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SPECIAL ISSUE: 
COLLECTION OF SCHOOL-LEVEL FINANCE DATA

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The Coming of Age of School-Level Finance Data

BY ROBERT BERNE, LEANNA STIEFEL AND MICHELE MOSER

Since before the November 1994 election, the U.S. public has been raising serious questions about elementary and secondary education finance. These questions include how the American public education system compares to that in other countries, whether the appropriate share of total resources is used directly for educating students, whether new forms of governance such as charter schools and vouchers should be more prevalent, and, once again, whether state public education systems are equitably financed.

The November 1994 election results added another question about whether there needs to be a reorganization and retrenchment of public spending in general, with clear implications that public education will be affected.

There has been a common theme in the various answers suggested for all of these questions. The theme is that schools rather than districts should be the primary units for management, analysis and policy. The full effect of this shift to the school level has yet to be felt, and, once in place, districts will not be irrelevant. But where once districts were everything, now schools share the spotlight.

With districts as the educational unit for a long period, organizations and individuals focused on collecting valid and reliable data at that level. Because the shift to the school has occurred relatively quickly, our track record in data quality, organization and collection has not kept pace. In this paper we discuss some of the implications for school finance data collection and analysis of moving to the school as a key unit in educational management and policy.

In the second part we discuss the questions that can be an-

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swered by school-level data. An assessment of school-level data from a conceptual point of view is presented in the third part. The realities of these data are assessed in the fourth section; and examples from Rochester, NY, are used as illustrations in the fifth section. The final section addresses where we go from here.

Questions to be Answered with School-Level Data

One question precedes all others: What is a school? At one time, the answer, from a data collection point-of-view, presented no problem because there was a close relationship between a school and a building. In many districts this is no longer the case, so the question needs to be considered more carefully, especially before major data systems are designed to capture school-level information.

In districts where the school as an organizational unit does not necessarily correspond to a building, there are many definitional issues. For example, if there are multiple schools in a single facility, then there are bound to be issues surrounding shared resources.

Once the definition of a school is satisfactorily addressed, then what questions would we want answered? There are three general categories:

- Are resources being used efficiently and effectively?
- Are resources being used as intended?
- Are resources being used equitably?

Efficiency and Effectiveness

Regardless of whether we focus on efficiency or effectiveness, we should be trying to measure the relationship between inputs or resources and outputs or outcomes. And more than that, we should measure whether the relationship is such that more could be achieved with the same resources or not. These are not easy concepts to measure. Thus far, efforts to measure efficiency or effectiveness too often have focused exclusively on the input side, or when they have measured input/output relationships, the district and not the school has been the unit of analysis.

The recent research on spending by type—instructional versus administrative in its most usual form—aside from various questions of method, leaves an incomplete “so what?” kind of feeling because the research is rarely connected to output or outcome measures.1

1. See for example, Coopers and Lybrand, Resource Allocations in the New York City Public Schools (New York, NY: Coopers and Lybrand, 1994).
Despite the absence of a link to outputs, the question of how spending is distributed among input functions and among various groups of students has generated controversy in a number of settings and has led to the marketing of different approaches to get at answers of input distributions (e.g., Coopers & Lybrand).

There probably is some merit in knowing what we spend on a general education student versus a special education student, as an example. But even in this case, data should be collected because we want to do something with the information. New systems of cost collection are too expensive to undertake (it is quite complex to know answers to resource distribution questions) without a well-defined set of clients ready to use the information that is generated.

It is possible to think of a "least cost" type of analysis, although such an approach is not particularly interesting for policy analysts. A school needs to transport children and could analyze the least cost to accomplish that. Or, at the school level, we could measure the least cost to get all children to a certain level of learning. But the way these questions are phrased, they are single-school management-type questions rather than school-level analytical questions.

The most straightforward efficiency analysis involves input-output ratios. The simplest and perhaps most-used measure is cost per student, but the student is not an output. In cost effectiveness we really want to know whether the goals of education are being met, with the best use of resources. This may be operationalized by asking whether we are achieving specified learning goals and with what resources. Perhaps cost per credit accumulated or cost per graduate or cost per student who gets above a certain level on a performance measure are ways of getting closer to measuring what we mean by effectiveness.

In the end, we are no doubt headed toward some kind of cost-benefit analysis. For both the efficiency and effectiveness questions, we may want to ask questions for different subgroups of students, which places demands on the student counts and more importantly on the organization of the finance data.

Libraries are filled with production studies at the district level, and with school-level data we may be able to get at more valid production functions. But as we point out in other work, school-level production function analyses require linking specific resources to outcomes. Perhaps with multiple input and multiple

outcome statistical or other techniques, we can sort out the efficient and effective schools from the less efficient and less effective better than we can with district-level data.\textsuperscript{3} We believe that with all the conceptual and empirical caveats, school-level data will provide more and better answers to efficiency and effectiveness questions than we get with district-level data. However, much more work on how to conceptualize and measure efficiency and effectiveness is needed.

\textbf{INTENT}

This is a compliance-type question. Are resources being used the way they are intended? Despite a decade of substantial growth in categoricals, without going to the school level, it is difficult to know whether resources are being used in ways that program designers intended.

But as we move to school-level autonomy, many people advocate that we give schools more authority to decide how to spend the resources and thus the intent question will become less salient. But even with school-level autonomy, we may want to know about the resources used by more versus less needy pupils, which takes us to the equity questions.

\textbf{EQUITY}

A paramount equity concern — the relationship between resources and ability to pay — cannot be examined in the same way at the school level as it is at the district level because the tax base is a district-wide resource, not the resource of a particular school. Even if school areas could be measured in terms of their tax base, the mobility of students in many districts would call into question such an analysis.

Still there remains a concern about wealth and school resources. Within districts it is better expressed in terms of students' income or poverty levels. Although the imprecision of school lunch data as a poverty measure is well-known, particu-

\textsuperscript{3} For example, data envelopment analysis may be able to help with the multiple output problem. See the following articles for a sample of the work done with data envelopment analysis: R. Banker, A. Charnes, W.W. Cooper, H. Swarts, and D.A. Thomas, "An Introduction to Data Envelopment Analysis with Some of Its Models and Their Uses," \textit{Research in Governmental and Nonprofit Accounting}, Vol. 5 (Greenwich, CT: JAI Press, 1989): 125–163; A. Besant and E.W. Besant, "Determining the Comparative Efficiency of Schools through Data Envelopment Analysis," \textit{Educational Administration Quarterly} 16, no. 2 (Spring 1980): 57–75; I. R. Bardhan, W. W. Cooper, S.C. Kumbhakar, \textit{A Simulation of Joint Uses of Data Envelopment Analysis and Statistical Regressions for Production Function Estimation and Efficiency Evaluation} (Austin, TX: The University of Texas at Austin, 1994).
larly at the high school level, it is often used as a proxy to determine the relationship between school resources and student poverty.

In school-level analyses, the principle of vertical equity (treating different pupils in an appropriately different manner) replaces horizontal equity (treating all children equally) as the most compelling equity principle.

In addition to the increased importance of vertical equity, where weighted pupils are used, school-level equity analyses that compare students by poverty levels, race and ethnicity, or by geographical division of the district are likely to be more common. Particularly in large districts, we know relatively little about how large amounts of resources are distributed across these groups.

**Conceptual Issues in School-Level Finance Data**

What data do we need to answer the three questions on efficiency, intent, and equity at the school level? Clearly we must address the issue of school definition and identification. We also have some other very basic issues that need to be resolved. A general issue that needs to be addressed is what defines school-level resources. At one extreme is the position that only those resources that are directly associated with the school are school-level and all else is outside the school. The other extreme is that all district resources have to be assigned to some school. Unless the first position is taken, there will be many questions about allocation.

What should be allocated and how it is allocated needs clarification. Capital items need to be separated from operating items. A complicating factor can be the accounting funds that may combine resources in ways that prevent the kinds of divisions that are desired. A more technical accounting issue that can cause problems is the interfund transfer.

The issue of staff versus dollars needs to be considered. A complicating issue is that accounting for dollars is usually more precise than similar distinctions for staff. Staff who work at more than one school need to be considered.

The major programs at the school level need to be identified and hopefully separated. In most schools, a major program distinction is between general education and special education. But in many schools there are other distinctions such as bilingual, gifted, or other special programs.

Beyond programs, there are several other ways to categorize spending, for example, by functional categories such as instruc-
tion, administration, transportation, etc. or by objects such as salaries, supplies, textbooks, rental equipment, etc.

Most of the discussion thus far, and in fact most school-level resource analyses, focus on expenditures. But there are very important questions that require us to examine revenues as well. The measurement of vertical equity is an example of where we would like to be able to separate state and local revenues from federal revenues, by program, but this places considerable demands on the data at the school level.

Once these various distinctions are considered, there is the parallel issue of how the distinctions among students are made and how the dollars (or staff) and students can be linked. If, for example, we are serious about vertical equity and we want to determine whether certain types of students receive different amounts of resources, we need differential student counts that can be related to different dollar amounts or staff numbers.

**Experience with School-level Finance Data**

A significant distinction is whether the state has a school-level finance database or whether we need to rely on data from individual districts. Clearly state-level databases will have greater comparability across districts, but the level of detail may be limited.

For large districts, a district-level database may be sufficient to allow an analysis of the issues within that district, but then comparability across districts may be a problem. Even at the district level, a key question is the purposes for which the school-level database was put together in the first place. It is always a concern if the data are not used in any management or policy context and if the data have not been analyzed or used previous to the school-level resource analysis.

Perhaps the most complex situation is when the data exist, but not in a specific database, so that the researchers need to construct the school-level database for themselves. In this case, data from different files (dollars and staff) need to be combined and a substantial amount of cooperation is required to insure that the resulting database is truly coordinated.

When the district (or the state) puts the database together, then all of the decisions discussed in the previous section are made but rarely can be changed.
SOME EXAMPLES FROM ROCHESTER, NEW YORK, TO ILLUSTRATE ISSUES, PROBLEMS, AND PRINCIPLES

We are currently studying school-level resource allocation in four cities and are far enough along in Rochester, NY, to illustrate several of the conceptual points made earlier. 4

One of the major difficulties of collecting school-level data in Rochester is the coordinated effort required by various departments. While the budget office keeps data on expenditures, it is necessary make contacts in other departments to obtain additional school and student data. For example, personnel data has to be obtained from the Human Resource Department. School data, such as enrollment figures and socioeconomic indicators, are obtained from the Department of Research and Evaluation, while additional test data are gathered from Information Systems. In addition, specific information concerning the organizational design of elementary and secondary schools has to be obtained from the central office coordinator for each level of education.

Expenditure data are divided by function and object with several thousand combinations of codes that need to be aggregated for a meaningful analysis. First, consideration has to be given to which funds should be used in the analysis. It would be useful to break expenditures into general education and categorical programs (with Federal Title I separate) in order to conduct separate analyses of the expenditures from three major streams of revenues (general, usually tax levy plus general state aid; state categorical revenue; Federal categorical revenue, mostly Title I). Unfortunately, Rochester combines all categorical dollars, including Title I, into one special aid fund and it is not possible to break out the programs reliably. Thus the general fund is used to analyze general expenditures and the special aid fund is used to analyze all categorical expenditures.

Rochester does not report position information by fund. The personnel data available are the number of full-time equivalents (FTEs) for each position in a school. The FTEs are not matched to expenditures so one cannot discern the number of Title I teachers in a school or the number of teachers receiving funding from any special aid programs. Again, data are collected from separate offices in the district that do not coordinate efforts. All of these

problems make it difficult to complete analyses of horizontal and vertical equity as we cannot analyze the categorical positions separately, even though we found a way to analyze expenditures separately.

Student data are also not complete in Rochester. Pupil counts are reported for general education and non-graded handicapped students only. Data are not available on the number of students receiving Title I or other special funding in each school, again making a separate analysis impossible. One reason for this lack of information may be that the data are provided by two different departments that do not attempt to coordinate efforts.

Test data are also collected from two different offices, the Department of Research and Evaluation, which reports the percentage of students passing the state reference point and the Information Systems Office, which maintains the actual raw scores on standardized tests for each student. Analyses are calculated using both sets of data and compared until one set of data appears to be the most reliable for this research.

Finally, the district does not keep data on basic demographics by school such as the parents' education level and parental income. These variables would assist our analysis of school-level efficiency as they could be used as controls in production function studies.

WHERE SHOULD WE GO FROM HERE?

School-level analysis is a relatively new area and as such it is worthwhile to continue to let a thousand flowers bloom; while many weeds will grow as well, it is too early to cut off potentially productive ways to gather and analyze data. However, at some point it will become important to use cost-benefit principles in deciding what kinds of uniform data to gather across schools in a city, state, or the country. The more micro the level of our data collection, the more expensive it is to add data elements. We eventually need a good sense of the kinds of analyses that are used for decision making and the kinds of data necessary for analyses.

While school-level data are attractive because they relate directly to the newest ideas on which administrative units should make decisions and be responsible and accountable for them, it is also important to keep an open mind about the need for even more micro, student-level data for some purposes. For example, we continue to need more information on productivity of various learning and teaching techniques, and this information may ultimately require student-level production function type studies. And
the sooner we can join student, school, and district data, the sooner we can make good progress in permitting the analytical question to determine the data needs, rather than visa-versa.