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The Impact of Maine's Essential Programs and Services Program on Student Equity:

Early evidence

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During the last decade Maine's K-12 public school system has undergone several significant changes. Among the most influential new laws governing the education system were passage of the *Essential Program and Services Funding Act* (2004) and LD1 *Act to Increase the State Share of Education Costs, Reduce Property Taxes and Reduce Government Spending at all Levels* (2006). The 2004 act established the methodology for calculating the total cost of K-12 education, called the total K-12 Allocation, and the second act established how the funding of the Total Allocation was to be shared between the State and local communities.

In fiscal year 2005-06 the state began ramping up school funding toward full implementation of the funding act. The purpose of this present study was to assess the early impacts of the recent changes in school district cost allocations and expenditures on student equity. Although the funding act has not been fully implemented, it is important to determine if the funding act is beginning to achieve one of its major policy objectives; that is, improving student equity.

Historical Background

The new laws ushered in at least three major changes to Maine's school funding system: (1) a change in the calculation of the total cost allocation for each School Administrative Unit (SAU); (2) a change in the state and local cost sharing formula; and (3) a substantial increase in the amount of state funding to local school districts. State General Purpose Aid to Schools increased from $737 million in 2004-05, the fiscal year before EPS implementation, to almost $978 million in 2007-08. The increase in state funding was intended to be distributed between increases in education spending and local property tax relief.

Prior to implementation of EPS, general purpose aid was distributed to school districts in two stages under a minimum guaranteed foundation program. First, money for program costs—special education, transportation, career technical education, and debt service—was distributed according to a prescribed reimbursement formula. The program cost subsidy to each district was determined by the district's prior expenditures and its ability to pay. Next, remaining available general purpose aid funds were distributed for operating costs. A fixed amount of money, the per-

pupil guarantee, was allocated to each SAU for each of its pupils. Each SAU's total allocation was then split between the state share and the local share using an ability to pay index, which at that time was a function of both property wealth and household income. The resulting state share was provided to each SAU as an operating cost subsidy. Thus, the State guaranteed an equal amount of resources for the education of each Maine pupil in terms of State guaranteed operating costs. SAUs could raise additional local funds in support of their schools beyond the State guaranteed amount, which resulted in some schools spending more than other districts in providing education for their pupils. Thus, school districts spent considerably different amounts on education, but not based primarily on differences in student population demographics, but on the ability of local communities to raise property tax revenue.

The move to EPS, an adequacy-based funding system, followed a blueprint laid out in a 1998 report by the State Board of Education, prepared at the request of the Maine State Legislature (State Board of Education, 1998). A major premise of the blueprint was that in order to provide all students equal opportunities to achieve high standards of learning, some schools will need more resources than others. Not all children enter school equally prepared to learn, but in order for all children to exit high school equally well prepared for career, college, and citizenship, some schools need more resources to ensure success for all students; more resources based on student needs, not local property values. As an adequacy-based school funding system, the Essential Programs and Services Funding Act was intended to ensure that each school has the appropriate level of funding sufficient for the resources they need to give all students the opportunity to meet the state learning standards (MRS Title 20-A, Chapter 606-B, § 15671).

Under the EPS funding system, the calculation of the state subsidy for each school district is carried out in two phases. First, a total cost of education is calculated according to the cost model outlined in the statute. After full implementation of EPS, originally scheduled for 2009-10, this cost of education will be what is called a district's total allocation. During the ramping up period, the total allocation is an annually increasing percentage of the total cost of education. This percentage was 95% in 2007-08.

Second, the total cost allocation is divided into state and local shares according to the funding formula. The local share is an amount determined by each district's equalized property valuation and a statewide required property tax rate called the mill rate expectation. The state share, which results from subtracting the local share from the total allocation, is the State Subsidy.

2

In FY 2008, the total allocation was 95% of the adequacy cost with a 51.60% state share (MRS Title 20-A, Chapter 606-B, § 15671). Upon full implementation, the total state and local allocation will be 100% of the computed adequacy cost with a 55% state share.

Another change to the funding system that occurred between 2004-05 and 2007-08, a result of a statewide referendum passed in June 2004, and unrelated to the basic premise of the EPS model, was an increase in the minimum state subsidy from a 4% state share to 100% of the special education costs, later reduced to 50%. This and other non-EPS-related changes to the funding system, as well as local decisions about additional funds raised for education, have affected the actual distribution of education resources across Maine. Therefore, as one reviews education spending across the State, it is important to recognize that not all changes in funding equity, nor the lack thereof, are directly attributable to adoption of the EPS adequacy-based funding model.

Measuring Vertical Equity

In discussions of equity in school funding, it is customary to distinguish two aspects of equity: horizontal and vertical equity. Following the general principle of justice, that like cases should be treated alike, and unalike cases should be treated unalike, horizontal equity is defined as the equal treatment of equals, and vertical equity is defined as the unequal treatment of unequals. Students with the same educational needs receiving the same educational resources would constitute horizontal equity. Students with greater needs receiving more educational resources would demonstrate vertical equity. Because Maine's EPS funding formula is designed to reflect different student needs by allocating different amounts of resources, the formula is designed to create greater vertical equity.

Berne and Stiefel (1984) catalogued several customary measures of equity in school finance in their classic work on the subject, including vertical equity measures such as a need-adjusted, weighted dispersion measure. The weighted dispersion measure adjusts the per-pupil amount based on the characteristics of the pupils according to their educational needs. Greater pupil weights are assigned to pupils, such as special education students, economically disadvantaged pupils, and limited English proficient pupils, because they are seen as having greater educational needs.

The purpose of this study was to compare the equity in the distribution of school resources before and during EPS implementation. The core question was: Has school funding become more equitable for students since implementation of the EPS funding formula in Maine?

Data on expenditures, enrollment, student characteristics, state and local revenues, from the Maine Department of Education, were used in this analysis. Results were analyzed for the 268 school districts existing in both FY2005 and FY 2008 for which complete expenditure data was available, which is 93% of districts in Maine in FY 2008.

In Maine, where neither the constitution nor state laws spell out an exact amount of educational resources local governments are required to provide, no single body chooses the specific level of funding for the various districts. As a result, some differences in education funding may come from local communities exercising their right to make choices about how to educate their resident children, rather than from inequitable or unfair treatment. Thus, because local governments make their own decisions about how much is ultimately spent on education, it was important in this study to compute measures of vertical equity in two ways. First, to evaluate equity of the state funding system according to the EPS funding formula, and without regard to independent local decisions, the distribution of *per-pupil cost allocation* was calculated. In essence, this entailed evaluating student equity in terms of the EPS resource allocation calculation. The cost allocation includes both the state and local share calculated under the state funding formula as well as federal Title I funds. Second, to evaluate equity within the system overall, including both state and local spending decisions, the distribution of *per-pupil expenditure* was calculated. Per-pupil expenditures include expenditures by school district of state and local funds, including local funding beyond the required minimum as well as federal Title I funding. Both calculations exclude debt service and major capital.

Findings

To evaluate vertical equity, the unequal treatment of un-equals, per-pupil allocations and expenditures were adjusted for pupil need and resource prices using a pupil need ratio. A pupil need ratio is a number assigned to students to represent their level of educational need, because some students need more educational resources than others to meet the learning standards. The EPS model recognizes additional student needs in three broad categories: special education, economically disadvantaged, and limited English proficiency. The formula adjusts for these needs

4

using a pupil weighting system. The pupil need ratio is also adjusted for resource prices using the state's regional adjustment, as well as for the levels of experience and education of SAU staff. The adjustment for resource prices is needed because the same number of dollars cannot buy the same amount of resources everywhere in the state. Because the EPS model is intended to account for pupil needs and resource prices, the pupil need ratio calculated for this study was based on the EPS model.

On average, the analysis indicates pupil need was 1.51 or 1.55 times the base amount, as may be seen in Table 1, which amounts to $3,224 additional dollars in 2004-05 and $3,146 in 2007-08. The overall range of pupil need ratios was wide, from 0.98 to 2.22 in 2004-05 and from 1.01 to 2.99 in 2007-08, which may have been due to small, outlier SAUs with unusual circumstances or even a single very-high-cost special education student. But what the pupil need ratio analysis

Table 1: Pupil Need Ratios and Additional Per-Pupil Amounts

	Pupil Need Ratio		Average Additional Per-Pupil Allocation	
	2004-05	2007-08	2004-05	2007-08
Mean	1.51	1.55	$3,224	$3,146
Minimum	**0.98**	**1.01**	-$122	$67
Maximum	**2.22**	**2.99**	$7,660	$11,268
5th Percentile	1.33	1.36	$2,064	$2,024
95th Percentile	1.69	1.75	$4,326	$4,225

showed was that the needs of some students, both within and across districts, may be two to three times the needs of other students, with ninety percent of students falling into the much narrower range of pupil need ratios between the 5th and 95th percentiles; i.e., between 1.33 and 1.69 in 2004-05 and between 1.36 and 1.75 in 2007-08. This indicated that in 2007-08, the needs of some students was about 75% higher than the needs of other students.

In terms of assessing vertical equity, two dispersion measures of need-adjusted per-pupil allocation and per-pupil cost expenditure appear in Table 2. One is the standard deviation of allocations and expenditures, and the second is the Coefficient of Variation of allocations and expenditures. If vertical equity is improving, then these two measures of variances should be declining, signaling smaller gaps between student needs and resources.

Table 2: Descriptive Statistics of Need-Adjusted Resources

	Need-Adjusted Per-Pupil Allocation		Need-Adjusted Per-Pupil Expenditure	
	2004-05	2007-08	2004-05	2007-08
Mean	$5,134	$5,891	$6,071	$6,512
Std. Deviation	$360	$245	$763	$843
Coefficient of Variation	0.07	0.04	0.13	0.13

As shown in the table, on a need-adjusted basis, there was much less variation in per-pupil allocation in 2007-08 than in 2004-05, both in absolute terms ($245 vs. $360 standard deviation) and relative to the mean (0.04 vs. 0.07 coefficient of variation). However, there was no change in the coefficient of variation of per-pupil expenditures and an increase in the standard deviations of per pupil expenditure, meaning little, if any, change occurred in vertical equity in terms of actual SAU expenditures.

Table 3 reports the need-adjusted resource distribution for several different percentiles. This data is useful in determining if the increases by 2007-2008 were more beneficial to those SAUs below or above the median per-pupil allocations and per-pupil expenditures.. As shown in the table, allocations increased at all levels, and the lower end was brought up more than the higher end. This means that the apparent improvement in equity shown by the decrease in the standard deviation and coefficient of variation were not from bringing the top end down, as may have happened in some states. Rather, the improvement was from bringing the lower end up more than the upper end.

Table 3: Need-Adjusted Resource Distribution

	Need-Adjusted Per-Pupil Allocation			Need-Adjusted Per-Pupil Expenditure		
	2004-05	2004-05	Increase	2004-05	2007-08	Increase
5th Percentile	$4,668	$5,219	$944	$5,219	$5,488	$269
10th Percentile	$4,761	$5,333	$907	$5,333	$5,690	$357
20th Percentile	$4,826	$5,561	$937	$5,561	$5,935	$374
Median	$5,115	$5,932	$765	$5,932	$6,317	$385
80th Percentile	$5,404	$6,501	$616	$6,501	$7,019	$518
90th Percentile	$5,567	$6,993	$535	$6,993	$7,505	$512
95th Percentile	$5,700	$7,332	$507	$7,332	$7,784	$453

In terms of expenditures, they increased at all percentile levels, but the higher end increased more than the lower end. This means that even the students with lower amounts of need-adjusted resources behind their education had more in 2007-08 than before the beginning of EPS

implementation. However, the higher end increases were large enough that there was no improvement in the coefficient of variation.

Several adjusted need-adjusted range ratios are presented in Table 4. The 5/median range ratio for allocations is defined as the difference between the median allocation and the 5th percentile allocation, divided by the 5th percentile allocation. The 10/median and 20/median range ratios are the same, except they use the 10th and 20th percentile instead of the 5th. Again, if vertical equity has improved, ratios for difference ranges should become smaller. As revealed in the table, here was a marked improvement in each of the range ratios for allocation. However, there is virtually no improvement in the need-adjusted range ratios for per-pupil expenditures. Thus these analyses reveal that there has been an overall improvement in equity of the per-pupil allocation, but that that improvement has not carried over to per-pupil expenditures.

Table 4: Need-Adjusted Resource Distribution – Lower-End Range Ratios

	Per-Pupil Allocation		Per-Pupil Expenditure	
	2004-05	**2007-08**	**2004-05**	**2007-08**
5/Median Range Ratio	0.10	0.05	0.14	0.15
10/Median Range Ratio	0.07	0.04	0.11	0.11
20/Median Range Ratio	0.06	0.02	0.07	0.06

Conclusions

To summarize the findings, more education resources were allocated and spent in 2007-08 than in 2004-05, and there was just as much district-to-district variation in them. However, the variation in per-pupil allocations—though not per-pupil expenditures—was more in line with pupil needs in 2007-08 than in 2004-05. *This indicates an improvement in vertical equity in the state funding system for Maine students. But once local expenditure decisions are added in, there is no improvement in vertical equity of expenditures.*

It is important to note that this study encompasses only equity between SAUs, not between the schools in SAUs or even within the schools. Thus, it does not address the question whether the resources are directed to the right schools, programs, and students within an SAU. It also does not address the equity of educational resources in Maine compared to the rest of the US or to the world.

The study also does not address equity in educational quality, but only in the distribution of educational resources. If the resources are expended in ways that provide differing levels of educational benefit, or if there are factors unrelated to education resources that affect quality, those differences will not appear in this study. To sum up, this is a study of student equity in the distribution of educational resources among Maine SAUs. And the study results reveal that, as designed the EPS funding model is improving student vertical equity, but expenditures remain quite unequal.

There are several possibilities to account for the lack of an improvement in vertical equity in expenditures. It may simply amount to different local values about education, leading to different democratic local funding decisions. It may also be due to differing tax yields. That is, SAUs with higher per-pupil property values may be able to support higher per-pupil expenditures than others using the same property tax mill rate. A third possibility is that SAUs with higher household incomes may be have an easier time supporting a higher mill rate. Any of these possibilities may lead to differing local decisions about how much to spend per pupil on education, and consequently have an impact of vertical student equity. From a public policy perspective, one possible strategy for continuing the improvement of student equity and thereby promoting greater educational opportunities, while preserving local autonomy, may be to develop state policies to insure that increases in funds because of needs-based allocations be targeted to SAU programs designed to address these higher need pupils.

REFERENCES

Berne, Robert and Leanna Stiefel. 1984. *The measurement of equity in school finance: Conceptual, methodological and empirical dimensions*. Baltimore: Johns Hopkins University Press.

State Board of Education, Maine Department of Education. 1998. *Essential programs & services; Equity & adequacy in funding to improve learning for all children*. Augusta, ME: Author.