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Fiscal Equity Comparison between Current and Capital Education Expenditures and between Rural and Non-Rural Schools in Oklahoma

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By

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Fiscal Equity Comparison between Current and Capital Education Expenditures and between Rural and Non-Rural Schools in Oklahoma

A Dissertation APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL LEADERSHIP
AND POLICY STUDIES

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Table of Contents

List of Tables

Abstract

A Fiscal Equity Comparison between Current and Capital Education Expenditures and between Rural and Non-Rural Schools in Oklahoma

By: Rodney E. Stearns

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The purpose for conducting this study was to extend equity theory and evaluative methodology from its traditional concern with current educational expenditures to inclusion of capital outlay expenditures and to make comparisons between rural and non-rural school systems. The study included analysis of the impact of capital outlay funding divided into state and local allocations on the equity of the total educational expenditure. Also, the comparisons of current expenditures and capital outlay expenditures will be made between rural and non-rural schools.

The purpose of this research was to answer the following questions by analyzing fiscal data collected by the Oklahoma State Department of Education from school districts throughout Oklahoma:

1. How do trends of current expenditures compare to capital outlay expenditures for the years 1995-2003 in the state of Oklahoma?
2. Are current expenditures and capital outlay expenditures equitable between rural and non-rural schools?

Accordingly, the data to be analyzed with resource accessibility measures and wealth neutrality measures was reported by schools through

the Oklahoma Cost Accounting System (OCAS). Specifically, all current expenditures and data reported that has anything to do with capital outlay such as building maintenance, upkeep, and replacement.

Chapter 1

Introduction

Fiscal equity in financing public education has been a substantive issue with a long history in school finance literature.[1] Indeed, equity or the concept of a fair and just method of distributing resources has been directly affecting education since the dramatic social reforms and school finance lawsuits starting in the late 1960's and continuing through today.[2] Certainly, the pursuit of equity is no more evident than in fiscal aid schemes for schools, whereby the least able are afforded an opportunity to change their lives—a benefit that would be totally inaccessible were it not for public fiscal support.[3]

Although equity is similar in meaning to equality, equity differs in that it does not require strict adherence to the principle of equal treatment for all. Instead, equity necessitates fair and just treatment, which—surprising as it may sound—might actually require unequal treatment of some individuals or groups. In school finance, in fact, equity is sometimes best served by funding inequalities,[4] especially when dealing with capital outlay.

Equity studies primarily look at three kinds of equity: horizontal equity, vertical equity, and wealth neutrality. Horizontal equity requires equality of equals, while vertical equity requires action to assure equality of unequals. For example, horizontal equity requires identically situated school districts to receive equal resources. Vertical equity is then required to adjust resources to

assure equality for students that require more resources, such as special education students.[5]

Wealth neutrality is a condition in which the fiscal support for students is not related to the fiscal condition of the school districts.[6] It is achieved when poor districts can provide their pupils with the same level of education that rich districts offer. It indicates the degree to which district wealth and revenue are associated when the wealth of a school district and expenditures per-pupil are examined together. Poor districts are those where personal income of residents and property values are low, while wealthy school districts are characterized by high personal income and high property values.[7]

Currently, school districts throughout the nation are faced with the need to finance the construction, renovation, or repair of public school facilities. The U.S. Department of Education estimated that elementary and secondary public and private school enrollment would increase by one million students during the period 1999-2009.[8] The National Center for Education Statistics noted that in 1998 the average age for public school facility was 42 years, while rapid deterioration usually begins at the age of 40.[9]

When the General Accounting Office (GAO) surveyed the condition of U.S. school facilities in 1994, it found a need for substantial investment into upgrading and replacing substandard buildings. At the time, the GAO estimated it would take $112 billion over a three-year period to bring the nation's schools into "good" overall condition. As if that were not enough, the GAO also found that most school facilities do not have the infrastructure to

support modern technology. Moreover, many schools face classroom shortages.[10]

In 2000, the GAO reported that annual construction expenditures for elementary and secondary schools across the nation grew by 39 percent from fiscal year 1990 through fiscal year 1997 to about $25 billion after adjusting for inflation. Average annual construction expenditures per pupil varied widely from state to state, ranging from $934 in Nevada to $37 in Connecticut. States with the largest expenditures per pupil had relatively low enrollment growth rates.[11] Construction of buildings accounted for the majority of expenditures while equipment expenditures increased only slightly during the eight-year period.

While few can argue that schools need more attention and funding, many state legislatures have been reluctant to raise taxes, thereby shifting more of the burden for the funding of schools to local taxpayers. These states are an example of legislative support moving away from the idea argued in *Serrano v. Priest* (487 P.2d 1241 [Calif. 1971]), that no child's education should depend on the wealth of his neighbors. This led to the formulation of a guaranteed tax base formula for distributing state aid to school districts, which in its pure form is constructed so that districts that levy the same tax rates will spend the same amount of money per pupil.[12]

Statement of the Problem

Certainly, inequitable capital outlay funding will make it more difficult for poorly funded districts to upgrade aging facilities. In fact, a rash of recent

court cases has been filed over dilapidated, unsafe, and under-funded school systems. In a decision issued on October 27, 2003, an Idaho District Court declared a school funding law enacted by the state legislature in May of 2003 unconstitutional. The court explained that the new law has the practical effect of "amending the Idaho Constitution to remove the duty it places on the legislature to create an adequate system of public school funding."[13] In the 1999 *Abbeville County School Dist. v.*State (515 S.E.2d 535 [S.C. 1999]) decision, the South Carolina Supreme Court noted that unlike similar suits brought in other states, appellants do not seek "equal" state funding since they already receive more than wealthier districts, but instead allege that the funding results in an inadequate education. The court stated:

> We hold today that the South Carolina Constitution's education clause requires the General Assembly to provide the opportunity for each child to receive a minimally adequate education. We define this minimally adequate education required by our Constitution to include providing students adequate and safe facilities in which they have the opportunity to acquire: 1) the ability to read, write, and speak the English language, and knowledge of mathematics and physical science; 2) a fundamental knowledge of economic, social, and political systems, and of history and governmental processes; and 3) academic and vocational skills.[14]

Unquestionably, school infrastructure financing is one of the timeliest topics in school finance today. In fact, many state legislatures have passed bills that either increased their state's role in funding these needs or have created new options such as sales taxes. In addition—and perhaps working

as a catalyst for funding reform—recent school finance litigation has addressed inequalities in providing school infrastructure needs.[15]

Those who are concerned about education generally agree that all children have a right to at least a basic level of educational opportunity and quality. Most school finance-based litigations have shifted from a legal theory of equal funding to one based on the adequacy of educational opportunity. Recent court decisions in New York as well as other states such as Kentucky, New Jersey, Arizona, Montana, New Hampshire, and Arkansas demonstrate that state high courts are interpreting their constitutions to require educational opportunity at levels high enough to prepare students for the contemporary challenges of citizenship and employment. The courts are mandating that the states ensure the appropriate educational resources to provide for this opportunity.[16]

The state courts have commissioned studies that measure what it actually costs to determine an adequate level of funding necessary to educate a child according to each state's standards as well as to meet the federal standards under the No Child Left Behind Act. In Kentucky, recent costing-out studies have indicated that an additional $750 million to $892 million are needed to provide students with the resources necessary to meet state learning standards.[17] Similar studies have been undertaken in Missouri, North Dakota, Arkansas, Kansas, and Maine. The results of these studies show a need for increased funding in excess of several 100 million dollars with future cost of living increases.

Also, there has been a legislative driven movement in Oklahoma to consolidate small school districts rather than to correct the many problems some districts face with their facilities. West Virginia recently used consolidation of school districts as a means to comply with court ordered changes in facilities funding, and now students ride for several hours one way on hazardous roads to get to school. The West Virginia study, which will be addressed further in chapter 2, has provided an example of what consolidation has to offer for rural states.

Statement of the Purpose

This study extends equity theory and evaluative methodology from its traditional concern with current educational expenditures to the inclusion of capital outlay expenditures and makes comparisons between rural and non-rural school systems. The study includes analysis, with procedures that illuminate the equity condition from a variety of perspectives, of the impact of capital outlay funding divided into state and local allocations on the equity of current educational expenditures. Also, the comparisons of capital outlay expenditures and current educational expenditures are made between rural and non-rural schools.

Research Questions

The study is guided by the following research questions:

1. How do current educational expenditures compare to capital outlay expenditures for the years 1995-2003 in Oklahoma?

2. Are current educational expenditures and capital outlay expenditures equitable between rural and non-rural schools in Oklahoma?

Significance of the Study

While fiscal equity is often a goal state courts set for the legislature, it is important to discuss whether or not state legislatures are providing equitable amounts of capital outlay to schools. Accordingly, policy makers should be looking at whether the courts, that are requiring a high level of education and defining it as the "best education system," are using accurate measurements of equity.[18]

The belief among policy makers, practitioners, and researchers that there is a need to show the importance of increasing financial investments in at-risk students will be outlined in the next chapter. The study looks for a link between rural and non-rural school's funding of capital outlay and equity of educational expenditures. Consequently, the focus of this study is equity in the capital outlay expenditures that are available to schools.

Limitations of the Study

This study does not address adequacy—educational opportunity at levels high enough to prepare students for the contemporary challenges of citizenship and employment.[19] Even though adequacy has been shown to have a direct effect on educational outcomes and has become the focus of many lawsuits in recent history, the question of what expenditures are

necessary to adequately address the needs of individual students is not considered. Within this study, the use of student level data was not feasible; unit level data was averaged to student. For example, specific pupil outcomes were not used to measure equity across districts; rather the district resources for capital outlay were used. Oklahoma's reporting instrument for capital outlay makes it impossible to break the data down into useful specific per-pupil outcomes.

Another limitation is that only one state was involved. Clearly, the more states that could be considered in the study the more extensive it would be, but for the purpose of this study only the state of Oklahoma was evaluated. The state of Oklahoma did provide a large sampling by itself. For example, during the years 1995-2003 the state averaged 541 school districts with an average of 337 rural districts and an average of 204 non-rural districts. Nine years of data from 541 districts covered 4,869 rows of data in Excel.

Also, within Oklahoma the reporting instrument from the districts did provide some limitations. School district administrators follow strict guidelines when reporting information using the Oklahoma Cost Accounting System (OCAS), but not all school district administrators interpret the guidelines alike. OCAS will be discussed in greater detail in chapter three.

Definitions

Capital outlay, for the purpose of this study, was defined as expenditure generally used to finance and maintain long-lived fixed assets including instructional buildings, equipment, land or other facilities.[20]

Fiscal Equity in school finance refers to a condition of fair treatment of all students in a given state who should be provided equivalent support for education given their varying educational needs.[21]

Rural Schools for the purpose of this study was defined as those that qualify for the district weights such as the isolated schools weight (schools whose total area in square miles is greater than the average number of square miles for all school districts in this state, and whose areal density is less than one-fourth of the state average areal density[22]) and the small schools weight from the Oklahoma state funding formula. The small school district formula calculation shall apply only to school districts whose highest average daily membership is less than 529 pupils.[23]

Summary

Equity in educational expenditures is of great concern in times of funding deficiencies, especially when facilities directors for both rural and non-rural school districts across the country are competing with other governmental agencies for fewer budget dollars. As shown by the GAO study in 2000, the funding of capital outlay is a significant part of the educational funding equation. More often than not, districts are looking for ways to address infrastructure problems without access to additional capital funding.

Consequently, inequalities in capital outlay expenditures can decrease the equitability of overall educational expenditures. This study could give some insight as to whether or not expenditures on facilities should play a part in the discussion both for rural school districts as well as for non-rural school districts.

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Chapter 2

Review of the Literature

Chapter two includes a review of the literature related to the present study. The study purports to compare the differences between capital outlay expenditures and current expenditures across school districts in the state of Oklahoma. The literature review will address several issues such as equity issues, capital outlay funding, litigation, and legislation.

This chapter begins by addressing the history of equity and the studies of capital outlay. Following equity issues is a discussion of the litigation for both equity and capital outlay. Legislation and history follow with a look at how state courts and state legislators have addressed equity throughout the years. Finally, a general look at construction issues is made before the summary of the chapter.

History of Equity

Since establishing educational systems in the 1800's, most states have experienced problems trying to equalize education funding. Widespread dependence on local property-tax revenues has "meant that students living in school districts with high-priced residential or commercial property continued to have substantially greater resources available to support their education" than students residing in poorer districts.[1] Consequently, problems occur when legislators and policy makers attempt to find an equitable funding formula for public school systems.

Equity Issues

According to the National Research Council, there is a strong consensus among policy makers, practitioners, and researchers about the importance of increasing financial investments in at-risk students, to address the broad range of educational, social, and physical needs that affect their learning.[2] School finance disparities—differences in funding between wealthy and poor school systems—arise from the way states finance public schools. This is the essential problem: by not requiring equity among schools, state policies, in effect, support inequality in schooling.[3] Although money alone cannot ensure a quality outcome, schools cannot be expected to be effective with resources they do not have.[4]

Hartman studied three Pennsylvania school districts representing high, middle, and low expenditure patterns and wealth. Not surprisingly, input quantity and quality (class size, education level of teacher, salary and experience levels of personnel, neighborhood quality) varied positively with wealth. Although he did not directly examine the relationship between spending and outcomes, he inferred that it is positive. "The higher expenditure and taxation levels and the choices related to the quantity and quality of the educational resources made by higher spending districts indicate that they operated in accordance with a perceived cost/quality relationship."[5]

In a report entitled *Equality of Educational Opportunity,* Coleman concluded "differences between schools account for only a small fraction of differences in pupil achievement." He pointed out that non-school factors had

more to do with achievement "than do all the 'school factors' together" and, further, that expenditure differences are not as important to achievement as are community and social differences. Thus, forces external to the public school affected achievement more than the schools themselves.[6]

Therefore, adequate school funding cannot be justified on the grounds that it "makes life better right now," and that "students' and teachers' claims to the public purse are not more legitimate than the claim of a myriad of other public service enterprises."[7] According to Jencks, "unequal expenditures do not account for the fact that some children read more competently than others. If elementary and secondary education has little impact on earnings, then once a study controls for family background and initial test scores, equalizing the distribution of such education cannot be expected to have such effect on the distribution of earnings."[8]

According to Hanushek, there is no consistent relationship between resources and student performance. Also, he attempted to prove that public schools are so inefficient and nonproductive that additional dollars invested would be meaningless and wasteful.[9]

Equity Studies

As a result of these concerns over equity issues, fiscal equity studies have taken center stage in the last three decades particularly in the face of court challenges of state funding formulas. These equity studies have undergone many stages since the beginning of the 1970's. Additionally, litigation has been the main catalyst for these changes. The litigation filed by poor school districts in the

1970's and 1980's made the states rethink the role they were playing in education financing and local control. Before then, funding the schools had been left almost completely to the local education agency (LEA). The 1990's brought about the age of standards-based reform mandated by the state and federal government and paid for by the LEA.

Consequently, most experts believe that fiscal equity can be achieved, but that it must be connected to increased standards and achievement. According to Verstegen, current school finance systems were created to support a minimalist level of schooling necessary for an individual to effectively function in an industrial era and contribute to it.[10] Antiquated finance systems rest on the idea of a minimum education—not a quality or world-class education. In the past, state constitutions, curricula, goals, objectives, and/or exit exams crystallized the vision of basic or minimum education, and this vision could serve as a basis for the state-funding guarantee.[11]

Traditionally, dollars have been the object of equity. Hence, if dollars are equalized, or at least made more equitable, all pupils will receive quality education.[12] Current fiscal equity literature is focusing on studies showing long-term alternatives to financing our schools as a whole. However, the courts are still being asked to hear cases related to equitable and adequate funding for all schools.

Equity Litigation

As previously stated, schools with the most economically disadvantaged, at-risk students are likely to have the poorest financial

resources.[13] Therefore, this has resulted in a shift in school finance litigation from “equity” to what was called “adequacy,” arguing that while dramatic differences in dollars per pupil were still a problem, the bigger issue was whether or not school districts had adequate money to implement programs that teach their students to meet the proficiency levels of the state testing systems.[14] Several landmark cases have addressed these issues.

The doctrine of “separate but equal” was declared unconstitutional in 1954 in *Brown v. Board of Education* (346 U.S. 483 [Kans. 1954]), yet it continues to influence public education policy today. In fact, this doctrine provided a basis for the fiscal equity movement that began in the early 1970’s.[15] Plaintiffs generally prevailed in the early litigations dealing with education finance, but by the 1980’s defendants were winning most of these cases.

In 1989, the pendulum began to shift again and since then plaintiffs have won about two-thirds of the recent cases. This can be contributed to the focus shifting from equal protection claims to provisions of state constitutions that guarantee some level of adequate education to all students. Now, rather than dealing with equal funding concepts and complex property tax reforms, the adequacy approach allows courts to focus on the concrete issues of what resources are needed to provide the opportunity for an adequate education to all students and the extent to which those resources are actually being provided.[16]

In *San Antonio v. Rodriguez* (411 U.S. 1 [Tex. 1973]), the United States Supreme Court upheld the Texas system of school funding despite substantial disparities.[17] The federal courts closed the door for litigation at the federal levels but they opened the door for the state courts to look into the disparities in funding that existed between schools. Since then, funding reformers have been more successful with the state courts in attempting to produce funding reform. The state courts have become the tool of choice for fiscal equity lawsuits.

Most scholars recognize the Supreme Court of California's decision in *Serrano v. Priest* (487 P.2d 1241 [Calif. 1971]) as the beginning of the modern era in school funding litigation.[18] The California Supreme Court ruled that funding should be a function of state wealth, not local wealth.[19] This case was a clear victory for those who were seeking greater fiscal equity in California. The idea still resonates with courts more than 25 years after *Serrano*.

Since *Serrano*, most of the 50 states have experienced some type of equity reform, ranging from informal political efforts to protracted litigation. A review of the case law confirms that since *Serrano*, the courts in at least 35 states have ruled on the merits of constitutional challenges to their states' funding systems, with 18 states' highest courts upholding challenged funding systems and 17 states' highest courts declaring funding systems unconstitutional.[20] There does not seem to be an end in sight to the litigation possibilities for some states. Just as they seem to have resolved old cases, someone files a new lawsuit with the courts.

Recently, two other court cases opened the way for change in equity funding. The Vermont Supreme Court ruled for the plaintiffs in its 1997 *Brigham v. State* (692 A.2d 384 [Vt. 1997]) decision without the benefit of a trial, holding that the mere facts of unequal spending and tax rates rendered the state's system of school finance unconstitutional. The New Hampshire Supreme Court was similarly impressed by inequalities in tax rate in *Claremont v. Governor* (635 A.2d 1375 [N.H. 1993]) and ruled that a reformed system must fund basic education expenditures from a tax whose rate does not vary across the state's school districts.[21] Recent high court decisions overturning state aid systems have also begun to reinterpret state constitutions. The courts read state constitutions as requiring a high level of education necessary to enable a child to be an effective citizen and competitor in the labor market of the 21st century. This is defined by the courts as the "best: education system, a "quality" education, or "excellence in education."[22] The courts have generally left the job of defining what constitutes a quality education and/or high level up to the states in order to perform their constitutional and statutory duties related to public education.[23]

As the states look into changing how they will provide this "quality high level education," they are also looking to hold LEA's accountable through testing. The state and federal governments have both attached consequences to the money they have, in the past, given so freely. The schools that are not able to show growth and improve scores will lose funding

and risk the possibility of being taken over by the state, or repaying money to the federal government.

Subsequently, the new millennium ushered in still more litigation, including a much-publicized May 2000 lawsuit brought by civil-rights groups against the state of California for failing to provide some students with the most basic physical and educational amenities.[24] Interestingly, former California Governor Grey Davis launched, in 2001, an aggressive counterattack that attempted to hold districts [not the state] responsible for poor school conditions (outdated texts, leaking roofs, rats in classrooms, and unqualified teachers).[25]

In October 2000, a North Carolina superior court judge issued two of three decisions (the third was in April 2001) that upheld the state's funding formula while requiring the state to provide preschool education for all at-risk 4 year-olds.[26] The courts are beginning to be more specific as to what they expect the legislature to accomplish and by what time frame they expect it to be completed. They are taking a more active stance in the area of fiscal equity litigation possibly to encourage legislators to be more productive.

Equity litigation has not been limited only to common education issues. While the courts have been focused on state constitutions and funding formulas, researchers such as the Center for Special Education Finance are starting to look deeper into equity issues relating to specific groups of students such as special education. Although states like Oklahoma use weights to balance the high costs of educating special needs students in an attempt to

assist schools with students that are more expensive to educate, the need for equity in special education expenditures still exists.

Special Education Equity Issues

Therefore, any discussion of equity and funding must include special education. The potential for encroachment of special education spending on regular education has stimulated serious consideration of finance reform with a majority of states in the nation.[27] As a result, state governments have taken a greater interest in knowing the state's share of special education costs. Federal requirements and regulations have heightened interest by states in understanding the costs and uses of educational funds.

Congress promised to eventually pay up to 40% of the supplemental cost of special education, although it initially placed a cap of 12% to dissuade districts from over-identifying students. Currently, most states give special education students more weight when calculating the state funding formula. While the state may select one way of categorizing students for the purpose of funding or reimbursement, the various factors that contribute to the patterns of variation are important in understanding the equity implications of alternative funding mechanisms. Differences in the distributions of students with respect to various need categories, for instance, may have dramatic effects on costs. School systems enrolling more high need students than other school systems will tend to exhibit higher per student expenditures.[28]

Recent contributions to analysis of expenditures have focused more attention on the school rather than the district level.[29] The school is where

service delivery to children takes place, and it is the variations in resources at this level that result in any differences in educational outcome for children. Thus, using the school as the unit of analysis may provide more precise answers to issues of adequacy and equity. For example during the year 1999-2000, 30 cents of every dollar levied in general-fund property taxes in Indiana went to pay the local share of special-education costs.[30]

Possible Equity Solutions

Early on, most school critics reached the conclusion that expenditure of public resources on free, common, and equal schools constituted a wasteful and inefficient use of private resources uselessly siphoned off by taxation. The presumption supporting the ideal of public schools is, of course, that they are effective social mechanisms for conveyance of knowledge, and the expenditure of tax resources is justified in pursuit of that end.[31] For every argument there is a counter argument just as passionate and defendable.

Educational Policymakers and taxpayers continue to challenge school finance structures that rely heavily on the local property tax for fiscal support. A system that is dependent on the property wealth of a district is alleged to permit wide disparities in per-pupil spending, which in turn foster inequities in educational opportunities and tax burdens across communities.[32] As a result, disadvantaged poor and minority students who reside in communities with low assessed property values receive less funding than middle class, white students who reside in wealthy communities with higher assessed values.[33]

Likewise, scholars have indicated that school finance systems are flawed in theory and practice. For example, according to Brent, these systems drive wide and growing gaps in education quality and equality among more and less affluent school systems, and funding targets are not anchored in research or cost studies.[34] The better and more precisely designed studies, with more carefully derived data, tend to reveal relationships between school expenditures and achievement.[35]

To address these shortcomings, states that fund all education programs through an equalizing finance formula achieve greater fiscal equity in education. Second, states that phase out provisions that provide uniform assistance across all school districts—minimum aid—increase equity in school finances. Third, those states that fully fund the cost of education including facilities and pre-school show increased fiscal equity.[36]

In an attempt to increase equity, Tennessee implemented a new school finance program throughout the 1990's. The maximum LEA's per-pupil spending relative to the state average became smaller, and the minimum LEA's spending relative to the state average became larger. The variance of per-pupil spending has become smaller, supporting the evidence that per-pupil spending in the LEA is clustered more closely.[37] However, districts that experienced rapid growth in average daily membership (ADM) were unable to increase local revenue as fast as the average LEA in Tennessee, thus exposing a weakness in the new funding formula. The formula did not

respond fast enough to keep these districts from declining in the average per-pupil expenditures below the average in the state.[38]

Traditionally, state education funding formulas are designed with many goals in mind, such as horizontal equity, vertical equity, and fiscal equity. They cannot all be fully achieved because they are often in conflict. The effects of education funding formulas may be hidden by analysis of data on the aggregate or average of school systems.[39] Subsequently, state legislatures, driven by the courts, are looking at new sources of revenue for the public school systems.

For example, a school finance plan that permits districts to draw on a political unit larger than the district as a base for taxation of nonresidential property is commonly referred to as nonresidential expanded tax base (ETB). In general, nonresidential ETB approaches permit school districts to maintain taxing authority over their residential property, while removing nonresidential property from the local tax base. The pool of nonresidential property is instead taxed at the state or regional level, with the proceeds distributed back to local districts in some equalizing manner. The intended effect of this approach is to create a financing system that continues to utilize the local property tax, thereby preserving a degree of local fiscal control, while providing a more equitable distribution of the state or region's aggregate nonresidential property wealth.[40]

Capital Outlay

Nationally, one of the most pressing school finance equity issues today involves the decline of America's school facilities.[41] Over seventy percent of U.S. schools still in use were built before 1960, according to the General Accounting Office. In the next decade, school districts around the nation will have to replace or renovate over six thousand of these buildings, and the school's administrators will aim to construct the best possible learning environments while using limited budgets.[42]

Nowhere is this problem more evident than in America's poorest school districts. Concentrated in urban and rural areas where the tax base simply does not exist to support the necessary funding, these poor districts find it almost impossible to generate sufficient revenues to build new schools. In some cases, this is due to anti-tax sentiments, but some districts are simply growing too rapidly to keep pace with the demand for classroom space.[43]

In addition, school infrastructure financing is one of the most significant topics in school finance today. Many state legislatures have passed bills that either increased their state's role in funding these needs or have created new option sales taxes. Moreover, recent school finance litigation—perhaps a catalyst for funding reform—has addressed inequalities in providing school infrastructure needs.[44] As an overriding principle, however, it should be noted that the availability of state infrastructure funding sources of any significance for local school districts, specifically in states serving heavily rural populations of students, is the exception rather than the rule.[45]

History and Litigation of Capital Outlay Equity

Increased concern and interest in capital outlay related to equity has amplified the number of court cases being heard. During the 1960's and 1970's, school finance litigation generally ignored the condition of school facilities as a contributing variable to equality. This changed in 1984 when a West Virginia case, *Pauley v. Bailey* (324 S.E.2d 128, 131 [W. Va. 1984]), served to broaden the judicial interpretation of equal educational opportunity to intentionally include facilities. The *Pauley* decision was especially significant on two historic levels. First, no state court had ever gone so far in stating its interest in capital funding mechanisms. As a result, the noticeably broadened judicial interpretation of equal educational opportunity broached in other states was deliberately propelled to the forefront by this court, which intentionally related educational facilities to equal educational opportunity. Second, the court made a historic move far beyond traditional plan for school improvement that included broad facility mandates and specified in detail that each school would provide quality facilities for each area of the curriculum.[46]

Following the *Pauley* decision, three more states (Arizona, Ohio, and Tennessee) have had success applying for the broadened definitions of equal educational opportunity that include the adequacy of school buildings. This extended interpretation has become increasingly important because the overall condition of educational facilities in the United States continues to deteriorate.[47] The courts have begun to force states to look at equality and ways to finance equitably when it comes to educational facilities.

In each of the three other states following West Virginia's lead—Tennessee, *Tennessee Small School Systems v. McWerter* (851 S.W.2d 139 [Tenn. 1993]); Arizona, *Roosevelt Elementary School District 66 v. Bishop* (877 P.2d 806 [Ariz. 1994]); and Ohio, *DeRolph v. State* (677 N.E.2d 733 [Ohio 1997])—the courts also ruled that inequities in school facilities were relevant to determining the constitutionality of finance statutes.[48] In all of these cases, the courts expected the states to make changes in the way they fund capital outlay.

Idaho leaders were forced to grapple with funding concerns following a state district court judge's ruling that the system of paying for school construction failed to satisfy a constitutional requirement that guarantees students access to a "safe environment conducive to learning."[49] In response, the legislature approved a $10 million program that subsidized the interest on construction financing garnered through low-interest health-and-safety loans made by commercial banks to public school districts. Many Idaho legislators still maintained that school construction funding, except in circumstances of extreme hardship, was still best left up to the local communities. They believe that if the state started buying school buildings for the districts, it would make district officials less accountable to local voters.

State legislatures are now trying to define equality when it comes to funding school facilities across the nation. Crampton and Whitney concluded that if equality were defined as a fair and just method of distributing resources among public school students, equality could be measured by looking at

variations in revenue and spending across local districts. In essence, an equitable state system would produce low or moderate variation in spending among local districts.[50] This definition, if applied to current capital outlay and school facilities funding across the nation, might create severe panic for state policy makers.

In deciding lawsuits challenging state funding programs, the courts have not always required total equality. Some decisions validated state funding systems with expenditure variations when the defendants were able to demonstrate that local control objectives fell within the prerogative of legislators. The courts ruled that some inequity was tolerable in order to preserve liberty.[51]

Some courts have treated adequacy of school resources as being as important as the equality of their distribution. Adequacy is a nebulous concept that may raise questions about the quality of education—how much is enough? However, measures of adequacy are commonly based on outputs and thus, one could argue that as long as districts meet state minimums (thresholds of adequacy), inequalities of opportunity do not exist.[52] The common definition used by the courts for both equality—the extent to which districts have reasonably equal facilities, and adequacy—the extent to which the facilities accommodate modern school curricula in a safe and healthy environment—give legislators clearly defined terminology from which to work out the problems as defined by the courts.

Hickrod, a strong advocate of litigation, argued that state legislatures generally will not respond to the moral call for funding fairness without force as a motivator. Yet, in response to Ward's criticism of lack of data and overly reform-minded zealots as reasons that reform has not fared better,[53] Hickrod posited that the future is grim in that plaintiffs often face limited choices because the outcome of a lawsuit is so uncertain.[54] It is important to be aware of the cost of litigation and to know the climate before entering into a lawsuit.

Even well known reformers have voiced concern about the cost benefit ratio of litigation. Berne, in a study of the historical impact of equity studies from the 1960's to the 1980's, suggested that the battle for equity is hard fought, yet victory is elusive, as values are placed in direct conflict in a democracy.[55] Furthermore, he questioned the value of litigation for facilities and capital outlay. Is it cost effective? Ward argued that because a commitment to social fairness is not unarguably present in the nation's legal foundations, the promise of school finance litigation may be overrated and, instead, legislation based on social embarrassment may prove more effective.[56]

Capital Outlay Legislation

As a result of equity concerns and capital outlay litigation, capital outlay legislation increased during the 1990s. Nationally, in 1994, 127 school funding bills were passed; in 1998, 394 funding bills (approximately three times as many) were passed. A record 441 bills were passed in 1997. Although all categories of school funding bills experienced significant

increases between 1994 and 1998, capital outlay funding bills and tax bases as well as taxation bills experienced the greatest growth in state legislative activity.[57]

Crampton reported that during the 1999 legislative session, 93 bills were passed in 35 states that addressed school infrastructure funding. Crampton reported that a number of states passed legislation that allowed the state, rather than the individual district, to issue bonds. These proceeds are then distributed to districts using such funding options as flat grants, equalized grants, need-based grants, full state funding, and the inclusion of earmarked dollars within the state's basic support program.[58]

The 2000 GAO report stated that school construction contract spending grew by 39% from fiscal year 1990 through fiscal year 1997 to about $25 billion after adjusting for inflation. Between 1990 and 1998, about $21.3 billion was spent for renovating existing facilities. Although this was approximately 17% of total contracted construction spending, renovations accounted for the greatest increase—82%. The substantial growth in renovating schools after 1996 reflected an increased awareness among the general public as well as state and local officials of the need to repair badly deteriorated school buildings.[59] Although a substantial increase, the $25 billion fell far short of the needed $112 billion identified in 1995.

Construction Issues

Concerns with capital outlay funding are further exacerbated by the aging condition of schools across the country. Many school districts

throughout the nation are faced with the need to finance the construction, renovation, or repair of public school facilities. As stated previously, the U.S. Department of Education estimated that elementary and secondary public along with private school enrollment would increase by one million students during the period 1999-2009.[60] According to the National Education Association, the total funding needed for public school repair, renovation, and new construction is approximately $268.2 billion.[61] These funding needs are especially critical given research studies that suggest that student achievement and behavior are linked to the condition of school facilities and the extent of overcrowding.[62]

Geography plays a definite role in school construction expenditures. Between 1990 and 1998, the greatest cumulative percentage growth rates for school construction contract spending occurred in the South, with a 55% increase in elementary school construction, 94% increase in middle school construction, and 143% increase in high school construction. Most of that construction occurred in Georgia and Texas. The Northeast experienced a 3.8% decline in construction spending for elementary schools, while the West experienced a 7.4% decline in construction spending for middle schools. The Midwest experienced some significant increases at all levels: 46.7% for elementary schools, 84% for middle schools, and 79% for high schools.[63]

While districts are building new schools on limited funds, it becomes more important than ever to use the most efficient and cost effective labor. One of the most heated debates throughout the country has been the

effectiveness of prevailing wage laws. Prevailing wage laws require that state mandated wage rates be paid on public road and building construction. The purpose of these laws is to encourage collective bargaining in construction and to discourage the payment on public works of wages below those prevailing locally. Critics of prevailing wage laws assert that these laws raise public construction costs and discourage non-union contracts from bidding on public works.[64] Keller and Hartman concluded that the elimination of prevailing wage regulations in jurisdictions in which they exist would not yield measurable savings on school construction costs.[65]

Prevailing wage regulations raise the hourly wage rate paid on public school construction, but the higher labor productivity that comes with these higher wage rates or other economies associated with better construction management appear to offset the higher mandated wage rates. In any case, there is no measurable difference, controlling for other factors, in public schools built with and without prevailing wage regulations.[66] School districts' best opportunities for construction cost savings lie in planning the pattern of new school construction. Specifically, school districts that build during economic downturns can enjoy a buyer's advantage that appears pronounced in the construction industry. A doubling of the unemployment rate can lead to a 21% decline in school construction costs. Spacing out projects so that many are not begun in the same period also promises to save money.[67]

School Consolidation

States have been looking very carefully for a variety of capital outlay funding solutions. Consolidation has been a popular topic for many years in many states. Rural and small districts often become targets of legislators when states look at the budget. In the 1990's conventional wisdom in educational policy and administration assumed that small-district consolidation improves the conditions of education, including cost savings.[68] Typically, consolidation proposals rely on arguments about cost and efficiency, but these concepts are not interchangeable.

Consolidation advocates have long argued that educational improvement depends on enhanced productivity and efficiency; and that the best way to ensure both is to consolidate smaller, ineffective, and inefficient schools and districts. Expected benefits from such reorganization include broader curriculum, greater specialization in teaching, and economies of scale.[69] Larger districts can provide a variety of curriculums and activities that smaller districts cannot afford or populate.

Consolidation is not without critics, however. Researchers have demonstrated inverse relationships between size and academic quality, higher absenteeism in larger settings, severed connections between school and communities, and problematic support for consolidation's efficiency claims.[70] Barker and Gump found that students in small schools and districts participated more in extra curricular activities and, therefore, exhibited better self-concepts and lower levels of alienation than their peers in larger

settings.[71] Andersson reported that teachers and students in large schools were less content and thus performed more poorly than their counterparts in smaller settings.[72]

In sharp contrast to mid-twentieth century conventional wisdom in educational administration, Verstegen concluded that small schools and districts might provide more efficient investments than larger educational units because the learning value per unit of expenditure is generally higher in smaller schools and districts.[73]

Capital Outlay in Rural Schools

Rural schools often face unique problems with capital outlay financing. Studies have shown that rural economies specialize in natural resource extraction (for example, farming, mining, and logging) or routine (as apposed to “high-tech”) manufacturing. Many rural schools often operate on some of the lowest revenue bases in the country. Moreover, incomes produced by such an economic base tend to be comparatively low.[74]

A major hindrance to meeting the infrastructure funding needs of schools is the lack of the type of broad state financial assistance that is more readily available for school districts’ current operational costs. Hence, most local communities bear primary responsibility for their infrastructure needs, leaving school districts in many areas of the nation dependent on deficit financing through the bond mechanism. In rural areas, in particular those serving very small student population bases, this difficulty is exacerbated by

the requirements inherent in utilizing bonding as the primary or sole infrastructure funding mechanism.[75]

Furthermore, because the local economic conditions determine the local ability to pay taxes, proposals to raise property taxes in order to meet the capital outlay needs of rural school districts are often unsuccessful. Bond elections that do not pass are typically sent back to the voters for another vote, or the district has to do without necessary buildings or renovations. In 1998, one-third of all school bond elections were defeated.[76]

Additionally, during the last decade, local budgets for education have felt the effect of increased demands for new or expanded services; demands that strain local capacity to provide the desired services.[77] Meeting these demands affects the capacity of local education agencies to maintain existing buildings or construct new ones.

Conclusion

The current policy debate in education does raise some interesting questions for fiscal equity studies. What are the costs of restructuring the public schools, and who should pay? Can the schools be substantially improved without a significant infusion of resources by the state and/or federal government? How do possible school finance formulas interact with attempts to manage resources by the LEA? To what extent can incentives and sanctions be used in a state funding formula?

Who has the most knowledge and responsibility? Even though they are confronted with increasing administrative complexities and burdensome state

mandates, LEA's are more adequately designed to monitor their own progress as well as take an active part in designing the process by which they will not only be funded but also judged. The powers of the legislative branch will want to participate actively in all facets of the process, especially since money will be a major issue.

Instead of focusing their energies narrowly on business affairs, LEA's must become assertive policy makers who direct administrators' supervisory and management functions; assume responsibility for implementing, creating, and monitoring state and federal mandates; and set standards for academic excellence. The LEA's can strengthen their roles by undertaking more systematic training for individual board members and administrators and by working more closely with teacher organizations and other groups to help initiate state education policies, rather than react to state-generated proposals.[78]

In 2000-2001, state and local school revenue averaged $7,376 per pupil across the states—it was $4,674 per pupil in Utah and $10,716 in New York. Thus, students attending schools in New York had, on average, $6,042 more per pupil in school funds than did students in Utah.[79] These kinds of studies showing vast differences in the amount of funding that gets to the schools are necessary to show legislators and the courts where changes are needed.

Current studies are looking closely at fiscal funding and its correlation to standardized test results. It is possible that standards based reform may

actually be the catalyst needed for states to actually take an objective look at the inequalities across the country in terms of dollars spent on students at each site. They will need to look carefully at what is equitable as defined by the literature and the courts or be prepared to go to court defending the content of their public school funding system.

While much concerted attention has been devoted in recent years to reforming education, little concomitant financial support has been given to the need for effective physical environments to house the educational process.[80] Currently, capital outlay funding is riding a wave of interest from courts, legislators and researchers. While the interest level is high, it is apparent that the fiscal crises that many states are suffering have priority while the aging facilities continue to deteriorate.

Although the popular press has focused on school failure in the context of curriculum reform, there is evidence indicating that education's physical infrastructure is also rapidly failing in ways that can impede the progress of such reform. Numerous reports have begun to chronicle the condition of educational facilities, providing school leaders and policymakers with the necessary warnings about the need for new capital investment in education. Estimates run into the billions of dollars to repair and replace aging school facilities, primarily because districts have responded to other budget pressures by delaying basic facility maintenance and deferring repairs.[81]

The courts are becoming the catalyst more and more and show no signs of changing their position that educating the children in an equitable or

at least an adequate fashion is the states' responsibilities. Even without the pressure from the courts, the seriousness of the crisis seems to have a sobering effect on legislators, and they are doing more to help revitalize schools across the nation.

The federal government seems poised to help with funding facilities. A $1.2 billion fund was created in the fiscal year 2001 and signed by President Clinton. It was designed to help districts make emergency repairs and wire schools for technology.[82] Educators fear that under President Bush's administration this money will be in jeopardy.

Another federal example is the Qualified Zone Academy Bonds, created in 1997. They are targeted to assist with school renovations in high-poverty areas such as Empowerment Zones/Enterprise Communities (EZ/EC) or schools in which 35% of students are eligible for free and reduced priced lunch. $400 million in bonding authority was initially provided in both FY 1998 and FY 1999. In the FY 2000 budget, an additional $400 million was provided in both FY 2000 and FY 2001.[83] Initially, congress extended the program through 2003. Allocations must be used within two years after they become available, and a state loses its allocation if it fails to use it.

Currently, the state and federal governments are increasing their roles in school finance especially where it comes to capital outlay. They are nowhere near the $112 billion and growing needs as reported by the GAO, but it is a start. State fiscal problems may slow them down; but if trends continue,

we may be moving slowly away from locally financed facilities to state and even an increasingly federally financed system of building our schools.

Consequently, there is no question that capital outlay has not been receiving the appropriate amount of fiscal attention. States have been neglecting capital outlay for so long that the current crisis may seem a little overwhelming to educators and policy makers alike. It will take an enormous investment by the states to revitalize facilities in all settings—rural, urban, and even suburban.

Summary

This chapter was divided into three major sections, which provided a review of literature related to equity, school finance litigation and capital outlay. Special focus was on the major concept of equity from the scholarly literature and litigation. Chapter three provides the details of the state funding formula for Oklahoma and the methodology used to answer the research questions.

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Chapter 3

Research Design

The condition of school facilities is declining nationwide. Many schools are old and in need of renovation. Student enrollment shifts, both growth and decline, have triggered a need for new school buildings and/or created a situation in which buildings are being used inefficiently. Education policies and innovations in education reform, such as class size reduction and technology, have put added pressure on states and school districts to adapt their facilities. While the research is inconclusive on the relationship between facilities and student achievement,[1] students attending run-down or overcrowded schools face more distractions from learning and are likely to be less comfortable than students in newer, more adequate schools.[2]

Construction to correct these conditions is desperately needed, and districts must rely on bond issues, both nationally and in Oklahoma, passed by local school boards financed primarily with local debt.[3] Due to the growing demand for new schools and renovations to existing facilities, the issue has been placed in the national political spotlight. Many state governments have taken some action to assist local school boards with the increased demand for school construction.

While states spend $29 billion annually on school facilities,[4] 60 percent of rural schools have at least one major building in need of replacement or extensive repair because their school facilities are frequently ignored,

neglected, and under-funded.[5] Even though a number of court cases have hinged on facilities, we simply have no common way of evaluating the adequacy of facilities across the nation. Few states, if any, have a comprehensive facilities adequacy inventory system. Many of the variables are subjective, and self-reports have not proven to be particularly useful. The limited data suggest that rural areas have large facility problems and lack of economic infrastructure to repair or build and that state funding support is insufficient to overcome the financial barriers.[6]

In fiscal years 1990 thru 1997, total school construction in the United States increased from about $17.8 billion to about $24.7 billion. This 39 percent increase was more substantial than the rise in enrollment, which grew about 12 percent during the same period.[7] Due to either aging, outdated facilities, severe overcrowding, or new mandated class sizes, 75 percent of our nation's school buildings remain inadequate to meet the needs of school children. The average cost of capital investment needed is $3,800 dollars per student, more than half the average cost to educate a student for one year.

Currently, population growth is outpacing investment in our schools. While school construction spending has increased, the cost to remedy the situation remains more than $127 billion.[8] Some states still have a significant need for capital improvement. Since there have been no studies to measure equity for capital outlay in Oklahoma, this study holds significance in that it measures equity not only for current expenditures but also for capital outlay across the state.

Consequently, as stated in Chapter one, this study purports to extend equity theory and evaluative methodology from its traditional concern with current expenditures to inclusion of capital outlay expenditures and make comparisons between rural and non-rural school systems. It includes analysis, with procedures that illuminate the equity condition from a variety of perspectives, of the impact of capital outlay funding related to state and local allocations on the equity of the total educational expenditure. In addition, the comparisons of capital outlay expenditures and current expenditures are made between rural and non-rural schools.

Research Context

As it is difficult to draw conclusions about the way in which expenditures are converted into specific educational activities, the outcomes of these activities are invariably subject to considerable debate. Nothing can be conclusively stated about whether expenditure differences deprive students of the benefits of education. Therefore, this study was limited to an analysis of whether the dollars, which flow through Oklahoma's funding formula and school districts, were expended equitably. No attempt was made to make a connection with specific educational benefits, programs, or outcomes.[9]

Since this study was not an evaluation of revenues for the Oklahoma funding formula, expenditures were analyzed, and an attempt was made to evaluate whether or not inequities exist in what schools spent on their facilities and what they spent on their students. Furthermore, one could make a strong argument that it would have been better to use student level data rather than

district level data, but as stated in chapter one, two reasons were given for not looking at student expenditures:

1. The sheer size of the data required was overly complex for this study.
2. It would be nearly impossible to connect capital outlay to specific students.

For this reason, the study was concerned only with the per-pupil expenditures at the district level.

In this study, the two components of educational expenditures were analyzed.

1. Current educational expenditures per-pupil for the State of Oklahoma (CUR).
2. Capital expenditures per-pupil for the State of Oklahoma (CAP).

Both current expenditures per-pupil and capital expenditures per-pupil were used to measure equity across the state of Oklahoma. Also, both variables were used to measure equity in Oklahoma between rural and non-rural school districts.

In order to decide which to use as the “per-pupil” component of the analysis, a correlation was made between weighted ADM and unweighted ADM. As shown in Table 1, for each year the correlation was almost a perfect 1.0 showing no significant difference. In fact, the lowest correlation was for the year 1999 at .974. Therefore, the selected unit of analysis for current expenditures and capital expenditures was average per-pupil expenditures per

school district based on unweighted average daily membership (ADM), or the average number of pupils present and absent in a school district during a school year.

Average daily membership was calculated by dividing the sum of the pupil's total days present and total days absent by the number of days taught. Provided, a pupil absent without excuse ten consecutive days was taken off the roll beginning the eleventh day absent. Subsequently, the pupil could not be considered in a district's average daily membership calculation until the pupil was placed on the roll again. So for the purpose of this definition, consecutive days represents the days for which enrollment are recorded.[10]

Table 1: Weighted ADM and unweighted ADM Correlations

Year	Correlation
1995	0.997910898
1996	0.998185030
1997	0.997908476
1998	0.997961636
1999	0.974210195
2000	0.997922274
2001	0.998073193
2002	0.998258118
2003	0.998153563

The components of the Oklahoma education funding system include a foundation formula, a transportation supplement to the foundation formula, and a second tier equalization formula (a modified guaranteed yield). Similar to other state finance distribution systems, the Oklahoma system is enrollment driven.[11] In order to understand the study and how schools are funded in Oklahoma, the components listed above are explained in greater detail later in this chapter. The explanation is intended to help clarify for readers how Oklahoma schools get revenues that support current expenditures.

As stated previously, the basic state support mechanism for Oklahoma schools includes a two-tiered equalization program. The first component is a foundation formula with a transportation supplement. The transportation supplement represents the number of students legally transported who live one and one-half miles or more from the school. The average daily haul is then multiplied by the per capita allowance, determined annually by the legislature, based on the number of students transported per square mile in a school district.

The salary incentive aid component of the Oklahoma funding system (fundamentally, a guaranteed yield formula) constitutes a second-tier resource equalization program. The local portion of the program is derived from an annual levy up to 20 mills for each local district. District aid is calculated semiannually, in July and January. August through December disbursements are based on the July calculation, while January through June disbursements

are based on a January calculation. Aid is distributed monthly through electronic transfer.

Salary Incentive Aid annually is determined as follows: (a) Multiply the Incentive Aid guarantee by the district's highest weighted ADM based on the first nine weeks of the current school year, the preceding school year, or the second preceding school year. (b) Divide the district's adjusted assessed valuation of the current school year minus the previous year's protested ad valorem tax revenues by one thousand and subtract the quotient from the product of subparagraph (a) of this paragraph. The remainder cannot be less than zero. (c) Multiply the number of mills levied for general fund purposes above the fifteen mills required to support Foundation Aid not including the county four-mill levy, by the remainder of subparagraph. (b) The product was the Salary Incentive Aid of the district.[12]

Following *A Nation at Risk*,[13] the Oklahoma Foundation Program experienced sweeping educational reform. The Oklahoma Education Reform Act of 1990 (House Bill 1017) included statewide education mandates intended to improve academic achievement as well as changes in the mechanisms for distributing state general aid to local districts. The reform was accompanied by an infusion of additional state funding intended to provide financial support to local school districts facing the mandates encapsulated in the reform initiatives.[14]

Subsequently, when the Oklahoma legislature adopted new formulas for the distribution of state money in 1981 and amended those formulas in

1989 and 1996, it committed itself to several principles. One of these is often referred to as "vertical equity." This was simply an effort to recognize that the costs of providing education vary with students and with districts. Some students, who have one or more disabilities, may not receive an equal educational opportunity unless more money is spent on them than on non-disabled students. Such a need has long been recognized in Oklahoma through special supplements that school districts have received to support special education services.

In this study, the first variable for analysis was (CUR) the aggregate of total dollar value of current operating expenditures.[15] Each school district receives revenues that support expenditures through its December calculation of per pupil revenue determined by dividing the district's preceding year's total weighted ADM into the district's preceding year's total revenues excluding federal revenue, insurance loss payments, reimbursements, recovery of overpayments and refunds, unused reserves, prior expenditures recovered, prior year surpluses, and less the amount of any transfer fees paid in that year. The July calculation of per pupil revenue is determined by dividing the district's second preceding year's total weighted ADM into the district's second preceding year's total revenues excluding federal revenue, insurance loss payments, reimbursements, recovery of overpayments and refunds, and unused reserves prior paid in that year. [16]

The second variable for analysis was (CAP) the total dollar value of local capital outlay expenditures. A large majority of capital outlay revenue is

raised through local millage, so this revenue is related to property wealth. In Article X section 10, the Oklahoma Constitution provides that each school district may levy up to 5 mills (1 mill is 1/1000 of a dollar or .001) for the purpose of erecting, remodeling, and repairing school buildings, or for purchasing furniture.[17] Additional CAP revenues include all revenues received from local government for Debt Service Funds (local property taxes, debt service millage, interest, and revenue received for interest on investments, tax redemptions, and excess fees) and all revenues received from local sources for Capital Projects Funds (interest and the proceeds on the sale of bonds). These categories (local total and state total), as defined by Oklahoma Department of Education, were used in this study.[18]

Currently, schools in the state of Oklahoma also rely heavily on bond issues to raise capital funds. Oklahoma is one of fourteen states that require at least 60 percent approval from voters to pass an issue as regulated in Article X section 26 of the Oklahoma constitution.[19] A bond fund holds proceeds from the sale of bonds from which all expenditures for bond projects are paid. The governmental entity calling for an election will set forth in a general statement all purposes and specific projects for which 70 percent of the proceeds will be expended. Once a bond issue is approved at an election, the particular governmental entity must expend all of the proceeds of the bond issue for the purposes set out in the proposition voted upon and must expend not less than 85 percent of the monies allocated to each specific project unless the project can be completed for less money. In such event, the

governmental entity may expend the lesser amount from the specified 85 percent and could use the surplus funds on other projects within the same general purpose or to reduce the sinking fund.[20]

Data Collection

The study looked at several categories from the Oklahoma Cost Accounting System (OCAS). OCAS uses project codes and function codes to describe where money was used in a school district. Project codes 0-397 and 590-594 with the function codes in the 1000's, 2000-2500's, 2710, 2730, 2800's, and 2900's was used to show current expenditures and the function codes in the 2600's, 2720, 2740, 2790, 4000's, and 5100's to show expenditures for capital outlay and facilities funding in the state of Oklahoma for the years 1995 thru 2003. All non-instructional, vocational, and student activities expenditures were removed from the school district expenditures, since they were not examined in this study. Also, federal expenditures were removed except for impact aid since it replaces lost local taxes used for capital projects due to federal properties within a school district.

Once the data had been collected, range, adjusted restricted range, adjusted federal range ratio, standard deviation, and the coefficient of variation were used to measure and chart the level of horizontal equity of current expenditures and capital expenditures across the state of Oklahoma. The same measures were used to compare the equity of current expenditures to capital expenditures and for both current and capital expenditures between rural and non-rural school districts. Finally, wealth neutrality was measured for

the same variables using the McLoone Index, Gini coefficient, regression coefficient, and the correlation coefficient.

Horizontal Equity Measures

The study began by looking at the range as it refers to the difference between the highest value and the lowest value in a given distribution. Formula equity may be considered on horizontal or vertical planes. To know if a formula was equitable, this study required databased measurement that considers how widely and why variations occur.[21] For the purposes of this study only horizontal equity was measured.

The range is the difference between a distribution's highest and lowest observations in a distribution. The smaller the range was, the less the disparity and the greater the equity. The range has several limitations as a measure; it has been referred to as the "least accurate measure available."[22] The formula that was used for range calculation was:

$$\text{highest } X_i - \text{lowest } X_i$$

where X_i = mean of expenditures per weighted ADM in district i.[23]

The restricted range is the difference between the 5^{th} and 95^{th} percentiles in a distribution. The smaller the difference, the greater the equity. The advantage of the restricted range over the range is that it examines values that are more representative.[24] The restricted range was calculated by the formula:

$$X_i \text{ at } 95^{th} \text{ percentile} - X_i \text{ at } 5^{th} \text{ percentile}$$

where X_i will be the variable considered in district *i*. X_i is the per-pupil expenditures of the district, so the restricted range is the difference between the per-pupil expenditures of the district at the 95th and 5th percentiles. This was useful in viewing the total distribution because it eliminates the effect of misrepresentative values above and below these extremes.[25] For the purpose of this study the bottom 5 percent were kept in the study because they reflect the school districts with the greatest fiscal needs at the bottom end of the distribution. Hereafter, the restricted range is referred to as the adjusted restricted range.

The Federal Range Ratio is the restricted range divided by the value of the distribution at the fifth percentile. Originally, it was designed as a federal test to measure whether states met federal wealth neutrality guidelines in distributing federal funds, thus the federal range ratio is simply the restricted range divided by the expenditures per pupil per district at the 5th percentile.[26] The federal range ratio was calculated as:

Restricted Range / X_i at 5th percentile

where X_i is the expenditures per pupil in district *i*.

As with the restricted range the bottom 5 percent of the population was kept in the study. Rather than dividing by the expenditures at the 5th percentile the restricted range was divided by the distribution at the bottom percentile. Hereafter, the restricted range is referred to as the adjusted restricted range ratio.

The standard deviation is the square root of the variance, and the smaller the variation in the distribution of expenditures per pupil, the greater the equity. In a normal, bell-shaped distribution, approximately two-thirds of the values in the distribution fall within one standard deviation from the mean in each direction and about 95 percent within two standard deviations.[27] The formula for the standard deviation calculation was:

$$\sqrt{\sum P_i (X_p - X_i)^2 / \sum P_i}$$

where P_i is the number of pupils in district i, X_p is the mean expenditures for all pupils in the state, and X_i is per-pupil expenditures in district i.[28] The standard deviation is based on assumptions about normal distributions in a bell curve. The smaller the standard deviation is, the greater the equity for per-pupil expenditures.

The Coefficient of Variation is the square root of the variance divided by the distribution's mean. The coefficient of variation is expressed as the ratio of the standard deviation of the distribution to the mean of the distribution calculated by using the formula:

$$\sqrt{[\sum P_i (X_p - X_i)^2 / \sum P_i]} / X_p$$

where X_p is the mean of expenditures per unweighted ADM for all unweighted ADM.

Once the range of expenditures was available, it was possible to compare them and evaluate whether or not current and capital expenditures were horizontally equitable between non-rural and rural districts based on the range for each group.

Wealth Neutrality Measures

The Gini Coefficient is an economist's measure of income equality that measures how close the variable distribution is to providing a specific percentage of the population with that same percentage of the variable, such as how far the distribution of expenditures is from providing each percentage of students with the same expenditure or expenditure inequality.[29] The Gini was calculated using the expenditure example:

$$\sum_i \sum_j P_i P_j (X_i - X_j) / 2(\sum_i P_i)^2 X_p$$

where P_i was the number of pupils in district i; P_j was the number of pupils in district j; X_i was the expenditure per pupil in district i; X_j was the expenditure per pupil in district j; and X_p was the mean expenditure per pupil for all districts.

The McLoone Index is the ratio of the actual values below the median, summed, and the total of values below the median if all values are at the median. It is a measure unique to school finance that was designed to demonstrate the degree of equity in the bottom half of a distribution.[30] The formula used to calculate the McLoone Index was:

$$\sum P_i X_i / M_p \sum P_i$$

where district i is below M_p (the median expenditures per unweighted ADM for all weighted ADM), P_i is the number of weighted ADM in district i and X_i = mean of expenditures per unweighted ADM in district i.

Correlation and regression measures were used to test the relationship between property wealth per unweighted student (VAL/ADM), density, the

small schools weight and each of the proposed variables that are the subject of analysis. The relationship was considered to conform to the model as expressed in the equation:

$$Y_i = b_0 + b_1 X_i + b_2 X_2 + b_3 X_3$$

where Y_i was the value of the dependent variables, the capital outlay expenditures per unweighted pupils (CAP/ADM), and the current educational expenditures per unweighted pupil (CUR/ADM). X_i was the value of the independent variable, property wealth per unweighted student (VAL/ADM), density, and the small schools weight. b_1 was the slope or regression coefficient indicating the amount of change in the dependent variable per unit of independent variable, and b_0 was the intercept.[31]

Two regression equations were generated for the purposes of this study. In each, property wealth per unweighted student (VAL/ADM), density, and small schools weight were regressed on the appropriate variable. The value of expenditures for the two variables was shown as:

1. Current educational expenditures = CUR/ADM
2. Capital outlay expenditures = CAP/ADM

Residuals of these regressions were summarized to ascertain possible data trends or patterns unaccounted for by the utilized model.

Two analyses were undertaken. The first analysis involved the regression of current expenditures per unweighted pupil (CUR/ADM) on property wealth per unweighted full time equivalent student (VAL/ADM), density, and small schools weight. This created a baseline for comparison of

the capital outlay expenditure variables' relationships to property wealth. The second analysis related total capital outlay per unweighted student (CAP/ADM) to property wealth per unweighted full time equivalent student (VAL/ADM), density, and small schools weight. In each analysis, correlations and slopes were analyzed to ascertain the strength (correlation) and size (slopes) of the relationships between property wealth per unweighted full time equivalent student (VAL/ADM) and the two variables.

Results were presented in several formats. For each analysis, a summary exhibited the regression analysis with the independent variables, property wealth per unweighted full time equivalent student (VAL/ADM), density, and the small schools weight with the dependent variable (CAP/ADM). Tables are displayed, containing correlation coefficients, R squared values, residual information, and other regression information.

The purpose of using this regression was to establish differences in the baseline relationship of current expenditures with wealth (CUR/ADM, VAL/ADM) and capital outlay expenditure with wealth (CAP/ADM, VAL/ADM), and the magnitude of these relationships. This was done to determine if there was a greater relationship between capital outlay expenditures and wealth than current expenditures and wealth. Once the regression was completed, a comparison of the regression analysis, both for capital outlay and for current expenditures, was done between rural and non-rural school districts in order to see if there was a significant relationship between expenditures and wealth in either category.

Summary

The four sections in Chapter three addressed appropriate methodologies for equity analysis and a wide variety of measurement tools intended to extend equity analysis to current educational expenditures and capital outlay expenditures. These were used to determine the equity of current and capital outlay expenditures as a whole and the equity across non-rural and rural school districts in the state of Oklahoma.

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Chapter 4

Results

The purpose of this study was to extend equity theory and evaluative methodology from its traditional concern with current educational expenditures to the inclusion of capital outlay expenditures and make comparisons between rural and non-rural school systems. In order to accomplish this, two research questions were posed:

1. How do current educational expenditures compare to capital expenditures for the years 1995-2003 in the state of Oklahoma?
2. Are current education expenditures and capital expenditures equitable between rural and non-rural schools?

Chapter three included a discussion of the particular data design and procedures used in the study to make these comparisons. The current chapter begins with a review of the methodology presented in Chapter three and concludes with a presentation of the results of the resource accessibility and wealth neutrality measures.

Data used for this study were taken from the OCAS information reported to the state department of Oklahoma by the school systems in Oklahoma. Also, state aid data such as assed valuation per-pupil, unweighted ADM, small schools weight and isolation weight were used in the study. The study includes all of the school districts with complete data. Alternative schools and schools that have been consolidated did not have complete data files at the state department; therefore, they were not used in the study. The

total number of school districts used in the study averaged 541 for the fiscal years 1995-2003.

Resource Accessibility

The measures used to compare resource accessibility were the range, the adjusted restricted range, the adjusted federal range ratio, the variance, and the coefficient of variation. The range is the difference between a distribution's highest and lowest values,[1] and therefore yields information about extreme differences within the distribution of the variables. Smaller range among variables indicates smaller disparity and thus greater equity.

The range measures are included in Table 1. The range figure for non-rural current expenditures was $2,159.98 compared to the range for rural expenditures which was $13,477.00, a difference of $11,317.02. The range for non-rural capital expenditures was $2,159.98 as opposed to $6,279.51 for rural capital expenditures, a difference of $4,119.53.

In 1997 and 1998, rural current showed a large increase in range, but the next year decreased significantly and continued the normal pattern of moderate yearly growth. Non-rural current expenditures show fluctuations with decreases in 1996, 1998, and 2001 followed by slight increases in 1997, 1999, and 2000 and increasing steadily over time. Also, 2003 did indicate a moderate decrease in range for both current expenditures and capital expenditures in all categories.

Table 1: Range

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	9362.34	6407.38	2068.68	1956.64	9246.32	6407.38
1996	545	13216.55	5920.39	1860.43	2236.73	13216.55	5920.39
1997	544	15830.05	6587.29	2158.54	2502.83	15778.95	6587.29
1998	541	16288.29	5798.96	1956.32	3329.42	16236.34	5798.96
1999	541	13835.24	4306.94	2038.32	3275.04	13819.62	4306.94
2000	540	11787.18	5472.67	2386.37	2601.22	11745.82	5472.67
2001	538	10964.16	7881.01	2269.04	3241.95	10946.33	7856.83
2002	538	12898.79	7882.26	2476.12	3531.60	12623.49	7881.46
2003	537	17944.01	6283.66	2226.01	3484.92	17679.59	6283.66
average	541	13569.62	6282.28	2159.98	2906.71	13477.00	6279.51

The adjusted restricted range removes the more extreme outliers at the top and shows the school districts that have per-pupil expenditures between the observations at the 95th and bottom percentile of the distribution. The adjusted restricted range measures are included in Table 2. As discussed in chapter three, normal restricted range would not include the bottom five percent of expenditure data, but they are important to this study since they reflect the school districts with the greatest fiscal needs at the bottom end of the distribution.

As with the range, the smaller the adjusted restricted range was the better the indication of equity. The advantage of the adjusted restricted range is that it examines more representative values by removing the extreme values at the top. When the adjusted restricted range was compared and everything

above the 95th percentile was removed the range dropped to $1,388.69 for non-rural current expenditures and $2,936.70 for rural current expenditures, a difference of only $1,548.01. The adjusted restricted range for non-rural capital expenditures was $1,521.88 as opposed to $2,262.29 for rural capital expenditures, a difference of only $740.31. Removing the expenditures above the 95th percentile changed the range between non-rural and rural capital expenditures by $3,379.22.

Due to smaller distributions, when non-rural and rural current expenditures were taken together the top 5 percent represented 82 percent of the range for current expenditures. Also due to smaller distributions, when the total non-rural and rural capital expenditures were taken together the top 5 percent accounted for about 70 percent of the range for total capital expenditures. The range at the 95th percentile was accounted for a larger percentage of current expenditures than for capital expenditures.

Trends in the data reflected in the range and adjusted restricted range demonstrate large disparities between rural and non-rural districts for both current expenditures and capital expenditures. The range reflected more extremes between non-rural expenditures and rural expenditures than the adjusted restricted range, while the adjusted restricted range illuminates just how extreme the differences are between the wealthiest districts and the poorest districts in the state of Oklahoma. Despite the fact that there is more money for current expenditures than for capital expenditures, the range

measure reflects much larger disparities with capital expenditures than for current expenditures.

Table 2: Adjusted Restricted Range

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	2270.85	1775.52	3296.44	1170.57	2511.72	2841.54
1996	545	2186.96	1590.35	1069.90	1410.06	2553.30	1736.33
1997	544	2150.10	1808.17	1121.89	1258.02	2510.28	2099.01
1998	541	2149.93	1585.58	1002.24	1406.19	2572.85	1743.50
1999	541	2399.89	1658.78	1076.42	1292.13	2747.71	1899.69
2000	540	2503.58	2002.89	1269.00	1553.00	2882.73	2550.66
2001	538	2864.19	2099.42	1238.61	2051.86	3161.07	2171.92
2002	538	2888.10	2283.20	1189.52	1771.67	3591.66	2604.38
2003	537	3127.06	2344.40	1234.16	1783.43	3898.94	2713.62
average	541	2504.52	1905.37	1388.69	1521.88	2936.70	2262.29

Another measure of horizontal equity used is the adjusted federal range ratio. Measures for the adjusted federal range ratios are presented in Table 3. Originally designed as a federal test to measure whether states met federal wealth neutrality guidelines in distributing federal funds, the federal range ratio is simply the restricted range divided by the expenditures per weighted ADM per district at the 5th percentile.[2] As with the restricted range this study includes those districts with expenditures below the 5th percentile, so the restricted range was divided by the number representing the districts at the bottom percentile in order to get the adjusted federal range ratio.

As with each of the previous range measures a smaller adjusted federal range ratio is indicative of a degree of equity. The non-rural current expenditures were more equitable than the rural current expenditures by .46, and both the non-rural and rural capital expenditures were much higher at 3.15 for non-rural and 4.72 for rural with a difference of 1.57. The measures indicate that school district current expenditures were more equitable than the capital expenditures by 111 percent.

A few years such as 1995 and 2000 yielded extraordinary ratios. In fact, 1995 non-rural current at 1.54 was three times larger than any of the other years. Rural capital in 1995 was 8.02 where the next largest was only 6.64. In 2000, non-rural current was .23, which was one fourth the size of the closest year in that variable. Also, in 2000 rural capital expenditures were .55, which was 330 percent lower than the next smallest of rural capital expenditures.

Table 3: Adjusted Federal Range Ratio

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	1.06	5.74	1.54	2.97	1.12	8.02
1996	545	0.96	5.28	0.47	3.41	1.12	5.77
1997	544	0.87	5.72	0.45	3.02	0.99	6.64
1998	541	0.84	3.52	0.39	2.96	0.98	3.87
1999	541	0.87	3.54	0.39	2.48	0.99	4.05
2000	540	0.93	4.96	0.46	3.24	0.23	0.55
2001	538	0.92	3.90	0.39	3.81	1.02	3.86
2002	538	0.95	4.12	0.36	3.19	1.18	4.69
2003	537	1.09	4.37	0.40	3.23	1.36	5.06
average	541	0.94	4.57	0.54	3.15	1.00	4.72

The mean is the measure of central tendency of the distribution of observations. A summary of the mean statistics are displayed in Table 4. The mean takes into account all of the observations in a distribution. While the mean is not indicative of resource accessibility per se, it is an excellent first step in assessing wealth variation because wide differences from the mean could suggest inequity.[3]

The mean is what is commonly called the average. It is the sum of all the scores divided by the number of scores. The mean is a good measure of central tendency for roughly symmetric distributions but can be misleading in skewed distributions since it can be greatly influenced by extreme scores.[4] The mean for non-rural current expenditures was $3,397.43. The mean for rural current expenditures was $4,067.33 with the mean for the combination of

both non-rural and rural at $3,811.87. The mean for non-rural capital expenditures was $1,140.96. The mean for rural capital expenditures was $1,283.06 with the mean for the combination of both non-rural and rural capital expenditures at $1,229.57.

Table 4: Mean

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	3270.02	975.86	2926.17	837.28	3474.31	1058.19
1996	545	3297.72	974.82	2947.88	896.21	3508.65	1022.21
1997	544	3455.16	1072.36	3093.03	962.56	3675.86	1139.28
1998	541	3549.44	1087.91	3176.17	1019.13	3773.62	1129.23
1999	541	3828.37	1176.25	3389.82	1106.20	4093.84	1219.64
2000	540	3862.17	1300.75	3468.77	1224.69	4106.73	1348.02
2001	538	4294.72	1474.19	3848.50	1396.73	4562.99	1520.76
2002	538	4424.51	1520.16	3931.46	1414.32	4723.28	1582.47
2003	537	4324.74	1483.81	3795.04	1411.53	4686.68	1527.74
average	541	3811.87	1229.57	3397.43	1140.96	4067.33	1283.06

The variance is simply the average of the squared deviations from the mean. The smaller the variation is in the distribution of a variable, the greater the equity. The variance summary is displayed below in Table 5.

Variance statistics are useful for making a comparison between groups and years, such as between non-rural current and rural current which was 1,099,185.99. The comparison between non-rural capital and rural capital showed a difference in the variance of 222,880.86. In rural capital, the 1995

variance was 52,391.44 and the next year the variance soared to 362,652.22 which was a change of 310,260.78. After 1997, the variances in rural capital have continued to grow each year through 2003 which was 747,535.20. In all categories, the variances illuminate a constant growth in variances with few exceptions. The most recent decline was in 2003 when the variance for non-rural current actually declined by 8,264.46.

Table 5: Variance

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	497599.51	384412.75	69455.28	117787.85	640610.43	52391.44
1996	545	667842.72	296217.69	61703.36	177317.31	915938.17	362652.22
1997	544	851646.38	411862.40	75854.75	144919.53	1197075.44	56307.40
1998	541	954595.24	307954.53	69751.67	211777.34	1353476.56	361955.72
1999	541	979445.08	353327.81	88558.10	217828.91	1333148.77	431234.80
2000	540	692946.28	422623.57	108553.29	196595.83	901155.09	558294.83
2001	538	822660.24	503084.71	134048.13	274062.97	1046041.49	636206.40
2002	538	1059657.15	572309.23	136213.40	278900.47	1384041.77	741151.30
2003	537	1457430.32	589182.17	127948.94	322611.38	1993273.10	747535.20
average	541	887091.44	426774.98	96898.55	215755.73	1196084.54	438636.59

The standard deviation is defined as the square root of the variance.[5] As with the variance, the smaller the variation was in the distribution of a variable the greater the equity. The standard deviation measures are shown in Table 6.

The standard deviation, which is more sensitive to outliers that could skew the distribution, was $932.03 for current expenditures and $648.76 for capital expenditures, a difference of $238.27. Non-rural current expenditures were $371.14 while the rural current expenditures were $1,081.10 a difference of $709.96. Non-rural capital expenditures were $473.12 and rural capital expenditures were $734.05 a difference in the standard deviance of $260.93. The two measures show there was a greater standard deviation for capital expenditures than for current expenditures and a larger deviation for rural than non-rural expenditures. Rural current expenditures had the largest standard deviation of $1,081.10 illustrating a vast equity difference between non-rural current expenditures and rural current expenditures.

Table 6: Standard Deviation

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	705.41	620.01	263.54	343.20	800.38	724.84
1996	545	817.22	544.26	817.22	544.26	957.05	602.21
1997	544	922.85	641.77	275.42	380.68	1094.11	750.74
1998	541	977.03	554.94	264.11	460.19	1163.39	601.63
1999	541	989.67	594.41	297.59	466.72	1154.62	656.68
2000	540	832.43	650.1	329.47	443.39	949.29	747.19
2001	538	907.01	709.28	366.13	523.51	1022.76	797.63
2002	538	1029.40	756.51	369.07	528.11	1176.45	860.90
2003	537	1207.24	767.58	357.70	567.99	1411.83	864.60
average	541	932.03	648.76	371.14	473.12	1081.10	734.05

The coefficient of variation is simply the standard deviation divided by the mean. The coefficient of variation yields a single value, typically between zero and one, wherein the smaller values demonstrate smaller variations in the distribution, thereby indicating greater equity. Coefficients of variation for the two variables were compared directly because they were standardized by using a value at a common fixed point (the mean in this case) within the distribution as part of a ratio.[6] The results of the coefficient of variation are presented in Table 7.

Results of the coefficient of variation yielded differences between the non-rural current coefficient of variation and rural current coefficient of variation of 16 percent. The non-rural current had a coefficient of variation of 11 percent and rural current had a coefficient of variation of 27 percent. The non-rural capital coefficient of variation and rural capital coefficient of variation experienced the same difference of 16 percent with a non-rural capital coefficient of variation of 42 percent and a rural coefficient of variation of 58 percent.

In 1996, the non-rural current coefficient of variation was significantly higher than the rest of the years with a coefficient of variation of 28 percent, a difference of 18 percent higher than the next highest coefficient of variation. When the average of non-rural current coefficient of variation is taken without 1996, non-rural current drops from 11 percent to 9 percent. 1996 produced a significant difference for non-rural capital as well. The coefficient of variation was 19 percent higher than the average for all years. The non-rural capital

coefficient of variation was 61 percent or 20 percent higher than 1995, the next highest year.

Table 7: Coefficient of Variation

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	0.22	0.64	0.09	0.41	0.23	0.68
1996	545	0.25	0.56	0.28	0.61	0.27	0.59
1997	544	0.27	0.60	0.09	0.40	0.30	0.66
1998	541	0.28	0.51	0.08	0.45	0.31	0.53
1999	541	0.26	0.51	0.09	0.42	0.28	0.54
2000	540	0.22	0.50	0.09	0.36	0.23	0.55
2001	538	0.21	0.48	0.10	0.37	0.22	0.52
2002	538	0.23	0.50	0.09	0.37	0.25	0.54
2003	537	0.28	0.52	0.09	0.40	0.30	0.57
average	541	0.25	0.54	0.11	0.42	0.27	0.58

Wealth Neutrality

Wealth neutrality refers to the extent to which resources available for education of students is related to local fiscal conditions of the area in which the student is educated. Typical assessments of wealth neutrality used were the McLoone Index, Gini coefficient, and regression related measures, including the correlation coefficient and regression coefficient. The following section includes the results of the wealth neutrality calculations.

The McLoone Index is a measure unique to school finance that was designed to demonstrate the degree of equity in the bottom half of a distribution. It shows the ratio of the sum of observations below the median to

the sum of all observations that would be required if observations below the median were brought up to the median level.[7] The McLoone Index is based on the assumption that if all students in the state were lined up according to how much their districts spent on them, perfect equity would be achieved if every district spent at least as much as was spent on the pupil in the middle of the distribution, or the median. Summaries of the results derived from these measures are presented in Table 8.

In the state of Oklahoma, non-rural schools were spending 94 percent of what is necessary to bring current expenditures per-pupil to the median level, and rural schools were spending 90 percent of the amount needed to raise all students to the median current expenditure per-pupil. In fact, almost every year was within one percentage point of the total current expenditures. 1995 was the only year of current expenditures more than one percentage point away from total current expenditures at 92 percent, a difference of two percentage points. Non-rural capital was 80 percent, and rural capital was 81 percent, where 100 percent represents perfect equity.

The largest McLoone index difference of 4 percent was between non-rural current expenditures and rural current expenditures. In 1995, rural capital had an extreme McLoone index of 97 percent although the total for all years was 81 percent which actually was only higher than non-rural capital by one percent. 1995 appears to be an anomaly for Oklahoma. Overall the McLoone index illustrates more equity between non-rural expenditures and rural expenditures than all other measures. The McLoone index demonstrates

that the bottom half of the distribution for both non-rural expenditures and rural expenditures appear to be somewhat similar in terms of equity.

Table 8: McLoone Index

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	.92	.80	.94	.80	.92	.97
1996	545	.91	.79	.95	.81	.91	.77
1997	544	.92	.81	.93	.82	.90	.81
1998	541	.92	.81	.94	.81	.90	.81
1999	541	.92	.79	.94	.80	.90	.79
2000	540	.92	.78	.94	.80	.90	.77
2001	538	.91	.79	.93	.81	.90	.79
2002	538	.92	.81	.94	.82	.89	.79
2003	537	.91	.77	.94	.76	.89	.78
average	541	.92	.79	.94	.80	.90	.81

The Gini coefficient was developed to measure the degree of concentration of a variable in a distribution of its elements. Solving the formula yields a value from zero to one where the smaller the value of the Gini coefficient, the more equitable the distribution of expenditures in providing a specified percentage of students with the same percentage of expenditures. The Gini is sensitive to changes throughout the distribution, though not to extreme outliers.[8] The results of this measure are presented in Table 9.

The Gini coefficient for total current was .10 and for total capital it was .22. One year (1995 for non-rural current at .21) produced an extreme Gini

coefficient but for the most part each year had a similar Gini. In fact, the Gini coefficient showed no major differences between non-rural and rural, but between each group of current and capital there was at least a .12 difference. The largest difference of .14 was between non-rural current and non-rural capital.

Table 9: Gini Coefficient

Year	Number of Districts	Total Current	Total Capital	Non-Rural Current	Non-Rural Capital	Rural Current	Rural Capital
1995	542	.10	.27	.21	.25	.10	.28
1996	545	.10	.03	.05	.23	.11	.25
1997	544	.10	.25	.05	.20	.11	.27
1998	541	.10	.23	.05	.21	.11	.24
1999	541	.10	.24	.05	.21	.11	.25
2000	540	.10	.24	.05	.19	.10	.26
2001	538	.10	.22	.05	.20	.11	.23
2002	538	.10	.23	.05	.19	.11	.24
2003	537	.12	.25	.05	.21	.13	.26
average	541	.10	.22	.07	.21	.11	.26

The correlation coefficient measures the relationship between wealth and expenditures. It is represented by values that range from +1.0 to -1.0. Tables 10-11 show the summary of the results for the correlation coefficient for current and capital expenditures per-pupil. The yearly correlation matrices are included in Appendix B.

The assessed valuation per-pupil was significant at .01 (type 1 error rate) for both current and capital expenditures per-pupil. Assessed valuation had a high correlation of .748 for the years 1995-2003 to current expenditures per pupil. Assessed valuation was still correlated to capital expenditures per-pupil, but the correlation was lower at .483 for the same years, showing a difference of .265 for current expenditures and capital expenditures.

Density was not significant for the years 1995 to 1998 for current expenditures. However, for all years since 1999 it has been significantly correlated each year to current expenditures. The density measure was significantly related to current expenditures but not to capital expenditures. The average density for all years was negatively correlated to current expenditures per-pupil at -.086 for the years since 1998. The small schools weight had a negative correlation for both current expenditures and capital expenditures. For current expenditures, the correlation averaged -.338 and for capital expenditures -.17. The small weight was significant at .01 for current expenditures and .05 for capital expenditures with the years 2001 and 2003 not showing a significant correlation.

Table 10: Correlation Coefficient for Current Expenditures per-pupil

Year	assvalpp	sig	density	sig	small	sig
1995	0.743	0.000	-0.077	0.074	-0.369	0.000
1996	0.805	0.000	-0.076	0.075	-0.326	0.000
1997	0.821	0.000	-0.072	0.094	-0.301	0.000
1998	0.824	0.000	-0.074	0.085	-0.296	0.000
1999	0.777	0.000	-0.090	0.037	-0.348	0.000
2000	0.696	0.000	-0.099	0.022	-0.364	0.000
2001	0.631	0.000	-0.104	0.016	-0.379	0.000
2002	0.666	0.000	-0.095	0.028	-0.371	0.000
2003	0.748	0.000	-0.091	0.035	-0.338	0.000
average	0.746	0.000	-0.086	0.052	-0.344	0.000

Table 11: Correlation Coefficient for Capital Expenditures per-pupil

Year	assvalpp	sig	density	sig	small	sig
1995	0.520	0.000	-0.005	0.902	-0.141	0.001
1996	0.509	0.000	0.043	0.321	-0.106	0.014
1997	0.390	0.000	0.015	0.728	-0.131	0.002
1998	0.560	0.000	0.000	0.993	-0.091	0.033
1999	0.454	0.000	0.010	0.814	-0.088	0.040
2000	0.411	0.000	0.032	0.462	-0.094	0.029
2001	0.426	0.000	0.011	0.799	-0.072	0.095
2002	0.538	0.000	0.019	0.665	-0.103	0.017
2003	0.541	0.000	0.022	0.608	-0.706	0.080
average	0.483	0.000	0.016	0.699	-0.170	0.035

The model shown in Tables 12-13 predicts the relationship of the dependent variable to the independent variables. R is the correlation between all of the independent variables and the dependent variable. The model estimates that there is a 78 percent correlation between the dependent variable of current expenditures per-pupil and the independent variables assessed valuation per-pupil, density, and the small schools weight. For capital expenditures the predicted correlation drops to 50 percent for the same independent variables. R squared is the proportion of variance in the dependent variable of current expenditures per-pupil, which can be predicted from the independent variables assessed valuation per-pupil, density, and the small schools weight. This value indicates that 61 percent of the variance in current expenditures per-pupil can be predicted from the variables assessed valuation per-pupil, density, and the small schools weight. The value drops to 25 percent of the variance that can be predicted for capital expenditures per-pupil from the variables assessed valuation per-pupil, density, and the small schools weight.

The p-value is 0.00 for both current expenditures per-pupil and capital expenditures per-pupil. Therefore, according to the model, the independent variables assessed valuation per-pupil, density, and the small schools weight can be used reliably to predict both current expenditures per-pupil and capital expenditures per-pupil. This is an overall significance test assessing whether the group of independent variables, when used together, reliably predict the

dependent variable and does not address the ability of any of the particular independent variables to predict the dependent variable.[9]

Table 12: Regression Model Summary for Current Expenditures per-pupil

Year	R	R Squared	F	Sig
1995	0.779	0.608	277.571	0.000
1996	0.826	0.683	387.262	0.000
1997	0.837	0.701	422.164	0.000
1998	0.842	0.709	436.103	0.000
1999	0.810	0.657	342.184	0.000
2000	0.736	0.541	210.804	0.000
2001	0.687	0.473	159.524	0.000
2002	0.715	0.511	186.349	0.000
2003	0.780	0.608	275.367	0.000
average	0.779	0.610	299.703	0.000

Table 13: Regression Model Summary for Capital Expenditures per-pupil

Year	R	R Squared	F	sig
1995	0.523	0.273	67.426	0.000
1996	0.514	0.265	64.762	0.000
1997	0.445	0.198	44.519	0.000
1998	0.560	0.314	81.912	0.000
1999	0.456	0.208	46.882	0.000
2000	0.415	0.172	37.099	0.000
2001	0.427	0.182	39.608	0.000
2002	0.585	0.342	92.697	0.000
2003	0.543	0.295	74.307	0.000
average	0.496	0.249	61.023	0.000

The regression coefficient provides the magnitude and direction of the relationships between two or more variables. In other words it measures what effect a change in wealth has on expenditures. An increase in this relationship indicates a decrease in wealth neutrality. Tables 14-15 show a summary of results of the regression coefficients for current and capital expenditures per-pupil. Specific regression results generated for each fiscal year are included in Appendix B.

Assessed valuation per-pupil was significantly related to current expenditures per-pupil and capital expenditures per-pupil at .05. The total regression for all years for current expenditures was $.0217. This meant for every dollar increase in assessed valuation per-pupil, there was a

commensurate increase of $.0217 in current expenditures per-pupil. For capital expenditures, the total regression coefficient for assessed valuation was $.0106.

The density measure was not significant and therefore had no relationship, positive or negative, with either of the two dependent variables. The small schools weight was significant at .05 for current expenditures but was not significant and had no relationship to capital expenditures. The small weight had a negative relationship to current expenditures; therefore, for every dollar increase in rural current expenditures there was a commensurate increase of $420.22 in the current expenditures per-pupil.

Table 14: Regression Coefficient for Current Expenditures per-pupil

Year	assvalpp	sig	density	sig	small	sig
1995	0.0188	0.000	0.0966	0.695	-352.416	0.000
1996	0.0225	0.000	-0.0028	0.991	-317.110	0.000
1997	0.0234	0.000	-0.0252	0.927	-310.600	0.000
1998	0.0220	0.000	-0.0841	0.762	-345.634	0.000
1999	0.0227	0.000	-0.1390	0.639	-461.598	0.000
2000	0.0213	0.000	-0.2040	0.470	-405.172	0.000
2001	0.0195	0.000	-0.2440	0.456	-501.542	0.000
2002	0.0206	0.000	-0.1920	0.581	-550.524	0.000
2003	0.0249	0.000	-0.2300	0.517	-537.374	0.000
average	0.0217	0.000	-0.1138	0.671	-420.219	0.000

Table 15: Regression Coefficient for Capital Expenditures per-pupil

Year	assvalpp	sig	density	sig	small	sig
1995	0.0121	0.000	0.253	0.391	-668.261	0.162
1996	0.0099	0.000	0.497	0.053	-35.616	0.405
1997	0.0088	0.000	0.382	0.221	-88.858	0.091
1998	0.0087	0.000	0.159	0.511	-12.985	0.756
1999	0.0083	0.000	0.236	0.384	-28.959	0.547
2000	0.0105	0.000	0.414	0.163	-38.647	0.475
2001	0.0112	0.000	0.240	0.452	-2.757	0.963
2002	0.0142	0.000	0.374	0.206	-19.115	0.734
2003	0.0121	0.000	0.356	0.241	8.664	0.884
average	0.0106	0.000	0.323	0.291	-98.504	0.557

Conclusion

This chapter presented the results of the analysis intended to address the questions,

1. How do current expenditures compare to capital expenditures for the years 1995-2003 in the state of Oklahoma?
2. Are those expenditures equitable between rural and non-rural schools?"

These results were related to two constructs of fiscal equity, including resource accessibility and wealth neutrality. The resource accessibility issue was addressed using descriptive measures of per-pupil expenditures, such as the mean, range, adjusted restricted range, adjusted federal range ratio, variance, standard deviation, and coefficient of variation.

The wealth neutrality issue was addressed using both regression and econometric measures. The regression measures included the correlation coefficient and the regression coefficient, in which the relationship between current and capital per-pupil expenditures were related to assessed valuation, density, and small schools weight. The econometric measures included the Gini coefficient and the McLoone index with an analysis of the distribution of per-pupil expenditures. Chapter five includes a discussion of the results, as well as overall conclusions and implications of the study.

Notes

1. D.C. Thompson, R.C. Wood, & D.S. Honeyman, *Fiscal Leadership for Schools: Concepts and Practices*. (New York: Longman Publishing Group, 1994), 248.

2. Ibid., 248.

3. Ibid., 247.

4. Ibid., 247.

5. Ibid., 249.

6. M. L. Berenson & D. M. Levine, *Basic Business Statistics: Concepts and Applications*, (New Jersey: Prentice-Hall, Inc., 1979) 87.

7. Thompson, *Fiscal Leadership*, 250.

8. Ibid., 251.

9. X. Chen, P. Ender, M. Mitchell, and C. Wells, "Regression with SPSS." *SPSS Web Books.* (Retrieved January 29, 2005, from http://www.ats.ucla.edu/stat/spss/webbooks/reg/default.htm)

Chapter 5

Findings, Conclusions, and Implications

The current chapter begins with a general summary of the study. Subsequent to this general summary, observations are presented based on the results obtained in Chapter four. The discussion then turns to the conclusions reached based on these observations, specifically in light of the concepts of equity discussed in chapter two. Chapter five concludes with implications of the study for further research and practice.

The objective of this research was to continue the expansion of equity theory from its conventional concern with current expenditures to capital expenditures. Also, the research was intended to make comparisons across non-rural and rural districts for both current expenditures and capital expenditures. Accordingly, current expenditures and capital expenditures were analyzed in detail with resource accessibility measures and wealth neutrality measures.

Six variables were derived from the corresponding questions (total CUR/ADM, non-rural CUR/ADM, rural CUR/ADM, total CAP/ADM, non-rural CAP/ADM, and rural CAP/ADM). Horizontal equity was measured for these variables by statistics that reflect dispersion in a distribution, such as the range, the adjusted restricted range (95^{th} to bottom percentile), the adjusted federal range ratio (the adjusted restricted range divided by the bottom percentile value), the mean, the variance, the standard deviation, and the

coefficient of variation. Wealth neutrality measures—such as the Gini Coefficient, the McLoone Index, the regression coefficient, and the correlation coefficient—were utilized to examine the relationship between district wealth and CUR/ADM and CAP/ADM as well as between non-rural and rural for both CUR/ADM and CAP/ADM.

This research attempted to answer the following questions.

1. How do capital expenditures compare to current educational expenditures for the years 1995-2003 in the state of Oklahoma?
2. Are current educational expenditures and capital expenditures equitable between rural and non-rural schools?

The results for the analysis of the questions were presented in chapter four. The current chapter includes a discussion of these results with implications for future studies.

Findings

Current expenditures have been consistently more resource accessibly and wealth neutral. Through the entire nine years included in the study both non-rural capital expenditures and rural capital expenditures demonstrated immense range differences even though schools typically spend much less money for capital expenditures than for current expenditures. Large ranges for capital expenditures—with fewer formula dollars going for capital outlay—indicates the possibility that schools are using monies designated for current expenditure needs for capital purposes. Creating noticeable equity issues especially in rural districts where the ranges were larger.

Consequently, the range for total current expenditures was $13,569.20 compared to $6,282.28 for total capital expenditures, a difference of $7,286.92. The adjusted restricted range for total current expenditures was significantly lower than the range. After removing the schools above the 95th percentile, the range for total current expenditures decreased by $11,065.10. The drop was smaller for total capital expenditures at $4,376.91 but no less important. The adjusted federal range ratio continued the pattern of larger inequities for capital expenditures than for current expenditures. In fact, there was a difference of 363 percent between the two range ratios. The adjusted federal range ratio for current was .94, while the ratio for capital was much higher at 4.57, also highlighting the inequities between current expenditures and capital expenditures in the state of Oklahoma.

The total current mean was more than double the total capital mean. The large mean for rural current (which was larger than the mean for non-rural current) contributed significantly to the large total mean. The variance echoes the mean in that total current was more than double the total capital figure, also attributable to the large rural current variance. The standard deviation did not show the large differences between total current and total capital. Current was $932.03 and capital was only $283.27 lower at $648.76. In a comparison of the coefficients of variation, total capital expenditures were more than twice as variable as total current expenditures (capital at .54 and current at .25).

All of these measurements when taken together demonstrate a higher degree of equity for total current expenditures per-pupil than for total capital expenditures per-pupil. Throughout all of the nine years there are often huge variances in each measure, but the average shows that deficiencies for the total capital expenditures are more significant than for total current expenditures. Current expenditures are more horizontally equitable than are capital expenditures for the state of Oklahoma during the years 1995-2003.

Resource accessibility was also measured for non-rural and rural current and capital expenditures by using the range, adjusted restricted range, and the adjusted federal range ratio. Consequently, the range was greater for each of the rural variables than it was for non-rural variables indicating the non-rural variable was more equitable than rural. In fact, the difference between non-rural and rural current expenditures was $11,383.57, and the difference for non-rural and rural capital expenditures was $3,372.80.

The adjusted restricted range and adjusted federal range ratio both had significant drops in range after adjusting at the 95th percentile. The adjusted restricted range difference actually dropped the range between rural and non-rural current expenditures from $11,383.57 to $1,548.01, a difference of $9,853.56. This gives evidence of large inequities between the schools in the top 5 percent and the bottom percent of rural schools for current expenditures. The adjusted federal range ratio difference between non-rural and rural capital expenditures was .46 while the difference between

the non-rural and rural capital expenditures was 1.57. Again representing a higher degree of equity for non-rural than rural in both categories.

Capital expenditures had a larger variance than current expenditures. In addition, when non-rural and rural capital expenditures were compared, rural capital expenditures were higher by 222,880.86. A comparison of non-rural and rural current expenditures showed an even larger variance of 1,099,185.99 with rural also having the highest measure.

In a comparison of the coefficient of variation for non-rural and rural the same variance difference of .16 appears for current expenditures as for capital expenditures. Rural capital was the highest coefficient at .58 and non-rural current the lowest at .11. Consequently, when each coefficient of variation (non-rural and rural) was compared using capital expenditures and current expenditures, non-rural expenditures were more equitable than rural expenditures for both current and capital expenditures.

Wealth neutrality measures were also applied to current and capital expenditures for the years 1995-2003. Wealth neutrality measures were used to assess the relationship between district wealth and expenditures. These measures included the correlation coefficient, the regression coefficient, the Gini coefficient, and the McLoone Index. The results from the regression and econometric measures of wealth neutrality are analyzed in the next section.

The correlation coefficient measures the relationship between wealth and expenditures. It is represented by values ranging from +1.0 to -1.0. The closer the value is to 1, positive or negative, the stronger the correlation. If

the analysis reveals no relationship between two variables then the relationship is indeed neutral.

According to the correlation coefficient, the assessed valuation per-pupil had a higher correlation to current expenditures at .746 than to capital expenditures with a correlation of .483. Yet again density was not significantly related to capital expenditures or current expenditures. The density correlated at a level of .086 with current expenditures. The small schools weight was statistically significant for both current and capital expenditures, having a correlation coefficient of -.344 for rural current expenditures and a correlation coefficient of .344 for non-rural current expenditures. Also, the small schools weight had a correlation coefficient of -.170 for rural capital expenditures and .170 for non-rural capital expenditures. Each of these measures illustrate that the non-rural schools are more wealth neutral than the rural schools for both current expenditures and capital expenditures. Also, the correlation coefficient shows the total current to be more wealth neutral by more than 25 percent.

The regression coefficient measured the effect a change in wealth had on each of the two dependent variables. The independent variable density had a coefficient of -0.1138 for current expenditures and a coefficient of .323 for capital expenditures. However, it was not statistically significant for either current expenditures or capital expenditures. As a result, -0.1138 was not statistically different from zero for current expenditures and .323 was not different from zero for capital expenditures.

The independent variable assessed valuation per pupil was significantly related to both current expenditures and capital expenditures. Hence, for every dollar increase in assessed valuation there was an estimated increase of $.02 in current expenditures, and for every dollar increase in assessed valuation there was an estimated increase of $.01 in capital expenditures. The independent variable small schools was significant at .05 for current expenditures but was not significantly related to capital expenditures. Current expenditures will increase $420.22 for every dollar increase in the small school weight. According to the regression coefficient, the isolation weight of the Oklahoma school funding formula has no significant relationship to current expenditures or capital expenditures. The lack of relationship between isolation and expenditures will be discussed further in the implications section.

The preceding discussion included the result of wealth neutrality measurements such as the correlation coefficient and the regression coefficient. The results of the two econometric measures of wealth neutrality, the Gini coefficient and McLoone index, follow.

Analysis of Gini coefficients indicated that when current and capital expenditures were ranked by wealth, average total current expenditures were .10 and exhibited a much smaller relationship between wealth and expenditures than average total capital expenditures, which were .22. Non-rural current expenditures at .07 demonstrate the smallest relationship to wealth. Also, rural current expenditures at .11 were similarly related to

wealth. Non-rural capital expenditures at .21 were more closely related to wealth than total capital expenditures which were .22, and rural capital at .26 had the results farthest from zero and therefore was the least wealth neutral of the variables studied.

The McLoone index measured the degree of equity for those pupils below the state median by calculating the ratio of the sum of expenditures per pupil per district below the median if those below the median were brought to the median level of expenditures.[1] Simply put, it is the degree of equity at the bottom half of the distribution. The distribution of the McLoone index had similar results to the Gini coefficient in that current expenditures had a smaller relationship to wealth than capital expenditures.

Districts in the lower half of the distribution were spending 92 percent of what would be needed to bring them up to the median of current expenditures, while those same districts were spending only 79 percent of what would be needed to bring them up to the median of capital expenditures. Also, districts in the lower half of the distribution were spending 80 percent of what would be needed to bring them up to the median of non rural capital expenditures and were spending 94 percent of what would be necessary to bring them to the median of non-rural current expenditures. Rural expenditures dropped for current to spending 90 percent of what was needed to get districts to the median and for capital they were spending 81 percent of what was needed to bring them to the median.

The McLoone index illustrates the degree of equity in the bottom half of the distribution and the McLoone index was higher for total current than for total capital indicating again that current expenditures are more equitable and less related to wealth even at the bottom half of the distribution. The same results were established for non-rural expenditures and rural expenditures. Also, non-rural expenditures had a smaller relationship to wealth and a greater degree of equity at the bottom of the distribution based on the McLoone index measurement.

Conclusions

The preceding section summarized the findings of the study. This section includes conclusions about the comparison of current expenditures to capital expenditures in Oklahoma.

1. Range measures illustrated large discrepancies between capital expenditures and current expenditures.
2. Range measures show extremes in the measurement between non-rural and rural expenditures. In fact, the majority of the extremes for total capital and total current come from the rural ranges.
3. Measures of central tendency such as the mean, standard deviation, variance, and coefficient of variation all show wide variances between current expenditures and capital expenditures. These measures indicate greater equity for current expenditures than for capital expenditures among school districts in Oklahoma.

4. Measures of central tendency such as the mean, standard deviation, variance, and coefficient of variation all show wide variances between non-rural expenditures and rural expenditures. Rural expenditures had larger variances in all measurements than non-rural expenditures.
5. Based on horizontal measures of equity, average current expenditures were more equitable than average capital expenditures.
6. Based on horizontal measures of equity, non-rural average current expenditures were consistently more equitable in school districts across the state of Oklahoma than rural average current expenditures.
7. Based on horizontal measures of equity, non-rural average capital expenditures were consistently more equitable than rural average capital expenditures.
8. Based on the correlation and regression analysis, current expenditures have a smaller correlation to wealth than do capital expenditures, thus demonstrating greater wealth neutrality for current expenditures than for capital expenditures.
9. The district isolation variable for the Oklahoma school funding formula shows no significant relationship to current expenditures or capital expenditures based on the regression coefficient. This may indicate that the isolation weight has little or no affect on equity for either current expenditures or capital expenditures and necessitates the possible need to evaluate this source of funding.

10. The small schools variable demonstrates a significant relationship to capital expenditures based on the regression coefficient. This may indicate that the existence of small school weight in the formula is valid.
11. The Gini coefficient reflected smaller values of current and capital expenditures for non-rural schools than for rural schools indicating a smaller relationship to wealth for non-rural expenditures.
12. The McLoone Index demonstrated a greater need to raise expenditures at the bottom half of the distribution for rural schools for both current and capital expenditures than for non-rural current and capital expenditures.

Overall, the findings indicate that current expenditures for Oklahoma school districts are consistently more horizontally equitable than capital expenditures. Also, the findings indicate that current expenditures are more wealth neutral than capital expenditures in the state of Oklahoma based on the wealth neutrality measures. The findings were the same when current and capital expenditures were compared between non-rural and rural districts. Non-rural schools showed more horizontal equity than rural schools in all categories, and non-rural schools were more wealth neutral based on the wealth neutrality measures.

Implications

The previous section included conclusions based on the results of this study. The current section includes a discussion of implications of this study divided into two sections: implications for research and implications for practice.

Implications for research:

1. The conclusion that there is less horizontal equity for average capital expenditures than for average current expenditures in Oklahoma for the years 1995-2001 suggests that future studies might look at several potential alternative models of capital outlay funding in comparison with the current system in Oklahoma.
2. Future studies might investigate correlations between capital expenditures and student outcomes. Current trends in testing and record keeping—encouraged by the federal government—are making it possible to collect detailed data that was once unavailable. Also, as OCAS data are developed to accommodate the No Child Left Behind legislation more efficient and well defined data will become available to refine this research.
3. A case study could be done to look at specific schools and make comparisons at the student level. The study would be more intensive, but it could include specific student outcomes and even use qualitative methods to look at how the differences between capital and current expenditures affect the schools themselves.

Implications for practice:

1. This study should be replicated with other states and possibly multiple states in order to impress upon a given state legislative body the severity of the equity issues for rural schools.
2. The small schools weight was a predictor of expenditures, while isolation was not. This indicates that the isolation weight in the Oklahoma funding formula needs to be assessed for value and need.
3. This research holds merit for any rural school district attempting to encourage the legislatures to increase the equity for rural school district's current expenditures.
4. Also, district leaders across the state could use this research to illustrate the dire necessity of finding a stable funding source to provide for equitable amounts of capital expenditures.

Any of the preceding suggested studies would be worthwhile for school leaders, researchers, and state legislatures. The necessities of providing appropriate fiscal support for capital as well as current expenditures warrant looking into the fiscal needs of schools for capital outlay—both rural and non-rural, especially as state legislatures begin looking at consolidating small school systems in order to improve conditions of education including cost.[2]

Summary

As stated in chapter two, dependence on local property tax has meant schools with high-priced residential or commercial property will continue to

have more money when it comes to capital expenditures. Those schools with more will continue to have innovative up-to-date facilities with more advanced technology and safety equipment. Meanwhile, the schools at the bottom end of the spectrum will be forced to find ways to make up for the lack of tax base to fund capital expenditures. This research sheds light on a number of issues—through the study of the variables—which lay ahead for schools and legislatures.

Examination of the variables through a wide variety of equity measures indicated that this wide range of analysis yields a quantity of important information about the equity of capital expenditures and current expenditures in Oklahoma. Measures for average current expenditures indicated greater horizontal equity for this variable than for average capital expenditures. Overall, rural schools experienced greater inequities than their counterparts in non-rural school districts for both average current expenditures and average capital expenditures. Rural schools tended to be more affected by wealth than non-rural schools.

Notes

1. D. C. Thompson, C. R. Wood, and D. S. Honeyman, *Fiscal Leadership for Schools: Concepts and Practices.* (New York: Longman, 1994) 250.

2. D. C. Thompson, “Consolidation of Rural School: Reform or Relapse?” *Journal of Education Finance* 16 (1990): 192

Appendix A

Regression and Correlation computations and figures for the years 1995-2003:

1995

Correlations

Correlations

		CUREXPPP	ASVALPP	DENSITY	SMALL
CUREXPPP	Pearson Correlation	1.000	.743**	-.077	-.369**
	Sig. (2-tailed)	.	.000	.074	.000
	N	542	542	542	542
ASVALPP	Pearson Correlation	.743**	1.000	-.051	-.184**
	Sig. (2-tailed)	.000	.	.235	.000
	N	542	542	542	542
DENSITY	Pearson Correlation	-.077	-.051	1.000	.214**
	Sig. (2-tailed)	.074	.235	.	.000
	N	542	542	542	542
SMALL	Pearson Correlation	-.369**	-.184**	.214**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	542	542	542	542

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Correlations

		ASVALPP	DENSITY	SMALL	CAPEXPPP
ASVALPP	Pearson Correlation	1.000	-.051	-.184**	.520**
	Sig. (2-tailed)	.	.235	.000	.000
	N	542	542	542	542
DENSITY	Pearson Correlation	-.051	1.000	.214**	-.005
	Sig. (2-tailed)	.235	.	.000	.902
	N	542	542	542	542
SMALL	Pearson Correlation	-.184**	.214**	1.000	-.141**
	Sig. (2-tailed)	.000	.000	.	.001
	N	542	542	542	542
CAPEXPPP	Pearson Correlation	.520**	-.005	-.141**	1.000
	Sig. (2-tailed)	.000	.902	.001	.
	N	542	542	542	542

**. Correlation is significant at the 0.01 level (2-tailed).

1995

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	ASVALPP, DENSITY, SMALL[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.779[a]	.608	.605	443.1649

a. Predictors: (Constant), ASVALPP, DENSITY, SMALL

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.64E+08	3	54513588.21	277.571	.000[a]
	Residual	1.06E+08	538	196395.107		
	Total	2.69E+08	541			

a. Predictors: (Constant), ASVALPP, DENSITY, SMALL

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3001.690	30.510		98.385	.000
	SMALL	-352.416	40.794	-.243	-8.639	.000
	DENSITY	9.664E-02	.246	.011	.392	.695
	ASVALPP	1.875E-02	.001	.699	25.418	.000

a. Dependent Variable: CUREXPPP

1995

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	ASVALPP, DENSITY, SMALL[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.523[a]	.273	.269	530.0297

a. Predictors: (Constant), ASVALPP, DENSITY, SMALL

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56826187	3	18942062.18	67.426	.000[a]
	Residual	1.51E+08	538	280931.430		
	Total	2.08E+08	541			

a. Predictors: (Constant), ASVALPP, DENSITY, SMALL

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	739.328	36.490		20.261	.000
	SMALL	-68.261	48.790	-.053	-1.399	.162
	DENSITY	.253	.295	.032	.858	.391
	ASVALPP	1.207E-02	.001	.512	13.680	.000

a. Dependent Variable: CAPEXPPP

1996

Correlations

Correlations

		CUREXPPP	ASVALPP	DENSITY	SMALL
CUREXPPP	Pearson Correlation	1.000	.805**	-.076	-.326**
	Sig. (2-tailed)	.	.000	.075	.000
	N	544	544	544	544
ASVALPP	Pearson Correlation	.805**	1.000	-.047	-.175**
	Sig. (2-tailed)	.000	.	.273	.000
	N	544	544	544	544
DENSITY	Pearson Correlation	-.076	-.047	1.000	.208**
	Sig. (2-tailed)	.075	.273	.	.000
	N	544	544	544	544
SMALL	Pearson Correlation	-.326**	-.175**	.208**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	544	544	544	544

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Correlations

		ASVALPP	DENSITY	SMALL	CAPEXPPP
ASVALPP	Pearson Correlation	1.000	-.047	-.175**	.509**
	Sig. (2-tailed)	.	.273	.000	.000
	N	544	544	544	544
DENSITY	Pearson Correlation	-.047	1.000	.208**	.043
	Sig. (2-tailed)	.273	.	.000	.321
	N	544	544	544	544
SMALL	Pearson Correlation	-.175**	.208**	1.000	-.106*
	Sig. (2-tailed)	.000	.000	.	.014
	N	544	544	544	544
CAPEXPPP	Pearson Correlation	.509**	.043	-.106*	1.000
	Sig. (2-tailed)	.000	.321	.014	.
	N	544	544	544	544

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

1996

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.826[a]	.683	.681	458.6180

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.44E+08	3	81452912.59	387.262	.000[a]
	Residual	1.14E+08	540	210330.504		
	Total	3.58E+08	543			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2929.173	31.203		93.874	.000
	ASVALPP	2.245E-02	.001	.771	31.320	.000
	DENSITY	-2.76E-03	.251	.000	-.011	.991
	SMALL	-317.110	41.830	-.191	-7.581	.000

a. Dependent Variable: CUREXPPP

1996

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.514[a]	.265	.261	468.4359

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42632520	3	14210840.04	64.762	.000[a]
	Residual	1.18E+08	540	219432.217		
	Total	1.61E+08	543			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	764.381	31.871		23.983	.000
	ASVALPP	9.900E-03	.001	.507	13.524	.000
	DENSITY	.497	.257	.073	1.938	.053
	SMALL	-35.616	42.725	-.032	-.834	.405

a. Dependent Variable: CAPEXPPP

1997

Correlations

Correlations

		CUREXPPP	ASVALPP	DENSITY	SMALL
CUREXPPP	Pearson Correlation	1.000	.821**	-.072	-.301**
	Sig. (2-tailed)	.	.000	.094	.000
	N	544	544	544	544
ASVALPP	Pearson Correlation	.821**	1.000	-.045	-.172**
	Sig. (2-tailed)	.000	.	.296	.000
	N	544	544	544	544
DENSITY	Pearson Correlation	-.072	-.045	1.000	.207**
	Sig. (2-tailed)	.094	.296	.	.000
	N	544	544	544	544
SMALL	Pearson Correlation	-.301**	-.172**	.207**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	544	544	544	544

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Correlations

		ASVALPP	DENSITY	SMALL	CAPEXPPP
ASVALPP	Pearson Correlation	1.000	-.045	-.172**	.439**
	Sig. (2-tailed)	.	.296	.000	.000
	N	544	544	544	544
DENSITY	Pearson Correlation	-.045	1.000	.207**	.015
	Sig. (2-tailed)	.296	.	.000	.728
	N	544	544	544	544
SMALL	Pearson Correlation	-.172**	.207**	1.000	-.131**
	Sig. (2-tailed)	.000	.000	.	.002
	N	544	544	544	544
CAPEXPPP	Pearson Correlation	.439**	.015	-.131**	1.000
	Sig. (2-tailed)	.000	.728	.002	.
	N	544	544	544	544

**. Correlation is significant at the 0.01 level (2-tailed).

1997

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.837[a]	.701	.699	505.9545

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.24E+08	3	108069805.5	422.164	.000[a]
	Residual	1.38E+08	540	255989.943		
	Total	4.62E+08	543			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3049.206	33.736		90.383	.000
	ASVALPP	2.344E-02	.001	.793	33.205	.000
	DENSITY	-2.52E-02	.274	-.002	-.092	.927
	SMALL	-310.600	46.028	-.165	-6.748	.000

a. Dependent Variable: CUREXPPP

1997

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.445[a]	.198	.194	576.2213

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	44344570	3	14781523.23	44.519	.000[a]
	Residual	1.79E+08	540	332030.956		
	Total	2.24E+08	543			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	900.884	38.422		23.447	.000
	ASVALPP	8.833E-03	.001	.430	10.985	.000
	DENSITY	.382	.312	.048	1.226	.221
	SMALL	-88.858	52.420	-.068	-1.695	.091

a. Dependent Variable: CAPEXPPP

1998

Correlations

Correlations

		CUREXPPP	DENSITY	SMALL	ASVALPP
CUREXPPP	Pearson Correlation	1.000	-.074	-.296**	.824**
	Sig. (2-tailed)	.	.085	.000	.000
	N	541	541	541	541
DENSITY	Pearson Correlation	-.074	1.000	.204**	-.039
	Sig. (2-tailed)	.085	.	.000	.360
	N	541	541	541	541
SMALL	Pearson Correlation	-.296**	.204**	1.000	-.152**
	Sig. (2-tailed)	.000	.000	.	.000
	N	541	541	541	541
ASVALPP	Pearson Correlation	.824**	-.039	-.152**	1.000
	Sig. (2-tailed)	.000	.360	.000	.
	N	541	541	541	541

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Correlations

		DENSITY	SMALL	ASVALPP	CAPEXPPP
DENSITY	Pearson Correlation	1.000	.204**	-.039	.000
	Sig. (2-tailed)	.	.000	.360	.993
	N	541	541	541	541
SMALL	Pearson Correlation	.204**	1.000	-.152**	-.091*
	Sig. (2-tailed)	.000	.	.000	.033
	N	541	541	541	541
ASVALPP	Pearson Correlation	-.039	-.152**	1.000	.560**
	Sig. (2-tailed)	.360	.000	.	.000
	N	541	541	541	541
CAPEXPPP	Pearson Correlation	.000	-.091*	.560**	1.000
	Sig. (2-tailed)	.993	.033	.000	.
	N	541	541	541	541

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

1998

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	ASVALPP, DENSITY, SMALL[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.842[a]	.709	.707	528.5330

a. Predictors: (Constant), ASVALPP, DENSITY, SMALL

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.65E+08	3	121824003.1	436.103	.000[a]
	Residual	1.50E+08	537	279347.152		
	Total	5.15E+08	540			

a. Predictors: (Constant), ASVALPP, DENSITY, SMALL

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3177.857	34.361		92.485	.000
	SMALL	-345.634	47.956	-.173	-7.207	.000
	DENSITY	-8.41E-02	.277	-.007	-.303	.762
	ASVALPP	2.197E-02	.001	.797	33.858	.000

a. Dependent Variable: CUREXPPP

1998

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	ASVALPP, DENSITY, SMALL[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.560[a]	.314	.310	460.9272

a. Predictors: (Constant), ASVALPP, DENSITY, SMALL

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52207693	3	17402564.36	81.912	.000[a]
	Residual	1.14E+08	537	212453.914		
	Total	1.66E+08	540			

a. Predictors: (Constant), ASVALPP, DENSITY, SMALL

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	886.729	29.966		29.591	.000
	SMALL	-12.985	41.821	-.011	-.310	.756
	DENSITY	.159	.242	.024	.657	.511
	ASVALPP	8.745E-03	.001	.559	15.457	.000

a. Dependent Variable: CAPEXPPP

1999

Correlations

Correlations

		CUREXPPP	DENSITY	ASVALPP	SMALL
CUREXPPP	Pearson Correlation	1.000	-.090*	.777**	-.348**
	Sig. (2-tailed)	.	.037	.000	.000
	N	541	541	541	541
DENSITY	Pearson Correlation	-.090*	1.000	-.043	.200**
	Sig. (2-tailed)	.037	.	.322	.000
	N	541	541	541	541
ASVALPP	Pearson Correlation	.777**	-.043	1.000	-.158**
	Sig. (2-tailed)	.000	.322	.	.000
	N	541	541	541	541
SMALL	Pearson Correlation	-.348**	.200**	-.158**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	541	541	541	541

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Correlations

		DENSITY	ASVALPP	SMALL	CAPEXPPP
DENSITY	Pearson Correlation	1.000	-.043	.200**	.010
	Sig. (2-tailed)	.	.322	.000	.814
	N	541	541	541	541
ASVALPP	Pearson Correlation	-.043	1.000	-.158**	.454**
	Sig. (2-tailed)	.322	.	.000	.000
	N	541	541	541	541
SMALL	Pearson Correlation	.200**	-.158**	1.000	-.088*
	Sig. (2-tailed)	.000	.000	.	.040
	N	541	541	541	541
CAPEXPPP	Pearson Correlation	.010	.454**	-.088*	1.000
	Sig. (2-tailed)	.814	.000	.040	.
	N	541	541	541	541

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

1999

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.810[a]	.657	.655	581.6086

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.47E+08	3	115750043.6	342.184	.000[a]
	Residual	1.82E+08	537	338268.551		
	Total	5.29E+08	540			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3479.979	39.032		89.157	.000
	ASVALPP	2.274E-02	.001	.741	28.920	.000
	DENSITY	-.139	.296	-.012	-.469	.639
	SMALL	-461.598	52.693	-.229	-8.760	.000

a. Dependent Variable: CUREXPPP

1999

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456[a]	.208	.203	530.6205

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39600332	3	13200110.63	46.882	.000[a]
	Residual	1.51E+08	537	281558.071		
	Total	1.91E+08	540			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	986.796	35.610		27.711	.000
	ASVALPP	8.331E-03	.001	.452	11.611	.000
	DENSITY	.236	.270	.034	.871	.384
	SMALL	-28.959	48.073	-.024	-.602	.547

a. Dependent Variable: CAPEXPPP

2000

Correlations

Correlations

		CUREXPPP	ASVALPP	DENSITY	SMALL
CUREXPPP	Pearson Correlation	1.000	.696**	-.099*	-.364**
	Sig. (2-tailed)	.	.000	.022	.000
	N	540	540	540	540
ASVALPP	Pearson Correlation	.696**	1.000	-.045	-.187**
	Sig. (2-tailed)	.000	.	.293	.000
	N	540	540	540	540
DENSITY	Pearson Correlation	-.099*	-.045	1.000	.200**
	Sig. (2-tailed)	.022	.293	.	.000
	N	540	540	540	540
SMALL	Pearson Correlation	-.364**	-.187**	.200**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	540	540	540	540

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

Correlations

		ASVALPP	DENSITY	SMALL	CAPEXPPP
ASVALPP	Pearson Correlation	1.000	-.045	-.187**	.411**
	Sig. (2-tailed)	.	.293	.000	.000
	N	540	540	540	540
DENSITY	Pearson Correlation	-.045	1.000	.200**	.032
	Sig. (2-tailed)	.293	.	.000	.462
	N	540	540	540	540
SMALL	Pearson Correlation	-.187**	.200**	1.000	-.094*
	Sig. (2-tailed)	.000	.000	.	.029
	N	540	540	540	540
CAPEXPPP	Pearson Correlation	.411**	.032	-.094*	1.000
	Sig. (2-tailed)	.000	.462	.029	.
	N	540	540	540	540

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

2000

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.736[a]	.541	.539	565.3871

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.02E+08	3	67386299.71	210.804	.000[a]
	Residual	1.71E+08	536	319662.586		
	Total	3.73E+08	539			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3524.376	41.294		85.348	.000
	ASVALPP	2.133E-02	.001	.650	21.833	.000
	DENSITY	-.204	.282	-.022	-.723	.470
	SMALL	-405.172	51.581	-.238	-7.855	.000

a. Dependent Variable: CUREXPPP

2000

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.415[a]	.172	.167	593.2253

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39167007	3	13055668.98	37.099	.000[a]
	Residual	1.89E+08	536	351916.224		
	Total	2.28E+08	539			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1061.497	43.327		24.500	.000
	ASVALPP	1.045E-02	.001	.408	10.191	.000
	DENSITY	.414	.296	.056	1.397	.163
	SMALL	-38.647	54.121	-.029	-.714	.475

a. Dependent Variable: CAPEXPPP

2001

Correlations

Correlations

		CUREXPPP	ASVALPP	DENSITY	SMALL
CUREXPPP	Pearson Correlation	1.000	.631**	-.104*	-.379**
	Sig. (2-tailed)	.	.000	.016	.000
	N	538	538	538	538
ASVALPP	Pearson Correlation	.631**	1.000	-.044	-.178**
	Sig. (2-tailed)	.000	.	.311	.000
	N	538	538	538	538
DENSITY	Pearson Correlation	-.104*	-.044	1.000	.200**
	Sig. (2-tailed)	.016	.311	.	.000
	N	538	538	538	538
SMALL	Pearson Correlation	-.379**	-.178**	.200**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	538	538	538	538

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

Correlations

		ASVALPP	DENSITY	SMALL	CAPEXPPP
ASVALPP	Pearson Correlation	1.000	-.044	-.178**	.426**
	Sig. (2-tailed)	.	.311	.000	.000
	N	538	538	538	538
DENSITY	Pearson Correlation	-.044	1.000	.200**	.011
	Sig. (2-tailed)	.311	.	.000	.799
	N	538	538	538	538
SMALL	Pearson Correlation	-.178**	.200**	1.000	-.072
	Sig. (2-tailed)	.000	.000	.	.095
	N	538	538	538	538
CAPEXPPP	Pearson Correlation	.426**	.011	-.072	1.000
	Sig. (2-tailed)	.000	.799	.095	.
	N	538	538	538	538

**. Correlation is significant at the 0.01 level (2-tailed).

2001

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.687[a]	.473	.470	660.5180

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.09E+08	3	69597632.89	159.524	.000[a]
	Residual	2.33E+08	534	436283.991		
	Total	4.42E+08	537			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4010.271	47.919		83.689	.000
	ASVALPP	1.951E-02	.001	.582	18.227	.000
	DENSITY	-.244	.327	-.024	-.746	.456
	SMALL	-501.542	60.398	-.270	-8.304	.000

a. Dependent Variable: CUREXPPP

2001

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.427[a]	.182	.177	643.2936

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49173083	3	16391027.52	39.608	.000[a]
	Residual	2.21E+08	534	413826.606		
	Total	2.70E+08	537			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1191.453	46.669		25.530	.000
	ASVALPP	1.118E-02	.001	.427	10.724	.000
	DENSITY	.240	.319	.030	.752	.452
	SMALL	-2.757	58.823	-.002	-.047	.963

a. Dependent Variable: CAPEXPPP

2002

Correlations

Correlations

		CUREXPPP	ASVALPP	DENSITY	SMALL
CUREXPPP	Pearson Correlation	1.000	.666**	-.095*	-.371**
	Sig. (2-tailed)	.	.000	.028	.000
	N	538	538	538	538
ASVALPP	Pearson Correlation	.666**	1.000	-.041	-.172**
	Sig. (2-tailed)	.000	.	.338	.000
	N	538	538	538	538
DENSITY	Pearson Correlation	-.095*	-.041	1.000	.200**
	Sig. (2-tailed)	.028	.338	.	.000
	N	538	538	538	538
SMALL	Pearson Correlation	-.371**	-.172**	.200**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	538	538	538	538

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

Correlations

		ASVALPP	DENSITY	SMALL	CAPEXPPP
ASVALPP	Pearson Correlation	1.000	-.041	-.172**	.583**
	Sig. (2-tailed)	.	.338	.000	.000
	N	538	538	538	538
DENSITY	Pearson Correlation	-.041	1.000	.200**	.019
	Sig. (2-tailed)	.338	.	.000	.665
	N	538	538	538	538
SMALL	Pearson Correlation	-.172**	.200**	1.000	-.103*
	Sig. (2-tailed)	.000	.000	.	.017
	N	538	538	538	538
CAPEXPPP	Pearson Correlation	.583**	.019	-.103*	1.000
	Sig. (2-tailed)	.000	.665	.017	.
	N	538	538	538	538

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

2002

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.715[a]	.511	.509	721.5236

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.91E+08	3	97012485.01	186.349	.000[a]
	Residual	2.78E+08	534	520596.314		
	Total	5.69E+08	537			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4091.726	50.825		80.505	.000
	ASVALPP	2.058E-02	.001	.620	20.206	.000
	DENSITY	-.192	.347	-.017	-.553	.581
	SMALL	-550.524	66.070	-.261	-8.332	.000

a. Dependent Variable: CUREXPPP

2002

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.585[a]	.342	.339	615.1768

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.05E+08	3	35080585.65	92.697	.000[a]
	Residual	2.02E+08	534	378442.510		
	Total	3.07E+08	537			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1139.673	43.334		26.300	.000
	ASVALPP	1.422E-02	.001	.583	16.374	.000
	DENSITY	.374	.296	.045	1.265	.206
	SMALL	-19.115	56.332	-.012	-.339	.734

a. Dependent Variable: CAPEXPPP

2003

Correlations

Correlations

		CUREXPPP	DENSITY	ASVALPP	SMALL
CUREXPPP	Pearson Correlation	1.000	-.091*	.748**	-.338**
	Sig. (2-tailed)	.	.035	.000	.000
	N	537	537	537	537
DENSITY	Pearson Correlation	-.091*	1.000	-.041	.200**
	Sig. (2-tailed)	.035	.	.338	.000
	N	537	537	537	537
ASVALPP	Pearson Correlation	.748**	-.041	1.000	-.165**
	Sig. (2-tailed)	.000	.338	.	.000
	N	537	537	537	537
SMALL	Pearson Correlation	-.338**	.200**	-.165**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	537	537	537	537

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Correlations

		DENSITY	ASVALPP	SMALL	CAPEXPPP
DENSITY	Pearson Correlation	1.000	-.041	.200**	.022
	Sig. (2-tailed)	.	.338	.000	.608
	N	537	537	537	537
ASVALPP	Pearson Correlation	-.041	1.000	-.165**	.541**
	Sig. (2-tailed)	.338	.	.000	.000
	N	537	537	537	537
SMALL	Pearson Correlation	.200**	-.165**	1.000	-.076
	Sig. (2-tailed)	.000	.000	.	.080
	N	537	537	537	537
CAPEXPPP	Pearson Correlation	.022	.541**	-.076	1.000
	Sig. (2-tailed)	.608	.000	.080	.
	N	537	537	537	537

**. Correlation is significant at the 0.01 level (2-tailed).

2003

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CUREXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780[a]	.608	.606	758.1416

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.75E+08	3	158275198.8	275.367	.000[a]
	Residual	3.06E+08	533	574778.715		
	Total	7.81E+08	536			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CUREXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3831.796	52.466		73.034	.000
	ASVALPP	2.491E-02	.001	.712	25.880	.000
	DENSITY	-.230	.355	-.018	-.648	.517
	SMALL	-537.374	69.445	-.217	-7.738	.000

a. Dependent Variable: CUREXPPP

2003

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SMALL, ASVALPP, DENSITY[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: CAPEXPPP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.543[a]	.295	.291	646.3521

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	93129675	3	31043225.16	74.307	.000[a]
	Residual	2.23E+08	533	417771.050		
	Total	3.16E+08	536			

a. Predictors: (Constant), SMALL, ASVALPP, DENSITY

b. Dependent Variable: CAPEXPPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1130.270	44.730		25.269	.000
	ASVALPP	1.210E-02	.001	.544	14.748	.000
	DENSITY	.356	.303	.044	1.175	.241
	SMALL	8.664	59.205	.006	.146	.884

a. Dependent Variable: CAPEXPPP

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