

# Chapter 4

## Financial Performance Indicators and Measures



### Financial Condition and Key Ratios—Definitions and Uses

Analysis of a school district's financial condition is generally based on data elements used to construct a series of ratios that depict the short- and long-term district financial situation. These ratios aid in the interpretation of finance data and are used in financial statements and reports to compare the relationship between financial elements. For example, it is difficult to assess whether revenues are sufficient by reviewing revenues alone. Rather, it is more meaningful to compare revenues with another financial element, such as liabilities or net assets. This produces a measure that is comparable for different fiscal periods for the same entity and among other similar entities. Ratios are useful tools for financial statement analysis because they conveniently summarize data in a form that is more easily understood, interpreted, and compared.

Several possible standards that might be used include:

- the planned ratio for the period being analyzed;
- the corresponding ratio during the preceding year, or some average of past years;
- the corresponding ratio from a peer school district or the state-wide average; and
- the legislatively mandated benchmark for the ratio.

As components of financial statements and reports, these ratios are used both internally by the school district to monitor and assess district finances and practices, and externally by legislators, taxpayers, parents, and others who wish to assess aspects of school district accountability.

Most financial statement analysis is directed at the financial soundness of the district through its ability to provide services in relation to the tax structure, tax base, state and local economic climate, supply and cost of staff and resources, enrollment, and demand for services. Reviewing current and past financial indicators in the context of these outside variables can provide some insight into the management decisionmaking process to maintain the solvency of the district.

Several states use financial information to set benchmarks based on multiyear trends of specific financial measures that determine whether districts are beginning to experience financial difficulty, so that internal or external policy actions can be taken to correct the situation. Additionally, rating agencies look at the current and past financial situation of the school district through a series of financial measures that represent a distinct and important composite of district financial indicators. Local taxpayers can also use district financial information to make informed decisions on local tax referenda as well as the need for participation in the local budget approval process.



Recently, there has been significant interest nationally in developing measures of efficiency in the use of resources. This involves linking student achievement with the financial resources expended to produce the desired academic performance. This measure is often referred to as Return on Investment, and provides another assessment of school and/or district accountability for performance.

The following sets of ratios are categorized into major areas and represent some of the more common financial ratios used (Meade 2001). These ratios can be modified to reflect per pupil or per capita figures, depending on the use of the measure. Some ratios incorporate a period of time and inherently reflect growth or change in the indicator. Others are point-in-time indicators, but can also be viewed sequentially through time-series analysis. Ratios can also be compared between districts through cross-sectional analysis. In either case, care must be taken to ensure the comparability of data either across districts or within the same district over time if major or one-time changes have occurred.

All definitions are presented in broad aggregate terms relating to assets and expenses, and can be further refined to address specific assets and expenses using the same methodology to evaluate a particular financial category within the school district. For example, financial position ratios can be based on unrestricted assets, restricted assets, or capital assets, as well as the more general ratio using total assets. Similarly, all definitions can be refined to incorporate particular funds, programs, or revenues. All ratios can also be modified to a per student basis. Basic definitions of accounting and finance terms used can be found in Siegel and Shim (2005) and Downes and Goodman (2006).

It should also be noted that no one ratio should be used to evaluate the financial condition or capacity of the school district. The ratio should be used to identify financial issues that may require further assessment.

## Financial Condition Indicators

Key ratios of the financial condition of a school district assist in evaluating the district's current financial situation as well as provide insight into the district's ability to continue providing services in the future. In general, these financial ratios can be categorized as measures of financial position, liquidity, solvency, and fiscal capacity.

### Financial Position Ratios

Financial position ratios are used to evaluate the current and past financial condition of a school district in terms of the nature of its debts and obligations and the resources available to repay them.

#### ***Financial Position***

This ratio is used to evaluate a school district's financial position at a given time based on a comparison of the resources it generally owns or controls with its obligations. It is calculated as:

$(\text{Assets} - \text{Liabilities}) / \text{Total Revenues}$

This measure can be modified to use expenses (net assets divided by total expenses or operating expenses), fund balances (fund balance divided by total expenditures, revenues, or operating revenues), or unreserved fund balance (unreserved fund balance divided by total expenditures, revenues, or operating revenues).



### **Change in Financial Position**

A change in financial position is measured in terms of change in net assets divided by total revenues. This ratio is used to evaluate the change in a school district's financial position based on a comparison of the resources it generally owns or controls with the obligations it faces. It provides information as to how the financial position of the school district has changed over time. It is calculated as:

$$(\text{Net Assets}_e - \text{Net Assets}_b) / \text{Total Revenues}_e$$

Where:

b = beginning of time period, and  
e = end of time period.

This indicator can be modified to use expenses (change in net assets divided by total expenses or operating expenses), fund balances (change in fund balance divided by total revenues, operating revenues, or expenditures), or unreserved fund balance (change in unreserved fund balance divided by total revenues, operating revenues, or expenditures). This ratio shows the direction of change in financial position over a period of time, whereas financial position is a point-in-time measure.

### **Liquidity Ratios**

Liquidity ratios are used to evaluate whether a school district will be able to meet its obligations in the short run and whether it will have sufficient resources to cover ongoing operating costs.

#### **Current Ratio**

This ratio is used to evaluate a school district's ability to cover its obligations with existing resources. It is calculated as:

$$\text{Current Assets} / \text{Current Liabilities}$$

Where:

Current Assets are defined as cash, accounts receivable, inventory, and other assets that are likely to be converted into cash, sold, exchanged, or expensed in the normal course of business, usually within a year; and Current Liabilities are defined as debt or other obligations coming due within a year (Downes and Goodman 2006).

#### **Quick Ratio**

The quick ratio is measured in terms of the sum of cash and current investments divided by current liabilities. This ratio is used to evaluate a school district's ability to meet its current obligations using only the most liquid assets—generally cash, near cash assets such as money market funds, other short-term investments, and sometimes receivables. It is calculated as:

$$(\text{Cash} + \text{Current Investments}) / \text{Current Liabilities}$$

Where:

Current Investments (short-term investments) are defined as funds placed in securities that are expected to be held for one year or less (Siegel and Shim 2005).



## Solvency Ratios

Solvency ratios are used to evaluate a school district's ability to repay its long-term obligations, such as bonds, or to cover future costs, such as compensated absences and leave pay. Solvency ratios are categorized either as leverage ratios or coverage ratios. Leverage ratios are used to determine the degree to which a school district's assets are financed through borrowing and other long-term obligations. Coverage ratios compare cash flows to a district's debt repayments, both interest and principal.

### ***Debt-to-Assets Ratio***

This ratio is used to evaluate the degree to which a school district has resources necessary to repay its debt. It is calculated as:

Total Liabilities / Total Assets

### ***Debt-to-Net-Assets Ratio***

This ratio is used to evaluate the degree to which available resources for providing public services by the district are financed through debt. It is calculated as:

Total Liabilities / Net Assets

### ***Times-Interest-Earned Ratio***

This ratio compares cash flows generated by operations to interest payments on debt. It is calculated as:

(Cash Flow from Operations + Interest) / Interest

Where:

Cash Flow = (General Funds Revenues + Special Funds Revenues - General Funds Current Expenditures - Special Funds Current Expenditures); and

Interest = Interest on Long-Term Debt for Governmental and Business-Type Activities.

### ***Debt Service Coverage Ratio***

This ratio compares cash flows to all debt repayments, both interest and principal. It is calculated as:

(Cash Flow from Operations + Debt Service) / Debt Service

Where:

Debt Service = (Interest on Long-Term Debt for Governmental and Business-Type Activities + Principal Repayments for Long-Term Debt for Governmental and Business-Type Activities).

## Fiscal Capacity Ratios

Fiscal capacity ratios measure a school district's ability to generate resources that can be used to finance the provisions of services to students. Many of these indicators combine a school district's financial statement information with economic, demographic, and tax-related data. These ratios compare revenues, expenses, and debt to measure the community's ability to pay for school district services. Full-time equivalent student counts are used in many of the following ratios; however, other measures of student counts can be substituted.



### **Taxable Property per Student**

(Total Taxable Property Value) / (Total Full-Time Equivalent Students)

### **Property Tax Revenues per \$100 of Assessed Property Value**

(Total Property Tax Revenues x 100) / (Total Assessed Property Value)

Note: This produces an effective tax rate rather than the rate levied.

### **Taxes per Student**

(Total Tax Revenues) / (Total Full-Time-Equivalent Students)

### **Debt per \$100 of Assessed Property Value**

(Total Liabilities x 100) / (Total Assessed Property Value)

### **Debt per Student**

(Total Liabilities) / (Total Full-Time-Equivalent Students)

## **Revenue and Expenditure Analysis**

Revenues and expenditures are two key sets of elements used in the financial analysis of school districts. Both revenue and expenditure data elements are identified with account codes at their most detailed level and can be aggregated into larger levels of revenues and expenditures, depending on how the data will be used for reporting and analysis. Revenues and expenditures are the primary components used to create financial ratios by presenting an amount per specified base, such as revenue or current expenditure per pupil. Common revenue classifications include local, state, intermediate, and federal sources, and are further classified by the source of revenue generation, such as local property tax. Common expenditure classifications include operating (or current), capital, and debt service, and are generally reported at the school district level and aggregated to the state level. These classifications may be disaggregated into functional areas in order to provide a more detailed financial analysis. For example, community services expenditures may be excluded from total current operating expenditures in order to identify expenditures specifically related to public elementary and secondary education.

## **Equity Measures**

The study of equity in funding public education is not a new concept. Elwood Cubberley in the early 1900s was the first to question the differences in resources available to school children. In the early 1970s, equity concerns were heightened by two landmark lawsuits: (1) *Serrano v. Priest* (487 P. 2d 1241, 1971) and (2) *Antonio Independent School District v. Rodriguez* (411 U.S. 1, 1972). Both of these lawsuits addressed equity, although many scholars argue that *Brown v. Board of Education* (1954) was the real beginning of legal tests of equitable resources and opportunities for all children.

The use of statistical equity measures to examine the differences in dollars available to students between districts within a state became prevalent with the increased litigation. The inequity that was examined focused on the inability of school districts with lower property wealth (fiscal capacity) to generate revenues comparable to those available to districts with higher property wealth.



Equity in education finance research is often viewed in two different but interrelated ways. School finance researchers look at equity as being either horizontal or vertical. Horizontal equity means that persons who are similarly situated (e.g., all students) are treated similarly. Vertical equity addresses persons with differing needs, such as students with disabilities, students with limited English proficiency, and students from families with low incomes. These students require dissimilar treatment to achieve equity.

In exploring issues of equity, the education research field and other disciplines have relied on a variety of measures, each of which incorporates different ways for gauging the magnitude of the equity of resource distribution. These measures focus on *inputs* for students (i.e., fairness in dollars available to purchase the resources needed to provide all students an equal opportunity for education). These measures address issues of *horizontal* equity only.

The funding of public education through local property taxes has tended to create the input inequities that school finance litigation tries to remedy. Traditionally, the choice for lower property-wealth districts was to either remain poor, creating inequities for students, or to impose higher tax rates, creating inequities for taxpayers. The disparity in local funding available between low property-wealth districts and high property-wealth districts meant that students living in higher property-wealth districts had greater resources and, therefore, better educational opportunities. In order to address inequities, states began taking a larger role in funding education. State legislatures, whether ordered by the state courts or to avoid litigation, developed formulas that would fund local school districts in an inverse relationship to the district's local property wealth.

Funding that seeks to address differing needs of particular students or groups of students takes many forms. There are no standardized measures for vertical equity as there are for horizontal equity, although researchers have developed various weights and cost indexes that reflect the increased resources involved in providing additional services for students with needs above the regular education programs. Some states have chosen to incorporate these weights and indexes into the basic education funding formula or to apply them through categorical program funding.

Taxpayer equity is a less explored issue in school finance research. Through various mechanisms in state aid formulas, such as equalization funding, states fund local school districts inversely to what is raised locally. Statistical measures of taxpayer equity are not as prevalent or standardized as measures for student equity.

## **Common Equity Measures**

Four of the most common and frequently used equity measures are identified and described below. Additional information and examples are provided to aid in the interpretation of the indicator results. More information about these and other measures can be found in *The Measurement of Equity in School Finance* (Berne and Stiefel 1984).

### ***Federal Range Ratio***

This measure identifies the difference between the per pupil financial variable at the 95th and 5th percentiles arranged in ascending order of per pupil values divided by the per pupil financial variable at the 5th percentile. The federal range ratio has a long tradition of being used to define disparity. Its limitation is that it only focuses



on two points to define an entire distribution. The ratio has a minimum value of zero with increasing values indicating higher disparity. The calculation for this ratio is:

$$(\text{District}_{95} - \text{District}_5) / \text{District}_5$$

Where:

District<sub>95</sub> = District at the 95th percentile; and

District<sub>5</sub> = District at the 5th percentile.

### **Coefficient of Variation**

As an education measure of equity, the coefficient of variation is generally applied to per pupil expenditures or resources of each school district within a given state. It is defined as the standard deviation expressed as a percentage of the mean. A standard deviation is the average variance from the mean. Using these generally applied education finance terms, the calculation for the coefficient of variation is:

$$\frac{\left[ \frac{\sum P_i (M - x_i)^2}{\sum P_i} \right]^{1/2}}{M}$$

Where:

P<sub>i</sub> = Student Enrollment in District i;

X<sub>i</sub> = Expenditures or Resources in District i; and

M = Mean Expenditure or Resources per Pupil for all Pupils.

Unlike the federal range ratio, the coefficient of variation takes into account all observations (e.g., expenditures or resources per pupil for all school districts within the state), rather than only extreme cases with the highest and lowest value of a specified range. As an example, a coefficient of 15 percent (or 0.15) indicates that approximately 68 percent of the observations (e.g., school districts within a state) have a value that is 15 percent above or below the average per pupil resources or expenditures (i.e., within one standard deviation of the mean) and 95 percent of the observations have a value that is 30 percent above or below the average (i.e., within two standard deviations of the mean). So if average expenditures per pupil in a given state is \$4,000, then using this example, 68 percent of the districts in the state have an expenditure per pupil between \$3,400 and \$4,600 (\$4,000 plus or minus 15 percent) (Odden and Picus 2004).

The value of the coefficient of variation generally ranges between 0 and 1, although the values can be higher. A value of zero indicates perfect equity while higher values indicate increasing inequity.

### **Gini Coefficient**

The Gini coefficient is a statistical measure originally designed to measure competition within a given industry. If the market shares of a given industry are evenly distributed among all businesses in the industry, that industry is considered to be perfectly competitive. In a similar way, the Gini coefficient can measure school districts' shares of resources, wealth, revenues, expenditures, or other comparable factors in a given state. If per pupil resources are evenly distributed across school districts, then the school system has perfect equity. The calculation of the measure in both instances is based on the Lorenz curve, which shows the cumulative share of the aggregated value of a variable plotted against the cumulative portion of units when units are ranked in ascending order by the variable. As an education measure of equity, per pupil expenditure or some other cost or resource figure is generally used as the variable of interest, with the school district or specified student count as the unit. The



Lorenz curve is calculated by first ranking school districts (or student counts) based on the magnitude of per pupil expenditures. Next, the cumulative percentage distribution is calculated by determining the total share of the variable (e.g., per pupil expenditures) attributed to the lowest 10 percent of school districts (or students) in the distribution, then calculating the percentage of the total received by the lowest 20 percent and so on, until all school districts (or students) are included. These figures, one for each 10 percent interval, are then plotted. The axes on the graph are measured in terms of the percentages. The Lorenz curve is created by connecting these points. A 45-degree diagonal is the perfect equity reference line for the Lorenz curve. The Gini coefficient is a summary statistic that measures the area between the Lorenz curve and the perfect equity reference line.

As an example, if the lowest 10 percent of school districts (or students) accounts for less than 10 percent of per pupil expenditures, the Lorenz curve would bow downward, displaying inequity. The closer the school system is to perfect equity, the closer the Lorenz curve will be to the reference line and the closer to zero will be the area between them. The coefficient ranges from 0 to 1, with 0 indicating perfect equity (King, Swanson, and Sweetland 2003).

The calculation for the Gini coefficient is:

$$\frac{\left[ \frac{\sum \sum |\chi_i - \chi_j| P_i P_j}{\left( \sum P_i \right)^2} \right]}{2M}$$

Where:

P<sub>i</sub> = Student Enrollment in District i;

P<sub>j</sub> = Student Enrollment in District j;

X<sub>i</sub> = Expenditures or Resources in District i;

X<sub>j</sub> = Expenditures or Resources in District j; and

M = Mean Expenditure or Resources per Pupil for all Pupils.

### **McLoone Index**

Unlike the variance and Gini coefficients, the McLoone index focuses only on districts below the median district by comparing the amount of expenditures or resources that recipients below the median of the distribution actually received with the amount received by the median recipient. It is the ratio of expenditures or resources for pupils below the median to the resources that would be required if all pupils below the median were actually receiving the per pupil amount of resources at the median. This index varies between 0 and 1 and becomes larger as equity increases. As an example, if state A had a McLoone Index of 0.85 and state B had a McLoone Index of 0.95, state B would have achieved greater equity.

The calculation for the McLoone Index is:

$$\frac{\sum P_i \chi_i}{\sum P_i (med)}$$

Where:

i = Districts Below the State Median per Pupil Level of Expenditures or Resources

P<sub>i</sub> = Student Enrollment in District i;

X<sub>i</sub> = Expenditures or Resources in District i;

med = Median Expenditures or Resources per Pupil for all Pupils.





## Ad Hoc Procedures

Generally, the common equity measures cited in this guide are used independently, though often several measures are used to either verify or further enhance the equity findings of a single measure. In these cases, the findings of each indicator remain independent. However, some measures are created that use several common or less-than-common measures and weight each outcome to create a hybrid or ad hoc indicator. One major example of this type of equity measure is used by *Education Week*. In collaboration with the Pew Charitable Trusts, *Education Week* compiles data on more than 75 indicators across 5 categories. In 2006, the *Quality Counts* section of the annual *Education Week* report included a measure and grade for equity. The equity measure was constructed from two common equity measures: the McLoone Index and the coefficient of variation, as well as a less common wealth neutrality calculation. Each of these measures was equally weighted to create an overall equity grade or measure. *Education Week* analysis and measures may change in future publications.

## Adequacy Measures

The study, definition, and measuring of adequacy in school finance is relatively new. In recent decades, equity was the major focus of study. In several instances, state funding systems were found to be equitable using within state comparisons. However, having a fair or equivalent funding distribution does not always mean that the amount given is enough or adequate. Recently, school finance litigation and research has begun to apply more of its focus to the adequacy of funding.

Although subtle in several instances, there are key differences between equity and adequacy. Equity deals with *inputs*. The concern, as discussed in an earlier section, is providing equitable resources to students regardless of the local school district's wealth. Equity is related to the assumption that equal or equitable dollars provide an equitable opportunity to learn. Adequacy, on the other hand, deals with *outputs*. The concern is whether the amount of funding accomplishes a set goal or standard, such as increasing test scores, increasing graduation rates, decreasing dropout rates, or similar standards.

The goals of equity and adequacy also differ. Legislators and policymakers set a goal of redistributing tax dollars to bring about equity, usually providing additional dollars in an inverse relationship to fiscal capacity. While student learning is implicitly the end result, the explicit goal is fair distribution of funding. Adequacy, on the other hand, begins with establishing a targeted standard for student achievement. Funding in this case is based upon providing the resources necessary to bring all students up to the established standard. The explicit goal is fair funding of sufficient resources.

A major area of concern in the area of adequacy is which of the measures or standards should be targeted. Output measures focused on so far have been achieving defined levels of proficiency on some test, usually a state-developed criterion reference test.

However, in some lawsuits regarding adequacy, the courts have developed a list of abilities that students should possess upon exiting the K-12 public school system. The list developed with the Kentucky lawsuit (*Rose v. Council for Better Education, Inc.*) called for *sufficient* skills in communication, reading, making informed choices, and other areas. A more recent lawsuit over funding of New York City Schools (*Campaign for Fiscal Equity, Inc. v. State*) raised the bar even higher. New York decided that, in addition to other knowledge and skills, students should be able to serve on a jury, and therefore, understand such things as DNA evidence and election campaign reform. Other states have decided to identify the school district that is producing the desired outcome and fund all districts at the level of this identified district.



The Education Commission of the States (<http://www.ecs.org>) found three reasons that states have studied or moved to funding adequacy. Those reasons are compliance with court rulings, alignment of state accountability programs and funding, and reevaluation of the state funding system.

## Economic Adjustment Indexes

Economic adjustment indexes can be used in education finance to put into context the value of education dollars. These adjustment indexes are often incorporated into adequacy funding formulas or research analyses. This is done by adjusting for differences in the purchasing power of different school systems or by adjusting for changes in general prices over time. Some economic adjustment indexes encompass broad areas of the economy and can be applied to areas other than education. Other indexes—called cost of education indexes (CEIs)—emphasize education-related factors. The common component in these CEIs is teacher salaries, because they make up the majority of education operating costs. Both the general and CEI indexes can be used in resource analysis to help estimate the funds needed for educational services. Additionally, many of these indexes can be used to compare the financial resources available across communities or school districts. Some of the more common indexes are identified below with additional descriptions for the indexes that continue to be updated.

### ***Comparable Wage Index (CWI)***

This index is the most recent addition to this growing set of education indexes and is also the most recent geographic cost index released by NCES (Taylor and Fowler 2006). It uses data from the 2000 Decennial Census and the Bureau of Labor Statistics' Occupational Employment Statistics to develop a geographic wage index for states and metropolitan labor markets. The basic premise of the CWI is that all types of workers—including teachers—demand higher wages in areas with a higher cost of living or a lack of amenities. The CWI was released in May 2006. This is the only geographic index available from NCES as of July 2006. As of the time of publication for this guide, the CWI has been updated for use with 2004 education finance data. Periodic updates will be made to this index. Additional information about this index can be found at <http://nces.ed.gov/edfin/prodsurv/data.asp>.

### ***Consumer Price Index (CPI)***

This is a measure of the average change over time in the prices paid by consumers for a fixed market basket of consumer goods and services. The CPI provides a way to measure the change in prices over time for a single area. While the CPI was not designed specifically to be used with education finance data, it is a common measure that is continuously updated. However, the CPI cannot be used to measure differences in price levels or costs between one place and another; it measures only period-to-period changes for the nation as a whole. The CPI is published monthly, allowing for annual inflation to be defined for any 12-month period. Since most school districts operate on a fiscal year that begins on July 1, a CPI calculated for a July-to-June year is usually used to adjust public education finance data. Additional information about this index can be found at <http://www.bls.gov/cpi> (U. S. Department of Labor 2006).

### ***Economic Adjustment Indexes in the 1990s***

Several economic adjustment indexes that have been either used for or created for use with education finance data include: the Cost of Living Index (McMahon 1994); the Average Teacher Salary Index (Barro 1992); the Teacher Cost Index (Chambers 1995); and the Geographic Cost of Education Index (Chambers 1997 and 1998). These indexes were developed in the 1990s but have not been continuously updated, limiting their usefulness for more current financial analysis. Of these indexes, the Geographic Cost of Education Index has been one of the more commonly used because it measures cost-of-living, teacher salary, and other economic factors, and includes adjustments for inflation for education-related costs based on the prices of the inputs (personnel and non-personnel items used in the provision of school services) purchased by schools.



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