School Funding: How Much Does Money Really Matter?  
An Analysis Based on Math and ELA Test Scores 

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Motivation
- Great disagreement in academic literature regarding whether raising school expenditures improve academic outcomes
- Public school funding represents a huge business in the United States
- Unfortunately, financing is distributed unequally across states, districts, schools and students

Data Sources
- Report Card Database - New York State Education Department
  - ELA and Math test scores
  - % of students with disabilities
  - % black, white, hispanic, and other students
  - % poor students
- Chapter 656 Report - New York State Education Department
  - Percent of students enrolled who are Limited English Proficient
- Fiscal Profile Reporting System - New York State Education Department
  - Combined-wealth ratio
  - Total expenditure
- SEDCAR - New York State Education Department
  - Percent of students with disabilities

Model
- Test_dP = β_0 + β_1*LNPEXP + β_2*OCR + β_3*POOR + β_4*BLACK
  + β_5*HISPANIC + β_6*OTHER + β_7*LEP + β_8*SMD + β_9*RSI

Effect of Per Pupil Expenditure on Test Scores for Black and Hispanic Students
- Per pupil expenditure has no significant effect on the passing rate of Math and ELA tests, either for All Students or for subgroups of Black and Hispanic students
- The percentage of poor students has a negative effect on the passing rate of both Math and ELA tests, for all groups
- The race segregation index has no significant effect on the passing rate of Math and ELA tests

Does money matter?
The focus of this project is to measure the effect of funding (total expenditure) on academic achievement across school districts in New York State, measured through ELA and Math test scores

Research Hypothesis
In New York State, per pupil expenditure by school district explains only a small part of the variation in academic achievement in ELA and Math

Background
- Walstad, Chingos and Gallagher (2013): Only about 1% of the differences in student achievement (i.e., the variance) is located at the school district level.
- Student level differences, which represent everything including measurement error that is not accounted for by teachers, schools, districts, and demographic controls, account for 99% of the variability.
- The Albert Shanker Institute (2012): On average, aggregate measures of per pupil spending are positively associated with improved higher student outcomes.
- Card and Payne (2002): Increases in the amount of state aid available to poorer districts led to increases in the spending of these districts and this contributed to the narrowing of the spending gap between richer and poorer districts.

Descriptive Statistics
- Dependent Variable: English Language Arts (ELA) and Mathematics proficient passing rate of students in grades 3-8 in New York State

Race Segregation Index (RSI)
- Constructed by La Ferrara & Mele (2009)
- Used to measure segregation by examining the likelihood of two randomly drawn individuals belonging to different races
- The values of the index range from 0 to 1 (higher value means more dispersion of races or segregation)
- As New York State’s school segregation is one of the largest in the country, we included this variable in the model to measure if it plays any role in students’ achievement in ELA and Math

Main Findings
- Per pupil expenditure has no significant effect on the passing rate of Math and ELA tests, either for All Students or for subgroups of Black and Hispanic students
- The percentage of poor students has a negative effect on the passing rate of both Math and ELA tests, for all groups
- The race segregation index has no significant effect on the passing rate of Math and ELA tests

Total Expenditure and Test Scores
- Total expenditure by school districts has grown over the years, while average test scores for all students have shown little improvement

Policy Implications & Limitations
- The results from this study seem to indicate that per pupil expenditure by school districts is weakly linked to academic performance as measured by test scores.
- Future research should focus on how this money is spent
  - Detailed expenditure data is not available by district, therefore analyses about the quality of investment is missing.
  - Due to lack of availability of subgroup data (Black and Hispanic students) from many districts, a more detailed analysis by ethnic group was not possible
  - Increased accountability demanded from school districts would make them pay more attention to the quality use of their resources that could translate in better academic results from students