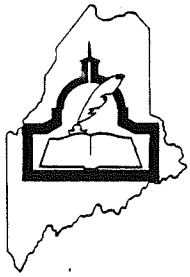
MAINE EDUCATION FINANCE

AN EXAMINATION OF THE REFORM DECADE OF THE 1970's

A report prepared for the
Joint Select Committee on School Finance
Second Session of the 110th Legislature



by
Lars H. Rydell, Ph.D.
Office of Legislative Assistants
Maine State Legislature

May 1983

This study was sponsored by the National Conference of State Legislatures with funding provided by the National Institute of Education and the Maine State Legislature.

SUMMARY

State government in Maine has a long history of involvement in the provision and funding of public education starting with the enactment of the 1820 constitutional requirement for the State to insure the availability of educational programs to children in all communities across the state. During the century and a half the recurring issues have been the provision of an educational opportunity to children in all communities across the state, the relief of the burden for school expenditures on the local tax base, and the evening out of the local tax burden across the state. These three goals coalesced in the uniform property tax reform of 1973 and the School Finance Act of 1978.

At present there are 4 sources for monies for education. Two provide a State subsidy through the Finance Act -- a foundation program (State and local assocation) to fund a basic education program and local leeway to provide an option for additional monies for new or expanded programs and inflation costs. A third source provides no State subsidy and derives from the local option to raise additional local money above local leeway. The final source is based on the State's assumption of responsibility to fund the employer's contribution to teachers' retirement. Chapter II provides a description of how the three subsidy mechanisms operate for different school units. A discussion of the cost of correcting various deficiencies in the present subsidy formula is provided in the Appendix.

One of the goals of the finance reforms was to stimulate the development of special education and vocational education programs. The analysis of the allocation of education dollars between 1970 and

1980 provided in Chapter III indicates that while expenditures on education have increased considerably over the past decade the proportional shares going to various programs or budget accounts has not changed appreciably. The subsidy formula in the Finance Act has not significantly altered the program priorities established by local school units. The major emphasis is still on general education programs and the major portion of the increased resources going to education went to these general programs. Coupled with the decrease in enrollment this resulted in a substantial improvement in the student-teacher ratio in the elementary grades. If the increase in teacher resources assigned to special education had been allocated to the general education programs, it would have resulted in only a very insignificant further change in the student-teacher ratios.

Chapter IV analyzes the effect of the finance reforms in providing local tax relief and in stimulating a more equitable distribution of education resources and property tax burdens across the state. The reforms clearly had an impact in reducing the local tax burden. To fund the same level of educational programming available today with the funding mechanism in effect prior to the reforms would result in a substantial increase in the local tax share. The Finance Act has had a more modest impact on equalizing the local tax burdens for education. While there has been some movement toward the median mill rate raised for education, there still remains a considerable spread in mill rates. In addition, the association between the wealth of a community (property valuation per student) and the expenditures per student increased over the decade indicating that the amount of educational dollars available per student was more dependent on the wealth of the communities in the school unit after the reforms than was the

case before they were implemented. Finally, there was only a slight equalization in the educational opportunity (dollars spent per student) provided students in different communities across the state. There was a large disparity in the dollars available to students in high and low spending units at the beginning of the decade and this disparity was basically unchanged by the finance reforms.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

Maine has had a long history of State government involvement in the provision and financing of public education. When Maine became the 23rd state in the Union in 1820, it included in its constitution the specific "duty" for the State to:

> ...require the several towns to make suitable provision at their own expense for the support and maintenance of public schools.... (Maine Constitution, art. 8, sec 1)

At first, the funding responsibility was placed solely on the local municipality with the State, in 1821, imposing the requirement for each municipality to raise 40 cents per capita to support public education (Laws of Maine 1982, pp 503-9). In subsequent years, the State earmarked varying State revenues to supplement local monies. In 1828 the State established a Public School Fund with the proceeds from the sale of State land and war claims settlements (Public Laws of Maine 182 -31, pp 1175-6). Five years later the State established the first State imposed tax for public education when it created a semi-annual tax on the capital stock of all banks in the state (Maine Law of 1932-9, pp 88-9). The money from the tax was distributed based on the school census.[1] Then in 1872 the State established a statewide property tax dedicated to the support of schools. These monies were also distributed on the basis of the school census.[2] The millage on this tax was increased in 1909 and again in 1921. The method of

1. The school census includes all school age children regardless of whether they were attending school.
2. The millage or mill rate is the number of dollars assessed in taxes for every $1000 of assessed value of taxable property.

allocation was changed in 1921 to include a combination of the number of teachers, school census and aggregate attendance.[3]

Following the recommendation of the 1934 Mort report on "The Financing of the Public Schools of Maine", the Legislature, in 1937, established a foundation program for education and distributed funds on the basis of a combination of the number of teaching units[4] and the State's valuation of property in each municipality. Towns which were unable to meet school expenses within the State-established mill rate could apply for State aid to fund a basic foundation program.

In 1951, the Legislature assigned the property tax to the exclusive use by the individual towns and in the same year established a sales tax to fund State services including aid to school units. A new program for State aid to local schools in the same years provided for a foundation program based on a dollar amount per student. The percentage of State aid for this foundation program was tied to the municipality's property valuation. The aid ranged from a high of 65% to a low of 14%. Finally in 1965, the State adopted, in principal, the concept of a uniform tax effort by local schools when it specified a base property tax rate for schools of 20 mills.

All these earlier initiatives attempted to deal in different ways and with varying degrees of success with the dual problems of equalizing the opportunities for education across the state and overcoming the extreme disparity in property wealth among communities. In addition, starting with the 1951 reform, the education aid formula was seen as a way of relieving the burden on what had become, in that year, the "local" property tax.

3. Aggregate attendance is the number of children attending school at least part of the year.
4. Teaching unit is a classroom with one teacher.

The enactment of the Uniform Property Tax in 1973 was in many ways a culmination of these historical trends. It provided a method of computing an estimate of the budget needed to fund a foundation program for each school unit based on the unit's prior pattern of expenditure. To encourage an equalization of expenditures across school districts, it included a disincentive for high, above the state per student average, spending units and a mechanism to gradually bring low spending units closer to the state average. Finally, it established a uniform property tax levy to fund 50% of the cost of the foundation program statewide. The remaining 50% was funded through the State's general fund revenues. The State establishment of a uniform property tax levy included a recapture or pay-in provision whereby towns which raised more money from the uniform levy than they needed to fund their foundation program were required to pay the excess amount to the State to be distributed to other towns through the school aid formula.

Though the 1973 act had the support of a broad coalition of individuals and groups throughout the state, the pay-in feature of the uniform tax rate appeared to go beyond the support of local citizen groups. After a failed attempt to get the Legislature to repeal this portion of the act, a citizen group led a successful petition and referendum drive which forced a repeal in 1977. The Legislature enacted a revised finance act in 1978 which retained almost all of the features of the original act with the exception of the pay-in requirement.[5]

5. The material for this overview came primarily from Rodney P. Hatch, Maine School Finance Past, Present and Future, Ph.D. Dissertation, George Peabody College of Teachers of Vanderbilt University, 1979.

The following report will first describe the mechanisms for providing State aid for education. A detailed discussion of some of the problems associated with the method of calculating aid and assessing the local share is found in an accompanying appendix. Second, the report will analyze, on a statewide basis, how education dollars have been spent over the past decade. Third, it will examine the spread in per pupil expenditures and property tax rates for schools among communities in the state and assess the degree to which the formula has been sucessful in reaching the twin goals of providing a more equal educational opportunity for all students and of achieving a greater degree of taxpayer equity. Finally, it will examine some of the factors which distinguish high-spending from low-spending units.

CHAPTER II

THE SCHOOL FUNDING ACT OF 1978 AND OTHER STATE AID

State aid to elementary and secondary education comes from three main sources. Two are provided through the School Finance Act - foundation program aid and local leeway. The foundation program defines allowable costs for a basic education program and local leeway allows expansion for additional costs. Both distribute aid in inverse proportion to a community's ability to pay (i.e. more aid to the poor school units and less aid to the wealthier ones). These two programs do not limit a unit's authority to raise additional local monies beyond leeway. The third source of aid is through the State pension system where the State has assumed liability for each school unit's employer's share regardless of the unit's ability to pay. The amount of aid is a flat rate for all school units based on the total salaries paid by the unit (or approximately the number of teachers.) The amount of State aid going to local units has increased dramatically under both systems as the cost of education and the cost of the pension program have increased. The source of educational dollars is presented grapically in Figure 1.

A. SCHOOL FINANCE ACT

1. TAXATION

The formula used in Maine's School Finance Act contains two basic components, a taxation component and an expenditure component. On the taxation side, the State calculates, each year, a subsidy index mill rate[1] on the state's equalized valuation of property sufficient to

1. The millrate is the number of dollars raised per $1000 of assessed property valuation.

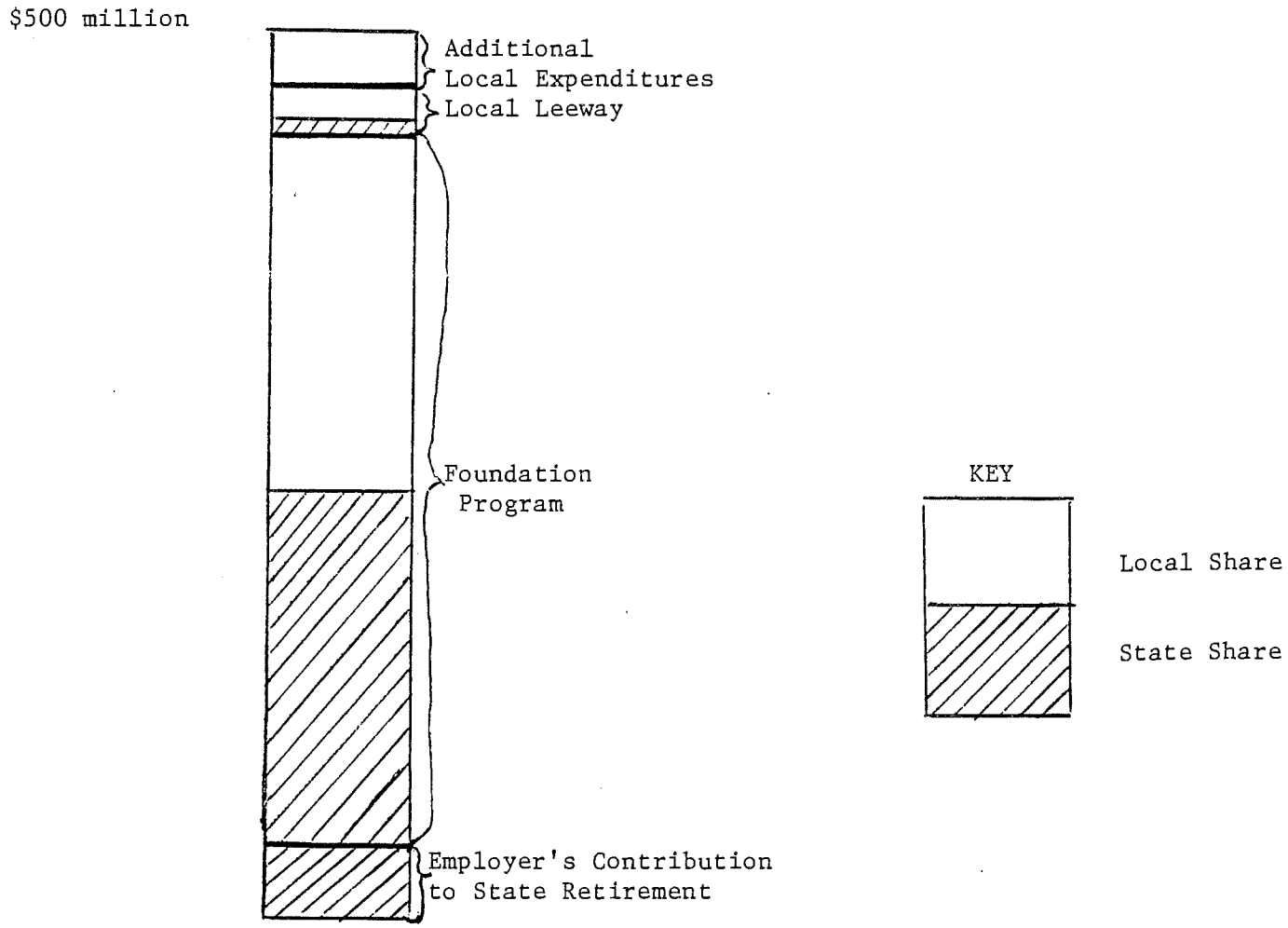


Figure 1: State and Local Shares of Education Costs in 1982-83

raise 46% of the allowable costs for a State subsidized foundation program for schools.[2] This defines the maximum local share of the foundation program. Towns which raise more from this State-established property tax mill rate than it costs to run the basic foundation education program in their unit only need to raise an amount sufficient to pay for the program. In these cases the unit receives no State aid and is referred to as a non-receiving unit.[3]

Those units which do not raise a sufficient amount from the State-established mill rate to fund their foundation program receive state aid sufficient to cover the difference between the allowable cost of the foundation program and their maximum local share. The formula for determining subsidizable foundation program costs is described below. Of importance for the taxation side, the foundation program costs are based totally on prior expenditures and not tied to the current year budget. Units are, therefore, not required to raise their maximum local share to receive their calculated State aid unless they participate in the local leeway formula described below.

Three examples, based on a subsidy index millrate at 8.55 (the actual rate for 1982-3), will help clarify how the formula works. In a school unit where the subsidizable costs of its foundation program is $2 million and the State valuation of its property was $250 million, the unit would raise $2.14 million if it levied the total 8.55 mills. Since this would be more than its total foundation

2. Finance Act requires the State to pay at least 50% of this subsidizable foundation program or no less than the percent raised in the previous year. The State's share has increased since the inception of the Act to 53.9% leaving a local share of 46.1%.
3. Under the preceding uniform property tax, these units were called pay-in units and had to pay the difference to the State. In recent years approximately 55 units were non-receivers.

program, the unit would receive no State aid. While it is not eligible to receive State aid, it can fund its program on a millrate of only 8 mills - a savings of .53 mills. In comparison in a unit with a State valuation of its property of $150 million, 8.55 mills would raise $1.28 million, and it would receive $720,000 in State aid to make up the total $2 million.

A third example would be a unit which had the same property tax base as the second unit, $150 million, but half again as many students and hence an estimated foundation program budget of $3 million. Its local share would also be 8.55 mills or $1.28 million, the same as the second example. The State would again make up the difference between the local share and the estimated foundation program budget resulting in a State share of $1.72 million. The three examples are presented in Figure 2.

The subsidy index mill rate only establishes each local unit's maximum share for the purpose of deterimining the State's share. It does not establish a minimum tax rate. If a unit could fund a foundation program for less, as in the first example, it could levy a lesser rate. The units in the other two examples also have the option of raising the full $1.28 million or they could cut their budget and raise less. The State's share would remain the same for the first two years. The budget cut would only appear in the formula two years later as a reduction in the unit's total foundation program and at that time result in a reduction in its State aid.

The subsidy index acts as a circuit breaker on local costs and limits all local shares for the foundation program to the same subsidy index mill rate. Without the circuit breaker the second unit in the example above would have had to raise 13.33 mills to raise the $2

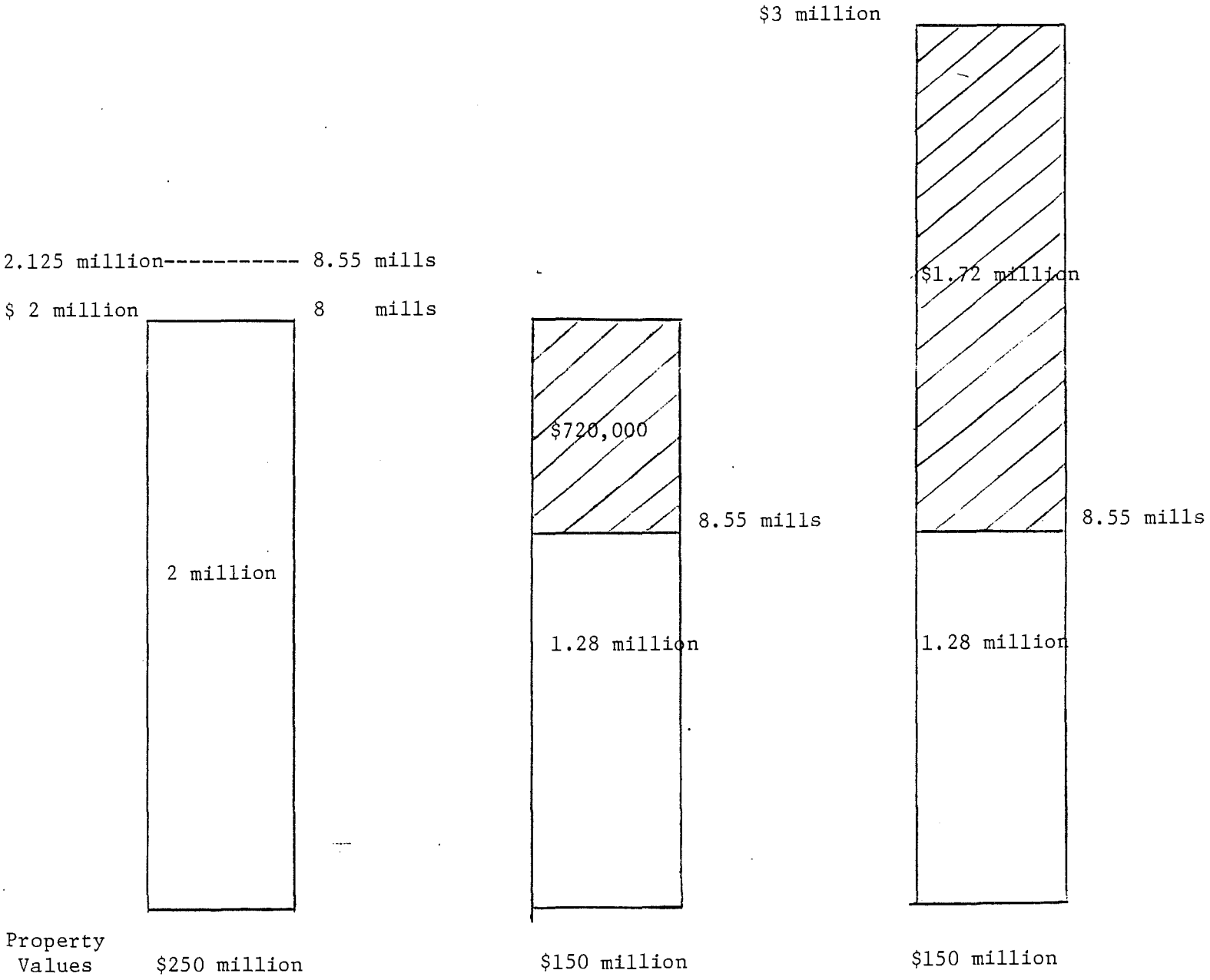


FIGURE 2: Foundation Program.

million needed to fund its total foundation portion of its school budget and the third unit, 20 mills to raise its needed $3 million. The circuit breaker is often referred to as the kick-out effect of the formula because all subsidizable costs above the subsidy index mill rate kick-out as part of the State share.

On top of this comes a local leeway provision. Local leeway guarantees a State set-dollar amount per student if units make a property tax effort of a certain additional millage established by the State. In contrast to the foundation program, local leeway is intended to provide additional State subsidy for projected current year programs. The dollar amount per student and the local millage establish the maximum State and local shares. If a unit decides to raise less than its maximum amount of leeway, its State and local shares are reduced in equal proportions.

One example of how this formula works would be a unit with 1400 students. If leeway was set at $140 per student, they would have $196,000 available to them above their foundation program. If their State valuation was $150 million and the extra millage establishing the local share set at 1 mill it would raise $150,000, then the State's maximum share would be $46,000 and the percentage breakdown would be 23.5% State and 76.5% local. If the unit decided it only needed $140,000 above their foundation program, the State and local shares would still be divided 23.5% ($32,900) State and 76.5% ($107,100) local. A second example would be a unit with 2100 students would have $294,000 available. If the valuation of its property was $150 million, its local share would also have been $150,000 but the State's share would be increased to $144,000. In this case, the split would be 51.0% local abd 49.0% state. A final example would be a unit

with 1400 students but a property valuation of $250 million. Its maximum one mill local share wuld be $250,000, well above their maximum leeway amount of $196,000. The unit would receive no State aid but it could raise $196,000 with an additional levy of 0.78 mills, a savings to local taxpayers of 0.22 mills. The three examples are presented in Figure 3.

Neither of these two aid formulas limits a unit's freedom to raise additional money on its own. If a unit decides it needs more than the foundation program and leeway can provide, it can raise any amount it wants above leeway. Expenditures above leeway are funded totally from local revenues.

2. SUBSIDIZABLE COSTS

On the expenditure side, the 1978 School Finance Act established a foundation program to fund the cost of a basic education and a local leeway provision to provide access to additional State subsidized dollars to fund new or expanded programs. The foundation program included four different groupings of allowable costs. First, there are general operating costs which include the cost of running a basic education program and plant operation. These costs are based on two-year-old expenditures which have been updated by an estimate for one year's inflation and adjusted to the spring/fall average in school enrollment of the most recent calendar year. The intent is to use known cost and pupil enrollment figures and at the same time to develop an estimate which reflect year-old costs. (The formula computes, for each unit, the two-year-old per student costs, adjusts it by a one year inflation percentage, and then multiplies the adjusted per student cost by the updated enrollment.) This general operating cost

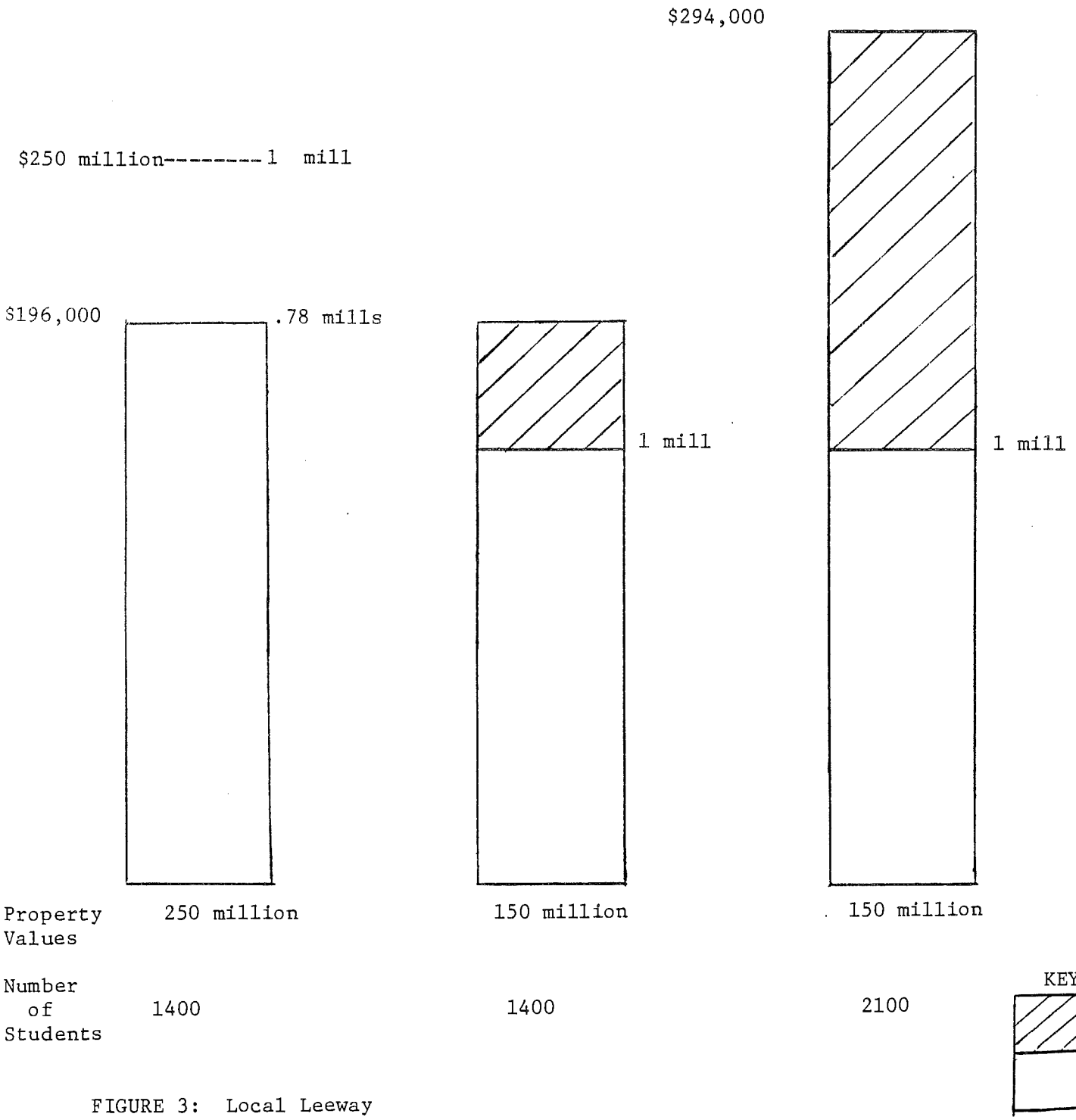


FIGURE 3: Local Leeway

portion of the formula also has a capping mechanism to limit allowable costs. A unit's subsidizable per student cost cannot exceed a cap established by the State. For units which spend above the state per student average, the cap is set by the state average. For units which spend below the state average, the cap is set at the units own per student average plus 1/3 of the difference up to the state average. All figures are based on two year old costs updated for one year's inflation.

If a unit had 100 elementary students and its two-year (1980-81) old elementary operating costs were $120,000, its per student costs for calculating its 1982-83 subsidy would have been $1200. If the inflation allowance that year was 10%, its per student updated cost would be $1320. If the State per student average was $1290, the unit's allowable costs would be limited by the $1290 cap. If its student count remained the same, its subsidizable foundation program costs would be $129,000. A unit which only spent $1000 per student two years ago would have an updated per student cost of $1100. Its allowable costs would be capped by its own per student average since it is lower than the state average. Because it spends below the state average, it can add 1/3 of the difference between its average and the State average or $63 (1/3 of 1290 - 1100) raising its allowable costs to $1163. The intent of the use of the per student caps is to restrain rapid increases in expenditures. The addition of 1/3 the difference between the units own average and the state average is meant to allow the low spending unit to gradually come up to the State average.

It is important to note that both units would make the same tax effort, 8.55 mills in the examples used above, but one would be guar-

anteed $1290 per student and the other only $1163 per student. Adding 1/3 of the difference between the local unit's average and the state average only very slowly allows a low spending unit to come up to the level guaranteed units spending at or above the state average. The effect is to penalize units which historically have spent less than the state average.

The second grouping of costs is for special education, vocational education and transportation operating costs. These are referred to as categorical programs and are based on two-year-old expenditures, but they are adjusted neither for inflation nor for changes in program enrollment. While there is also no capping mechanism or limit placed on the inclusion of these costs in the formula, local units have to pay the total cost of new or expanded programs for two years before they are included in the calculation of the unit's foundation program costs. It also means that the costs which are added in are two-year-old costs and do not include adjustments for inflation or changes in the number of students served. The lack of a cap would seem to indicate a policy in support of categorical expenditures. The use of two year old non-updated costs acts as a severe restraint.

The third group is comprised of approved leases and approved bus purchases which are based on one-year-old costs. Finally debt service payments for approved construction projects are based on the calculation of current year debt service payments.

To determine a school unit's subsidizable foundation program, the formula combines the costs derived under these four groupings. This foundation program amount is then divided into State and local shares, as described above.

The foundation program costs are based on previous expenditure and program patterns and was designed to maintain existing programs. If a unit wants to expand its programs, or pay for uncovered inflation costs, it can participate in local leeway. The State guarantees a certain number of dollars per student if the unit raises an additional millage, $140 and 1.0 mills in 1982-83.

B. EMPLOYER'S CONTRIBUTION TO THE RETIREMENT SYSTEM.

Payment of the employer's share of the teachers' pension system is the second mechanism by which the State provides a subsidy to school administrative units. Teachers are part of the State retirement system, not federal social secuirty, and the State is responsible for paying the employer's share. The employee's share has remained a constant 6.5% of gross salary since 1973, having increased in that year from 5%. The employer's (State's) share, in contrast, has increased steadily from 8.865% in 1971-72 to 16.17% for 1982-83. The State makes the contribution directly to the pension system for all state employees, including teachers. The actual contribution depends on an appropriation from the legislature and may differ from the amount needed to fund teachers' pensions in that year. Since the State assumes full liability, the savings or aid to the local unit is the contribution necessary to assure full funding.

The visibility of this subsidy mechanism has largely been obscurred by the fact that the costs have been subsumed in the pension costs of all State employees. There have been suggestions in the past to include the pension costs in the School Finance Act formula. This past year the Legislature for the first time required their inclusion as a separate item in the Commissioner of Education's annual report to

the Legislature on the Actual Costs of Education.

It is also important to realize that the method of allocation of these dollars is different from either the foundation aid or local leeway formulas. While State aid for each unit's foundation program is provided in inverse proportion to the unit's ability to pay, the pension aid is geared solely to the cost of teaching and administrative salaries, i.e. the number of teachers and the pay scale in each unit. This method of distributing aid is much closer to a flat grant system with each unit receiving an equivalent amount regardless of the unit's ability to pay.

C. COST OF EDUCATION AID

The cost to the State of the aid provided through the Finance Act and the pension system are presented in Table 1. In addition to the obvious fact that costs of education have increased over the decade, there are two interesting trends in the table. First there was a dramatic realignment in the balance of state and local shares going to fund educational costs with the introduction of the uniform property tax in the 1974-75 school year. Prior to the introduction of the uniform property tax the state share of education costs was between 35% and 40%. In subsequent years, including the post uniform property tax repeal years, the State and local shares have been relatively equal, hovering between 49% and 51%. The second major trend is the more rapid increase in the pension aid relative to the aid provided through the finance act. State aid to the foundation program costs increased from $63.0 million in 1971-72 to $204.2 million in 1981-82, a 224% increase.

Table 1: State Expenditures of Aid to Elementary and Secondary Education.

	SCHOOL FINANCE ACT			STATE PENSION SYSTEM				
	STATE SHARE				EXPECTED EMPLOYER'S CONTRIBUTION**			
YEAR	DOLLARS	PERCENT	PER STUDENT	TOTAL SALARIES*	PERCENT	DOLLARS	PER STUDENT	PER $100 FINANCE ACT AID
1973-74	$ 85.5 million	39.0%	$ 346	$ million	9.2%	$ million	$	$
1974-75	123.0 "	50.4	498	148.5 "	9.35	13.9 "	56	11
1975-76	127.6 "	47.8	519	161.3 "	9.61	15.5 "	63	12
9176-77	141.6 "	49.0	577	172.8 "	9.77	16.9 "	69	12
1977-78	150.8 "	48.1	614	185.0 "	10.73	19.9 "	81	13
1978-79	167.0 "	49.2	686	196.2 "	10.91	21.4 "	87	13
1979-80	183.2 "	50.3	765	208.3 "	14.70	30.6 "	128	17
1980-81	192.8 "	49.4	824	220.4 "	14.96	33.0 "	141	17
1981-82	204.2 "	48.5	898	237.8 "	15.90	37.8 "	166	19

*Total salaries includes instructional salaries and an estimate of the salaries component of administrative costs (72% of central administrative costs.

**The expected employer's contribution reflects the amount saved by the local unit if they were responsible for contributing the employer's share in the year in which salaries were earned. The actual contribution by the State differs from the expected reflecting an underfunding of the system in the early part of the decade and an attempt to catch up in more recent years. The expected amounts, however, reflect the relief or aid provided local units regardless of whether the State funds its obligation or not.

The State's contribution to the pension system over the same period increased from $9.83 million to $46.71 million, a 375% increase. Looked at another way, the State contributed $9.77 to the teachers' pension fund for every $100 it spent on aid through the Finance Act in 1974-75. By 1981-82, the State's contribution had incrased to $22.87 per $100 of aid through the Finance Act.

D. CONCLUSION

The underlying policy goals of the initial uniform property tax reform of 1973 and the revision following its repeal in 1977, was to address the problems of equity for taxpayers and equality of opportunity for students. As a major selling point for the reforms, there was also a substantial increase in the amount of state aid provided through the formula. The reforms attempted to accomplish the twin goals by limiting the maximum local share of a basic education program to a uniform subsidy index mill rate. This established a foundation program for a uniform tax rate across the state. In addition there was a local leeway program to provide an extra amount per student based on a formula guaranteeing equal dollars for equal effort. Leeway was intended to to help units develop new programs and to counteract the effect of inflation. Finally, the specific provisions of the Acts were designed to encourage certain types of expenditures -- school construction, vocational education, special education and transportation -- while placing a cap on other expenditures.

As indicated by the above detailed description of the Act, the specific provisions of the formula often impede the implementation of the policy goals. A cap is placed on general operating expenditures

with the intent of slowing the rate of increase of these costs. Vocational education and special education had no caps but the formula used the units two year old expenditures in calculating their contribution to the foundation program. The requirement that units provide the funding for the first two years acts as a disincentive to establishing new programs. It also violates the equalization principle of the Act because property poor towns have to levy a higher mill rate than property wealthy towns in order to fund the same level of programming. The separate caps on general operating costs for units spending above and below the state per student average tends to freeze units according to their historical spending patterns and therefore, tends to perpetuate the inequalities that existed prior to the implementation of the Act rather than encouraging their elimination. An assessment of how the formula functioned in practice is made in Chapter IV.

CHAPTER III

TRENDS IN EDUCATIONAL EXPENDITURES IN THE 1970s

I. HOW RAPIDLY HAS THE EDUCATION BUDGET INCREASED?

Public elementary and secondary education is the single largest item in State and local budgets. It has also captured a fairly stable share of the budget - 30% in 1972 and increasing only slightly over the decade to 32.6% in 1980. During the 1970's, total expenditures rose by $216 million from $178 to $394 million, or an increase of 121% (see Table 2). During the same period, the number of students decreased by 9% from 247,062 to 224,542. This decrease means that per student expenditures rose by an even faster rate, 144%, or by $1035, from $719 to $1754 per student.

TABLE 2: Expenditures from 1970-1 to 1980-1

	Dollars 1970-1	Dollars 1980-1	Difference	Percent Change
Total expenditures	$178 million	$394 million	$216 million	121%
Per student expenditures	$719	$1754	$1035	144%

These figures, however, are not corrected for inflation. The estimate of the cost of inflation varies from expenditure to expenditure and from index to index. The Consumer Price Index rose by 117% over the decade suggesting that the real increase in total expenditures might have been as small as 4% and increase in per student expenditures 27% (see Table 3). The inflation rate, as indicated by the Implicit Price Deflator for Gross National Product, was a more modest 104%. Using this index, the real growth in total education expenditures was 17% and the per student increase of 40%. Finally, since education is a very labor-intensive operation, the increase in

teacher salaries might represent a fair index of the inflation in school costs. During the decade the average teacher's salary increased from $8650 to $14,462 or 62%. Using this percentage as an inflation index, the real growth in total education expenditures could have been as high as 59% and a per student increase as high as 82%.

TABLE 3: Percent Real Increase 1970-1 to 1980-1 Controlling for Inflation.

	Consumer Price Index	Implicit Price Deflator for GNP	Teacher Salaries
Increase in inflation index	117%	104%	62%
Increase in (controlling for inflation)			
Total expenditures	4%	17%	59%
Per student expenditures	27%	40%	82%

II. HOW ARE THE EDUCATION DOLLARS SPENT?

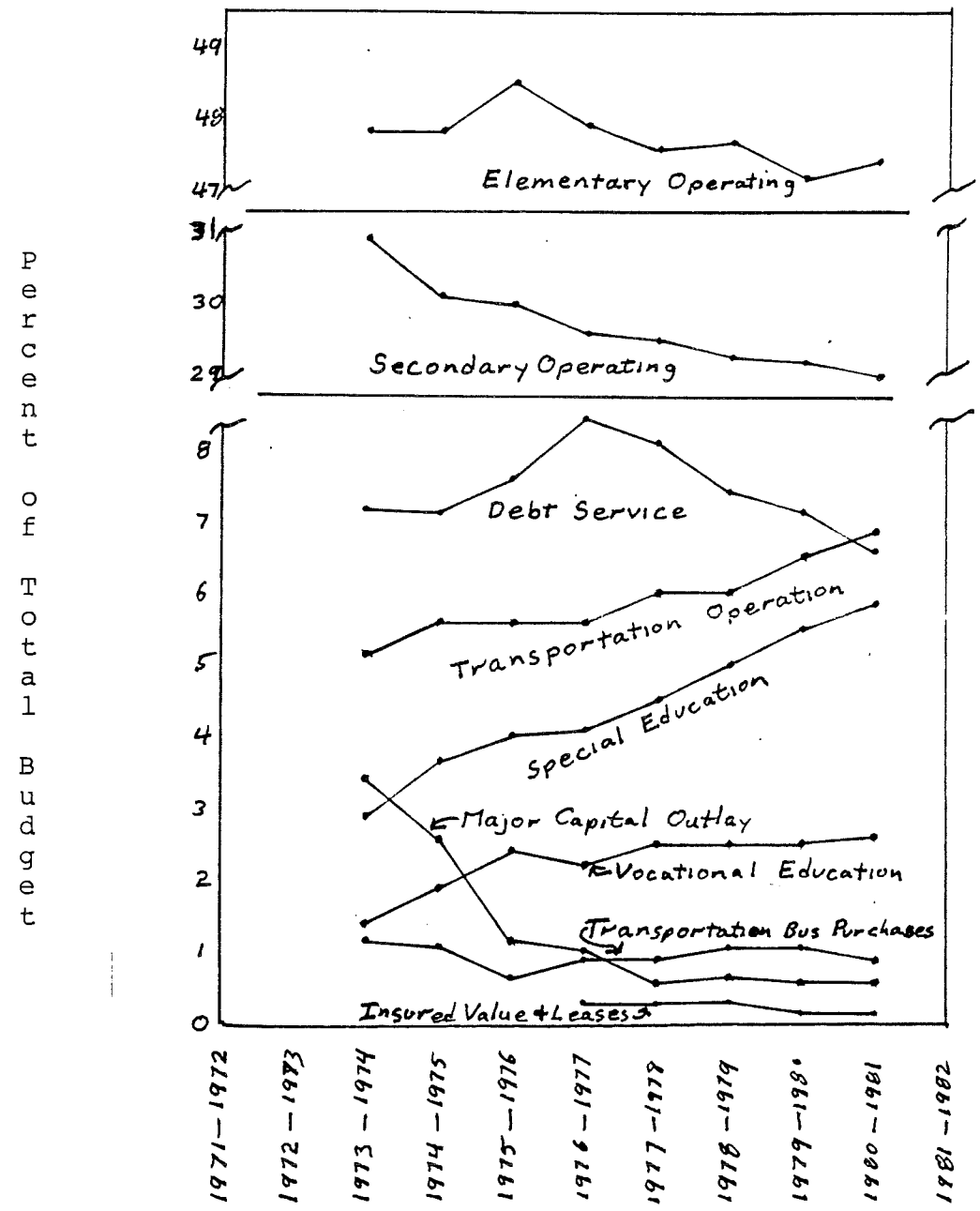
An additional question is how these dollars have been distributed among the various educational programs and budget accounts.

A. EDUCATION PROGRAM COSTS.

Since the 1973-74 school year, the State has collected expenditure data divided into 8 program categories. One of the most significant features of the expenditure patterns is the consistency in the relative priority given to each program. As indicated by Graph 1, each program's percentage share of the total expenditures did not fluctuate more than 3%. The two major programs are elementary and secondary operating costs, representing 48% and 30% of the expenditures respectively. These programs include the cost of regular teachers' salaries, administration, textbooks and supplies, and plant and equipment operation.

GRAPH 1:

ELEMENTARY AND SECONDARY EXPENDITURES
AS A PERCENT OF THE
TOTAL PUBLIC SCHOOL BUDGET
BY PROGRAM CATEGORY



The remaining 8 programs together account for only 22% of the total expenditures. Debt service[1] at one point reached 8% of the budget and special education and transportation operating costs increased to account for 6 to 7% of the total by the end of the decade. The remaining programs - vocational education, school bus purchases, and major capital outlay - each remained under 3%.

While each program's relative share of the total expenditures remained remarkably constant over the decade, not varying by more than 2 or 3%, there was some interesting reordering among the minor programs. Specifically, the state aid formula enacted in 1974 encorporated debt service in its calculation of each unit's foundation program. As a result there appears to have been a sharp decrease in local units' use of major capital outlay to fund construction programs in the current year and a commensurate increase in debt service. Then starting in 1977, the State imposed a $30 million ceiling on debt service. As debt service was held constant by this cap, its portion of total expenditures declined. This means that from 1973-74 to 1980-81 debt service and construction costs' combined share of expenditures decreased from 10.6% to 7.2% or a drop of 3.4%. This provided some room for special education to increase its share during the same period by about 3% and transportation by about 2% without significantly affecting the shares going to general operating programs. Vocational education increased its share by 1%. Elementary operating costs fluctuated up and down around 48% and secondary operating costs decreased by 2% from 31% to 29% with half of that decrease occurring in 1974-75 school year.

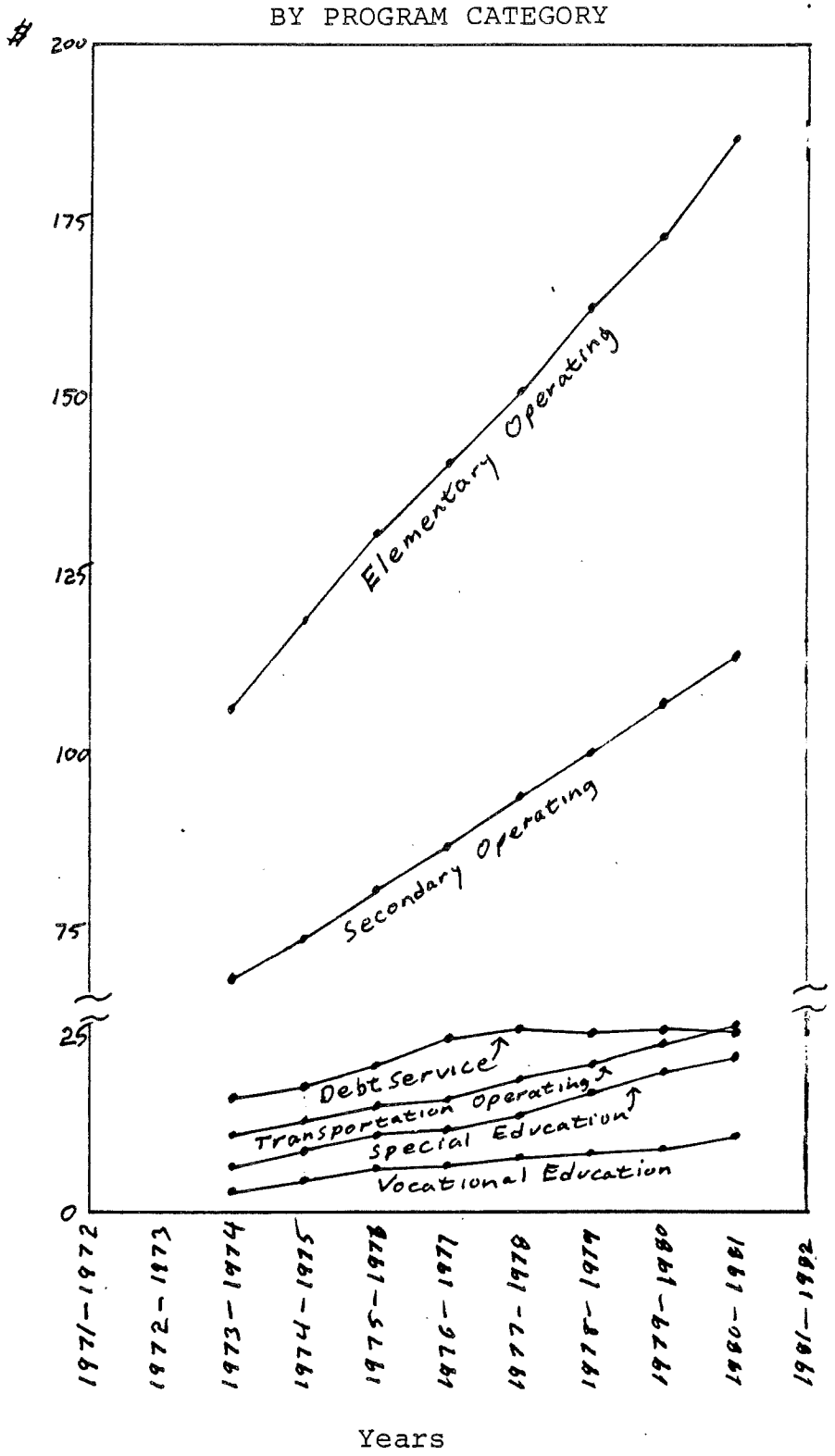
1. Debt service includes payment on school construction and major capital improvement loans.

Given the relative stability of each program's proportional share of the total expenditures, the trend in actual expenditures in each of the programs presented in Graph 2 is not unexpected. The slope of the graph lines indicate the relative share of the increased dollars going into education received by the various programs. Since the two general operating programs retained their major share of the expenditures throughout the decade, the graph line of actual dollar increase rises the sharpest for these programs. Elementary operating costs started at slightly above $100 million and increased dramatically to close to $200 million at the end of the decade. Secondary operating costs started at around $85 million and increased only slightly less dramatically to $115 million. None of the other programs exceeded $25 million in any year during the decade.

The overall impression from the graph is again that the general operating portions of the expenditures retained their dominant position. The steeper slope of these two graph lines indicate their acquisition of a major share of the increase in expenditures over the decade. While the positive rise in the graph lines for transportation operating and special education expenditures indicate a significant increase in dollars going to these programs, the absolute increase in dollars expended was relatively small. These programs still only accounted for a minor proportion of the total expenditures at the end of the decade.

Another way to look at the increase in expenditures is to examine the percentage in relation to the initial expenditures in 1973-74. In examining percentage increases it must be kept in mind that the percentages depend both on the size of the increase and the size of the expenditure in the base year. A small increase can appear large if

GRAPH 2: ELEMENTARY AND SECONDARY EXPENDITURES BY PROGRAM CATEGORY



Expenditures in millions of dollars

the base year expenditures were also very small. Conversely, a large increase can appear relatively modest if it is added to a large base year figure. The calculation of the percentage increase does provide a way of quickly comparing the increase in the programs with the three measures of inflation described above to get a feel for the degree of real growth.

The base year costs, the dollar increase and the percent increase over the decade are presented in Table 4. The table clearly shows that the elementary and secondary operating programs received the major portion of the increases as they did the major portion of expenditures in each year. Of the $172 million increase in expenditures, elementary operating costs accounted for $81 million or 47% and secondary operating costs for $46 million or 27%.

TABLE 4: Increase in Program Expenditures from 1973-4 to 1980-81

Program	Expenditures 1973-4	Increase 1973-4 to 1980-1 Dollar	Percent
Elementary operating costs	$106 million	$81 million	76%
Secondary operating costs	$68.5 million	$46 million	67%
Debt service	$16.0 million	$10 million	63%
Transportation-operating	$11.5 million	$16 million	139%
Special education	$6.52 million	$16 million	245%
Vocational education	$3.05 million	$7.3 million	239%
Major capital outlay	$7.53 million	-$5.15 million	-68%
Other	$2.47 million	$ .15 million	6%
Total	$222 million	$172 million	77%

*Inflation indices:	Consumer Price Index	Implicit Price Deflator	Teacher Salaries
	84%	69%	51%

In terms of estimating how well the programs have kept pace with the inflation rate over the period, the comparisons are an inflation rate of 84% for the consumer price index, 69% for the implicit price deflator and 51% for teacher salaries. Elementary operating costs increased by 76% and secondary operating costs by 67% which meant they kept pace with the implicit price deflator but were below the consumer price index. The most sizable increases, however, were recorded by transportation operating, special education, and vocational education -- 139%, 245% and 239% respectively.

Comparison of the percentage increases in the total expenditures among the various programs, however, does not provide the complete picture. For example, total expenditures for special education and vocational education programs increased at considerably more rapid rates than the two general operating cost programs. The former two programs, however, also had sizable expansions in the number of students they served while the latter two had declining enrollments. Varying rates of change in enrollment can be controlled by looking at changes in per student expenditures.

When the programs are compared in relation to the amount of money spent per student, the picture of the relative growth rates among the programs changes dramatically (see Table 5). Using 1976-77 as the first year comparable enrollment data were available, the overall increase in general operating elementary and secondary programs was 32% and 31% respectively. Because of declining enrollments, per student expenditures increased at a faster rate, 46% for elementary operating and 36% for secondary operating costs.

TABLE 5: Increase in Per Student Expenditure 1976-7 to 1980-1

	Total Expenditure			Per Student Expenditures		
	1976-7	1980-1	Percent Increase	1976-7	1980-1	Percent Increase
Elementary	$141 million	$187 million	32%	$827	$1211	46%
Secondary	87.2 "	114 "	31%	1189	1614	36%
Special Education	12.1 "	22.7 "	88%	544	897	65%
Vocational Education	6.57 "	10.4 "	59%	759	1098	45%

Inflation indecies:	Consumer Price Index	Implicit Price Deflator	Teacher Salaries
	47%	37%	26%

Conversely, special education's dramatic increase of 88% decreases to a still sizable but less dramatic 65% when controlling for increases in enrollment. The increase in vocational expenditures drops from 59% to 46%. Special education's growth is still considerably higher than the general operating programs. However, it should be noted that this was also a period when responsibility for many severely handicapped students, particularly those with emotional problems, was transferred back to the local school units. Compared to increases in the consumer price index over the same period of 47%, implicit price deflator of 37% and teacher salaries of 26%, this means that the per student expenditures in all the programs except secondary operating costs matched or exceeded the increase in each of the inflation indices. Secondary operating costs kept pace with two out of the three indices.

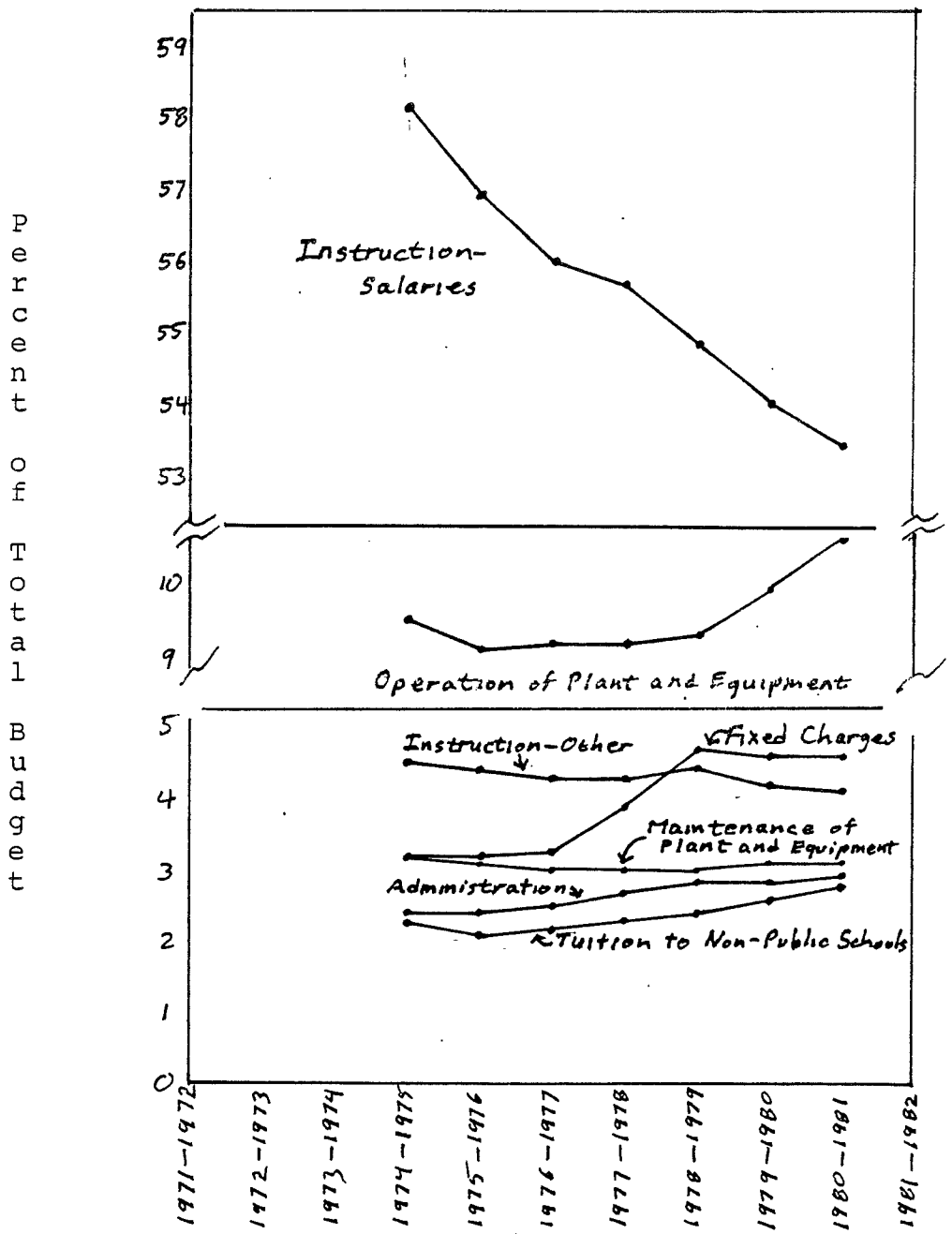
B. EDUCATION BUDGET ACCOUNTS. 4ncs1

The State has collected data on expenditures by budget account since 1974-5. This categorization divided expenses into about 13 accounts of which 7 are sizable enough to be analyzed here. As was the case with program categories, one of the most significant findings is the stability in the percentage shares claimed by each of these budget accounts (see Graph 3). In spite of a decline of 4.5% in its percent share, instructional salaries did not relinquish their dominant position accounting for more than 50% of expenditures throughout the decade. The second largest category was operation of plant and equipment with about a 10% share. The remaining categories all claimed less than 5%.

Among the minor accounts there are two of particular note. One is the jump in the percentage share going to fixed charges from slightly over 3% to slightly under 5%. The other is the increasing percent of expenditures going to operation of plant and equipment toward the end of the decade -- from slightly over 9% to slightly under 11%. The somewhat more rapid increase in expenditures for these accounts is also apparent in Graph 4 which shows the dollar expenditures over the decade. The cause of the increase in plant operations is probably related to increases in energy costs in the latter half of the decade. The jump in fixed charges in the 1978-79 fiscal year is do to a change in the State's Tort Claims Act which increased the circumstances in which individuals could bring suit for personal damages against a municipality or school unit. The increase in fixed charges was to cover the cost of additional insurance coverage.

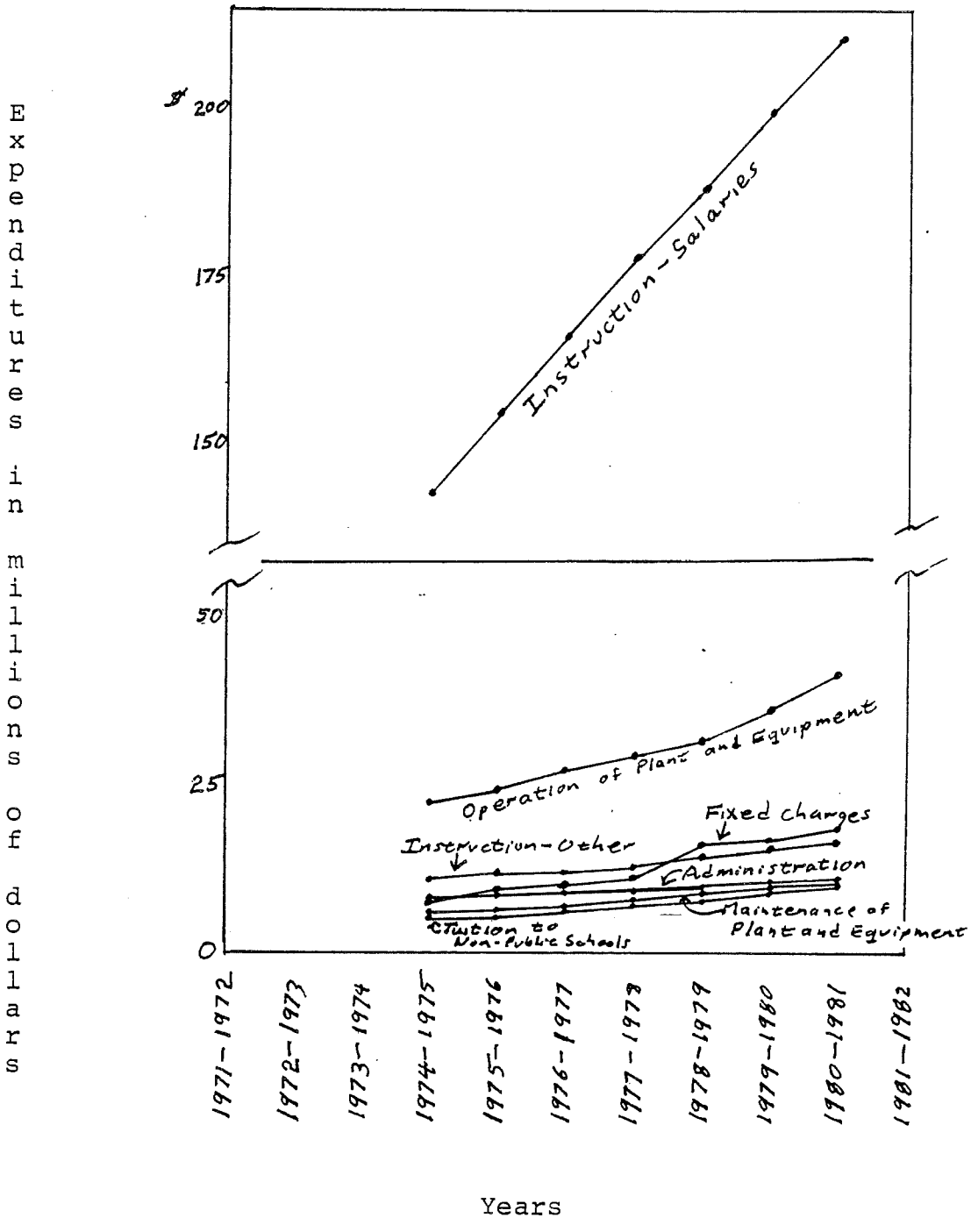
GRAPH 3:

ELEMENTARY AND SECONDARY EXPENDITURES
AS A PERCENT OF THE
TOTAL PUBLIC SCHOOL BUDGET
BY EXPENDITURE CATEGORY



GRAPH 4:

ELEMENTARY AND SECONDARY EXPENDITURES
BY EXPENDITURE CATEGORY



Graph 4 also indicates that in spite of the drop in the percentage share received by the instructional salaries budget account, expenditures still increased a substantial $69 mllion from $143 to $212 million. While this additional amount indicates an increase of only 48% over 1974-5 expenditures, it still means that instructional salaries captured 47% of the total $145 million increase over the period.

Table 6: Increases in Expenditure Categories from 1974-5 to 1980-1.

	1974-5 Expenditures	Dollar Increase	Percent Increase
Instruction - salaries	$143 million	$69 million	48%
Operation of plant and equipment	23.3 "	19 "	82
Instruction - other	11.0 "	4.4 "	40
Fixed charges	7.82 "	9.2 "	118
Administration	7.90 "	3.4 "	43
Maintenance of plant and equipment	5.95 "	4.3 "	72
Tuition to non-public schools	5.86 "	3.8 "	65
Other	41.2 "	33 "	80
Total	245 "	146 "	60

The percentage increase in the other accounts are presented in Table 6. It again shows that fixed charges and operation of plant and exquipment were the fastest growing accounts, at 118% and 82% respectively. As mentioned above instructional salaries increased at a considerably more modest rate of 48% and expenditures on central administration (also predominantly a salary item) at a slightly lower

43%. Expenditures for books and other instructional costs increased the slowest at 40%. Compared to an increase in the consumer price index of 67%, implicit price deflator of 55%, and teacher salaries of 43%, only the non-salary, non-instructional material portion of the expenditures kept pace with the two national measures of inflation.

The fact that the proportion of the expenditures allocated for instructional salaries exceeded the percentage increase in teacher salaries over the same period, however, does suggest that in spite of the lower rate of increase there was an expansion in the amount of instructional staff time available to students. One way to document this increased availability of teaching resources is to examine the change in the student teacher ratio over the period.

Table 7: Changes in student teacher ratios from 1974-5 to 1980-1.

	Elementary School			Secondary School		
	1975-4	1980-1	diff-erence	1974-5	1980-1	diff-erence
I. Classroom teachers	25.6	23.9	1.7	20.9	21.7	-.8
II. Classroom teachers plus assistant, associate, reading teachers and aides	19.0	16.1	2.9	19.9	20.1	-.2
Difference I-II	6.6	7.8	1.2	1.0	1.6	0.6
III. Classroom teachers plus assistant teachers etc. and special education teachers	18.0	14.8	3.2	19.5	19.0	.5
Difference II-III	1.0	1.3	.3	.4	1.1	0.7

Table 7 presents the student-teacher ratios for both elementary and secondary shcools in 1974-5 and 1980-81. Ratios are presented in

three groupings: first regular classroom teachers alone, second with the addition of assistant and associate teachers, reading teachers, and aides, and finally with the additon of special education personnel.

Variation in the ratios is most dramatic in the case of elementary students. The ratio of students to regular classroom teachers was 25.6 students per teacher in 1974-75 and decreased to 23.9 students per teacher in 1980-81 . This means that over the latter half of the decade there was an average decrease of 1.7 students per teacher. These ratios, however, only include the traditional classroom teacher and do not reflect the additional professional resources available to that teacher or the fact that some of the students will spend all or a portion of their day outside that classroom in individual instruction or a special program. With the inclusion of assistant teachers, aides and reading teachers this ratio decreased by 6.6 to a ratio of 19 students per staff member in 1974-75 and by 7.8 to a ratio of 16.1 in 1980-81. Over the last part of the decade this increase in teacher assistant and aide resources meant an additional decrease of 1.2 students per staff person. The addition of special education teachers further reduced the ratio by 1 student to a ratio of 18 students per member of the teaching staff in 1974-75. The decrease was 1.3 in 1980-81 to a ratio of 14.8 students per staff member.

Thus the overall ratio decreased by 3.2 students per staff member with a decrease of 1.7 students occurring in the ratio of the classroom teachers and an additional decrease of 1.2 students caused by the increased availability of assistant teachers and aides. This amounts to a drop of 2.9 students per member of the teaching staff in

the regular education program. Finally, special education services contributed to an additional decrease of 0.3 students per staff member.

These figures again document that the major portion of the increase in resources have gone to general operating programs and only a minor portion to special programs. If the total increase in staff resources for special education had been allocated to the regular classroom, it would have only decreased the student-staff ratio by 0.3 of a student. This is in contrast to the decline in the student-staff ratio of 2.9 caused by the increase in the additional teacher and teacher aide resources actually assigned to general education programs.

The student-teacher ratio for secondary school students was much lower than for elementary students at the beginning of the decade, 20.9 students per classroom teacher. Though the table indicates some variation in the ratios with the inclusion of assistant teachers and special education programs and from the beginning to the end of the decade, the major pattern in the table is the consistency in the ratios.

C. CONCLUSION

Public elementary and secndary education has received a fairly constant 30% of the state and local budgets over the decade of the 1970's indicating a major public commitment. As public expenditures rose during the 1970's so did the budgets for education. This increase is apparent even when the increases are controlled for inflation.

An examination of the various school program and budget accounts

reveals that the increased dollars for education did not cause a major change in the priorities or alter the relative distribution of dollars by program area or budget account. Elementary and secondary operating costs were the dominant program areas and personnel costs was the major budget item throughout the decade. Special education and vocational education increased their share of the budgets, but in spite of the increase, they only captured a relatively minor portion of the available funds throughout the decade. Thus the caps placed on general operating costs did not seem to place any particular constraints on those expenditures. Conversely, the lack of a cap on special education and vocational education, in the face of the requirement to fund the costs for the first two years for any new program totally with local taxes, did not appear to encourage expenditures in those areas.

This continuing emphasis on general operating programs is particularly apparent when the allocation of teacher resources are analysed. The combination of increased expenditures and decrease in the number of students over the decade produced a rather substantial decrease in the number of students per teacher or teacher aide in elementary schools. In 1974-5 the student-teaching staff ratio in the regular class room was 19 by 1980-81 this had dropped to 16.1 a reduction of 2.9 students per staff member. If the increase in teacher and teacher aid resources allocated to special education had had been assigned to general classroom it would have reduced student teacher ratio only by an additional 0.3 of a student. The data for secondary school students indicated relatively minor changes in the student-staff ratios over the period.

CHAPTER IV

EQUITY FOR TAXPAYERS AND EQUAL OPPORTYNITY FOR STUDENTS

Even prior to the assignment of the property tax to municipal governments, discussions surrounding State aid to school finance have included the issue of property tax relief - reducing the burden on the property tax of financing public education. In addition, at least since the court cases of the 1960s, discussions have had to take into account the issue of the equity for tax payers - equalizing the tax burden on property owners in different school units. Finally, again at least since the 1960's there has been a concern with the provision of equal educational opportunity for students across the State. These three issues either directly, or indirectly as underlying factors in the debate over the percent of State aid to be provided through the formula, formed the basis of the education finance reforms in the 1970's. The following analysis examines the actual impact the School Finance Act has had on these three policy goals.

A. TAX RELIEF

The impact on property tax rates can be assessed by examining the change in the median mill rates needed to fund local schools. The median mill rate for schools in 1973-74, based on a State valuation of property values was 18.45 mills; by 1980-81 this had been reduced to 11.03 mills, a reduction of 40%. This comparison, however, fails to take into account the rapid increase in property values or the inflation in the cost of goods and services in general and school programs in particular. During the same period property values increased by 128%, and school costs increased by 77.7%.[1]

1. The consumer price index increased by 84%.

Translating the 1973-74 mill rate into 1980-81 property values and school costs results in a standardized rate of 14.38 mills.[2] This is the number of mills which would have been needed to run the 1980-81 school programs if the state had not added any additional funds into the new uniform property tax formula enacted in 1973. The difference between 14.38 and 11.04 mills, however, reflects a real average reduction in the local tax rate of 3.34 mills or 23%. Therefore, in spite of the large increase in property values the new State aid formula has, on a statewide average, succeeded in providing a considerable amount of property tax relief to local units.[3]

B. TAXPAYER EQUITY.

Taxpayer equity can be defined in two ways. The clearest is an equal tax rate regardless of the cost of the programs offered. The second is for equal tax rates for equal or similar programs. The former would require a uniform statewide tax rate for education. The latter would allow for varying rates based on the quality or cost of the program provided. The single state established mill rate to fund the foundation program, especially under the uniform property tax phase, represents the uniform levy approach while local leeway makes

2. The 14.38 mills was computed as follows. 18.45 mills on $1000 would have raised $18.45. Since school costs increased by 77.7% between 1973-74 and 1980-81, this amounts to an equivalent of $32.79 in 1980-81 dollars. During the same period property values increasd by 128% which means the original $1000 is now worth $2280. The tax rate needed to raise $32.79 on $2280 is 14.38 mills.

3. This conclusion must be considered in light of three criticisms. First, if the State had not provided additional financial support, the voters in many school units might not have approved as large budget increases as occurred during the 1970's. Second, while property tax rates for schools might have declined not all municipalities (councils and town meetings) pass all the savings on to local property owners. Finally, the reduction in property taxes for schools was paid for with income and sales tax dollars so it may be more correct to refer to a tax shifts rather than a tax reduction.

equal dollars available for equal effort.

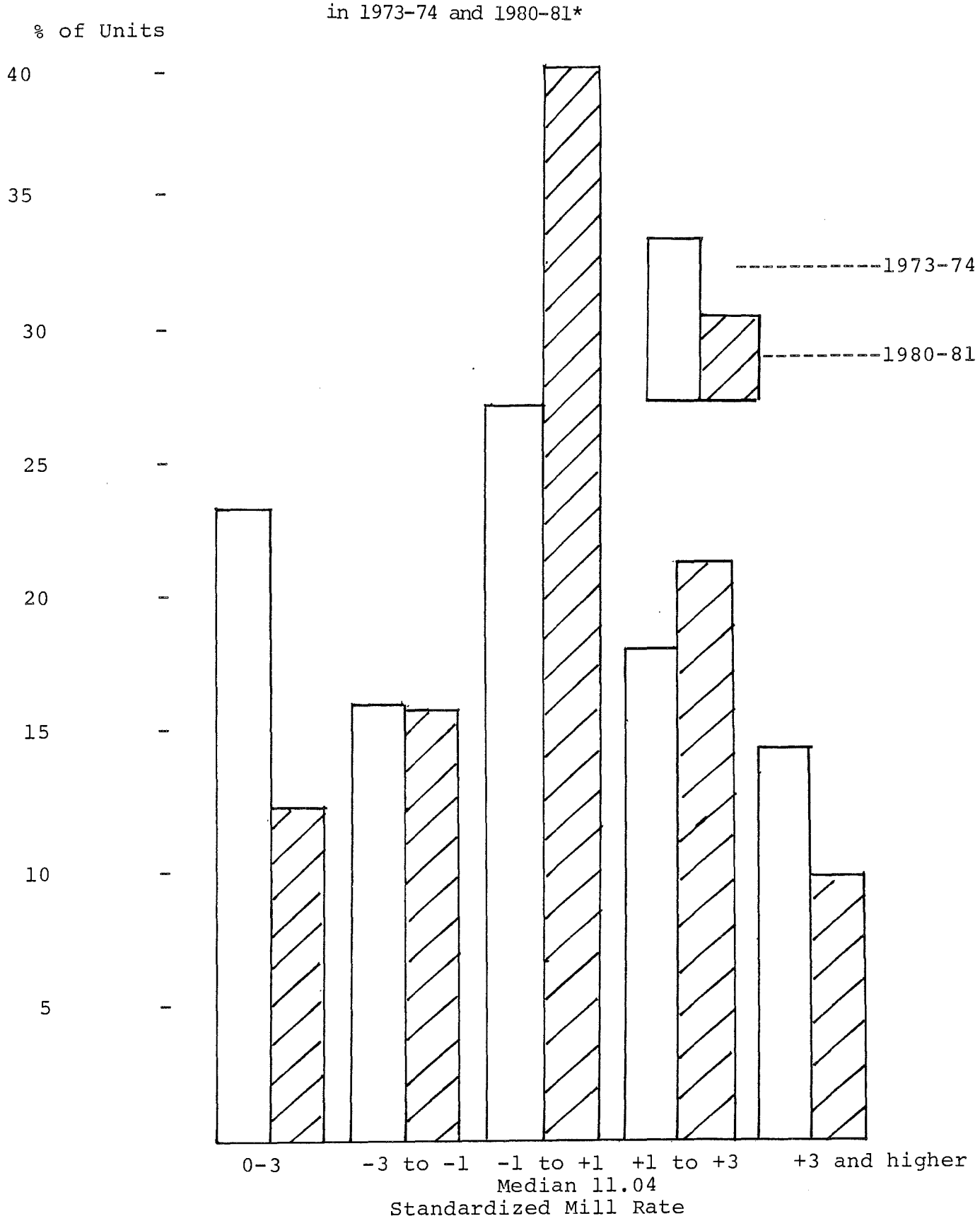
The formula departs from a formula to equalize tax efforts in three ways. First, the present Act does not have a recapture feature. While wealthy units do not receive aid, they can often run their educational programs on considerably less than the maximum mill rates set by the state for the foundation and leeway programs. Second, units can raise monies above leeway which do not become part of the equalization formula and which they must fund entirely from local tax dollars. Third, as referred to above, the method of determining the size of the foundation program depends on the previous spending pattern of a unit and penalizes those units which have historically funded the general operating portion of their program at an amount below the state average. Taken together these three factors tend to favor the property wealthier districts and work against the equalization intent of the formula.

If the funding formula has had any effect on the equalization of tax rates, one would expect to find, according to the uniform tax definition, a reduction in the overall spread in the mill rates levied by municipalities to cover educational costs. According to the equal monies for equal effort definition, the equalization would be among schools grouped relative to the amount they spend on education.

The spread in the mill rates for 1973-74 and 1980-81, standardized to 1980-81 rates[4] is presented in Graph 5. It is clear

4. In order to compare the spread in the mill rates in the two periods, it is necessary to first standardize the 1973-74 rate to take into account three factors - the increase in property values, school costs and State aid. The ratio of the mean mill rate in 1980-81 to the mean mill rate in 1973-74 is .61265. This ratio was used to weight the 1973-74 mill rates to make them comparable to the 1980-81 rates. The weight times the 1973-74 mill rate would equal the mill rate needed to fund the educational program in 1980-81.

GRAPH 5. Standardized Mill Rate levied by School Units for Education in 1973-74 and 1980-81*



*Figures based on 278 school units in 1973-74 and 282 units in 1980-81.

from the graph that there has been a significant increase in the number of school units which have mill rates within one mill of the median (11.03 mills) rate. In 1973-74, 27% of the units fell within one mill of the median; by 1980-81 this had increaed to 40%. There was also a decrease in the percentage of units which spent at least 3 mills less than the median from 23% to 12% and a decrease in the percentage of units which spent at least 3 mills more than the median from 15% to 10%. This reduced the percent of units still outside the range of the median plus or minus 3 mills from 37% to 22%. On the other hand, taken as a whole this represents a shift of only from 13% to 15% of the units toward the median.

Under a standard of equalization which allowed equal programs for equal effort, one would expect to continue to find a certain degree of variation. The mill rates, however, should be more uniform among units grouped according to expenditures on education. Tables 7 and 8 present the spread in mill rates for school units within expenditure groupings for both elementary and secondary students. The tables reveal that the trend toward the median from the beginning of the 1970s to the begining of the 1980s relates primarily to the shifts among elementary units in the bottom 60% of spenders. There is an elimination of the situation, for both elementary and secondary programs, where a unit had to levy a high mill rate but was only able to afford a minimal program. The remaining differences are modest and do not represent any uniform trend. Therefore, there is no clear indication that the formula produced any greater equity based on the standard of equal programs for equal effort than under the uniform tax criteria.

In the final analysis, the formula has only been partially

Table 7: Standardized Mill Rates Levied by School Units for 1973-74 and 1980-81 by Elementary Per Student Expenditures.

		Mills Raised for Education					
		Under 8.04	8.05 10.04	10.05 12.04	12.05 14.04	Over 14.05	Total
Quintiles of school units by per student expenditures							
Lowest 20%	1973-74	14%	25%	27%	18%	16%	44
	1980-81	9	32	43	14	2	56
20%	1973-74	9	20	36	23	11	44
	1980-81	4	17	65	15	0	54
Middle 20%	1973-4	18	14	34	23	11	44
	1980-81	9	11	60	18	2	55
20%	1973-74	16	11	23	23	27	44
	1980-81	13	11	25	36	15	55
Highest 20%	1973-74	34	9	20	20	16	44
	1980-81	25	12	12	22	29	51
Total	1973-74	16	18	28	21	16	220
	1980-81	12	17	41	21	9	271

Table 8: Standardized Mill Rates Levied by School Units for 1973-74 and 1980-81 by Secondary Per Student Expenditures.*

		Mills Raised for Education					
		Under 8.04	8.05 10.04	10.05 12.04	12.05 14.04	Over 14.05	Total*
Quintiles of units by pe student expenditures							
Lowest 20%	1973-74	13%	13%	46%	17%	13%	24
	1980-81	6	29	59	6	0	51
20%	1973-74	4	0	52	39	4	23
	1980-81	6	19	46	17	12	52
Middle 20%	1973-4	4	17	29	33	17	24
	1980-81	15	12	40	29	4	52
20%	1973-74	22	9	26	22	22	23
	1980-81	20	12	27	25	16	51
Highest 20%	1973-74	13	30	26	17	13	23
	1980-81	13	8	27	35	17	52
Total	1973-74	11	14	36	26	14	117
	1980-81	12	16	40	22	10	258

*The smaller number of school units in 1973-74 is due to the inclusion of tuition students in the receiving units student count prior to the 1973 finance act reform and the counting of tuition students in the sending units count after the reform.

successful in producing taxpayer equity. While there was to some extent a greater degree of taxpayer equity at the end of the decade than at the beginning, there was still a considerable variation among units. School units and municipalities still levy considerably different mill rates even when offering similar levels of programming to their students.

C. EQUAL OPPORTUNITY FOR STUDENTS.

The constitution of Maine requires the state to assure that towns make "suitable provisions for the support and maintenance of public schools" and the education statutes define it as "the intent of the Legislature that every person within the age limitations prescribed by the statutes shall be provided an opportunity to receive the benefits of a free public education." The question is whether the school finance reforms went beyond these mandates and created a mechanism to assure that students in different units had equal or more equal educational opportunities in conformity with the equal protection clause of the constitution.

In order to assess the spread in the opportunities provided by school units, they were ranked according to the amount they expended per elementary student and per secondary student.[5] For both elementary and secondary programs units were ranked according to their per student expenditures and then divided into 5 groups (quintiles) which included equal numbers of students. The top and bottom quintiles were further subdivided so as to be able to focus special attention on

5. The assessment of the degree to which students in different units receive equal educational opportunities is, in the following analysis, based solely on an examination of per student expenditures. While recognizing its limitations, expenditures do provide an objective index on which to compare school units.

the units at both extremes or alternatively to be able to eliminate the effect of the extremes on the group average. The average per student expenditures were calculated for each group. This provides similar size groupings of students at various positions in the expenditure hierarchy and allows for a relative comparison of the per student dollars available to students at the different levels. The average are presented on Table 9.

Comparing the per student expenditures available to elementary students in the bottom 1% with those at the top 1% reveals an enormous difference. In 1973-74 elementary students among the lowest 1% had an average of $382 expended on them while those at the top end had $953 available. This means that the students in the top 1% group had $2.49 for every $1 spent on students in the lower group. By the beginning of the next decade the expenditures on all groups had increased, but the spread in the ratio had also increased. For every $1 spent on students in the bottom 1% grouping, the top 1% had $2.60 spent on them.

Among high school students the ratio decreased from $3.39 spent on the top 1% group for every $1 spent on the bottom 1% group in 1973-74 to $2.59 for every $1 in 1980-81. This represents a considerable improvement over the decade but it only reduces the disparity to the same magnitude of difference found with elementary students.

The one percent extremes, however, may not provide a true picture of the general disparity in expenditures among schools systems in the state. Examining the difference in the average expenditure available to those students between the 10th and 20th percentiles, with those between the 80th and 90th percentiles may provide a fairer basis for comparison and eliminate special cases at both extremes. Among ele-

TABLE 9: Dollars spent per Student in 1973-74 and 1980-81 by Percent Ranking of Students *

Percent-Ranking of Students	Elementary Students 1973-4 Mean Dollars Per Student	Elementary Students 1980-1 Mean Dollars Per Student	Secondary Students 1973-4 Mean Dollars Per Student	Secondary Students 1980-1 Mean Dollars Per Student
0 - 1 %	382	862	545	$ 1233
1 - 5 %	464	1022	691	1318
5 - 10%	507	1089	754	1393
10 - 20%	531	1143	819	1476
20 - 40%	581	1199	881	1589
40 - 60%	633	1288	968	1724
60 - 80%	689	1411	1051	1930
80 - 90%	758	1575	1179	2151
90 - 95%	811	1710	1288	2405
95 - 99%	859	1902	1481	2526
99 - 100%	953	2245	1846	3189

*Based on 174,197 elementary and 68,770 secondard students in 1973-74 and 151,711 elementary and 72,849 secondary students in 1980-81.

mentary students the higher group had $1.42 for every dollar spent on the lower group before the finance acts went into effect and $1.38 for every dollar spent on the lower group at the beginning of the 1980s. The ratios for secondary school students were $1.44 to $1 at the beginning of the period and $1.44 to $1 at the end. This reflects both very little movement from the beginning to the end of the decade and very little difference between elementary and secondary student.

Another way to try to provide a standardized comparison to judge both the discrepency between the relative amounts of money available to students at various positions in the hierarchy is to look at the expenditures as a percent of the median quintile (40th to 60th percentile) group. As shown in Table 10 the average amount of money available to both elementary students in the bottom 20% has increased relative to the expenditures on their median group. The bottom one percent increased its relative share from 60% to 66% of the median groups expenditures and those between the 10th and 20th percentiles increased their share from 84% to 89% of the median. The opposite tendency has occured among the top 10%. At the beginning of the decade, elementary students in the top one percent group on the average had 151% of what the median group had expended on them. At the end of the decade, this had increased to 174%. Those between the 90th and 95th percentiles had their share increased from 128% to 133% of the median.

A similar pattern of a slight up grading of the relative amounts spent on students in the bottom 10% is apparent from the data on secondary school expenditures. Among the students in the top 10% the trends are not as uniform. While in general the pattern found with elementary schools holds and the share received by the students in the

TABLE 10: Expenditures per Student as a Percent of the Median in 1973-74 and 1980-81 by Percent Ranking of Students*

Percent Ranking of Students	Elementary Students 1973-4 Percent of $633	Elementary Students 1980-1 Percent of $1288	Secondary Students 1973-4 Percent of $968	Secondary Students 1980-1 Percent of $1724
0 - 1 %	60%	66%	56%	72%
1 - 5 %	73	79	71	76
5 - 10%	80	85	78	81
10 - 20%	84	89	85	86
20 - 40%	92	93	91	92
40 - 60%				
60 - 80%	109	110	109	112
80 - 90%	120	122	122	125
90 - 95%	128	133	133	140
95 - 99%	136	148	153	147
99 - 100%	151	174	191	185

*Based on 174,197 elementary and 68,770 secondary students in 1973-74 and 151,711 elementary and 72,849 secondary students in 1980-81.

top groups increased relative to the median group over the decade, those in the top 5% had a slight decrease in their relative share. However, the divergence from the median of the expenditures on the top 5% was much greater for secondary school students than for elementary students at the beginning of the decade. While it had decreased by the end of the decade, it was still larger than that found amoung elementary students with those in the top 1% receiving 185% of that received by the median group.

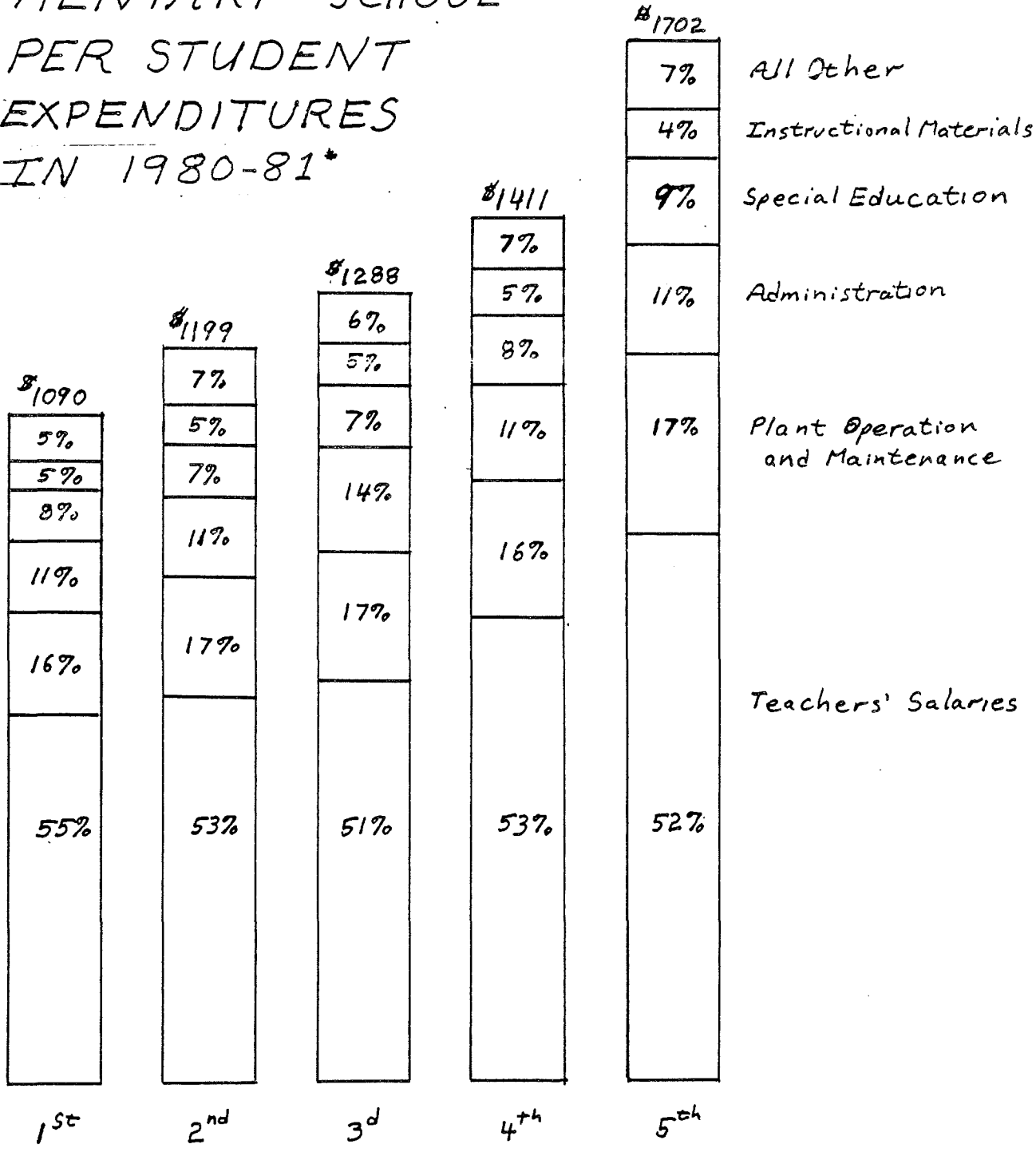
The overall impact of the funding formula on redistributing dollars in a more equal fashion among school units was relatively small. While there was a slight tendency for the position of students in units which spent below the median to improve over the decade, this improvement was balanced by an increase in the relative amount spent by those units above the median. As a result by the end of the decade the divergence between the top and bottom groups was actually as large or larger than it had been at the beginning of the decade.

D. EXPENDITURE PRIORITIES

To get a slightly better understanding of how the discrepancies in per student expenditures affect the quality of education provided, an examination was made on the 1980-81 data of the distribution of expenditures by six category or program areas -- teacher salaries, plant operation and maintenance, administration, vocational education, special education and instructional materials. The relative priorities for expenditures on students, ranked and divided into quintiles, reveals a basic uniformity from high to low spenders. Units spent from 53% to 57% of their dolars on teachers salaries and 16% to 17% on plant operation and maintenance (see Graphs 6 and 7). Adminis

Graph 6

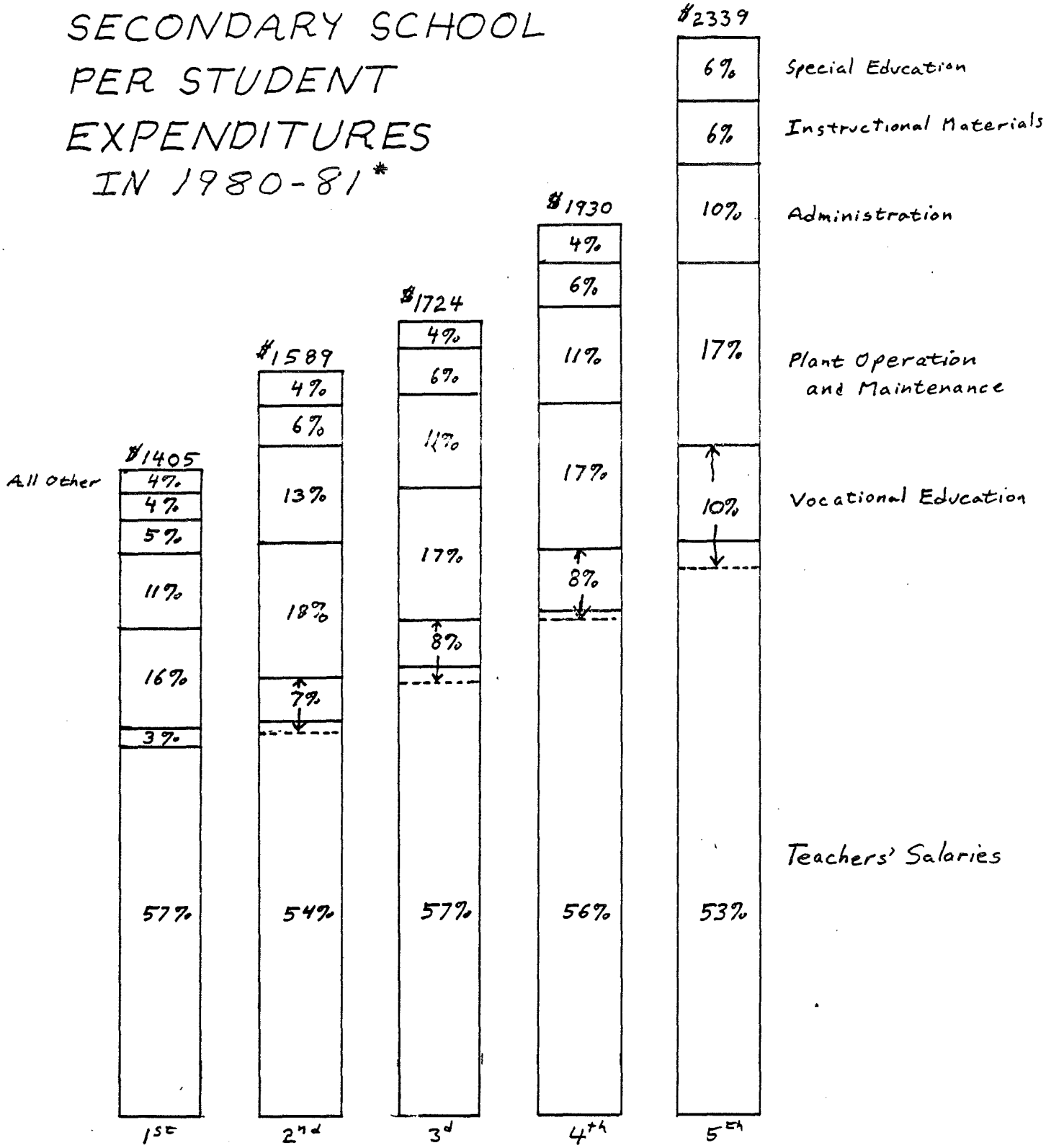
ELEMENTARY SCHOOL PER STUDENT EXPENDITURES IN 1980-81*



* BASED on 151,711 elementary students.

Graph 7

SECONDARY SCHOOL PER STUDENT EXPENDITURES IN 1980-81*



-18-

* Based on 72,849 secondary students.

tration, which included principals as well as the superintendent's office, accounted for 10% to 14% of expenditures, special education from 4% to 9% and instructional materials from 4 to 7%. This division indicates that in general units make the same priorities in expenditures whether they are high spenders or low spenders. The area of vocational education at the secondary level appears to contradict this generalization to some degree. The middle three fifths all spent between 7% and 8%. The bottom fifth, however, only spent 3% on the average while the top fifth spent 10%. This difference reflects not so much a variation in the priorities placed on vocational education as to a special feature of the organization and funding of vocational services. Among the school units included in the top fifth are a number of vocational centers. Conversely, among the units included in the bottom fifth are a large number which send their students to vocational centers. Most of the other school units belong to vocational regions. School units which are part of vocational regions share the cost of the programs among themselves and hence the vocational costs are spread more or less evenly among the units. Vocational centers, on the other hand, are funded totally by the unit in which the center is located. The units which send their students to a center do not have any expenses except for transportation costs. This division of costs works out fairly equitably in the Finance Act formula due to the circuit breaker or kickout effect of the State established maximum mill rate for the program. However, it does give the appearance of greater differences in expenditures and oportunities in the area of vocational education than really exist.

This general pattern does not negate the possibility that school units within each of these groupings may vary considerably as to their

spending in particular areas as they respond to particular local needs. It does indicate that given a certain pot of money school boards and administrators make the same general priorities as to how much money shall be allocated to different programs. In particular the low spending of the units in the bottom fifth does not come primarily at the expense of certain programs nor are the additional expenditures by those among the top fifth due to an emphasis on one or more of these general areas.

E. SOCIO-ECONOMIC INDICATORS

In an attempt to gain an understanding of the underlying factors related to the wide variation in per student expenditures, they were correlated with a variety of demographic and economic characteristics of the school units. For both the beginning 1973-74 period and end 1980-81 period the indicators included property valuations per student and the local tax rate for schools. In addition for the later period indicators were developed from a combination of census, social services, economic data. They include the age distribution in the community (1978); the percent of households receiving food stamps, AFDC, and social assistance (1981); and the per capita income (1977).

Maine still has many unconsolidated small school units. Because these small districts often either have uncharacteristically high per student costs due to their geographic isolation or have artificially low costs because the State sets a cap on the allowable rate for tuition charged units which do not run their own schools, the following analysis excludes school units under 100 students. In addition, to eliminate the differences caused by the manner in which the State subsidizes vocational education, the per student secondary costs exclude vocational education.

Examining first the data from 1980-81, the correlations in Tables 11 and 12 clearly show that for both elementary and secondary expenditures the major explanatory variable is the property tax base behind each student. As indicated above, while the state aid formula attempts to equalize the tax burden among municipalities across the state, there is still considerable variation in the tax rate required to provide equal or similar levels of funding per student. When the propety value of a school unit is divided by its number of students, those units which have the larger amount of taxable property behind each student (ie can run the same program at a lower tax rate) appear to spend more on education than those units which have a smaller tax base per student. The correlation was a fairly high .649 for secondary students and a lower .446 for elementary students explaining approximatley 40% and 20% of the variation in per student expenditures respectively.

The ineffectiveness of the State subsidy formula in weakening the tie between property tax base and school programs is even more clearly brought out when the correlations are compared with those found at the beginning of the decade. In 1973-74 (see Tables 13 and 14), the correlations between per student expenditures and property valuation per student were only .274 for elementary expenditures and .378 for secondary expenditures. Thus valuation per student rather than being less effective as an explanation of the variation is a better predictor at the end of the decade than at the beginning increasing its explanatory power from 7.5% to 20% for elementary and 14% to 42% for secondary expenditures.

With elementary expenditures, there is also a fairly substantial

Table 11: Elementary Per Student Expenditures for 1980-81 Correlated with Socio-Economic Variables*

	Correlation	Explained Variation	Standard Error of Estimate
Percent population age 0-17	-.260	6.8%	220
Percent of population age 18-64	.218	4.8	223
Percent of population age 65 and over	-.086	.7	227
Food stamps recipients as percent of all households	-.289	8.4	218
AFDC recipients as a percent of all households	-.206	4.2	223
Social assistance recipients under age 65 as a percent of all households	-.240	5.8	221
Social assistance recipients age 65 and over as a percent of all households	-.144	2.1	226
Families below poverty level as a percent of all households	-.264	7.0	220
Per Capital Income	.440	19.4	205
Property valuation per student	.446	19.9	204
Property tax rate for education	.352	12.4	213

*Based on 184 units with 100 or more students.

Table 12: Secondary Per Students Expenditures for 1980-81 correlated with Socio-Economic and Variables*

	Correlation	Explained Variance	Standard Error of Estimate
Percent population age 0-17	.035	.1%	350
Percent population age 18-64	.198	3.9	343
Percent population age 65 and over	---	---	---
Food stamp recipients as percent of all households	-.215	4.6	342
AFDC recipients as percent of all households	-.237	5.6	340
Social assistance recipients under 65, as percent of all households	-.210	4.4	342
Social assistance recipients 65 and over as percent of all households	-.096	.9	349
Families below poverty as percent of all households	-.238	5.7	340
Per Capita Income	.260	6.8	338
Property valuation per student	.649	42.1	266
Property tax rate for education	.103	1.1	348

*Based on 143 units with 100 or more students.

Table 13: Regression of 1973-74 Secondary per Student Expenditures by Property Valuation per Student and Property Tax for Education *

	Correlation	Explained Variance	Standard error of Estimate
1973-74 Secondary per student expenditures	---	---	159
By: Property valuation per student	.378	14.3%	148
By: Tax rate for education	.089	.8	159
By: Property valuation per student and tax rate for education	.412	17.0	146

*Based on 110 units with 100 or more students.

Table 14: Regression of 1973-74 Elementary Per Student Expenditures by Property Valuation per Student and Property Tax for Education*

	Correlation	Explained Variance	Standard error of Estimate
1973-74 Elementary per Student Expenditures	---	---	114
By: property valuation per student	.274	7.5%	110
By: tax rate for education	.128	1.6	113
By: property valuation per student and tax rate for education	.375	14.1	107

*Based on 183 units with 100 or more students.

tax rate effort made for education. For both elementary and secondary units the social support indicators are all negatively correlated with expenditures. The correlation with the percent of the population under age 18 and over age 65 are negative and the correlation with the population 18 though 64 is positive. While the correlations are relatively low when they are taken together, they indicate that units with a greater burden of social support cases or large numbers of chidren have a tendency to spend less on education. Conversely, those with a higher property tax base and higher per capita income or with a greater number of individuals in the productive working ages tend to spend more on education.

As indicated in Table 15 and 16 these factors have a cumulative effect in explaining the variation in school expenditures. Taking all the variables into a single multiple regression equation results in a correlation of .701 for elementary expenditures and .753 for secondary expenditures or an explanation of approximately 50% of the variation in both cases. In examining the stepwise progression, the relative importance of the various factors is basically similar for both elementary and secondary expenditures. In order of importance the central variables are property valuation per student, percent of the population age 18 to 64, percent of the households over 65 on social assistance, and the property tax rate levied for education. The difference is that per capita income enters as the second most important factor in the regression equation explaining elementary expenditures and percent of the population under age 18 as the third factor for secondary expenditures. It is of interest to note that the major factors relate to the wealth of and the burdens placed on the

Table 15: Regression of Elementary per Student Expenditures for 1980-81 with Socio-Economic Variables*

	Correlation	Explained Variation	Standard Error of Estimate
Elementary Per Student expenditures			227
By: property valuation per student	.446	19.1%	204
Plus: per capita income	.542	29.3	192
Plus: Percent of population age 18 to 64	.561	31.5	190
Plus: Social assistance recipients age 65 and over as percent of all households	.595	35.4	184.81
Plus: Property tax rate for education	.684	.468	168
Plus: All other	701	49.2	167

*Based on 184 units with 100 or more students.

Table 16: Regression of Secondary Per Student Expenditures for 1980-81 by Socio-Economic Variables*

	Correlation	Explained Variance	Standard Error of Estimate
Per student expenditure			348
By: property valuation per student	.649	42.1%	266
Plus: percent of population age 18-64	.686	47.1	256
plus: Percent of population under age 18	.702	49.3	251
Plus: Social assistance over age 65 as a percent of all households	.718	51.5	246
Plus: Property tax rate for education	.735	54.0	241
Plus: All other	.753	56.7	238

*Based on 143 units with 100 or more students.

unit or the municipalities within the unit. Thus it is not the amount of poverty in the unit per se or the percentage of individuals on some type of transfer payment (AFDC or food stamps) which is important. Rather it is whether they represent a burden on the local property tax base (social assistance and the number of chidren). Finally, willingness of the voters in a unit to tax themselves enters as a significant factor in predicting elementary expenditures increasing the explained variance from 35 to 47%.

F. CONCLUSIONS

The education finance reforms of the 1970's produced only mixed results in acheiving their three goals of property tax reduction, taxpayer equality and equal educational opportuity. It did succeed in reducing the local property tax share of education costs by 23%. There was also a narrowing of the spread in the range of local property tax rate levied for education and an increase from 27% to 40% in the percent of units which fell within a range of plus or minus 1 mill of the median tax rate.

However, inspite of this narrowing of the range of the property tax rates, there was actually a tightening of the link between property values per student and expenditures for education. In 1973-4, before the finance reforms went into effect, variation in property valuations per student explained 7.5% of the variation in expenditures for elementary education and 14% of the variation in expenditures for secondary education. By the end of the decade the explanatory power of property values per student had more than doubled to 20% and 42% respectively. In addition, in the analysis of the variation in 1980-81, a number of other indicators relating to a unit's ability to finance education costs were found to add to the explanation of dif-

ferences in expenditures. These included the percent of the population in the working ages 18 to 64, the percent of the households receiving social assistance from their communities, and per capita income. When these factors were accounted for, the property tax rate levied for education, reflecting each unit's willingness to fund education, played only a marginal role in explaining the variation in expenditures.

Finally, the finance reforms did not produce an equality of opportunity for all students across the state. At the end of the decade, there remained as wide a variation in the amount of dollars available to educate students in different school units as there was at the beginning of the decade. Students in the top 1% still had 2 1/2 times as many dollars behind their education program as students in the bottom 1%.

APPENDIX

PROBLEMS WITH THE PRESENT FUNDING FORMULA

A. COMPLEXITY OF THE FORMULA - DIFFICULT FOR ELECTED OFFICIALS AND LOCAL CITIZENS TO UNDERSTAND.

As is apparent from the presentation in Chapter II, the formula for providing State aid to units is complicated. The complication stems partly from the nature of the act itself and partly from the manner in which it has been explained to voters (used to defend or argue against funding of specific programs). In an attempt to use only known costs in defining subsidizable costs, the formula uses two year old expenditures for most costs, one year old costs with prior approval for bus purchases and current year costs for debt service. Some of the two year old costs are up-dated for one year's inflation to "estimate" one year old costs. In discussing a current year budget, it is often difficult to explain what effect an addition or deletion of a particular program would have on the unit's present, or even more difficult, future State subsidy. Individuals who support the development of certain programs will claim that the State will reimburse the unit for 100% of costs two years later. Opponents, on the other hand, will emphasise that the local unit will have to pay the total costs of any expanded programs for at least the first two years. In regard to budget costs, proponents will point out that the unit will not lose any State aid from the cut. Opponents will argue that any cut in the current year will result in a reduction of State aid two years later.

B. PENALTY FOR ABOVE STATE AVERAGE SPENDERS

Partly because leeway has been under-funded and partly because of the high inflation rates in recent years, many units have expended additional local monies above leeway. Under the present formula, the amount spent above local leeway is not included in calculating the state per student average cost. This above leeway amount accumulates from year to year, for example it was $29.7 million for FY80-81, increased to $30.8 million for FY82-83, and will be an estimated $32.0 million in FY 1983-84. The cost to the State of correcting this problem in FY1983-84 would be $6.47 million.

C. DISINCENTIVE FOR LOW SPENDING UNITS.

The present formula has two disincentives for low spending units to increase expenditure. One is that a unit's subsidizable costs are based on its two-year-old expenditures. Therefore, if a unit spent below the state average two years ago, its allowable costs for school subsidy purposes would be less than the allowable costs for units which had spent at the state per pupil average. Both types of units would have to raise the same subsidy index tax rate. In short this means that units which spend below the state average have the same tax burden but receive less State aid or in other words less State aid for the same tax effort.

An example of this process would be two units, one which spends at or above the state elementary per student average of for example $1290 and another which spends only $1000. If they both have the same property tax base, $150 million, and the same number of elementary students, 2100, then their local share would be $609 per student on a subsidy index mill rate of 8.53 mills. The low spending unit would be

able to add 1/3 of the difference between the state average and its own local average raising its subsidizable costs from $1000 to $1097 per student. However, even this additional $97 would mean that for the same tax effort, the same property valuation, and the same number of students, one unit would receive $681 in State aid per student while the other unit would receive only $488. To make up this $193 difference and increase its expenditures up to the state average, the low spending unit would have to raise the additional $405,300 from local revenues for two years before they would be included as base year costs in the subsidy formula. One hundred ninety-three dollars per student would require an additional millage effort of 2.70 mills, or a tax rate 32% higher than the town with the historically higher expenditure pattern.

This additional mill rate acts as a considerable financial disincentive for units which have historically spent below the state per student average to increase their school budgets. The cost to the State of correcting this disincentive - by offering each unit an operating cost subsidy based on the actual state per student average - would be $8.51 million in 1983-84.

The second mechanism encouraging low spending units to spend below the State average is the addition of 1/3 the difference up to the State average to the subsidizable costs of below state average spenders. Since local units establish their own budgets and mill rate, the 1/3 feature can also be seen as a bonus for spending below the state average. Units which spend at the state average do not receive a bonus. The bonus could be used, to help the low spending unit to come up to the state average. It could also be used to lower the unit's tax rate. Using the preceding example of the unit which

spent $1000 per student, the 1/3 bonus of $97 could bring the unit's expenditures up to $1097 or be applied to reducing the units tax rate by 1.36 mills to 7.17 mills. In discussions of prospective financing of hospital costs, similar types of bonus mechanisms are consciously included as cost containment mechanisms.

D. UNDERFUNDING OF LOCAL LEEWAY

The present formula requires the Commissioner of Education to calculate the amount proposed for leeway in the coming budget on the previous year's per student dollar guarantee and mill rate. Since the value of property tends to increase from year to year, the fixed mill rate tends to raise more money in each subsequent year or, in other words automatically increase the local share. At the same time inflation reduces the value of the per student guarantee. Both of these factors have tended to cause an erosion in State support from the originally intended level of 40% to 30% and less. The cost to the State of increasing its share to 40% of $145 per student[1] would be $2.08 million in 1983-84.

E. LACK OF AN INFLATION FACTOR FOR CATEGORICAL PROGRAMS

The categorical programs and general operating costs are both calculated on each unit's two year old expenditures. The latter are adjusted for one year's inflation to reflect year old expenditures. Categorical programs are not adjusted. To include an inflation adjustment for categorical programs would cost the State $3.48 million in 1983-84.

1. The per student amount was set at $145 for 1983-84.

F. IMPACT ON LOCAL UNIT'S SHARE

One of the problems in correcting the deficiencies in the present formula is that a solution which benefits one set of school units may increase the costs of another. When money is added into the formula to address any of the above problems, it increases the total amount of money in the foundation program. Since these total costs are shared between the State and the local units, any increase in the total cost increases the subsidy index mill rate needed to pay for the local share. The net gain to any unit is the difference between the increase in its subsidizable costs and any increase in property taxes resulting from the inclusion of these new expenditures in the formula. A unit which is already raising taxes to cover these costs would not experience any new increase in taxes and would in fact receive a decrease equivalent to the State's share of those costs.

An example would be the inclusion of an inflation factor for the categorical programs (transportation--operating, special education and vocational education). The inclusion of these costs would increase the subsidizable costs statewide and increase the subsidy index to cover the local share of these costs. All units would be required to raise the same additional millage for their foundation program, but the amount they received would depend on the size of their categorical progams. A unit which did not provide transportation, or had very small transportation costs, would not receive as large an increase as those which did, and the increase in the taxes raised might be greater than the amount added to their subsidizable costs. The units which have high expenses have been raising tax monies to pay for the inflation costs all along. Any additional State aid would help reduce their overall tax rate.

If the inclusion of the inflation factor for these categorical programs increased the overall foundation program from $424.02 million to $430.47 million, the local share of the increase would be $2.87 million and necessitate an increase in the subsidy index mill rate from 8.53 mills to about 8.68 mills. If the unit had a State property valuation of $150 million this would mean an additional local share of $19,500. In a unit with two year old categorical costs of $350,000 a 7% update would produce an additional $24,500 in their subsidizable costs and a net gain in state aid of $5000. On the other hand, if the unit had only $200,000 in categorical costs the 7% up-date would be worth only $14,000. Since the additonal millage would raise $19,500, the unit would have a net loss of $5500 in State aid.

A central factor in judging how the other changes affect units is the different impact the changes would have on units which spend below the state per student average and those which spend above the state average. Correcting the problem of the exclusion of the local expenditures above leeway from the calculation of the state average would benefit those units which spend above the average. Since those units which spend below would be able to add only 1/3 of the increase into their formula, they would receive only 1/3 of the benefit at best. On the other hand, all units would have to increase their subsidy index mill rate to pay for the local share of the change. For low spending units, the increase in the tax rate would, in many cases, be greater than the increase in subsidizable costs, and they would have a net loss in State aid.

The cost of including the expenditures above leeway in the formula would be about $11.98 million with a State share of $6.47

million and a local share of $5.51 million. To cover the local share, the subsidy index mill rate would have to be increased by 0.24 mills. If the use of the real average increased the state average per student elementary costs by $80, those units spending above the state average could add the full $80 per student to their subsidizable costs while those spending below the state average could add 1/3 of that amount or only $27. In the case of two units where the State aid covered 50% of their foundation program, the increased millage would raise $40 per elementary student. The net gain in State aid would be $40 per student for the above average spender resulting in a reduction in its mill rate by 0.24 mills. (It was previously raising 0.48 mills to cover the full $80 and now needs only 0.24 mills.) The below average spender would actually receive a net loss in aid of $13 per student (a $27 increase in subsidizable costs minus a $40 increase in local share) and a resulting net increase of 0.24 mills to cover the addtional $40 per student. If an above average spending unit had 2100 elementary students, it would mean an additional $84,000 in state aid. A below state average spender would lose $27,300 in State aid ($13 times 2100).

Conversely, any effort to address the disincentive for low spending units to come up to the real state average would adversely affect the high spending units. The total cost would be $15.77 million resulting in a State share of $8.51 million and local share of $7.25 million. The subsidy index would have to be increased by .31 mills to pay for the change. While the increase in the monies in the formula would be available to help low spending units come up to the state average, above-state-average spenders would also have to raise the additional .31 mills but would not receive any increase in State

aid. This would amount to an increase of $46,500 in local share for a unit with a State valuation of $150 million and a commensurate decrease in their State aid. If the below state average unit with $150 million in valuation and 2100 elementary students spent $290 less than the state average, they would have access to an additional $193 per student (they already receive 1/3 of the $290). This would result to a net increase in State aid of $358,800. With the addition of $46,500 (.31 mills) in local share, this would, in the current year, give the below-average spender the same access to a subsidy based on the state per student average as above-average spenders.