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EXECUTIVE SUMMARY:

THE EFFECT OF CONSOLIDATION OF ELEMENTARY AND SECONDARY DISTRICTS INTO UNIT DISTRICTS IN ILLINOIS UPON EQUITY GOALS IN THAT STATE

By

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A series of prior studies supported by the Illinois School Problems Commission has indicated that progress toward equity goals was made in the early 1970s, but that since 1976 or 1977 that progress has been arrested and the state has moved away from equity goals. At least that is the major finding when property valuation is the measure of district wealth. A different situation emerges when income is the measure of wealth and research is continuing on this second point. These prior studies, however, computed equity indexes for elementary, secondary, and unit districts separately, and hence the picture for the "state as a whole" was difficult to ascertain. In this study, the dual districts are abolished, at least on paper, and the state is treated as if it were composed entirely of unit districts. This was done by merging all elementary districts into the overlying secondary districts, thus reducing the number of school districts in Illinois to less than 600 districts. Elementary districts lying in more than one secondary district were prorated to secondary districts by use of a "digitizer," a computerized device used in modern cartography. All the relevant fiscal variables necessary for the equity tests, e.g., equalized assessed property valuations, expenditures, tax rates, etc. were then recomputed for these "pseudo-units," and equity indexes re-established for a time series in the 1970s.

Two major conclusions are evident from this type of analysis. First, the state as a whole could make progress toward equity goals by abolishing dual districts. There would be less variation in expenditures per pupil and less dependence of expenditures per pupil upon local district wealth if Illinois consisted only of unit districts. However, even such a massive consolidation effort would not reverse the decline in equity indexes which has been observed since 1976 or 1977. That is, even when the State of Illinois is treated as if it were all unit districts, there is still a retreat from equity goals from a high point in the mid-1970s, e.g., expenditure variation tends to increase and the association of local district wealth with expenditures tends to increase after 1976 or 1977. The authors conclude from this study, as they did from prior Commission-supported studies, that only an increase in state support can reverse the slide away from equity goals that has been documented since the mid-1970s.

Since consolidation of school districts was shown in the study, however, to at least help in attaining equity goals, the authors put forward a policy proposal for the consideration of the Illinois School Problems Commission. The proposed legislation would authorize the Illinois State Board of Education to carry out consolidation studies in the 50 smallest elementary districts in the state, many of which have less than 100 students. The affected districts are indicated in Appendix A. The proposed legislation would have the state provide the funds for the consolidation studies, but would have the studies conducted by local personnel supported by whatever expert assistance the local administrators wished to employ. The consolidation feasibility studies would be reviewed by a panel appointed by the Illinois State Board of Education. If consolidation seemed feasible, the statute would empower the Board to order the consolidation to take place within a reasonable period of time. In the authors' opinions, the gains in "equity" and "efficiency" are sufficient to merit some slight reduction in "local control."

CHAPTER I

STATEMENT AND DEVELOPMENT OF THE PROBLEM

Introduction

In 1971, in Serrano v. Priest, the California Supreme Court ruled that the expenditure level for a child's education could not be a function of local wealth.[1] In Rodriguez v. San Antonio Independent School District, a 1973 case, the United States Supreme Court recognized that reliance on local property taxes caused educational inequality.[2] Decisions from these and other cases set the stage for reforms in methods of financing public schools in many states. As of 1982, supreme courts in the states of Georgia, Colorado, and New York have ruled in opposition to Serrano.

In the light of Serrano and increased public awareness, the Illinois School Problems Commission recommended to the Illinois General Assembly a state system of financing public education based on a foundation program supplemented by a guaranteed yield provision.[3] This recommendation was implemented in 1973 as House Bill 1484. This reform in Illinois school finance permitted local school districts to receive state aid according to one of four funding formulas; one of which was a guaranteed yield formula known in Illinois as the "resource equalizer."[4]

It was the intent of the Illinois General Assembly that poorer school districts would respond to this legislation by increasing local effort and therefore receiving additional revenue from the state.[5] Equal educational opportunity, at least in terms of expenditure per pupil, would become more of a reality.

Equal educational opportunity is one definition of equity. Admittedly, this definition is somewhat vague, but it does suffice to convey the general meaning of equity. This definition does not imply that all students should receive exactly the same types of instruction, exactly the same services, or even that dollar amounts spent per student should be exactly the same. Individual student need most certainly causes variation in instruction, services, and expenditures. The focus should be to provide fair and equal access to educational services.[6]

In 1976, the Illinois General Assembly began making changes in the original legislation. Amendments passed in 1976, 1978, 1979, 1980, and 1981 may have had an effect on the intent of the original legislation and on the equalizing effect it produced.[7]

Inherent in the above-mentioned legislation was the long-standing Illinois concept of three types of school districts: elementary, high school, and unit. The legislation underscored this concept by specifying different qualifying tax rates and guaranteed valuations per pupil

for each of the three district types. Much is known about each of the three district types in terms of equity; however, the inherent district trichotomy in Illinois permits little knowledge about the state as a whole.

Problems With Illinois School District Organization

The power of each state to determine the framework for its educational system has resulted in fifty unique structures, some more similar than others, with districts ranging in number from one in Hawaii to almost 1,100 in Texas.[8] Illinois had, at one time, as many as 12,000 school districts.[9] (That number has now been reduced to 1,010.) Consolidation during the late 1960s and early 1950s was rapid but slowed considerably in the late 1950s and has been practically non-existent in recent years.[10]

Illinois, in addition to containing a large number of school districts, is further complicated by its three separate district types: unit, high school, and elementary. For purposes of almost any kind of analyses, the diversity in district types has created problems for researchers and school finance analysts. The problems associated with school district organization have been the topic of conversation and speculation in Illinois for years. At the time the present study was conducted, there were 448 unit school districts, 125 high school districts, and 437 elementary school districts in Illinois.[11]

Illinois school districts emerged into three types. Because there existed more elementary schools than any other type of school, these were the first to legally form. Separate secondary or high school districts were organized as the increased need for further education became apparent. Eventually, unit school districts emerged in many areas of the state. Because of the strong attachments communities developed for their schools, few attempts have been made in recent years to consolidate existing elementary and high school districts.[12]

The existence of three separate school district organizational structures has presented many problems for school finance researchers and educators. Little related literature on these problems seems to exist; however, according to Hickrod and Hubbard, two major problem areas created by these separate district types were evaluation and program.[13]

Three types of school districts make an overall financial assessment of the state in terms of finance very difficult. The difficulties in comparing elementary, high school, and unit districts, each with different tax rates and state aid allocation parameters, would be difficult at best. The situation could be further complicated by geographic locale. The comparison of geographic regions within the state has been a very difficult task. Most dual districts are in the northern part of the state. Southern and central Illinois have mostly unit districts. For these reasons, comparisons have not been easily made.[14] Since most other states have only one type of school district,

the comparison of Illinois to other states in terms of finance is also a problem.[15]

The authors feel that problems with school programs and continuity of curriculum have existed in many areas of Illinois because of present school district organization. It would appear logical that similar programs in similar elementary districts should exist in order to insure a continuous transition from elementary to high school. At the present time, however, three or more elementary districts may send students to one high school district. These districts usually have both separate boards of education and separate administrators. This often yields little or no coordination in these districts in terms of programming.[16]

Approaching the problem from another point of view, it would be almost impossible for one high school district to meet the needs of students from several separate elementary districts with diverse programs. The authors cite a particular example of coterminous high school and elementary districts. Each district had a separate board of education, but were headquartered in the same building. The elementary school offered French in the curriculum while the high school district offered no French but offered German instead. Little opportunity for a continuous foreign language curriculum existed.[17]

Statement of the Problem

The problem of this study was to develop a procedure for the theoretical formation of pseudo-unit school districts in Illinois. A second problem was to compute equity measures for Illinois using existing unit districts together with the newly created pseudo-unit districts as the data base.

Clarification of the Problem Statement

Definition of Terms

The following definitions are provided for terms which have special application for this study.

School District—School district was defined as a governmental unit with specified geographic boundaries formed for the purpose of educating children in grades no higher than twelve.

Elementary District—An elementary district was defined as a school district encompassing grades kindergarten through eight.

High School District—A high school district was defined as a school district encompassing grades nine through twelve.

Unit District—A unit district was defined as a school district encompassing grades kindergarten through twelve.

Pseudo-Unit District—A pseudo-unit district was defined as a theoretical school district formed by combining overlapping high school and elementary districts.

Equity—Equity was defined to be the equality of educational opportunity as delineated by wealth neutrality, permissible variance, and conditional wealth neutrality.

Equity Criteria—The equity criteria were defined as the standards against which equity was judged. The equity criteria used in this study were permissible variance, wealth neutrality, and conditional wealth neutrality.

Permissible Variance—Permissible variance refers to reducing the disparity in expenditures per pupil among school districts.

Wealth Neutrality—Wealth neutrality refers to making school district expenditures less dependent on school district wealth.

Conditional Wealth Neutrality—Conditional wealth neutrality refers to making school district expenditures less dependent on school district wealth while controlling for tax rate.

Equalized Assessed Valuation—Equalized assessed valuation was defined as a governmental unit's assessed valuation after the application of a calculated multiplier.

Per Capita Income—Per capita income was defined as the income of a governmental unit divided by the total population of that governmental unit.

Average Daily Attendance—Average daily attendance was defined as the total number of attendance days of pupils in a district for a given attendance period divided by the total number of enrollment days in that period.

Weighted Average Daily Attendance with Title I Weightings—Weighted average daily attendance with Title I weightings was defined as average daily attendance calculated using .5 as the weight for pre-school and kindergarten students, 1.0 as the weight for students in grades one through eight, 1.25 as the weight for students in grades nine through twelve, and an additional weight for the school district's Title I eligibles.

Total Revenue—Total revenue was defined as the sum of the district's state and local revenue. State and federal categorical grants were not included.

State Aid Formula—State aid formula was defined as the one existing in Chapter 18-8 of the Illinois School Code for the appropriate year.

Operating Tax Rate—Operating tax rate was defined as a school district's total tax rate for operational purposes, as defined in Chapter 18-8.

Delimitations

The delimitations of this study were:

1. Tax rates of pseudo-unit districts were computed tax rates rather than actual operating tax rates.

2. This study was completed for fiscal years 1974, 1977, and 1982 only.

3. Equity measures used in this study were the Gini index, McLoone Index, coefficient of variation, and regression coefficient only.

4. Proration of state aid was the method used to assign state aid to pseudo-unit districts. Simulation of state aid using funding formulas was another alternative.

Assumptions

Assumptions made in relation to this study were:

1. Revenue is a valid measure of expenditure.

2. Per capita income is a representative measure of district income.

3. Population, revenue, and assessed valuation were evenly distributed across school districts.

4. Pseudo-unit school districts were uniform with respect to services and expenditures.

Review of Selected Literature

Equality of educational opportunity has been a goal of education for many years. The goal originally took the form of laws which mandated that schools be operated and later took the form of compulsory attendance laws.[18] A logical extension of these goals was that an adequate education for all students be provided. Since early schools were generally poorly financed, the question of how to equitably finance education naturally emerged. Proponents of local control have supported only minimal state contributions to the financing of public education.

Advocates for full state funding feel that local funding for public education should be minimal. These various positions have resulted in most states adopting systems of financing public education that combine state and local support.[19] Regardless of the method used to finance public education, questions of equity and equal educational opportunity remain unanswered.

In passing Public Law 92-318, which established the National Institute of Education, the United States Congress stated:

> The Congress hereby declares it to be the policy of the United States to provide every person an equal opportunity to receive an education of high quality regardless of race, color, religion, sex, national origin, or social origin.[20]

This mandate to the National Institute of Education clearly established equity as a primary federal goal for education. Groups such as the National Education Finance Project,[21] the Killalea Associates,[22] and the School Finance Cooperative[23] have attempted to assess equity on a national level. These groups primarily focused their efforts on the two equity criteria of fiscal neutrality and revenue variation.

Answers to equity questions have been sought in many states. Yang examined revenue equity in Illinois, Michigan, and Kansas.[24] Carroll evaluated the equity situation in California, Florida, Michigan, Kansas, and New Mexico.[25] Hickrod, Chaudhari, Hubbard, and Lundeen compared Illinois, Indiana, and Iowa in terms of equity.[26] Odden examined the equity of Missouri's school finance system.[27] The criteria of revenue variation and fiscal neutrality were applied in these studies.

These two equity criteria, fiscal neutrality and revenue variation, have firm foundations in the literature.[28] The measures of these criteria differ slightly. All, however, are used to answer the same questions. Measures such as the range, restricted range, Federal range ratio, standard deviation in the logarithms, the coefficient of variation, the McLoone Index, and the Gini Index have been employed to operationalize the equity criteria.[29] Garms warns that although several measures may be intended to measure essentially the same concept, they are not identical, and use must be based on their specific characteristics.[30]

The 1973 Reform of the General Purpose Grant-in-Aid System in Illinois has been evaluated by the Center for the Study of Educational Finance at Illinois State University extensively in terms of equity.[31] Most of these evaluations have been completed for each type of school district. These studies have employed the equity criteria of wealth neutrality and permissible variance. Measures of wealth neutrality used in Illinois have been standardized regression coefficients and the Gini Index. The coefficient of variation and the McLoone Index have been used as measures of permissible variance. The criteria and measures used in Illinois were consistent with equity criteria and measures used in other states.

The intent of this study was to evaluate the equity situation in Illinois when considering the state as a whole. When this was accomplished, comparisons could then be made between Illinois and other states.

Operationally Defining the Equity Criteria

The equity criteria chosen for this study were permissible variance, wealth neutrality, and conditional wealth neutrality. Each of these will be operationalized separately below.

Permissible Variance—Two measures of permissible variance were computed. These were the coefficient of variation and the McLoone Index. The coefficient of variation was defined as the standard deviation of the expenditure variable divided by its mean and multiplied by one hundred. The smaller the coefficient, the smaller the expenditure variation.

The McLoone Index was based on the number of dollars required to raise the lower half of the state up to the median expenditure level. The index was defined as the ratio of actual revenues generated below the median to the sum of these actual revenues and the revenues required to raise the lower half of the state to the median expenditure level.

Wealth Neutrality—Two measures of wealth neutrality were also computed. These were the Gini Index and a regression coefficient. To compute the Gini Index, districts were sorted in ascending order of wealth per pupil. The cumulative proportions of pupils were represented on a horizontal axis. The cumulative proportions of expenditures per pupil were represented on a vertical axis. The graph of these two cumulative distributions is known as a Lorenz curve. If the state were wealth neutral, the curve would be represented as a straight line. If the curve is below this ideal straight line, poorer districts receive less than their fair share of expenditures per pupil. The Gini Index was then defined as the ratio of the area between the ideal straight line and the plotted curve to the area under the straight line. The smaller the ratio, the closer the state would be to wealth neutrality.

Simple regression using expenditure as the dependent variable and wealth as the independent variable was the other approach used to measure wealth neutrality. The regression coefficient associated with the wealth variable yielded the slope of the regression line. The closer the regression coefficient was to zero, the closer the state was to being wealth neutral.

Conditional Wealth Neutrality—Conditional wealth neutrality refers to making expenditures per pupil less a function of district wealth while partialing out the effects of another variable, in this case, tax rate. Multiple hierarchal regression was the technique used. Expenditure was the dependent variable. Tax rates and district wealth were the independent variables. The tax rate was stepped into the regression model first, partialing out its effect. The regression coefficient associated with the wealth variable was the measure of conditional wealth neutrality. The smaller the coefficient, the closer the state was to being conditionally wealth neutral.

Research Questions

The specific research questions addressed in this study included the following.

1. How did wealth neutrality measures for Illinois using one district type compare with separate wealth neutrality measures using three district types?

2. How did permissible variance measures for Illinois using one district type compare with separate permissible variance measures using three district types?

3. How did the conditional wealth neutrality measure for Illinois using one district type compare with separate conditional wealth neutrality measures using three district types?

Sources of Data

Fiscal data for fiscal years 1974, 1977, and 1982 were obtained from the Illinois State Board of Education. Income data were obtained from a machine readable general revenue sharing tape provided by the United States Bureau of the Census. School district maps were obtained with the assistance of Professor Vernon Pohlmann of the Department of Sociology at Illinois State University. Permission for the use of the computer cartography laboratory was obtained from the Department of Geography at Illinois State University.

Weights

Analyses were performed using both the pupil and the district as separate units of analysis. When the district was the unit of analysis, all districts were treated equally. The largest district in the state had the same weight as the smallest district in the state. The pupil became the unit of analysis by assigning each district the factor of its weighted pupil count. This gave larger districts more weight in the analysis than smaller districts.

CHAPTER II

FORMATION OF PSEUDO-UNIT DISTRICTS

Introduction

An integral part of the present study required the formation of pseudo-unit school districts in Illinois. This was necessary in order to study selected financial equity issues for the state as a whole. Existing unit school districts, together with the newly formed pseudo-unit school districts, formed the set of school districts examined. The cooperation of three individuals was instrumental in the completion of this aspect of the research. Vernon Pohlmann, Professor of Sociology at Illinois State University, provided access to maps of Illinois school districts. Dr. Donald Luman, formerly of the Department of Geography at Illinois State University, provided access to and instruction in the use of the equipment utilized in the compilation of data used in the study. Ramesh Chaudhari, Director of Academic Computing and Research Consultation and Associate Professor of Educational Administration and Foundations at Illinois State University, provided the computer expertise necessary to combine the present data for pseudo-unit districts with existing school district fiscal data.

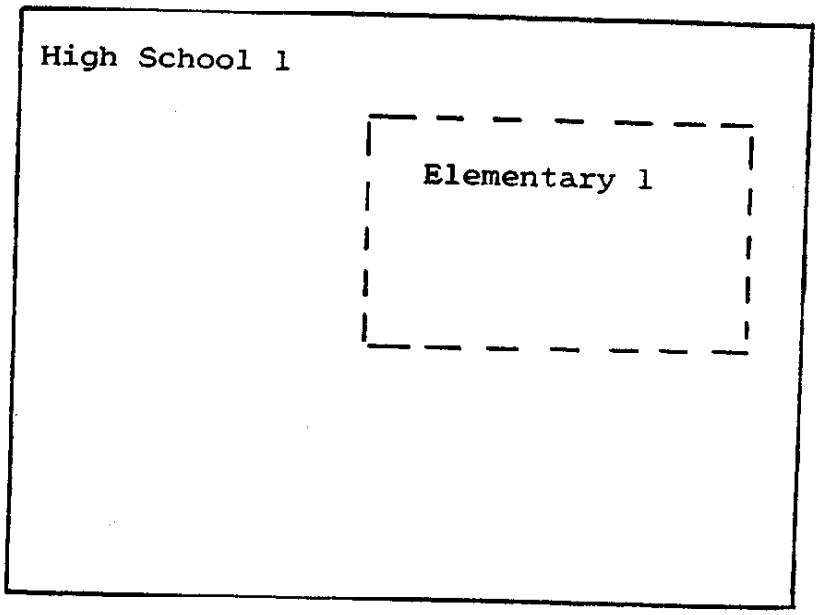
Formulation of the Data Base

Pseudo-unit school districts were formed by assigning the entire geographic area of existing Illinois elementary districts to existing Illinois high school districts on a prorated basis. To accomplish this, a listing of all Illinois school districts for the 1980-1981 school year was obtained from the Illinois State Board of Education publication, 1980-1981 Illinois Public School Districts and Schools.[32] In this publication, each Illinois school district was listed in order of district number of county. Unit districts were coded using the number 2, high school districts using the number 1, and elementary districts using the number 0. There were 435 elementary districts with administrative headquarters in forty-nine counties. These districts were assigned, on a prorated basis, to the 125 high school districts to form the pseudo-unit districts.

If the elementary district was contained, geographically, in only one high school district, that elementary district was designated as a 100 percent district; that is, 100 percent of that elementary district was solely contained in a particular high school district. Figure 1 shows a hypothetical example of a 100 percent elementary district. The data entry for 100 percent districts consisted of the county and district number of the elementary district, the county and district number of the high school district to which it was assigned, and the percentage of assignment, in this case, 100. Three hundred thirty-one of the 435

FIGURE 1

HYPOTHETICAL CONFIGURATION OF A "100 PERCENT" ELEMENTARY DISTRICT



High School Boundary _____

Elementary Boundary - - - - -

elementary districts, or 76 percent, were categorized as 100 percent districts. If the elementary district was not a 100 percent district, it was designated as a "scattered" district.

The process of determining which districts were 100 percent districts was relatively straightforward and was completed by inspection of maps. The data collection for the scattered districts, however, required the use of a "digitizer," a computerized device used by modern cartographers. Functions of the digitizer include the measurement of length and the measurement of area. The function employed to form the pseudo-unit school districts from the scattered elementary districts was the measurement of area.

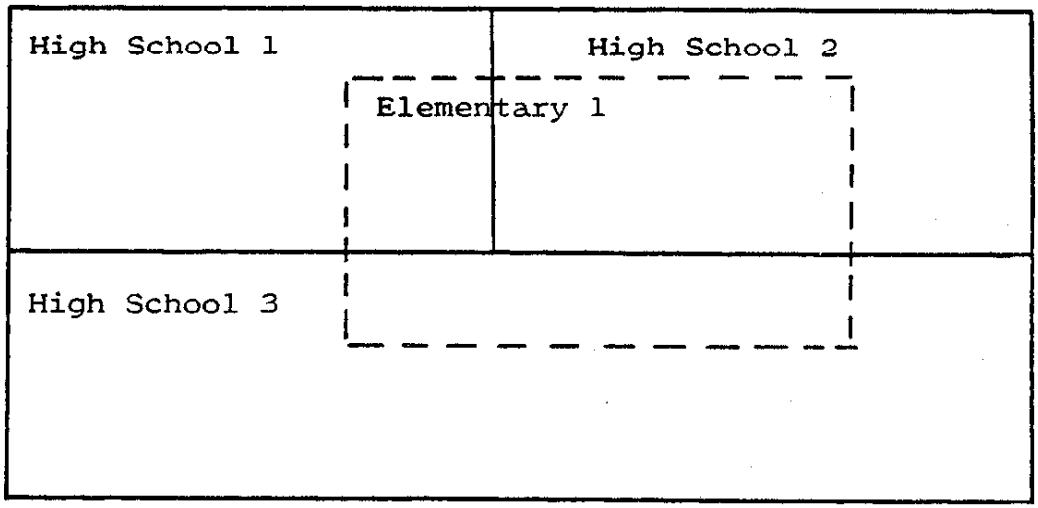
The measurement of area can be performed in one of two modes of operation. The "continuous" mode allows the user to move a stylus, connected to a small computer, in a clockwise motion continuously around any closed region. When this is accomplished, the digitizer provides a read-out of the area of the closed region. The region may be convex or non-convex and may have either straight lines, curves, or a combination of curves and straight lines as boundaries. There is no limit to the number of sides the region may have. The second mode of operation is "point to point." In this mode, the user places the stylus on certain points around the perimeter of the region. A straight line distance is assumed between points. If the region contains a curved side, the user must consider the curve to be a series of short-line segments. Movement must also be clockwise in the point-to-point mode.[33]

The digitizer was used on those elementary districts designated as scattered. It was necessary to determine the percentage of a given elementary district contained in each of the high school districts it overlapped. The area of a scattered elementary district was determined. Next, the area of that part of the scattered district overlapping one high school district was determined. Simple arithmetic then yielded the percentage of area of a scattered district associated with one of its high school districts. This process was continued until 100 percent of the area of a scattered elementary district had been assigned to high school districts. Figure 2 gives a hypothetical example of a scattered elementary district. The entire process was completed for each of the remaining scattered elementary districts. Figure 3 provides a hypothetical portion of a county map, school district configurations, and data entries.

The process of forming the pseudo-unit districts was not without problems. When school district boundaries crossed county lines, maps had to be taped together before digitizing could begin. When a district boundary crossed county lines, and scales of the two or more county maps differed, maps had to be digitized separately and scale conversions made.

FIGURE 2

HYPOTHETICAL CONFIGURATION OF A
"SCATTERED" ELEMENTARY DISTRICT

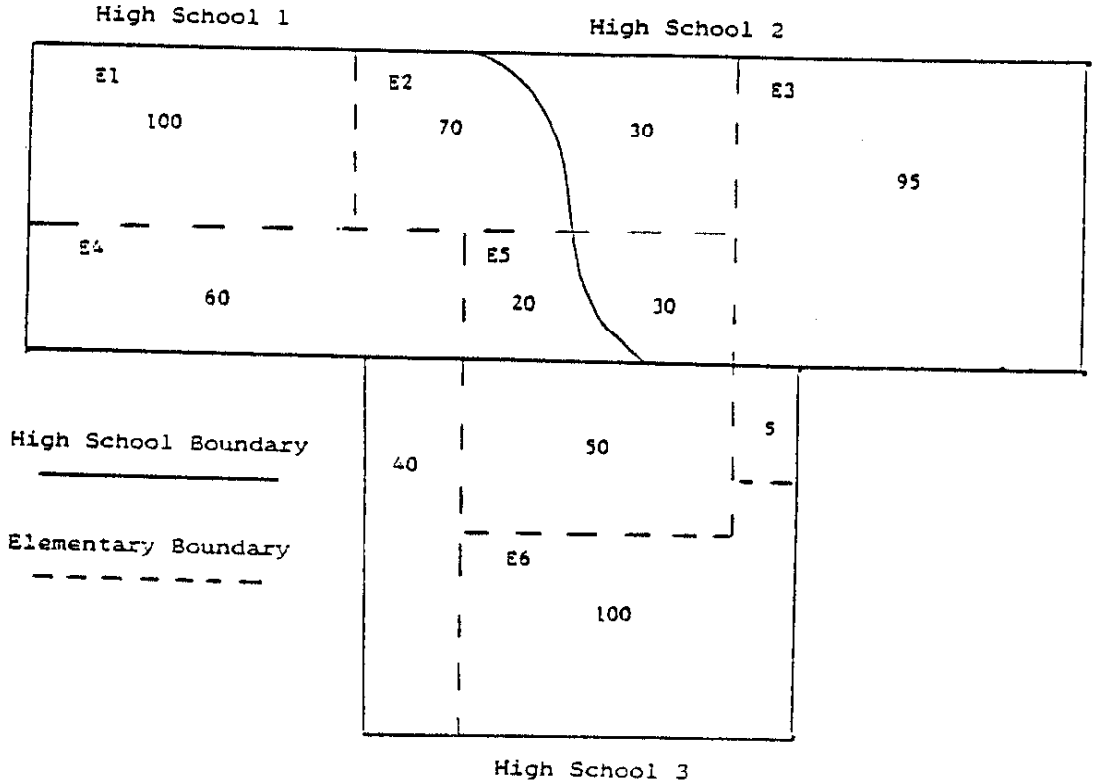


High School Boundary ————

Elementary Boundary — — — —

FIGURE 3

HYPOTHETICAL COUNTY MAP, SCHOOL DISTRICT CONFIGURATIONS, AND CORRESPONDING DATA ENTRIES



Elementary District	High School District	% Elementary in High School
E1	HS1	100
E2	HS1	70
E2	HS2	30
E3	HS2	95
E3	HS3	5
E4	HS1	60
E4	HS3	40
E5	HS1	20
E5	HS2	30
E5	HS3	50
E6	HS3	100

Note: Exterior boundaries represent both high school and elementary boundaries. The above configuration is not drawn to scale. The sum of all numbers in any one lotted region is 100.

Establishing and Insuring the Accuracy of the Data

The most recent updating of the maps used to establish the data base was completed in June 1981. Information for updating school district boundaries was furnished by superintendents of educational service regions across the state. The updating was completed by Professor Pohlmann and his staff.

The examination of 435 school districts and the establishment of a data set for each was a source of possible human error simply because of the enormity of the project. Errors may have occurred in the digitizing of districts, especially if the district boundaries crossed county lines or if scale conversions had to be made before completing computations.

The digitizer is a sensitive instrument and if one were to compute the area of the same region on two consecutive occasions, slight deviations in the area obtained would likely result. Therefore, to verify the accuracy of the original data base, the entire process was repeated for every third scattered elementary district. The average error of measurement, using the absolute value of the difference between the first computation of area and the second, was .28 percent. The standard deviation was .37. No changes were made in the original data, based on information gained during this check.

Assessed valuation was used as a further check of the validity of the data. Uniformity of assessed valuation over elementary districts was assumed. Assessed valuations for each Illinois high school district and elementary district were obtained from the Illinois State Board of Education. The assessed valuation of each high school district in the state was compared to the sum of prorated assessed valuations of its associated elementary districts.

When the assessed valuation of a high school district differed from the sum of the prorated assessed valuations of its associated elementary districts by 6 percent or more, maps of these districts were reexamined and redigitized in an attempt to resolve the discrepancy. Changes in the original data base were made reflecting the results of this validation procedure. Similar attempts to resolve discrepancies were made until the number of discrepancies was reduced to fourteen.

Further attempts to resolve discrepancies in assessed valuation sums were made by examining maps containing the above-mentioned fourteen high school districts and those high school districts bordering the districts in question. The net assessed valuation discrepancy of a district and its bordering neighbors was determined. The assumption of uniformity of assessed valuation was rejected if the net discrepancy over a larger geographic area was within acceptable limits. This procedure reduced the number of "problem" districts to seven. In a final attempt to resolve these discrepancies, administrators of those seven high school districts and their scattered elementary districts were contacted and asked to confirm the existing data base. Inquiries were made as to the possibility of large industry adversely affecting the assessed valuation

sums. Additional inquiries of elementary district administrators pertained to percentages of assessed valuation and average daily attendance derived from areas overlapping associated high school districts. As a result of these contacts, the data base was altered in five of the seven problem areas.

The intent of the present research was to analyze group data and draw conclusions concerning selected financial equity issues for the state as a whole. Therefore, the reliability of the group data was also examined. Three measures were used to examine the reliability of the data. The first measure was the percentage difference between the total of the high school assessed valuations and the total of the sums of the prorated elementary assessed valuations. This percentage difference was calculated to be .13. The second measure used was the percentage of dollar discrepancies in districts where the high school assessed valuation differed from the sum of the prorated elementary assessed valuations by 6 percent or more. The sum of the dollar discrepancies of problem districts was computed. This dollar amount accounted for .98 percent of the total assessed valuation of the high school districts. The third measure of reliability was the Pearson product moment correlation coefficient. The high school assessed valuations were correlated with the sums of the prorated assessed valuations of the associated elementary districts. The correlation between these two sets of data was .998. Based on these three measures of group data reliability, the data base was finalized.

The data base obtained from 1981 maps was originally applied to fiscal data for 1974, 1977, and 1982. School district consolidations and boundary changes since the early 1970s were responsible for many discrepancies in the 1974 and 1977 data. Attempts were made to resolve these discrepancies by examining 1974 school district maps, obtaining a similar data base, and applying that data base to the 1974 and 1977 fiscal data only.

Definition of and Assumptions Regarding Fiscal Variables

In order to form the pseudo-unit school districts, certain quantities had to be known. Assumptions regarding the pseudo-unit districts, and the elementary and high school districts from which they were constructed, had to be made in order to formulate the fiscal variables. These variables, their derivations, and the assumptions made in formulating the variables were defined in the following manner:

Assessed Valuation—Assessed valuation of each pseudo-unit district was defined as the assessed valuation of the associated high school district. The same was true for equalized assessed valuation. Since the geographic boundaries of the pseudo-unit districts were defined as the geographic boundaries of the existing high school district, these were valid definitions. The assessed valuation of a geographic area was constant.

Per Capita Income—Per capita income of each pseudo-unit district was defined as the per capita income of the associated high school district. The population of the pseudo-unit district was the same as the population of the existing high school district. Per capita income did not change for any particular geographic region.

Weighted Average Daily Attendance With Title I Weightings—Weighted average daily attendance with Title I weightings for each pseudo-unit district was defined as the weighted average daily attendance with Title I weightings of the associated high school district added to the sums of the prorated weighted average daily attendance with Title I weightings of the corresponding elementary districts. The assumption made here was that school-age children were uniformly distributed over each elementary district.

Computed Tax Rate—Computed tax rate for each pseudo-unit district was defined as the ratio of local revenue of the district to total equalized assessed valuation of the district. Since no tax rate was available for pseudo-unit districts, a tax rate had to be computed. The method employed for computing tax rate was similar in nature to methods used for calculating tax rates for existing Illinois school districts. Tax rate is computed by dividing the levied amount in dollars by the equalized assessed valuation of the district. Since pseudo-unit districts had no tax levy, local revenue was used as a substitute.

Local Revenue—Local revenue for each pseudo-unit district was defined as the local revenue of the associated high school district added to the sum of the prorated local revenues of the corresponding elementary districts. Local revenue for each elementary and high school district was computed by multiplying the actual operating tax rate of the district by the assessed valuation of the district. The assumption made in prorating the local revenue was uniformity of assessed valuation across the elementary districts. Local revenue, as described above, was a function of district assessed valuation.

State Revenue—State revenue for each pseudo-unit district was defined as the state revenue of the associated high school district added to the sum of the prorated state revenues of the corresponding elementary districts.

Total Revenue—Total revenue for each pseudo-unit district was defined as the sum of state and local revenue of the pseudo-unit district. No attempt was made to account for state and federal categorical grants.

CHAPTER III

ANALYSIS OF THE DATA

Definition of Variables and Methodology

The expenditure variable used in all analyses performed in the present study was total revenue per Title I weighted average daily attendance (REVTWADA). Wealth variables used in the analyses were equalized assessed valuation per Title I weighted average daily attendance (ASVTWADA) and income per Title I weighted average daily attendance (INCTWADA). The effort variable used was district tax rate (TAXRATE). Tax rate used for existing unit school districts was the actual operating tax rate of the district; however, the tax rate used for pseudo-unit districts was computed using the quotient of local revenue and equalized assessed va-uation. In an attempt to reduce the influence of extreme values in the data, log 10 transformations were performed on all variables used in regression analysis.

Findings

In order to answer each research question, the question itself, pertinent variables, and statistical methodology were reviewed.

> Research Question 1—*How did wealth neutrality measures for Illinois using one district type compare with separate wealth neutrality measures using three district types?*

Results Using the Gini Index

Table 1 presents Gini Indices using ASVTWADA as the wealth variable for each district type separately and for the state as a whole.*

Elementary districts experienced movement toward wealth neutrality between 1974 and 1977, but then a reversal between 1977 and 1982. Comparison of the 1974 index of .0806 and the 1982 index of .0869 indicated elementary districts were further from the wealth neutrality goal in 1982 than in 1974. High school districts showed continual movement toward wealth neutrality through the entire time period. Unit school districts had Gini Indices of .0251 in 1974 and .0133 in 1982. This indicated an overall improvement over the eight-year time period; however, the index was not interpretable for fiscal year 1977.

The indices for the state as a whole were generally smaller in magnitude than those for elementary and high school districts but larger than corresponding indices for unit districts.

*All tables are at the end of study, beginning on page 33.

Table 2 presents Gini Indices using INCTWADA as the wealth variable for each district type separately and for the state as a whole.

Elementary districts experienced gains toward wealth neutrality between 1974 and 1977. Deterioration then occurred between 1977 and 1982. High school districts experienced gains between 1974 and 1977 and a reversal between 1977 and 1982. The Gini Index was not interpretable for any of the three points in time for unit districts.

Since the Gini Index for the state as a whole was only interpretable for 1974, comparisons were made for that year only. The index for the state as a whole was smaller in magnitude than the corresponding indices for either elementary or high school districts. No comparison could be made with unit districts.

Results Using Regression Analysis

Table 3 presents regression coefficients and corresponding R^2 values for each district type separately and for the state as a whole. ASVTWADA was the wealth variable, and the district was the unit of analysis.

Elementary districts experienced movement toward wealth neutrality between 1974 and 1977 but then a reversal between 1977 and 1982. Comparison of the 1974 and 1982 regression coefficients indicated elementary districts deteriorated to a point further from wealth neutrality in 1982 than in 1974. High school and unit districts exhibited the same overall pattern of movement toward wealth neutrality between 1974 and 1977 and a reversal between 1977 and 1982; however, both high school and unit districts were closer to wealth neutrality in 1982 than in 1974. Corresponding R^2 values for each of the three district types yielded results similar to those yielded by regression coefficients.

The coefficients for the state as a whole were smaller than the corresponding coefficients for elementary and high school districts and larger than the corresponding coefficients for unit districts.

Regression coefficients and R^2 values for each district type and for the state as a whole are presented in Table 4. ASVTWADA was used as the wealth variable and the pupil was the unit of analysis.

Patterns found for each type of district were similar to those found with the district as the unit of analysis. Movement was made toward wealth neutrality between 1974 and 1977. A reversal then occurred between 1977 and 1982. The percentage change of coefficients associated with elementary districts indicated deterioration to approximately the same level of wealth neutrality in 1982 as in 1974. High school and unit districts, although deteriorating over the last time period, were closer to wealth neutrality in 1982 than in 1974. The corresponding R^2 values yielded results similar to those yielded by regression coefficients.

Regression coefficients for the state as a whole were smaller than the corresponding coefficients for elementary and high school districts

and larger than the corresponding coefficients for unit districts.

Table 5 presents regression coefficients and corresponding R^2 values for each district type and for the state as a whole. INCTWADA was the wealth variable and the district was the unit of analysis.

Elementary districts showed continual movement toward wealth neutrality between 1974 and 1982; although gains made between 1977 and 1982 were small. High school districts exhibited movement toward wealth neutrality between 1974 and 1977, and a reversal between 1977 and 1982. Unit districts moved toward wealth neutrality between 1974 and 1977. Comparison of coefficients for 1977 and 1982 showed that unit districts exhibited little net change during that time period. Corresponding R^2 values yielded results similar to those yielded by regression.

The regression coefficient for the state as a whole was larger than for each of the separate district types in 1974. Only elementary districts had a larger regression coefficient than the entire state in 1977 and 1982.

Regression coefficients and corresponding R^2 values for each district type and for the state as a whole are presented in Table 6. INCTWADA was the wealth variable and the pupil was the unit of analysis.

Elementary districts showed movement toward wealth neutrality between 1974 and 1977, and then a leveling off through the last time period. High school districts exhibited movement toward wealth neutrality between 1974 and 1977 and a slight reversal between 1977 and 1982. Unit districts showed continual movement toward wealth neutrality between 1974 and 1982, with a large gain between 1977 and 1982. Corresponding R^2 values again yielded results similar to those yielded by regression coefficients.

The regression coefficient for the state as a whole was larger than corresponding coefficients for elementary and unit districts in 1974, 1977, and 1982. Only high school district coefficients indicated less wealth neutrality than the state as a whole.

Research Question 2—*How did permissible variance measures for Illinois using one district type compare with separate permissible variance measures using three district types?*

The coefficient of variation and the McLoone Index were computed for the state as a whole and for each district type separately for fiscal years 1974, 1977, and 1982.

Results Using the Coefficient of Variation

Table 7 presents coefficients of variation for each district type and for the state as a whole using the district as the unit of analysis.

Elementary districts showed an increase in revenue variation between 1974 and 1982. Coefficients of 26.3374 in 1974, 27.0247 in 1977, and 35.5048 in 1982 indicated larger revenue variation in 1982 than in 1974 or 1977. High school districts showed a decrease in revenue variation between 1974 and 1977, but then an increase between 1977 and 1982. Unit districts exhibited the same overall pattern as high school districts, a decrease between 1974 and 1977 and then an increase between 1977 and 1982; however, the magnitude of the coefficients indicated only small changes through the entire time period.

For all three points in time, the coefficients for the state as a whole were smaller than the corresponding coefficients for elementary and high school districts and larger than the corresponding coefficients for unit districts. The overall pattern observed for the state as a whole was similar to the general pattern observed in separate district types.

Coefficients of variation for each district type and for the state as a whole with the pupil as the unit of analysis are presented in Table 8.

Elementary districts experienced a decrease in revenue variation between 1974 and 1977 and then an increase between 1977 and 1982. Coefficients of 21.5762 in 1974 and 24.8689 in 1982 suggested greater revenue variation in 1982 than in 1974. High school districts experienced a decrease in revenue variation between 1974 and 1977. Coefficients of 16.8801 in 1977 and 16.8446 in 1982 indicated the level of variation in high school districts had little net change during that time period. Unit districts experienced an increase in revenue variation between 1974 and 1977 and then a decrease between 1977 and 1982.

Coefficients for the state as a whole were smaller than corresponding coefficients for elementary and high school districts for 1974 and 1977. Only elementary districts had a larger coefficient of variation than the state as a whole in 1982.

Results Using the McLoone Index

McLoone Indices for each district type and for the state as a whole are presented in Table 9.

Elementary districts experienced an increase in revenue variation below the median between 1974 and 1977 followed by a decrease between 1977 and 1982. Comparison of the indices, .9065 in 1974 and .9272 in 1982, showed elementary districts to have had less variation in revenue below the median in 1982 than in 1974. Median expenditure levels for elementary districts rose from $844 in 1974 to $1684 in 1982, an increase of approximately 100 percent.

High school districts showed a decrease in revenue variation below the median between 1974 and 1977 followed by a moderate increase between 1977 and 1982. Indices of .8859 in 1974 and .8914 in 1982 indicated high school districts were at approximately the same level of revenue

variation below the median in 1982 as in 1974. Median expenditure levels rose from $1007 in 1974 to $2085.50 in 1982, an increase of 107 percent.

Unit districts exhibited a large increase in revenue variation below the median between 1974 and 1977. Indices of .9317 in 1977 and .9374 in 1982 suggest little net change over that time period. Median expenditure levels rose from $869 in 1974 to $1572 in 1982, an increase of 81 percent.

Indices for the state as a whole were larger than corresponding indices for elementary and high school districts, but smaller than the corresponding indices for unit districts in 1974 and 1977. The index for the state as a whole was larger than the corresponding index for all three district types in 1982.

Research Question 3—*How did the conditional wealth neutrality measure for Illinois using one district type compare with separate conditional wealth neutrality measures using three district types?*

Regression coefficients and R^2 increases were computed for district wealth variables while partialing out the effects of TAXRATE. These coefficients were computed for the state as a whole and for each district type separately for fiscal years 1974, 1977, and 1982.

Results Using Regression Analysis

Table 10 presents regression coefficients and R^2 increases associated with ASVTWADA for the state as a whole and for each district type separately. The district was the unit of analysis.

Elementary districts exhibited movement toward conditional wealth neutrality between 1974 and 1977 and a reversal between 1977 and 1982. Comparison between the 1974 coefficient of .28399 and the 1982 coefficient of .33823 indicated elementary districts were further from conditional wealth neutrality in 1982 than in 1974. High school districts exhibited the same pattern as elementary districts through the eight-year time period; however, high school districts were closer to the equity goal in 1982 than in 1974. The pattern exhibited by unit districts was the same as that of high school districts. Corresponding R^2 increases yielded results similar to those yielded by regression coefficients.

Coefficients for the state as a whole were smaller than corresponding coefficients of elementary and high school districts for all three fiscal years. Only coefficients associated with unit districts were smaller than corresponding coefficients for the state as a whole.

Table 11 presents regression coefficients and R^2 increases associated with ASVTWADA for the state as a whole and for each district type separately. The pupil was the unit of analysis.

Elementary districts showed movement toward conditional wealth neutrality between 1974 and 1977; however, a reversal occurred between 1977 and 1982. Coefficients of .26805 in 1974 and .29325 in 1982 indicated elementary districts were further from conditional wealth neutrality in 1982 than in 1974. High school districts and unit districts exhibited the same overall pattern as elementary districts. Movement toward conditional wealth neutrality was observed between 1974 and 1977. Movement away from the equity goal was observed between 1977 and 1982; however, both high school and unit districts were closer to conditional wealth neutrality in 1982 than in 1974. Corresponding R^2 increases yielded results similar to those yielded by regression coefficients.

The coefficient for the state as a whole was larger than the corresponding coefficients for elementary and unit districts in 1974. In 1977 and 1982, only unit districts had a smaller coefficient than the state as a whole. The state as a whole followed the same overall pattern of movement toward conditional wealth neutrality between 1974 and 1977 and reversal from that goal between 1977 and 1982.

Regression coefficients and R^2 increases associated with INCTWADA for the state as a whole and for each district type separately are presented in Table 12. The district was the unit of analysis.

Elementary and high school districts moved toward conditional wealth neutrality between 1974 and 1977; however, a reversal occurred between 1977 and 1982. Unit district coefficients of .16394 in 1974, .07258 in 1977, and .07721 in 1982 indicated movement toward conditional wealth neutrality between 1974 and 1977 and little net change through the last time period. R^2 increases associated with INCTWADA indicated high school districts were further from conditional wealth neutrality in 1982 than in 1974.

Coefficients for high school and unit districts were smaller than the corresponding coefficients for the state as a whole in 1974, 1977, and 1982. Only elementary districts had coefficients of greater magnitude than the coefficients for the state as a whole. The state as a whole exhibited movement toward conditional wealth neutrality between 1974 and 1977 and a reversal between 1977 and 1982.

Table 13 presents regression coefficients and R^2 increases associated with INCTWADA for the state as a whole and for each district type separately. The pupil was the unit of analysis.

Elementary and high school districts experienced movement toward conditional wealth neutrality between 1974 and 1977 and a reversal during the last time period. Corresponding R^2 increases yielded results similar to those yielded by regression coefficients.

Unit districts experienced continual movement toward the equity goal until, in 1982, conditional wealth neutrality had, for all

practical purposes, been achieved. This was evidenced by regression coefficients of .14720 in 1974, .06605 in 1977, and .00235 in 1982. Corresponding R^2 increases yielded results similar to those yielded by regression coefficients.

Only regression coefficients associated with high school districts were larger than the corresponding coefficients for the state as a whole in 1974 and 1977. Coefficients associated with high school and elementary districts were larger than the coefficient for the state as a whole in 1982. Although elementary and high school districts experienced reversals between 1977 and 1982, the state as a whole showed continual movement toward conditional wealth neutrality through the eight-year time period.

CHAPTER IV

SUMMARY, CONCLUSIONS, POLICY IMPLICATIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

Research questions addressed in this study included the following.

1. How did wealth neutrality measures for Illinois using one district type compare with separate wealth neutrality measures using three district types?

2. How did permissible variance measures for Illinois using one district type compare with separate permissible variance measures using three district types?

3. How did the conditional wealth neutrality measure for Illinois using one district type compare with separate conditional wealth neutrality measures using three district types?

The Variables

The expenditure variable chosen for this study was the sum of state and local revenue per Title I weighted average daily attendance (REVTWADA). District wealth variables used were district assessed valuation per Title I weighted average daily attendance (ASVTWADA) and income per Title I weighted average daily attendance (INCTWADA). The measure of local effort was actual operating tax rate for existing unit school districts and a computed tax rate for pseudo-unit school districts (TAXRATE).

Equity Criteria

The equity criteria examined in this study were wealth neutrality, permissible variance, and conditional wealth neutrality. Gini Indices and regression coefficients were computed to determine the extent to which expenditures were a function of district wealth. Coefficients of variation and McLoone Indices were computed to determine the extent of revenue variation for the state as a whole. Multiple regression was used to determine the extent to which expenditure was a function of district wealth while controlling for tax rate.

Limitations on Conclusions

It should be noted that the following conclusions are based on results obtained using pseudo-unit districts. These districts do not exist. They are hypothetical constructs only.

Conclusions

Wealth Neutrality

When considering the "state as a whole" to consist of unit districts, the following conclusions could be drawn.

1. The "state as a whole" made progress toward wealth neutrality between 1974 and 1977. A reversal occurred between 1977 and 1982. Only when income was used as the wealth variable and the pupil was the unit of analysis was there continual movement toward wealth neutrality through the eight-year time period.

2. The "state as a whole" was closer to wealth neutrality than were either elementary or high school districts in each of the three fiscal years. Measures associated with unit districts indicated those districts were closer to wealth neutrality than the state as a whole.

Gini Indices and regression analyses yielded similar results for the state as a whole. Progress toward wealth neutrality was made between 1974 and 1977. A reversal occurred after that time. When income was used as the wealth variable and the pupil was the unit of analysis, regression analysis indicated continual movement toward the equity goal.

These findings support earlier studies conducted at the Center for the Study of Educational Finance. The general trend observed in all three district types has been movement toward wealth neutrality between 1973 and 1977 and general deterioration after that time.[34]

The magnitudes of the Gini Indices and regression coefficients for the state as a whole were not as great as the corresponding measures for elementary and high school districts but were larger than the corresponding measures for unit districts. When elementary and high school districts were combined into pseudo-unit districts, the state appeared to be closer to wealth neutrality than was previously indicated through separate examination of elementary and high school districts.

Permissible Variance

When considering the "state as a whole" to consist of unit districts and pseudo-unit districts, the following conclusions could be drawn.

1. The "state as a whole" experienced a reduction in overall revenue variation between 1974 and 1977. The degree of revenue variation was greater in 1982 than in 1974.

2. The "state as a whole" had less variation in revenue than either elementary or high school districts in each of the three fiscal years. Measures associated with unit districts indicated those districts had less revenue variation than the state as a whole.

Coefficients of variation showed that the "state as a whole" experienced a reduction in revenue variation between 1974 and 1977. A reversal then occurred to a point where revenue variation in 1982 was greater than that observed in 1974. This pattern of movement also supports previous studies conducted by the Center for the Study of Educational Finance. The trend observed in all three district types has been a reduction in revenue variation between 1974 and 1977 followed by an increase over the last time period.

The McLoone Index, a measure of revenue variation below the median, yielded results diametrically opposed to results obtained using the coefficient of variation. This index revealed an increase in revenue variation below the median between 1974 and 1977 and then a reduction to a point, in 1982, to a level approximately the same as in 1974. One possible explanation for this phenomenon would be the low expenditure school districts exercised the computation available to them in 1977 of using a constant in the state aid formula rather than their actual operating tax rate. This computation may have been exercised not only by districts with low assessed valuations, but also by some property wealthy districts. Districts with low tax rates and low assessed valuations may have exercised that computation but so may have those districts with low expenditure levels, regardless of district property wealth. An influx of state dollars to these districts would have accounted for the reversal after 1977.

Coefficients of variation for each of the three fiscal years were generally smaller for the state as a whole than the corresponding measures for elementary and high school districts. Only unit district coefficients were smaller than the measures computed for the state as a whole.

McLoone Indices indicated less revenue variation below the median for the state as a whole than for elementary and high school districts. Unit districts generally had less revenue variation below the median than the state as a whole.

Measures obtained in the present study for each district type separately support like measures computed by the Center for the Study of Educational Finance for each of the three fiscal years in question.[35]

Conditional Wealth Neutrality

When considering the "state as a whole" to consist of unit districts and pseudo-unit districts, the following conclusions could be drawn.

1. The "state as a whole" made progress toward conditional wealth neutrality between 1974 and 1977. A reversal occurred between 1977 and 1982. Only when income was used as the wealth variable and the pupil was the unit of analysis was there continual movement toward conditional wealth neutrality through the eight-year time period.

2. The "state as a whole" was closer to conditional wealth neutrality than were either elementary or high school districts. Measures associated with unit districts indicated those districts were closer to conditional wealth neutrality than the state as a whole.

Regression analysis indicated that the "state as a whole" made progress toward conditional wealth neutrality between 1974 and 1977. Deterioration occurred after that time, although the state was closer to the equity goal in 1982 than in 1974. Only when income was used as the wealth variable and the pupil was the unit of analysis was there continual movement toward conditional wealth neutrality through the eight-year time period.

Regression coefficients for the state as a whole were generally smaller than the corresponding coefficients for elementary and high school districts for the fiscal years in question. Coefficients associated with unit districts were smaller than the coefficients for the state as a whole. The direction and magnitude of the coefficients associated with each district type separately generally supported the findings of Schmink et al. in their 1979 study.[36]

Policy Implications

The underlying question answered in the present study is: What if the state were truly comprised of all unit school districts? This study has shown that if the state consisted of only unit school districts, the state as a whole would be closer to financial equity than has been previously indicated even though the state has been moving away from equity in recent years.

Equal educational opportunity for all children, regardless of residency or wealth of parents, has been generally accepted as a worthwhile goal. However, individuals and school districts have not often demonstrated a willingness to make sacrifices necessary to achieve those goals on a statewide level. Legislation would no doubt be unpopular with various segments of the diverse population in the state.

Even though this study has implied that the elimination of all elementary school districts in Illinois would move the state toward the goal of equity, such a drastic action is not recommended at this time. There are too many possible adverse consequences of such an action. In

the first place, such an action would remove many well-respected "light-house" districts from the elementary scene in Illinois. Such an action might cause a flow out of the public schools and into the private schools in the wealthier elementary districts in the state, as wealthier families withdrew their children rather than send them to the newly consolidated public schools. This would weaken support for public education from the wealthier segments of society at a time when public education needs all the support it can get. Perhaps more importantly there are unknown economic efficiency aspects involved in any such massive consolidation effort. Some of these efficiency effects would probably be beneficial, since the elimination of very small elementary districts would remove those suffering the most from diseconomies of scale. However, merging districts that are already large might well create new K-12 districts that are too large to be economically efficient. There are also obvious problems connected with the reemployment and replacement of over 400 public school superintendents and the redirection of the energies of over 400 school boards. Possible hardships involved in transportation of pupils would also need to be considered, including safety factors in transporting pupils over sizeable distances.

Because there are so many possible negative "side effects" of a massive consolidation of elementary districts with high school districts in Illinois, the authors propose a more conservative approach. The authors feel both this study and a number of older efficiency-oriented studies cast enough doubt on the continued existence of the very small elementary districts that the state should mandate consolidation feasibility studies in the smallest elementary school districts in the state. One might, for example, draft legislation that would call for feasibility studies in the fifty smallest elementary districts in the state concentrating especially on those districts that are not "scattered," that is, elementary districts that are totally within the boundaries of one currently existing high school district. As can be seen in the Appendix, many of these elementary districts have less than 100 students. We feel these consolidation feasibility studies should be done at the local level by local people; and since they are mandated by the state, the state should provide some financial assistance to offset the cost of the mandated consolidation studies. There should be some time limit, however, in which these consolidation studies must be done. After the feasibility studies have been conducted, they should be reviewed by a panel appointed by the Illinois State Board of Education. If a consolidation seems merited, the panel should so recommend to the Illinois State Board of Education who should be empowered by statute to order the consolidation to take place within a reasonable period of time. Such an authorization by the legislature to the Illinois State Board of Education would require some changes in existing consolidation and reorganization statutes. The hard public policy choice here is whether concerns at the state level like "equity" and "efficiency" outweigh "local control." A properly empaneled group acting on initial recommendations at the local level, with ultimate responsibility resting with the Illinois State Board of Education, should insure a fair balance on these conflicting values.

By calling for the establishment of a review panel at the state level, with ultimate power of the Illinois State Board of Education to order consolidation, the assumption is being made that the State Board of Education has a responsibility, perhaps even a constitutional responsibility, to maintain both an equitable and an efficient system of public education. It is also suggested that these responsibilities, at least in some extreme cases, can outweigh local control. As is so often the situation in school finance, the public policy goals are in conflict with one another and must be balanced on a case-by-case basis. The desires of the few should not outweigh the needs of the many; however, the desires of the few must also be heard and respected.

The present study has shown that, if pseudo-unit school districts had been formed, the deterioration observed in each of the three types of school districts since 1977 would not have been totally reversed. Movement away from the equity goals would have occurred, but perhaps not at its present rate.

To reverse movement away from equity, the General Assembly would need to make a commitment to the pursuit of equity goals and continue that commitment on an annual basis through legislation geared to reverse the observed trend since 1977.

Recommendations for Future Research

1. This study consistently showed a pattern of movement toward equity between 1974 and 1977 and a reversal between 1977 and 1982. A further investigation could repeat the present study for fiscal years 1974, 1976, 1978, 1980, and 1982 to obtain a more complete understanding of the pattern of movement toward or away from the equity goals.

2. Since 1977 income data were used in this study, the study could be replicated using 1980 income data obtained from the United States Census. This would provide for updated measures computed using more current data.

3. This study computed school finance equity statistics for the state as a whole. Further research for the state as a whole, using the data base formed in this study, should be conducted on a yearly basis. Statistics for each district type separately should continue to be calculated and comparisons made with the state as a whole.

4. Using the existing data base, studies in special education and vocational education should be conducted. These studies could explore equity in Illinois for the state as a whole rather than by district type.

5. The present study used a selected set of measures to answer questions concerning revenue variation, wealth neutrality, and conditional wealth neutrality. Alternate measures could be explored and compared with measures used in this study.

6. Integral to the present study was the formation of the data base permitting the formation of pseudo-unit school districts. This technique reduced the number of school districts in Illinois to less than 600. Similar data bases could be formed to create county school districts or multi-county districts similar to existing educational service regions. Equity measures could then be computed using these organizational structures.

FOOTNOTES

[1] Serrano v. Priest, 96 Cal Rptr 601 (1971).

[2] Rodriguez v. San Antonio Independent School District, 411 U.S. 1 (1973).

[3] Final Report of the State Superintendent's Advisory Committee on School Finance by G. Alan Hickrod, Chairman (Springfield, Illinois: Office of the Superintendent of Public Instruction, 1973), pp. 1-115.

[4] G. Alan Hickrod, Ben C. Hubbard, and Thomas Wei-Chi Yang, The 1973 Reform of the Illinois General Purpose Educational Grant-In-Aid: A Description and an Evaluation (Normal, Illinois: Center for the Study of Educational Finance, Illinois State University, 1974), pp. 6, 7.

[5] G. Alan Hickrod and Ben C. Hubbard, The 1973 School Finance Reform in Illinois: Quo Jure? Quo Vadis? (Normal, Illinois: Center for the Study of Educational Finance, Illinois State University, 1978), p. 5.

[6] Hickrod et al., The 1973 Reform of the Illinois General Purpose Educational Grant-In-Aid: A Description and an Evaluation, pp. 21-25.

[7] G. Alan Hickrod, Ramesh Chaudhari, and Ben C. Hubbard, Equity Goals in Illinois School Finance: 1973-1979 (Normal, Illinois: Center for the Study of Educational Finance, Illinois State University, 1979), p. 14.

[8] Estimates of School Statistics (West Haven, Connecticut: National Education Association, 1981), p. 26.

[9]Illinois School Problems: Report of the Illinois School Problems Commission Number 4, by Charles W. Clabaugh, Chairman (Springfield, Illinois: 1957), p. 6.

[10]Fred Bradshaw, State, Local, and Federal Financing for Illinois Public Schools, 1981-1982 (Springfield, Illinois: Illinois State Board of Education, 1981), p. 6.

[11]Ibid., p. 6.

[12]G. Alan Hickrod, interview held at Illinois State University, Normal, Illinois, June 1982.

[13]G. Alan Hickrod and Ben C. Hubbard, Illinois School Finance Research: Some Knowns and Unknowns (Normal, Illinois: Center for the Study of Educational Finance, Illinois State University, 1977), p. 28.

[14]Ibid.

[15]Hickrod interview, June 1982.

[16]Ben C. Hubbard, interview held at Illinois State University, Normal, Illinois, June 1982.

[17]Ibid.

[18]Walter I. Garms, Measuring the Equity of School Finance Systems (Washington, D.C.: National Institute of Education, Department of Health, Education, and Welfare, 1978), p. 3.

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[22]Killalea Associates, Educational Opportunity: The Concept, Its Measurement, and Application (Washington, D.C.: National Center for Education Statistics, Department of Health, Education, and Welfare, 1978), pp. 29037. ED 157 204

[23]Robert Berne and Leanna Stiefel, A Methodological Assessment of Education Equality and Wealth Neutrality Measures: A Report to the School Finance Cooperative (New York: Public Policy Research Institute, Graduate School of Public Administration, New York University, 1978), pp. 1-250.

[24]Thomas Wei-Chi Yang, "Measurement of School Revenue Equity in the States of Illinois, Michigan, and Kansas" (Ph.D. dissertation, Illinois State University, 1975), pp. 1-117.

[25]Stephen J. Carroll, The Search for Equity in School Finance Systems: Summary and Conclusions (Santa Monica, California: Rand Corporation, National Institute of Education, 1979), pp. 1-51. ED 176 396

[26]G. Alan Hickrod, et al., Equity Measurements in School Finance: Indiana, Iowa, and Illinois (Normal, Illinois: Center for the Study of Educational Finance, Illinois State University, 1980), pp. 1-38.

[27]Allan Odden, "Missouri's New School Finance Structure," Journal of Education Finance 3 (Spring 1978):465-475.

[28]See, for example, Garms, Measuring the Equity of School Finance Systems, pp. 27-122; Berne and Stiefel, A Methodological Assessment of Education Equality and Wealth Neutrality Measures, pp. 1-206; Allan Odden, Robert Berne, and Leanna Stiefel, Equity in School Finance—Report Number F79-9 (Denver, Colorado: Education Finance Center, Education Commission of the States, 1979), pp. 1-91. ED 182 821

[29]Berne and Stiefel, A Methodological Assessment of Education Equality and Wealth Neutrality Measures, pp. 15-25.

[30]Garms, Measuring the Equity of School Finance Systems, p. 26.

[31]See, for example, Hickrod et al., The 1973 Reform of the Illinois General Purpose Educational Grant-In-Aid: A Description and an Evaluation, pp. 43-74; G. Alan Hickrod, Ben C. Hubbard, and Thomas W. C. Yang, The 1973 Reform of the Illinois General Purpose Grant-In-Aid: An Evaluation After Three Years (Normal, Illinois: Center for the Study of Educational Finance, Illinois State University, 1976), pp. 5-15; Hickrod, Hubbard, and Chaudhari, Equity Goals in Illinois School Finance: 1973-1979, pp. 10-14.

[32]1980-1981 Illinois Public School Districts and Schools (Springfield, Illinois: Illinois State Board of Education, Department of Research and Statistics, 1981), pp. 1-123.

[33]Numonics Corporation 1224 Users Manual (Lansdale, Pennsylvania: Numonics Corporation), sec. 2.5.1-2.5.6.

[34]Hickrod et al., Reformation and Counter-Reformation in Illinois Public School Finance: 1973-1981, pp. 41-45.

[35]Ibid., pp. 39, 40.

[36]Schmink et al., Conditional Wealth Neutrality as a School Finance Equity Criterion in Illinois, pp. 1-65.

TABLE 1

WEALTH NEUTRALITY CRITERION
GINI INDEX
ASVTWADA AS THE WEALTH VARIABLE

District Type	1974	1977	1982
Elementary	.0806	.0443	.0869
High School	.0810	.0443	.0433
Unit	.0251	-.0080*	.0133
Unit & Pseudo Combined	.0472	.0185	.0545

* The Lorenz curve crosses the line and the Gini Index is not interpretable.

TABLE 2

WEALTH NEUTRALITY CRITERION
GINI INDEX
INCTWADA AS THE WEALTH VARIABLE

District Type	1974	1977	1982
Elementary	.0845	.0490	.0664
High School	.0903	.0341	.0454
Unit	.0117*	.0260*	.0034*
Unit & Pseudo Combined	.0445	.0372*	.0309*

* The Lorenz curve crosses the line and the Gini Index is not interpretable.

TABLE 3

WEALTH NEUTRALITY CRITERION
REVTWADA REGRESSED ON ASVTWADA
LOG 10 TRANSFORMATIONS
DISTRICT AS THE UNIT OF ANALYSIS

District Type	Statistic	1974	1977	1982
Elementary	Regression Coefficient	.23074	.19691	.30992
	R^2	.43202	.32426	.58144
High School	Regression Coefficient	.38175	.22156	.30534
	R^2	.49311	.29223	.48658
Unit	Regression Coefficient	.17004	.03849	.14326
	R^2	.39600	.02292	.28188
Unit & Pseudo Combined	Regression Coefficient	.19309	.06002	.18023
	R^2	.37899	.04434	.28629

TABLE 4

WEALTH NEUTRALITY CRITERION
REVTWADA REGRESSED ON ASVTWADA
LOG 10 TRANSFORMATIONS
PUPIL AS THE UNIT OF ANALYSIS

District Type	Statistic	1974	1977	1982
Elementary	Regression Coefficient	.27975	.15998	.27960
	R^2	.45578	.20163	.47717
High School	Regression Coefficient	.44882	.24941	.27119
	R^2	.38931	.21174	.27940
Unit	Regression Coefficient	.19877	.01987	.07099
	R^2	.36740	.00311	.10958
Unit & Pseudo	Regression Coefficient	.27328	.11655	.20689
	R^2	.31326	.07811	.27466

TABLE 5

WEALTH NEUTRALITY CRITERION
REVTWADA REGRESSED ON INCTWADA
LOG 10 TRANSFORMATIONS
DISTRICT AS THE UNIT OF ANALYSIS

District Type	Statistic	1974	1977	1982
Elementary	Regression Coefficient	.23795	.20221	.19692
	R^2	.31460	.21633	.21498
High School	Regression Coefficient	.22514	.11094	.14907
	R^2	.09963	.04881	.08660
Unit	Regression Coefficient	.19580	.10917	.11034
	R^2	.12020	.04592	.05217
Unit & Pseudo Combined	Regression Coefficient	.24944	.17405	.18052
	R^2	.22403	.13912	.13190

TABLE 6

WEALTH NEUTRALITY CRITERION
REVTWADA REGRESSED ON INCTWADA
LOG 10 TRANSFORMATIONS
PUPIL AS THE UNIT OF ANALYSIS

District Type	Statistic	1974	1977	1982
Elementary	Regression Coefficient	.29524	.15724	.15361
	R^2	.47006	.20824	.21885
High School	Regression Coefficient	.51499	.20838	.22206
	R^2	.48753	.14460	.25806
Unit	Regression Coefficient	.16953	.15875	.01929
	R^2	.18515	.15689	.00546
Unit & Pseudo Combined	Regression Coefficient	.32761	.21333	.15976
	R^2	.38793	.24271	.14001

TABLE 7

PERMISSIBLE VARIANCE CRITERION
COEFFICIENT OF VARIATION
DISTRICT AS THE UNIT OF ANALYSIS

District Type	1974	1977	1982
Elementary	26.3374	27.0247	35.5048
High School	25.1461	18.3075	24.2217
Unit	13.3122	12.8505	14.4557
Unit & Pseudo Combined	15.7746	14.4465	19.5999

TABLE 8

PERMISSIBLE VARIANCE CRITERION
COEFFICIENT OF VARIATION
PUPIL AS THE UNIT OF ANALYSIS

District Type	1974	1977	1982
Elementary	21.5762	18.4651	24.8689
High School	22.0087	16.8801	16.8446
Unit	10.3952	11.4571	9.2727
Unit & Pseudo Combined	17.2364	14.3848	18.2083

TABLE 9

PERMISSIBLE VARIANCE CRITERION
MCLOONE INDEX

District Type	Measure	1974	1977	1982
Elementary	Index	.9065	.8813	.9272
	Median	844.00	1169.50	1684.00
High School	Index	.8859	.9015	.8914
	Median	1007.00	1287.00	2085.50
Unit	Index	.9552	.9317	.9374
	Median	869.00	1063.00	1572.00
Unit & Pseudo Combined	Index	.9432	.9241	.9407
	Median	877.00	1088.00	1600.50

TABLE 10

CONDITIONAL WEALTH NEUTRALITY CRITERION
REVTWADA REGRESSED ON ASVTWADA
WHILE CONTROLLING FOR TAXRATE
LOG 10 TRANSFORMATIONS
DISTRICT AS THE UNIT OF ANALYSIS

District Type	Statistic*	1974	1977	1982
Elementary	Regression Coefficient	.28399	.24033	.33823
	R^2 Increase**	.60932	.45690	.65250
High School	Regression Coefficient	.50625	.28130	.37874
	R^2 Increase	.75687	.44502	.68659
Unit	Regression Coefficient	.24044	.09906	.15757
	R^2 Increase	.68519	.13893	.33699
Unit & Pseudo Combined	Regression Coefficient	.25937	.11062	.20107
	R^2 Increase	.61660	.14295	.35212

* The statistics derived are associated with the wealth variable ASVTWADA.

** This indicates the amount of increase in R when ASVTWADA is stepped into the regression equation.

TABLE 11

CONDITIONAL WEALTH NEUTRALITY CRITERION
REVTWADA REGRESSED ON ASVTWADA
WHILE CONTROLLING FOR TAXRATE
LOG 10 TRANSFORMATIONS
PUPIL AS THE UNIT OF ANALYSIS

District Type	Statistic*	1974	1977	1982
Elementary	Regression Coefficient	.26805	.16520	.29325
	R^2 Increase**	.41764	.21493	.52180
High School	Regression Coefficient	.51943	.30532	.34756
	R^2 Increase	.51214	.31153	.44313
Unit	Regression Coefficient	.24275	.08681	.10346
	R^2 Increase	.50721	.05704	.22294
Unit & Pseudo Combined	Regression Coefficient	.31026	.11784	.18015
	R^2 Increase	.39925	.07985	.20645

* The statistics derived are associated with the wealth variable ASVTWADA.

** This indicates the amount of increase in R when ASVTWADA is stepped into the regression equation.

TABLE 12

CONDITIONAL WEALTH NEUTRALITY CRITERION
REVTWADA REGRESSED ON INCTWADA
WHILE CONTROLLING FOR TAXRATE
LOG 10 TRANSFORMATIONS
DISTRICT AS THE UNIT OF ANALYSIS

District Type	Statistic*	1974	1977	1982
Elementary	Regression Coefficient	.21130	.16976	.19881
	R^2 Increase**	.21486	.14061	.20728
High School	Regression Coefficient	.13526	.05912	.11095
	R^2 Increase	.02971	.01307	.04432
Unit	Regression Coefficient	.16394	.07258	.07721
	R^2 Increase	.08188	.02008	.02478
Unit & Pseudo Combined	Regression Coefficient	.19031	.08052	.11106
	R^2 Increase	.11044	.02692	.04470

* The statistics derived are associated with the wealth variable INCTWADA.

** This indicates the amount of increase in R when INCTWADA is stepped into the regression equation.

TABLE 13

CONDITIONAL WEALTH NEUTRALITY CRITERION
REVTWADA REGRESSED ON INCTWADA
WHILE CONTROLLING FOR TAXRATE
LOG 10 TRANSFORMATIONS
PUPIL AS THE UNIT OF ANALYSIS

District Type	Statistic*	1974	1977	1982
Elementary	Regression Coefficient	.21845	.09114	.12959
	R^2 Increase**	.22209	.06381	.14564
High School	Regression Coefficient	.38565	.12208	.13201
	R^2 Increase	.22874	.04654	.07915
Unit	Regression Coefficient	.14720	.06605	.00235
	R^2 Increase	.11990	.02511	.00009
Unit & Pseudo Combined	Regression Coefficient	.22352	.10626	.07821
	R^2 Increase	.14895	.05373	.03122

* The statistics derived are associated with the wealth variable INCTWADA.
** This indicates the amount of increase in R when INCTWADA is stepped into the regression equation.

FIFTY SMALLEST ELEMENTARY DISTRICTS IN ILLINOIS
AS OF 1980

County	Number	District Name	Enrollment	EAV/Pupil	Tax Rate	Median Income	Density	Title I Eligibles
LEE	2200	STEWARD ELEM SCHOOL	112	106971.19	1.7493	9500	2.2	11.61
MCLEAN	0880	BELLFLOWER C.C. SCH.	112	159336.81	1.8030	10918	1.9	18.75
JEFFERSON	0120	MCCLELLAN C.C. SCHOC	110	27029.22	1.5700	6577	6.1	18.18
LASALLE	0650	ALLEN TWP. C.C. SCHC	108	97298.25	1.3971	7540	2.9	9.26
BUREAU	0980	DALZELL SCHOOL DIST.	105	24072.53	1.4588	10804	26.3	.95
BUREAU	0840	MALDEN COMM CONS SCH	104	86222.81	1.6953	7921	3.0	22.12
WAYNE	0140	GEFF C.C. SCH. DIST.	103	35524.82	2.4719	5659	3.1	32.04
KENDALL	0900	LISBON COMM. CONS. S	102	142143.50	1.3109	9958	2.5	0.0
PERRY	2120	COMMUNITY CONS. SCH.	102	53178.70	2.0500	8500	2.2	24.51
LAKE	0720	RONDOUT SCHOOL DIST.	99	139634.50	1.9290	14355	21.1	1.01
WASHINGTON	0010	OAKDALE C.C. SCH. DI	99	61324.80	1.8400	7033	1.7	16.16
OGLE	2690	ESWOOD C. C. DIST. 2	99	114116.06	1.9474	9578	2.2	9.09
KANKAKEE	2620	WICHERT C.C. SCHOOL	98	57454.79	1.8670	9303	4.5	33.67
LASALLE	2300	RUTLAND C C SCHOOL D	97	175290.50	1.4377	10866	4.3	20.62
JEFFERSON	0060	GRAND PRAIRIE C.C. S	96	35964.68	1.5820	7515	2.7	25.00
TAZEWELL	6220	PLEASANT VIEW CONS S	95	102439.50	1.6545	11418	3.1	0.0
LASALLE	2350	OPHIR COMM. CONS. SC	95	102682.56	1.5836	8239	2.8	15.79
LOGAN	0680	BROADWELL C.C. SCHOC	92	114745.69	1.7018	10400	2.4	4.35
LOGAN	0170	BEASCN COMM. CONS. S	87	159278.75	1.9850	9050	1.8	3.45
CHRISTIAN	1830	TOVEY SCHOOL DIST. 1	86	31959.07	1.4293	6769	12.3	19.77
PUTNAM	5340	SENACHWINE CONS. SCH	85	127948.75	1.3682	10124	2.1	11.76
WASHINGTON	0290	HOYLETON CONS. SCH.	84	124852.94	1.3980	7083	1.4	19.05
BUREAU	1750	LEEPERTOWN C.C. SCH.	83	29477.82	2.1963	6833	4.5	7.23
JOHNSON	0430	BUNCOMBE CONS. SCHCC	81	33356.60	2.7906	6196	2.6	6.17
CHAMPAIGN	2240	PENFIELD C.C. SCHOOL	80	158557.94	1.3874	7961	1.9	16.25
CALHOUN	0410	BRUSSELS-RICHWOOD C.	80	84579.88	1.8760	8037	1.3	22.50
JEFFERSON	0990	FARRINGTON C.C. SCHC	79	42013.33	1.5090	4897	2.1	27.85
LIVINGSTON	4250	ROOKS CREEK C.C. SCH	78	133464.75	1.4015	8833	2.3	1.28
FULTON	3300	SOUTH FULTON CONS. S	77	88398.06	1.4060	5312	1.4	46.75
STARK	0450	VALLEY COMP. CONS. S	77	136883.81	1.3520	6854	1.9	22.08
FULTON	3400	PRICHARD CLARK CONS.	74	82473.06	1.9070	8714	3.0	5.41
FRANKLIN	1100	LOGAN COMM. CONS. SC	70	19118.18	2.5300	6240	7.0	35.71
GRUNDY	024C	NETTLE CREEK C.C. SC	68	173154.19	1.3673	8333	1.5	0.0
WHITE	0180	MILL SHOALS C.C. SCH	63	30108.58	1.4470	5583	3.2	63.49
LEE	0080	NELSON PUBLIC SCHOOL	63	86357.88	2.0736	9571	4.6	3.17
FULTON	0880	DUNFERMLINE SCHOOL D	60	22438.68	2.3590	6906	17.1	10.00
PERRY	2110	COMMUNITY CONS SCH D	59	81749.88	2.1100	6555	1.4	33.90
BUREAU	2500	BUREAU TWP SCHOOL DI	56	132050.50	1.7855	7722	1.5	5.36
LASALLE	1290	J. F. KENNEDY C.C. S	56	64314.00	1.9609	11240	4.3	10.71
IROQUOIS	2840	BRYCE-ASH GROVE C C	54	157307.81	1.8610	7687	1.4	16.67
LIVINGSTON	4310	SUNBURY C.C. SCHOOL	51	149836.00	1.3930	9083	1.6	9.80
GRUNDY	035C	GOODFARM COMM. CONS.	47	178563.19	1.3363	9954	1.5	4.26
LASALLE	0560	OTTER CREEK ELEM SCH	45	119384.38	1.3522	10184	2.3	15.56
LIVINGSTON	4300	PONTIAC ESMEN C.C. S	35	210328.44	1.7392	9000	1.3	14.29
BUREAU	0230	KASBEER CONS. SCHOOL	33	124323.31	2.0522	8642	1.9	21.21
LASALLE	0430	EAGLE ELEM SCHOOL DI	29	156843.50	1.7392	10132	1.6	37.93
DUPAGE	0270	MCAULEY SCHOOL DIST.	28	526449.50	.6648	11630	6.5	14.29
LIVINGSTON	4340	OWEGO COMM. CONS. SC	20	407090.25	1.0509	9625	.9	5.00
RANDOLPH	1240	KASKASKIA ISLAND CON	11	192389.13	1.6800	5272	.4	163.64
FRANKLIN	0370	FLATTS SCHOOL DIST.	0	0.0	0.0	6800	0.0	0.0