THE EDUCATION ADEQUACY ACT: a Formula for the Distribution of State Aid to Schools

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When the Rhode Island General Assembly passed the Education Adequacy Act in June of 2010, it was a bold new public education funding equalization program that had been designed by Brown University experts and featured a formula that included a quadratic mean. No other state has utilized this quadratic mean formula. The new state aid formula is planned to cost the state the same amount as the current system but redistributes those funds according to the latest data on student enrollment, student needs, and local ability to pay.

The new formula addresses a number of problems. The primary problem is that communities with low property values and large student populations to educate cannot raise sufficient funds locally because their primary source of income is the property tax. States have passed public education finance equalization laws to assist such communities with state funds which are derived primarily from the income tax. RI had a functioning education equalization formula until the '90s. Then the program funds were frozen because of state budget shortfalls.

Thereafter it increased only by across the board percentages, regardless of changes in enrollment, property values and income levels. Another problem was that communities could not predict how much aid they were going to receive from the state and could not make plans with a reasonable degree of certainty. The formula set out in the 2010 Education Adequacy Act enables any local government or interested citizen to access the necessary figures, insert them into the formula, and determine how much aid they can expect in the coming year.

Three numbers are required. First is **$8,295**, referred to as the Core Instructional Amount per pupil **(**CIA). Included in this amount are teachers', administrators', other support staff members' salaries, and supplies and books. Exempt are school construction costs.
Second is the number of students in the district, referred to as Resident Average Daily Membership (RADM.) This number starts with a straightforward count. (Computerized attendance records have made this number quite accurate). Consideration of the increased needs of students living in poverty is provided by multiplying the number of students by the percentage of students receiving free or reduced price lunches, then "weighting" this number by 40% as stipulated by the law. This is referred to as children, prekindergarten (PK) through grade 12, on the federal free and reduced price lunch program (FRPL.) In essence, a student from a low-income family counts as 1.4 students. There are solid reasons for using the number of students receiving free or reduced price lunches to indicate the need for increased educational services. Several studies show a very high statistical correlation between increased educational services and the lunch program data. These studies have been based upon statistics collected and published by the Federal government.

The state education aid program is called a foundation program in which its cost is determined by multiplying the Core Instructional Amount by the weighted enrollment.
Third are the numbers that show a community's ability to contribute to the costs of educating

its students, measured by its property tax base and income level. These start with the community's EWAV (pronounced E-wave), which stands for Equalized Weighted Assessed Valuation and is the market value of property adjusted by the relation of the community's median income to the state's median income. It has been used for some time in many contexts and is widely accepted in RI.

THE FORMULA CALCULATIONS

To determine the Total Foundation Amount (TFA), first find the Weighted number of Students (WS)
Weighted Students = (RADM) + (0.4 x PK12 FRPL)
Then multiply WS by Core Instructional Amount (CIA) of $8,295:
Weighted Students x $8,295 CIA = Total Foundation Amount.

SSRC (State Share Ratio for the Community) is a calculation of the percentage of the total foundation cost that the town will get from the state; the SSRC will later be adjusted by the quadratic mean. The law prescribes that we calculate the SSRC as follows: First the EWAV is computed per student. Next that per student base is compared to the EWAV per student for the state as a whole. Then we create a mathematical provision for balance between the state's contribution and the communities'. By this law, the state pays 52.5% of the total cost of the program and the cities and towns pay 47.5%. We represent the entire amount with 1 (as in 100%). Then we multiply the ratio of community tax base per pupil to state tax base per pupil by 47.5% and subtract this from 1. This quantity is denoted SSRC in the formula:
SSRC = 1 – 0.475 x (community EWAV per student divided by state EWAV per student)

Next, according to the law, SSRC is adjusted by the "quadratic mean" of two numbers, the SSRC calculated above, and the percentage of students in prekindergarten through grade 6 receiving free or reduced price lunches (%PK6 FRPL.) The result is called the State Share Ratio, abbreviated SSR**.** To determine the quadratic mean, the SSRC is squared, %PK6 FRPL is squared, the resulting two percentages are averaged (added together and divided by 2) and then the square root of the resulting number is taken:
SSR = square root of {(SSRC squared + %PK6FRPL squared) divided by 2}.

Although careful attention is required when following many similar abbreviations through the process, these abbreviations are the ones that are used in the law and the RI Department of Education (RIDE) so we are using them here. The FRPL used in the SSRC calculation above only includes those in Prekindergarten through grade 6, rather than all the poor children; why is not explained in the law. Also not explained is why the poor children appear twice in the formulas, once when giving added weight to poor children in the numbers of children needing schooling and again when calculating capacity to pay for schooling in the quadratic mean formula. One rationale for numbers of poor children appearing twice is that they are being used both as a stand-in for the poverty level of the city or town and as an indicator of the need for special services in the school population.

APPLYING THE FORMULA

We can select a town to see how the formula works. The town of Smithfield has neither a large proportion of students living in poverty nor a substantial proportion of property with high-assessed values. Its EWAV was $3,383,407,993. It had 2,473 students in kindergarten through twelfth grade.
So to do our first calculation, the State Share Ratio for the Community (SSRC), we start by computing Smithfield's EWAV per student:
$3,383,407,993 / 2,473 = $1,368,139.10
Then we compute the state's EWAV per student.
$141,599,970,283 / 139,934 = $1,011,905.40
Next we divide the Smithfield EWAV per student by the state's EWAV per student:
$1,368,139.10 / $1,011,905.40 = 1.352042492
Finally we take 47.5% of that ratio:
1.352042492 x 0.475 = 0.642220184
and subtract from 1:
1 - 0.642220184 = 0.357779816.
This gives us the SSRC for Smithfield of 35.8%.
To do the second calculation, the State Share Ratio (SSR) for Smithfield, take the SSRC of 35.8% and the PK6FRPL of 9.0%:
SSR = square root of (SSRC squared + %PK6FRPL squared)/2
SSRC squared = 0.357779816 squared = 0.357779816 x 0.357779816 = 0.128006397
%PK6FRPL squared = 0.090 squared = 0.090 x 0.090 = 0.0081
SSRC2 + %PK6FRPL2 = 0.128006397 + 0.0081 = 0.136106397
0.136106397/ 2 = 0.068053199
The square root of 0.068053199 = 0.260870081
This gives us the SSR for Smithfield of 26.1%
To determine the Total Foundation Amount (TFA), first determine the weighted students (WS):
RADM + (0.4 x PK12 FRPL) = 2,471 + (0.4)233 = 2,471 + 93.2 = 2,564.2 WS
Then multiply Weighted Students (WS) by Core Instructional Amount (CIA):
2,564.2 WS x $8,295 CIA = $21,270,039 Foundation Total Amount (FTA) for Smithfield.
To find out the state share of the FTA for Smithfield, multiply that total by the SSR:
$21,270,039 FTA x 0.260870081 SSR = **$5,548,717 State funds for Smithfield**

THE EDUCATION ADEQUACY ACT DISCUSSION

The Education Adequacy Act goes into effect in July of 2011. Many communities gain substantial increases of funds, to be phased in over seven years: Providence gains nearly $30 million; Cranston, nearly $11 million; Pawtucket, $7 million; Cumberland, nearly $5 million; Woonsocket, $4 million; Barrington, $4 million; and East Providence, $4 million.
A basic question is, why are these formulas so complex? One response is that the factors in these formulas are complex; see the glossary below. Care should be taken, however to make funding formulas as simple as possible while preserving necessary detail. Transparency in government is an important foundation in a democracy. The people need to understand what their government is doing, especially when it is spending the people's dollars.

The question has arisen, why not use a simple average of the two percentages instead of a quadratic mean, especially since that in this most public of contexts, transparency is much to be desired? In the case of Smithfield, a simple average would give them a state share ratio of 22.4%, 3.7% percentage points lower than the number obtained by the more complicated quadratic mean method. If we look at Barrington, a district with a smaller proportion of lower income students and a greater capacity to pay we find a simple mean would give a state share ratio of 18.1%, 4.9 percentage points lower than the quadratic mean. In Pawtucket the %PK6 FRPL of 76 is very close to the SSRC so the simple mean and the quadratic mean are nearly identical. The student population of Burrillville is comprised of 29% students PK-6 receiving free or reduced price lunches while it has a relatively small tax base yielding an SSRC of 67.7%. Computing the simple mean results in 47.5 % while the quadratic mean result is 50.98%. In each case above, the city or town gets a higher State Share Ratio or percentage from the quadratic mean than from a simple mean.

Another question is, why do we need the quadratic mean formula at all? The formula which had been used in RI to measure local wealth capacity was simply the State Share Ratio of the Community (SSRC) described above. In that formula, local wealth per pupil is compared with state average wealth per pupil; communities with lower wealth per pupil than state average got higher state aid per pupil. However, one city and five towns have SSRC of 0%, because their wealth compared to the state average wealth is so high. So by the SSRC formula alone, they would get no state aid at all. By adding a poor children factor to the SSRC in calculating the SSR with the quadratic mean, it assures that all communities will get some state aid since all have some poor children.

Politically, a formula that gives no aid to several communities would be very difficult to pass unless there were provisions that would give some aid to these communities. Provisions that are popular would “hold harmless” these communities. “Hold harmless” means that the community would receive no less than they had received the year before. However, cities and towns have challenged in court equalization formula legislation with hold harmless provisions. With this quadratic mean formula, the six communities which would have received $0 aid under the SSRC formula alone, will receive the following state aid ratios and aid: Charlestown: 14.4% and $1,279,383; Jamestown: 3.5% and $205,291; Little Compton: 3.5% and $126,870; Narragansett: 12.7% and $1,607,955; Newport: 43.8% and $9,186,000; and New Shoreham (Block Island): 9.9% and $113,977.

A further question is, how did the Education Adequacy Act pass since some communities do lose substantial sums of money? Central Falls loses over $12 million; the Bristol-Warren School District loses over $8 million; South Kingstown loses $3 million; Middletown, Portsmouth, and the Exeter-West Greenwich School District each lose over $2 million. One way the blow is being softened for communities losing funds is that the losses will be phased in over 10 years. For districts receiving additional state education aid, funding is increased over a period not to exceed seven years.

An important incentive to pass a public education funding equalization program in 2010 was

that RI was competing for a substantial sum of federal money which they could receive only if they passed a public education equalization formula which did not have hold harmless clauses. Since the bill passed, RI is receiving approximately $75 million.

GLOSSARY:

CIA: Core Instructional Amount, which is $8,295 for the year beginning July 2011.
EWAV: Equalized Weighted Assessed Valuation as defined in RI General Laws 16-7-21 and calculated by the RI Division Municipal Finance. This measure considers the total assessed valuations of real and tangible property for each city and town as of December 31 of the preceding calendar year, adjusted for true market value, and adjusted for the ratio of median family income for the city or town as compared to the statewide median family income as reported in the latest available federal census data.
PK12 FRPL: Number of children in grades Prekindergarten through 12 enrolled in the free and reduced price lunch program as calculated by RI Department of Education.
% PK6 FRPL: Percentage of children in grades Prekindergarten through 6 enrolled in the free and reduced price lunch program as calculated by RI Department of Education.
RADM: Resident Average Daily Membership as defined in RI General Laws 16-7-22 and calculated by the RI Department of Education.
SSR: State Share Ratio, the percentage of the TFA that each community receives from the state. It is:
SSR = square root of {(SSRC squared + %PK6 FRPL) divided by 2}.
SSRC: State Share Ratio for the Community as defined in RI General Laws 16-7-20. It is the preliminary percentage of the the TFA that each community receives before the quadratic mean formula is applied:
SSRC = 1 – 0.475 x (community EWAV per pupil / state EWAV per pupil).
TFA: Total Foundation Amount is the total cost of the program. TFA is the Core Instructional Amount multiplied by the sum of the Resident Average Daily Membership and the Weighted Students. Statewide, the state share of the TFA is 52.5% and the local share is 47.5%.
WS: Weighted Students.

Sources:

1. Data provided to the General Assembly by Fiscal Advisory Staff, June 30, 2009.
2. Email letter from Edith H. Ajello, Representative, RI House District 3 to her neighbors, September, 2010.
3. “A Funding Formula for Rhode Island”, power point presentation, November 10, 2010, RIDE
4. Memo from Deborah Gist, Commissioner, RIDE, to Board of Regents for Elementary and Secondary Education, dated March 4, 2010, entitled, “Endorsement of the Proposed Education Aid Funding Formula Methodology and Calculations.”
5. “2007 EQUALIZED WEIGHTED ASSESSED VALUATIONS OF RHODE ISLAND MUNICIPALITIES”, RI Division of Municipal Finance.
6. “2010 – S 2770 SUBSTITUTE A AS AMENDED and H 8094 SUBSTITUTE A AS AMENDED, STATE OF RI, THE EDUCATION ADEQUACY ACT”, RI General Assembly.