Financing Adequate Resources for New York Public Schools

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State academic standards require that public schools have adequate resources. In its 2004-05 state aid proposal, the New York State Board of Regents presents its estimate of the cost of those resources, which it refers to as foundation cost. This paper analyzes five different school finance systems that would ensure that every New York school district has the revenue necessary to meet its foundation cost. The first is a benchmark system in which the state combines general revenue with the revenue from a statewide property tax to pay for each district’s cost. The second is a local implementation of that benchmark in which local school districts levy the same tax rate and the state supplements local revenue with enough state aid for each district to cover its cost. This system is shown to be infeasible because some districts would raise more revenue than their cost, an outcome due to the uneven distribution of real property across school districts. This uneven distribution is caused primarily by large differences among districts in the average value of residential property. In the third system, all districts levy the same tax rate except those for which revenue at that rate exceeds cost. In that case, a district levies a rate sufficient to cover its cost. Under that system, nearly 80 percent of New York districts would levy the same rate. The districts that would levy a lower rate have higher income households on average. The fourth finance system is outlined in the Regents’ proposal. Each district’s tax rate is proportional to the income of its taxpayers. Under that system, tax rates tend to be lower for districts with low median household income, but tax rates also vary widely for districts with the same median income. The final system is modeled after Maryland’s new system in which the state and local districts share the cost of meeting state standards. If this system were applied in New York State, property tax rates would be inversely related to the median income of a district’s households. The paper concludes by considering local flexibility to raise additional revenue above foundation cost. This local flexibility may undermine the notion that all school districts ought to be held to the same high academic standards.
1. Introduction

Over the last decade, many states have established academic content standards for their public schools, describing in detail what students should learn in every grade. In the next decade, states will increasingly turn to the issue of what resources schools need to accomplish these objectives. If the experiences of Kentucky, Wyoming, Ohio, and New York are any guide, state courts will also focus on the issue of resource adequacy. Legislative and judicial attention to this issue seems likely to lead to requirements that each school district has enough revenue to obtain adequate resources.

Because many states have established very high academic standards, these requirements may exceed the revenue that taxpayers in some districts would choose to provide. In that sense, high state academic standards may conflict with the principle of locally financed public schools. This conflict could be resolved if states were to provide districts with the revenue their academic standards require, allowing districts to then supplement that minimum with their own tax revenue. However, this resolution would require a large increase in state aid and thus in state revenue.

An obvious source of additional state revenue is the property tax. The increase in state aid to schools would reduce the need for local property tax revenue, creating some room for the state. A state could levy its own property tax rate, combining the proceeds with existing state aid to finance the district resources required by its academic standards. An alternative is a system of state aid to schools tied to requirements for minimum local revenue. If the value of real property were distributed across school districts in proportion to the minimum revenue requirements of districts, this indirect system could be made essentially equivalent to a state property tax for schools. Each school district
would be required to levy the same tax rate as the state would have levied. Its local property tax revenue would be supplemented by state aid, producing the same revenue as in the case of a state property tax for schools. However, this local implementation of a state property tax for schools has the advantage of preserving the principle that the property tax is a local tax.

This paper simulates this finance system for New York school districts in 2003-04. The system is shown to be infeasible because the value of real property is not distributed across districts in relation to the cost to each district of meeting state academic standards. The paper then simulates three other financing arrangements. The first arrangement modifies the local implementation of the state tax by eliminating the recapture of local property tax revenue in excess of district cost. The second builds on the New York Regents’ proposal for state aid for 2004-05. It is essentially a modification of the first arrangement to make a district’s local property tax rates proportional to its taxable income per pupil. The third arrangement is modeled after Maryland’s new system in which the state and districts share the cost of meeting state standards. The paper concludes by considering how the flexibility of local school districts to raise revenue in excess of their cost may undermine systems to hold schools accountable for achieving state academic standards.
2. A Working Definition of Adequate Revenue

In his paper for this conference, Thomas Downes discusses various approaches for determining the cost to a school district of educating its students to state academic standards. This paper has a different focus: designing a school finance system that ensures that every district has the revenue sufficient to meet that cost. That focus requires a definition of cost and how cost varies with the characteristics of a school district. Accordingly, as a working definition, I have adopted the total cost of general education specified in the Regents' proposal for state aid for 2004-05. The analysis below can be easily revised to accommodate a different definition.

The Regents’ definition begins with the concept of foundation cost, which is the cost of providing an adequate general education in a baseline school district. The baseline district faces salaries typical of school districts in New York’s least expensive region, has no students with extra needs, and encounters none of the extra cost associated with serving students in sparsely populated areas. In the Regents’ proposal, this foundation cost is $4,505 per pupil. From this foundation, the Regents adjust cost to account for additional student needs and for regional salary differences. Specifically, in the Regents’ proposal, cost per pupil is calculated in the following way:

\[
\text{Cost per Pupil} = 4,505 \times (\text{Pupil Needs Index}) \times (\text{Regional Cost Index})
\]
The Pupil Needs Index is a function of the geographical density of students and the percentage of K-6 students eligible for free or reduced price lunch. Figure 1 shows the relationship between the Pupil Needs Index and density, which is measured by a district's enrollment divided by its area in square miles. The index is calculated under the assumption that none of the district’s students are eligible for free or reduced price lunch. Note that the index reaches a minimum of unity when density is 25 students per square mile or more. About 45 percent of school districts have densities less than 25, but only 11 percent of students attend such districts.
In the Pupil Needs Index, a more important factor than density is poverty. Figure 2 shows the relationship between the Index and the percentage of K-6 students in a district eligible for free or reduced-price lunch. Eligibility for the national school lunch program is based on a family’s income relative to the poverty level and thus the percentage eligible is a measure of the percentage of students from poor families. The Index increases from unity for districts with no poor students to two for districts in which every student is poor. In the fall of 2002, half of New York school districts had
more than 30 percent of their K-6 students eligible for free or reduced price lunch. New York City had 78 percent eligible, Buffalo had 82 percent eligible, and Rochester had 85 percent eligible. According to the Regents’ formula, a district with 80 percent of its K-6 students eligible for free or reduced price lunch has a cost 80 percent higher than a district with no students eligible.

Regional salary differences can also have a large effect on cost. Table 1 lists the Regional Cost Index for the ten regions of the state. The index is based on salaries in 63 job titles that typically require a bachelor’s degree. Note that this index is nearly fifty percent higher for Long Island and New York City than for the North Country region. Thus, holding density and poverty equal, the cost per pupil in Long Island is 50 percent higher than in North Country.

Table 1
Regents' Regional Cost Index (2003)

<table>
<thead>
<tr>
<th>Region</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Country</td>
<td>1.000</td>
</tr>
<tr>
<td>Mohawk Valley</td>
<td>1.016</td>
</tr>
<tr>
<td>Southern Tier</td>
<td>1.061</td>
</tr>
<tr>
<td>Western New York</td>
<td>1.080</td>
</tr>
<tr>
<td>Central New York</td>
<td>1.132</td>
</tr>
<tr>
<td>Capital District</td>
<td>1.168</td>
</tr>
<tr>
<td>Finger Lakes</td>
<td>1.181</td>
</tr>
<tr>
<td>Hudson Valley</td>
<td>1.359</td>
</tr>
<tr>
<td>Long Island</td>
<td>1.496</td>
</tr>
<tr>
<td>New York City</td>
<td>1.496</td>
</tr>
</tbody>
</table>
Taken together, student poverty and regional costs have a large effect on cost per pupil. Figure 3 shows the relationship between cost and poverty for two regions. The first region is North Country, which has the lowest regional cost index, and the second is Long Island, which has the highest cost index. A Long Island district with all of its students eligible for free or reduced-price lunch would have a cost per pupil nearly three times higher than a North Country district with no eligible students.
3. A State Property Tax

The cost per pupil described in the previous section is the Regents’ estimate of the revenue school districts need to meet state academic standards. Aggregated across all 670 districts in the state for which I have complete data for 2003-04 (see Appendix), this cost is approximately $27 billion per year. The Regents’ proposal also specifies a distribution of those costs between the state and local school districts. School districts would be expected to contribute about $13 billion, and the state would contribute $14 billion.

The introduction of this paper outlined a method of financing these costs through a state property tax. The state would tax real property at a constant rate throughout the state and combine the proceeds from that tax with state revenue from other sources to provide each district with the revenue to meet its cost. To simulate the operation of such a tax and to make those simulations comparable to the Regents' proposal, I have chosen a property tax rate that would raise the same amount of revenue, $13 billion, as local districts are expected to contribute under the Regents' proposal. That rate is 1.22 percent. With that property tax rate and the $14 billion in additional state revenue envisioned in the Regents' proposal, the state would be able to fund the entire $27 billion cost of its academic standards.

This same outcome could be implemented as a state aid system with a minimum local tax rate. Each district would be required to levy a tax rate of 1.22 percent, and the state would provide aid to fill in the difference between local tax revenue from a 1.22 percent levy and district cost. At this tax rate, districts with high value per pupil and low cost could raise more property tax revenue than their cost. Under a state tax system, this
is not a problem because the state is under no obligation to spend more money in each
district that it receives from that district in property taxes. In a local system, however,
this excess is a problem. Collecting property tax revenue in one district and spending it
in another, commonly called recapture, violates the principle that the property tax is a
local tax whose proceeds should be spent locally.
Would a uniform tax rate in all districts lead to the recapture of property tax revenue in some districts? The answer lies in Figure 4, which plots costs and real property values of New York school districts. Small districts are those with enrollments below 2,000 students. Medium districts have more than 2,000 students but less than 20,000 students. Large districts are the four districts between 20,000 and 100,000—Buffalo, Rochester, Syracuse, and Yonkers. New York City is represented by the largest square. The line in the figure represents combinations of cost per pupil and value per pupil such that the revenue raised from a tax of 1.22 percent exactly equals cost per pupil.
Districts above the line would raise more revenue at 1.22 percent than their cost.

Districts below the line would raise less revenue.

As the figure makes clear, the distribution of real property is not related to cost per pupil. At a property tax rate of 1.22 percent, local property tax revenue per pupil would exceed cost per pupil in 131 districts. The median value per pupil for these districts is over $900,000. In contrast, for the remaining 539 districts, median value per pupil is approximately $200,000. Median cost per pupil is only slightly higher for the first group of districts than for the second ($6,993 vs. $6,899).

The distribution of real property across school districts is determined by a number of factors. The following equation decomposes value per pupil into three components:

\[
V / P = \frac{(R/H)}{(R/V)(P/H)},
\]

where  \( V \) is the total value of real property in a school district,

\( P \) is the number of pupils in the district,

\( R \) is the value of residential property in the district, and

\( H \) is the number of households in the district.

Thus, value per pupil is determined by the value of residential property per household \((R/H)\), the value of residential property as a fraction of all property \((R/V)\), and the number of pupils per household \((P/H)\). Holding other components constant, a district with expensive homes has a high value per pupil. Also, holding other components constant, a district has a high value per pupil if residential property is a small fraction of total value. Lastly, holding property values constant, districts in which households have more school children than average have lower value per pupil than average.
The first component, the average value of residences, varies widely across districts, and that variation is not related to cost per pupil. Figure 5 plots the average value of residences against cost per pupil for New York school districts. The dark squares represent districts in which the revenue from a 1.22 percent property tax would exceed school district cost. These districts have much higher average house values than do other districts. Half of these districts had average house values exceeding $270,000. In contrast, half of other districts had average house values less than $70,000.
By itself, higher average housing value leads to higher value per pupil, but districts with higher average housing value also tend to have less commercial and industrial property, which leads to lower value per pupil. This tendency is illustrated in Figure 6. In districts in which revenue at 1.22 percent exceeds cost (the dark squares), the value of residential property tends to be a high percentage of the value of all property. In half of those districts, this percentage exceeded 78 percent. In contrast, in half of other districts, this percentage was less than 69 percent. Over all districts, the percentage of non-residential property is unrelated to cost.
The third component of value per pupil is the average number of pupils per household. As Figure 7 shows, the ratio of pupils to households also varies widely across districts and is unrelated to cost per pupil. In districts in which revenue at 1.22 percent would exceed cost, the median ratio is 0.43. In other districts, the median is 0.56. Thus, differences in pupils per household explain why some districts would have higher revenue than cost.

A state property tax for schools is a simple way to resolve the conflict between the cost of academic standards and the local finance of schools. If the distribution of real
property across school districts is sufficiently aligned with the distribution of school
district cost, this simple system could be implemented through a system of state aid and
minimum requirements on local tax rates. In New York state, however, this system could
not be implemented without recapturing property tax revenue in several districts. Districts
have high value per pupil relative to cost mainly because of high average housing values
and a low ratio of pupils to households.

4. Uniform Tax Rates without Recapture

An obvious modification of the plan outlined in the previous section is to
establish a uniform local tax rate, but not recapture revenue in excess of costs. Under that
modification, each district would levy the same property tax rate unless revenue from that
rate exceeds cost. If revenue exceeds cost, the district would reduce its rate to equate
revenue and cost.

This uniform rate would have to be higher than 1.22 percent because some
districts would levy a rate lower than 1.22 percent. The revenue lost from those districts
would have to be made up by a higher rate in other districts. For my sample of 670
districts, that rate is 1.4 percent. A rate of 1.4 percent applied in all districts for which
revenue at that rate is less than cost would require 14 billion of state aid to meet district
costs, the level of state aid under the Regents' proposal. Other districts would meet their
cost entirely through local revenue. Local revenue would total to $13 billion, the same
total as the Regents' proposal. Thus, 1.4 percent without recapture is fiscally equivalent
to 1.22 percent with recapture.
Under the system without recapture, 149 New York districts would have a property tax rate less than 1.4 percent. These districts are primarily small, constituting just eleven percent of students. They are also wealthier. Figure 8 plots the tax rates of districts against median household income from the 2000 Census. For districts with tax rates below 1.4 percent, median income is $69,000. For districts with tax rates of 1.4 percent, median income is $40,000.
5. Progressive Tax Rates without Recapture

The Regents proposal addresses the relationship between income and property tax rates. Under the proposal, the tax rate districts are expected to levy is proportional to the income of households in the district. The income measure is taxable income as defined by the state income tax divided by the number of pupils. This ratio relative to the ratio for the state as a whole is referred to as the district’s Alternate Pupil Wealth Ratio (APWR). A district’s expected tax rate is then 1.5 percent multiplied by its APWR. Thus, in a district with income per pupil twice the ratio for the state, the expected tax rate would be 3.0 percent. In a district with income per pupil half the ratio for the state, the expected tax rate would be 0.75 percent.

Under the Regents’ proposal, expected local tax rates are used only to calculate state aid. State aid is the district’s cost less its expected contribution, which is its expected local tax rate multiplied by the value of its real property. The proposal does not require districts to levy the expected rate or higher. Consistent with leaving local tax rate decisions in the hands of local voters, the Regents' proposal does not envision the recapture of excess revenue. Thus, the district tax rate envisioned under the Regents’ proposal is the minimum of two rates: 1.5 percent multiplied by APWR and the tax rate necessary to raise enough local revenue to cover the district's cost. In the following, I refer to this minimum as the effective tax rate, and I refer to 1.5 percent multiplied by APWR as the expected tax rate.
Effective property tax rates under the Regents’ proposal are displayed in Figure 9. Only 38 districts have tax rates greater than 1.5 percent, the baseline from which expected tax rates are calculated. While roughly half of districts have Alternate Pupil Wealth Ratios greater than unity and thus expected local tax rates greater than 1.5 percent, the effective tax rate for most of these districts is less than 1.5 percent because of the recapture provision. A high expected local tax rate makes it more likely that a district’s revenue at that rate will exceed its cost, and thus few districts have effective tax rates exceeding 1.5 percent. For the 167 districts for which the effective tax rate is less than the expected rate, the average expected rate is 2.7 percent and the average effective
rate is 0.9 percent. For other districts, the effective and expected tax rates also average 0.9 percent. Thus, the progressivity built into the Regents’ formula for expected tax rates is partly neutralized by the recapture provision. Note, however, that tax rates do clearly increase with household income for districts in which median household income is less than $70,000. There is progressivity at the lower end of the income distribution.

Despite this progressivity, effective tax rates vary considerably for districts with similar median household income. This variation is due to the low correlation between household income and real property value per pupil. Among districts with similar income, those with high value per pupil are more likely to have low effective tax rates.
6. Sharing Cost between the State and Districts.

Another way of financing school district cost is by sharing cost between the state and local school districts. This approach necessarily preserves the local nature of the property tax because revenue raised in a district is spent in that district. Maryland has taken this approach as part of its effort to ensure that all schools in the state have adequate resources. The state established a minimum revenue requirement for each district (which are counties), and the state and the school district share the cost of that requirement. Districts may raise more revenue if they choose.

How would the Maryland system play out in New York? Under the Regents’ proposal, school district cost totals $27 billion across the state, and the state contributes $14 billion to that total, a share of 52 percent. Under a sharing scheme like that in Maryland, this share would be replicated in each district. Each district would provide 48 percent of its cost, and the state would provide the remaining 52 percent. The tax rate in each district would then be determined by the district’s share and the value of its real property.
Figure 10 plots these tax rates against the median income of households in each district. Because cost is inversely related to household income and because value per pupil is not related to cost, tax rates under a sharing plan tend to decline with household income. The sharing scheme preserves the local nature of the property tax, but tax rates under that scheme are regressive.
7. Local Flexibility

The previous three sections have focused on the property tax rates necessary to raise enough local revenue to meet district cost for different allocations of state aid. Districts may supplement this local revenue by levying higher tax rates. Furthermore, the Regent’s proposal does not require districts to levy the tax rates necessary to meet district cost. That decision is left to local taxpayers.

This local flexibility leads to the question of what tax rates are districts likely to levy under the Regents’ proposal. Will all districts levy a rate sufficient to meet local revenue requirements? Will some districts raise more local revenue than required? The answers to both questions hinge on how districts respond to a change in state aid. One possibility is that districts do not change their own property tax rates in response to changes in state aid. A more likely possibility is that districts adjust their property tax rates to partially offset the change in state aid. Districts receiving an increase in state aid may react by reducing local revenue, resulting in an increase in district expenditures that is smaller than the increase in state aid. Districts experiencing a decrease in state aid may reasonably respond by increasing local revenue, resulting in a net decrease in total expenditures that is less than the decrease in state aid.

In what follows, I consider two scenarios. In the first, districts do not change their local tax rates in response to a change in state aid. Under that scenario, district expenditures are expenditures in 2003-04 plus the change in state aid from the current allocation to the allocation proposed by the Regents. In the second scenario, districts respond to a change in state aid by offsetting half of the change with a change in local revenue. Under that scenario, a district experiencing an increase of $1,000 per pupil in
state aid under the Regent’s proposal would decrease property tax revenue by $500 per pupil for a net increase in expenditures of $500 per pupil. A district experiencing a decrease of $1,000 per pupil in state aid would increase property tax revenue by $500 per pupil for a net decrease in expenditures of $500 per pupil.

Under both scenarios, I calculate district expenditures as a ratio of district cost. Because household income is an important determinant of the willingness of taxpayers to support their local public schools, I examine the relationship between this ratio and median household income. Figure 11 plots that relationship under the first scenario.
Under the first scenario, all but six districts raise enough local property tax revenue to cover the difference between district cost and state aid. Two large districts, Yonkers and New York City, are among the six, though both raise enough revenue so that total expenditures are 98 percent of district cost. The ratio of expenditures to cost is positively related to household income, partly reflecting the ability and willingness of wealthier households to support their local public schools. This relationship is also partly due to the negative relationship between income and district cost.
Under the second scenario, districts adjust local property tax revenue to offset half of the change in state aid. In this case, thirty six districts raise less revenue than required to meet district cost. Falling in this class are the five largest districts. As in the first scenario, the ratio of expenditure to cost is positively correlated with household income.
8. Local Supplementation and State Accountability

State academic standards inevitably lead to some system that holds schools accountable for educating students to those standards. Accountability may take the relatively mild form of publicizing a school's scores on standardized tests. In some states, it may take the stronger form of sanctions for failing schools and bonuses for successful schools. In the case of California, for example, the state pays bonuses to the staff of schools that have achieved targets for improvement in student achievement. The state may also reconstitute schools who have failed to make improvement for three successive years. Reconstitution involves the forced transfer of teachers and administrators to other school sites.

If sanctions and bonuses are to be effective incentives, school staff must believe that their resources are adequate for the objectives they are expected to achieve. A good step towards that goal is to establish a cost for each district and to ensure each district has enough revenue to meet its cost. Any cost estimate is bound to be controversial, however. In that event, district expenditures in excess of cost will tend to undermine incentives. Suppose, for example, that District A has just enough revenue to meet its cost and that District B has twice as much revenue as cost. If we all share the belief that cost has been accurately estimated, both districts should be able to meet state standards and can fairly be held accountable for doing so. However, if there is some uncertainty about those costs, the probability that District A has adequate resources is less than the probability that District B has adequate resources. If District B has more resources than District A because District B has more commercial property and thus taxpayers in the district are able to raise more local revenue with the same tax rate as in District A, it
would be hard to fault the staff of District A for maintaining that they are being judged by an unfair test.

These concerns could be partially addressed by a program of state matching aid for local revenue raised in excess of district cost. For example, Odden and Picus (2004) describe a guaranteed tax base program in which state aid is allocated to districts so that equal tax rates in different districts yield the same revenue per pupil. Even with such a program, however, different districts may choose different tax rates and thus have different revenue per pupil. These differences will tend to undermine the effectiveness of a state’s accountability system.

If resource adequacy is the logical consequence of state standards, as I believe it is, and accountability is a necessary part of state standards, as it surely is, then one must question whether the local finance of schools is consistent with state standards. A crucial element in this question is the rigor of state standards. If those standards are very high, so high that many schools will not easily meet them, then surely the unequal distribution of expenditure relative to cost undermines the perception that the accountability system is fair. If the standards are minimal, however, so that most schools should be able to meet them, the conflict between state standards and local finance may not be so critical.
9. Conclusion

Academic standards arose from a concern about the performance of American schools, and standards have been embraced by both ends of the political spectrum. On the right, standards are seen as a way to wring the inefficiencies out of the public school monopoly. On the left, standards are seen as a way of focusing attention on the substandard education received by many of America’s poorest school children.

State standards also have consequences for the way we finance schools. In the traditional theory of fiscal federalism, the source of revenue for a public service should be located at the same level of government that provides that service. State academic standards are essentially shifting the control of educational services from localities to the state. In almost all states, localities are still nominally in charge of public schools, but in fact control over the content of educational services is shifting to the state. That shift suggests that the financing of those services should shift to the state as well.

This paper has highlighted some of the difficulties inherent in maintaining the local finance of schools when the state has essentially defined the resources that schools must have. If real property were distributed across school districts in proportion to their needs, a form of local finance could be easily maintained, albeit with some state requirements on local tax rates. Because the distribution of property does not match the distribution of need, however, it is much more difficult to maintain local finance.

The more serious conflict between state standards and local finance lies with local flexibility to raise more revenue that the state’s estimate of a district’s cost. If this flexibility is removed, as it has been in California, local finance lives in name only.
However, unless this flexibility is constrained, it becomes difficult to hold schools accountable for achieving state standards in a manner that most perceive to be fair.

10. References


11. Data Appendix

The simulations combine data from the New York State Education Department (NYSED) with data from the 2000 Census. The NYSED data contains finance and enrollment data for 680 districts. Four are comprehensive high schools and were dropped from the simulations. Data records were incomplete for four other districts: Carle Place, Bradford, Central Islip, and Rondout Valley. They were also dropped from the simulations, leaving 672 districts. Two other districts were in the NYSED data, but not in the Census data. These districts were Cattaraugus and Sullivan West. These two districts were also dropped, leaving 670 districts.

In the simulations, the value of taxable property is a district's Actual Value for 2001 from the NYSED. Enrollment is Total Aidable Pupil Units for 2003-04 from the NYSED. The percentage of students eligible for free or reduced price lunch is the October 2002 count for K-6 students from the NYSED. The area of each district is also from the NYSED. Median household income and the number of households are from the 2000 Census. In simulating the effects of the Regents' proposal on total expenditures in Section 7, local revenue is the NYSED's estimate of a district's 2003-04 local levy, and state aid is the sum of revenue a district received in 2003-04 from all the state aid programs that would be consolidated into foundation aid in the Regents' proposal.