Methodological Issues in Measuring Facilities Costs of Early Education Programs

PAMELA J. KELLEY
National Institute for Early Education Research

INTRODUCTION

Most early education programs rely on accounting budgets to account for program expenditures. However, as a source of data for economic cost analysis, budgets often do not provide all of the information necessary to answer needed research questions and inform policy and program decision-making. Accounting budgets report program expenditures only in the current fiscal period. For the purposes of cost analysis, "costs" refer to the opportunity or foregone costs associated with program resources. The limitations of budgets are particularly evident when measuring costs associated with preschool facilities. School current expenditure budgets do not account for all costs related to preschool facilities: an omission that can significantly impact total program costs. For example, budgets do not include the cost of facility space that is either subsidized or donated, nor do they generally include the cost of facilities that are have been purchased (not rented or leased). While it is typical for a budget to include a program's monthly expenditure on a mortgage payment, mortgages are not an accurate representation of facilities costs since they depend on factors including the amount of the down payment, the term of the mortgage and the interest rate. Insufficient attention to these details is likely to result in inaccurate estimation of program costs.

A more accurate method for collecting preschool program costs is based on the ingredients method of economic cost analysis (Levin & McEwan, 2001). Using this approach, a list is created of every input or "ingredient" in the program and costs are estimated for each. A typical ingredients list for a preschool program would include instruction, administrative, equipment, facilities, etc. More detailed components can be listed under each ingredient, for example, under "facilities" a list of subcomponents would include the physical space used by the program (this would include donated and subsidized space); repair and maintenance on the facility, insurance, parking and utilities. The ingredients approach thus provides a more comprehensive and accurate account of total program costs than does the budget system.

Using the ingredients method as a framework, this paper will discuss three issues that frequently confront the researcher measuring preschool facilities costs: 1) assigning cost to space that is donated or subsidized 2) assigning costs when facilities expenditures are significantly higher than average market price in a specific location. 3) assigning cost to space that is shared with another agency or when a preschool program is part of a larger agency. Rather than arrive at a single solution for these issues, this paper is meant to generate discussion among those interested in using cost analysis to evaluate early education programs.

Assigning Costs to Facilities: Basic Framework

Costs related to preschool facilities that are incurred on a regular basis are relatively simple to collect. For example, the program's monthly rent and utility payments are obtainable from most types of program expenditure records. Methodological issues arise when: 1) a facility is fully owned and paid-for and not rented or leased 2) all or part of the facilities costs are subsidized or, 3) facility space is donated. For these situations, the following alternative approaches have been recommended as a means to obtain an implied rent (Levin and McEwan, 2001):

estimate the annual rental value of a similar facility in the same location, also referred to as comparable rent. This approach requires a reliable real estate resource (some resources may be available on the internet).

Compute the annual interest and depreciation for the value of the facility. This is a more complicated approach that requires knowledge of: 1) the replacement value of the facility 2) the facility's estimated lifespan and, 3) the rate of returns that might have been earned had program resources been invested elsewhere (Levin & McEwan, 2001). Due to the complexity of this problem, a preferred resource is Levin and McEwan (pp. 68-69), which combines interest and depreciation into *annualization factors* that can be applied to the market value of facilities with a range of lifetimes in order to obtain a yearly cost estimate.

Consider the following example:

The director of a preschool program reports on a cost survey the only facilities costs incurred by her program is a $2000 per month mortgage payment. According to additional information collected on the survey, the 10,000 sq.ft. facility was purchased 10 years ago for $350,000. At the time of purchase, the building was approximately 15 years old.

Employing the first approach described above, the analyst could consult with a knowledgeable real estate agency to determine an average rent for a space of equivalent square footage and condition in that location. The researcher might estimate a comparable rent to be $5000 per month. Since costs should be computed for one year[1], $5000 (12) = $60,000.

Employing the second method, the researcher might determine the building's life expectancy to be approximately 50 years. Since the building was 15 years old when the program purchased it 10 years ago, it has 25 years remaining in its lifespan. According to Levin and McEwan (2001) a building with a lifetime of 25 years, at an interest rate of 10%, should use 0.1102 as the annualization factor.

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[1] Traditional cost analysis estimates program costs for a period of time, typically one year.

The researcher would next multiply this factor by the estimated replacement value of the facility. If the facility was estimated to be worth $550,000, the annual cost of the facility would be: $550,000(0.1102)= $60,610.

Cost of Donated Space

For cases in which programs use donated or subsidized facilities, the methods described above have been questioned by Glantz and Layzer (Abt, 2000) for their failure to account for space that is in excess of what the program would have purchased in the market without the donated resources. For example:

A preschool program operates in an 1800 sq. ft. basement of a church. The classroom space measures 1500 sq. ft. and office space measures 300 sq. ft. There are 15 preschoolers enrolled in the program. The church does not charge the program rent for using its facilities. On a cost survey, the program director reports zero monthly expenditures on rent because the program space is a donation from the church.

The analyst, using the comparable rent method, determines average rent for space of similar size and condition in the same location would cost approximately $2.67 per square foot. This equals $2.67*1800, or $4806 per month for the 1800 sq ft facility. Thus, the program's annual expenditure on rent is $4806*12 = $57,672.

Under the critique, assigning an annual cost of $57,672 would overestimate the actual cost of the program facilities, since the space is considerably larger than the program would probably purchase without the aid of donations or subsidies. Research points to an upper bound of about 50 sq. ft. per child for preschool programs (NCEF, 2001). Under these guidelines, the program would require classroom space measuring about 750 square feet. By this estimate, the classroom space is in excess by about 750 square feet. Therefore, the cost should be: $2.67*1050=$2804 per month, or $33,642 annually. Thus, the unadjusted comparable rent method overestimated facilities costs by about $24,030.

Glantz and Layzer (Abt, 2000) recommend the application of a "market test" to determine if the program director would have purchased a facility of equivalent size in the absence of the donation. If not, the analyst can use the market price as an upper bound estimate and assume the value of the facility is lower than its market price but greater than zero (at zero, the donation would have been disregarded). A contingency value could then be obtained by determining the value of the program director's willingness to pay for a facility in the absence of the donation. Other possible alternatives include bracketing a range of facilities estimates, or the use of a sensitivity analysis to compare the results of more than one estimate. This same approach can also be applied to other donated items such as labor, materials, etc. Regardless of the preferred method, the final estimation is unlikely to affect total costs by more than 1-5%.

Finally, when assigning a value to unused space, keep in mind that the quantity of space per child impacts program quality. The researcher should consider whether a relationship exists between a maximum space threshold and negative impacts on children. Only program space that

is unused can truly be defined as excess. An example of unused space would be an empty classroom or other room that remains so during program operation.

Facilities Expenditures are Significantly Higher (or Lower) Than Average Market Price for Comparable Space

As discussed earlier, preschool program expenditures on facilities that are donated or subsidized are an inaccurate estimates of the facility's market value. In these cases, program expenditures will likely be significantly lower than the average market value for similar space in a given location. However, it is also possible for program expenditures on facilities to be higher than the market price. For example:

A preschool program with an enrollment of 25 children is located in a district in which the average cost per square foot for space is $2.67. On a cost survey, the program director reports the program rents a 1250 square foot space for $5200 per month, a yearly expenditure of $5200*12 = $62,400.

In this case, the program cost for facilities is $4.16 per square foot ($5200/1250 = $4.16); $1.49 greater than the average cost per square foot of $2.67. If the program paid the average market value for the space, its yearly expenditure would be $2.67*1250 = $3338 per month or $40,050 annually, a difference of $22,350.

The market for commercial rental property, like any market, will see a distribution of prices clustered around the average market price, for a given type of space. In the case of preschool facilities, this distribution represents the "good deals" or "bad deals" that program administrators negotiate on their leases. Bad deals could represent a lack of skill on the part of program administrators (a program input), lack of information (market inefficiency), or other factors. In some instances, a church, synagogue or other nonprofit may charge rent that is above the average market price to a program that operates from its premises; part of this rent could be considered a donation to the nonprofit.   Researchers may want to make an adjustment for these outliers.

Program Space is Shared with Another Agency

Assigning a cost to preschool facilities may present a problem to the analyst when the facility is shared with another agency or if the program is part of a larger school organization. Examples include a preschool program that is run within an agency, such as a job-training program, or a preschool program that operates in a classroom located in a public elementary school. In these cases, data is often difficult to collect: information pertaining to facilities costs is often the responsibility of a central office, which may or may not be located on the same premises as the facility. It may be possible to hold a meeting with central office administrators to discuss ways in which data collection can be facilitated. For example, a separate survey interview could be scheduled for central office administrators, in addition to the interview with the preschool program coordinator.

Secondly, facilities costs are often not separated from those of the larger school organizations. When preschool facilities costs are not separated from the expenditures of a larger school organization, it is sometimes possible to prorate the costs, provided the system of prorating is based on an appropriate procedure and rationale to estimate the share of costs for each component (Barnett, Frede, Cox & Black, 1994). For example, when a program is part of larger school organization, facilities costs could be prorated based on factors such as enrollment or usage time. Consider the following:

A preschool program operates within an extra classroom at a public elementary school, grades K-6. The preschool program is part-day (10am-2pm) and enrolls 15 children. The enrollment for the elementary school (K-6) is 240. The elementary school-day length is 6 hours. The researcher's estimate of the annual cost of the elementary school building was $200,000.

In order to estimate the preschool program's facilities costs, the researcher could prorate the school facilities costs based on: a) the proportion of preschool enrollment to the total enrollment of the school b) the proportion of facilities usage time represented by the preschool program to that of the K-6th grades. Based on this rationale, preschoolers represent approximately 6% of the total school population.

$$240 + 15 = 255$$
$$15/255 = .058 = 6\%$$

The preschool program operates 4 hours per day, 2/3 of the elementary school-day length. This assumes the classroom is dormant for the remaining 1/3 of the school-day (e.g. not used for a second part-day class or an after-school program).
Therefore, the estimated annual cost of facilities for the preschool program is:

$$\$200,000 * .06 \ (2/3) = \$8000$$

As an alternative prorating rationale for this example, the preschool classes are smaller (15) than the typical elementary school class size. Therefore, costs could be prorated according to classroom space usage. Prorating can be particularly helpful when estimating preschool classroom-level costs, which are often embedded in the costs of the entire program. As there may be no obviously correct basis for prorating costs for any given case, analysts will need to consider the alternative rationales before making a final decision.

Conclusion

Facilities costs typically account for only 10% of the total cost per child of an early childhood program (Escobar & Barnett, 1994; Helburn, S.W., 1995). Thus, moderate errors in facilities costs will have only very small impacts on total cost estimates. However, facilities costs often are addressed separately in public policies and errors in estimating costs can have major impacts on facilities policies and budgets. Within this perspective, this paper presented a basic strategy for assigning costs to early education facilities, including two recommended methods for estimating costs based on comparable rents and annual interest and depreciation.

These methods were used as a framework for a discussion regarding specific issues that frequently arise when measuring early education facilities costs. First, when assigning a cost to preschool facilities that are donated or subsidized, the two methods described above can result in an inaccurate estimate of facilities costs if program space is in excess of what would have otherwise been purchased in the market. A market test can be used to make this determination, however, researchers should consider how excess space is defined and measured. The second issue involves determining whether researchers need to adjust for facilities costs that are significantly higher (or lower) than the average market price for similar property in a given area. The discussion concluded with assigning costs to preschool facilities that are shared with another agency or are part of a larger school organization. Prorating costs is one recommended method for separating the embedded costs associated with these cases. Researchers' attention to each of these issues will improve the accuracy of cost estimates of early education facilities.

REFERENCES

Abt Associates, Inc. (2000, September). The cost, quality, and child outcomes study: A critique.(Final Report). Cambridge, MA: Glantz, F.B. & Layzer, J.

Barnett, W.S., Frede, E.C., Cox, J.O., & Black, T. (1994). Using cost analysis to improve early childhood programs. In W.S. Barnett (Ed.), Cost Analysis For Education Decisions: Methods and Examples. (Vol.4, pp.145-181). Greenwich, CT:JAI.

Escobar, C.M., & Barnett, W.S. (1994). Early childhood special education. In W.S. Barnett (Ed.), Cost Analysis For Education Decisions: Methods and Examples. (Vol.4, pp.145-181). Greenwich, CT:JAI.

Helburn, S.W. (1995). Cost, Quality, and Child Outcomes in Child Care Centers, Technical Report. Denver, Department of Economics, Center for Research in Economic and Social Policy, University of Colorado at Denver.

Levin, H.M. & McEwan, P.J. (2001). Cost effectiveness analysis: Methods and applications. Thousand Oaks, CA: Sage.

National Clearinghouse for Educational Facilities (2000). Early Childhood Centers. http://www.edfacilities.org/rl/earlychildcenters.