

**An Examination of the Fiscal Equity of Current, Capital, and Crossover
Educational Expenditures in Oklahoma School Districts**

Full Report

ISEF – 001FR

Shawn Hime, Ph.D.

Chair of the Advisory Council
Institute for the Study of Education Finance

Executive Director
Oklahoma State School Boards Association

shawnh@ossba.org

Jeffrey Maiden, Ph.D.

Senior Researcher and Director
Institute for the Study of Education Finance

Professor of Educational Administration, Curriculum and Supervision
University of Oklahoma

maiden@ou.edu

Copyright Institute for the Study of Education Finance

July 2017



ISEF

INSTITUTE FOR THE STUDY OF
EDUCATION
FINANCE

The Impact of the Inequity of Capital Improvement Revenue on the Equity of Current Educational Expenditures in Oklahoma Schools

The primary purpose of this study was to ascertain the extent to which inequities in capital outlay funding in Oklahoma influences the equity of current expenditure funding. A secondary purpose was to assess the overall equity of the system for funding schools in Oklahoma over the past five years.

Because the United States Constitution includes no education clause, processes for creating, maintaining, and funding systems of public schools has historically become a function of state governments. Consequently, state lawmakers bear the responsibility for creating adequate and equitable education funding systems in the 50 states. The natural result is varying levels of fiscal equity and adequacy among the states, with concomitant equity and adequacy litigation based on state constitutions that has produced varying legal outcomes among states. Furthermore, individual states typically use separate mechanisms for supporting local district current and capital expenditures, thus further complicating the policy and legal environment of financing public education.

Oklahoma has mostly avoided litigation about state education funding, due in part to the fact that the Oklahoma formulae have been demonstrated to distribute funding across local districts equitably. (Maiden, 1998; Deering and Maiden, 1999; Maiden and Stearns, 2007). However, Oklahoma is one of only a handful of states that includes no state appropriated funding for capital outlay support. At least one study has demonstrated that capital expenditures are not equitably distributed across Oklahoma school districts, and that the inequity is especially acute among Oklahoma's numerous rural districts (Maiden and Stearns, 2007).

There is virtually no research on the impact of the equity of one restricted revenue area on another restricted revenue area nationally, and certainly none dealing with Oklahoma, specifically. Again, The Oklahoma formula for current education funding has consistently been found to be equitable (Maiden 1998; Deering and Maiden, 1999; Maiden and Stearns, 2007). However, because Oklahoma schools rely solely on local ad valorem valuation to generate capital outlay funding, intuitively a disturbance in the overall equity of the program needs to be examined. The problem is that the range in ad valorem among Oklahoma's 516 public school districts was between \$2,500 per student and \$600,000 per student during the 2014-2015 school year (OCAS 2015). This wide range in local school tax bases creates a significant discrepancy in locally raised revenue available to meet capital improvement needs, given the lack of state assistance in this area.

The problem is exacerbated by the fact that over the past decade, faltering state budgets coupled with the state's school population growing by over 48,000 students have resulted in reductions in per pupil state aid formula dollars. The result of Oklahoma's school funding woes has led to the state falling further behind peer states in its ability to fund the common education system. Oklahoma now trails its contiguous states in total per pupil expenditures by over \$2,000 per student (NCES 2016). This has led Oklahoma lawmakers and other policymakers to look for new ways to adequately fund Oklahoma public schools, including the increased use of creative funding mechanisms including the use of legally viable current operations support from capital funds.

Background and Context

Historically, funding from public schools has been derived from local sources, with the natural result that education funding for students in less affluent communities having access to equivalent resources to students in wealthier communities. Further complicating the problem is that often districts in less affluent areas serve a greater proportion of students placed at risk, which further adds to the need for resources. To overcome this resource disadvantage, states legislatures across the nation beginning in the 20th Century legislated into existence school funding formulas that are structured in such a way as to equalize state and local funding for all children educated in their respective states. Most state funding formulas, including Oklahoma's, use a combination of state and local revenues to fund schools. Of course, school districts also receive supplementary revenue from the federal government. During 2011-12 (the most recent national data available), overall the state funding share is 46.5%, the local share is 44.4 %, and the federal share at 9.1% (NCES 2015).

A few recent studies may shed light on the degree to which state education funding mechanisms have produced equitable financial support for education. Verstegen (2013) found significant inequity in the state's funding formula. The study found a coefficient of variance where almost two-thirds of Nevada's students are within a range of 32% to 38% of average funding per student. This far exceeds the 5% target range (Verstegen 2013). On the basis of local wealth, Verstegen's regression analysis also showed that Nevada school funding could be predicted almost 88% of the time. The inequity of Nevada's school funding system appears to have the greatest negative impact on the state's largest cities. Eighty-nine percent of Nevada's students reside in the state's largest districts while those districts receive the least amount of funding per-pupil (Verstegen 2013).

Massachusetts on the other hand, has a school funding system that has a required local contribution and a formula that counts a municipalities local property values and income as equal weights when calculating the target contributions. This system was modified in 2007 as a reaction to dissatisfaction with the previous state mandated school funding system. Between 2007 and 2010 the state phased in part of the new system by reducing the requirements of those districts that contributed amounts in excess of the required targets (Fahy 2012). Each Massachusetts school district must contribute a portion of its own foundation aid while the state provides additional revenue to make up the schools total required spending (Fahy 2011). Fahy finds that “The downside to the legislatures emphasis on taxpayer equity has been the lack of attention paid to the important (and potentially expensive) questions surrounding the adequacy of funding in the wake of updated curriculum and testing standards. Equity in contributions across districts is an important goal in its own right. Its achievement will allow the state to refocus its energies on other matters related to public education.”

Sweetland (2014) employed commonly used ratio and wealth relationship analyses to examine the fiscal equity of Ohio schools after the most recent DeRolph decision (DeRolph v. State [DeRolph IV], 97 Ohio St. 3d 434 [2002]). Part of the analysis included the McLoone Index, and underutilized but still important indicator of equity for the less than well to do districts in a state. The finding of decreased equity in the system over the years (a finding that parallels what’s been happening in Oklahoma, partially explained by the Great Recession) is critical, given that the *DeRolph* litigation was focused on fiscal equity (Sweetland 2014)..

Three Oklahoma funding studies published over the past 20 years may be particularly instructive in informing the present study. Maiden (1998) found that the state aid formula provided a high degree of both resource accessibility and wealth neutrality across Oklahoma

school districts in support of current fiscal operations (Maiden, 1998).. The study did not address the degree to which fiscal support for capital needs was distributed fairly across districts.

Deering and Maiden (1999) focused primarily on the adequacy of state funding to meet requirements of state education reform legislation. However, their analysis also assessed the extent to which the reform affected fiscal equity. Their conclusion was that the system of state aid maintained a relatively high level of horizontal equity (Deering & Maiden, 1999). Deering and Maiden did not examine the equity of capital outlay funding across Oklahoma districts.

Maiden and Stearns (2007) extended the fiscal equity assessment in Oklahoma to capital funding. Maiden and Stearns found that while Oklahoma education funding continued to provide equitable resource access for current operations across school districts, capital funding demonstrated a high degree of wealth non neutrality, and an extraordinarily low degree of resource accessibility across Oklahoma school districts (Maiden and Stearns, 2007). Additionally, rural districts in particular were at a capital outlay funding disadvantage in the absence of state aid (Maiden and Stearns, 2007).

None of the out of state nor the Oklahoma studies addressed the extent to which inequities in capital outlay influenced the overall equity of current operations within the state. There is a particular need for determine if lack of state aid for capital revenue support adversely affects distributional equity of resources for current operations, given the lack of state capital aid for public education in Oklahoma.

Study Context

An overview of Oklahoma school funding is included to provide a contextual understanding of the study. The Oklahoma State Aid equalization formula was implemented in

1981, and has retained its structure with a few modifications since then. Formula aid is distributed to local school districts based on weighted average daily membership (WADM), comprised of the average daily enrollment plus the sum of nine additional possible weights delineated in Title 70 Section 18 of Oklahoma State Statutes. The funding formula uses student- and district-level weights to address vertical equity (unequal treatment of unequals based on resource needs). The Oklahoma funding formula weights are allocated based on identified differences in students, teachers, and district factors that affect the cost to educate students.

The vertical equity weighting of the formula begins with the unweighted average daily membership (ADM) of a given school district, which includes the average number of students enrolled in that school district over a specified period. Based on the perceived cost for differences in student populations, there are six student categorical weights used to enhance revenue for schools. The student categorical weights include a weight for student grade level, special education based on disability, gifted students, bilingual students, students who receive summer special education services, and students who are identified as economically disadvantaged. The formula also includes a teacher index weight which provides a school district additional revenue based on the experience and advanced degree level of the school's certified staff if it is higher than the average of all Oklahoma districts. There are two district-level weights possible for Oklahoma schools to receive. A school district may be eligible for the small school or isolation weight, based on the number of students enrolled or the density of their student population in relation to square miles within the school district's boundaries.

Oklahoma state aid includes a multi-tiered formula. The 'top half' of the funding formula includes a foundation program with a transportation supplement. The 'bottom half,' known as salary incentive aid, is a modified guaranteed yield formula. The State Aid Formula for funding

is comprised of eight common education revenue sources that include local and county, state-dedicated, and state-appropriated revenue. Local and county revenue is derived from ad valorem taxes authorized by Article X, Section 9 of the Oklahoma Constitution, which includes 35 mills from local property valuation and a county four-mill that is allocated to schools within the county, based on average daily attendance. The 35 mills from local property valuation is generated by four different constitutional levies. The first 15 mills are levied pursuant to paragraph (c) which states: “Upon certification of a need therefor by the board of education of any school district an additional tax of not to exceed fifteen (15) mills on the dollar valuation of all taxable property in the district shall be levied for the benefit of the schools of such district.” The 15-mill levy is used as an equalization factor as part of the foundation portion of the State Aid Formula (70 O.S. § 18-200.1).

The remaining 20 mills are used as part of the salary incentive portion of the State Aid Formula. These 20 mills include three separate levies: A local 10-mill support levy, a county-wide five-mill levy and a five-mill emergency levy. Article X, Section 9 of the Oklahoma Constitution was amended by a legislative referendum that called for State Question 690 to be voted on during the general election held November 7, 2000. The referendum passed, adding paragraph (d-2): “A school district may upon approval by a majority of the electors of the district voting on the question make the ad valorem levy for emergency levy and local support levy under (d) and (d-1) of this section permanent.” This provision allowed local voters to decide if they wanted to vote annually for the constitutionally authorized ad valorem levies or make them permanent. By the end of the 2014-2015 school year, all 516 school districts had voted to make their mill levies permanent.

Several revenue sources are used as part of Oklahoma state aid. These included gross production taxes, motor vehicle taxes, Rural Electrification Association (REA) Cooperative Tax, and state appropriation. Table 1 includes state aid by source in fiscal year 2016.

Table 1: State Aid Revenue by Source

Revenue Source	Amount	Percentage
County 4-Mill	\$91,678,550.25	3%
School Land	97,500,003	3%
Gross Production	83,688,215	2%
Ad valorem - 35 Mills	\$1,004,969,001.95	29%
Motor Vehicle	261,403,102	8%
Rural Electrification Tax	42,066,545	1%
State Aid Appropriation	\$1,826,404,722	54%
Total State Aid Revenue	\$3,407,710,139	

Source: Oklahoma State Department FY2016 form B17004WX

The state aid funding formula uses these seven sources of revenue in conjunction with school districts' weighted average daily membership to provide current operating revenue to Oklahoma schools with the intent of providing horizontal equity. The state's method for creating horizontal and vertical equity is to calculate the state aid factor which indicates the amount of money each school district will receive for each weighted student represented by their weighted average daily membership.

Oklahoma state aid is provided to school districts as part of the multi-tiered formula to support local district current operation needs. However, there is no state funding formula for the capital needs of Oklahoma districts. Oklahoma public schools receive almost 100 percent of their capital improvement revenue from local ad valorem tax levies (OCAS 2015). The two ad valorem revenue sources from which Oklahoma schools are expected to meet capital improvement funding needs are their annual five-mill building fund (Article X, Section 21) and bond funds (Article X, Section 27).

Oklahoma's capital improvement equity issue is based on vast differences in property wealth among the 516 public school districts. Capital improvement revenue for schools in Oklahoma is generated solely by local property taxes. Oklahoma's 516 public school districts had an ad valorem (property tax) base between \$2,500 per student and \$600,000 per student during the 2014-2015 school year (OCAS 2015). This wide range in tax bases creates a significant discrepancy in the possible revenue for capital improvement needs.

Even though each state has a unique funding mechanism for schools, many are facing a similar issue of underfunded facility maintenance and new construction. The historical aspect of local control and local responsibility for capital outlay funding is well documented and even held as sacred by many educators. The harsh reality is that many school districts are facing variables that make it virtually impossible to maintain educational facilities to a minimal standard. Many rural and urban districts are facing the daunting task of maintaining old buildings amid an ever-declining tax base. The recent national decline in home values will cause this problem to be felt by even more school districts. Suburban districts have, for the most part, had the good fortune to maintain enough growth in property value to have up-to-date buildings and diversify their capital

outlay revenue into areas of current educational expenses. This discrepancy has led many states to create a stand-alone funding system, an equalization formula, or a combination of the two in order to offset and inequity or inadequacy.

In addition to natural inequities in capital funding support across districts, Oklahoma statutes include language that allows districts to meet certain current operations needs with capital funding. Oklahoma statutes indicate, “A school’s building fund may be used for erecting, remodeling, repairing, or maintaining school buildings, for purchasing furniture, equipment and computer software to be used on or for school district property, for repairing and maintaining computer systems and equipment, for paying energy and utility costs, for purchasing telecommunications utilities and services, for paying fire and casualty insurance premiums for school facilities, for purchasing security systems, for paying salaries of security personnel, or for one or more, or all, of such purposes.” (O.S. §70-1-118). There are several items that may be paid for from a school district’s building fund that may also be paid for from their general fund. These ‘crossover’ expenditures from the building fund include a school’s utility bills, custodial, maintenance and security salaries, furniture, and insurance premiums (OCAS 2016).

Further, crossover funding may originate from bond funds. Oklahoma statutes provide, ‘Equipment purchase - Bonds. Any school district may become indebted for the purpose of purchasing equipment and may issue its bonds, as provided for by law, in any amount not exceeding, with existing indebtedness, ten percent (10%) of the valuation of the taxable property within the school district, as shown by the last incurring of indebtedness. The bonds shall be made to mature within a period not to exceed five (5) years from their date. It is hereby declared that the use of the word "equipment" in Section 26, Article X of the Oklahoma Constitution was

intended to include: library books, textbooks, school-owned uniforms, computer software, electronic media content, perpetual or continuous district software license agreements and web-based software subscriptions with a term of more than one (1) year but not more than five (5) years, the acquisition of telecommunications devices and components to be used to enhance classroom instruction and maintenance/service contracts which are included as a part of the equipment purchase price and any associated hardware and software necessary for implementation and training and any maintenance agreements.” (O.S. §70-15-106.1). The Oklahoma State Legislature added the language defining equipment that may be purchased with bond funds in 1995 and amended the language again in 2004 and 2010, providing flexibility for school districts by expanding the use of bond funds beyond capital improvement and land acquisition.

Clearly, there is a possibility that the existence of these crossover funding sources may affect the equity of current operation support in Oklahoma. Districts with greater ability to take advantage of crossover funds (based at least partly on the ability to raise capital revenue) may be at a funding advantage. The primary purpose of this study is to assess this inequity.

Research Design

The primary purpose of this study was to determine if the lack of equalization of capital improvement revenue in Oklahoma impacts funding available for the day to day operations of school districts, thereby nullifying to some extent equalization funding. Secondly, the study sought to determine the current relative equity of current and capital funding in Oklahoma. This quantitative ex post facto study examined the expenses Oklahoma may legally meet with their General, Building, and Bond Funds and what expenses can be paid with more than one fund. In the current study, those current expenditures that may originate from the building fund or bond

funds are entitled “crossover funds.” The study therefore assessed possible inequities created when school districts with higher levels of local property wealth are able to use their revenue earmarked for capital improvement as crossover funds for current educational expenses more fully than less wealthy districts. The study focused on district level revenue data rather than student level or school site level data, given the fact that Oklahoma’s education funding system is allocated per district. The components of district level revenue and student count data analyzed were:

- Current educational revenue from the school districts general fund. This data were collected from districts reporting Oklahoma Cost Accounting System (OCAS) fund 11.
- Building fund revenue generated by the 5-mill ad valorem assessment. These data were collected from districts reporting Oklahoma Cost Accounting System (OCAS) fund 21.A
- Total Bond fund expenditures. These data were collected from districts reporting Oklahoma Cost Accounting System (OCAS) fund 31-39 object total.
- Bond fund expenditures for instructional materials. These data were collected from districts reporting Oklahoma Cost Accounting System (OCAS) fund 31-39 instruction.
- Total district ad valoral valuation
- Full year district weighted average daily membership (WADM)
- Median District Salary

Data Collection

Data for this study were obtained from the Oklahoma State Department of Education Financial Services Division, and included all 516 Oklahoma school districts in Oklahoma for fiscal years 2012 through 2016. These data used included each district's weighted average daily membership used in the annual final allocation for the state aid formula (form B17004WX), total district property valuation, building fund (OCAS fund 21) revenue, General Fund expenditures (Fund 11) total bond fund expenditures (Fund 31-39) and bond fund expenditures for instructional materials (Fund 31-39 instruction). For the purposes of this study we assumed the Oklahoma Cost Accounting System (OCAS) revenue and expenditure reports are statistically accurate, and that all student and financial data are self-reported by Oklahoma school districts to the department of education via the states online reporting system.

Data Analysis

The equity measures used to address the secondary purpose of the study included standard resource accessibility and wealth neutrality statistics. Resource accessibility is a horizontal equity construct that addresses the extent to which funding is uniform across organizational units, such as school districts (Berne and Steifel, 1984; Maiden and Stearns, 2007). Resource accessibility assessments include dispersionary measures such as the distributional variance/standard deviation, coefficient of variation, range, and federal range ratio. The coefficient of variation is a standardized statistic calculated by dividing the standard deviation by the mean. The coefficient of variation is scaled in such a way that zero indicates perfect resource accessibility, and as the number increases equity decreases. The federal range

ratio includes the distributional data point at the 95th percentile minus the data point at the 5th percentile divided by this latter number.

A variance statistic, standard deviation, coefficient of variation, range, and federal range ratio were calculated for each fiscal year 2012-2016, for each of the following distributions:

- Current expenditures per pupil;
- Capital expenditures per pupil; and,
- Crossover expenditures per pupil.

Wealth neutrality refers to the degree to which funding outcomes for students is not related to the local wealth of an organizational unit, such as a school district. Wealth neutrality is achieved when a school district with lower per student wealth is able to provide it with the same level of fiscal support for education that a high local wealth district. Wealth neutrality is often assessed using the coefficient of determination, Gini Coefficient and McLoone Index. The coefficient of determination (regression R^2) includes an estimate the amount of variance in pupil support explained by district fiscal ability (often assessed value per pupil in a district).

The Gini coefficient is a measure of the equity of a given revenue distribution. When it applies to fiscal equity in education, the Gini Coefficient measures how close the distribution is to providing like groups of students with equal proportions of revenue. The Gini Coefficient is standardized with a range from zero to one. Lower Gini Coefficients are associated with increased fiscal equity in a distribution. The formula to calculate the Gini coefficient is

$$G = \frac{\sum_i \sum_j P_i P_j (X_i - X_j)^2}{2(\sum_i P_i)^2 X_p}$$

where \sum is the sum for all students in districts i and j, P_i was the number of pupils in district i, P_j is the number of pupils in district j, X_i is the expenditure per-pupil in district i, X_j is the expenditure per-pupil in district j, and X_p is the mean expenditure per-pupil for all districts.

The McLoone index measures equity for a given revenue distribution below the median, and is mathematically expressed as a ratio of the actual revenue in the bottom half of the distribution relative to the total revenue that would be received if the group studied were at the median revenue the entire group being studied. The McLoone index ranges from 0 to 1, with an increased McLoone Index is associated with a higher level of equity below the distribution median. The formula to calculate the McLoone Index is

$$\frac{\sum(i..j) P_i X_i}{M_p \sum(i . . . j) P_i}$$

where \sum is the sum of pupils in all districts i to j, P_i is the number of pupils in district i, X_i is the expenditure per-pupil in district i and M_p is the median per pupil revenue or expenditure for all districts.

A Coefficient of Determination, Gini Coefficient and McLoone Index were calculated for each fiscal year 2012 through 2016, for each of these variables:

- Current expenditures per pupil;
- Capital expenditures per pupil; and,
- Crossover expenditures per pupil.

The primary purpose of this study was to ascertain the extent to which inequities in capital outlay funding in Oklahoma influences the equity of current expenditure funding. A linear regression was used to measure the relationship between the ability of districts to raise capital outlay

revenue and several funding outcomes. The independent variable in the analysis was per pupil capital revenues per district during the most recent fiscal year (2016). Several dependent variables were used in the analysis:

- Current expenditures per pupil
- Median district teacher salaries

A regression analysis using crossover expenditures was also contemplated, but was not possible for statistical reasons (see results section for a discussion of the exclusion of this variable). The purpose of these regression analyses was to ascertain relationships between capital funding and current and crossover funding and median teacher salaries, to better ascertain if inequities in capital funding was related to other areas of fiscal support outside of capital outlays.

Results

The secondary purpose of the study, to assess the equity of current and capital education funding in Oklahoma over the past five years, is addressed first to establish a baseline for the primary purpose of the study. The results of the resource accessibility analyses for fiscal years 2012 to 2016 follows.

Resource Accessibility

The mean, variance, standard deviation, coefficient of variance, and federal range ratio were utilized to assess the horizontal equity of the distributions for the five year period between 2012 and 2016. Table 2 includes the resource accessibility statistics for per pupil current education expenditures.

Table 2: Resource Accessibility Current Expenditures per pupil

<u>Year</u>	<u>Mean</u>	<u>Variance</u>	<u>Standard Deviation</u>	<u>Coefficient of Variation</u>	<u>Federal Range Ratio</u>
2012	\$4,615.60	1,185,961.25	\$1089.02	0.24	0.60
2013	\$4,719.76	980,290.04	\$990.10	0.21	0.56
2014	\$4,724.34	3,240,464.04	\$1,802.90	0.38	0.59
2015	\$4,603.72	761,556.02	\$872.67	0.19	0.60
2016	\$4,613.31	929,297.96	\$964.00	0.21	0.69
average	\$4,655.35	1,419,513.86	\$1,143.74	0.25	0.61

The mean current educational expenditures across Oklahoma’s school districts was \$4,615.60 per pupil for fiscal year 2012, and increased to \$4,719.76 per pupil in 2013. The mean per pupil current educational expenditures increased again in 2014 to \$4,724.34, then decreased by \$120.62 to \$4,603.72 in 2015. The 2016 mean current expenditure per pupil was \$4,613.31 (close to the mean for fiscal year 2013).

Variance and standard deviation statistics are instructive in examining multiyear data. There were substantial shifts in per pupil current education expenditure variance over the 5-year period between 2012 and 2016. The 2012 variance for per pupil current expenditures was 1,185,961.25, and then dropped to 980,290.04 in fiscal year 2013. Variance then dramatically increased by 2,260,174 to 3,240,464.04 in 2014, then decreased to 761,556.02 in 2015. The

variance for current education expenditures was 929,297.96 for fiscal year 2016. Of course the standard deviation, a derivative of variance, followed a similar pattern (\$1089.02, \$990.10, \$1,802.90, \$872.67, \$964.00, and \$1,143.74, respectively).

Unlike the variance and standard deviation, the coefficient of variation provides a standardized statistic irrespective of unit of analysis (the coefficient of variation is expressed as a percentage). The coefficient of variation measures variability (in this case, current expenditure per pupil) of the distribution around the observed mean. As the coefficient of variation decreases, equity increases (with 0 indicating perfect equity).

The coefficient of variation for per pupil current education expenditures in 2012 was 0.24, dropping to 0.21 in 2013. The coefficient then increased to 0.38 per pupil in 2014 before dropping to 0.19 in 2015. The 2016 coefficient of variation for current education expenses per pupil was 0.21.

The federal range ratio is the difference between the per pupil revenue of the range between the 95th percentile and the 5th percentile divided by the value at the 5th percentile. Like the coefficient of variation, the ratio may be expressed as a percentage. As the federal range ratio decreases, equity increases (0 is perfect equity). The federal range ratio for Oklahoma public school current expenditures per pupil was between 0.59 and 0.69 during the five year period between 2012 and 2016.

The federal range ratio for per pupil current education expenditures for the 516 public schools in Oklahoma was 0.60 during fiscal year 2012, decreasing slightly to 0.56 in 2013. The ratio then increased to 0.59 in 2014 before increasing slightly to 0.60 in 2015. The ratio then grew rather substantially to 0.69 in 2016.

The resource accessibility statistics for capital expenditures per pupil are shown in Table 3. Capital expenditures used are limited to revenue derived from building fund and bond fund yields.

Table 3: Resource Accessibility Capital Expenditures per pupil

<u>Year</u>	<u>Mean</u>	<u>Variance</u>	<u>Standard Deviation</u>	<u>Coefficient of Variation</u>	<u>Federal Range Ratio</u>
2012	\$395.14	251,397.10	\$501.40	1.27	28.96
2013	\$396.81	214,652.25	\$463.31	1.17	29.10
2014	\$443.29	219,849.03	\$468.88	1.06	28.42
2015	\$538.18	462,935.05	\$680.39	1.26	36.27
2016	\$556.47	405,097.92	\$636.47	1.14	34.88
average	\$465.98	310,786.27	\$550.09	1.18	31.53

The average capital expenditures per pupil increased for each year between 2012 and 2016. The mean capital expenditure per pupil among Oklahoma’s 516 public school districts was \$395.14 in 2012, increasing to \$396.81 in 2013. The mean increased again to \$443.29 in 2014, and again to \$538.18 in 2015. The mean expenditure was \$556.47, the largest among the five years.

As with current expenditures per pupil, the variance and standard deviation statistics fluctuated during the five years of the study. During fiscal year 2012 the variance for per pupil capital expenditures was 251,397.10, and by 2013 that had dropped to 214,652.25. The variance statistic increased slightly to 219,849.03 in 2014 and then substantially to 462,935.05 in 2015.

The variance for capital expenditures was 405,097.92 in fiscal year 2016. The standard deviation demonstrated the same fluctuation during those five years.

The coefficient of variation for per pupil capital expenditures in 2012 was 1.27, dropping to in 2013. The coefficient decreased again to 1.06 in 2014 before increasing to 1.26 in 2015. The 2016 coefficient of variation for capital expenditures per pupil was 1.14.

The federal range ratio for per pupil capital expenditures for Oklahoma's 516 public schools was 28.96 in 2012, increasing slightly to 29.10 in 2013. The ratio decreased to 28.42 in 2014 then increased more dramatically to 36.27 in 2015. The 2016 federal range ratio for capital expenditures per pupil was 34.88.

The resource accessibility statistics for crossover expenditures per pupil are included in Table 4. The fiscal year 2012 crossover expenditures mean for the 516 public schools in Oklahoma was \$1.67 per pupil. The 2013 mean crossover expenditures increased to \$5.58 per pupil. The mean per pupil crossover expenditures increased again in 2014 to \$7.57. Oklahoma's average crossover expenditures per pupil in 2015 was \$12.41. The 2016 mean crossover expenditures per pupil decreased by \$4.26 to \$8.15 per pupil.

The variance and standard deviation demonstrated volatility during the five year period. The smallest variance of the period was 96.97 in fiscal year 2012, increasing to 448.27 in 2013. In 2014 the variance soared to 1028.47 and then even more to 8,478.34 in 2015. The variance for crossover expenditures per pupil was 750.93 in fiscal year 2016. The standard deviations reflected this pattern, calculated at \$9.85, \$21.17, \$32.07, \$92.08 and \$27.40, respectively.

Table 4: Resource Accessibility Crossover Expenditures per pupil

<u>Year</u>	<u>Mean</u>	<u>Variance</u>	<u>Standard Deviation</u>	<u>Coefficient of Variation</u>	<u>Federal Range Ratio</u>
2012	\$1.67	96.97	\$9.85	5.89	None
2013	\$5.58	448.27	\$21.17	3.79	None
2014	\$7.57	1,028.47	\$32.07	4.24	None
2015	\$12.41	8478.34	\$92.08	7.42	None
2016	\$8.15	750.93	\$27.40	3.36	None
average	\$7.08	2,160.60	\$36.51	4.94	None

The coefficient of variation for per pupil crossover expenditures was 5.89 in 2012, dropping to 3.79 in 2013. The coefficient of variation increased to 4.24 in 2014 and to .7.42 in 2015. The 2016 coefficient of variation for crossover expenditures per pupil was 3.36. The federal range ration for crossover expenditures was none for all five years due to the crossover expenditures per student being \$0.00 for the school at the 5th percentile for each year.

The five-year average for the resource accessibility statistics of current expenditures, capital expenditures, and crossover expenditures independently are shown in Table 5. The five year mean current per pupil expenditures for the 516 public schools in Oklahoma was \$4,655.35 per pupil. The five-year average for per pupil capital expenditures was \$465.98. Oklahoma’s mean crossover expenditures from 2012 to 2016 was \$7.08 per pupil. The 2016 mean crossover expenditures per pupil decreased by \$4.26

to \$8.15 per pupil. The average current per pupil for Oklahoma schools was almost ten times the amount spent per pupil for capital outlay.

The coefficient of variation measures variability in expenditure distribution around the observed mean. As the coefficient of variation approaches zero, equity increases. The coefficient of variation for current education expenditures per pupil was 0.25 or 25%. The average capital outlay coefficient of variation was 97% higher than the coefficient of variation for current education expenses at 1.18. The large degree of inequity for Oklahoma public school capital revenue is attributable to the significant differences in local wealth. Crossover expenditures had a coefficient of variation of 4.94.

The federal range ratio for Oklahoma public school current education expenditures per pupil between 2012 and 2016 was 0.61. The federal range ratio also indicated that current education expenditures had a far greater degree of equity than capital outlay expenditures. The five-year average federal range ratio for per pupil capital outlay expenditures was 31.53. The federal range ratio for crossover expenditures was none for all five years due to the crossover expenditures per pupil being \$0.00 for the school at the 5th percentile for each year.

Table 5: Resource Accessibility Averages

<u>Year</u>	<u>Mean</u>	<u>Variance</u>	<u>Standard Deviation</u>	<u>Coefficient of Variation</u>	<u>Federal Range Ratio</u>
Current	\$4,655.35	1,419,513.86	\$1,143.74	0.25	0.61
Capital	\$465.98	310,786.27	\$550.09	1.18	31.53
Crossover	\$7.08	2,160.60	\$36.51	4.94	None

Wealth Neutrality

Wealth Neutrality basically refers to the extent to which student’s educational opportunity (as indicated by fiscal support for education) is a function of local wealth (Berne and Steifel, 1984; Maiden, 1998; Maiden and Stearns 2007). This study examined the extent to which crossover expenditures, capital funding, and current education funding are related to local wealth, representing a school districts ability to provide financial resources to educate their students. The Gini Coefficient, McLoone Index, and Coefficient of Determination were used to ascertain the level of wealth neutrality in Oklahoma from 2012 to 2016. Wealth neutrality statistics for current expenditures are included in Table 6.

The Gini coefficient is a measure of the equity of revenue distribution, estimating how close the distribution is to providing like groups of students with equal proportions of revenue. The index measures the ratio with range from zero to one, with zero indicating perfect equity and with equity decreasing as the coefficient increases. The Gini coefficient for Oklahoma district

average current expenditures per pupil indicated a high level of equity for all five years studied. Between fiscal year 2012 and fiscal year 2016 the Gini coefficient only varied by 0.0139. The Gini coefficient for current expenditures per pupil in 2012 was 0.0833, and was nearly identical at 0.0831 in 2013. In 2014, the Gini coefficient reached the high for the five-year period at 0.0967 and decreased again to 0.0828 in 2015. The Gini coefficient for current per pupil expenditures was .0905 in fiscal year 2016.

The McLoone index measures equity for the revenue distribution below the median, and is expressed as a ratio of the actual revenue in the bottom half of the distribution relative to the total revenue that would be received if the group studied were at the median revenue the entire group being studied. The McLoone index ranges from from zero to one, and as the index approaches one, equity for the lower half of the distribution increases.

The McLoone index for Oklahoma's public schools' current expenditures per pupil indicated a high level of equity for schools below the median for per pupil current expenditures all five years studied. Between fiscal year 2012 and fiscal year 2016 the McLoone index was at least 0.9361 and only varied by 0.0063. The McLoone index reached the high for the five-year period at 0.96424 (2014) and a low of .9361 (2013).

Table 6: Wealth Neutrality Current Expenditures per pupil

<u>Year</u>	<u>Gini Coefficient</u>	<u>McLoone Index</u>	<u>Coefficient of Determination</u>
2012	0.0833	0.9392	0.038
2013	0.0831	0.9361	0.122
2014	0.0967	0.9424	0.065
2015	0.0828	0.9416	0.373
2016	0.0905	0.9414	0.351

The coefficient of determination (regression R^2), estimates the amount of variance in pupil support explained by district fiscal ability. The coefficient of determination ranges between zero and one, with zero indicating no relationship between wealth and outcomes (signifying perfect horizontal equity).

The coefficient of determination for current expenditures per pupil for the five-year period between fiscal year 2012 and fiscal year 2016 fluctuated between 0.038 and 0.373. The relationship was lowest in 2012 ($R^2 = .038$) and highest in 2014 ($R^2 = .373$).

Wealth neutrality statistics for capital expenditures per pupil are presented in Table 7. The Gini coefficient for Oklahoma public school capital expenditures per pupil indicated a consistent lack of equity for all five years studied. Between fiscal year 2012 and fiscal year 2016 the Gini coefficient only varied by 0.0244. The Gini coefficient over the five-year period studied indicated that capital expenditures per pupil were significantly less equitable than current education expenditures. The Gini coefficient for capital expenditures per pupil was 0.5252 in

2012, increasing to 0.5496 in 2013. The Gini coefficient decreased slightly to 0.5274 in 2014, then and increased slightly to 0.5437 in 2015. The Gini coefficient for capital per pupil expenditures was .5349 in fiscal year 2016.

Table 7: Wealth Neutrality Capital Expenditures per pupil

<u>Year</u>	<u>Gini Coefficient</u>	<u>McLoone Index</u>	<u>Coefficient of Determination</u>
2012	0.5252	0.4626	0.877
2013	0.5496	0.4766	0.165
2014	0.5274	0.4575	0.198
2015	0.5437	0.4129	0.230
2016	0.5349	0.4010	0.211

Likewise, the McLoone index for Oklahoma’s public school capital expenditures per pupil indicated a low level of equity for the schools below the median for all five years studied. Between fiscal year 2012 and fiscal year 2016 the McLoone index was never higher than 0.4766 and only varied by 0.0756. The McLoone indices were 0.462, 0.4766, 0.4575, 0.4129, and 0.4010, respectively

The relationship between local wealth and capital education expenses per pupil as measured by the coefficient of determination was relatively high at 0.877 in 2012. The coefficient plummeted to 0.165 in 2013 then increased to 0.198 in 2014. The 2015 R-squared value was 0.230, then decreased slightly to 0.211 in 2016.

The Gini coefficient for Oklahoma public school crossover expenditures per pupil indicated a low level of equity for all five years studied. Between fiscal year 2012 and fiscal year 2016 the Gini coefficient only varied by 0.0692 (refer to Table 8). The Gini coefficient over the five-year period studied indicated that crossover expenditures per pupil were significantly less equitable than current education expenditures. The calculated Gini Coefficients were 0.9708, 0.9372, 0.9895, 0.9374, and 0.9203, respectively. The McLoone index for Oklahoma's public school crossover expenditures per pupil was in calculable for all five years between 2012 and 2015, the result of more than half of the schools in Oklahoma having \$0.00 in crossover expenditures for the fiscal years used in the analysis.

For fiscal years 2012 and 2013, the relationship between local wealth and crossover expenditures per pupil as measured by the coefficient of determination was 0.00. In 2014, the coefficient was 0.008, decreasing to 0.001 in 2015. In 2016, the relationship between local wealth and capital expenditures per pupil as measured by the coefficient of determination remained low at 0.003. These low levels are likely explained in part by the relatively small amounts of crossover funding.

Table 8: Wealth Neutrality Crossover Expenditures per pupil

<u>Year</u>	<u>Gini Coefficient</u>	<u>McLoone Index</u>	<u>Coefficient of Determination</u>
2012	0.9708	None	0.000
2013	0.9372	None	0.000
2014	0.9895	None	0.008
2015	0.9374	None	0.001
2016	0.9203	None	0.003

Primary Analysis

We were primarily interested in the effects of crossover funding on the equity of current funding among Oklahoma School Districts. A series of regression analyses were contemplated to determine the effects of inequitable capital funding on current operations of Oklahoma school districts. Robustness checks of the regression assumptions indicated violations of normality for all dependent variables (current + crossover expenditures per pupil, crossover expenditures per pupil, and teacher salaries). As indicated in Table 9, the skew was significant for all three variables, using both the Kolmogorov-Smirnov test and the Shapiro-Wilk test. Accordingly, we decided to use logarithmic transformations of the data to reduce potential for bias. Because of the number of crossover per pupil amounts being zero, the logarithms were not calculable, and the regression analysis was therefore used only on two dependent variables.

Table 9: Normality Test Results

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Curr+Cross/pup	.207	516	.000	.677	516	.000
Crossover/pup	.443	516	.000	.339	516	.000
Teacher Salary	.374	516	.000	.583	516	.000

a. Lilliefors Significance Correction

The first regression analysis examined the extent to which current expenditures plus crossover funding was predicted by ability to raise capital funding, to ascertain the effects of local capital outlay capacity on current expenditures. The result of the analysis is included in Table 10.

A small but statistically significant percent of the variance in current plus crossover expenditures was explained by district ability to raise capital revenues ($F=5.021$, $\text{Sig.} = .025$). The result of the regression analysis indicates that the existence of crossover funding affects the overall equity of the system. Specifically, Oklahoma districts with higher levels of access to capital revenues per pupil have a resource advantage in the area of funding current operations if crossover expenditures (those that are derived from capital revenue sources) are included.

Table 10: Regression Analysis Current Expenditures

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.098 ^a	.010	.008	.07257

a. Predictors: (Constant), Cap/pup

b. Dependent Variable: Log CurrCross/pup

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.026	1	.026	5.021	.025 ^b
	Residual	2.707	514	.005		
	Total	2.734	515			

a. Dependent Variable: Log CurrCross/pup

b. Predictors: (Constant), Cap/pup

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.652	.004		860.110	.000
	Cap/pup	1.126E-005	.000	.098	2.241	.025

a. Dependent Variable: Log CurrCross/pup

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.6517	3.6999	3.6578	.00717	516
Residual	-.11258	.49965	.00000	.07250	516
Std. Predicted Value	-.860	5.869	.000	1.000	516
Std. Residual	-1.551	6.885	.000	.999	516

a. Dependent Variable: Log CurrCross/pup

Table 11: Regression Analysis Teacher Salaries

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.156 ^a	.024	.022	.01557

a. Predictors: (Constant), Cap/pup

b. Dependent Variable: Log Teacher Salaries

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.003	1	.003	12.835	.000 ^b
	Residual	.125	514	.000		
	Total	.128	515			

a. Dependent Variable: Log Teacher Salaries

b. Predictors: (Constant), Cap/pup

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.577	.001		5024.666	.000
	Cap/pup	3.862E-006	.000	.156	3.583	.000

a. Dependent Variable: Log Teacher Salaries

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.5765	4.5931	4.5787	.00246	516
Residual	-.03167	.07091	.00000	.01555	516
Std. Predicted Value	-.860	5.869	.000	1.000	516
Std. Residual	-2.034	4.554	.000	.999	516

a. Dependent Variable: Log Teacher Salaries

Teacher salaries are an important component of current operations, given about half the average district current expenditures are used to compensate teachers (cite), and given the critical importance of teachers as part of the learning organization (Maiden and Evans, 2009). A third regression analysis examined the relationship between per pupil capital outlay support and median district teacher salaries. The results of this analysis are included in Table 11. These results indicate that districts with higher abilities to raise revenues for capital support were, on average, able to pay higher teacher salaries ($F=12.835$, Sig. = .000). Again, this provides evidence that these crossover funds are providing relatively wealthier districts the ability to more fully support current operations, specifically teacher compensation.

The results of the teacher salary analysis was particularly intriguing, and we were interested in determining the extent to which these differences were meaningful across the entire distribution of school districts. An Analysis of Variance (ANOVA) was used to test for statistically significant differences in median teacher salaries among Oklahoma districts with high, moderate, and low levels of capital support. Robustness checks were used to determine model appropriateness, and we found a significant level of heteroscedasticity across the three groups (Table 12). The variance of the group with the highest level of capital support is more variant than the other two groups, as confirmed by the significant Levene Statistic. We subsequently used both the Welch and the Brown-Forsyth corrections to account for the intergroup differences in variance. The results of the ANOVA with corrections are included in Table 13.

Table 12: Tests of Homogeneity among High, Moderate, and Low Capital Groups

Descriptives

Teacher Salary

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Low	173	37583.40	1010.891	76.857	37431.70	37735.11	35100	43350
Moderate	172	37783.62	1111.083	84.719	37616.39	37950.85	37225	42527
High	171	38417.55	1886.648	144.276	38132.75	38702.35	37225	44700
Total	516	37926.57	1432.685	63.070	37802.67	38050.48	35100	44700

Test of Homogeneity of Variances

Teacher Salary

Levene Statistic	df1	df2	Sig.
46.791	2	513	.000

Both the Brown-Forsyth and the Welch corrections rendered a finding of statistically significant differences among the three groups in teacher salary. A Games-Howell post hoc analysis was used (given the heteroscedascity problem) to determine the nature of the differences. The results of the post-hoc analysis are included in Table 14.

Table 13: Analysis of Variance High, Moderate, and Low Capital Groups

ANOVA

Teacher Salary

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	65109303.523	2	32554651.762	16.836	.000
Within Groups	991972274.678	513	1933669.151		
Total	1057081578.20	515			
	2				

Robust Tests of Equality of Means

Teacher Salary

	Statistic ^a	df1	df2	Sig.
Welch	13.003	2	325.983	.000
Brown-Forsythe	16.771	2	377.156	.000

a. Asymptotically F distributed.

Table 14: Games-Howel Post-Hoc Analysis

Multiple Comparisons

Dependent Variable: Teacher Salary

Games-Howell

(I) Capital Group	(J) Capital Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low	Moderate	-200.212	114.387	.188	-469.48	69.06
	High	-834.145*	163.470	.000	-1219.48	-448.81
Moderate	Low	200.212	114.387	.188	-69.06	469.48
	High	-633.933*	167.310	.001	-1028.20	-239.67
High	Low	834.145*	163.470	.000	448.81	1219.48
	Moderate	633.933*	167.310	.001	239.67	1028.20

*. The mean difference is significant at the 0.05 level.

Clearly, the districts with the highest levels of capital funding were paying relatively higher levels of teacher salary. A modest but significant effect size of just over 6% was calculated ($\eta^2 = .062$), indicating that roughly 6 percent of the variance in median district teacher salaries was attributed to high, moderate, or low levels of capital funding per pupil, and that this difference was attributable to the group at the highest level.

Discussion

The objective of this study was to determine if having deficiencies in capital outlay revenue had an impact on the revenue available for the current operations of Oklahoma’s school districts. The extent to which such impact is substantial than the overall equity of the state

distribution system may be called into question. The study examined the possible inequity created when schools with higher local property wealth can use their revenue earmarked for capital improvement as crossover funds for current educational expenses. Schools with less local wealth must use revenue from the state aid equity formula for similar expenditures. The study focused on district level revenue data rather than student level or school site level data, given the fact that Oklahoma's education funding system is solely based on district-wide data and allocated on a district basis.

The study found statistically significant relationship exist between local ability to raise capital revenue and elements of current operations. Coupled with the relatively high level of equity in the distribution of standalone current expenditures across the state that was determined as part of this and previous studies, we conclude that the existence of crossover funding does indeed impact current operations in terms of reduced fiscal equity.

The second part of the study, which provided an equity baseline, confirms research from the past two decades that Oklahoma's current operations are reasonably equitable (Maiden, 1998; Deering and Maiden, 1999; Maiden and Stearns, 2007). In other words, the state aid formula which is designed in part to equalize funding is performing reasonably well, though there were some decreases in fiscal equity since the Maiden and Stearns study of 2007 (perhaps partially attributable to a greater number of districts being off formula currently). The second part of the study also confirmed research from a decade ago that capital funding is not equitably distributed among Oklahoma school districts, and in fact these inequities have increased over the past decade (Maiden and Stearns, 2007).

To further exemplify these findings, Table 15 includes relevant data from the Edmond and Moore districts to demonstrate the revenue disparity between very similar Oklahoma school districts. The weighted average daily membership (WADM) of Moore Public Schools was 35,704.95, while the total assessed valuation in the district was \$1,027,450,081. Edmond Public Schools had a similar ADM of 34,381.94, yet assessed valuation in the district was over 70% higher at \$1,749,242,280. The building fund revenue difference was \$3,608,961. In 2016, The property value difference results in Edmond Public Schools having an advantage of \$31,514,688 annually in building fund and bond fund revenue resulting in \$930.41 more per pupil. This revenue can be used for traditional capital outlay projects or crossover expenditures which could potentially free building and bond fund revenue to meet current expenditures.

Table 15: Capital Revenue: Inequity Example

District	Valuation	Building Fund (5 mills)	Bond Fund (30 mills)	Instructional Bond Funds	Total Ad Valorem Revenue
Edmond	\$1,749,242,280	\$8,746,211	\$44,154,041	\$3,630,830	\$56,531,082
Moore	\$1,027,450,081	\$5,137,250	\$16,578,525	\$3,300,619	\$25,016,394
Annual Difference		\$3,608,961	\$27,575,516	\$330,211	\$31,514,688

The study confirms Maiden and Stearns (2007), providing further evidence that state capital funding assistance to local school districts is desperately needed. Clearly, the absence of state funding supporting capital outlay creates inequities in capital expenditure support among school districts. This lack of state assistance appears to be causing equity issues beyond capital support, including the equity current operations including the critical area of teacher salaries. Although adequacy was not included in this study, one of the authors interacts regularly with school and school district leaders indicating a great need for additional capital funding support to meet educational infrastructure needs. The Oklahoma Constitution includes a provision for the State Public Common School Building Equalization Fund (OK Const. art X sec 32), which includes language about support through legislative appropriation. Unfortunately, the Legislature historically has not appropriated money to support the fund. The results of this study support the need for such support from the state to assist local school districts with capital needs. Such support could subsequently eliminate the need for crossover funding, thereby increasing fiscal equity in the overall funding system (both capital and current operations).

Further research is needed to address this and concomitant policy issues in Oklahoma. The current study examined the degree of equity in the distribution of resources. Fiscal adequacy is often coupled with equity (particularly vertical equity), and a thorough study of the fiscal adequacy of Oklahoma public education is long overdue. Certainly, the adequacy of capital funding warrants further investigation. A number of Oklahoma districts are struggling to raise money to support capital outlays. Oklahoma is one of only small number of states that does not include state aid to districts to meet capital needs, and most certainly the lack of funding results in infrastructure inadequacies for many school districts. A future study might also examine in

more depth other influential effects of inequities of capital funding, such as school district size and the impact of municipal tax revenue on fiscal equity.

Recommendations for Oklahoma Policy Makers

We conclude the report by offering three primary recommendations based on the results of this study:

- 1) We urge the Oklahoma Legislature to appropriate money to support the State Public Common School Building Equalization Fund (OK Const. art X sec 32). Capital outlay funding in the absence of stated aid had been demonstrated to be inequitable, and these inequities affect current operations due to the use of crossover funding. State funding is necessary to reduce these interdistrict imbalances. We realize that the state has faced consecutive years of declining revenues to support education and other critical state services, and that finding funds to appropriate to the Capital Fund may be a daunting task given current economic conditions. However, the Equalization Fund has historically not been supported irrespective of the state of the economy. Funding it is long overdue.
- 2) We recommend the development of a capital outlay funding formula to disperse the funding generated through the State Public Common School Building Equalization Fund. Clearly, the results of this study coupled with Maiden and Stearns (2007) indicate that capital funding is inequitable. A funding formula that recognizes naturally occurring fiscal abilities among local districts is warranted in order to help ensure Oklahoma school children are treated fairly.

- 3) Policy makers should commission a study dealing the fiscal *adequacy* of Oklahoma capital funding in education. Though we believe the current study is sufficient evidence to support the previous two recommendations, we believe a richer understanding of the fiscal needs of school districts would help guide the development of a capital outlay funding formula in the short term, and would guide the Legislature in appropriating funds to provide sustainable support the State Public Common School Building Equalization Fund. The nearly 700,000 children served in Oklahoma's schools deserve no less.

References

- Addonizio, Michael. (2003). From Fiscal Equity Educational Adequacy Lessons from Michigan. *Journal of Education Finance* 28:457-484.
- Alexander, Nicole. (2004). Exploring the Changing Face of Adequacy. *Peabody Journal of Education* 79: 81-103.
- Augenblick, John and Palaich, Robert. (2005). Calculating the Cost of an Adequate Education in Oklahoma. *The Legislative Service Bureau of the Oklahoma State Legislature*.
- Ballard, Stephen. (2016). *An Examination of Oklahoma Education Funding Adequacy and District Spending Efficiency*. Ph.D., University of Oklahoma, Norman, Oklahoma
- Berne, R., and L. Stiefel. (1984). *The Measurement of Equity in School Finance: Conceptual, Methodological, and Empirical Dimensions*. Baltimore: Johns Hopkins University Press.
- Bullock, Calvin C. (2007) *The Relationship between School Building Conditions and Student Achievement at the Middle School Level in the Commonwealth of Virginia*. Dissertation. Virginia Polytechnic Institute, Blacksburg, VA
- Burke, Sarah, (1999). An Analysis of Resources Inequality at the State, District, and School Levels. *Journal of Education Finance* 24:435-458.
- Carpenter, Tim. (2005, July 6). Back to try again. *The Topeka Capital Journal*.
- Cash, Carol (1993) *A Study of the Relationship between School Building Condition and Student Achievement and Behavior*. Dissertation. Virginia Polytechnic Institute, Blacksburg, VA
- Crampton, Faith E. (2004). *The Forgotten Side of School Finance: The Role of Infrastructure Funding in Student Success*. NASSP Bulletin 88; 49
- Dayton, John. (1995) When All Else Has Failed: Resolving the School Funding Problem, \ BYU Educ. & L.J. 1 (1995) Available at: <http://digitalcommons.law.byu.edu/elj/vol1995/iss1/2>
- Deering, Pam. (1997) *An Examination of the Fiscal Adequacy and Equity Effects of Class Size Mandates Embedded in Extensive Statewide Education Reform*. Ph.D., University of Oklahoma, Norman, Oklahoma
- Deering, Pamela Dale and Jeffrey Maiden. (1999) “The Fiscal Effects of State Mandated Class Size Requirements in Oklahoma.” *Journal of Education Finance*, 25, no. 2 (Fall 1999), 195-210.
- Donnell-Kay Foundation. (2007). *How Colorado Funds K-12 Capital Construction* [Electronic Version] <http://www.dkfoundation.org/PDF/K-12%20Capital%20Construction.pdf>
- Fahy, Colleen A. (2011) Education Funding in Massachusetts: The Effects of Aid Modifications on Vertical and Horizontal Equity Vol. 36, No. 3 (Winter 2011), pp. 217-243
- Fahy, Colleen A. (2012) Fiscal Capacity Measurement and Equity in Local Contributions to Schools: The Effects of Education Finance Reform in Massachusetts Vol. 37, No. 4 (Spring 2012), pp. 317-346
- Funk, Josh. (2005, July 4). Answers to school funding questions. *The Wichita Eagle*.
- Gehring, John, (2003). Court Orders New York Funding Shift. *Education Week*, 22:1-14
- Grubb, Norton, (2008). Multiple Resources, Multiple Outcomes: Testing the “Improved” School Finance with NELS88. *American Educational Research Journal* 45; 104.
- Gurley, R, (2002). School Capital Funding: Tennessee in a National Context.
- Hoppe, Christy & Garrett, Garrett. (2005, June 18). Perry calls veto bold step. *The Dallas Morning News*.

- Hughes, Mary F. (2000) Financing in Rural School Districts: Variations among the States and the Case of Arkansas. In *Improving Rural School Facilities: Design, Construction, Finance, and Public Support* (pp. 21-39). (ERIC Document Reproduction Service No. ED 445857).
- Johnson, Carl. (2008): An Examination of Capital Outlay Funding Mechanisms in Oklahoma. Ph.D., University of Oklahoma, Norman, OK.
- Koski and Levin (2000). Twenty-Five Years after *Rodriguez*: What Have We Learned? *Teachers College Record* 102: 480-513.
- Ladd and Fiske (2011). Weighted student funding in the Netherlands: A model for the U.S.? *Policy Analysis and Management* 30(3). 470-498.
- Lackney, Jeffery A. (1997) *The Relationship between Environmental quality of school Facilities and Student Performance. Energy Smart Schools: Opportunities To Save Money, Save Energy and Improve Student Performance*. A Congressional Briefing to the U.S. House of Representatives Committee on Science. [on-line]. Available: <http://www.edi.msstate.edu/performance.html>.
- Lackney, Jeffery A (2000). *Thirty-Three Educational Design Principles for Schools and Community Learning Centers*. Washington, DC: National Clearinghouse for Educational Facilities.
- Lewis, M. (2001). Facility conditions and student test performance in the Milwaukee Public Schools. Scottsdale, AZ: Council of Educational Facility Planners International.
- Lefkowitz, Laura. (2004, March). School Finance: From Equity to Adequacy. *MCREL Policy Brief*.
- Lockridge, Courtney and Maiden, Jeffrey. (2014) The Tangible Impact of School Finance Litigation, *Journal of Education Finance*, vol. 39 no. 4 (Spring), 344-369.
- Maiden, Jeffrey. (1998) An Examination of Fiscal Effects of Statewide Education Reform on Oklahoma School Districts. *The Journal of School Business Management* 10, no. 2 p 17-25.
- Maiden, Jeffrey. (1998) Financing Statewide Education Reform in Oklahoma. *Educational Considerations* XXV, no. 2 (Spring 1998), 57-60.
- Maiden and Stearns (2007) Fiscal Equity Comparisons between Current and Capital Education Expenditures and between Rural and Non-Rural Schools in Oklahoma. *Journal of Education Finance*, 33, no. 2 p 147-169.
- Maiden, J. and Evans, N.O. (2009). "Fiscal Equity of Teacher Salaries and Compensation in Oklahoma." *Journal of Education Finance*, 35, no. 2 (Winter 2009), 231-246.
- Miles, Howley-Ware, and Roza, (2003). Leveling the Playing Field: Creating Funding Equity through Student-Based Budgeting. *Phi Delta Kappan*, v85 n2 p114-119.
- Monk, D. (2006). *An assessment of the quality of educational adequacy of educational facilities and their perceived impact on the learning environment as reported by middle school administrators and teachers in the Humble Independent School District, Humble, Texas*. Dissertation, Department of Education, Texas A&M University, College Station, TX.
- New Mexico Public School Facility Authority (NPSF). (2006). *Public School Facilities Programs State Benchmark Study*.
- OEA v. Oklahoma. Oklahoma County District Court Case No. CV – 2006-2 Oklahoma Department of Education. (2007) *2007 Oklahoma Cost Accounting System report (OCAS)*.
- Oklahoma State Constitution (Article X § 26).
- Oklahoma State Constitution (Article X § 9).
- Oklahoma State Constitution (Article X § 10).

- Oklahoma State Constitution (Article X § 3).
- Oklahoma Statute (70-1-117).
- Oklahoma Statute (70-68-1806).
- Oklahoma Statute (70-15-101).
- Oklahoma Statute (70-1-118).
- Oklahoma Statute (70-10-104).
- Oklahoma Statute (70-18-118).
- Oklahoma Statute (70-18-200.1).
- Oklahoma State Department of Education. (2016). *Oklahoma Technical Assistance Document (OTAD)*. Retrieved from Oklahoma State Department of Education Website: <http://sde.ok.gov/sde/sites/ok.gov.sde/files/documents/files/FY%202016%20TAD.pdf>
- Oklahoma State Department of Education. (2011). *Oklahoma Cost Accounting System (OCAS)*. Retrieved from Oklahoma State Department of Education Website: <http://sde.ok.gov/sde/financial-accounting>
- Oklahoma State Department of Education. (2012). *Oklahoma Cost Accounting System (OCAS)*. Retrieved from Oklahoma State Department of Education Website: <http://sde.ok.gov/sde/financial-accounting>
- Oklahoma State Department of Education. (2013). *Oklahoma Cost Accounting System (OCAS)*. Retrieved from Oklahoma State Department of Education Website: <http://sde.ok.gov/sde/financial-accounting>
- Oklahoma State Department of Education. (2014). *Oklahoma Cost Accounting System (OCAS)*. Retrieved from Oklahoma State Department of Education Website: <http://sde.ok.gov/sde/financial-accounting>
- Oklahoma State Department of Education. (2015). *Oklahoma Cost Accounting System (OCAS)*. Retrieved from Oklahoma State Department of Education Website: <http://sde.ok.gov/sde/financial-accounting>
- Oklahoma State Department of Education. (2016). *Oklahoma Cost Accounting System (OCAS)*. Retrieved from Oklahoma State Department of Education Website: <http://sde.ok.gov/sde/financial-accounting>
- Oklahoma State Department of Education. (2014). *2013-2014 Annual Report*. Retrieved from Oklahoma State Department of Education Website: <http://sde.ok.gov/sde/state-aid-annual-report>
- Oklahoma State Senate. (2015). *FY'15 Appropriations Report*. Retrieved from the Oklahoma State Senate Website: <http://www.oksenate.gov/publications.aspx>
- Oklahoma Attorney General. (2002). Oklahoma Attorney General Opinion #14 (2002 OK AG 14). April 5, 2002.
- Oklahoma Watch. (2014). *More Oklahoma Teachers Enter Classrooms Without Certification*. Retrieved from <http://oklahomawatch.org/2014/08/27/more-oklahoma-teachers-enter-classrooms-without-certification/>.
- Olsen, Lynn, (2004). Financial Evolution. *Education Week* 24: 8-12.
- Owens, Thomas J. and Jeffrey Maiden. (1999) A Comparison Of Interschool And Interdistrict Funding Equity in Florida. *Journal of Education Finance* 24, no. 1 (Spring), 503-518.

- Painter, Steve. (2005, July 2). Kansas Supreme Court to consider closing schools. *The Wichita Eagle*.
- Painter, Steve. (2005, July 3). Lawmakers are unable to agree on plan, take break until Wednesday. *The Wichita Eagle*.
- Picus, Lawrence, (2000). Student-Level Finance Data: Wave of the Future? *The Clearing House*. November/December.
- Ritter, G and Lauver, S.C. (2003). School Finance Reform in New Jersey: A Piecemeal Response to a Systemic Problem. *Journal of Education Finance* 28:575-598.
- Richard, Alan, (2002). Poor Districts Seen to Face 'Funding Gaps' in Many States. *Education Week* 22:26-28.
- Rodriguez, Gloria. (2004). Vertical Equity in School Finance and the Potential for Increasing School Responsiveness to Student and Staff Needs. *Peabody Journal of Education* 79 7-30.
- Stearns, Rodney. (2005). *Fiscal Equity Comparison between Current and Capital Education Expenditures and between Rural and Non-Rural Schools in Oklahoma*. University of Oklahoma, Norman, Oklahoma
- Strongin, Dana. (2005, July 5). Board may try to skirt court. *The Wichita Eagle*.
- Stutz, Terrence. (2005, June 27). Strayhorn labels Perry plan a "mess." *The Dallas Morning News*.
- Stutz, Terrence. (2005, June 30). Senate OKs tax cut bill; Robin Hood to remain *The Dallas Morning News*.
- Stutz, Terrence. (2005, June 29). House approves school plan. *The Dallas Morning News*.
- Stutz, Terrence. (2005, July 5). School financing fought on 2 fronts. *The Dallas Morning News*.
- Sweetland, Scott R.(2015). *An Assessment of the Adequacy of Ohio School Funding: New Performance Standards and Alternative Measurements of Adequacy* Volume 41, Number 2, Fall 2015
- Scrag, Peter. March, 2001. Defining Adequacy Up. *The Nation*.
- Texas Education Agency. (2007). *Instructional Facilities Allotment (IFA)*. Retrieved August 24, 2008, from Texas Education Agency Web site:
<http://www.tea.state.tx.us/school.finance/facilities/ifa.html>
- Texas Education Agency. (2007). *New Instructional Facilities Allotment(IFA)*. Retrieved August 24, 2008, from Texas Education Agency Web site:
<http://www.tea.state.tx.us/school.finance/facilities/nifa.html>
- Texas Legislative Council. (2006) *State Roles in Financing Public School Facilites*. Retrieved from <http://www.tlc.state.tx.us/docs/policy/OnlineFinancePubSch.pdf>
- Ujifusa, Andrew. Kansas School Funding Falls Short of Legal Standard, Court Rules. *Ed Week*. December 30, 2014.
- United States Department of Education. (2000). *Impact of Inadequate School Facilities on Student Learning*. Retrieved September 14, 2008, from USDE web site:
<http://www.ed.gov/offices/oese/archives/inits/construction/impacts2.html>
- Ward, James. (2003). A Case Analysis of Selected Illinois Rural School Districts: Implications for State Rural School Finance Policy. *Journal of Education Finance* Spring 2003: 599-606.