EQUALIZATION OF SCHOOL FUNDING IN MONTANA

by

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ABSTRACT

In 1988 the First Judicial Court of Lewis and Clark County ruled that because of disparities in spending among districts and a heavy reliance on local property taxes, the school funding system in Montana did not provide an equal opportunity for education. The Montana State Legislature responded by passing House Bills 28 and 667 in attempts to reduce the reliance on local property taxes and to bring the expenditures among districts closer together.

This thesis examines school budgets for a representative sample of 301 elementary districts and 118 high school districts for fiscal years 1989, 1991 and 1995. Districts are ranked by their general fund budget per pupil in each year. High spending districts (95th percentile) are then compared to low spending districts (5th percentile). The results indicate that spending disparities have diminished among both elementary and high school districts, and among most size groups as well. High spending districts, however, still commonly spend twice as much as low spending districts, far exceeding the 1.25 ratio which is the target of both federal regulations and the state's own program.

Changes in state policy over this period first reduced and then increased district dependence on local property tax levies. When HB 28 was first implemented, the state picked up a larger share of budgets in most districts. Although much of the state's contribution was itself financed by property taxes, districts did not need to rely so much on their local levies. Between 1991 and 1995, however, state funding failed to keep pace with inflation and enrollment growth. The state also changed the rules governing district finances so that voter approval is often necessary. The result of these policies has been a growing reliance since 1991 on local mill levies, and increasing numbers of public votes on budget issues. These trends may run counter to the goal of equalization, while restraining overall spending.

CHAPTER 1

INTRODUCTION TO SCHOOL FINANCE

The largest single item of Montana's state and local governmental budget is expenditure on public education. This expenditure constitutes about one third of total spending and consumes over half of property tax revenues.[1] One concern about school finance stems from the inequality of funding among the districts of the state. Districts with larger property tax bases typically end up with higher levels of spending than do districts that have relatively lower taxable values.

In 1988 the First District Court of Lewis and Clark county ruled that the existing differences in expenditures among school districts violated the Montana constitutional requirement to provide equal educational opportunity for all persons. Since then the legislature has changed the funding system in an attempt to spread the available funds more evenly among districts. The purpose of this thesis is to examine how spending for education has changed as a result. The following chapters will try to answer four basic questions about whether recent legislative directives have been effective in achieving their stated fiscal goals:

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[1] See Young (1995), pg. 8

I. Has equalization of funding among Montana's school districts taken place, and if so to what degree?

II. What happened to spending on schools in recent years? In particular, have changes in the funding methods resulted in rapid increases in spending?

III. Has the reliance on local property tax values been reduced?

IV. Has state and federal support kept up with increasing school costs?

Background

In the late nineteenth century the responsibility for providing and funding education came to rely primarily on local governments and revenues generated by local property taxes.[2] As a result concern began to arise about the inequities between communities in their relative tax wealth. The unequal property wealth among school districts created unequal spending and an unequal opportunity to provide public education. If local revenues provide the bulk of revenues within a district, the districts with greater property wealth can spend more and provide a higher quality public education, with less tax effort, than can poorer districts.

A district may also have a greater proportion of "high cost" students (non-English speaking, learning disabilities or economically disadvantaged), and therefore a greater resource cost associated with providing a given level of education. When such a district also has relatively low property wealth, it doesn't have the opportunity to produce as high a quality of education at as low a cost as a high property wealth district.

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[2] See Reschovsky (1994), pg. 185

Policy Goals and Tools

The effectiveness of policies for fiscal equalization vary greatly depending on their objectives and rules. Several possible policy goals are "equal education", "wealth neutrality", and "taxpayer equity".[3] Equal education is a goal that concentrates more on the output from educational expenditure. With this goal a state tries to ensure that each student receives the same level of education. If the costs of education were equal among all districts, a state could obtain equal education by establishing the same level of per pupil spending for each district.

Wealth neutrality, which concentrates more on the equalization of inputs, means that per pupil expenditures within a district are not a function of the local taxable value. The best to way achieve wealth neutrality would be to fund all schooling at the state level.

Taxpayer equity means that districts can provide equal levels of spending by adopting the same property tax rate. Providing a subsidy to property poor districts can accomplish taxpayer equity. To be truly equal a policy would have to require that wealthier districts return any excess revenues.

Two popular policy suggestions for many states are the power equalization program and the foundation program.[4] States adopting a power equalization formula try to even local educational spending by providing a larger share of state revenues to districts with lower property wealth. Often referred to as percentage equalization or guaranteed tax

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[3] See Reschovsky (1994), pg. 186-189

[4] See U.S. Advisory Commission on Intergovernmental Relations (1990), for a thorough discussion of the power equalization and foundation programs

base aid, power equalization effectively guarantees an equal tax base to all districts. Here the state establishes a guaranteed tax base level and provides an amount equal to the difference between what a district actually raised by local tax levies, and what a district could have raised if they were at the guaranteed tax base level. Such a program is most effective when the state requires the districts with greater property wealth to pay back any revenues raised in excess of the guaranteed level. Power equalization programs, although used by many states in an attempt to gain wealth neutrality, are most effective in achieving taxpayer equity.

A foundation program attempts to guarantee a minimum level of expenditure for each student within a state. To achieve this goal a foundation program typically requires each district to levy a specific number of local mills and then the state contributes the difference between the local share and the foundation expenditure. The state aid is greater for less wealthy districts who are unable to generate as much revenue as wealthier districts when taxing at the statewide rate. States may combine the two programs so that districts receive an income effect from the foundation formula and a price effect from the power equalization system.

A Brief History of Equalization

In 1971 the California Supreme Court ruled in Serrano v. Priest that because of its heavy reliance on local property taxes, the state's school system violated state constitutional guarantees regarding a child's right to an education.[5] Resulting from other

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[5] See Silva and Sonstelie (1995), pg. 199

court decisions or threatened litigation, the majority of states have made notable changes in their school finance systems. Every state in the union now utilizes at least a foundation program or power equalization program. (With the exception of Hawaii which funds its schools entirely at the state level.)[6] Since Serrano v. Priest, court decisions regarding school finance moved toward equalizing per-student spending throughout a state. In even later court cases decided in Kentucky and Massachusetts, the emphasis focused upon issues of school performance rather than just expenditures per-student. The courts have begun to look at factors that embody an adequate level of education and the capabilities that an educated child would be expected to possess.[7]

In 1949 Montana, concerned about the disparity of wealth between its districts, enacted a foundation program. Through a mandatory 45 mill levy and distribution of state revenues, the foundation program attempted to level the highs and lows of mills levied by districts. Although the public school system underwent many changes since 1949, the basic foundation program remained until 1988.

In 1972 Montana enacted the last of four constitutions. This current constitution contains clear and explicit language for the support and preservation of public education. Article X lays out the intent and responsibilities of the Montana public education system.

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[6] See U.S. Advisory Commission on Intergovernmental Relations (1990), pg 21

[7] Many researchers have found only a relatively weak relationship between spending and student performance, (Hanushek (1986), pg. 1141-1171). This raises the issue of whether equalizing spending really equalizes "education", or conversely, whether differences in spending really constitute differences in educational opportunity. These issues are, however, beyond the scope of this thesis.

Section 1 states that:

> "It is the goal of the people to establish a system of education which will develop the full educational potential of each person. Equality of educational opportunity is guaranteed to each person of the state."[8]

The new constitution, however, did little to reduce the heavy reliance on local property taxes .

In 1985 sixty low property wealth districts filed suit with the First Judicial District Court in Lewis and Clark County. In 1989 the Supreme court unanimously upheld the district court's finding that the current education system violated Article X of the Montana Constitution. In response, the legislature enacted House Bill 28 which effectively raised the foundation payments provided to each district and instituted a guaranteed tax base system. The "Underfunded Schools Coalition", finding shortcomings with the new system, filed another law suit in 1991. Before a decision could be rendered on the second law suit, the legislature passed House Bill 667. Whether HB 667 successfully equalized the funding of Montana schools and whether it addressed the issues discussed in the law suit remains a question.

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[8] See Montana Education Association (1994), pg. 1

Summary of Results

Questions about the equalization of general fund budgets, the reliance on local property taxes, changing enrollments, and the change in the mix of funding sources are addressed using data from 301 elementary and 118 high school districts for the fiscal years 1989, 1991 and 1995.

Introduction of the new school finance program brought a nominal increase in general fund budgets of nineteen percent from 1989 to 1991, while a further increase of twelve percent resulted from the legislative changes made between 1991 and 1995. The data show that real per pupil spending is more equalized in 1995 than it was in 1989. The standard deviation of real per pupil budgets fell by 28 percent at the high school level and 33 percent at the elementary level. The ratio of spending per student for elementary and high school districts between the 95th and 5th percentile dropped between 1989 and 1995. A high school district at the 95th percentile still spends twice as much as a high school district at the 5th percentile, however, while an elementary district at the 95th percentile spends 54% more than one at the 95th percentile.

Total property taxes levied for schools rose forty-four percent in nominal terms from $299 million in 1989 to $429 million in 1995. The average mill rate rose from 154 mills for schools in 1989 to 240 mills for schools in 1995. Taxable value per pupil was $13 in 1989 and declined to $11 in 1995, while inflation was 23 percent over this period. Taxable values also failed to keep up with enrollment growth as total enrollments rose eight percent between 1989 and 1995.

The state's share of general fund budgets rose dramatically as result of the

school finance reform in 1991. Although state shares actually declined after 1991, the net increase of state funds rose from 47% of general fund budgets to 65% of general fund budgets between 1989 and 1995. The average and standard deviation of state revenues per student increased initially, but fell between 1991 and 1995 for high school and elementary districts. State support did, however, increase relatively more for the larger, less wealthy districts by 1995.

Federal impact aid funds , which are very important to some districts, fell from 5% of budgets in 1991 to 3% in 1995. The average and standard deviation of federal funds also fell at the elementary and high school level. As a result of these declines in federal and state funding sources, local revenues became more important. Dependence on local revenues rose from 24% of general fund budgets in 1991 to 32% in 1995.

Thus, our basic findings are that budgets are significantly more equalized than prior to the 1989 reforms, but that large disparities remain between some districts. Also, declines in state and federal support since 1991 have increasingly shifted the burden of paying for schools back on to the local property tax payer.

CHAPTER 2

SCHOOL FINANCE IN PRINCIPLE AND PRACTICE

This chapter describes the various school funding systems employed by the states. A basic foundation program and guaranteed tax base (power equalization) system are described. The chapter concludes with a description of the legislative actions in Montana that resulted from the "Underfunded Schools" law suit.

Equalization and Incentives to Spend

Primary reliance on locally raised funds creates unequal spending among districts that are otherwise similar. Districts with larger tax bases can raise an equivalent amount of money by levying fewer mills than a district with a relatively lower tax base. Increased state support embodies an attempt to equalize spending. Through a foundation program a state can guarantee a minimal level of spending per pupil.

Usually states augment their foundation program by requiring districts to contribute a share of the revenues. These revenues are based on their assessed property value per pupil given a uniform millage rate. The same tax effort is required from each district and the state pays the difference between the local share raised and the foundation level. Less wealthy districts, due to their lower property value, receive a greater state contribution.

States may also institute a guaranteed tax base system to help fund school districts. Through this program states guarantee a district's ability to generate a certain level of revenue per pupil from a given tax rate. If local revenues raised do not reach the guaranteed level, then the state provides the difference. A foundation program effectively increases the purchasing power for education of a district. A guaranteed tax base lowers the tax price of providing education within a district. The two programs are often combined providing both a price effect and an income effect for residents of a district, as shown below.

In calculating the number of students within a district, most states use an enrollment count. Pupil instruction days are commonly used to determine the number of school days within a year. This helps establish a state standard to account for student populations and days spent in school. Enrollment counts taken at the beginning of the year determine the number of students within a district. Full-time, special education, kindergarten and preschool students are often weighted differently. Pupil instruction days are days when the district provides organized instruction under the supervision of a teacher. To meet accreditation standards Montana requires one hundred and eighty pupil instruction days.

Budget Constraint of a Typical Voter

A typical voter's income I, is divided between private goods, G, and taxes. Taxes are the product of the tax rate, t, and the resident's property value, H. (Other taxes are ignored for simplicity.) The typical voter's budget constraint could then be expressed as:

$$I = G + tH$$

With no state aid the total revenue and total expenditures of a district must be equal. The budget constraint for such a district could be written as:

$$NE = tV,$$

where N represents the number of students in the district, E is the expenditure per pupil, and V symbolizes the total value of all taxable property in the district. (Again for simplicity, we ignore nonlevy and other revenue sources.) The district tax rate can then be expressed as:

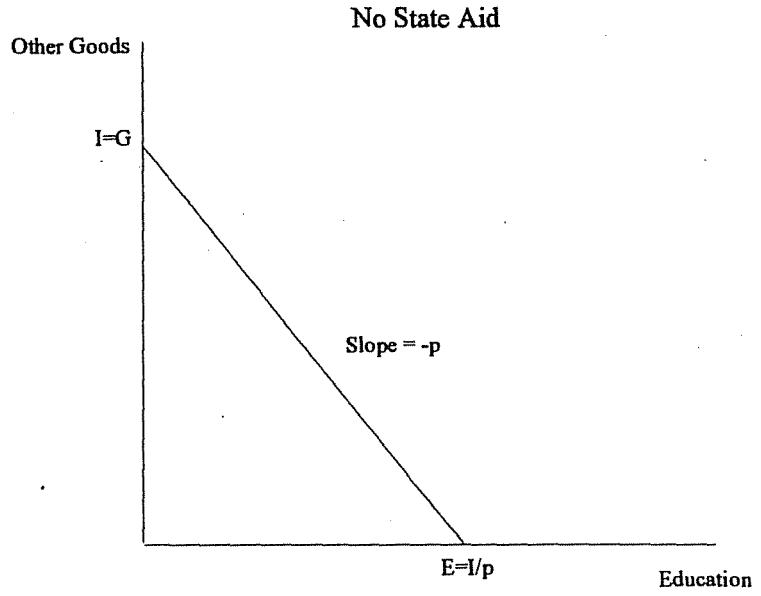
$$t = E/(V/N).$$

Substituting this value into the voter's budget constraint gives the equation:

$$I = G + pE$$

where $p = [H/(V/N)]$ is the "price" to the voter of a one dollar increase in educational expenditure per pupil. Specifically, p is equal to the voter's taxable value divided by the per student taxable value in the entire district. Consequently, voters in districts where there is a larger taxable value per student, V/N, face relatively low prices for education. Voters in these districts would then be expected to choose higher levels of spending per student, E. Figure 1 shows the budget constraint of a typical voter when no state aid is available.

Figure 1



Foundation Program

A foundation program requires each district to levy a certain tax rate, r, and then provides each district with a certain amount of funding per student, F. Most importantly, the district receives the amount F even if the tax rate r generates a different amount of revenue. Letting t continue to denote the local tax rate, excluding the foundation levy, the district's budget constraint can be written:

$$NE = NF + tV$$

The typical voter then pays both the foundation and local property taxes:

$$I = G + (r + t)H$$

The individual voter's budget constraint under a foundation program is obtained by substituting from the district's budget constraint:

$$I = G + rH + p(E - F); \text{ for } E \geq F$$

That is, the individual's income is divided among private goods, foundation taxes, and payments for education beyond the foundation level, F. Essentially, the marginal price of education, p, is not altered by a foundation program.

In the aggregate, receipts and expenditures of the foundation program must balance. However, individual districts may receive more or less in foundation payments, F, than they pay in property taxes. Figure 2 below illustrates the situation for a voter in a district which receives more than it pays. In this case there is a positive income effect on school spending. That is, the foundation program would be expected to increase spending on education (if education is a normal good).

In addition, a foundation program may increase spending because it effectively forces a minimum level, F. That is, a district cannot spend less than F, as indicated by the "corner" in the budget constraint shown in Figure 2.

As shown in Figure 3, other districts may "lose" with a foundation program. These districts pay more in foundation program taxes than they receive in payments, and thus a negative income effect is created. That is, the foundation program would be expected to reduce education spending in districts which pay more in taxes than they receive in payments.

When foundation programs are financed primarily through property taxes, the "winners" tend to be districts with low taxable value per student and the "losers" tend to be districts with high taxable value per student.

Figure 2

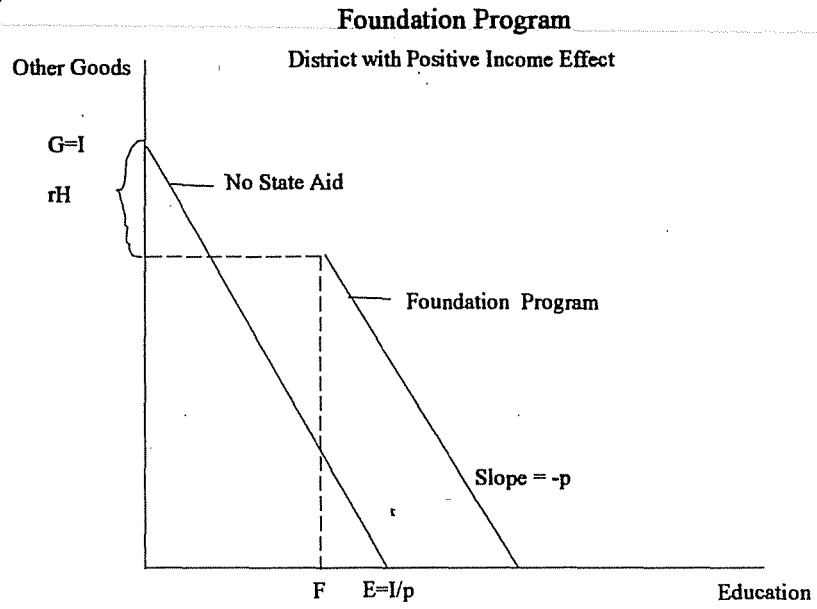
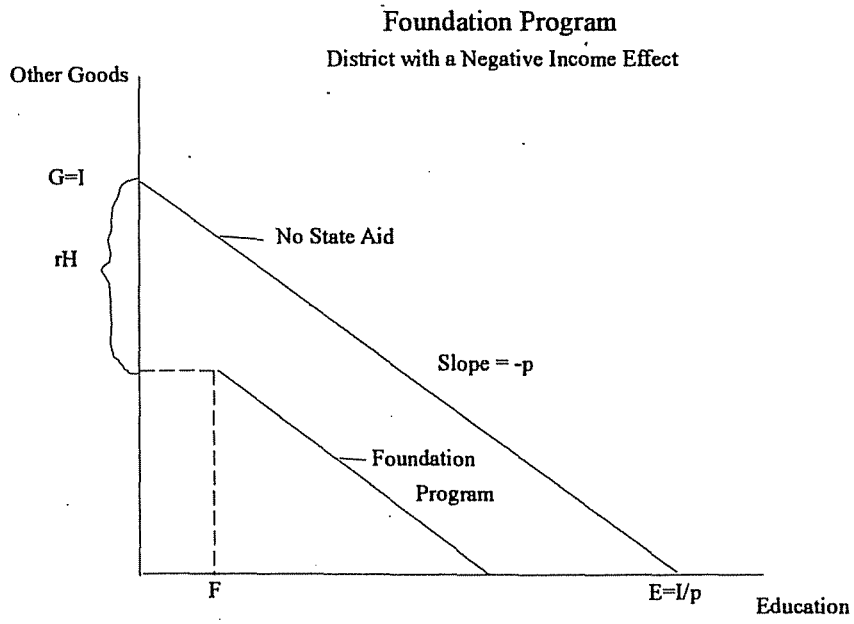


Figure 3



Guaranteed Tax Base

In contrast, a guaranteed tax base (or "power equalization") program alters the marginal price of education. With a guaranteed tax base program a target taxable value for the state is established. Districts with taxable value below the target are subsidized to a level equivalent to what they would be able to generate if they had taxable value equal to the target.

The district's budget constraint with a guaranteed tax base is:

$$E = t\,(V/N)^*$$

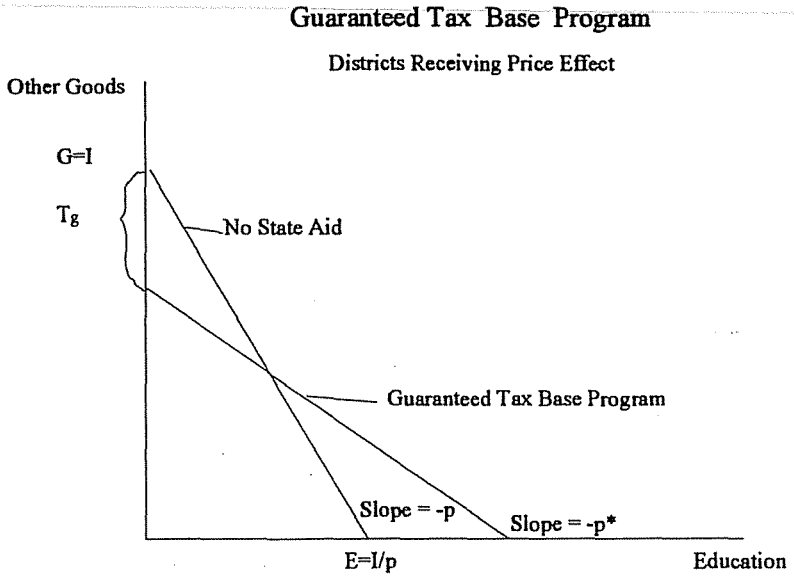
where $(V/N)^*$ now represents the target tax base. Each district is now guaranteed a taxable value that is at least equal to $(V/N)^*$. Substituting from the district's budget constraint, we obtain the individual voter's budget constraint under a guaranteed tax base system:

$$I = G + T_g + p^*E$$

where T_g represents taxes levied to finance the equalization subsidies, and $p^* = [H/(V/N)^*]$ is again the "price" to the voter of a dollar increase in educational expenditure per pupil. Now, p^* is equal to the voter's taxable value divided by the guaranteed amount of taxable value per student in the district. Consequently, voters in districts where the taxable value per student was below $(V/N)^*$, now see a relatively lower price for education.

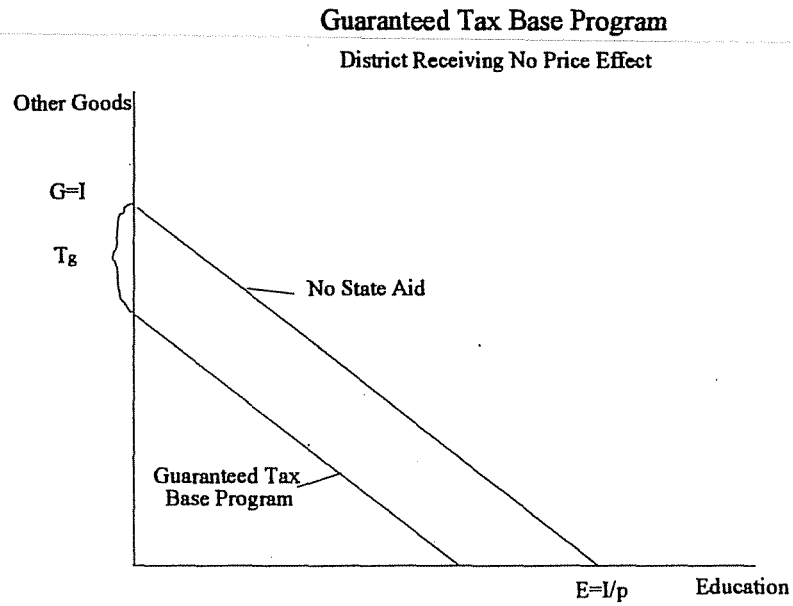
Figure 4 below illustrates a district whose price for education falls as a result of the guaranteed tax base system. Available income is reduced by the (state) taxes levied to pay the guaranteed tax base subsidies, T_g. Then, the marginal price of education is reduced by the subsidy itself.

Figure 4



A district with a taxable value above the target would only feel the effects of the taxes levied to fund the program, and would not receive a subsidy. Such a district's property value gives it a price for education that is already lower than what it would receive through the guaranteed tax base program. Figure 5 below, features a budget constraint for a district that does not benefit from a price effect. A power equalization program would be expected to reduce school spending in such a district, due to the income effect of taxes levied to pay subsidies in other districts.

Figure 5



Many states combine their foundation programs with a guaranteed tax base program. A district may receive both the income effect from the foundation program and the price effect from the guaranteed tax base program. The district receives the foundation program amount F, and the guaranteed tax base level, (V/N)*. The budget constraint for the district now becomes:

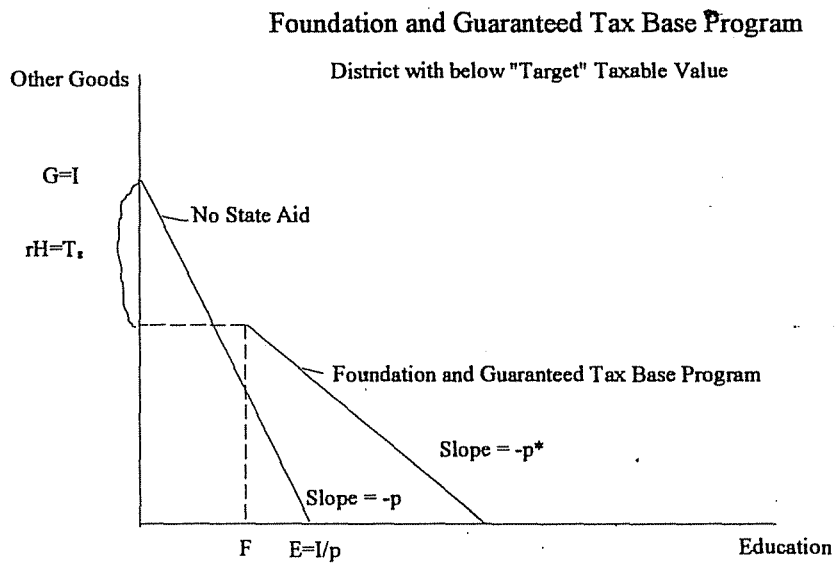
$$NE = NF + t\,(V/N)^*$$

The individual voter's budget constraint is the same as it was under the foundation program except that the voter now receives the guaranteed tax base price, p*, and pays taxes to support the guaranteed tax base program, T_g :

$$I = G + (rH + T_g) + p^*(E - F)$$

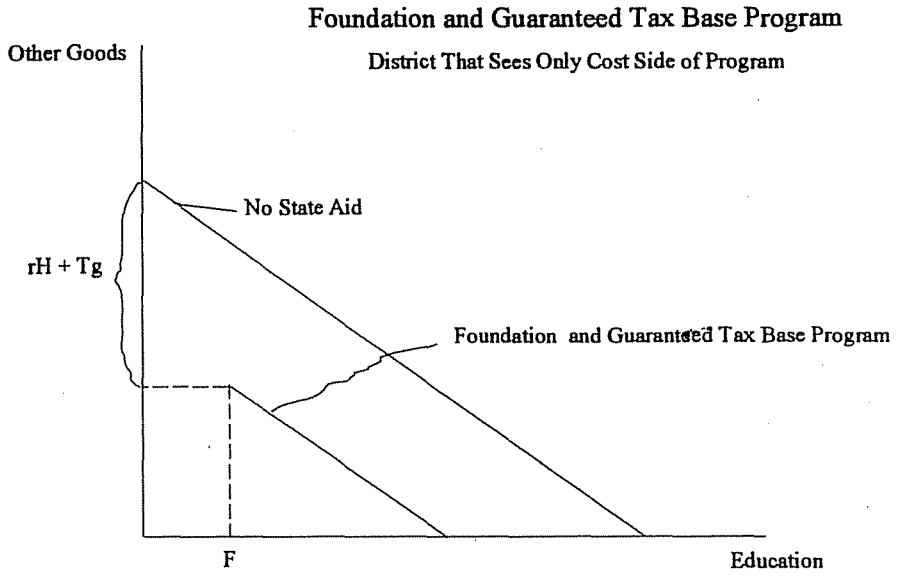
A district with a relatively low property tax value would receive more in foundation payments than is paid in taxes. If this district's property tax value was also below the target level, the district would receive guaranteed tax base aid. Figure 6 shows a district which receives a positive income effect from the foundation program and a price effect from the guaranteed tax base program. Both the income and price effects would be expected to result in higher spending on education.

Figure 6



A relatively wealthier district might see only the cost side of the two programs. Such a district would have to pay taxes to fund each of the programs, and would thus experience a negative income effect and no price effect. As shown in Figure 7, the district's budget constraint would shift down by the amount of the taxes levied to fund each of the programs. As a result, school spending would be expected to decline.

Figure 7



Financing Public Schools in Montana

Each Montana school district has a general fund budget that includes the major operating budgets; salaries, operation and maintenance, and equipment. The general fund budget forms the largest budgeted fund accounting for approximately 70% of the total budgeted funds.[1] Prior to 1991, districts relied upon the foundation program, a permissive tax increase, nontax revenues and a voted levy to finance the general fund budget.

The Montana legislature established a "maximum" general fund budget per student for each school size throughout the state. The foundation program level of spending was 80 % of the maximum general fund budget. To finance the foundation program each

[1] Helena School District, et al. v. State of Montana, (1988)

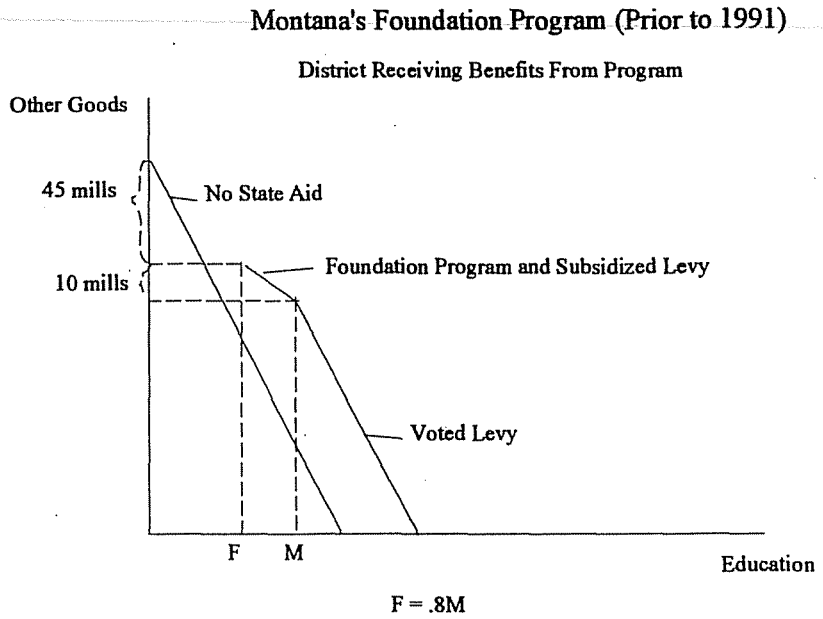
county levied a mandatory 28 mills for all its elementary foundation programs and 17 mills for all its high school foundation programs. If these 45 mills did not provide enough money to finance the foundation programs, the state paid the balance in "equalization" funds. County revenues generated in excess of the foundation program were remitted to the state. These dollars plus money raised through earmarked taxes and legislative appropriations were used to finance the state equalization fund.

Beyond the mandatory county levy, districts could levy an additional six elementary and four high school mills without seeking voter approval. The state made up the difference if this "permissive" levy plus certain additional funds, such as federal impact aid funds, did not raise enough revenue to cover the remaining 20% of the maximum budget.

Districts were able to raise money in excess of their maximum fund budgets through a voted levy. A voted levy as defined by House Bill 209 (1985) consisted of any money over the scheduled maximum general fund actually raised by taxes. The state did not impose limits for voted levies. Much of the inequality among districts rose through the voted levies, because district revenues from voted levies depended solely on the district tax base. Figure 8 shows the budget constraint for a district in Montana that benefits from the foundation program and the subsidized voted levy (which acts like a power equalization program).

To finance additional expenses school districts adopted budgets besides the general fund budget. A county wide levy financed high school transportation and public school employee retirement. The retirement levy alone became a major factor for increasing

Figure 8



property tax bills in the 1970s and 1980s.[2] Districts then adopted levies to provide money for other concerns such as elementary transportation, bus reserve, tuition, debt service, building reserve, comprehensive insurance and adult education.

The ability of districts to adopt voted levies in excess of the "maximum" general fund budget, combined with the levies enacted to pay for additional budgets, created inequality among similarly sized districts in Montana. Most districts spent more than their maximum general fund budgets. After the 1985 legislative session a group of sixty schools, calling themselves the "Underfunded Schools Coalition", filed a law suit. They claimed that the current funding system violated Article X of the Montana Constitution. In 1988 the First District Court of Lewis and Clark County found the educational

[2] See Montana Tax Foundation (1987), pg. 48

financing system in Montana to be unconstitutional.

Findings of the Court

Failure of the state to adequately fund the foundation program forced districts to rely on local revenues to fund their general fund budgets.[3] This created inequities in the system due to the varying property wealth among districts. Capital outlay, retirement, and to some lesser extent transportation budgets, affected a district's ability to raise revenue for their general fund budgets and further exacerbated these inequities.

Special education also began to rely more on local support. The state no longer provided indirect costs and severely limited funding for direct costs associated with special education. The increasing costs of providing special education were now competing directly with a district's ability to finance its general fund budget. Federal regulations and legally guaranteed protection for special education students limited a district's flexibility in responding to the decreases in state support.

Inequities were compounded by federal impact aid because they constituted a double subsidy for districts which qualified. The district's were seen as low property wealth districts because they contained federal lands that were not taxable. These districts received a large state subsidy through the foundation program in addition to their federal aid. Initiative 105 locked in the existing property wealth differences when it froze property taxes at their 1986 levels. This effectively eliminated a poor district's ability to improve its situation through increased mill levies.

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[3] See Montana Education Association (1994), pg. 4

Using the taxable value of property per student, district tax effort, and district spending, the court found many discrepancies when comparing districts of similar size. The general fund budget spending ratio between the district at the 95th and the district at the 5th percentile was 1.8 to 1 for elemenatry districts with more than 300 students. The spending ratio was even greater in all other size categories. The spending ratio between the 95th and 5th percentile for high school districts ranged from 4.8 to 1 for districts with 41-100 students, to 1.4 to 1 for districts with greater than 600 students.[4] Since differences in ability to raise revenues were not education related but based on relative property wealth, Judge Noble concluded that "the present system of funding may be said to deny to poorer school districts a significant level of local control, because they have fewer options due to fewer resources."[5] In summary, the court concluded that the state's failure to adequately fund the foundation program forced schools to rely too heavily on permissive and voted levies. The opportunity for education was not equal among districts because of the disparities in spending.

House Bill 28

As a result of this decision, the 1989 Legislature passed House Bill 28. Taking effect in fiscal year 1991, HB 28 increased state support by raising foundation program levels and beginning a guaranteed tax base system[6]. The foundation program was now to

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[4] See Helena School District et al. v. State of Montana (1988)

[5] See Montana Education Association (1994), pg. 4

[6] The guaranteed tax base program worked the same as the subsidized permissive levy. Both are a type of power equalization program and result in a price effect.

finance comprehensive insurance and special education costs as part of the general fund budget. Existing Foundation schedules increased by 17.3% for elementary districts and 25.2% for high school districts. This effectively brought the foundation schedules $67.2 million higher than they were in 1989.[7] The mandatory statewide property tax was increased from 45 to 95 mills to help finance the Foundation schedule increase. In addition a 5% surtax on individual and corporate income taxes and reallocated coal, lottery and income tax revenue were designated for the School Equalization Account.

HB 28 changed the permissive levy from 10 mills to 35% of a district's foundation program amount. The state began a guaranteed tax base system to support the permissive levy and the retirement costs incurred by school districts. A district whose taxable value per student was less than a statewide average calculated by the Office of Public Instruction, received a subsidy from the state to make up the difference. No recapture existed for districts with above average taxable value per student, and these districts were required to use their actual taxable value to calculate permissive and voted levies.[8]

In summary, HB 28 increased the foundation amount and used a guaranteed tax base program to support the permissive levy instead of a direct subsidy. The budget constraint for the district in Figure 8 would shift down by the 50 mill increase in the mandatory levy and out to the right by the percentage increase in foundation payments. The district would be supported out to the maximum fund budget, M, by a per mill

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[7] See Office of Public Instruction (1989), pg. 1

[8] In addition, HB 28 limited maximum general fund budget increases, contributed state funds to transportation and created reserve limits.

subsidy.

House Bill 28 also made important changes in the property tax system. Specifically, most oil, gas and coal production was taken off the property tax rolls, and alternative taxes were imposed (the Local Government Severance Tax and Coal Gross Proceeds Tax). While these changes were revenue neutral as of 1989, they effectively exempted oil, gas and coal from the 50 mill increase in statewide property taxes used to fund the expanded foundation program. As a result, the burden of paying for schools was (partially) shifted to other forms of property, including agricultural land and residential, commercial and industrial land.

A second effect of exempting most oil, gas and coal was to make district tax bases much more equal. That is, one of the reasons that taxable values varied so much in the 1980's was that some districts had valuable natural resource production while others did not. As will be seen below, this inequality of taxable value per student was dramatically reduced between 1989 and 1991 mostly because of the change in natural resource tax.

In 1991 the Underfunded Schools Coalition and the Montana Rural Education Association filed a follow up law suit contending that HB 28 failed to alleviate spending disparities among districts. They noted that large expenses such as transportation, retirement and capital/debt outlays were still primarily dependent upon locally raised property taxes. They also argued that HB 28 locked in existing disparities between districts. Under HB 28 districts were restricted in their ability to increase budgets, but the lower spending districts were not brought any closer to the higher spending districts. To forestall this second law suit the legislature passed HB 667 in 1993.

House Bill 667

House Bill 667 effectively replaced the existing foundation program with a per school and per student entitlement program.[9] Entitlement under HB 667 is a combination of a basic entitlement plus per student entitlements. Based on this entitlement the state determines a maximum and minimum fund budget for the different school sizes in the state. The minimum fund budget, or base, forms 80% of the basic entitlement and 80% of the per student entitlement. The maximum fund budget consists of the entire basic and per student entitlement.[10]

Sources for the general fund budget come from direct state aid, special education payments, nonlevy revenue and local levies. Direct state aid provides 40% of the basic and per student entitlement. After direct state aid, the next 40% of a district's basic and per student entitlement make up the guaranteed tax base budget area.[11] This area is funded by fund balance reappropriated from the previous year, non levy revenues, district property taxes and state guaranteed tax base subsidy payments. A district whose taxable value per student falls below the target taxable value per student for the state, receives a subsidy for every mill levied to fund the guaranteed tax base budget area. All other

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[9] Under HB 667 enrollment counts now included full-time special education students and were based on the average of enrollments taken in October and February, rather than one enrollment count taken in October.

[10] Minimum and maximum fund budgets are also based on a percentage of the special education cost payments received.

[11] Direct state aid and the guaranteed tax base budget area also help fund a percentage of the special education cost payments included in the general fund budget.

funding sources, such as reappropriated fund balance and non levy revenues, must be exhausted before property taxes are levied.[12] An important exception is that federal impact aid funds (P.L. 874) are outside of the general fund budget and are therefore not included in the calculation.

Figure 9 shows how the budget constraint would change for a low wealth district such as the one depicted in Figure 8. Here the direct state Aid, A, is equal to 40% of the base funding amount. From A to the base fund budget, B, is the guaranteed tax base area. The base fund budget makes up 80% of the entitlement and per student entitlement. The area between the base fund budget and maximum fund budget, M, is financed entirely through district voted levies.

In addition, HB 667 along with House Bill 22 (passed in a special legislative session in 1993) established new budget growth limits that were designed to force the lower spending districts closer to the higher spending districts. If a district's previous general fund budget fell below the 1994-95 base budget level, it must increase its budget by 25% of the difference between its' general fund budget and the 1994-95 base. A district must reach the base budget level by the 1997-98 school year. Low spending districts, for the first time, were required to increase spending regardless of whether the citizens and school trustees wanted to or not.

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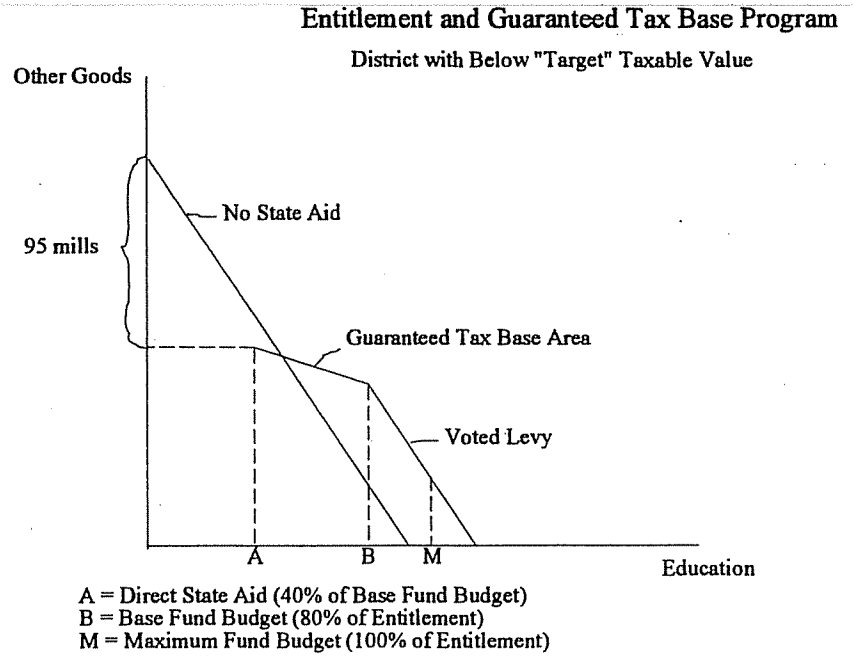
[12] Non levy revenues include: motor and reacreational vehicle fees, out of state equipment fees, local government severance and net proceeds taxes paid on oil and gas production, coal gross proceed taxes, personal property tax reimbursements, corporation license taxes paid by financial institutions, tuition, investment earnings, and miscellaneous revenues.

Figure 9



Districts whose previous year's general fund budget was below the 1994-95 maximum budget, but above the base budget for 1994-95, could levy, without an election, an increase of up to 4% of the previous year's general fund budget, or the prior year's general fund budget per student times the 1993-94 enrollment. A school board may increase its budget more than 4% with voter approval, but they cannot adopt a budget that exceeds the maximum general fund budget. If a district's general fund budget is above the maximum it must not increase its budget.[13]

House Bill 22 also effectively reduced the basic and per student entitlement by

[13] Federal impact aid funds were accounted for in a new non budget "Impact Aid Fund". Any federal impact aid funds received were to be included in the general fund budget before the permissive 4% growth could be calculated.

4.5%. Districts whose budgets were above the base funding level were required to reduce their 1994 budget by 4.5% before calculating their 1995 budget. If the percentage decrease would drop the district below the base budget level, then they were required to decrease only to the base level. If a district was over the maximum budget level and the decrease dropped them below the maximum, they could recover their budgeting authority with voter approval. Effectively, through HB 22, the foundation payments were reduced.

The basic entitlements for elementary and high school districts in 1995 were $17,190 and $191,000 respectively. Added to this is a per student entitlement which is calculated as a function of enrollment. The resulting entitlements are displayed in Table 1. Total entitlements decline sharply on a per student bases with increasing enrollments for small schools, where economies of scale are largest.[14]

Table 1

Elementary Entitlements

Enrollment	Basic	Per Student	Total	Total/Student
1	$17,190	$3,343	$20,533	$20,533
10	$17,190	$33,421	$50,611	$5,061
50	$17,190	$166,905	$184,095	$3,682
100	$17,190	$333,310	$350,500	$3,505
500	$17,190	$1,646,550	$1,663,740	$3,327
1000	$17,190	$3,243,100	$3,260,290	$3,260

High School Entitlements*

Enrollment	Basic	Per Student	Total	Total/Student
50	$191,000	$233,388	$424,388	$8,488
100	$191,000	$465,525	$656,525	$6,565
500	$191,000	$2,277,625	$2,468,625	$4,937
1000	$191,000	$4,430,250	$4,621,250	$4,621

*The lowest high school enrollment in 1995 was 20 students.

[14] House Bill 667 allowed a district to receive part of any fund balance existing at the end of a fiscal year as long it did not exceed 10% of the following year's general fund budget.

Results and Incentives

With the provision that below base districts must be budgeting at least at the base level by fiscal year 1997, while limiting the ability of above base districts to increase their budgets, HB 667 attempts to close the gap between similarly sized districts. This addresses a failure of HB 28 (from the standpoint of equalization) that limited budgeting increases, but did not do enough to bring the lower budgeting districts up. These provisions along with the establishment of maximum and minimum general fund budgets embody House Bill 667's greatest effort toward equalizing the school funding system. Additional state support for debt service, retirement and transportation will also ease the pressure on general fund budgets.

CHAPTER 3

THE DATA AND ANALYSIS

An Overview of School Finance

Table 2 contains statewide totals for all districts. The number of districts shrank significantly between 1991 and 1995 as a number of elementary and high school districts combined to form K-12 districts. Enrollment increased eight percent from 1991 to 1995, after virtually no change from 1989 to 1991. Total general fund budgets and total state revenues increased dramatically in nominal dollars from 1989 to 1991.[1] Nominal mill values dropped considerably from 1989 to 1991, and although increasing between fiscal years 1991 and 1995, experienced an overall decline of eight percent. Federal revenues dropped in nominal value between 1989 and 1995.[2] The second portion of Table 2 presents the same data on a per student basis. General Fund budgets increased 20% and state aid 54% on this basis. By comparison, inflation was 23%, so real general fund budgets per student declined slightly. The last portion of the table expresses state, federal and local revenues as a percent of the general fund budget. The state's share increased

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[1] General fund budgets comprise about three quarters of all budgeted funds. They exclude retirement, transportation, bus depreciation, debt services, building reserves, and several other funds.

[2] These include only the Federal revenues which accrue to the general fund budget. Most of these are impact aid funds paid in lieu of taxes on nontaxable property such as Malmstrom Air Force Base or reservation lands. Other federal revenues are outside of the general fund and include funds for food programs, disadvantaged students, special education and other programs.

Table 2 Yearly Totals for All Districts (Nominal)

	FY89 Total	FY91 Total	FY95 Total	Percent Change Between Periods 89-91 Total	91-95 Total	89-95 Total
Number of Districts	544	538	481	-1%	-11%	-12%
Enrollment	151,948	151,942	164,422	-0%	8%	8%
General Fund Budget	$494,246,444	$569,834,683	$640,723,504	15%	12%	30%
State Revenue	$248,062,565	$406,716,843	$413,466,862	64%	2%	67%
Federal Impact Aid*	NA	$26,743,217	$20,478,163	NA	-23%	NA
Local Revenue**	NA	$136,374,623	$206,778,479	NA	52%	NA
Mill Value	$1,942,950	$1,573,661	$1,787,064	-19%	14%	-8%

Yearly Totals For All Districts Per Student	FY89	FY91	FY95	Percent Change Between Periods 89-91	91-95	89-95
General Fund Budget Adopted	$3,253	$3,750	$3,897	15%	4%	20%
State Revenue	$1,633	$2,677	$2,515	64%	-6%	54%
Federal Impact Aid*	NA	$176	$125	NA	-29%	NA
Local Revenue**	NA	$898	$1,258	NA	40%	NA
Mill Value	$13	$10	$11	-19%	5%	-15%

Revenues As Share of General Fund Budget	FY89	FY91	FY95	Percent Change Between Periods 89-91	91-95	89-95
State Revenue	50%	71%	65%	42%	-10%	29%
Federal Impact Aid*	NA	5%	3%	NA	-32%	NA
Local Revenue**	NA	24%	32%	NA	35%	NA
Consumer Price Index				10%	12%	23%

Notes: *Federal Impact Aid for FY89 is not separately available, but is included in the General Fund Budget.
**Local Revenue is estimated as General Fund Adopted minus State Revenue and Federal Impact Aid.
1989 Includes Comprehensive Insurance (Budgeted) and 1995 Includes Federal Impact Aid

dramatically between 1989 and 1991, but then declined between 1991 and 1995, with the federal share also declining districts have relied more on own source (local) revenues.

The nominal value of property taxes levied for schools was $229 million in 1989 and rose to $429 million by 1995.(Table 3) The same period experienced a decline in the state's nominal taxable value from $1.9 million in 1989 to $1.6 million in 1991, as a result of coal, oil and natural gas being removed from the states accounting of property value. Nominal taxable value in Montana rose again to $1.8 million by 1995. Property taxes as a percent of general fund budgets for all districts in Montana rose from 47% in 1989 to 52% in 1995, after dropping to 43% in 1991. The statewide number of mills levied for schools increased steadily throughout the period rising from 154 in 1989 to 240 in 1995. Thus while budgets were not quite keeping up with inflation and enrollment growth, a larger fraction of the general fund budget was financed by property taxes, which themselves were levied on a smaller base.

The Data Set

To examine the effects of the changes brought about by House Bills 28, 667 and 22, school district data for three different years were compared. Fiscal year 1989 represents the "old" foundation program (which was found unconstitutional), fiscal year 1991 reflects the introduction of HB 28, and fiscal year 1995 shows the effects of HB 667 and 22, and gives the most recent picture of Montana's public education system[3]. The main part of the data set comes from two sources. School district characteristics for fiscal

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[3] Fiscal year 1990 was still under the old foundation system, but some districts had already responded to the passage of HB 28. Thus 1989 is the last "clean" year for comparison.

Table 3 Property Taxes and School Finances: 1989-1995

Calendar (Tax) Year Fiscal Year	1988 1989	1990 1991	1994 1995	Percent Changes 1989-95
Total Property Taxes (millions)	$498	$514	$675	36%
Property Taxes for Schools (millions)	$299	$314	$429	43%
Residential Property Taxes (millions)	$148	$172	$239	61%
School Enrollment (k-12)	151,948	151,942	164,422	8%
Total School Budgets (millions)	$631	$736	$825	31%
Total School Budget per Student	$4,153	$4,843	$5,018	21%
Consumer Price Index (1982-84=100)	118.3	130.7	148.2	25%
Montana Personal Income (millions)	$10,353	$11,790	$15,258	47%
Property Taxes as Percent of Total Budgets	47%	43%	52%	10%
Residential Property as Percent of Property Tax Base	24%	31%	34%	42%
Taxable Value of All Property (millions)	$1,943	$1,573	$1,787	-8%
Average Total Mill Rate	256	327	378	48%
Average Mill Rate for Schools	154	199	240	56%
General Fund Budget for Schools (millions)	$494	$570	$641	30%
General Fund Budget per Student	$3,253	$3,750	$3,897	20%

years 1991 and 1995 were obtained from the OPICORE data set constructed and provided by the Office of Public Instruction (OPI). The OPICORE data set begins fiscal year 1991, so information for fiscal year 1989 was obtained from the Office of the Legislative Auditor.

Acquired over Metnet from OPI, the files OPIBUD91.DBF and OPIBUD95.DBF contained school district budget data for fiscal years 1991 and 1995.[4] The budget files each contain eighty nine different fields concerning school districts, including county and legal entity numbers, budget information, mill value, and taxable value. The 1995 file contained 482 districts with specifications for K-12, elementary, and high school districts. The 1991 file provided 539 districts but did not identify K-12 districts. For fiscal year 1989 several data files, Res89.wk1, Budg89.wk1, and Mill89.wk1, were received from the Office of the Legislative Auditor. Much more limited in the number of different fields available, these data sets contained five hundred and fifty-five districts designated as elementary, high school, K-12 or cooperative.

From this varied information, one representative data set was formed by including districts which could be found in each of the three original files. Variables representing general fund budgets adopted, state revenue received for the general fund, mill value and general fund mills levied were selected from each data set. Non-levy revenues were not

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[4] OPI also provides expenditure and revenue information in similar files. The expenditures results, however, are not completed until February of the following year, so budget data was used in order to have the most recent information.

included in the 1989 information and therefore were not utilized.[5] The general fund state revenue variable included the direct state aid for foundation payment, special education payments to the district, and any guaranteed tax base aid. General fund mills levied represents the mills levied to support the general fund budget, while mill value represents the taxable value of the district divided by 1,000.

Although a field for federal revenues received for general fund budgets are included in each of the OPI files, only the 1991 data actually contained values for those fields. Under the current system of school funding, federal funds are accounted for in a separate fund and are no longer included in the general fund budget. OPI was able to provide a non-electronic file containing federal funds paid-to-date for each school district in 1995. This information was added to the data set as a separate variable, and it was added to the existing general fund budget adopted variable to make it comparable to the budget variable from 1991. Although not all districts receive federal funding, this information is very important for the districts that do. No federal revenue information was provided in the Legislative Auditor data, so the figures for the federal fund variable in 1991 were used as a proxy in the regression analysis. The general fund budget adopted for 1989 should, however, include federal revenues received. These methods were adopted in an attempt to keep the federally funded districts from 1991 and 1995 in the sample data set.

In order to simplify the study only elementary and high school districts were

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[5] Initial regression results for FY 91 and FY 95 with general fund budget per student as the dependent variable produced insignificant results for non-levy revenues per student.

included in the sample. The fiscal year 1995 data, because it represents the most current situation and had designations for K-12 districts, became the starting point for defining the representative sample. All fifty-three K-12 schools were eliminated and the remaining districts were sorted according to level. After a comparison of county and legal entity numbers, districts not existing in both the 1991 and 1995 data sets were deleted. Most of the deleted districts had become K-12 districts between 1991 and 1995. Two districts existing in 1995 could not be found in the 1991 data, while twenty districts that existed in 1991 could not be accounted for in 1995. Only seven of these twenty districts contained any field values and were likely absorbed by another district. The resulting data set now contained a comparable set of districts between 1991 and 1995.

To compensate for the fact that comprehensive insurance changed from a separately budgeted fund to part of the general fund, comprehensive insurance expenditures were added to the 1989 general fund budgets. Comprehensive insurance expenditures were used since the comprehensive insurance budgets were not available in the 1989 data set. After matching districts in 1989 and 1991 to the districts for 1995, any districts not having an enrollment count in any of the three years were deleted. Finally, Squirrel Creek district was eliminated because it had a relatively large drop in mill value between 1989 and 1995. This obscured the regression results by lowering the coefficient on mill value by a magnitude of ten. The data set now consisted of 301 elementary and 118 high school districts.

Enrollment data, provided separately by OPI, was used instead of the annual number belonging (ANB) counts that were included in each of the original data sets.

ANB counts are beginning of the year estimates for student numbers which can prove much less accurate than the enrollments counts taken at the end of the year. The enrollment numbers, listed by county and legal entity number, were matched with the sample districts. Each of the variables (except for general fund mills levied) were divided by enrollment to give per student values.[6]

All values were converted to 1995 dollars using the CPI for all urban consumers and all items. The CPI was used because of its convenience and because it covers a wide range of consumer and service products. The CPI for 1995 was not available at the time this paper was written, but was estimated using the percentage increase from 1993 to 1994 and assuming a steady inflation rate. Prices rose twenty-three percent from 1989 to 1995 and twelve percent from 1991 to 1995.

Analysis Goals

The sample was used to test whether or not the recent legislative changes materially altered the funding problems that were brought out in the court's decision. Have general fund budgets been equalized among the various districts within Montana? Has the reliance on local property taxes been reduced, or are they now more prevalent? Has there been an increase in general fund budgets, and did support from the state and federal governments increase proportionately to school costs and enrollment changes?

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[6] Also added to the sample data set were county level demographic variables, which were taken from the 1990 U.S. Census. They included variables to account for the percent of people in the county over age 25 having a college education, the percent of county residents who own their residence, and another for the average household income. This information was taken for calendar year 1989 and used as a proxy for each of the other two years. These county variables, however, did not work well in conjunction with the district data.

Summary statistics, organizing and ranking districts by enrollment, and a seemingly unrelated regression were utilized for this purpose.

Budget Ratios

As with the majority of other states, Montana's fiscal reform emphasis fell primarily upon the equalization of district expenditures. To gauge how the range of spending has changed since 1989, we study budgeted expenditures at different enrollment percentiles. The sample data were ranked by general fund budget per student, and enrollment was summed district by district. The running total of enrollment for each district was divided by the overall total of students to give a percent of total. The general fund budget at various percentiles were then compared.

Table 4 shows the ratios of per pupil general fund budgets between the districts at the 95th percentile and the 5th percentile. These ratios have decreased from 1989 to 1995 for both elementary and high schools. Among elementary districts in 1989, the district at the 95th percentile spent 2.11 times as much as the district at the 5th percentile. By 1995, this ratio had declined to 1.54, indicating that spending was more equalized. A school system is considered fully equalized (according to the federal government) when the ratio of spending between the district at the 95th percentile and the district at the 5th percentile is 1.25. Although the spending ratios fall for both elementary and high schools, the ratios in 1995 are still above the "equalized" level.

Some of the differences in budgets arise because it is more expensive (per student) to operate smaller districts. To control for economies of scale, districts are sorted by

Table 4 Budget Ratios by Enrollment Percentiles

Elementary (302 observations)
General Fund Budget Per Student

PERCENTILE OF ENROLLMENT	RATIOS FY 89	FY 91	FY 95	CHANGE 89-95
95TH/5TH	2.11	1.91	1.54	-0.57
90TH/10TH	1.64	1.42	1.33	-0.31
75TH/25TH	1.13	1.15	1.12	-0.01

High School (118 observations)
General Fund Budget Per Student

PERCENTILE OF ENROLLMENT	RATIOS FY 89	FY 91	FY 95	CHANGE 89-95
95TH/5TH	2.36	2.36	2.02	-0.34
90TH/10TH	1.69	1.80	1.64	-0.05
75TH/25TH	1.20	1.24	1.22	0.02

enrollment groups and general fund budgets are ranked within each size group. Table 5 displays the distribution of districts by 1995 enrollment size.[7] Note that the 114 smallest elementary districts comprise 38% of all elementary districts, but only 2% of enrollment. At the opposite extreme, the 27 largest elementary districts are only 9% of all elementary districts, but enroll 64% of the students. A similar situation exists among high school districts.

Two points are noteworthy. First, when data are weighted by enrollment (as is usually done) then the larger districts are heavily represented, since they have a majority of the students. This is one rationale for reporting separate results for smaller districts since otherwise, they are almost "lost" in the totals. Secondly, these are only modest numbers of high school districts in most of the enrollment groups. When data are reportedly separated by size, some statistical anomalies ("outliers") may arise simply because 9,14,16, or 17 is simply not a "large sample".

With these remarks in mind, consider tables 6 and 7. At the elementary level, spending ratios decline between 1989 and 1995 for every size group, except 41-100 students. At the high school level budget ratios fall for all size groups, except for the biggest schools. Interestingly, this is the only size group that actually attains the 1.25 federal standard. Nontheless, the evidence overwhelmingly indicates that budgets are more equalized now than six years ago.

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[7] Enrollment groups taken from Montana Education Association publication: "School District Budget and Expenditure Analysis."

Table 5 Districts by 1995 Enrollment

Elementary Districts

Enrollment Group	# of Districts	% of All 301 Districts	Enrollment	% of Total Enrollment
1-40	114	38%	1672	2%
41-100	50	17%	3546	3%
101-200	41	14%	5775	6%
201-400	43	14%	11944	11%
401-800	26	9%	14525	14%
>800	27	9%	67500	64%

High School Districts

Enrollment Group	# of Districts	% of All 118 Districts	Enrollment	% of Total Enrollment
1-40	14	12%	488	1%
41-100	35	30%	2288	5%
101-200	27	23%	4000	9%
201-400	17	14%	4439	11%
401-800	16	14%	8333	20%
>800	9	8%	22500	53%

Table 6 Elementary Budget Ratios by Enrollment Percentiles and Enrollment Group

Elementary (302 observations)
General Fund Budget Per Student

Enrollment 1-40 PERCENTILE OF ENROLLMENT	RATIOS FY 89	FY 91	FY 95	CHANGE 89-95
95TH/5TH	3.66	3.33	2.97	-0.69
90TH/10TH	2.42	2.77	2.27	-0.15
75TH/25TH	1.67	1.49	1.54	-0.13
Enrollment 41-100 PERCENTILE OF ENROLLMENT				
95TH/5TH	3.05	3.09	3.13	0.08
90TH/10TH	2.83	2.37	2.30	-0.53
75TH/25TH	1.80	1.70	1.59	-0.20
Enrollment 101-200 PERCENTILE OF ENROLLMENT				
95TH/5TH	2.94	1.99	1.71	-1.23
90TH/10TH	1.94	1.56	1.53	-0.41
75TH/25TH	1.35	1.21	1.27	-0.08
Enrollment 201-400 PERCENTILE OF ENROLLMENT				
95TH/5TH	2.08	2.12	1.40	-0.68
90TH/10TH	1.61	1.82	1.32	-0.29
75TH/25TH	1.32	1.13	1.12	-0.20
Enrollment 401-800 PERCENTILE OF ENROLLMENT				
95TH/5TH	2.21	1.83	2.06	-0.15
90TH/10TH	1.71	1.43	1.53	-0.18
75TH/25TH	1.18	1.23	1.21	0.03
Enrollment > 800 PERCENTILE OF ENROLLMENT				
95TH/5TH	1.63	1.37	1.28	-0.34
90TH/10TH	1.36	1.29	1.20	-0.16
75TH/25TH	1.10	1.06	1.11	0.01

Table 7 High School Budget Ratios by Enrollment Percentiles and Enrollment Group

High School (118 observations)
General Fund Budget Per Student

Enrollment 1-40 PERCENTILE OF ENROLLMENT	RATIOS FY 89	FY 91	FY 95	CHANGE 89-95
95TH/5TH	2.47	2.01	1.77	-0.70
90TH/10TH	1.91	1.73	1.68	-0.23
75TH/25TH	1.41	1.40	1.34	-0.07
Enrollment 41-100 PERCENTILE OF ENROLLMENT				
95TH/5TH	2.79	2.58	1.85	-0.94
90TH/10TH	2.35	2.19	1.73	-0.62
75TH/25TH	1.51	1.53	1.39	-0.12
Enrollment 101-200 PERCENTILE OF ENROLLMENT				
95TH/5TH	2.28	2.62	1.79	-0.49
90TH/10TH	2.11	1.89	1.69	-0.42
75TH/25TH	1.47	1.30	1.24	-0.23
Enrollment 201-400 PERCENTILE OF ENROLLMENT				
95TH/5TH	2.09	1.84	1.32	-0.77
90TH/10TH	1.44	1.79	1.30	-0.15
75TH/25TH	1.25	1.29	1.20	-0.05
Enrollment 401-800 PERCENTILE OF ENROLLMENT				
95TH/5TH	1.94	1.53	1.73	-0.21
90TH/10TH	1.76	1.42	1.69	-0.08
75TH/25TH	1.15	1.21	1.18	0.03
Enrollment > 800 PERCENTILE OF ENROLLMENT				
95TH/5TH	1.17	1.17	1.24	0.07
90TH/10TH	1.17	1.17	1.24	0.07
75TH/25TH	1.16	1.14	1.12	-0.04

Statistical Analysis

Another approach is to use weighted averages, variances and correlations to examine changes over time. (The data are weighted by district enrollment in an attempt to account for the large variation in school sizes.)[7] Observing the weighted mean value of general fund budget per student from Table 8, it can be seen that the average spending rises three percent for elementary districts between 1989 and 1995, after peaking in 1991. The average general fund budget per student for high school districts also rises in 1991, but then falls in 1995 for a net decrease of nine percent.

District budgets depend largely on the district mill value, revenues contributed by the state, and any federal impact aid received. How these variables change for each modification of the school funding system becomes very important when discussing equalization. State revenue per student rises considerably from 1989 to 1995 for both elementary and high school districts. These revenues increase a net of 46 % at the elementary level, and 31 % at the high school level from 1989 to 1995. Per pupil state funds fall between 1991 and 1995, but by less than the initial increase.

Thus, the substantial increase in state funding accompanying HB 28 reduced district dependence on local revenue sources for their general fund budgets. Mill value per student falls at the elementary and high school level by 1995 for a net decrease of twenty-one and thirty-one percent respectively. Federal impact aid per student decreases substantially from 1991 to 1995, particularly at the high school level where it fell 54%.

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[7] The data in Table 8 and succeeding tables are all adjusted for inflation to dollars of 1995 purchasing power.

Table 8 Means for Elementary and High School Districts

Means for Elementary Districts
(301 observations)
Weighted by Enrollment
In Constant 1995 Dollars

	FY 89	FY91	FY95	% Change 89-95
General Fund Budgets Per Student	$3,394	$3,602	$3,493	3%
Mill Value Per Student	$19	$15	$15	-21%
General Fund Mills Levied (District Level)	71	39	67	-6%
State Revenues Per Student	$1,577	$2,682	$2,309	46%
Federal Impact Aid Per Student	NA	$174	$125	-28%*

Means for High School Districts
(118 observations)
Weighted by Enrollment
In Constant 1995 Dollars

	FY 89	FY91	FY95	% Change 89-95
General Fund Budgets Per Student	$5,213	$5,431	$4,745	-9%
Mill Value Per Student	$54	$41	$37	-31%
General Fund Mills Levied (District Level)	46	27	37	-20%
State Revenue Per Student	$2,290	$3,662	$2,997	31%
Federal Impact Aid Per Student	NA	$281	$128	-54%*

NA = Not Available
* % change 91-95

Thus while districts benefitted from increased state aid, their local tax bases were eroded by declines in taxable value, inflation and enrollment growth. Federal impact aid also declined substantially.

Table 8 also provides information on the number of general fund mills levied at the district level. General fund mills fall for elementary districts from 1989 to 1991, (when the state mandatory mills increased from 45 to 95), but then rise again by 1995. Similarly, the high school district levy falls by 19 mills between the first two years in the study, but then increases 10 mills from 1991 to 1995. Thus district dependence on local revenues (as measured by local mill levies) first declined dramatically, with HB 28, but has since increased almost to the 1989 level.

Tables 9 and 10 provide information on the same variables broken down by enrollment group. The results generally confirm that the findings of the aggregate table apply to (almost) all size groups. Specifically, real per student general fund budgets change little at the elementary level while declining at the high school level. Mill values per student have declined, particularly in the smaller districts. The smaller districts, however, tended to have larger tax bases to begin with, and still do, even after the declines.

Among elementary districts, mills levied increased in the smaller districts, (which suffered the largest declines in tax base), while actually declining in the largest districts. Mill levies declined for most size groups at the high school level. State revenues per student increased for all except the largest elementary schools, and there is no longer any clear pattern by size. Among high schools, the largest amounts of state aid per student

Table 9 Elementary Means by Size Groups

Means by Size Groups (grouped by FY 95 enrollment)
Weighted by Enrollment
Elementary Districts (301 observations)
In Constant 1995 Dollars

General Fund Budget Adopted Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$4,071	$4,325	$4,208	3%
41-100	$4,607	$5,133	$4,403	-4%
101-200	$3,840	$4,119	$3,807	-1%
201-400	$3,453	$3,790	$3,547	3%
401-800	$3,726	$3,871	$3,775	1%
>800	$3,192	$3,375	$3,331	4%

Mill Value Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$94	$60	$62	-34%
41-100	$43	$44	$28	-35%
101-200	$27	$20	$20	-26%
201-400	$17	$14	$13	-24%
401-800	$34	$25	$23	-32%
>800	$12	$11	$11	-8%

General Fund Mills Levied (District level)

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	16	11	32	100%
41-100	36	25	58	61%
101-200	46	29	60	30%
201-400	47	36	60	28%
401-800	55	30	60	9%
>800	84	43	72	-14%

State Revenues Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$2,189	$2,970	$2,074	-5%
41-100	$2,024	$3,140	$2,215	9%
101-200	$1,899	$2,948	$2,301	21%
201-400	$1,711	$2,813	$2,388	40%
401-800	$1,553	$2,569	$2,331	50%
>800	$1,493	$2,633	$2,301	54%

Federal Impact Aid Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 91-95
1-40	NA	$55	$9	-84%
41-100	NA	$297	$168	-43%
101-200	NA	$172	$121	-30%
201-400	NA	$227	$177	-22%
401-800	NA	$427	$330	-23%
>800	NA	$108	$73	-32%

NA = Not Available

Table 10 High School Means by Size Groups

Means by Size Groups (grouped by FY 95 enrollment)
Weighted by Enrollment
High School Districts (118 observations)
In Constant 1995 Dollars

General Fund Budget Adopted Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$13,372	$14,229	$11,476	-14%
41-100	$8,586	$8,859	$7,508	-13%
101-200	$6,457	$6,874	$5,974	-7%
201-400	$5,285	$5,245	$4,731	-10%
401-800	$5,007	$5,599	$4,611	-8%
>800	$4,518	$4,595	$4,155	-8%

Mill Value Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$154	$103	$85	-45%
41-100	$82	$63	$50	-39%
101-200	$108	$48	$41	-62%
201-400	$54	$42	$36	-33%
401-800	$68	$54	$48	-29%
>800	$34	$32	$30	-12%

General Fund Mills Levied (District level)

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	38	22	31	-18%
41-100	33	25	38	15%
101-200	35	22	32	-9%
201-400	40	21	29	-28%
401-800	41	24	30	-27%
>800	54	31	41	-24%

State Revenues Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$4,831	$6,935	$5,417	12%
41-100	$3,709	$5,655	$4,356	17%
101-200	$2,662	$4,048	$3,542	33%
201-400	$2,348	$3,488	$3,083	31%
401-800	$2,097	$3,386	$2,975	42%
>800	$2,080	$3,451	$2,702	30%

Federal Impact Aid Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 91-95
1-40	NA	$1,598	$892	-44%
41-100	NA	$464	$326	-30%
101-200	NA	$696	$449	-35%
201-400	NA	$252	$53	-79%
401-800	NA	$699	$238	-66%
>800	NA	$8	$8	0%

NA = Not Available

continue to go to the smaller districts. Finally, federal impact aid has declined among all size groups which had any significant amount to begin with.

Standard deviations provide a measure of the disparities across districts. Weighted standard deviations, listed in Table 11, indicate that elementary and high school general fund budgets per student vary much less in 1995 than in either of the previous years. Thus, these results also indicate that general fund budgets are more equalized now than in previous years.

Table 11 also displays decreases in standard deviations for mill value per student and general fund mills levied at both the high school and elementary level. That is, taxable values and mill levies also appear to be more equalized in 1995 than in 1989. On the other hand the standard deviation for state revenue per student increased for both elementary and high school districts. This means that state aid is now less equally distributed, but this may promote budget equalization if the aid is directed more toward low wealth districts. Finally, the standard deviation for federal aid per student decreases at both levels.

The findings are again mostly confirmed when districts are disaggregated by enrollment (Tables 12 and 13). In particular, standard deviations of general fund budgets, mill values, mills levied and federal aid have declined for almost all enrollment groups, while the dispersion of state aid has generally increased.[8] Thus, these results are consistent with the ratio analysis presented previously; general fund budgets appear to be more equalized in 1995 than in 1989.

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[8] The exceptions are the smallest and largest high school districts, where sample sizes are only 14 and 9 respectively.

Table 11 Standard Deviations for Elementary and High School Districts

Standard Deviations for Elementary Districts
(301 observations)
Weighted by Enrollment
In Constant 1995 Dollars

	FY 89	FY91	FY95	% Change 89-95
General Fund Budgets Per Student	$943	$937	$633	-33%
Mill Value Per Student	$36	$28	$22	-39%
General Fund Mills Levied (District Level)	38	19	18	-53%
State Revenues Per Student	$239	$313	$281	18%
Federal Impact Aid Per Student	NA	$657	$395	-40%*

Standard Deviations for High School Districts
(118 observations)
Weighted by Enrollment
In Constant 1995 Dollars

	FY 89	FY91	FY95	% Change 89-95
General Fund Budgets Per Student	$1,917	$2,188	$1,389	-28%
Mill Value Per Student	$81	$46	$40	-51%
General Fund Mills Levied (District Level)	18	12	12	-33%
State Revenues Per Student	$534	$766	$652	22%
Federal Impact Aid Per Student	NA	$1,394	$531	-62%*

NA = Not Available
* % change 91-95

Table 12 Elementary Standard Deviations by Size Groups

Standard Deviations by Size Groups (grouped by FY 95 enrollment)
Weighted by Enrollment
Elementary Districts (301 observations)
In Constant 1995 Dollars

General Fund Budget Adopted Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$2,270	$1,865	$1,703	-25%
41-100	$1,861	$2,013	$1,618	-13%
101-200	$1,263	$1,143	$693	-45%
201-400	$996	$1,112	$503	-49%
401-800	$1,316	$1,053	$823	-37%
>800	$483	$557	$292	-40%

Mill Value Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$150	$60	$67	-55%
41-100	$42	$99	$23	-45%
101-200	$26	$14	$12	-54%
201-400	$17	$6	$6	-65%
401-800	$64	$47	$49	-23%
>800	$3	$2	$3	-6%

General Fund Mills Levied (District level)

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	13	13	19	46%
41-100	27	20	25	-9%
101-200	29	20	17	-43%
201-400	27	18	14	-47%
401-800	41	20	17	-58%
>800	34	17	16	-54%

State Revenues Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$949	$1,162	$832	-12%
41-100	$342	$850	$530	55%
101-200	$281	$377	$470	67%
201-400	$190	$324	$362	91%
401-800	$86	$229	$328	281%
>800	$63	$120	$159	152%

Federal Impact Aid Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 91-95
1-40	NA	$313	$70	-78%
41-100	NA	$1,122	$622	-45%
101-200	NA	$774	$483	-38%
201-400	NA	$818	$529	-35%
401-800	NA	$957	$618	-35%
>800	NA	$491	$254	-48%

NA = Not Available

Table 13 High School Standard Deviations by Size Groups

Standard Deviations by Size Groups (grouped by FY 95 enrollment)
Weighted by Enrollment
High School Districts (118 observations)
In Constant 1995 Dollars

General Fund Budget Adopted Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$2,372	$3,156	$2,840	20%
41-100	$3,221	$3,064	$1,528	-53%
101-200	$2,219	$2,203	$1,227	-45%
201-400	$1,378	$1,024	$513	-63%
401-800	$1,613	$2,693	$1,040	-36%
>800	$351	$461	$373	6%

Mill Value Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$107	$63	$54	-50%
41-100	$73	$40	$27	-63%
101-200	$149	$24	$21	-86%
201-400	$24	$13	$11	-54%
401-800	$130	$97	$85	-35%
>800	$7	$5	$5	-29%

General Fund Mills Levied (District level)

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	25	18	15	-39%
41-100	23	12	10	-57%
101-200	18	16	9	-51%
201-400	13	10	7	-47%
401-800	19	10	11	-39%
>800	16	12	12	-29%

State Revenues Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 89-95
1-40	$973	$1,589	$1,431	47%
41-100	$736	$1,217	$972	32%
101-200	$269	$498	$652	142%
201-400	$183	$415	$457	150%
401-800	$74	$307	$399	439%
>800	$26	$214	$187	619%

Federal Impact Aid Per Student

Enrollment	FY 89	FY 91	FY 95	% Change 91-95
1-40	NA	$3,662	$1,837	-50%
41-100	NA	$1,797	$973	-46%
101-200	NA	$1,825	$1,104	-40%
201-400	NA	$660	$186	-72%
401-800	NA	$2,485	$513	-79%
>800	NA	$20	$19	-5%

NA = Not Available

Regression Results for General Fund Budget. A seemingly unrelated regression was run with an equation for each of the three years and general fund budget adopted per student as the dependent variable . Independent variables included mill value per student, enrollment inverse and federal impact aid per student (Tables 14 and 15). At the elementary level the coefficient on mill value per student rises from 7.6 in 1989 to 10.5 in 1995. A t-test comparing the 1989 and 1995 mill value coefficients produced a t value of 3.1, significant at the one percent level. Using the high school data the same regression shows that the coefficient on mill value per student rises from 4.1 in 1989 to 6.1 in 1995. This increase is significant at about the 14 percent level. These results suggest that the reliance on the local mill values has actually increased since 1989. That is, differences in taxable value appear to have larger effects on budgets in 1995 than in 1989.

These results at first appear to contradict the earlier findings that budgets are more equalized now than in 1989. In fact there is no contradiction. The regression coefficients measure the effects of given differences in taxable value on general fund budgets. For example the 1995 elementary coefficient of 10.5 indicates that a district with one more dollar of mill value per student ($1,000 of taxable value per student) would be expected to budget, ceteris paribus, an additional $10.50 per student. The fact that the mill value coefficients are larger in 1995 than in 1989 implies that given differences in mill value result in larger differences in budgets now than six years ago.

Table 14 Elementary Regression Results for General Fund Budget

SEEMINGLY UNRELATED REGRESSION RESULTS

Dependent Variable: General Fund Budget per Student
Weighted by 1995 Enrollment
301 Elementary Districts
Regression Data in 1995 Dollars

Coefficients For Each Fiscal Year (t-ratio)

	FY 89	FY 91	FY 95
Mill Value per Student	7.62 (9.0)	9.63 (7.4)	10.48 (11.6)
Enrollment Inverse	24557 (12.9)	25361 (11.2)	21109 (15.1)
Federal Impact Aid per Student	1.00 (20.5)	1.09 (25.1)	0.88 (14.3)
Constant	2996.70 (79.4)	3191.4 (86.8)	189.80 (107.4)
R-squared	0.71	0.70	0.69

Test for Change in Mill Value Coefficient

Null Hypothesis: Coefficient 1995 - Coefficient 1989 = Zero

t- value = 3.1 DF = 296 P-value = .01

Table 15 High School Regression Results for General Fund Budget

SEEMINGLY UNRELATED REGRESSION RESULTS

Dependent Variable: General Fund Budget per Student
Weighted by 1995 Enrollment
118 High School Districts
Regression Data in 1995 Dollars

Coefficients For Each Fiscal Year (t-ratio)

	FY 89	FY 91	FY 95
Mill Value per Student	4.13 (4.9)	7.07 (4.8)	6.09 (5.4)
Enrollment Inverse	228950 (16.6)	228410 (17.6)	215220 (19.7)
Federal Impact Aid per Student	0.70 (11.7)	0.96 (20.8)	0.90 (10.5)
Constant	4077.20 (43.2)	4144.00 (41.2)	3818.30 (53.9)
R-squared	0.82	0.86	0.86

Test for Change in Mill Value Coefficient

Null Hypothesis: Coefficient 1995 - Coefficient 1989 = Zero

t- value = 1.08 DF = 113 P-value = .14

However, these results do **not** imply that the overall inequality of general fund budgets has increased. In particular, the rising coefficients have been more than offset by a more equal distribution of mill values. As previously noted, the standard deviation of mill value per student has declined 40-50% between 1989 and 1995. Thus an elementary district with a mill value that is one standard deviation above the mean in 1989 would have been expected, ceteris paribus, to have a general fund budget that was $274 (=7.6 * $36) above the mean. In 1995 an elementary district with a mill value that is one standard deviation above the mean would have been expected, ceteris paribus, to have a general fund budget that was $231 (=10.5 * $22) above the mean. In short, while given differences in taxable values appear to have larger effects on budgets in 1995 than in 1989, taxable values are so much more equally distributed in 1995 that budgets are also more equally distributed.

The coefficient of enrollment inverse is positive, as expected, indicating that per student budgets fall as enrollment increases. For example, the elementary coefficient in 1995 indicates that a school with 100 students would budget about $189 more per student than a school with 1000 students ($21,109/100 - $21,109/1000). More dramatically, the results imply that in 1995 a high school with 100 students would spend $1,936 more per student than a high school district with 1000 students ($215,220/100 - $215,220/1000). The marginal effects of federal impact aid on budgets are close to one for both high school and elementary districts, implying that federal revenues are spent dollar for dollar and do not substitute for local dollars.

Decomposition of Variation. Regression results can also be used to decompose the variation across districts in budgets into several sources. Specifically, the total variation in budget per pupil can be separated into components corresponding to the explanatory variables, the covariances between these variables, and the "residual" or unexplained variance. Mathematically, we write

$$v(y)=\hat{\beta}'v(x)\hat{\beta}+v(e)$$
$$=\hat{\beta}_1^2v(x_1)+\hat{\beta}_2^2v(x_2)+\hat{\beta}_3^2v(x_3)+2\hat{\beta}_1\hat{\beta}_2c(x_1,x_2)+2\hat{\beta}_1\hat{\beta}_3c(x_1,x_3)+2\hat{\beta}_2\hat{\beta}_3c(x_2,x_3)+v(e)$$

where v(y) is the variance across districts of per pupil budgets, $v(x_i)$ is the variance of ith explanatory variable (mill value, enrollment inverse or federal impact aid), $\hat{\beta}_i$ is the estimated regression coefficient on x_i, and v(e) is the variance of the residual.

Table 16 decomposes the variances of budgets according to this equation. The first column shows the budget variances, v(y). The next three columns show the amounts of budget variance which are attributable to the three explanatory variables, and the next three columns display the covariances. The last column shows the residual variance. Several striking results are displayed. First, the variation in budgets that stems from differences in mill values is a small proportion of the total variation. Among elementary districts in 1989 for example, only 75,548/952,485 = 7.9% of the variation in budgets can be attributed to the variation in mill values. The corresponding figure for 1995 is 14%, and the figures for high school districts are even smaller. Thus while there is no doubt that differences in taxable values have contributed to the inequality of budgets across districts,

Table 16 Decomposition of Variation in General Fund Budget Per Student

	Variation				Covariance			
	General Fund Budget	Mill Value	Enrollment Inverse	Federal Impact Aid	MV* Enr	MV *FIA	Enr* FIA	Residual Variation
Elementary Districts								
1989	952,485	75,548	137,501	413,038	71,528	-23,077	391	277,556
1995	489,379	69,117	100,258	112,003	54,591	1,159	-849	153,100
Change 89-95	-463,106	-6,431	-37,243	-301,035	-16,937	24,236	-1,240	-124,456
High School Districts								
1989	3,583,453	116,831	1,585,648	692,059	206,338	112,204	226,061	644,312
1995	2,029,853	70,119	1,067,205	231,697	99,136	42,929	243,260	275,507
Change 89-95	-1,553,600	-46,712	-518,443	-460,362	-107,202	-69,275	17,199	-368,805

these results imply that differences in taxable value are responsible for a relatively small proportion of the observed differences. Variations in school size and receipt of impact aid, and the residual variance are each larger influences on budget variation than is variation in taxable value.

Second, the most important reason for the equalization of budgets among elementary districts was the decline in the inequality of federal impact aid. As previously noted, federal impact aid is very important in some districts, and it tends to be spent rather than used to permit declines in other revenues. Thus as federal impact aid revenues have declined, spending has declined in those districts which rely on them. This has been the leading contributor to an equalization of per student budgets at the elementary level, and the second most important reason at the high school level.

A decline in the variation in spending associated with differences in school sizes has been the most important equalizing influence at the high school level. This outcome has been the result of two factors: First, the variance of enrollment inverse is smaller in 1995 than in 1989. Secondly, the coefficient of enrollment inverse declined in value between 1989 and 1995, indicating that given differences in enrollment now result in smaller differences in spending. Thus both the variance in enrollment inverse itself, and the effects of such differences on spending, declined. The same was true for elementary districts, but the quantitative impacts were smaller.

Finally, the residual variation declined substantially among both elementary and high schools. The residual variation represents everything not explicitly included as explanatory variables, i.e. everything *except* mill value, enrollment, and impact aid.

Factors omitted from the model include the income, tastes and other characteristics of the residents of the districts, cost considerations other than enrollment (e.g. special education), and dimensions of state policy that are not explicitly related to the included variables. While the sources of the residual variation cannot be precisely specified, the results clearly indicate that they contributed significantly to the overall equalization of budgets.

Correlations. A major point from the law suit involved the relationship between general fund budget adopted per student, mill value per student and general fund mills levied by a district. To study how these relationships have changed since 1989, the correlations of per student mill values with general fund budget per student, general fund mills levied and state revenue per student are listed in Table 17.

First, notice that mill values are positively correlated with general fund budgets in every year, indicating that wealthier districts do indeed adopt higher budgets. Among elementary districts, this correlation increased over time, while for high school districts it declined. Second, notice that mill values are negatively correlated with mills levied, indicating that wealthier districts not only enjoy larger budgets, but also lower tax rates. Again, the direction of change over time differs between the elementary and high school districts. Finally, notice that mill values are positively correlated with state aid in 1989, but negatively (only slightly in the case of high school districts) correlated in 1995. Thus, the wealthier districts tended to receive larger amounts of state aid in 1989, but this aid

Table 17 Correlations with Mill Value

Data in 1995 Dollars
Weighted by Enrollment
Elementary Districts (301 observations)

		BUDGET	MILLS	STATE
FY89:	MILL VALUE	0.38	-0.28	0.29
FY91:	MILL VALUE	0.30	-0.21	0.10
FY95:	MILL VALUE	0.46	-0.37	-0.26

* .05 Percent critical value for H_0: R=0 is | R | >= .12

High School Districts (118 observations)

		BUDGET	MILLS	STATE
FY89:	MILL VALUE	0.45	-0.42	0.20
FY91:	MILL VALUE	0.28	-0.25	0.10
FY95:	MILL VALUE	0.35	-0.31	-0.08

* .05 Percent critical value for H_0: R=0 is | R | >= .19

MILL VALUE = Mill value per student
BUDGET = General fund budget per student
MILLS = General fund mills levied
STATE = General fund state revenues per student

appears to be directed more toward the poorer districts in 1995.

Summarizing, the results in Table 17 suggest that wealthier districts continue to adopt higher budgets while enjoying lower tax rates, much as they did prior to the current reforms. However, state aid is apparently now more concentrated on less wealthy districts.

One possibility is that these results stem mainly from spurious correlation with enrollment size. That is, smaller districts tend to have both larger mill values per student and higher operating costs (because of economies of scale). Thus it is possible that the correlation between mill value and budget is a spurious reflection of the common variable site.

Partial correlations were derived in an attempt to account for differences in district sizes. Each variable was regressed on enrollment inverse, and then the correlations among the residual values were computed. A look at the results in Table 18 show very similar results to those found in Table 17. That is, even controlling for district size, wealthier districts tend to have larger budgets and lower tax rates. A notable difference is that state aid no longer displays a significant positive correlation with mill value in 1989. Apparently, the positive correlation in Table 17 arose because state aid was concentrated on smaller districts, and smaller districts tend to be wealthier on average. Table 18 also confirms that, controlling for district size, state aid is now more concentrated on the less wealthy districts.

Table 18 Partial Correlations with Mill Value

Data in 1995 Dollars
Weighted by Enrollment
Elementary Districts (301 observations)

		BUDGET	MILLS	STATE
FY89:	MILL VALUE	0.31	-0.21	0.08
FY91:	MILL VALUE	0.24	-0.16	-0.02
FY95:	MILL VALUE	0.39	-0.31	-0.30

* .05 Percent critical value for H_o: R=0 is | R | >= .12

High School Districts (118 observations)

		BUDGET	MILLS	STATE
FY89:	MILL VALUE	0.41	-0.38	-0.11
FY91:	MILL VALUE	0.17	-0.23	-0.22
FY95:	MILL VALUE	0.35	-0.29	-0.37

*.05 Percent critical value for H_o: R=0 is | R | >= .19

MILL VALUE = Residual of mill value per student when regressed on enrollment inverse
BUDGET = Residual of general fund budget per student when regressed on enrollment inverse
MILLS = Residual of general fund mills levied when regressed on enrollment inverse
STATE = Residual of general fund state revenues per student when regressed on enrollment inverse

Regression Results for Mills Levied. A further exploration of the relationship between mill value per student and general fund mills levied comes from a seemingly unrelated regression with general fund mills levied as the dependent variable. Tables 19 and 20 show that the coefficient on mill value per student is negative in both elementary and high school districts, again indicating that wealthier districts levy fewer mills. Furthermore, the coefficients are at least as large in 1995 as in 1989, indicating that the effects of given wealth differences have not diminished. However, the situation is analogous to the findings for general fund budgets; because the inequality of wealth is so much smaller in 1995 than in 1989, the inequality (standard deviation) of tax rates diminished substantially over the period (see Table 11). Other findings include: Mill rates are positively related to enrollment among elementary districts, but no clear relationship is evident among high schools. Federal impact aid appears to have little relationship with mill rates, again indicating that such aid is spent rather than used to lower taxes.

Result Summary

The summary statistics and regression results support the hypothesis of increased fiscal equalization for both high school and elementary districts. The variation in spending falls for high school and elementary districts between fiscal year 1989 and fiscal year 1995, while the spending ratios between the 95th and 5th percentiles of enrollment also drop. These declines generally hold when expenditures are sorted by enrollment size groups. Over the period from 1989 to 1995 both high school and elementary districts see falling

Table 19 Elementary Regression Results for Mills Levied

SEEMINGLY UNRELATED REGRESSION RESULTS

Dependent Variable: General Fund Mills Levied
Weighted by 1995 Enrollment
301 Elementary Districts
Regression Data in 1995 Dollars

Coefficients For Each Fiscal Year (t-ratio)

	FY 89	FY 91	FY 95
Mill Value per Student	-0.21 (.05)	-.16 (.05)	-0.24 (.04)
Enrollment Inverse	-181.03 (119.1)	-151.2 (81.6)	-70.8 (55.0)
Federal Impact Aid per Student	-0.02 (2.3)	-0.006 (.001)	-0.006 (.002)
Constant	78.7 (2.4)	42.5 (1.2)	72.02 (1.1)
R-squared	0.19	0.13	0.21

Test for Change in Mill Value Coefficient

Null Hypothesis: Coefficient 1995 - Coefficient 1989 = Zero

t- value = .7 DF = 296 P-value = .76

Table 20 High School Regression Results for Mills Levied

SEEMINGLY UNRELATED REGRESSION RESULTS

Dependent Variable: General Fund Mills Levied
Weighted by 1995 Enrollment
118 High School Districts
Regression Data in 1995 Dollars

Coefficients For Each Fiscal Year (t-ratio)

	FY 89	FY 91	FY 95
Mill Value per Student	-0.06 (.02)	-0.05 (.02)	-0.06 (.02)
Enrollment Inverse	-369.9 (269.5)	-72.4 (187.7)	-39.2 (212.2)
Federal Impact Aid per Student	-0.003 (.001)	-0.002 (.001)	0.001 (.002)
Constant	51.5 (1.8)	30.1 (1.4)	39.4 (1.3)
R-squared	0.22	0.10	0.13

Test for Change in Mill Value Coefficient

Null Hypothesis: Coefficient 1995 - Coefficient 1989 = Zero

t- value = .02 DF = 113 P-value = .49

average mill values and federal revenues per student. General fund mills levied at the local level show a net overall decrease, but increase from 1991 to 1995. In general, these results also occur for each size group, with the exception that only elementary districts with more than 800 students experience a net decline in general fund mills levied. High school and elementary state revenue per student moves oppositely from general fund mills levied per student for a net increase between 1989 to 1995.

CHAPTER 4

SUMMARY AND CONCLUSION

The combination of HB 28, HB 667 and HB 22 made many changes in the Montana school finance system. Using data on 301 elementary and 118 high school districts for the fiscal years 1989, 1991 and 1995, this thesis tried to answer some basic questions about how these legislative changes affected school funding in Montana.

I "Has equalization of funding among Montana's school districts taken place, and if so to what degree?"

The general fund budgets adopted by Montana's school districts in 1995 are more equal than they were in either 1989 or 1991. The ratio of spending between districts at the 95th and 5th percentile of students has dropped significantly. This ratio, however, still remains above the target equalization ratio of 1.25 for both elementary and high school districts. Ratios may continue to decline as many low spending districts have until 1997 to raise their general fund budget to the base budget level.

Further evidence of the equalizing effect of Montana's current school funding system is the fact that the standard deviation of general fund budget per student for high school and elementary districts is lower in 1995 than it was in earlier years. This decreased variation of spending is evident in total, as well as within size groups. There

remains a question as to whether Montana's school system is "equalized", but it is definitely more equal than it was prior to 1995.

II "What has happened to spending on schools in recent years? In particular, have changes in the funding methods resulted in rapid increases in spending?"

Overall spending on schools increased drastically with the initiation of HB 28, but then slowed in subsequent years. Overall general fund budgets actually trailed inflation and enrollment growth over the 1989-1995 period, resulting in lower real budgets per student. While elementary budgets saw a slight gain, high school budgets trailed inflation and enrollment growth by about nine percent.

III "Has the reliance on local property tax values been reduced?"

The reliance on local mill values to support schools within a district was reduced with the first legislative reform. The correlation between mill value per student and general fund budget per student fell from 1989 to 1991 for both elementary and high school districts. This correlation, however, increased again between 1991 and 1995, and was actually larger for elementary districts in 1995 than in 1989. Similarly, the negative relationship between mill value per student and general fund mills levied also decreased initially, but rose by 1995. Elementary districts saw a larger correlation between mill value per student and general fund mills levied in 1995 than they did in 1989. Regression analysis, with general fund budget per student as the dependent variable, also shows a coefficient on mill value per student that increases between 1989 and 1995.

IV "Has state and federal support kept up with increasing school costs?'

Although declining slightly between 1991 and 1995, state revenue per student rose dramatically between 1989 and 1995. This increase was evident for almost all enrollment groups as well. The distribution of state aid also increased by 1995, but appears directed more toward the relatively poorer districts. Federal impact aid, however, declined significantly between 1991 and 1995.

Overall Conclusion

General fund budgets among school districts are more equalized than they were in 1989. The general fund budgets have, however, failed to keep pace with increasing enrollments and inflation. State revenues per student increased substantially since 1989 and appear to be distributed more to the lower wealth districts. Federal impact aid has fallen significantly since 1991, but does not prove to be a substitute for local funds. Reliance on local mill value has not been reduced, however, and heavy reliance on local mill value increases the competition for funds among the major budgets, and reduces the flexibility of relatively low property wealth districts.

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