

CHAPTER 4

Public Expenditure Analysis in the Education Sector

Introduction

Financing is an important dimension in any relationship of accountability, as without financing, the agent lacks the means to perform the delegated tasks. When education services fail clients, an analysis of the manner in which the government spends money offers solid initial steps in isolating the underlying problem. If politicians and policy makers spend more money than they can sustain, public services deteriorate. If budgets are misallocated, basic services remain underfunded, and frontline providers are handicapped. And if funds are misappropriated, service quality, quantity, and access suffer. The budget is a critical link in the long route of accountability connecting clients to providers through politicians and policy makers. Thus it is important to take a closer look at the budget when assessing the performance of education services delivery.

Public expenditure analysis is being increasingly used for assessing public service delivery performance. As will be demonstrated below, it constitutes a useful tool to assess the efficiency and equity of public spending in the education sector. As such, it provides an important insight when analysts consider the rationale for government intervention in education.

In this chapter, a framework for analyzing the level and composition of public expenditure in the education sector is introduced. The broad approach follows Pradhan (1996)¹¹ and can be applied to other sectors as well. The objective of this chapter is to show how this framework can be applied to analyze broad expenditure allocations in the education sector. Some key findings in the literature are drawn upon. The chapter is organized in four main sections, starting with a brief discussion on the importance of the macroeconomic context to analyze the

aggregate level of public funding. It then introduces the basic framework for analyzing the composition of expenditure and discusses how this framework can be applied to analyze both intrasector expenditure and the economic composition of expenditure. Subsequently, it identifies basic data and information requirements to help carry out such analysis. The chapter concludes with a summary of the main findings.

Macroeconomic Framework and Aggregate Level of Public Spending

The evaluation of broad allocations entails analyzing both the *level* and *composition* of public spending. The bulk of this chapter focuses on the latter. However, it is critical that the allocation of public expenditure take place within a consistent macroeconomic framework.

The level of public spending is important, not because there is an “optimal” level of government spending, but because fiscal deficits caused by excessive spending can trigger macroeconomic crises. Hence, the analysis of the level of public expenditure centers on its impact on macroeconomic stability. Typically, such analysis covers three key areas:

- **Revenues.** How was the level of government revenues determined? What information is there, if any, about the distortionary and distributional effects of taxation in the country?
- **Spending.** How comprehensive is the public budget? The aggregate level of spending should include all levels of government (central, provincial, and local), particularly in decentralized systems, as well as public enterprises. Such consolidation will be constrained by data availability in many

¹¹ S. Pradhan. 1996. “Evaluating Public Spending: A Framework for Public Expenditure Reviews.” World Bank Discussion Paper 323.

countries. However, failure to consolidate key components may seriously distort the true picture of aggregate public spending.

- **Deficits.** How is the deficit defined? What assumptions underlie the analysis of its sustainability? How is foreign aid treated in the estimate of the deficit?

Knowing the answer to these questions may be insufficient to achieve a desirable level of public expenditure. The reason is that the public budget suffers from the “tragedy of the commons”—in this instance, the benefits of higher budgetary allocations accrue to individual ministries while the potential costs in terms of higher inflation, debt, or unemployment are borne by society at large. An important issue is therefore to assess the aggregate fiscal discipline of the government. For example, do various actors in the government face hard budget constraints? Are there mechanisms in place so that when the urge to increase spending hits, it can be resisted (by, e.g., restrictions on borrowing)? Another important issue is whether the overall expenditure level is predictable. In many countries, the ability to forecast revenue is poor and budgeted expenditure sometimes has to be cut midyear. Such practices clearly undermine the government’s budget process.

In practice, improved macroeconomic balance, including fiscal discipline, is obtained through good estimates of the available resource envelope, which are then used to develop budgets that fit squarely within that envelope. This top-down approach, often referred to as a medium-term fiscal framework (MTFF), is essentially a macroeconomic model that contains integrated medium-term macroeconomic and fiscal targets and projections. In terms of selecting the appropriate estimation method, practices vary widely across countries. Some countries rely exclusively on International Monetary Fund macroeconomic and fiscal data to develop the initial MTFF. Others develop their own spreadsheet-based or econometric models. One general principle is that the model used should be appropriate to the given administrative

capacity. Overall, the quality of the MTFF should be assessed by ADB’s country economists.

Framework for Analyzing the Composition of Expenditure

The composition of public expenditure should be such that it finances the mix of goods and services that maximizes social welfare. Pradhan (1996) proffers three criteria for analyzing expenditure choice. The first two reflect efficiency criteria while the third is concerned with equity. First, public expenditure should channel resources to those programs that the private sector cannot undertake, and away from programs that constitute the comparative advantage of the private sector. This would imply a reallocation of expenditure toward programs providing public goods and with strong externalities. Second, even if there is an underlying market failure, it needs to be ensured that alternative expenditure allocations actually improve upon private market outcomes. In other words, the social costs and benefits of alternative allocations need to be computed and compared. Third, the impact on the poor needs to be taken into account to ensure that the composition of spending helps meet the poverty reduction objectives. The following discusses in greater detail how these criteria apply to the education sector.

Rationale for Public Sector Intervention in the Education Sector

The rationale for government intervention in the education sector has usually been justified on grounds of market imperfections or equity (or both).

Externalities. The first, and most commonly alleged source of market imperfections with respect to education, is the presence of externalities from schooling, i.e., some of the benefits from education accrue not only to its direct recipients but also to society at large. Some claim that an educated electorate is essential to a successful democratic society because, for example, it permits individuals to keep records, file tax returns, and evaluate political campaign material.¹² Others argue that an educated workforce is critical for

¹² J. Dewey, *Democracy and Education: An Introduction to the Philosophy of Education*. 1966 edition. New York: Free Press; and D. Ravich and J. Viteritti. 2001. *Making Good Citizens: Education and Civil Society*. Yale University Press.

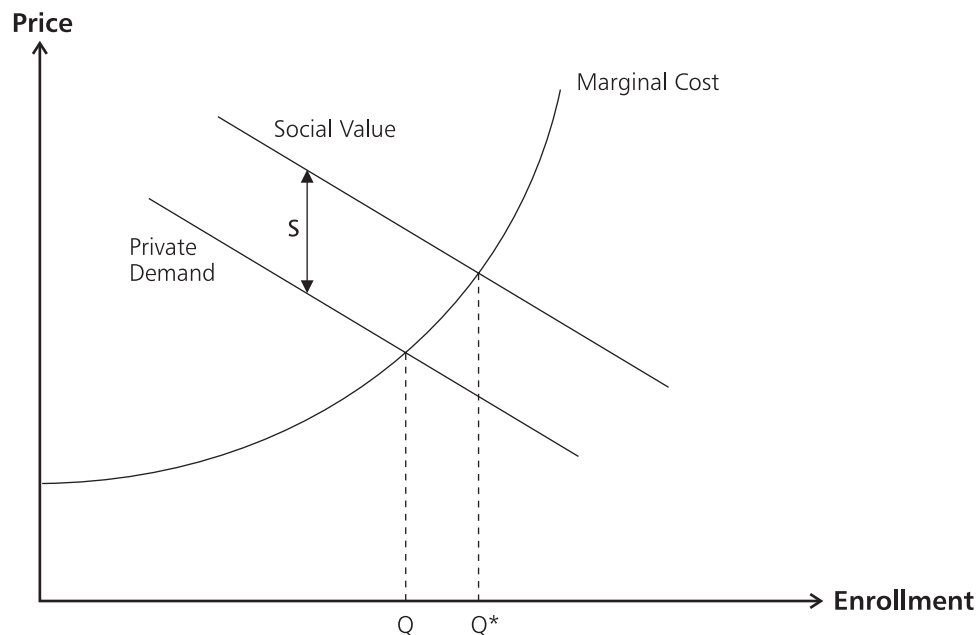
the adoption of new technologies and for improving not just an individual's productivity but that of his or her coworkers as well.¹³ For yet others, there is a negative correlation between education and crime, so that widespread education will reduce crime and associated social disruptions.¹⁴ Others suggest that women's education brings external benefits for fertility control and child health and nutrition.¹⁵ Each of these arguments suggests that private spending on education contributes to a public good. If parents ignore the externalities associated with education when deciding how much to spend on their child's education, education spending will fall below the socially efficient level (Figure 5). Public policies designed to increase education attainment therefore have some prospects for raising social welfare.

Graphically represented, the market for any particular level of schooling might look like Figure 5.

In Figure 5, the private sector would provide up to Q of the good on its own. The socially optimum level, however, is Q^* . The theoretical literature therefore suggests that (i) there is a compelling rationale for government intervention in the education sector, and (ii) priority for government intervention should be directly related to the value of "s" (i.e., the size of the externality or the gap between social and private returns to education).

Agency Issues. A second rationale for government intervention arises because minors, who are the usual recipients of education, are not responsible for deciding how much schooling they will obtain. Since

Figure 5: Hypothetical Market in Education



¹³ P. Romer. 1990. "Endogenous Technological Change." *Journal of Political Economy*, vol. 98, no. 5, pp. 71-102.

¹⁴ T. Yamada and J. Kang. 1991. "Crime Rates versus Labor Market Conditions: Theory and Time Related Evidence." NBER Working Paper 3810; and L. Lochner and E. Moretti. 2001. "The Effect of Education on Crime: Evidence from Prison Inmates, Arrests and Self-Reports." NBER Working Paper 8605.

¹⁵ J. Behrman and B. Wolfe. 1987. "How does Mother's Schooling Affect Family Health, Nutrition, Medical Care Usage and Household Sanitation?" *Journal of Econometrics*, vol. 26, nos. 1-2, pp. 185-204; and M. Rosenzweig and P. Shultz. 1989. "Schooling, Information and Non-Market Productivity: Contraceptive Use and Its Effectiveness." *International Economic Review*, vol. 30, no. 2, pp. 457-477.

the benefits of education accrue primarily to the children who receive it, the level of spending on education depends critically on the degree of parental altruism. If parents place a low value on improving their children's future earnings potential, possibly because they are unaware of the benefits of education, they may underinvest in their children. This argument needs to be treated cautiously since it implicitly assumes that the government cares more for children than parents. One setting in which this may be broadly correct is where there is widespread discrimination against girls. In such cases, there may be a case for government intervention, but such actions are likely to come into conflict with deep-rooted cultural values.

Capital Market Imperfections. A third market imperfection, which may be relevant for education decisions, involves capital market constraints. The private purchase of schooling, especially higher education, is beyond the means of many poor families. Most credit markets do not provide an effective solution because of imperfections that reduce participation, especially among the very poor. In principle, the budget constraint can be overcome by borrowing, given the high private return to education. However, there are risks for both borrowers and lenders in education financing. Banks do not accept the promise of future earnings as collateral. The failure of capital markets thus affects not only the lower-income groups, but also middle-income groups who cannot finance tertiary education without credit.

Incomplete Information. A fourth market imperfection relates to the problems of uncertainty and incomplete or asymmetric information. Parents, especially those from low-income families with little education, may be less informed than better educated parents about the benefits or quality of education.¹⁶ This argument needs to be looked at critically as some more recent studies suggest that the poorest income groups actually make very sophisticated choices about schooling for their

children, and there is notable willingness among the poor to pay (though ability is often limited or nonexistent) and to make a sacrifice for what they perceive to be good quality education (though teachers, parents, and students all have different views on what constitutes quality in schools).¹⁷ Furthermore, frontline providers of education services tend to have more information than clients on their relative performance in terms of financing, spending, and outcomes, so students may end up in institutions other than those they would have selected with better information.

Equity Issues. Not all groups in society can afford the direct costs of investing in education such as tuition fees, books, school uniform, and transportation, and the indirect costs such as earnings forgone to family and individuals. The government therefore plays a role in promoting equality of opportunity. If education were provided under market conditions, only those who could afford to pay would be able to enroll. Not only would there be underinvestment from the social point of view, but income inequalities would be preserved from one generation to the next, since education itself is a determinant of lifetime income.

Intrasector Expenditure Analysis—Efficiency Considerations

Within the education sector, public expenditure can be further disaggregated by subsector—primary, secondary, and tertiary as well as TEVT. Each subsector is characterized by different market failures, the nature of benefit provided, and impact on the poor. It is often argued that the rationale for government intervention is more compelling for primary education than secondary or tertiary education, because of the generally accepted large social externalities from basic literacy. However, this has not been proven in the empirical literature, as now discussed.

Returns to investment in education, based on human capital theory, have been estimated since the late 1950s. In the 40-plus year history of such estimates, there

¹⁶ N. Barr. 1993. *The Economics of the Welfare State*. Stanford, CA: Stanford University Press.

¹⁷ Department for International Development (DFID). 2001. "Reaching the Poor: The Costs of Sending Children to School: A Six Country Comparative Study."

Table 2: Returns to Investment in Education by Level

Region	Social			Private		
	Primary	Secondary	Higher	Primary	Secondary	Higher
Asia	16.2	11.1	11.0	20.0	15.8	18.2
Europe/Middle East/North Africa ^a	15.6	9.7	9.9	13.8	13.6	18.8
Latin America/Caribbean	17.4	12.9	12.3	26.6	17.0	19.5
OECD	8.5	9.4	8.5	13.4	11.3	11.6
Sub-Saharan	25.4	18.4	11.3	37.6	24.6	27.8
World	18.9	13.1	10.8	26.6	17.0	19.0

^a Non-OECD.

Source: G. Psacharopoulos and H.A. Patrinos. 2002. "Returns to Investment in Education: A Further Update." World Bank Policy Research Working Paper 2881. September.

have been several reviews of the empirical results to try to establish patterns. The most recent review presents the latest estimates and patterns as found in the literature in the 1990s. The results are presented in Table 2.¹⁸

The kind of inference that is usually made from this type of information is that since primary education has a higher social return than other levels, it should receive the most public funds. While it would seem logical to invest more where the social rate of return is highest, it is not consistent with the standard theoretical argument in favor of government intervention in the sector. When one looks at the numbers closely, the social rate of return is actually lower than the private rate of return in all cases. If the words "social" and "private" mean what they mean in the theoretical sense, then the clear inference is that not only would a government refrain from subsidizing (or providing free) education, rather it should actually tax whatever is being currently provided. Hammer¹⁹ notes that what is actually being measured in the empirical literature are wage effects. Private returns measure the increase in earnings derived from a particular level of education. Social returns are private returns minus the cost of public provision. There is therefore an important mismatch in the terminology used in the empirical and theoretical literature. The majority of empirical

estimates do not capture true social benefits or externalities. What they in effect measure is really some form of private return based on wage differentials associated with different levels of education.

Externalities, though, are hard to identify and even

harder to measure. A recent review of the literature that specifically attempts to measure externalities in the social sectors finds that the empirical evidence is scarce and inconclusive, providing some support for human capital externalities, but it is not very strong.²⁰ Hence, while the rate-of-return studies have yielded useful insights that have become widely accepted, it is important to keep in mind the studies' limitations. A central concern is that the rate-of-return calculations take into account only private benefits, i.e., the future earnings of the individual educated, at least some of which could be captured in the private market. A critical issue is thus whether this limitation negates the policy implication for broad allocations emerging from these studies. It probably does not, but if public provision of schools substitute for private provision and if most of the benefits are private benefits, the net social return from public provision could in fact be much less than suggested by the rate-of-return calculations. The studies' results do show, however, that investing in education yields high private returns and is therefore a worthwhile endeavor.

Intrasector Expenditure Analysis—Equity Considerations

Traditionally, rate-of-return analysis merely compares aggregate benefits and costs without placing differential weights on various groups,

¹⁸ G. Psacharopoulos and H.A. Patrinos. 2002. "Returns to Investment in Education: A Further Update." World Bank Policy Research Working Paper 2881. September.

¹⁹ J. Hammer. 1996. "The Public Economics of Education." Policy Research Department. World Bank.

²⁰ R. Venniker. 2001. "Social Returns to Education: A Survey of Literature on Human Capital Externalities." CPB (Netherlands Bureau for Economic Policy Analysis). Report 00/1.

Table 3: Benefit Incidence of Public Spending on Education in the 1990s

	Sample Size ^a	All ^b		Primary		Secondary		Tertiary	
		Poorest	Richest	Poorest	Richest	Poorest	Richest	Poorest	Richest
Sub-Saharan Africa	10	12.8	32.7	17.8	18.4	7.4	38.7	5.2	54.4
Asia and Pacific	4	12.4	34.8	20.3	16.9	8.3	37.3	2.5	69.0
Western Hemisphere	14	19.2	20.7	29.5	9.4	15.1	17.8	4.7	41.6
Middle East and North Africa	2	15.3	24.1	24.7	12.4	11.0	24.4	4.0	46.9
Transition	7	15.3	24.0	19.3	20.0	12.5	24.6	8.7	32.6
Total	37	15.8	26.3	22.8	15.1	11.3	27.9	5.4	46.3
Memorandum items:									
Minimum		5.0	9.7	7.4	4.3	1.9	9.6	0.0	24.6
Maximum		33.3	46.0	39.4	27.8	24.3	60.8	18.3	93.1

^a Number of countries based on overall spending. Some countries may have more than one observation.

^b Consists of primary, secondary, and tertiary education. The components may not sum to the total because of differences in sample size across education levels.

Source: H. Davoodi, E. Tiongson, and S. Asawanuchit. 2003. "How Useful are Benefit Incidence Analysis of Public Education and Health Spending?" IMF Working Paper 227. November.

including the poor. An evaluation of the implications for the poor is therefore also needed to ensure that the composition of spending helps meet the poverty reduction objectives. This can be accomplished through various methodologies. A common one is benefit-incidence analysis.

Benefit-incidence analysis is a powerful technique for assessing how effectively public spending is targeted to the poor. It identifies who benefits from public expenditure in education in different groups. Depending on the interest, a population can be grouped by various categories such as income, region, ethnicity, or gender, although most of the benefit-incidence analysis uses income grouping. The analysis links information provided by the public sector (estimated from the government's fiscal accounts) on the subsidy for different kinds of education with the distributional profile of utilization of public schools (obtained from households through various surveys). Carrying out a benefit-incidence analysis typically involves three basic steps: (i) identifying the distribution of student enrollment rates in public schools across population quintiles sorted by income; (ii) estimating the unit

subsidies for each level of schooling from the government finance data; and (iii) combining this data to derive an estimate of per capita subsidy accruing to each quintile.²¹

A recent review of benefit-incidence analysis in the education sector concludes that primary and secondary education expenditure is usually more pro-poor than tertiary education expenditure (Table 3).²² The literature therefore suggests that (i) public sector intervention in the education sector may be justified on efficiency grounds (even though the magnitude of the positive externality has rarely been measured empirically); and (ii) public intervention in primary education may be more equitable than public intervention at the secondary level, which in turn may be more equitable than in tertiary education. This latter finding is not entirely surprising, given that children from poor households tend to have less access to schooling at progressively higher levels than children from richer families, and their attrition rates increase as they become older (see *World Development Report 2004*, especially Chapters 2 and 7). In practice, governments around the world spend significant resources on education, and in many

²¹ For a more detailed description on how to conduct a benefit-incidence analysis, see L. Demery. 2003. "Analyzing the Incidence of Public Spending." In *Evaluating the Poverty and Distributional Impact of Economic Policies (Techniques and Tools)*, ed. F. Bourguignon and L.A. Pereira da Silva. Washington, DC: World Bank.

²² H. Davoodi, E. Tiongson, and S. Asawanuchit. 2003. "How Useful are Benefit Incidence Analyses of Public Education and Health Spending?" IMF Working Paper 227. November.

Table 4: Public Expenditure on Education in DMCs by Level and Region

	As Share of GDP (%)	Share of Total Public Expenditure on Education (%)			
		Primary	Secondary	Tertiary	Other
East Asia	2.75	34.2	41.6	12.6	11.5
Southeast Asia	3.47	43.2	29.0	20.5	7.3
South Asia	3.45	43.0	35.6	15.1	6.3
Central Asia	3.91	11.6	66.0	10.5	11.8
Pacific DMCs	6.23	—	—	—	—

— = data not available.

Source: Processed from *Key Indicators 2003*, Table 24. Manila: Asian Development Bank, 2003.

countries, it is in one of the largest government expenditure items. On average, the composition of education expenditure is usually skewed toward basic education (primary and secondary levels). Table 4 shows trends in public education expenditure among DMCs by level and by region.

Analyzing Economic Composition of Education Expenditure

Another key issue to consider is the existence of potential input-mix imbalances within a particular sector. Pradhan (1996) refers to this as the “economic composition of expenditure,” which comprises: (i) capital investments typically grouped under a country’s public investment program; and (ii) current or recurrent expenditure, which includes wages and salaries, other goods and services (including nonwage operation and maintenance), interest payments, and subsidies. Pradhan argues that there are often patterns of under- and overspending for each of these categories in many developing countries. These frequently include (i) the bias for new capital investment, as governments in developing countries tend to undertake new, mostly donor-funded, investment projects without adequately considering their future stream of recurrent costs; (ii) the underfunding of recurrent expenses, mainly nonwage operation and maintenance, which leads to inefficient service provision to the point of seriously reducing the effectiveness of these investments; and (iii) the overstaffing of a poorly paid civil service. In education, the principal input-mix problem typically relates to

wage / nonwage expenditure imbalances. As in many developing countries, teacher salaries account for a very large share of education sector expenditure, leaving little for nonwage operation and maintenance and even investment spending. An integrated analysis of capital and recurrent

expenditure at the sector level can serve as a check on distortionary and ineffective expenditure composition.

An analysis of the economic composition of education expenditure also requires an understanding of the relationship between, on the one hand, expenditure categories such as teachers, schools, and instruction materials, and, on the other, education outcomes, such as what allocation of resources across various inputs would best achieve desired education outcomes. There has been much research on the “education production” function, i.e., the relationship between education inputs and outcomes in the literature. Schools, for example, are not the only source of learning. The nonschool factors of family, initial student ability, community, and peer groups must be controlled for so that the unique influence of school resources can be isolated. Numerous studies have estimated the education production function, and some generalizations can be made. Socioeconomic variables (i.e., family background) and student ability have had the largest relative impact on school achievement. Community and peer effects have been smaller and frequently ambiguous. After controlling for these factors, the relationship between school resources and student achievement can be measured. No particular school resources have been found to have a consistent and positive effect on academic achievement, and this has been shown within both industrial and developing countries, across countries, and across time within most OECD countries, as well as within some East Asian countries.²³ An extensive debate has unfolded on whether the absence of any

²³ See for example: E. Hanusheck. 1995. “Interpreting Recent Research on Schooling in Developing Countries.” *World Bank Research Observer*, vol. 10, no. 2, pp. 227-246; E. Gundlach, L. Woessman, and J. Gmelin. 2001. “The Decline of Schooling Productivity in OECD Countries.” *The Economic Journal*, vol. 111, no. 471, pp. 135-147; and E. Gundlach and L. Woessman. 2001. “The Fading Productivity of Schooling in East Asia.” *Journal of Asian Economics*, vol. 12, no. 3, pp. 401-417.

statistically significant input-output relation can be taken at face value. Critics point to problems in the methodology employed and the choice of measurement of education outcomes, and, using alternative techniques, some studies have shown positive resource effects.²⁴ Notwithstanding this debate and the fact that there certainly are circumstances where resources do matter, the large body of empirical evidence suggests that while there are large international differences in student performance, differences in the amount of education inputs probably do not suffice as the full explanation.

Data and Information Framework for Public Expenditure Analysis

Consistent with the methodological framework for public expenditure analysis presented above, this section identifies elements of a basic information and data framework to help carry out such analysis. Whenever possible, the analysis should be based on trend data.

Defining the Education Sector

The first task for analysts is to decide how to define the sector. Figure 6 shows increasingly inclusive definitions.

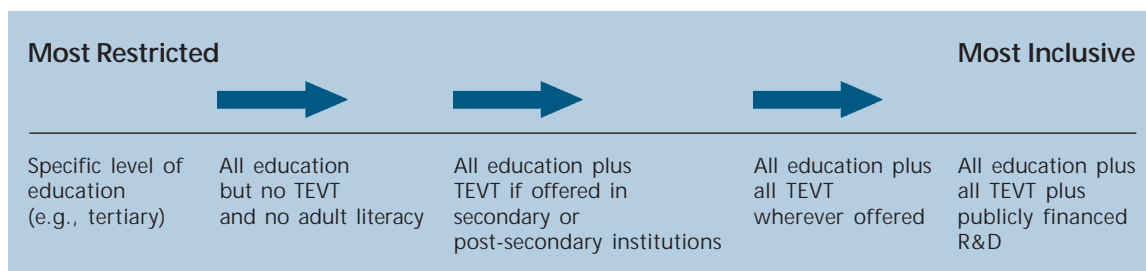
Analysts can mix and match—for example, just tertiary education, or just TEVT. The important point is to recognize that explicit choices have to be made. For example, if analysts decide to look at TEVT,

they should immediately be aware that they will need to check for public financing sources in ministries other than the education ministry.

How Much is Spent and How Much Does the Government Spend?

Financial resources for education may come from different sources—both budgetary and nonbudgetary. To begin to answer the question on spending, data on overall budgetary operations are needed to facilitate the analysis of the consolidated deficit and aggregate spending. It is then necessary to calculate the indicators that reflect the priorities of education spending. These indicators are total education expenditure as a share of GDP, and as a share of total public expenditure. These indicators are then compared with those of other sectors and across years. The examination of education spending relative to other sectors allows the analyst to assess whether education has been a priority economic development strategy. It will also show whether education is an increasing, decreasing, or steady priority. To estimate total public expenditure, analysts should make sure that they are working with: (i) the consolidated budget (including both central and local government budgets); (ii) the entire public budget for education expenditure (most central government expenditure will show up in the education budget, but some may be included in budgets from other ministries such as labor, culture, or youth); and (iii) executed budgets—or if the budget is still being implemented, analysts should clearly

Figure 6: Education Sector Definitions



²⁴ See for example: L. Hedges, R. Laine, and R. Greenwald. 1994. "Does Money Matter? A Meta-analysis of Studies of the Effects of Differential School Inputs on Student Outcomes." *Educational Researcher*, vol. 23, no. 3, pp. 4-14; J. Angrist and V. Lavy. 1999. "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement." *Quarterly Journal of Economics*, vol. 114, no. 2, pp. 533-575; and A. Case and A. Deaton. 1999. "School Inputs and Educational Outcomes in South Africa." *Quarterly Journal of Economics*, vol. 114, no. 3, pp. 1047-1084.

flag that the budget is planned (there are at times significant differences between planned and executed budgets).

Nonbudgetary resources come predominantly from private contributions and from foreign aid. Ideally, data on these should be included as part of the resource envelope. For private contributions, any analyst would ideally want to know total annual private payments for public education services (formal fees by level of education and informal payments) and for private education services. Unfortunately, such data are very difficult to glean from government statistics. Household survey data are usually required, and in many cases they are unavailable or incomplete. Because of this, it is often very difficult to assess the total resources available for education. With respect to foreign aid, the amount of donor grants and loans may be included or excluded from the government budget. If they are included, they can easily be traced. If they are excluded, the donors themselves should have information on these sources and the analyst should try to estimate their magnitude (which can be significant in some cases).

How Does the Government Finance Education Expenditure?

The analyst should then examine the intergovernment financing arrangements in the sector, and needs to know answers to questions that include the following:

- How is the total public budget for education divided between the central and local governments?
- If financing is split between the central and subnational levels, which level of government pays for different levels of education and/or specific inputs?²⁵
- If local governments have a financing role, how

do they get their money (e.g., tax revenues, subventions)?

- Is there evidence of vertical imbalances?²⁶
- Is there evidence of horizontal imbalances?²⁷

What Does the Government Finance?

As noted in the section “Framework for Analyzing the Composition of Expenditure,” above, the analyst should examine both the functional and economic composition of expenditure. In practical terms, this implies analyzing how public expenditure is allocated among various education subsectors. The analyst should deduct, to the extent possible, from the total figure for education expenditure both the amount going to the ministry of education and other purely administrative costs. The analyst should also try to derive the per student cost by level of education by dividing the total public expenditure for a level of education by the total number of students enrolled at that level, and look for anomalous ratios in per capita costs across levels. The OECD publishes average ratios that can be useful for reference purposes. Relative to the per student expenditure for primary education, in 2001 the average OECD country spent 0.86 per student at the preschool level, 1.19 per student for lower secondary education, 1.39 per student for upper secondary education, and 2.07 for tertiary education.²⁸

In terms of economic allocation, the analyst should determine how expenditure is allocated among the different inputs by level of education (if at all possible). At a minimum, he or she should try to obtain data on (i) recurrent versus capital expenditure; (ii) within the recurrent category, staff costs versus nonstaff costs; (iii) if possible within staff costs, the breakdown between teaching and nonteaching staff; and (iv) if possible within nonstaff recurrent costs, the breakdown between utilities and textbooks, etc. A hypothetical education budget framework is provided in Appendix 1 for illustration purposes.

²⁵ In some cases, local governments might fund preschools and basic education but not upper secondary education, or they might fund school maintenance but not capital expenditure.

²⁶ I.e., shortfalls in the amount that the central government provides for specific local governments.

²⁷ I.e., do local governments differ in the amount of money that they have available per student for education services?

²⁸ OECD. 2004. *Education at a Glance: OECD Indicators 2004*. Tables. Paris.

Should the Government Intervene in the Sector?

The subsection “Rationale for Public Sector Intervention in the Education Sector,” above, introduced a number of issues to consider in determining whether there is a role for government intervention in the education sector. Overall public intervention in the education sector is warranted if, and only if, public allocation can improve upon private sector outcomes, either on efficiency or equity grounds. A range of information is needed to assess how well the state is performing in its role, on both equity and efficiency grounds. In terms of equity, the analyst should assess how progressive (i.e., pro-poor) or regressive the state’s financing of education is overall and by level of education. Answering this question requires a benefit-incidence analysis (see the subsection “Intrasector Expenditure Analysis—Equity Considerations,” above). More broadly speaking, the analyst should examine whether there is an equity problem in the sector. Checking outcomes is generally a first step for identifying potential inequalities. To assess this question, the analyst needs data on key outcomes by subgroups at different education levels, including net and gross enrollment rates by level of education; completion rates for primary, lower secondary, and upper secondary levels; and learning outcomes from standard national or international assessments. Potential subgroups to consider would include poverty quintiles, urban and rural variations, and gender. Data from household surveys will almost certainly be required for this task.

Public expenditure should also be assessed on efficiency grounds (i.e., to determine whether the public is getting its money’s worth in terms of the efficient use of resources). Assessing this requires looking at technical efficiency (Is money being spent in the right way?), internal efficiency (Are repetition and drop-out rates low?), and external efficiency (Do the schools develop in students the skills and knowledge in demand by employers?). As part of technical efficiency, the analyst should examine labor efficiency by comparing student/teacher ratios in urban and rural areas, teacher/nonteacher staff ratios, and domestic/comparator country teaching loads. The distribution of

teachers by level of qualification, teachers’ wages relative to technically oriented public sector employees, GDP per capita, and labor market wages for those with similar qualifications also need to be assessed. Capital efficiency should also be assessed as part of technical efficiency. In this respect, the analyst should examine school maintenance records, average student/classroom ratios by level of education, average student/school ratios, and number of multiple shifts schools by level of education. To measure internal efficiency, data on repetition rates and, if at all possible, drop-out rates should be used. In many countries, however, public data on drop-out rates are not very reliable (especially if many families are moving within the country or emigrating to other countries). Students that moved are usually counted as dropouts from their schools of origin, but that does not mean that they do not re-enroll in a school at their new destination. Finally, to measure external efficiency, labor market data should be used (percentage of graduating students who find a job, average waiting time before finding a job, wage rate by level of education, etc.)

Is Public Spending Adequate and Sustainable?

Adequacy and sustainability of public spending are what public expenditure analysis in a given sector sets out to find. In the short term, the analyst should determine whether public spending is adequate. This will ultimately be a judgment call based on analysis of the previous topics. What is now being spent? Is there room for more efficient use of resources? Is there evidence of not enough money being spent to fund basic inputs—school maintenance, learning materials, teachers’ salaries, etc? The analyst should also assess whether public spending is likely to be adequate over the medium and longer term. Starting with how much is needed now, he or she should examine what may happen to cost in the medium term, given the following: (i) government sector goals such as Education for All, extending the length of compulsory education, introducing cost-recovery measures for tertiary education, improving education quality by hiring better educated teachers, and expanding TEVT (which will affect total education spending); and (ii) demographic projections for the school-age

population. The analyst (in consultation with the ADB country economist) should also determine what can be afforded (based on the current and projected public spending envelope; see the section “Macroeconomic Framework and Aggregate Level of Public Spending,” above).

Summary

This chapter has presented a broad framework for public expenditure analysis. PERs typically help analyze the level and composition of public sector expenditure both across and within sectors. The discussion has highlighted five key principles to guide public spending evaluation.

- First, to ensure macroeconomic stability, public spending should be kept at a level consistent with the country’s long-run financing ability.
- Second, this level should be allocated (both across and within sectors) in a way to maximize social welfare. However, this principle is very difficult to apply in practice, especially in the education sector, because the empirical literature has so far not been able to measure the true social returns to education. Other criteria are therefore needed to guide expenditure allocation decisions.
- Third, the role of the government versus the private sector ought to be a principal criterion governing the choice of programs for public financing and provision. Public expenditure should fund programs that make the most contribution to social welfare relative to what the private sector can do, rather than merely substituting for or even marginally improving upon private sector activities and outcomes. While the state in most countries remains the main financier and provider of education services, it is important to recognize two main features. First, in many countries there are other providers, and their role should be carefully examined. Second, public intervention is not

synonymous with public provision, since governments have a range of policy instruments or tools at their disposal to respond to market failures.

- Fourth, the impact of key programs on the poor should be analyzed. Here, the literature suggests that public intervention in primary education is likely to be more equitable than public intervention in secondary education, which in turn is likely to be more equitable than in tertiary education.
- Fifth, the input mix, or the allocation between capital and recurrent expenditure, should be analyzed in an integrated manner both at the program and sector levels.

Twenty-one PERs have been conducted in ADB DMCs over 2000–2005. Appendix 2 provides a list, and specifies whether the respective studies provide specific coverage of the education sector. It also clearly shows that the World Bank has carried out the most (ADB has participated in only six of them, in Afghanistan, Bangladesh, Cambodia, Lao People’s Democratic Republic, Maldives, and Philippines). An extensive World Bank review of all of the PER studies in the 1990s highlighted the following shortcomings.²⁹

- Most PERs define the public sector deficit as the central government deficit. The deficit of the consolidated general government (including contingent liabilities), a more relevant macroeconomic variable, has largely been ignored.
- Most PERs do not examine the rationale for public intervention. Basic public economics concepts of market failure, public goods, and externalities are seldom used to analyze the efficiency of public budget allocation.
- Most PERs do not integrate capital and recurrent expenditure, and so sidestep the issue of future

²⁹ Development Economics Vice Presidency and Poverty Reduction and Economic Management Network. 1999. “Public Expenditure Reviews: Progress and Potential.” PREM Notes Public Sector 20. World Bank. April.

recurrent cost implications of the capital budget. This introduces uncertainty regarding the sustainability of policies and projects.

- Less than a quarter of PERs reviewed adequately focused on institutional issues such as budget management or incentives in the public sector. Attention was restricted to incomplete (and often superficial) economic analysis of public expenditure.

Thus far, the focus of the discussion in this chapter has been almost entirely on the analysis of the level and composition of public expenditure allocation. It needs to be borne in mind, though, that focusing on allocative policies alone will do little unless such policies are efficiently executed and effectively managed. As discussed in Chapter 3, this requires well-functioning relationships of accountability—more the exception than the rule in many

developing countries. Public institutions lacking proper incentives (low pay, unfair recruitment and promotion, etc.) often fall prey to corruption and low morale, eroding the effectiveness of public institutions. The often prescribed approach of capacity building may not be an appropriate solution to deep-rooted problems such as lack of incentives and bad governance. It is therefore critical to incorporate the institutional context in the analysis of education sector issues—i.e., it is as important to evaluate the institutional arrangements or rules of the game among key players involved in the chain of education services delivery as the allocations themselves.³⁰ Unfortunately, public expenditure analysis has traditionally placed little emphasis on these institutional issues. However, recent tools are emerging to attempt to redress these shortcomings, and Chapter 5 reviews the use of microeconomic surveys as instruments for assessing public service delivery performance.

³⁰ Several studies over the last few years have highlighted the importance of the institutional/governance environment in determining educational outcomes and impact. See for example: L. Pritchett. 2001. "Where are All the Education Gone." *The World Bank Economic Review*, vol. 15, no. 3, pp. 367-391; and E. Dabla-Norris and M. Gradstein. 2004. "The Distributional Bias of Public Education: Causes and Consequences." IMF Working Paper 214.