

# Free Schools in America, 1850-1870: Who Voted for Them, Who Got Them, and Who Paid\*

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## Abstract

American public schools, which have been mainly financed by local property taxes, were not entirely free until aids from states grew and local resources were redistributed by states. This paper, concentrating on the period between 1850 and 1870 when common schools became free, investigates the long-existing intra-state inequality in public education with the following questions: How could the rules to finance public schools have changed, and what were the consequences of those changes? A political economy model, supported by statistical analyses, well explains historical events such as free school referenda in New York and Indiana. People favored less tax cost. Policies shifted toward redistribution over localities through imposing more tax burdens on the rich, who were minority in the elections. Inter-state analyses based on the decennial census data show that the centralization of school finance during the period increased the provision of public education and reduced intra-state inequality in public schooling across counties.

Today, public schools are funded from tax revenues and regarded as being free. However, most public schools in early American history were not entirely free. Though American public schools were funded by various supports from local and state governments, public funds were not enough to defray all the school costs. As a result, they raised tuition fees which were called rate bills to supplement school revenue. Free public schooling was not a social norm in the United States until the late 19<sup>th</sup> century when rate bills were abolished state by state.

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This paper tries to find answers to the following questions: Why was it so delayed in many states to make public schools free? How could they get rid of tuition fees from public schools? What were the consequences of providing entirely free public schools in America? The findings here are quite analogous to what has recently happened in many states. Until the mid-19th century, heavily localized public school finance had created great inequality in public schooling across districts as it has done in recent history. In some places, they could provide free schooling to all the children of school ages. But in other places, they must have charged rate bills for public schooling, which was indeed a great financial barrier to discourage further development and expansion of public education in America.

The reason for the inequality was simple. American localities had different average assessed property values, thus leading to wide range of geographical variation in the tax base for public school. Different tax bases required different local property tax rates for public schools. Consequently, to raise the same amount of school taxes per child, districts where assessed property values were relatively low were demanded to levy higher tax rates. In these places, the progress of public education was delayed until the aid from state governments arrived. This kind of inequality in public education among localities was similar to what caused the momentous *Serrano vs. Priest* decisions in California in the 1970s.

The aid from state governments was a redistribution of available resources across different places. During the period of 1850-1870, many states created state property taxes for public schools, which redistributed tax revenue from rich to poor districts. In principle, this was a political decision-making process about changing rules to finance public schools. This paper introduces a political economy model to explain this process of rule changes.

The consequences of making American public schools free were straightforward. They increased public school revenue per school-aged child. More financial resources broadened the opportunity of education through building more schools and hiring more teachers. The intra-state inequality in public schooling across localities eventually diminished as a result.

This paper contributes to the literature in the following ways. This paper proposes a political economy model to explain why early American public schools required supplementary private user fees and how they were able to eliminate it. The implication from the model is further investigated under the econometric analysis of historical data from free school referenda in New York State and Indiana. Also the consequences of making public schools free are statistically examined using pooled census data. The results in this paper suggest the followings about the early history of American public education. Localization had not been a perpetual virtue in developing public education. The mid-19<sup>th</sup> century centralization of public school finance was resulted by changes in the political economy variables, not just by campaigns of great men in the Common School Crusade.

The rest of the paper is organized as follows. American public school finance in the mid 19<sup>th</sup> century and how public schools became free will be first described. Then a political economy model which fit historical events will be proposed. An econometric test of the hypothesis proposed by the model using historical data will follow with an introduction to the free school referenda in the mid 19<sup>th</sup> century. Also the consequences of making public schools free will be statistically analyzed using pooled census data. Finally, the conclusion and discussion of the results will follow.

### **American public school finance in the mid-19th century**

The United States has led the world in primary and secondary school enrollment since the early 19<sup>th</sup> century. Its early success must not have been possible without a well-developed public education system. Americans had voluntarily built public elementary schools, mostly known as common schools, mainly based on local property taxes since colonial times. Interestingly, however, American public schools in many states were not entirely free until the late 19<sup>th</sup> century. Parents of public school pupils occasionally had to pay tuitions which were called rate bills.

Early public schools were funded from various sources. The first public elementary schools in the Massachusetts Bay colony were established on local voluntary supports.<sup>1</sup> Then, they moved to raise local property taxes for public schools. Several town meeting records in the late 17<sup>th</sup> century Massachusetts and Connecticut show that they built and ran schools through local property taxes.<sup>2</sup> However, early local property taxes were not a solid and stable source to finance public schools, given that the development of common school system lagged behind in many states outside New England until the mid-19<sup>th</sup> century and that they still needed various other sources for school revenue including rate bills.<sup>3</sup>

In the 19<sup>th</sup> century, three major sources for public school income were taxes, incomes from public funds, and rate bills. Taxes were mostly local property taxes, but in some states poll taxes and bank taxes were also utilized. After 1850, state property taxes were also introduced and heavily used. Incomes from permanent common school funds were another major source of public school income.<sup>4</sup> Starting from New York State in 1805, all the state created state

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<sup>1</sup> Updegraff (1969) shows that voluntary supports for town schools were collected every Sunday after church meetings in the mid 17<sup>th</sup> century Massachusetts when local taxes were not introduced.

<sup>2</sup> Cubberley (1919).

<sup>3</sup> As for various methods to supplement public school incomes, Swift (1911) lists taxes, permanent funds, endowment, fines, lotteries, license fees, appropriation, and rate bills.

<sup>4</sup> For example, incomes from the state common school fund in New York State were more than 20% of total school revenue in the 1840s, when calculated using data from Randall (1844) and Reports of the Common School

permanent common school funds in the 19<sup>th</sup> century.<sup>5</sup> Localities receiving incomes from public funds were usually required either to make school returns, to raise fixed amount of local taxes, or to maintain schools for required terms.<sup>6</sup> Rate bills were tuition fees paid by parents of public school pupils to defray the deficiency in school incomes. Rate bills were charged based on the days of attendance<sup>7</sup> and mostly expended in supplementing teacher's salaries.

The share of public school income from each source varied across states and over time. A couple of interesting patterns are revealed in Table 1<sup>8</sup>. In most states, the share from taxes apparently increased over time. Though average increase of the share from taxes appears to have been modest from 48.9 percent in 1850 to 54.4 percent in 1860, it was only because Northeastern states had already been raising school taxes more than eighty percent of school income. Conspicuous increase in the share from taxes can be found in Southern and Western states, while Midwestern states such as Illinois and Ohio led the rise of tax revenue. The relative importance of tax revenue was also greater in the North and East. Another interesting pattern in Table 1 is the growth of the share from public funds between 1850 and 1860, especially in the South.

The most striking is the decline of rate bills. The share of public school income from other sources which were mostly from rate bills greatly decreased in all the states. In the U.S.

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Superintendents of the State of New York. According to the 7th Census, incomes from public funds and endowments were 24.7% of the total public school revenue in the U.S.

<sup>5</sup> Two major sources for the public school funds were federal land grants following the Land Ordinance of 1785 and federal grants of the 1837 surplus revenue. Some states apportioned these grants directly to localities instead of forming state public school funds. For the various sources of state and local public school funds, see Swift(1911). For the use and apportionment of the 1837 surplus revenue, see Bourne(1885).

<sup>6</sup> The requirements varied over states. See Swift(1911, pp.177-179).

<sup>7</sup> In general, public schooling was provided without any cost for a part of the school term but required rate bills to attend the rest part of the school term.

<sup>8</sup> In Table 1, taxes indicate both local and state property taxes. State property taxes were rare in 1850 but significantly grew by 1870. Other poll, bank, insurance taxes are also included here but their amount was relatively small. Funds indicate incomes from state public permanent common school funds. In 1850 and 1860, this category also includes incomes from local funds and endowments, but their share was tiny. In 1870, the census report does not separate revenues from taxes and funds. Other sources include all the other incomes which was not from taxes, funds, and endowments, but they were mostly from rate bills. This view is supported by investigation of various state school reports, though the census report does not explicitly provide any evidence regarding the amount of rate bills.

average, the share from other sources decreased from 22.4 percent in 1850 to 7.9 percent in 1870. In 1850, eighteen out of thirty four states raised more than a quarter of the total school revenue from other sources which were mostly rate bills. In 1870, however, the number of those states decreased six out of forty three. In the states where the share from others greatly decreased, the share from taxes significantly rose. This implies that rate bills were substituted with taxes and that public schools became free.

The existence of rate bills means that the support to public schools from local and state government was in reality limited in many places before the mid-19th century. Many localities truly raised voluntary local property taxes to publicly educate their children<sup>9</sup>, but the amount of revenue raised in voluntary ways might have mostly been far less than was required to maintain public schools. This also explains why the expansion of common schools were delayed until the early 19<sup>th</sup> century when many states created permanent common school funds and apportioned the fund income to support local schools, in spite of the existence of voluntary local taxes since the colonial days. Moreover, a significant part of the local tax revenue was not a pure product of local enthusiasm for public education. Many states provided localities with permanent school fund incomes as a matching fund, thus mandating localities to levy local school taxes at a fixed rate or by a required amount.<sup>10</sup> However, prior to 1850, state contributions to the public school income were mostly incomes from permanent public funds, and these were still insufficient in defraying the total school cost. Rate bills were demanded to run local public schools in this situation until they would be abolished and substituted with taxes by state legislation.

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<sup>9</sup> Though most states allowed localities to raise taxes for schools by enacting permissive state laws in the first half of the 19<sup>th</sup> century, many local towns supposedly raised voluntary property taxes before the enactment of those laws. For the comprehensive list of state legislation permitting local school taxes before 1850, see Cremin (1951) p.127.

<sup>10</sup> For example, in Delaware, Massachusetts, New York State, and Rhode Island, fixed amounts of local taxes were required to be raised to receive benefit of the state common school funds. (Swift, 1911)

Undoubtedly there had also been some free schools in the United States before 1850. In some localities, mostly cities, public resources including highly assessed properties were enough to make their schools entirely free to all the school-aged children. Many big cities in New York State, starting from New York City in 1832, repealed rate bills by the early 1850s. Other cities in both North and South, such as Providence, Baltimore, Charleston, Mobile, New Orleans, Louisville, Cincinnati, Chicago, and Detroit, had free school systems about two and half decades prior to the state-wide abolition of rate bills.<sup>11</sup> But other cities and most rural areas had to wait until rate bills were repealed state by state in the mid 19<sup>th</sup> century. Table 2 shows when states repealed rate bills. New Hampshire, Maine, Massachusetts, Delaware, Pennsylvania, and Wisconsin had entirely public-funded school system by 1850. This is consistent with Table 1 in that those six states reported the smallest shares of “other sources” in 1850 excluding District of Columbia. Many other states had abolished rate bills during the third quarter of 19<sup>th</sup> century, or their shares had diminished by the end of 19<sup>th</sup> century except some frontier Mountain states.

How were local and state supports to public schools restricted in early 19<sup>th</sup> century? And how were those constraints able to be overcome? The investigation of long-run trends in the local and state supports helps us answer to those questions. Figure 1 shows the several stylized facts on the long-run shift of local and state funding for public education. The share of total school revenue from local sources increased until the 1920s and decreased after on. The share from state sources seems to have a little decreased from about thirty percent in 1850 to around fifty percent in the 1910s. But the main source of state school supports was interestingly changed from incomes from public funds to state taxes. The share from state school taxes greatly

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<sup>11</sup> Cubberley (1919) p.148; Goldin and Katz (2003), pp.20-21.

increased between 1850 and 1870.<sup>12</sup> During the same period, the share from other sources significantly declined. This reassures that the amount raised by rate bills diminished during the second half of the 19<sup>th</sup> century as it appears in Table 1. Rate bills actually disappeared by the early 20<sup>th</sup> century.<sup>13</sup>

The long-run movements in the local and state shares of public school revenue show some interesting patterns. As revealed in Figure 1, the largest part of the revenue came from local taxation, which had grown from about 50% in the early 1850s to more than 80% right before the Great Depression. More interesting is the rise of state taxes during 1850 – 1870, when schools in many states became entirely free and funded solely by public resources. There were few state taxes before 1850, but 26 states had established state taxes for public schools by 1873, and the state tax share of total U.S. public school income became 17.3%, as shown in **Table 3**.

The relationship between the abolition of rate bills and the rise of state and local taxes is reconfirmed in the 1874 *Report* of the U.S. Commissioner of Education. According to Table 3, 26 states had established state taxes for public schools by 1873. Also in those states, the share from others significantly decreased when compared with Table 1. Indeed, rate bills which coexisted with local taxes were eliminated in the late 19<sup>th</sup> century as the state property tax for public schools was introduced.

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<sup>12</sup> The exact amount of state school taxes was first reported in 1874 as it was 17.3 % of the total U.S. public school income in 1873. Though comparable statistics for the earlier period are not available, the following facts strongly suggest that state school taxes significantly grew during the 1850s and 1860s. First, there were no state property taxes for schools in all the states but Ohio where state property taxes started as early as in 1838. Other states implemented those taxes much later, as did Kentucky and Michigan in 1850, New York in 1851, Indiana and California in 1852, Alabama in 1854, and Illinois in 1855. Second, before 1850, there had been various state appropriations or earmarked taxes for schools, but their contributions were small except for that from permanent school funds. See Burke (1957), p.266.

<sup>13</sup> Also two notable facts are found in Figure 1. First, the share of public school income from permanent funds and endowment sizably dropped, because the amount of funds and endowment incomes did not grow as much as did the total public school revenue. Also federal financial supports to public schools started in the early 20<sup>th</sup> century, while their share has been small.

State property taxes differ from local property taxes in their redistributive nature. Local property taxes perform redistribution across income classes or different family types only within each locality. State taxes are also raised by localities, but they are first returned to state governments and later apportioned to each locality by their own redistribution rules. In this way, state property taxes possibly redistribute school revenue across different localities. Mainly started from the 1850s, state school tax revenue had been apportioned based on the school population, numbers of pupils, or total population. Sometimes there were special rules to distribute state incomes to some financially disadvantaged counties or districts. Thus the aid from state governments supposedly helped localities overcome financial barriers when available local resources for public schools were restricted. State property taxes for public schools peaked in the 1870s, and then began to decline until the early 20th century, when most states repealed them.<sup>14</sup>

### **Making Schools Free: Model and Test**

Many states in the United States abolished rate bills in the mid-19<sup>th</sup> century by providing more state supports than before. This was realized through a political process in which a new rule of financing public schools through raising geographically redistributive state property taxes was endorsed by voters. In this section, a political model which explains why rate bills were demanded under the local-tax-only system and how new state taxes abolished rate bills will be

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<sup>14</sup> As for the repeal of state property taxes for public schools, see Burke (1957), p.267. Also Wallis (2000) shows the overall decline of property taxes as a source of overall state finance. But the decline of state property taxes did not necessarily mean that the share of public school income from state had been decreased. As appeared in Figure 1, the share of state sources was never declined, and they actually increased after the Great Depression, supposedly because states could utilize other sources rather than property tax revenue.

introduced. Then it would be followed by an econometric analysis of the model using data from free school referenda in New York State and Indiana.

### A Political Economy Model of Financing Public Schools

Suppose that each locality has a public school financed by a local property tax and rate bills. Each local voter  $i$  has their own optimal local property tax rate  $t_{li}^*$  for schools such that

$$t_{li}^* = \arg \max U_i(C_i(y_i, t_{li}), S_{li}(y_i, \bar{y}_l, t_{li}))$$

where  $U_i$  is individual  $i$ 's utility function,  $C_i$  is consumption,  $S_{li}$  is individual demand for local public schooling,  $y_i$  is the value of taxable properties held by the individual,  $\bar{y}_l$  is the value of taxable properties in the locality  $l$  per school-aged children. Here,  $S_{li}$  gives utility to the individual in various channels. It would save individual's private spending on education and increase other consumptions. It would eliminate perceived risk of crimes, stigma of indigence, or adolescent aberrations. It would decrease disutility from having indigent neighbors who cannot afford private tuition fees for their children. The optimal tax rate  $t_{li}^*$ , the individual's taxable property value  $y_i$ , and the average taxable property value of the locality  $\bar{y}_l$  determine  $S_{li}^*$  which is the provision of individual's optimal local public schooling. Rate bills which are supplementary individual spending on their own child or private education expenditures are included in  $C_i$  which is all the other consumption.

When the prices of  $C$  and  $S$  are normalized to be one, the budget constraint implies that  $C_i = (1 - t_{li})y_i$  and  $S_l = t_{li} \bar{y}_l$ . The first order condition to choose the optimal tax rate gives the decision rule such that

$$\frac{U_s}{U_c} = \frac{y_i}{\bar{y}_l} \dots \dots [1]$$

The left hand side is the marginal rate of substitution between communal provision of public schooling and individual consumption. The right hand side is the individual property tax price. And in the locality, the local political equilibrium tax rate can be determined by majority voting.<sup>15</sup>

Once the local tax rate  $t_l^*$  is determined by the decisive voter at the political equilibrium, communal provision of local public schooling  $S_l^*$  will be given, and everybody will determine the individual optimal amount of private contributions, that is to say, the amount of rate bills. Let us say  $S_i$  is individual demand for education. Then,

$$S_i' = S_i - S_l^* \text{ if } S_i > S_l^* ,$$

$$S_i' = 0 \text{ otherwise,}$$

where  $S_i'$  is supplementarily purchased public schooling by rate bills. And everybody will consume public education by  $S_i' + S_l^*$ . Because the prices are normalized, the decision rule for  $S_i$  is simply

$$\frac{U_s}{U_c} = 1 .$$

Figure 2 helps to understand this simple mechanism. Panel (A) of Figure 2 shows a corner solution where the individual satisfied with the provision of public schooling and do not want to pay any more rate bills. Panel (B) shows the existence of rate bills.

According to the decision rule which is revealed in the equation [1], the political equilibrium of local tax rates depends on the decisive voter's preference (MRS), the amount of taxable property held by the decisive voter ( $y_i$ ), and the locality's valuation of taxable properties per school-aged child ( $\bar{y}_i$ ). Given that  $S_l$  is increasing in tax rates, a typical decisive voter would

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<sup>15</sup> The existence of the optimal individual tax rate depends on the concavity of the utility as a function of a tax rate. And if individual preferences are single-peaked, a majority voting equilibrium exists.

demand more  $S_l$  as  $\bar{y}_l$  rises.<sup>16</sup> The effect of rising valuation of individual properties ( $y_i$ ) is more complicated because there are both income and substitution effects in the opposite directions. But this simple model clearly shows that the local voter's distribution of property ownership and the local average valuation of taxable properties per school-aged children will affect the optimal local tax rates which eventually determine the level of the provision of local public schooling.

Then, what would change if there is additional state property taxation for public schools? The optimal state property tax rate is determined by a state decisive voter in a similar way. The decision rule for the individual voter  $j$ 's optimal state tax rates is Equation [2].

$$\frac{U_s}{U_c} = \frac{y_j}{\bar{y}_s} \quad \dots \dots [2]$$

This new decision rule implies that the political equilibrium of the state property tax rate would be determined by the decisive state voter's preference (MSR), individually owned property valuation ( $y_j$ ), and state average property valuation per school-aged child ( $\bar{y}_s$ ). Once the optimal state school tax rate is given, then local voters will decide local tax rates again, and each individual finally determine the amount of rate bills, if they are allowed.

Possible redistribution effects across localities within a state come from the variation in the local property holding distributions and the average valuations of taxable properties. In a locality where  $\frac{y_i}{\bar{y}_l} = \frac{y_j}{\bar{y}_s}$ , there would be no difference between local and state systems and therefore there would be no geographical redistribution. However, there could be redistribution across localities when the local decisive voter and the state decisive voter are different. The local and state decision rules provide two possible cases.

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<sup>16</sup> This is true if public education is not a Giffen good.

First, if  $\frac{y_i}{y_l} > \frac{y_j}{y_s}$ , the locality  $l$  would be a winner of redistribution by the introduction of state taxation. In this case, the state property tax price is lower than the local property tax price, hence more public schooling will be provided through centralization. On the contrary, the locality  $l$  could be a loser if  $\frac{y_i}{y_l} < \frac{y_j}{y_s}$ , because they should pay higher tax prices when state taxation is introduced.

The inequality between the local tax price and the state tax price is mainly driven by two factors: first, the differences between local and state property ownership distribution, and second, the differences between local and state average property valuations. With similar levels of average property valuation, the local (or state) decisive (median) voter's property value would be greater if the locality (or state) has more equalized property ownership distribution. On the other hand, if the local and state decisive voter's property values are similar, higher average local property valuation would make the locality the winner of redistribution.

Furthermore, if the local decisive voter's demand for public schooling is higher than the state decisive voter's, they could raise supplementary local taxes given the apportionment of state tax revenue. This is equivalent to the Figure 2 (B) above, while now the additional amount of schooling is financed by local taxes instead of rate bills. Also if the new state taxation increases the level of public provision of schooling, then there would be higher possibility to achieve the corner solution in Figure 2 (A) which does not need rate bills anymore.

### Free School Referenda in New York State and Indiana

New York State and Indiana had free school referenda around 1850. Though there were considerable geographical variations, public schools in New York State and Indiana were highly dependent on rate bills before the free school referenda. Both states had two state referenda to

make public schools free by eliminating rate bills through state legislation. The vote results in both states show a wide range of variation among counties, thus leading to a good chance of empirical study of the political economy model proposed above.

New York State was a leader in centralizing its public school system. They established a permanent common school fund in 1805<sup>17</sup> and created the Superintendent of Common Schools in 1812.<sup>18</sup> The New York State common school fund played an important role in financing public education in the 19th century. The state treasury first apportioned 48,376 dollars to school districts in 1814, and the amount grew to 275,820 dollars in 1848.<sup>19</sup> These amounts were apportioned to counties based on each county's total population, and each county distributed them to townships according to their population of 5 to 16 years old children. The fund was mainly used to defray teacher's wages. To receive the fund income, each county and town had to raise local taxes by the same amount that they received from the state. The public school finance system until 1848 may have helped New York State have high levels of enrollment in the first half of the 19th century. However, public resources had still not been enough to defray all the required costs, and a significant amount of private contributions in the form of rate bills was demanded to maintain public schools for the required school terms. For example, the amount raised by rate bills in 1848 was \$489,696.63, and this was 36.3% of the total public school revenue in the year.

But several cities in New York State had already abolished rate bills, as previously described. The urban leadership in free public schooling came from the relative affluence of tax bases. Higher property valuation enabled those cities to raise more local taxes with lower rates.

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<sup>17</sup> Swift (1911), p.352.

<sup>18</sup> It was abolished in 1821, but the state secretary took over the role as a superintendent of schools *ex officio* until the superintendent of public instruction was established in 1854. Boone (1909), p.101-102.

<sup>19</sup> All the statistics and school finance rules of New York State in this section are collected from the annual reports of the Superintendent of Common Schools of the State of New York.

The result was great inequality in public school resources among localities, as it is in most states today. Many rural counties experienced difficulty in raising local taxes required by the receipt of state matching fund. Thus their school revenue eventually became to depend heavily on rate bills, while big cities such as New York City or Buffalo ran plenty of surpluses in public school revenue without raising rate bills.

The Common School Crusade swept New York State in the 1840s, and there was a fierce movement to make public schools free by eliminating rate bills. The progressivism that swept all over the state finally resulted in the Free School Bill of 1849.<sup>20</sup> The bill mainly proposed two changes in the state public education system: replacing rate bills with school district taxes and extending school ages from 5-16 to 5-21 years old. The proposal was required to be sanctioned by a statewide referendum in November, 1849. The result of the 1849 referendum was a victory for the free school movement, with the majority of 158,181 votes.

But the free school act was soon confronted with financial difficulties in reality. Most rural districts became hostile to the act because it imposed a heavy burden of local taxation. Public opinion was sharply divided, and legislators could not help calling for a new referendum in November 1850 to ask whether to repeal the act or not. In the new referendum, majorities in most rural counties voted to repeal the act, but the result was still against the repeal because the populous urban areas voted to keep the 1849 act.

The election result of 1850 was controversial because the majority of votes would have been for the repeal if New York City had been excluded. The final result was a kind of eclecticism. The originally proposed free school act had never put into practice, and the actual abolition of rate bills was postponed until 1867. Instead, the legislature modified the act with

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<sup>20</sup> The following paragraphs about the history of free school elections in New York State are based on Finegan (1971) and annual reports of the superintendent of common schools in the state of New York.

three new features: creation of 800,000 dollars of state property taxes, increase of state common school fund expenditure to 300,000 dollars, and allowing rate bills to expend remaining balances.

Ellwood Cubberley states that the New York referenda results was the clear presentation of a growing conflict between city and rural interests, where cities demanded educational progress but rural districts lagged far behind.<sup>21</sup> But it did not seem as simple as his explanation, once we consider for the political decision process involving unequal local tax burdens and different local property ownership distributions. Before further investigation of political economy regarding rule changes, let us see another interesting history, that of Indiana in almost the same period.

Indiana also had two school elections in the similar period, but the background and rule changes were very different from those of New York State.<sup>22</sup> Until the late 1840s, education in Indiana had developed in different ways by regions. Central and southern counties, which were predominantly settled by Southerners, had barely maintained public schools. As in the South, public education was limited to some charity or pauper schools, and private academies dominated local education. By contrast, northern and eastern counties, which had more migrants from northeastern states, had fostered public common schools by voluntary local taxation.

The Common School Crusade also rolled through in Indiana in the 1840s, and it led to a proposal to introduce poll taxes and state property taxes. The proposal also required each county to raise additional local taxes by the same amount received from state tax revenue. But the legislation was not easily passed, and simply the question of state tax-supported schools was submitted at the election of 1848. The result was affirmative to the state tax idea. But it could not

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<sup>21</sup> Cubberley (1919), pp. 149-150.

<sup>22</sup> The following paragraphs about the history of free school elections in Indiana are based on Boone (1892).

securely establish the state public education system, because there was fierce opposition to state school taxes in most central and southeastern counties.

Therefore, the legislature changed the bill from state taxes to county taxes, and gave each county an authority to decide whether they would implement the plan locally or not, through a new referendum in 1849. The election results by county were very similar to the previous ones. Out of ninety counties, sixty-three voted in favor of the proposed school taxation of one millage county property tax and 25 cents of a poll tax.

But the county tax system did not last long. The state constitution was amended in 1851 to create a permanent state common school fund and repealed rate bills. This was followed by the school law of 1852, which introduced a State property tax, a township property tax, a State poll tax, and a township poll tax, as well as creating a state superintendent of public instruction. Thus common schools became free in Indiana.

The experience of Indiana, as well as that of New York State, was an outcome of collective decision making process under the democratic regime. Individual voters made their own decision by marginal cost and benefit from the rule change, and local election results were determined by the voter's characteristics which affected their perceived returns from the rule change. And the geographical variation in vote results supplies a chance to test the following hypotheses suggested by the political economy model previously described. Local distribution of property ownership would have been important when changes in the property tax rates were proposed. Large property owners might have suffered from the new scheme, whereas voters who did not own any property would have enjoyed a greater net benefit from it. A poll tax would have been different in that the poorest voters under tighter budget could have been hurt more. Voters with more children of school ages would have benefited more from the abolition of

private tuition. Other influences on the voter's decision might have included the local availability of private schooling, the change of the quality of public schools by more funds, and individual tastes for schooling.

The statistical investigation using the vote-return data supports the prediction of the above model very well. Let us turn first to New York State. The proposal of substituting rate bills with a district property tax implied different rates of local taxes across New York counties, because the amount of rate bills and the total valuation of properties were different one another. The OLS results in Table 6 show that greater prospective local tax burden clearly made more voters oppose to the bill. In 1850, a one mil increase in the implied local tax rates diminished the share of votes that favored the change of rules by 3.28 percentage points.

The IPUMS 1% sample of the 1850 decennial census allows us to investigate the effect of real estate ownership distribution on the election returns.<sup>23</sup> The results are straightforward. New York counties with a greater share of voters who did not individually own any real estate were more favorable to establishing the free school system through increasing local property tax rates. These coefficients are robust if household-level real estate ownership distribution is used instead of the individual level distribution. But the share of IPUMS voters without any children of school ages within their family does not exhibit any significant effect.

The model also explains the Indiana experience very well. The main issue in Indiana was whether they would accept a free school idea based on taxation. Therefore, the law actually proposed little change in the counties where voluntary local taxes for public schools had already been used. However, in the counties which did not have those taxes and depended on the private

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<sup>23</sup> The voters are defined by white males who are 21 years old or above. Both states did not have any property ownership or tax payment requirement for vote, and they extended the suffrage to white adult males before the state free school referenda. New York State abolished property and tax requirements for white adult males in 1821 and 1826 respectively. Indiana did not seem to have any economic requirement for vote in its history. (Keyssar, 2000)

education provided by academies were confronted with a big burden of new taxes by the proposed state law.

The regression results in Table 7 show this tendency quite clearly. In both of the Indiana referenda, the percentage of voters that favor local tax-based free schools was significantly higher in the counties where relatively higher rates of local property taxes for schools had already existed. On the other hand, higher dependency on the private education, represented by the academy enrollment rate, clearly diminished the local enthusiasm for free public schools. Also the share of voters who were born in Southern states clearly exhibits more opposition to tax-supported schools, as proposed by Boone (1892). The percentage of voters who did not individually own any real estate does not have a statistically significant coefficient, supposedly because Indiana proposed a mixture of property and poll taxes. A property tax and a poll tax may have worked in the opposite directions. A property tax for public schools would have been favored by voters who did not own much property because their perceived tax costs were smaller. But a poll tax could have been a greater burden for those voters who did not hold any property.

### **The Consequences of Free Schools, 1850 - 1870**

Then what were the consequences of making public schools free in the mid 19<sup>th</sup> century? The early statistics of American public education are rough and sparse. But previous research of various available sources including census returns since 1832 and several state reports shows consistent measures. Fishlow (1966a) shows that total school enrollment rates in New England and Middle Atlantic region had already been as high as 60-80% of 5-19 population in the 1830s and 1840s, while Mid-western states and the South fell behind but made significant progress in

the same period. Go and Lindert (2007) supported this view and extended the statistics to 1860, also showing that the improvement of public school enrollments had different patterns across states. This trend is also revealed in the analysis of individual-level sample data by Goldin and Katz (2003).

The same trend appears in Table 4, which extends enrollment rates by state reported in the Decennial Census to 1870. Northeastern states kept high levels of public and total school enrollment, though those rates seemed to have a little decreased over the period. Many Southern states still fell behind, even after the Civil War. The West established their education systems very well. But the fastest increases in enrollment rates occurred in Mid-western and border states, such as Illinois, Indiana, Iowa, Kentucky, and Missouri.

Three Midwestern states abolished rate bills in the 1850s. An impressive example is Indiana, which abolished private tuition for elementary public schools by state legislation in 1851 and started to levy the first general state school tax of one millage on property. The introduction of the state school tax and local mandatory taxes was an outcome of fierce political battles over sectarian benefits. Yet it greatly improved their funds for free schools, and fundamentally contributed to the establishment of state public education system.

Enrollment figures show to what extent American public schooling expanded, but they also hide many aspects. First, they do not reveal any change in quality of education. In this case, the evolution of public school income per pupil in Table 5 is helpful. In New England, the slight decline in enrollment rates was accompanied by an increase in the income per pupil. On the contrary, rising enrollment rates were closely correlated with the moderate decrease in the public school income per pupil in the South and the West. Therefore, there seemed to be some trade-offs between enrollment rates and per-pupil public school incomes. Midwestern states were

leaders in increasing the public school income per pupil as they were in the improvement of enrollment rates. Changes in the share of public school income from public resources give an interesting clue here. New England had already depended heavily on public resources before 1850, the South had just started to increase the public shares since 1850, and the Midwest had accomplished the publicly-funded public school finance system during 1850-1870. The Midwestern leadership might probably be explained by their commitment to eliminating private costs for public schooling.

Demographic changes over the period must be also considered for. During the period, more and more foreign immigrants arrived on the East Coast, domestic migrants continuously moved and settled westward, and the emancipation allowed limited but new opportunities of education to ex-slaves. All these factors were supposed to increase the size school population everywhere in the country. In many Northeastern states the enrollment and per-pupil income kept their good records in spite of the pressure of increasing population. This implies that public school resources were also greatly increased to defray huge additional costs required to maintain the level of public schooling.

More amazing is the fact that most states established state public school systems by the 1870s. Superintendents of common schools or of public instruction were established, and newly developed state supervision increased the length of required school terms. State systems also started to increase the quality of public education by hiring better qualified teachers, followed by state-managed teacher's schools and introducing statewide certification of teachers.

In summary, during the period of 1850-1870, American public education was greatly developed. In the Western frontier, they greatly expanded the opportunity of public schooling to children who did not have it before the period. In the North East, the provision of public

schooling was not severely harmed by the increasing population pressure, and they were able to keep the good records. The improvement of public education in this period was closely related to the expansion of public funding which made public schools free of rate bills. These are reinforced by pooled state-level data analysis using decennial census data.

Two variables, the abolition of rate bills and the property value per child of school ages, exhibit clear influences on school monies in Table 8. The abolition of rate bills represents a greater public school income per child of school ages by \$ 1.54 in 1869 dollars. Its effect reasonably grows bigger for the amount only from public resources of taxes, funds, and endowments, and it becomes a little smaller when the dependent variable includes incomes of both public and private schools. The coefficient is the greatest for the public resources because the repeal of rate bills substituted public monies for private contributions. The overall result also suggests that in the mid-19th century there was no crowding out of investment in human capital due to state in-kind subsidies.<sup>24</sup>

Higher property value per child of school ages similarly contributes to increasing school income per child. In this case, the coefficient for total school income is the greatest because the property value is correlated to wealth in general. But the effect was still clearly significant for the public school income from public sources. It means that wealth was related not only to the greater affordability of private schooling but also to increasing the size and scope of redistributive public education. This kind of redistribution might have been easier with higher property valuation which enabled lower tax rates.

The effects of property ownership distribution are unclear, possibly because there are two conflicting forces. When taxable properties were unequally owned by voters, the political voice

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<sup>24</sup> Following Peltzman (1973), West (1975) insisted that public education crowded out private schooling in the 19th century and that the crowding out supposedly decreased the total investment in human capital. But the result here, similarly found in Go and Lindert (2007), is clearly against the argument.

to increase school monies through redistributive property taxation would have possibly grown. But the local political situations were different over places, and the greater shares of voters without any taxable property frequently meant elite-dominating politics. While the coefficients are statistically insignificant, their signs are consistent to the theory of redistribution and political voices.

Overall results support that the increase in the public school income per child of school ages was led by the growth of public supports for schools, as suggested in the earlier section. Furthermore, the results imply that more public monies could be financed supposedly by rule changes toward redistribution within state through political process, which is consistent to the previously described history of American public education between 1850 and 1870.

The increase in the public school income per child of school ages had an apparent impact on the expansion of American public education during 1850-1870. As revealed in Table 9, more public school funds per child increased public school enrollment rates, numbers of public schools per child, and numbers of public school teachers per child. The increase in public school revenue enabled them to build more schools and to hire more teachers in spite of the pressure from the growth of school-age population. More children could benefit from public education as schools became free and public supports increased.

For closer investigation of the link between underlying political economy variables and outcomes of public education, two stage least square results were also reported in Table 10. Here, public school incomes per child of school ages are instrumented by the explanatory variables used in Table 8, as well as by year and state fixed effects. The results are robust. This implies that the positive effects of the increase in the public school income on the scope of public

education were mainly due to the changes in the state school finance rules and the variations in the distribution and valuation of taxable properties across states.

The rise of state average enrollment rates was clearly driven by improving the condition of relatively disadvantaged places in the state. The seventh and ninth decennial censuses provide county level enrollment statistics.<sup>25</sup> Using this information, indices showing the inequality of enrollment rates across counties can be constructed for each state.<sup>26</sup> Table 10 shows how increases in the public school income per child of school ages affected the intra-state inequality in the enrollment rate. All three inequality indices are apparently decreased as more public supports were supplied. The two stage least square models using the same political economy variables also show the robust results.

## **Conclusion**

Local autonomy was undoubtedly important at the dawn of American public schools. Many localities voluntarily raised local property taxes for public schools, which enabled the United States to be a global leader in public schooling as early as in the first half of the 19th century. But decentralization has not been a perpetual virtue.<sup>27</sup> Heavily localized public school finance impeded further development of public schools in the places where the assessed value of properties was relatively low in the middle of 19th century. The aid from state property taxes

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<sup>25</sup> The published census reports show these figures as school attendance, but considering for the general school conditions in the period, they are believed to be closer to the enrollment.

<sup>26</sup> Theil index, coefficient variation, and the ratio of 90th percentile to 10th percentile are calculated. For 1850, enrollment rates are the number of people enrolled in all kinds of schools per kid of ages 5-19. For 1870, enrollment rates are the number of people enrolled in all kinds of schools per kid of ages 5-18.

<sup>27</sup> The 19th century American public education is indeed well described by the simplistic explanation for the positive and negative effects of decentralization on the development of public education in Lindert (2004), pp. 104-105.

was a proper remedy for the problem, as it geographically redistributed available financial resources for public education.

The financial constraints imposed by localization were revealed by the existence of rate bills which were the tuition fees for public schools to supplement the deficiency in the local public school revenue. The rate bills were abolished in the mid 19<sup>th</sup> century when the state intervention into public school finance grew. A political economy model suggested in this paper explains that a state tax could be geographically redistributive, thus leading to the increase in public school outcomes in the places previously disadvantaged. This redistribution would be realized if each locality has a different property ownership distribution or if each locality's assessed property value per school-aged child is different one another. Indeed both of these conditions were true in the mid-19<sup>th</sup> century America.

The econometric analyses in this paper support the implication from the political economy model. The regressions using data from free school referenda in New York State and Indiana show that variation in the preference, property ownership distribution, and level of assessed property values among counties led to different changes in local tax rates from the free school legislations and that those differences were well represented by the share of the votes for free schools. The pooled state-level regressions show that the consequence of making public schools free was the increase in the public school enrollment rate through building more schools and hiring more teachers. Furthermore, it reduced the intra-state inequality in public school enrollment rates.

The belief that the local property tax is a benefit tax which coordinates people's different tastes for local public goods with different tax costs must be true in some parts.<sup>28</sup> But it was not in the case at least for American public schools in the period of 1850-1870. Local tax costs in the mid-19th century were determined by unequal property values across districts, which did not seem to be caused by the quality differences in local public schools. Many rural towns with lower assessed property values were not less enthusiastic about developing public schools than were urban centers. The rural yearning for public schools was possibly hampered by poor tax bases, and subsidiary private contributions in the form of rate bills were demanded. The rate bills were able to be eliminated only after the geographically redistributive state taxes arrived.

A possible counter argument based on Tiebout sorting does not appear plausible in 19<sup>th</sup> century America. As proposed by Wallis (2000) and Engerman and Sokoloff (2005), the existence of better public schools must have been a factor to attract migrants and to raise the value of their properties through the increase in housing demand. But the inequality in assessed property values among localities was too great to be explained only by people's difference tastes for public schools. By contrast, findings in this paper reaffirm that the provision of public goods has been homogenized in American history as proposed in Rhode and Strumpf (2003). The heterogeneity in the provision of public elementary schools had indeed declined in the late 19<sup>th</sup> century.

The development of state property taxation for public schools needs to be further investigated. There are various candidates to explain the rise of the state in financing public schools. Democracy allowing the voice of the public to be reflected on the political decision making process and excluding the domination by elites must have mattered. Rising economic

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<sup>28</sup> The benefit tax theory for public schools is well proposed by Hoxby (1996), Fischel (2001), and Hoxby (2001). Wallis (2003) plausibly shows that the theory worked well in the history of Indiana's mammoth internal improvement system.

gains from education was also seemingly important. Another interesting factor is the possible positive externalities from public education. The existence of positive externalities could explain how state intervention through geographical redistribution improved the efficiency of the school finance system. In reality, numerous 19<sup>th</sup> century school reports frequently revealed great concerns about the effect of education on reducing crimes and about eliminating stigmas on the children whose family could not afford rate bills.

The development of American public education in 1850-1870 is also represented by improvement in the curriculum, extension of school terms, and better qualified teachers. The role of state control agencies such as state superintendents of public instruction was also overlooked here. These quality measures would possibly be examined in future by exploring various state reports which started to be published during this period.

Another important question following this paper is the decline of state property taxes after 1875. State school taxes were repealed, and local taxes became dominant sources for public school finance again. This revival of localization continued until the 1970s when the supreme courts ordered school finance equalization in many states. Why could not the centralizing movement in public school finance last longer, and how did they eventually become further heavily local? These questions remain for future research.

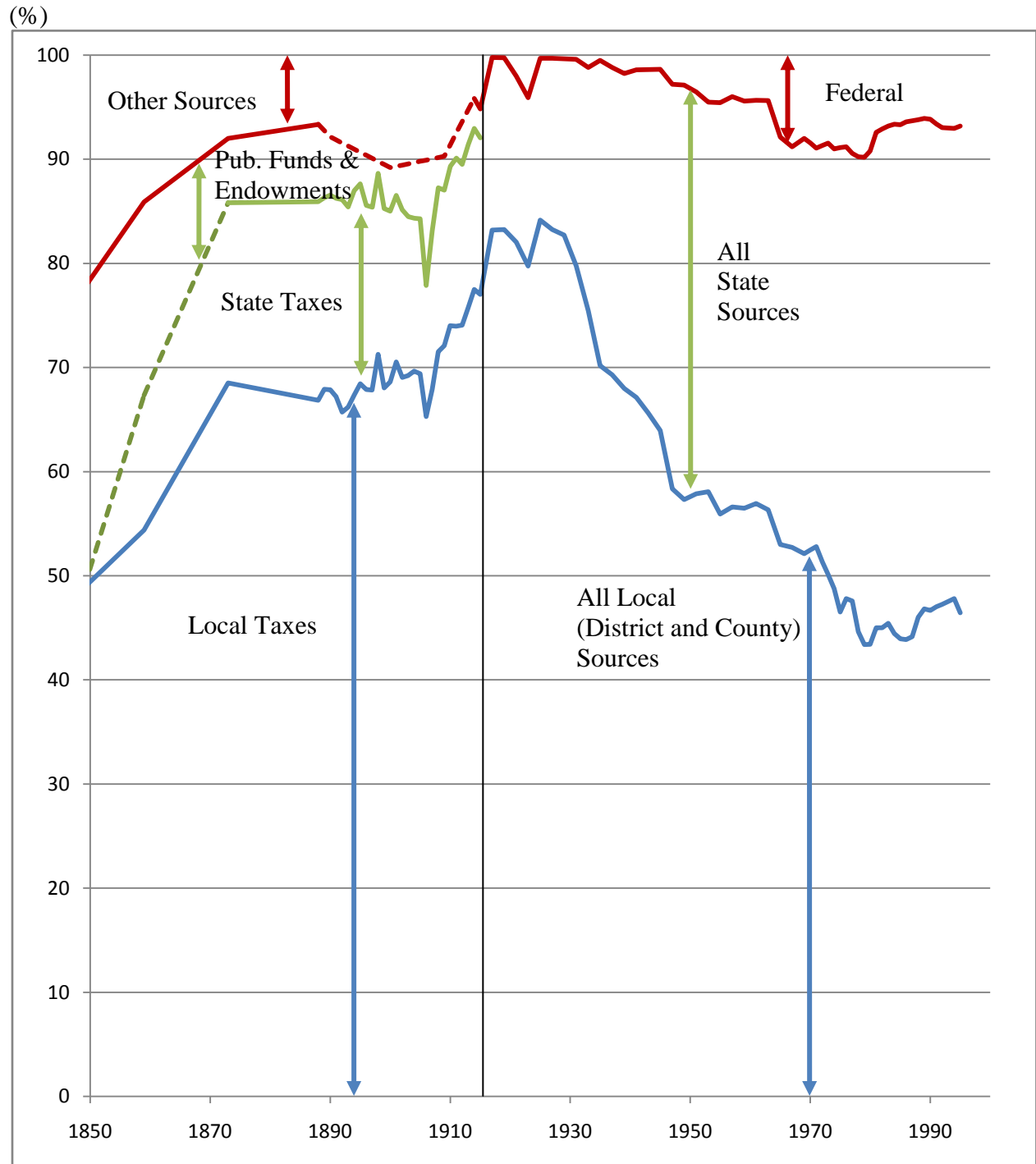
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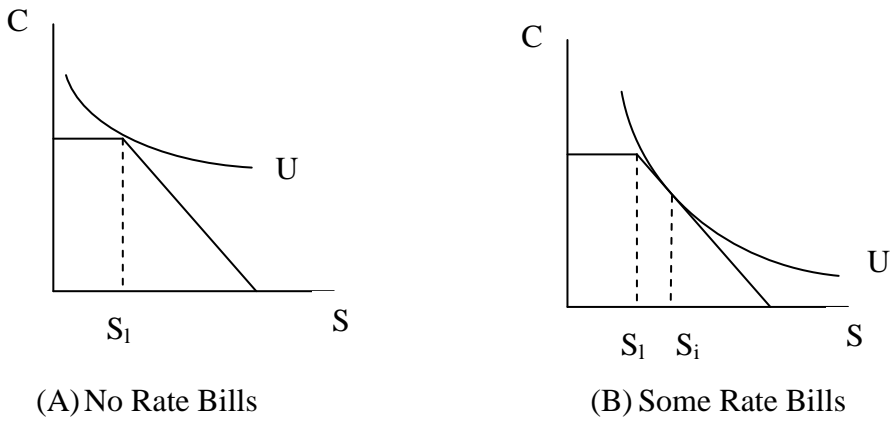
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**Figure 1. Sources of Revenue for U.S. Public Schools, 1850 - 1995**



Source: 1850 and 1860 decennial census, U.S. commissioner of education reports, 1874-1917. For 1917-1995, Historical Statistics of the United States.

**Figure 2. Optimal individual demand for public schooling**

**Table 1. Sources of Public School Incomes, 1850 - 1870 (%)**

Name	1850			1860			1870		
	Taxes	Funds and Endow- ments	Others	Taxes	Funds and Endow- ments	Others	Taxes and Funds	Endow- ments	Others
AL	0.3	18.8	81.0	13.0	40.7	46.2	71.0	1.3	27.7
AK	0.6	24.4	75.0	0.9	11.2	87.8	95.9	1.3	2.8
CA	0.0	100.0	0.0	43.2	37.8	19.0	93.3	0.0	6.6
CO							97.3	0.0	2.7
CT	17.1	69.4	13.6	41.2	45.2	13.6	85.3	0.0	14.7
DAKOTA							96.3	0.0	3.7
DE	32.9	63.3	3.8	47.7	43.5	8.8	94.3	0.0	5.7
DC	49.8	46.7	3.5	0.0	100.0	0.0	98.2	0.7	1.1
FL	0.0	1.1	98.9	3.9	12.0	84.1	80.6	5.2	14.2
GA	11.8	9.6	78.6	11.8	29.6	58.5	33.7	4.1	62.2
ID							100.0	0.0	0.0
IL	28.8	43.0	28.2	58.2	38.1	3.8	75.0	0.0	25.0
IN	23.6	46.0	30.4	47.9	46.4	5.7	97.0	0.0	3.0
IO	32.1	37.1	30.8	58.7	36.8	4.5	99.9	0.1	0.0
KS				65.8	3.8	30.4	97.7	0.0	2.3
KY	19.5	21.9	58.6	33.5	42.0	24.5	52.6	2.2	45.3
LA	55.8	27.6	16.6	47.7	40.0	12.3	94.1	0.0	5.9
ME	85.5	10.7	3.8	79.1	16.9	4.0	96.0	0.5	3.5
MD	39.4	31.3	29.4	51.5	27.8	20.7	90.7	0.4	8.9
MA	92.9	5.4	1.7	87.4	10.4	2.2	95.7	0.9	3.5
MI	53.0	32.3	14.7	58.3	30.7	11.0	93.3	0.0	6.7
MN				66.0	30.9	3.1	97.2	0.0	2.8
MS	13.2	14.3	72.5	7.7	33.5	58.8			
MO	1.9	51.0	47.1	14.5	60.9	24.6	97.3	0.2	2.6
MT							92.4	0.0	7.6
NE				57.0	17.3	25.8	99.6	0.0	0.4
NV							100.0	0.0	0.0
NH	84.5	10.5	5.0	82.6	11.4	6.0	97.2	0.4	2.4
NJ	35.1	31.7	33.2	62.3	21.3	16.4	95.5	0.0	4.5
NM				0.0	0.0	100.0	0.0	0.0	100.0
NY	51.4	39.7	8.9	56.7	37.0	6.4	94.1	0.1	5.8
NC	27.1	62.4	10.5	31.9	65.3	2.8	84.9	0.3	14.8
OH	38.4	47.1	14.5	59.4	36.8	3.8	99.6	0.1	0.3
OR	64.3	0.0	35.7	44.7	14.1	41.2	96.6	2.2	1.2
PA	83.1	15.2	2.2	87.4	10.7	1.9	96.8	0.1	3.1
RI	62.0	31.9	6.1	58.8	30.6	10.6	98.1	0.3	1.6

Name	1850			1860			1870		
	Taxes	Funds and Endow- ments	Others	Taxes	Funds and Endow- ments	Others	Taxes and Funds	Endow- ments	Others
SC	0.6	19.4	80.0	19.3	20.6	60.1	96.7	0.0	3.3
TN	2.3	54.6	43.1	5.5	50.1	44.4	85.0	0.2	14.9
TX	0.0	0.0	100.0	3.8	15.7	80.4			
UT	71.2	0.0	28.8	36.5	25.1	38.5			
VT	52.2	36.0	11.8	65.0	33.2	1.8	97.5	0.3	2.2
VA	13.8	23.2	63.0	14.5	21.9	63.6	56.1	1.1	42.8
WA				36.8	3.8	59.4	89.9	0.0	10.1
WV							95.9	0.3	3.8
WS	76.4	19.8	3.9	66.0	30.4	3.7	88.8	0.0	11.1
WY							100.0	0.0	0.0
US Total	48.9	28.7	22.4	54.4	31.5	14.1	91.9	0.2	7.9

Data: Decennial Census, 1850, 1860 and 1870.

**Table 2. State Abolition of Rate Bills**

State	Year	Public School Revenue from State Taxes, 1873 (%)	Sources
New Hampshire	No Rate Bills ever	71.5	Goldin and Katz (2003)
Maine	1820	17.0	Goldin and Katz (2003)
Massachusetts	1827	0.0	Swift (1911)
Delaware	1829	N/A	Swift (1911)
Pennsylvania	1834	8.2	Swift (1911)
Wisconsin	1848	0.0	Goldin and Katz (2003)
Indiana	1851	67.3	Swift (1911)
Ohio	1853	18.0	Swift (1911)
Illinois	1855	13.0	Cubberley (1919)
Iowa	1858	0.0	Swift (1911)
Vermont	1864	0.0	Cubberley (1919)
New York	1867	21.6	Swift (1911)
Connecticut	1868	12.9	Swift (1911)
Arkansas	1868	N/A	Swift (1911)
Rhode Island	1868	10.3	Swift (1911)
Michigan	1869	11.4	Cubberley (1919)
Florida	1869	N/A	Swift (1911)
Virginia	1870	38.1	Swift (1911)
New Jersey	1871	53.2	Cubberley (1919)
Utah	1890	13.7	Swift (1911)

Note: State tax shares are from 1874 *Report of the Commissioner of Education*

**Table 3. Percentages of Public School Income, 1873**

	Local Tax	State Tax	Funds Incomes	Others
Alabama	0.0	57.8	42.2	0.0
California	62.6	20.9	0.0	16.5
Connecticut	71.7	12.9	12.3	3.1
Georgia	0.0	43.4	0.0	56.6
Illinois	71.7	12.9	8.4	7.0
Indiana	25.0	67.3	7.8	0.0
Iowa	86.2	0.0	6.3	7.4
Kansas	72.5	6.9	11.2	9.4
Louisiana	34.6	39.9	5.2	20.4
Maine	48.2	17.0	11.4	23.4
Maryland	51.5	28.0	3.7	16.7
Massachusetts	97.0	0.0	1.9	1.0
Michigan	58.5	11.4	5.0	25.1
Minnesota	66.9	0.0	15.3	17.7
Mississippi	21.3	42.6	36.2	0.0
Nebraska	78.9	9.1	12.0	0.0
New Hampshire	17.9	71.5	7.4	3.2
New Jersey	41.1	53.2	5.7	0.0
New York	63.9	21.6	3.0	11.4
Ohio	71.8	18.0	7.5	2.7
Oregon	65.8	15.4	0.0	18.7
Pennsylvania	91.9	8.1	0.0	0.0
Rhode Island	73.5	10.3	4.4	11.8
South Carolina	22.9	68.2	0.0	8.8
Texas	47.8	36.9	15.4	0.0
Vermont	92.2	0.0	7.8	0.0
Virginia	44.1	38.1	8.5	9.3
West Virginia	60.4	0.0	25.4	14.3
Wisconsin	82.5	0.0	7.6	9.9
Arizona	50.0	50.0	0.0	0.0
Colorado	100.0	0.0	0.0	0.0
Dist. Of Columbia	51.9	0.0	0.0	48.1
Idaho	46.3	12.4	0.0	41.3
Utah	17.2	13.7	0.0	69.2
U.S. Total	68.5	17.3	6.2	8.0

Data: 1874 *Report* of the Commissioner of Education

Note: States without returns are excluded. U.S. total is calculated by only available states.

**Table 4. Enrollment Rates as a Percentage of 5-14 population, 1850-1870**

	Public School Enrollment Rates			Total School Enrollments Rates		
	1850	1860	1870	1850	1860	1870
ALABAMA	12.7	22.4	24.6	16.6	27.1	27.7
ARIZONA						10.3
ARKANSAS	13.4	15.0	55.9	17.5	18.6	63.3
CALIFORNIA	1.2	55.3	66.7	5.4	63.5	75.5
COLORADO			61.1			68.1
CONNECTICUT	91.5	90.5	81.9	101.4	101.1	91.3
DELAWARE	36.2	41.1	53.3	44.9	48.3	62.0
DIST COLUMBIA	16.9	13.8	40.2	36.7	44.7	70.1
FLORIDA	7.7	5.1	19.6	12.9	16.5	28.4
GEORGIA	12.2	18.5	3.4	16.1	23.3	20.4
IDAHO			78.5			90.5
ILLINOIS	51.5	100.3	102.4	53.4	104.1	116.0
INDIANA	55.3	80.2	98.5	57.8	87.2	102.6
IOWA	52.4	93.3	64.3	54.5	96.8	67.9
KANSAS		17.9	65.5		22.3	67.5
KENTUCKY	25.1	48.5	60.1	30.2	54.8	67.5
LOUISIANA	20.4	18.9	14.3	25.1	26.6	33.3
MAINE	131.9	129.2	112.8	136.6	135.2	120.1
MARYLAND	22.0	21.0	43.0	29.8	24.1	55.5
MASSACHUSETTS	87.9	85.2	84.0	95.1	91.7	93.5
MICHIGAN	101.0	111.5	88.9	102.8	117.8	93.0
MINNESOTA		79.3	87.4		84.3	90.6
MISSISSIPPI	10.6	14.4		14.9	18.4	19.6
MISSOURI	26.2	55.2	68.6	31.2	62.9	79.3
MONTANA			89.5			101.2
NEBRASKA		49.5	60.1		50.4	62.1
NEVADA			41.9			53.6
NEW HAMPSHIRE	110.3	109.0	98.9	118.5	127.3	107.7
NEW JERSEY	64.0	71.5	38.2	72.5	80.4	61.9
NEW MEXICO		1.0	0.8		2.5	7.6
NEW YORK	93.7	81.0	74.4	101.0	91.4	89.1
NORTH CAROLINA	41.8	37.5	14.7	45.2	42.7	22.8
OHIO	88.6	98.5	110.0	92.1	108.7	117.9
OREGON	2.6	64.9	124.8	29.5	81.6	136.4
PENNSYLVANIA	69.4	78.1	87.3	73.9	83.2	95.0
RHODE ISLAND	75.4	72.1	63.6	81.1	81.5	76.0
SOUTH CAROLINA	9.6	10.6	16.8	14.1	15.6	20.4
TENNESSEE	34.7	43.9	24.3	38.5	49.8	36.9
TEXAS	13.1	20.6		19.0	25.6	10.1
UTAH		52.5			54.5	83.6
VERMONT	125.7	117.0	75.0	135.6	128.6	90.7
VIRGINIA	16.9	19.6	2.8	19.5	23.3	19.1
WASHINGTON		52.9	88.2		62.5	101.9
WEST VIRGINIA			84.1			87.0
WISCONSIN	77.1	100.2	117.9	80.8	106.0	120.4

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WYOMING			25.8			44.9
DAKOTA TERRITORY			43.8			45.0
UNITED STATES	54.7	62.8	64.9	59.4	69.4	75.1

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Source: Decennial Census Reports

**Table 5. Public School Income per Pupil 1850-1870**

	Public School Income per Pupil (1860\$)			% From Public Resources		
	1850	1860	1870	1850	1860	1870
ALABAMA	12.1	7.9	5.7	19.0	53.8	72.3
ARIZONA						
ARKANSAS	5.6	6.3	4.7	25.0	12.2	97.2
CALIFORNIA	79.9	14.1	13.1	100.0	81.0	93.4
COLORADO			10.1			97.3
CONNECTICUT	3.5	4.5	9.8	86.4	86.4	85.3
DELAWARE	5.3	5.8	4.6	96.2	91.2	94.3
DIST COLUMBIA	7.1	3.3	24.0	96.5	100.0	98.9
FLORIDA	13.0	9.9	4.6	1.1	15.9	85.8
GEORGIA	6.1	8.0	9.6	21.4	41.5	37.8
IDAHO			9.4			100.0
ILLINOIS	3.0	5.1	7.0	71.8	96.2	75.0
INDIANA	2.1	2.3	2.8	69.6	94.3	97.0
IOWA	1.9	3.7	9.6	69.2	95.5	100.0
KANSAS		4.8	6.9		69.6	97.7
KENTUCKY	3.2	3.2	3.2	41.4	75.5	54.7
LOUISIANA	15.2	14.7	11.2	83.4	87.7	94.1
MAINE	1.8	2.4	3.4	96.2	96.0	96.5
MARYLAND	7.2	6.7	8.4	70.6	79.3	91.1
MASSACHUSETTS	6.2	7.5	8.1	98.3	97.8	96.5
MICHIGAN	1.7	3.2	5.2	85.3	89.0	93.3
MINNESOTA		2.8	5.3		96.9	97.2
MISSISSIPPI	14.7	12.5		27.5	41.2	
MISSOURI	3.4	4.6	5.9	52.9	75.4	97.4
MONTANA			13.0			92.4
NEBRASKA		3.8	6.5		74.2	99.6
NEVADA			26.7			100.0
NEW HAMPSHIRE	2.4	3.1	4.1	95.0	94.0	97.6
NEW JERSEY	3.0	4.9	11.9	66.8	83.6	95.5
NEW MEXICO		8.5	3.2			
NEW YORK	2.4	4.8	7.6	91.1	93.6	94.2
NORTH CAROLINA	1.7	2.6	3.0	89.5	97.2	85.2
OHIO	1.7	4.3	7.0	85.5	96.2	99.7
OREGON	53.4	6.0	2.8	64.3	58.8	98.8
PENNSYLVANIA	3.5	4.4	6.0	97.8	98.1	96.9
RHODE ISLAND	4.7	6.2	8.0	93.9	89.4	98.4
SOUTH CAROLINA	12.2	9.9	5.4	20.0	39.9	96.7

	Public School Income per Pupil (1860\$)			% From Public Resources		
	1850	1860	1870	1850	1860	1870
TENNESSEE	2.0	2.9	5.0	56.9	55.6	85.1
TEXAS	6.0	12.0		0.0	19.6	
UTAH		5.1			61.5	
VERMONT	2.0	2.7	6.1	88.2	98.2	97.8
VIRGINIA	5.1	5.8	6.9	37.0	36.4	57.2
WASHINGTON		18.4	4.3		40.6	89.9
WEST VIRGINIA			3.6			96.2
WISCONSIN	2.1	3.0	4.0	96.1	96.3	88.9
WYOMING			10.0			100.0
DAKOTA			4.3			96.3
UNITED STATES	3.1	4.5	6.3	77.6	85.9	92.1

Source: Decennial Census and *Historical Statistics of the United States*

Note: Public school incomes include all the sources, and they are adjusted by CPI from *Historical Statistics of the United States*, millennial edition.

**Table 6. Determinants of Votes for and against New York Free School Referenda, 1849 and 1850.**

	Net majority for free schools, 1849, as % of franchised men	Net majority for free schools, 1850, as % of franchised men	% of votes that favored free schools, 1850
$\Delta$ local tax rate implied by 1849 law	-3.62* [1.49]	-4.67** [1.37]	-3.28** [1.10]
% of IPUMS voters (men) individually owning no real estate	0.46** [0.13]	0.52** [0.13]	0.48** [0.13]
% of IPUMS voters (men) whose family had no 5-16 children	-0.17 [0.17]	0.09 [0.16]	0.21 [0.15]
Urban share of county population (%)	-0.09 [0.08]	0.11 [0.06]	0.22** [0.06]
Constant	5.42 [8.37]	-31.31** [8.71]	14.42 [9.25]
R-squared	0.26	0.60	0.70

For 57 New York state counties.

Robust standard errors in brackets

\* significant at 5%; \*\* significant at 1%

Sources: Vote returns from Finegan (1921). Changes in local tax rates are defined by the amount of rate bills over the assessed value of the total assessed property values, both of which were reported in the Reports of the Superintendent of Common Schools of the State of New York. Real estate ownership and having children distributions were calculated from the IPUMS 1850 1% sample.. Urban shares are from the 7th decennial census data compiled by Michael Haines (ICPSR 2896).

Notes: The results are robust for using the family real estate distribution (instead of individuals' real estate) and for using children aged 5-21 (instead of 5-16).

**Table 7. Determinants of Votes for and against Indiana Free School Referenda, 1848 and 1849.**

	% of vote that favored free schools, 1848	% of vote that favored free schools, 1849
Local voluntary property tax rate, 1849	7.09* [3.47]	6.04* [2.68]
% of IPUMS voters (men) born in Southern states	-0.78** [0.09]	-0.52** [0.09]
Public School Revenue per child of school ages, proposed by state taxation	25.26 [12.83]	
Public School Revenue per child of school ages, proposed by county taxation		19.88* [9.42]
% of IPUMS voters (men) individually owning no real estate	-0.14 [0.15]	-0.09 [0.11]
Academy enrollment rate (%)	-2.04** [0.62]	-2.15** [0.66]
Number of 5-16 children per 100 voters	-0.23 [0.21]	-0.23 [0.21]
% of IPUMS voters (men) whose family had no 5-16 children	0.16 [0.16]	0.17 [0.15]
Constant	93.14* [37.18]	87.36* [34.07]
Observations	77	68
R-squared	0.66	0.65

Robust standard errors in brackets

\* significant at 5%; \*\* significant at 1%

**Table 8. Public and Total School Income per Child of Ages 5-14, among States in 1850-1870**

	Public School Income	Public School Income (from Public Sources)	Total School Income
Repeal of rate bills	1.54** [0.33]	1.81** [0.32]	1.09* [0.44]
% of IPUMS voters (men) individually owning no real estate	-2.81 [1.96]	-2.14 [1.98]	6.13 [4.09]
Coefficient variation of the individual voters' real estate distribution	0.2 [0.14]	0.19 [0.14]	0.07 [0.25]
True Value of Real and Personal Property per child of ages 5-14 (\$1,000)	1.04** [0.24]	0.95** [0.21]	1.51** [0.36]
Constant	1.28 [0.95]	0.63 [0.95]	-2.22 [1.74]
R-squared	0.5	0.51	0.47

## Note:

Data are 93 observations of 31 states from the 1850, 1860, and 1870 decennial censuses and IPUMS 1% samples. School incomes and property value are in 1860 dollars, adjusted by CPI from *Historical Statistics of the United States, Millennial Edition*. They are also divided by numbers of children of ages 5-14. Public sources include taxes, public fund income, and endowment income.

Robust standard errors in brackets

\* significant at 5%; \*\* significant at 1%

**Table 9. Effects of Rising Public School Income 1850-1870 (OLS)**

	Public school enrollment rate (% of 5-14 kids)	Number of public schools per 1,000 kids of ages 5-14	Number of public school teachers per 1,000 kids of ages 5-14
Public school income per child of ages 5-14 (1869 \$)	5.61** [1.28]	0.88** [0.29]	1.46** [0.39]
Public school income from private contributions (%)	-0.42** [0.11]	-0.07** [0.02]	-0.05* [0.02]
Constant	67.50** [10.21]	15.72** [2.86]	15.25** [3.07]
R-squared	0.88	0.93	0.96

	Public school enrollment rate (% of 5-14 kids)	Number of public schools per kid of ages 5-14	Number of public school teachers per 1,000 kids of ages 5-14
Public school income from public sources per child of ages 5-14 (1869 \$)	5.58** [1.41]	0.90** [0.31]	1.47** [0.44]
Public school income from private contributions (%)	-0.34** [0.12]	-0.06* [0.02]	-0.03 [0.03]
Constant	69.83** [9.52]	16.01** [2.74]	15.81** [2.90]
R-squared	0.88	0.93	0.95

## Note:

Data are 93 observations of 31 states from the 1850, 1860, and 1870 decennial censuses and IPUMS 1% samples. School incomes are in 1860 dollars, adjusted by CPI from Historical Statistics of the United States, Millennial Edition. Public sources include taxes, public fund income, and endowment income. All models include year and state fixed effects.

Robust standard errors in brackets

\* significant at 5%; \*\* significant at 1%

**Table 10. Effects of Rising Public School Income 1850-1870 (2SLS)**

	Public school enrollment rate (% of 5-14 kids)	Number of public schools per 1,000 kids of ages 5-14	Number of public school teachers per 1,000 kids of ages 5-14
Public school income per child of ages 5-14 (1869 \$)	5.41** [1.69]	0.71 [0.48]	1.82* [0.74]
Public school income from private contributions (%)	-0.65** [0.11]	-0.15** [0.03]	-0.18** [0.04]
Constant	56.77** [8.41]	14.86** [2.32]	16.08** [3.17]
R-squared	0.43	0.23	0.28

	Public school enrollment rate (% of 5-14 kids)	Number of public schools per 1,000 kids of ages 5-14	Number of public school teachers per 1,000 kids of ages 5-14
Public school income from public sources per child of ages 5-14 (1869 \$)	5.89** [1.86]	0.81 [0.53]	2.07* [0.82]
Public school income from private contributions (%)	-0.58** [0.13]	-0.14** [0.04]	-0.15** [0.05]
Constant	56.01** [8.60]	14.62** [2.36]	15.54** [3.22]
R-squared	0.42	0.23	0.28

**Note:**

Data are 93 observations of 31 states from the 1850, 1860, and 1870 decennial censuses and IPUMS 1% samples. School incomes are in 1860 dollars, adjusted by CPI from Historical Statistics of the United States, Millennial Edition, and instrumented by the binary variable of state abolition of rate bills, percentage of voters owning no real estate, coefficient variation of voter's distribution of owned real estates, property valuation per child of ages 5-14, percentage of school incomes from private contribution, year fixed effects, and state fixed effects. Public sources include taxes, public fund income, and endowment income.

Robust standard errors in brackets

\* significant at 5%; \*\* significant at 1%

**Table 11. Change in Enrollment Inequality across Counties within States, 1850-1870**

OLS	Theil Index	Coefficient Variation	P90/P10	Theil Index	Coefficient Variation	P90/P10
Public school income per child of ages 5-14 (1869 \$)	-0.04 [0.02]	-0.06* [0.03]	-0.87 [0.56]			
Public school income from public sources per child of ages 5-14 (1869 \$)				-0.05 [0.02]	-0.07* [0.03]	-1.02 [0.66]
Constant	0.2 [0.13]	0.37 [0.19]	5.18 [2.86]	0.19 [0.13]	0.36 [0.18]	5.25 [2.84]
R-squared	0.76	0.87	0.66	0.76	0.87	0.67
2SLS	Theil Index	Coefficient Variation	P90/P10	Theil Index	Coefficient Variation	P90/P10
Public school income per child of ages 5-14 (1869 \$)	-0.02** [0.00]	-0.04** [0.01]	-0.41** [0.10]			
Public school income from public sources per kid of ages 5-14 (1869 \$)				-0.02** [0.01]	-0.05** [0.01]	-0.41** [0.10]
Constant	0.11** [0.04]	0.40** [0.06]	3.88** [0.61]	0.11** [0.04]	0.41** [0.06]	3.84** [0.60]
R-squared	0.13	0.33	0.17	0.13	0.32	0.16

Note:

The data consist of 90 observations of 30 states from the 1850, 1860, and 1870 decennial censuses and IPUMS 1% samples. The District of Columbia is excluded from the previous data set, and California is excluded for the models of the ratio of 90th percentile to 10th percentile. School incomes are in 1860 dollars, adjusted by CPI from *Historical Statistics of the United States, Millennial Edition*. For the two stage least squares, the same instruments in Table 10 were used. Public sources include taxes, public fund income, and endowment income. All models include the share of public school income from private contributions, and its effects are clearly zeros for all the models. Year and state fixed effects are also included in the OLS models.

Robust standard errors in brackets

\* significant at 5%; \*\* significant at 1%