch. Pre-recession base is expressed in 2009 constant dollars.

Table 5: Examining Heterogeneities by School District Urbanicity

Panel A	Instructional Expenditures			Instructional Support			Student Services		
	Per Pupil			Per Pupil			Per Pupil		
	Urban	Suburban	Rural	Urban	Suburban	Rural	Urban	Suburban	Rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Shift in 2008-09	-1.377	0.747	-1.115	0.668	0.426	-1.002	1.501	-2.187	-1.022
% Shift in 2009-10	-3.305	3.701	0.855	0.757	-0.871	-1.497	-0.033	-2.619	1.661
Pre-Recession Base	9617.69	12031.65	10855.30	795.10	808.81	991.42	468.94	826.95	584.16
Trend	189.8*	378.1***	376.9***	22.3***	24.0***	37.1***	10.5***	22.7**	19.7***
	(105.8)	(101.2)	(63.3)	(4.6)	(4.2)	(5.7)	(2.3)	(9.8)	(5.6)
Recession	-132.4	89.9	-121.0	5.3	3.4	-9.9	7.0	-18.1	-6.0
	(174.3)	(224.9)	(165.1)	(13.0)	(11.2)	(16.9)	(6.3)	(23.3)	(17.7)
Stimulus	-185.4	355.4	213.8	0.7	-10.5	-4.9	-7.2	-3.6	15.7
	(173.9)	(325.6)	(215.0)	(13.6)	(13.5)	(28.9)	(7.1)	(20.7)	(24.1)
Observations	797	1511	1831	797	1511	1831	797	1511	1831
R-squared	0.94	0.91	0.94	0.84	0.86	0.89	0.92	0.95	0.87

Panel B	Transportation			Student Activities			Utilities & Maintenance Spending		
	Per Pupil			Per Pupil			Per Pupil		
	Urban	Suburban	Rural	Urban	Suburban	Rural	Urban	Suburban	Rural
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
% Shift in 2008-09	-6.541***	6.899	-10.224***	-1.445	0.385	0.260	-4.217**	-2.364	-4.823*
% Shift in 2009-10	-10.534***	-3.596	-9.773**	-3.667**	-0.634	-2.210	-7.489**	-1.416	-5.754
Pre-Recession Base	891.03	1100.15	1416.62	231.47	261.93	279.55	4727.63	5598.72	6180.89
Trend	34.6***	71.2**	90.8***	9.3***	6.7***	12.3***	98.4	183.0***	325.0***
	(5.4)	(29.6)	(22.3)	(0.9)	(1.0)	(1.0)	(69.3)	(52.2)	(70.0)
Recession	-58.3***	75.9	-144.8***	-3.3	1.0	0.7	-199.4**	-132.3	-298.1*
	(15.4)	(99.3)	(44.1)	(2.8)	(2.4)	(3.2)	(87.9)	(104.5)	(175.2)
Stimulus	-35.6**	-115.5	6.4	-5.1*	-2.7	-6.9**	-154.7	53.0	-57.5
	(15.9)	(109.6)	(52.9)	(2.9)	(2.9)	(3.5)	(110.5)	(143.6)	(207.6)
Observations	797	1511	1831	797	1511	1831	797	1511	1831
R-squared	0.91	0.63	0.90	0.97	0.97	0.94	0.96	0.97	0.95

Notes: *, **, *** denote significance at the 10, 5, and 1 percent level, respectively. Robust standard errors are in parentheses. All regressions include school district fixed effects and control for racial composition and percent of students eligible for free or reduced price lunch. Pre-recession base is expressed in 2009 constant dollars.

Table 6: Examining Heterogeneities by Metropolitan Area

Panel A	Instructional Expenditures				Instructional Support				Student Services			
	Per Pupil				Per Pupil				Per Pupil			
	Albany	Buffalo	NYC	Syracuse	Albany	Buffalo	NYC	Syracuse	Albany	Buffalo	NYC	Syracuse
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
% Shift in 2008-09	-0.174	2.050	-0.256	0.506	1.879	-0.472	0.036	-0.292	-0.001	1.420	-0.874	0.252
% Shift in 2009-10	3.177	3.861***	2.181	3.595*	-0.528	-1.914	-0.513	-1.014	0.053	3.284	-2.074	0.770
Pre-Recession Base	9934.55	8117.35	12756.70	8182.69	728.39	746.29	924.59	833.33	510.45	450.52	850.07	414.48
Trend	131.7 (110.5)	99.8*** (25.1)	190.9*** (44.1)	165.5*** (39.7)	22.2*** (7.5)	21.2*** (4.7)	11.8 (7.9)	17.5*** (5.8)	10.3* (5.5)	6.0** (2.3)	36.0*** (6.1)	7.1* (3.9)
Recession	-17.3 (182.7)	166.4 (104.8)	-32.7 (140.9)	41.4 (119.6)	13.7 (17.3)	-3.5 (15.8)	0.3 (23.2)	-2.4 (20.4)	-0.0 (11.4)	6.4 (6.5)	-7.4 (14.2)	1.0 (10.8)
Stimulus	332.9 (257.9)	147.0 (111.5)	310.9 (228.7)	252.7* (138.7)	-17.5 (20.6)	-10.8 (16.8)	-5.1 (33.4)	-6.0 (20.5)	0.3 (11.5)	8.4 (7.2)	-10.2 (14.4)	2.1 (10.7)
Observations	372	252	335	257	372	252	335	257	372	252	335	257
R-squared	0.97	0.91	0.97	0.89	0.78	0.85	0.88	0.93	0.95	0.92	0.92	0.83

Panel B	Transportation				Student Activities				Utilities & Maintenance Spending			
	Per Pupil				Per Pupil				Per Pupil			
	Albany	Buffalo	NYC	Syracuse	Albany	Buffalo	NYC	Syracuse	Albany	Buffalo	NYC	Syracuse
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
% Shift in 2008-09	-4.382	-4.865**	-1.485	-1.508	1.017	-0.271	-2.110	3.297*	-2.631	-0.702	-5.250*	-1.896
% Shift in 2009-10	-7.410**	-7.065***	-4.938**	-4.774	-2.058	-2.281	-6.071***	-1.635	1.999	-0.671	-5.226	-2.361
Pre-Recession Base	1117.31	957.95	1260.53	997.57	189.50	197.11	340.14	255.76	5552.79	3937.37	5976.93	3859.24
Trend	46.4*** (9.3)	27.0*** (8.1)	29.7*** (7.4)	38.7*** (8.4)	6.7*** (0.9)	7.1*** (1.2)	13.2*** (2.3)	10.3*** (1.5)	87.8 (126.5)	75.8** (33.0)	147.0*** (50.2)	119.1*** (24.1)
Recession	-49.0 (32.8)	-46.6** (20.0)	-18.7 (18.0)	-15.0 (27.1)	1.9 (3.3)	-0.5 (3.2)	-7.2 (5.2)	8.4* (5.0)	-146.1 (186.9)	-27.6 (65.7)	-313.8* (176.4)	-73.2 (75.1)
Stimulus	-33.8 (31.0)	-21.1 (15.2)	-43.5* (23.9)	-32.6 (25.6)	-5.8 (3.8)	-4.0 (3.4)	-13.5** (5.5)	-12.6** (5.8)	257.0 (305.2)	1.2 (64.6)	1.4 (244.1)	-17.9 (78.6)
Observations	372	252	335	257	372	252	335	257	372	252	335	257
R-squared	0.90	0.88	0.98	0.80	0.96	0.96	0.97	0.95	0.98	0.93	0.96	0.95

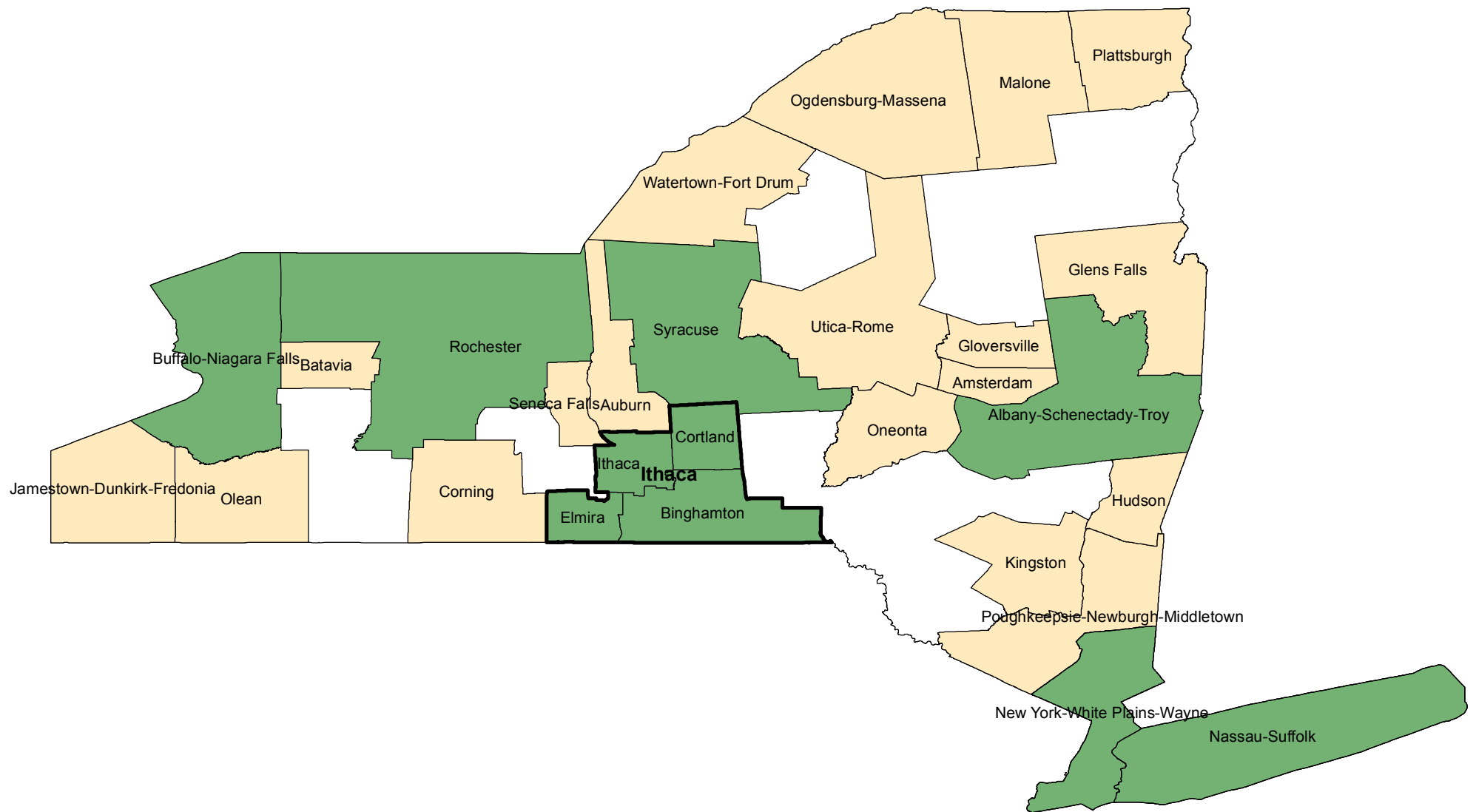
Notes: *, **, *** denote significance at the 10, 5, and 1 percent level, respectively. Robust standard errors are in parentheses. All regressions include school district fixed effects and control for racial composition and percent of students eligible for free or reduced price lunch. Pre-recession base is expressed in 2009 constant dollars.

Table 7: Examining Heterogeneities by Metropolitan Area

Panel A	Instructional Expenditures			Instructional Support			Student Services		
	Ithaca	Nassau	Rochester	Ithaca	Nassau	Rochester	Ithaca	Nassau	Rochester
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Shift in 2008-09	1.243	-4.460	1.436	3.430	-3.576	3.808	1.577	0.108	-1.058
% Shift in 2009-10	3.109*	-8.322*	3.277**	1.518	-3.388	8.985**	3.666	0.772	-2.771
Pre-Recession Base	8395.64	15971.95	8438.53	915.59	958.42	868.50	417.94	848.25	479.09
Trend	287.2*** (35.0)	672.0*** (259.0)	145.0*** (26.2)	39.2*** (7.1)	46.1*** (13.6)	25.5*** (8.0)	14.2*** (2.6)	26.9** (10.7)	15.1*** (3.2)
Recession	104.4 (115.8)	-712.4 (462.1)	121.1 (92.6)	31.4 (24.2)	-34.3 (35.1)	33.1 (24.5)	6.6 (7.9)	0.9 (23.4)	-5.1 (10.2)
Stimulus	156.7 (145.8)	-616.7 (631.9)	155.4 (99.4)	-17.5 (27.2)	1.8 (72.0)	45.0* (25.9)	8.7 (10.7)	5.6 (31.4)	-8.2 (9.9)
Observations	252	703	348	252	703	348	252	703	348
R-squared	0.84	0.94	0.87	0.89	0.88	0.81	0.87	0.90	0.88
Panel B	Transportation Per Pupil			Student Activities Per Pupil			Utilities & Maintenance Spending Per Pupil		
	Ithaca	Nassau	Rochester	Ithaca	Nassau	Rochester	Ithaca	Nassau	Rochester
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
% Shift in 2008-09	-5.232**	-18.612***	-3.011	2.726	1.919	-0.200	-1.965	-9.614*	-0.688
% Shift in 2009-10	-9.149***	-29.410**	-4.272	0.235	1.232	-0.123	-3.829*	-18.770*	1.224
Pre-Recession Base	875.37	1780.46	960.25	255.43	323.51	256.68	4294.35	8790.90	4193.63
Trend	48.9*** (7.1)	215.2** (89.8)	30.3*** (6.2)	12.0*** (1.6)	11.1*** (1.9)	13.0*** (1.4)	214.0*** (23.0)	605.8** (294.2)	132.9*** (16.2)
Recession	-45.8** (22.3)	-331.4*** (125.5)	-28.9 (23.6)	7.0 (5.0)	6.2 (6.2)	-0.5 (3.8)	-84.4 (79.6)	-845.2* (504.4)	-28.9 (50.2)
Stimulus	-34.3 (23.6)	-192.3 (178.1)	-12.1 (23.0)	-6.4 (5.4)	-2.2 (7.3)	0.2 (4.7)	-80.1 (87.7)	-804.8 (684.3)	80.2 (63.3)
Observations	252	703	348	252	703	348	252	703	348
R-squared	0.88	0.89	0.78	0.93	0.96	0.93	0.85	0.94	0.94

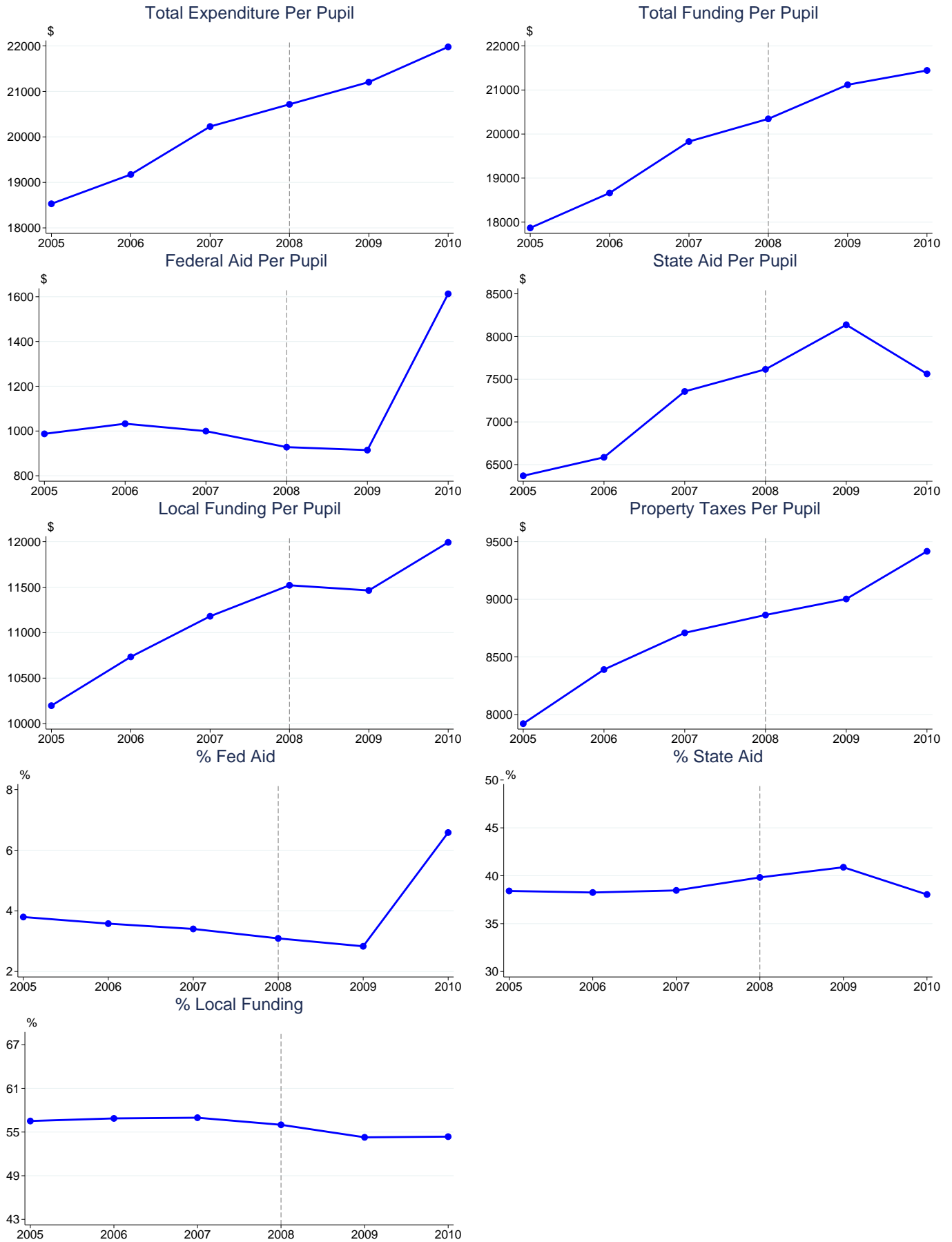
Notes: *, **, *** denote significance at the 10, 5, and 1 percent level, respectively. Robust standard errors are in parentheses. All regressions include school district fixed effects and control for racial composition and percent of students eligible for free or reduced price lunch. Pre-recession base is expressed in 2009 constant dollars.

Figure 1: New York Metropolitan and Micropolitan Statistical Areas



Note: This map represents all metropolitan and micropolitan statistical areas in New York, as defined by the Office of Management and Budget in 2009. The metro areas that we focus on in our analysis by metro area are Albany, Buffalo, Ithaca, Nassau, NYC, Rochester, and Syracuse. These are colored green in the map. In the case of Ithaca we pool four areas (Binghamton, Cortland, Elmira, and Ithaca, all of which are metro areas except Cortland, which is a micro area). In the case of the New York City MSA we consider its component metropolitan divisions—NYC and Nassau—as separate metro areas.

Figure 2: Examining the Trends in School Revenues and Expenditures for New York during the Great Recession



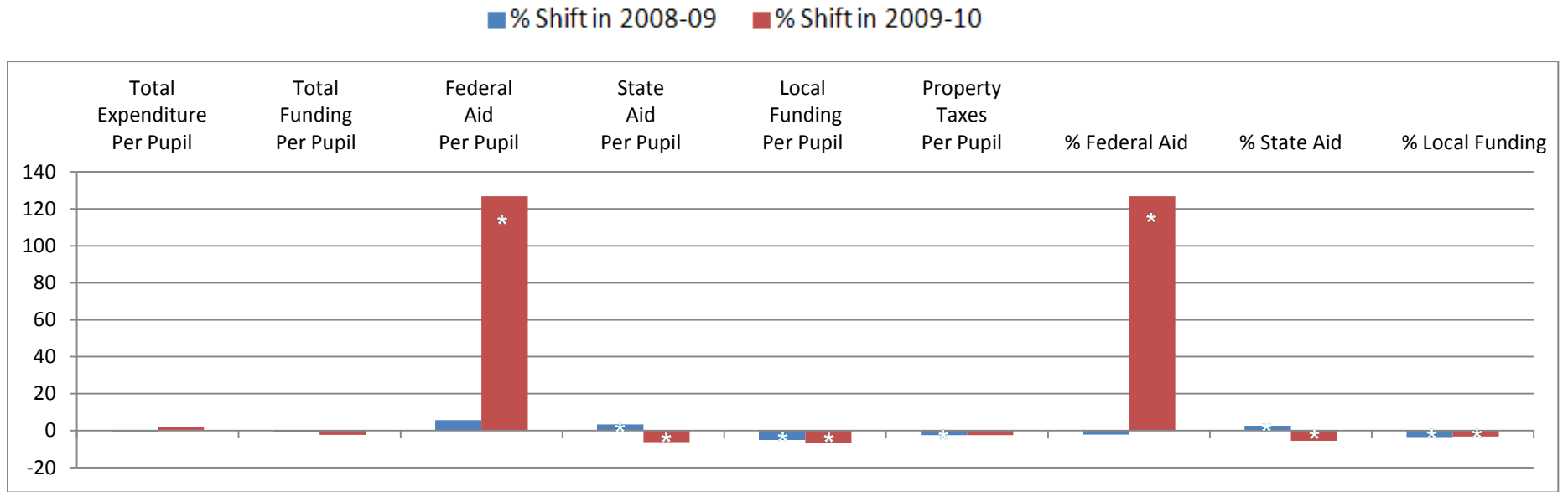
Note: The year is expressed as the spring term.

Figure 3: Examining the Trends in the Composition of Expenditures for New York during the Great Recession



Note: The year is expressed as the spring term.

Figure 4: Examining Patterns in Revenue During the Financial Crisis and Federal Stimulus Period



Note: * denotes significance at the 10, 5, or 1 percent level.

Figure) : Percent of District Revenue from Federal Sources



2007-08

2008 Overall
Average: 3.1%

2009-10

2010 Overall
Average: 6.6%

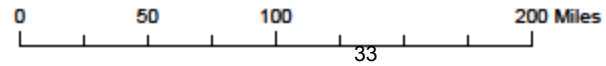
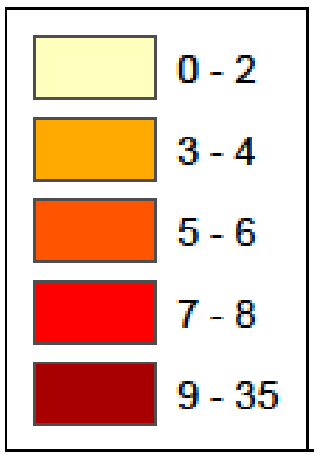
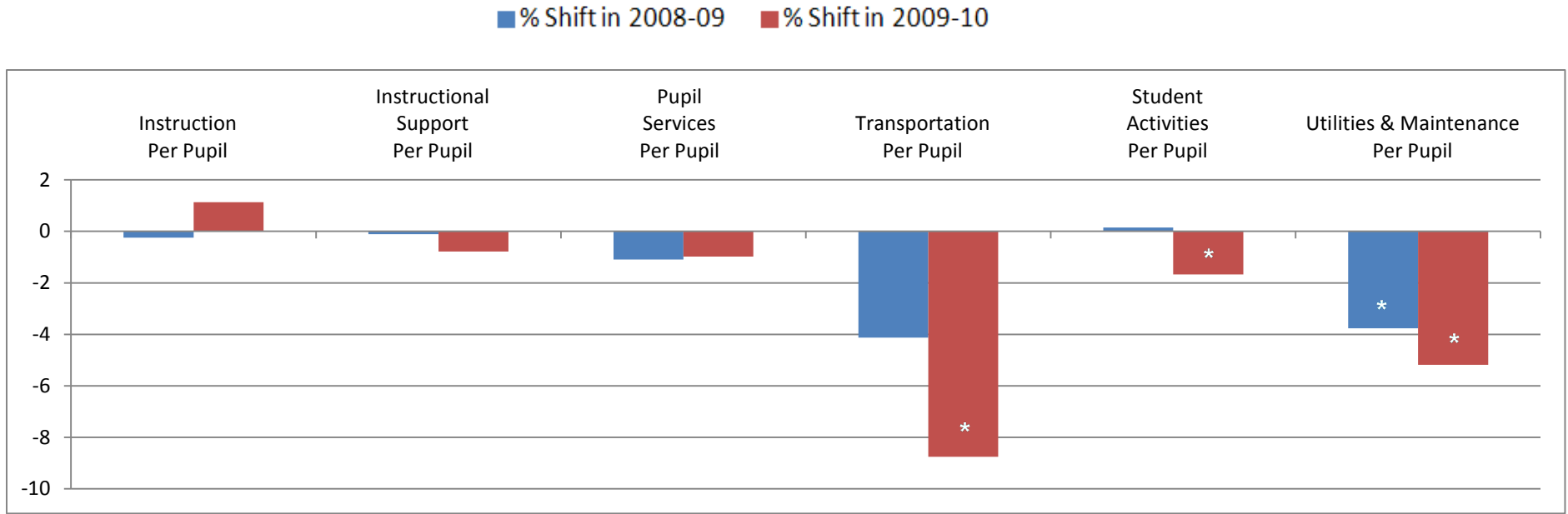


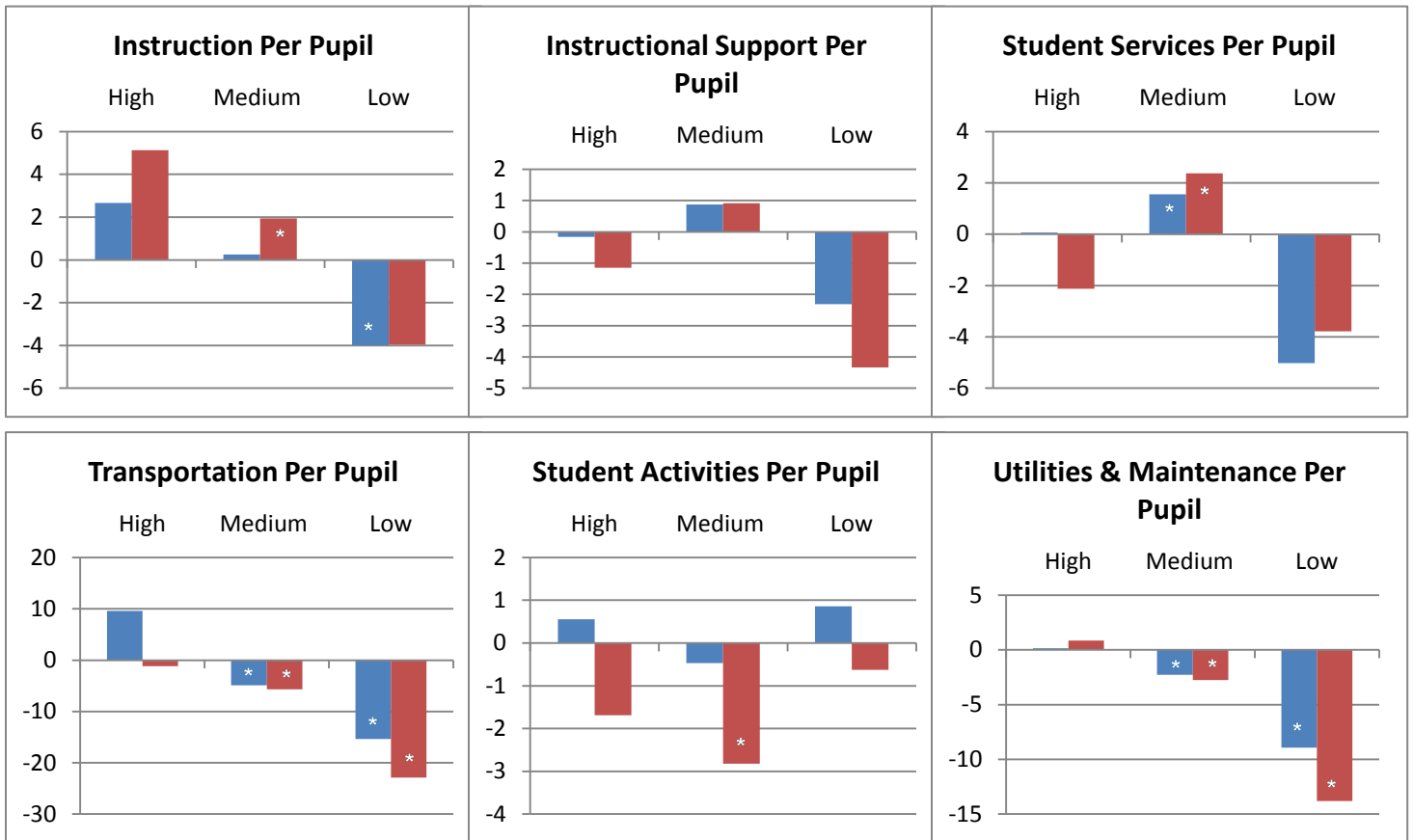
Figure 6: Examining Patterns in Expenditures During the Financial Crisis and Federal Stimulus Period



Note: * denotes significance at the 10, 5, or 1 percent level.

Figure 7: Examining Heterogeneities in Expenditure Categories by School District Poverty Status

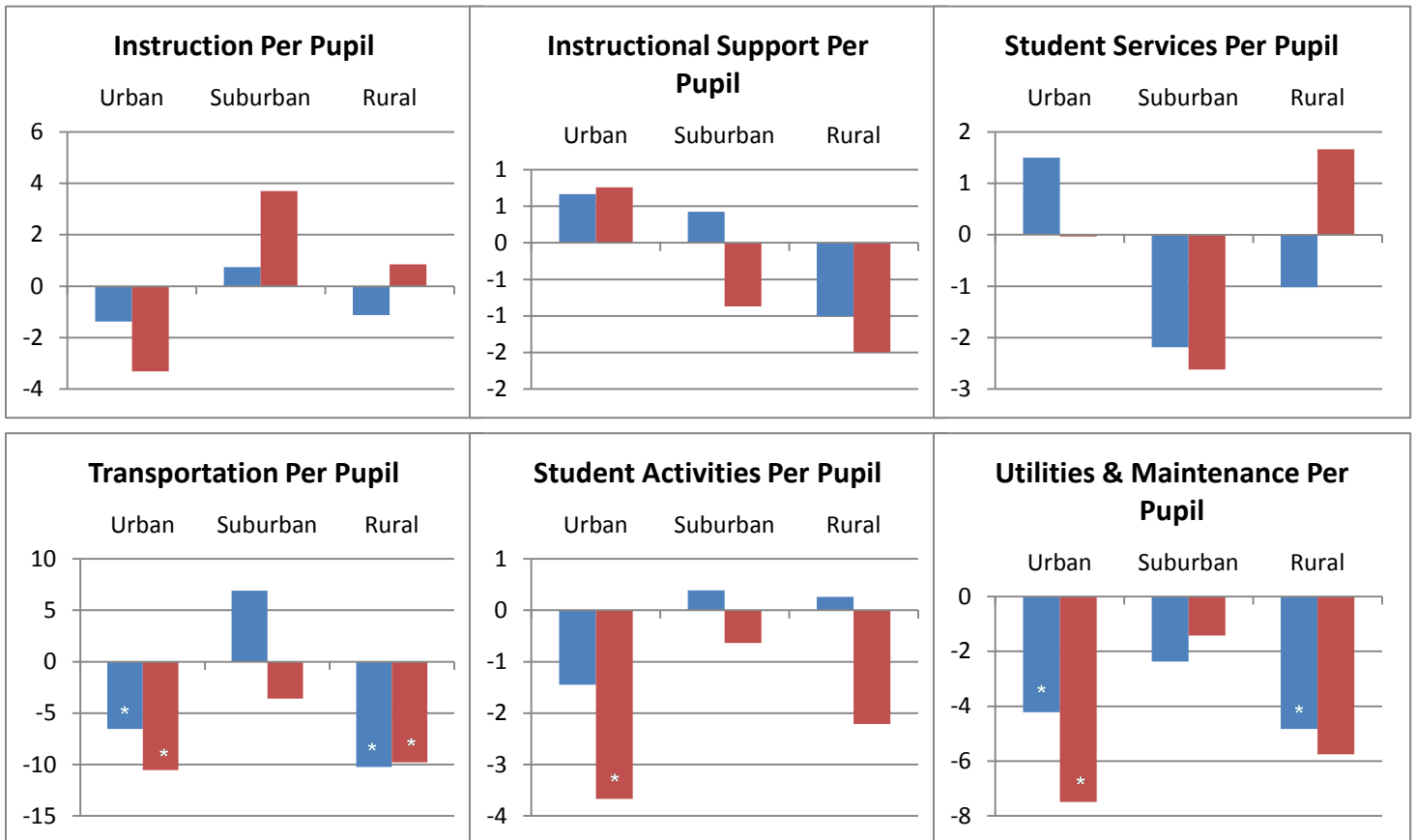
■ % Shift in 2008-09 ■ % Shift in 2009-10



Note: * denotes significance at the 10, 5, or 1 percent level.

Figure 8: Examining Heterogeneities in Expenditure Categories by Urban Status

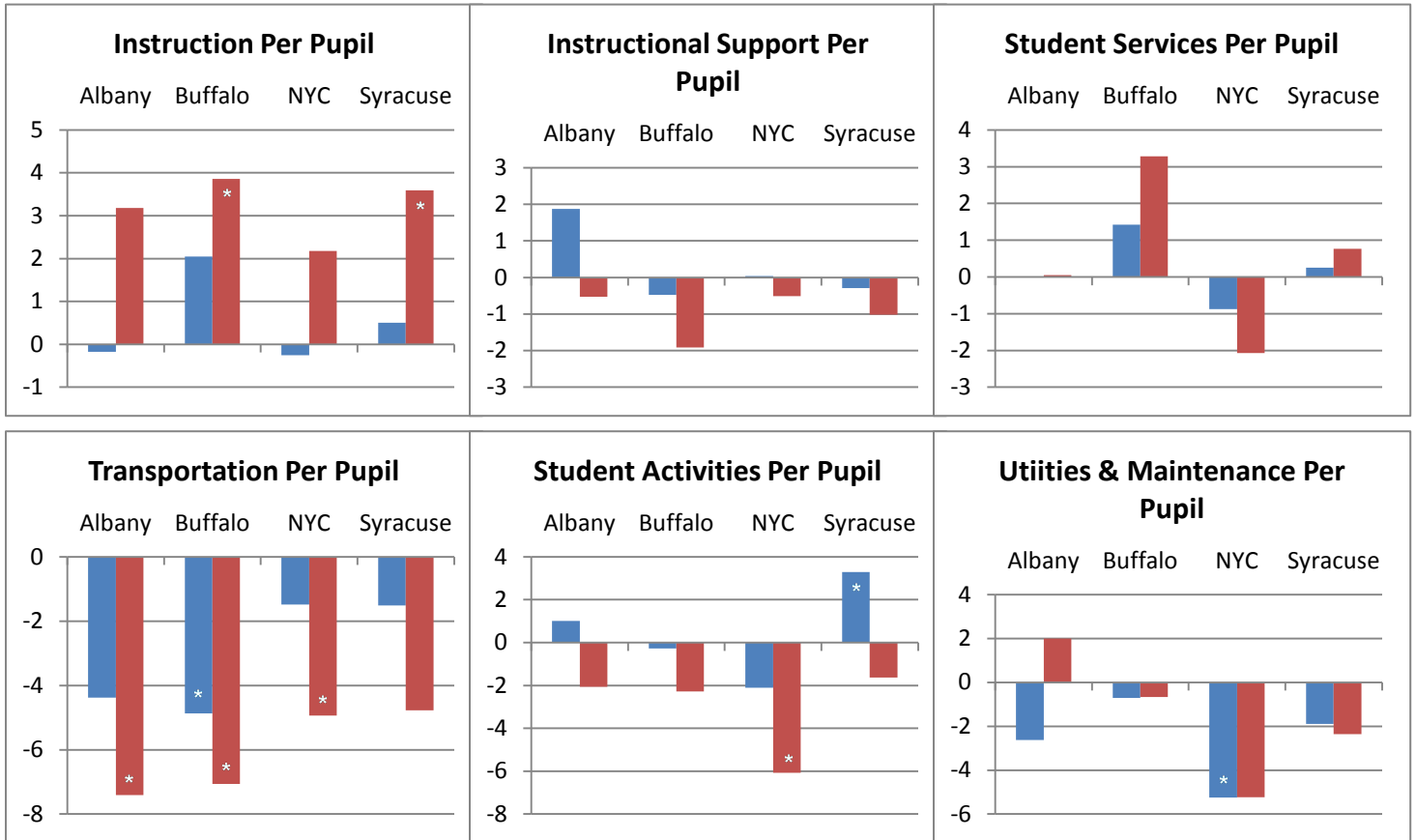
■ % Shift in 2008-09 ■ % Shift in 2009-10



Note: * denotes significance at the 10, 5, or 1 percent level.

Figure 9: Examining Heterogeneities in Expenditure Categories by Metropolitan Area

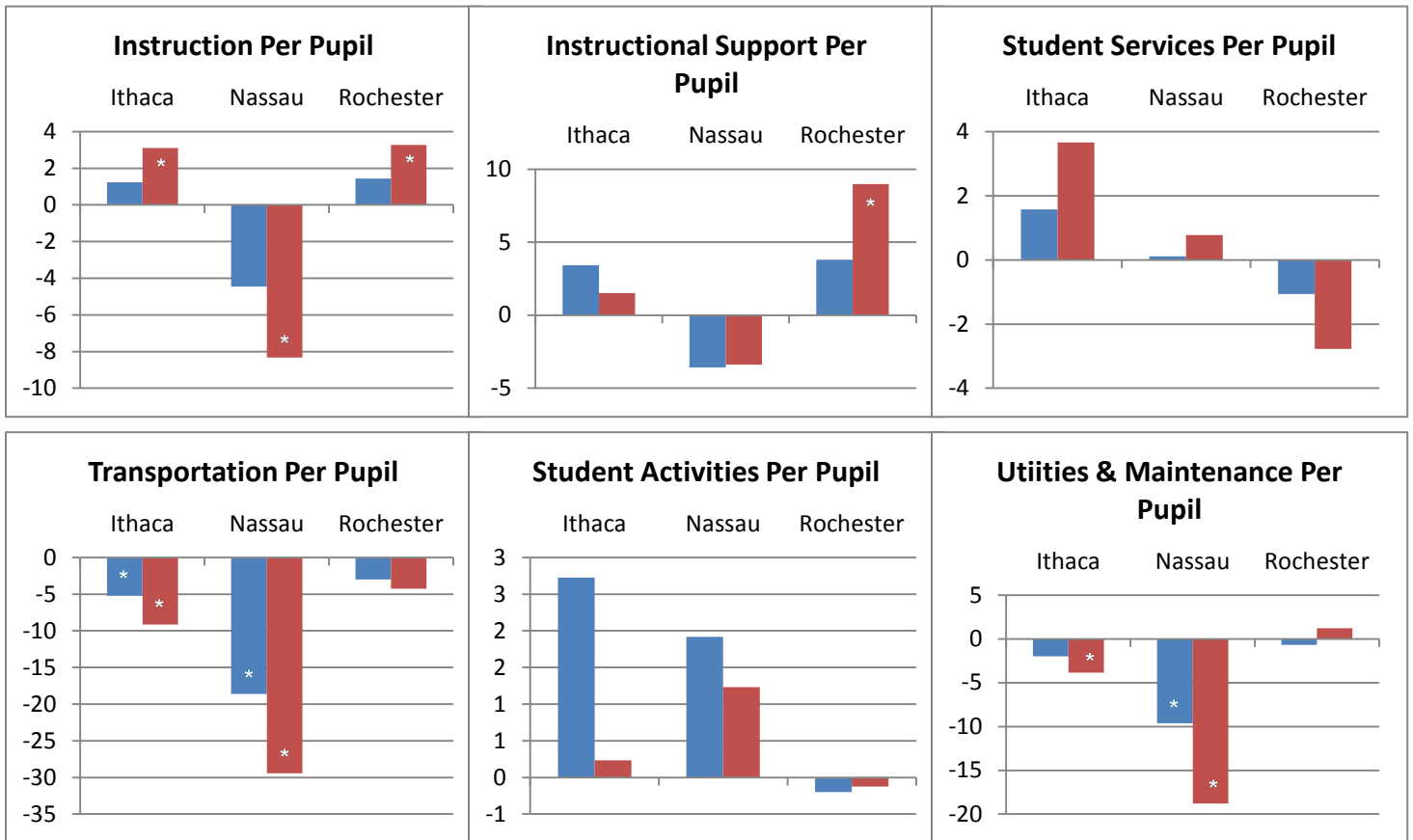
■ % Shift in 2008-09 ■ % Shift in 2009-10



Note: * denotes significance at the 10, 5, or 1 percent level.

Figure 10: Examining Heterogeneities in Expenditure Categories by Metropolitan Area

■ % Shift in 2008-09 ■ % Shift in 2009-10



Note: * denotes significance at the 10, 5, or 1 percent level.