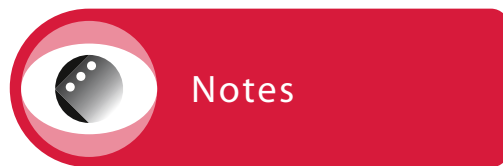


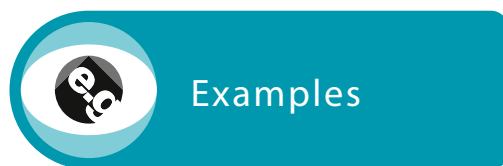
Specific Guidance for **EDUCATION**



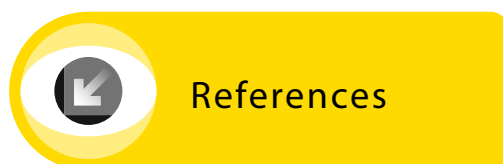
Preparing PERs



for Human



Development



Preface

These tools for analyzing public expenditures in HD sectors are part of a larger process to improve the treatment of human development issues in PRSCs, PERs, development policy lending and other cross-sectoral or macroeconomic analyses. The specific goal of these interlinked PER guidance notes is to support and spark the imagination of people tasked with analyzing expenditures in HD sectors—to help them learn from better than average examples and to make it easier to use the many resources already available.

The development of these tools was launched by Maureen Lewis, Interim Chief Economist, managed by Sue Berryman and carried out by Dina Abu-Ghaida and Sue Berryman (education), Dov Chernichovsky and Mattias Lundberg (health) and Margaret Grosh (social protection). The steering committee comprised Paul Gertler, Barbara Bruns, Anil Deolalikar, William Dorotinsky, Benoit Millot, Elizabeth King, Laura Frigenti, Marito Garcia, Michelle Riboud, Mukesh Chawla and Anand Rajaram.

The education materials benefited from the comments and suggestions of Regina Bendekot, Barbara Bruns, Luis Crouch, Deon Filmer, Ariel Fiszbein, Beth King, Marlaine Lockheed, Benoit Millot and Suhas Parandekar.

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The HD Council reviewed and discussed the PER Guidance draft and endorsed its approach, content and purpose. Any shortcomings remain those of the authors.

User's Guide



Checklists

It is important that this Education Guidance checklist be used in conjunction with the Core Guidance checklist. The latter checklist addresses cross-cutting issues, such as data sources and the selection and judicious interpretation of comparative data.

The guidance note given here is not to be taken as a minimum list where the authors must tick every sub-box. Every public expenditure review (PER) must be selective in what it covers, with the selection of topics based on many factors—what is needed to underpin the country dialogue, what is already known, what is feasible given constraints on time, data, funding, etc. This guidance note is meant to remind the analyst of the main features that might normally be included in the education chapter of a PER. It will often be decided to omit certain topics, but these decisions need to be made with some justification in mind. In addition to agreeing in the concept note on the planned coverage of topics, it may be useful to convey to the reader of the full report the reasons for excluding major themes.

Note also that the guidance note is organized as a checklist rather than an outline or table of contents. While a report might be organized along these lines, there are many other outlines that could be effective. One option might be to work around the core PER questions of: Where does the money come from? Where does the money go? What does it buy? How could spending be improved? Another outline might be to present in a first section the situation with all basic analyses, followed in a second section by a discussion of issues and in a third section by options for reform.

Notes

In many places along the right-hand margin of the checklist the symbol **Note X** appears. The text of all the notes follows the checklist itself. Some are short texts that explain further what is meant in the checklist. Often the notes contain references to methodological material or to sources from which international comparators may be drawn.



Note

Examples

In many places along the right-hand margin of the checklist the symbol **Example X** appears. The text of the examples follows the text of the notes. The examples are excerpts of a page, table or series of pages meant to show at least one interesting case of application of the themes contained in the checklist.



Example

Examples of Good PERs, Useful Websites, and References

Examples of good PERs, useful websites and references are contained in the unified bibliography. For the majority of documents contained in the bibliography, materials are available on the World Bank website and the URLs are given.

Checklist

After defining the boundaries of the education sector on which the PER will focus and assembling some contextual information, the following topics should be considered for inclusion in the PER. *The PER should judiciously use and interpret comparative data.*

 **Note 1**
 **Example 1**

TOPICS TO CONSIDER IN AN EDUCATION PER

1. How much is spent on education—and how much does government spend?
2. How does government finance?
3. What does government finance?
4. Does public spending protect equity?
5. Are public resources being used efficiently and effectively?
6. How much is enough? Is public spending adequate and sustainable?

1. Defining the Education Sector

The first task is to decide how you want to define the sector. The rough scale below shows increasingly inclusive definitions. Obviously, you can select a subset of domains—for example, just tertiary education and all publicly financed R&D (research and development), or just VET (vocational education and training). *The important point is to recognize that explicit choices have to be made and that whatever choice you make has pervasive implications for the work.* For example, if you decide that you want to look at VET, immediately you know that you must check for potentially significant private financing by employers and families and public financing sources in ministries other than education.

Narrowest <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Broadest <input type="checkbox"/>
Specific level of education (such as tertiary)	All education, but no VET	All education plus VET if offered in secondary or post-secondary schools	All education plus all VET wherever offered	All formal and informal education plus publicly financed research and development

2. Context

- It can be useful to diagram the structure of the country’s education system to understand how it is organized. Determine:
 - Levels of education by grade—some countries define primary education as grades 1–4, others as grades 1–6 or 1–8. Structure can affect the efficient use of inputs such as buildings or teachers.
 - Typical ages for each grade and level.
 - Flows between levels and types of education to show “pathways” that are open and closed to students. Allowable pathways usually have implications for equity, efficiency and learning outcomes. For example,

students may not be allowed to enter university from an upper secondary vocational education program.

- ❑ A country's demographic structure and trends significantly affect costs and efficiency. Population data by single-year age groups—preferably for male, female and total between 0 and 29 years of age for the last five years and as projected for the next decade—will be useful.




 **Note 2**
 **Example 2**

3. How Much Is Spent—and How Much Does Government Spend

- ❑ How much is spent on education from all sources—public, private and donor and NGO expenditures? (Donor funding may be funneled through government or be off budget.)

 **Example 3**

- ❑ How much is spent on education from public sources? Be sure to:
 - Work with the consolidated budget (central government and local government budgets).
 - Check the budgets of all ministries that might have education expenditures for all types and levels of education addressed by the PER.
 - Check for off-budget expenditures.
 - Work only with executed budgets for past fiscal years (because planned is not executed).
 - Use real expenditures if you want to track annual percentage changes in the public funds flowing into the sector.

 **Example 4**
 **Note 3**
 **Example 5**

- ❑ What are total public expenditures on education as a percent of GDP? Of total public expenditures?

 **Note 4**

- ❑ Do public expenditures for education come out of general revenues or earmarked taxes?

 **Note 5**

- ❑ How much is spent on education from private sources? What percentage of total expenditures are private expenditures?

 **Note 6**
 **Note 7**

- ❑ What percentage of enrolled students by level of education are enrolled in private schools? What are private enrollment trends? What is state policy on private provision—e.g., does the state regulate access in any way, does it require private students to take the same examinations as public students? How bureaucratically easy or difficult is it for private providers to go into business? Does the state have policies to ease the access of current or potential private providers to capital?

 **Note 8**

- ❑ How dependent is government on donors to finance the sector—i.e., donor expenditures are what percentage of the country's total expenditures on education? Of recurrent expenditures? Of capital expenditures? What

are the trends in these shares? What share of donor support is general budget support to the sector versus project-specific support?



- ❑ What is the executed public budget for education as a percentage of the planned public budget for education? Big gaps interfere with the sector's ability to plan meaningfully and take actions that entail future financial commitments, such as the procurement of goods and services.
- ❑ Are there budget arrears in the sector? If so, in what expenditure categories? Do trend data show that the stock of arrears is going up or down?

4. How Does Government Finance?

- ❑ What are the intergovernmental financing arrangements for the sector?
- ❑ How is the public executed budget for education divided between the central and local governments?
- ❑ If financing is split between the central and subnational levels, which levels of government pay for what? Local government may fund certain levels of education, such as preschool and basic education but not upper secondary education. They may fund certain inputs such as school maintenance but not capital expenditures.
- ❑ Are those who make decisions about local budgets for education either locally elected or accountable to those locally elected? Or are they appointed by and accountable to central government? In the latter case, decisionmaking has not been decentralized.



- ❑ If local governments have a financing role, do they have significant revenue-raising authority? In other words, is there true fiscal decentralization?
- ❑ Do local governments raise revenues, or are all taxes collected by the central government? If local governments collect revenues on behalf of the central government, are they allowed to retain any of them?
- ❑ Are there subventions or grants from the central government to local governments for financing education? If so:
 - Are these subventions earmarked for education—i.e., do they have to be spent on education? Or are they unconditional—i.e., local government can spend its grant as it wishes and, in theory, can decide to use none of it on education?
 - Do they come in a single tranche with one reporting requirement or in multiple tranches, possibly with multiple reporting requirements?
 - How are the subventions calculated?
 - Is there evidence of vertical imbalances?



- Is there evidence of horizontal fiscal imbalances? If so, do they emerge from locally variable fiscal resources or locally variable fiscal effort?

 **Note 14**
 **Example 8**

- Do schools have their own budgets? Do they have any decisionmaking authority over how their budgets are spent? Are schools allowed to keep school-generated revenues—such as fees or revenues from entrepreneurial activities or the sale of products in vocational schools or the rental of school space? These questions assess how well accountability for and authority over resources are aligned.



5. What Does Government Finance?

Functional allocations

- How are public expenditures for education allocated among levels of education—such as preschool or tertiary education? In other words, how much of the total goes to each level of education? How is donor financing allocated among educational levels?



 **Note 15**

- What are the unit costs by level of education as a percentage of per capita GDP? Use cross-country data to identify anomalous ratios in per capita costs between levels of education.

 **Note 16**
 **Example 9**

Economic allocations






- How are public expenditures for education allocated among the different inputs to service delivery by level of education? Again, look for anomalies—e.g., is the wage bill crowding out the nonwage recurrent budget? How is donor financing allocated among inputs? Given government-financed allocations, could donor financing be used in a more balanced way?

 **Note 17**
 **Example 10**

- On average, how much is available for routine maintenance per school? How adequate is this amount, compared with engineering estimates of the costs of routine maintenance for the average school? Given the government's textbook policy, how adequate is the amount spent per child on textbooks?

6. Do Public Policy and Public Spending Protect Equity?

- How do school enrollment rates, completion rates and learning achievements vary by subgroup? Look for variations by gender, family income, residential location (region and urban versus rural locations) and ethnic or religious group. Learning outcomes can be unequal without indicating inequitable opportunities. But if outcomes are unequal, there is a question to answer.

 **Note 18**
 **Note 19**
 **Note 20**
 **Example 11**
 **Example 12**

- ❑ A fundamental responsibility of the state is ensuring equity and handling redistribution. Public policy, including educational finance policy, can maximize or minimize subgroup differences in educational access and achievement. What role does the state play in mitigating or exacerbating differences in educational opportunities?
- ❑ How progressive or regressive is the state's financing of education? By level of education? By province and within provinces? Answering these questions requires a benefits incidence analysis.
- ❑ As an indicator of financial burden, what average percentage of consumption do families in different consumption quintiles cover in formal and informal payments for education? The demand response in countries that have abolished fees at the primary level (e.g., Malawi, Tanzania, Kenya, Uganda, Cameroon) is strong evidence that tuition fees curtail demand. However, as Kattan and Burnett (2004) point out, in addition to tuition fees, households frequently face a wide range of user fees for publicly provided primary education, including textbook fees or costs and rental payments, compulsory uniforms, parent-teacher association (PTA) dues, and various special fees such as exam fees and community contributions to district education boards. In many countries, private tutoring adds to the household costs of primary education.
- ❑ Has the government established financial incentives to increase families' demand for education? These may take the form of:
 - Cash transfers, conditional on families' keeping their children in school, as in Bangladesh, Mexico or Brazil.
 - A voucher program.
 - A scholarship or student loan system.
- ❑ What are the government's criteria for education transfers or subsidies, such as scholarships and free textbooks? Is there targeting to certain income, gender or ethnic and religious groups? When educational merit is the basis, the subsidy or transfer will tend to favor wealthier families.
- ❑ Does the government subsidize private schools? What are the rules governing these subsidies? For example, what percent of the estimated per student cost for public schools does a subsidized private school receive? Can a private school receiving public subsidies also charge fees? Depending on how they are designed, public subsidies may implicitly subsidize the wealthy's preference for private education.
- ❑ Are there corrupt practices that affect access, grades or graduation—e.g., bribes to university faculties to secure entry into a particular faculties, or parental "gifts" such as new computers to a school to gain entry to a prestigious

 **Example 13**
 **Note 21**
 **Example 14**
 **Example 15**
 **Example 16**
 **Note 22**
 **Example 17**
 **Example 18**
 **Note 23**
 **Example 19**

secondary school? If so, how widespread are they? Has the state taken any actions to stop these practices? Does the state regulate the dubious practice of private lessons by the student's teachers or by teachers within the student's school? Bribes, gifts and private lessons penalize the poor.

- ❑ What public policies govern progression through the educational system? If tertiary enrollments are rationed, examinations during the pre-tertiary years are often used to “weed” students out of the system. Pathways into tertiary education are highly restricted. Students may have had to complete the academic program at the upper secondary level, and access to this program may be highly restricted. These policies favor wealthier families.
- ❑ What actions other than financing does the government take to increase parental demand for education? If parents fear for their daughters' safety during travel to school, what does the government do? For families speaking a minority language, does the government offer instruction in that language? See Birdsall and others (2004) for public policies that can increase demand for education.

7. Are Public Resources Being Used Efficiently and Effectively?


- ❑ The ability of government, providers and beneficiaries to judge whether inputs are used efficiently and effectively depends on having information on the performance of the system that is publicly available, recent, reliable and relevant.
 - Does government measure educational inputs, processes and outcomes?
 - Does government ever evaluate the success of initiatives relative to their goals (e.g., effects of a new curriculum on student learning outcomes or of providing school transport on families' demand for education)?
 - Does government ever try to estimate the cost-effectiveness of alternative policies (e.g., changing class size)?

Allocative efficiency: Is money being spent on the right things?

- ❑ Can education goals be furthered more effectively by investing the marginal dollar in other sectors?
- ❑ Should public spending be reallocated among levels of education? What are the employment and unemployment rates and wage returns to different levels of education?

Technical efficiency: Is money being spent efficiently, given allocative decisions?

- ❑ Are there variations in unit costs between subnational units or schools? Between public and private schools? Such data will not show why there are cost differences, but will establish that “there is a question to answer.”

 **Example 20**

 **Note 24**

 **Example 21**

 **Note 25**

 **Example 22**

 **Note 26**


- Personnel policies and data show what the country is buying in the way of staff qualifications, at what price, and whether it is using staff efficiently.
 - What is the basis for personnel decisions about teachers and school managers: merit, seniority or politics?
 - What are the ratios of teachers, students and non-teaching staff? How do these ratios compare with comparator countries and other benchmarks, such as in the Education For All Fast Track Initiative (EFA FTI) indicative framework?
 - What is the distribution of teachers among levels of qualification? What percentage meet basic government standards?
 - How are teachers used? What are their teaching loads relative to those in comparator countries? In which grades do the schools use a single teacher for the class? In which grades do they use teachers specialized by subject? Do specialized teachers teach only one subject or two or more closely related subjects?
 - Holding annual hours of work constant, what does the average teacher cost per year relative to the average wage for a public sector technocrat? Relative to GDP per capita? Relative to wages for those with qualifications similar to those for teachers?

- What are the cost implications of the curriculum? A large number of subjects for each grade costs more in terms of textbooks and makes it hard to realize economies of scale for specialized teachers. It also seems to affect what is learned. A large number of subjects encourages a mechanical pedagogy (e.g., memorization) because an over-crowded curriculum makes project-focused and in-depth investigation of topics virtually impossible.

- How efficiently is capital used?
 - What criteria are used to decide when to build a new school and where to build it? (Look for the use of school mapping databases for making these decisions.)
 - Are there construction standards? In countries with cold winters, do these standards conserve energy? Has the government done any analysis of tradeoffs (maintenance costs, earthquake protection) between alternative standards?
 - What is the average unit cost of building a classroom? Do unit costs vary significantly across the country? How does the average cost compare with average unit costs in other countries?
 - What is the average maintenance budget for a school, and how does it compare with engineering estimates of the costs of routine maintenance for the average school?
 - Are transparent and proper procurement procedures used to contract for new construction, major repairs and textbooks? Is there any evidence about corruption in procurement and data for estimating its magnitude?

 **Note 27**
 **Note 28**
 **Example 23**
 **Example 24**
 **Note 29**
 **Example 25**
 **Note 30**

- What is the average student/classroom ratio by level of education for rural and urban schools?
 - What is the distribution of student/school ratios? For example, what percentage of schools have student/school ratios that are between 50 and 99 students per school? Between 100 and 199?
 - What percentage of schools run double shifts? Triple shifts?
- What do the trends in the school-age population imply about the inputs required now and in future? If the population is trending down, do trend data on the teaching force and facility use indicate that the government is downsizing inputs into the system—for example, reducing the number of teachers, closing schools or classrooms? What do the demographic projections imply for the challenges ahead for the government?
- If the government plans to introduce a cost-saving policy or a policy that adds significantly to costs, such as introducing computer-assisted instruction or decreasing class size, can you estimate the policy's marginal effect on outcomes relative to costs? (See chapters 4 and 9 in Mingat, Tan and Sosale (2003) for examples of how to calculate the cost-effectiveness of a policy.)

 **Example 26**

Internal efficiency: What are the social and private costs of repetition and dropout rates?

- What are the repetition rates at different levels? What are the dropout rates?
- What are the social and private costs of the repetition and dropout rates at different levels of the education system? (See chapter 9, p. 224 ff in Mingat, Tan and Sosale (2003) for examples of how to calculate these costs.)

 **Note 31**

External efficiency: Do schools focus on the skills and knowledge needed by employers?

- This question can be evaluated by triangulating several sources of data and analyses:
- Tracer studies of graduates.
 - Analysis of relationships between years and type of education completed and labor force participation, employment and unemployment rates.
 - Analysis of rates of return to different amounts and types of education.
 - Qualitative interviews with business associations and employers in broadly different industries.

 **Note 32**

 **Example 27**

Are there measures of system performance?

- International evidence shows a low correlation between public spending on education and educational outcomes. Look for information on the performance of the system.
- What are unit costs as a percentage of GDP per capita for different levels of education for public and private schools and relative to comparators?

 **Example 28**

- Is the money spent actually reaching the point of service delivery?
- Are providers actually providing services? (Do teachers show up at school?)
- What are students' outcomes in public and private schools—their enrollment rates, completion rates, learning outcomes, transition rates between levels of education and post-graduation employment and wages?
- In a graph of unit costs as a percentage of GDP per capita relative to performance on regional or international learning assessments (see Note 20), how productive is the system relative to regional neighbors or other comparators?

 **Note 33**
 **Example 29**
 **Note 34**

8. Bottom Line: How Much Is Enough? Is Public Spending Adequate and Sustainable?

How much is enough?

- In the short term? This is a judgment call, informed by analyses of the previous topics. What is now being spent? Can resources be used more efficiently? Are the resources available reaching the point of service delivery? Are there arrears in the sector? Is there evidence of not enough money to fund basic inputs—such as school maintenance or learning materials that complement teachers?
- In the medium and longer term? Starting with how much is needed now, what happens to costs given:
 - The government's sectoral goals that affect costs—e.g., implementing PRSP goals to expand educational access for the poor, participating or planning to participate in EFA FTI, extending the length of compulsory education, introducing cost recovery for tertiary education, improving educational quality by hiring better educated teachers, expanding VET, retrofitting facilities to protect against earthquakes.
 - Demographic projections for the school age population?

 **Example 30**
 **Note 35**
 **Example 31**

What can be afforded?

- If at all possible, do some simple modeling to assess the joint implications of projected costs and revenues and thus the realism of the government's plans for the sector. Be sure to work closely with the country economist or the macroeconomist on the PER team. The existence of a reasonable medium-term expenditure framework makes this task easier.
- Factor in:
 - The costs of the government's medium-term plans for the sector (see last section).
 - Expected changes in intersectoral allocations as a result of government's relative priorities among the sectors.
 - Arrears in the sector.
 - The projected macroeconomic framework.

 **Note 36**
 **Example 32**



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Note 1. Using and interpreting comparative data

One of the most important contributions of a PER is to estimate “how much is enough.” When are expenditures “too much,” “too little,” or “about right”? There are three sources of benchmarks to guide these judgments:

- Empirical literature that relates policies in the sector to the outcomes desired, such as enrollment rates, completion rates and learning achievements.
- Comparisons with other countries in some way “like” the country in question.
- Country-specific standards.

Empirical literature. Empirical studies, especially those that relate inputs to outcomes, are useful guides. For example, the Program for International Student Assessment (PISA), conducted by the OECD, found that a student/teacher ratio of 25:1 was optimal in terms of learning outcomes for 15-year-olds. This result implies that most countries have inefficient student/teacher ratios—too low (e.g., most OECD and ECA countries) or too high (e.g., most countries in Africa).

However, such studies have two problems. There is often no critical mass of studies that can be used to check for consistent findings about relationships between particular inputs and outcomes of interest. Second, there is the “unmeasured variable problem.” Country-specific factors that may or may not be represented in completed studies can alter the relationships between inputs and outcomes.

Comparisons with other countries. Comparisons with other countries have other problems. For example, in the Bank it is very common to compare the percentage of GDP or total public expenditures devoted to the social sector to that devoted by countries “comparable” in some way—because they are regional neighbors or in terms of per capita GDP, for example. There are two problems. One is that regional neighbors may share the same difficulties as the country in question. For example, countries of the former Soviet Union had the same inefficient input norms. The second problem is that countries differ in several factors that significantly affect total expenditures in the sector, such as variations in:

- Number and nature of service beneficiaries—e.g., the number of families that need social assistance, the share of the population that is older and in greater need of medical services for non-communicable diseases or the number and enrollment rates of school age children whose education has to be financed.
- Prices for key inputs, such as doctors or teachers.
- Residential patterns that determine opportunities for economies of scale—all else being equal, it costs more to provide health care or education in countries with large numbers of small and isolated settlements (e.g., Kazakhstan).
- Policies on public versus private financing.

Country-specific standards. The final and ultimately preferable option for judging how much is enough is to develop benchmarks for the country itself. This means triangulating the fiscal implications of the country's goals for the sector, its demographic patterns, the evidence on the equity and the allocative and technical efficiency of expenditures, and measures of sectoral outcomes.

Especially in fiscally decentralized systems, comparisons of recurrent expenditure patterns among local governments can be used to establish efficiency benchmarks. More factors that affect technical efficiency are held constant within a country than between countries. Thus, the PER, *Brazil Municipal Education Resources, Incentives and Results*, used Data Envelopment Analysis (DEA) to estimate the efficiency frontier and efficiency scores for municipalities below the frontier, controlling for the municipalities' per capita income and population size. This technique lets the task team identify municipalities able to extract much better outcomes for the same level of inputs than other municipalities—i.e., identify efficiency possibilities.

Note 2. Estimating school-age populations

Determine the date of the last population census for the country and the views of the Bank's country office and country team of its quality. Be alert to the fact that war, migration into or out of the country, and changes in total fertility rates can significantly—and quickly—alter total population and its age structure. (See Example 2.) *Always* check with the population experts in HDNHE (Human Development Network–Health) on population estimates and projections for the country, using HDNHE's estimates when other data sources are flawed. If census data are available only by five-year age groups, ask HDNHE for accepted practice in estimating the population for single age groups.

Note 3. Finding hidden expenditures

To estimate total public expenditures for education, double-check these issues:

- Are you working with the consolidated budget? All expenditures may come out of the centralized budget. However, if the country has delegated functions to subnational units, the budget required to discharge these functions may show up in local budgets. If the sector has decentralized financing, expenditures will show up in both central and local budgets that the government may or may not consolidate into a single budget.
- Have you checked the budgets of all ministries that might have education expenditures? Deciding which expenditures should be included requires prior decisions about the scope of the PER. These decisions should alert you to having to cast a broader or narrower net. Most expenditures for most education services will show up in the ministry of education budget. However, especially if the PER includes all vocational and technical training, some may sit in budgets for other ministries, such as the ministry of labor, a ministry of culture, the ministry

that handles social assistance (budget for adult literacy programs may sit here), or a ministry for youth and sports. The ministry of health may fund advanced professional training for doctors.

- Be on the alert for off-budget as well as budgeted expenditures. In the education sector, donor grants and loans are the most likely source of off-budget expenditures. If they are off-budget, the World Bank's Resident Mission should have information on these sources. They may be minor—or huge. For example, donor grants are off-budget in Armenia. In 2001 the grants for education were 17 percent of final education expenditures, 2 percent of total public expenditures and 0.5 percent of GDP.
- Work with executed budgets, or if the budget is still being implemented, the latest planned budget. Countries differ in the relationship between their planned and their executed budgets for the sector, with some running significant differences between the two.
- If you need highly current information on the government's fiscal behaviors in the education sector, check with the IMF or Resident Mission for information on "midyear corrections" in planned budgets.
- If you want to show the annual percentage change in the amount of money flowing into the sector, be sure to convert nominal into real expenditures, using the IMF's deflators for each year in the series. Under conditions of high inflation, the difference between nominal and real changes in public expenditures can be huge.

Note 4. GDP, total public expenditures and public expenditures on education

- Be sure to obtain comparator information on the relationships among GDP, total public expenditures and public expenditures on education. OECD's *Education at a Glance* reports them for OECD countries and for countries in the World Development Indicators program (Argentina, Brazil, Chile, China, India, Indonesia, Jordan, Malaysia, the Philippines, the Russian Federation and Thailand). Whatever database is used, treat it with caution, checking for non-comparabilities in definitions of variables and estimation techniques. Note 1 above (and Note 3 in the Common Guidance) discusses problems with making inferences from cross-country comparisons.
- If total public expenditures are a small share of GDP, education expenditures can easily be a small share of GDP and a large share of total public expenditures. For example, it looks as though Croatia and Poland make similar fiscal efforts in education and that Armenia makes significantly less (education public expenditure [EPE] as a percentage of GDP). In fact, however, Armenia makes more of a fiscal effort than Croatia, and Poland makes significantly more effort than Croatia (EPE as a percentage of total public expenditure [TPE]). The reason is the inter-country variations in the government's "take" from GDP (TPE as a percentage of GDP).

	TPE as % GDP	EPE as % GDP	EPE as %TPE
Croatia	49.4	4.7	8.6
Poland	34.5	5.0	14.5
Armenia	25.0	2.9	11.8

Note 5. Earmarked taxes

In general, earmarked taxes are less desirable because they limit the fiscal flexibility of government.

Note 6. Payments from households and enterprises

- Check households and enterprises as sources of private payments. The former can be very large, depending on the country. The latter may be so minor that they can be ignored.
- For households, estimate total annual payments for both public and private educational services by level of education. Private payments for public services reflect the government's cost recovery policies. Include both formal and informal payments.
- Household survey data are usually required to estimate private payments for public or private services, especially when these payments are informal.

Note 7. Private payments and equity problems

When private payments constitute a significant share of total expenditures on education—as in Sub-Saharan Africa—there is almost always a significant equity problem.

Note 8. Private Sector Development database

The Private Sector Development unit maintains a database for 130 countries that can be used to evaluate the effect of public policy on private provision of educational services. It has data on the costs of starting a business (such as the number of steps), hiring and firing workers, enforcing contracts, getting credit and closing a business. Website: <http://rru.worldbank.org/DoingBusiness/default.aspx>.

Note 9. Sustainability of donor expenditures

If donor expenditures constitute a significant share of total expenditures on education, the potential for sustainability problems has to be assessed.

Note 10. Decentralization and block grants

For more information on decentralization, visit: <http://www1.worldbank.org/publicsector/decentralization/index.asp> and <http://www1.worldbank.org/publicsector/decentralization/service.htm#1>.

Under some conditions block grants can operate similarly to own-source revenue in terms of their effects on the efficiency of sectoral spending. The four conditions are that local governments: are funded through block grants; are accountable to their citizens for the spending more than to higher tiers of government; have open and efficient budgeting processes—budgeting is contested but rational (populism and technocratic rationality have to go together); and have good, standardized metrics of performance so that citizens can compare one local government against another. What these arrangements do not do is generate a sense of overall fiscal economy. Local governments have an incentive for overall tax rates to be high because essentially they see themselves as free-riding on the national fisc.

Note 11. Presence of multiple tranches

Multiple tranches usually signal that upper-tier government agencies are engaged in turf fights among themselves or do not trust (or pretend not to trust) lower-tier government agencies. Multiple tranches make it difficult for lower-tier agencies to set spending priorities because their revenue streams are uncertain. Different reporting requirements by multiple upper-tier funders increase transaction costs for lower-tier agencies.

Note 12. Design of funding formulas

Is the formula simple and transparent, or complex and therefore more subject to political manipulation? Does it take into account basic variations in the local costs of providing services? Cities have higher labor costs. Rural areas are less able to realize economies of scale.

Note 13. Australian Commonwealth Grants Commission

Do subventions for education from the central government to local governments fall significantly short of the local costs of providing services and inputs? If so, how do local governments cope with the shortfalls? Look for underfunded inputs (school maintenance, learning materials), the use of locally raised resources to fill the gap and cost recovery from families. If vertical imbalances seem to be a serious problem, consider recommending something like the Australian Commonwealth Grants Commission. The commission was established as an independent arbiter between the Commonwealth and the states to assess claims by states for financial assistance (special grants) under section 96 of the constitution. The commission assumed the task of defining per capita relativities, its advice based on fiscal equalization: “each State should be given the capacity to provide the average standard of State-type public services, assuming it does so at an average level of operational efficiency and makes an average effort to raise revenues from its own sources.” Although the commission’s findings have not always received unqualified support from the states and territories, the commission’s technical competence, impartiality and objectivity are recognized broadly and seen to rationalize the conduct of intergovernment financial relations.

Note 14. Funds available to local governments

Do local governments differ in the amount of money that they have available or choose to make available per student for educational services? Calculate the per student funding provided by the central government for each local government. Look for data that tell you how local governments spend their unconditional grants or their locally generated revenues.

Note 15. Level-specific funding

Calculate level-specific shares by dividing the amount going to each level by the total allocated to all levels of education, net of amounts going to the ministry of education and other purely administrative costs.

Note 16. Public expenditure ratios by school level

See chapter 3 on calculating unit costs in Mingat, Tan and Sosale (2003). In general, divide the total public expenditures for a level of education by the total number of students enrolled in that level. The average OECD ratios are not a bad guide. Relative to the per student expenditure for primary education, the average OECD country spent 0.91 per student for preschool in 2001, 1.29 per student for lower secondary education, 1.34 per student for upper secondary education and 2.30 per student for tertiary education.

Note 17. Necessary data

At a minimum, obtain data on:

- Recurrent versus capital expenditures.
- Within the recurrent category, staff costs versus non-staff costs.
- If possible, within overall staff costs, the breakdown between teachers and non-teaching staff.
- If possible, within non-staff recurrent costs, the breakdown for maintenance, utilities, textbooks and so on.

Note 18. Useful data sources

- *Household surveys.* These surveys usually collect data on enrollments by level of education, ages (needed to calculate net enrollment rates) and gender of children, residential location of the household (rural or urban, province) and completion of different levels of education.
- *Special studies.* Sometimes household surveys have information on membership in ethnic or religious groups, but if not, check for special studies on minorities conducted by NGOs, UNICEF or other donor groups to look at enrollments.
- *Educational Attainment and Enrollment Around the World.* This database currently covers typically low-income countries with a Demographic and Health Survey (DHS). It will be expanded to countries with a Multiple Indicator Cluster Survey (MICS, sponsored by UNICEF) as well as an ad-hoc collection of countries with a National Socioeconomic Survey or a Living Standards Measurement Study (LSMS) survey. The website

is updated fairly regularly, but the rate depends on the release of new household survey data. URL: <http://www.worldbank.org/research/projects/edattain/edattain.htm>

Note 19. Estimating enrollment rates by family wealth

- Look at both net and gross rates and ideally at the histograms of enrollment by age and by grade. A line chart of enrollment on the y-axis and age on the x-axis, with different lines for different grades, is a useful way to understand what is going on. If sample sizes permit, such a chart can be created for each consumption quintile.
- Gross rates simply measure participation, calculated by dividing the number of students enrolled in a given level of education by the number in the population of the ages intended for that level. A number of overage or underage children in a given level of education can produce enrollment rates that exceed 100 percent.
- Net rates measure participation at the “appropriate” ages and are calculated by dividing the number of students enrolled in a given level of education who fall within the age range intended for that level by the number in the population of the ages intended for that level. Net rates are particularly important for countries, such as many Latin American countries, that have high repetition rates, since repetition increases the number of “out of expected age range” students.
- Using different indicators of parental socioeconomic status—such as consumption quintile/decile or mother’s and father’s education, calculate the net and gross enrollment rates and completion rates for children whose families differ in resources.

Note 20. Relating learning outcomes to consumption quintiles

- If country-specific learning assessments do not collect data that let you relate learning outcomes to consumption quintiles, there is a simple expedient. Many countries now have geographically based poverty maps for districts or municipalities. Many countries can map schools to municipalities, allowing learning assessment data by schools to be cross-linked to the geographic poverty database and yielding at least a proxy for learning achievements by consumption group.
- In addition to national assessments of learning outcomes, check to see whether the country has participated in any of the international or regional learning assessments. These assessments usually measure gender and characteristics of the home that can proxy for socioeconomic status and sometimes other characteristics that indicate subgroup membership. These assessments include:
 - Laboratorio Latinoamericano de Evaluación de Calidad de la Educación (LLECE), or Latin American Laboratory for Evaluating the Quality of Education, applied in 1997;

- Monitoring Learning Achievement (MLA), applied in various years, mostly in African countries;
- Southern Africa Consortium for Monitoring of Education Quality (SACMEQ), applied in 1995 and 1999;
- Programme d'Analyse des Systèmes Educatifs des Pays de la CONFEMEN (PASEC), or Programme of Analysis of Education Systems of CONFEMEN countries (i.e. conference of ministers of education of countries sharing the French language), applied over the period 1996–2001;
- Progress in International Literacy Study (PIRLS), applied in 2001;
- Program for International Student Assessment (PISA), applied in 2001;
- Third International Mathematics and Science Survey (TIMSS), applied in 1995 and 1999, the latter also known as TIMSS-R; and
- OECD's International Adult Literacy Survey (IALS).

Note 21. Minimum and best practices for calculating incidence

- See Mingat, Tan and Sosale (2003), chapter 7, for a general discussion of calculating the distribution of public subsidies for education.
- The calculation of incidence from primary household survey data is a moderately complicated task, with several methodological choices. Minimum practice is to report average public education financing per child or per household by household consumption quintile or decile. The programs used to calculate consumption aggregates for two LSMS surveys are available online. URL: www.worldbank.org/lsm under Tools for Using Household Survey Data. They help demonstrate how to implement some of the ideas.
- Best practice involves more sophisticated analyses. Calculating subnational variations in per child spending by poverty quintile or decile is much more meaningful than using national averages. And marginal and possibly dynamic incidence analysis complements the static average. Demery (2003) provides a good basic explanation of some of the issues and concepts in incidence analysis; van de Walle (2003) offers a more advanced treatment of some of the methodological approaches.

Note 22. Private and informal payments

- A survey of user fees in 79 World Bank client countries was conducted in 2001. Only two (Algeria and Uruguay) did not have fees of any type, while another eight allowed only PTA or community contributions. Fees for textbooks or compulsory uniforms existed in about half the countries. Tuition fees were collected in almost 40 percent of countries.
- As Kattan and Burnett (2004) point out, the burden on households as a result of fee payments is significant. The poorer the family, the greater the

burden of education spending. In Thailand, for instance, poor households spend 47 percent of their consumption on education while the average for all households is 16 percent.

Table 2
Household Expenditures on Primary Education as a Percentage of Household Spending

		All Households	Poorest Quintile
ECA	Bulgaria	24	36
	Macedonia	13	17
East Asia	China	19	29
	Indonesia	17	17
	Mongolia	6	8
	Thailand	16	47
	Vietnam	12	22
South Asia	Nepal	16	29

Source: Kattan and Burnett (2004), based on data from the World Bank's User Fee Survey, 2001, and Mark Bray, *Counting the Full Cost: Parental and Community Financing of Education in East Asia*, World Bank, 1996.

- Household survey data are required to estimate private payments, especially informal payments, as a percentage of consumption by consumption quintiles or deciles. Household surveys vary in whether and how well they measure informal payments.

Note 23. Funding nonpublic schools

There is no obvious efficiency rationale for fully funding nonpublic schools unless it can be shown that nonpublic schools achieve better outcomes than public schools. Paying the full unit cost saves the state nothing, but partial subsidies can create incentives for private provision that save the state money because it does not have to pay the full cost of educating the child. Unless publicly subsidized private schools are not allowed to charge fees, full public funding also works against equity. The poor cannot afford the fees for nonpublic schools, and public resources are being used to subsidize the preferences of wealthier families for private schooling.

Note 24. Improving education by investing in other sectors

A determinants analysis of parental demand for education that includes measures of variables from other sectors can give some insight into this question. Brenneman and Kerf (2002) report the education effects of investments in infrastructure (energy, information and communication technology, transport, and water and sanitation). For example, electricity has significant effects on the percentage of children who read and work on their studies at night. In Morocco an improved rural road system resulted in an enrollment increase in the affected area from 28 percent to 68 percent, with female enrollment tripling. In several African countries access to piped water increased enrollment between 2 and 16 percent, depending on country, by releasing children from the work of fetching water and allowing them to use that time in school.

Note 25. Measuring labor force participation from surveys

It is preferable to answer these questions, especially in countries with a large informal economy, using data from a labor force or household survey that measures labor force participation and wages and income. Sometimes tracer studies of graduates can be located.

Note 26. Challenges of Data Envelopment Analysis

The public expenditure review, *Brazil Municipal Education Resources, Incentives and Results*, used data envelopment analysis to estimate the efficiency frontier and efficiency scores for municipalities below the frontier, controlling for the municipalities' per capita income and population. This technique let the task team identify the municipalities that were able to extract better outcomes for the same level of inputs than other municipalities—that is, to identify efficiency possibilities. The analytical challenge is to estimate how much of the variation is natural (not correctable) and how much is correctable. Arriving at such estimates requires some reasonable benchmarks, based on studies, for the amount of variation that one would expect in a well-managed system.

Note 27. Personnel decisions about teachers and managers

How are teachers selected into the teacher corps? How are school managers selected? How are teachers deployed to more desirable or less desirable schools, such as isolated rural schools?

Note 28. Ratios of students and staff within schools

On average what are the student/teacher ratios? In rural schools? In urban schools? What are the teacher/nonteaching staff ratios? If the sector seems overstaffed, get data on projected retirements from the teaching force or the civil service over the next five years to see whether natural attrition will fix the problem.

Note 29. Labor market survey analysis

Data from a labor force or household survey can be used to compare wages among public servants and between similarly qualified individuals in the private and public sectors. The *Morocco Public Expenditure Review* of FY02 has a good example of such analysis. Also see the discussion of the economics of teacher pay in Mingat, Tan and Sosale (2003), chapter 6, p. 124 ff.

Note 30. Procurement projects and audits

Check the Bank's *Country Procurement Assessment Review* and any procurement audits for the country or for specific projects.

Note 31. Measuring repetition and dropout rates

Estimate student flow profiles by grade. (See chapter 2 in Mingat, Tan and Sosale (2003), for how to set up this analysis.) Household surveys such as the LSMS usually measure dropout rates within an age group more reliably than public data. Administrative data usually calculate the number of dropouts as those

individuals that neither transition to the next grade nor are repeaters. But the literature shows that repetition is systematically underestimated, producing overestimates of dropout rates. Significant internal or external migration also poses measurement problems. Students who move are counted as dropouts from their school of origin, but this does not mean that they do not re-enroll in a school at their new destination.

Note 32. Analysis of data on recent graduates

Employment and wage data for recent graduates are often used to shed light on this question. But be aware that these data reflect supply-demand interactions, not necessarily the adequacy of the skills developed by the educational system.

Note 33. Factors that can reduce spending and outcome correlations

Several factors can produce low correlations between spending and outcomes:

- Technical inefficiencies. Check Bruns, Mingat and Rakatomalala (2003) for cost drivers, such as class size, teacher salaries, or the use of non-teaching staff. Does the sector purchase the right inputs—i.e., ones that drive outcomes—in the right amounts? For example, government may buy inputs that have little relationship to outcomes, such as expensive buses. It may fail to buy inputs that leverage outcomes, such as paying teachers enough to attract adequately qualified individuals. It may buy more of a particular input than is needed to produce good outcomes, such as too many teachers or too many schools.
- The money spent does not reach the point of service delivery. If money flows through multiple layers of government to the point of service delivery, has government measured the flow to assess leakage? Public expenditure tracking surveys (PETS) are designed to follow the flow of money through different tiers of government and frontline service facilities to their ultimate intended beneficiary, such as poor families, schools or clinics. They track the leakage of public funds as funds flow through levels of government. Website: http://econ.worldbank.org/programs/public_services/topic/provider%20survey%20tools/.
- Service providers shirk—for example, teachers do not show up to teach. Quantitative service delivery surveys (QSDS) are appropriate for measuring this issue. Schools are the main unit of analysis, with the QSDS assessing the service delivery system (inputs, outputs), provider behavior, accountability arrangements and performance measurements in service delivery and providing baselines for examining the impact of policy and institutional reforms. Website: http://econ.worldbank.org/programs/public_services/topic/provider%20survey%20tools/.

Note 34. Data sources for student outcomes

The secretariat for the EFA FTI tracks enrollment and completion rates and learning outcomes at the primary/basic education level for EFA countries (website: <http://www.worldbank.org/education/efaiti>). The OECD's *Education at a Glance* reports on these and other outcomes.

Note 35. Assessing costs of EFA FTI.

Several MDG costing exercises are under way, including one under the Bank's Chief Economist's office and the UN Millennium Project (for a critical review, see Vandermoortele and Roy 2004). For the education sector, an early approach to costing the Millennium Development Goal (MDG) of universal primary completion recognizes that the mix of policy actions required for accelerated EFA progress differs considerably from country to another (see Bruns, Mingat and Rakotomalala 2003). Nonetheless, under the EFA FTI the education policy dialogue in low-income countries is organized and focused around a set of clear benchmarks (see box)—called the FTI “indicative framework.” These benchmarks provide a transparent and systematic way of tracking countries' fiscal commitment to EFA, the long-term sustainability of their primary education unit costs and quality and key outcomes, such as primary school completion and gender equity in school access and attainment. The Benin PER, for example, uses the projection methodology of the EFA FTI indicative framework to make medium-term projections of the financing requirements for the education sector in that country (see pp. 53–54).

Box: FTI Policy Benchmarks for EFA by 2015*

Service Delivery

Average annual teacher salary	3.5 x per capita GNP
Pupil-teacher ratio	40:1
Non salary spending	33% of recurrent education spending
Average repetition rate	10% or lower
Annual hours of instruction	850 or more

System Expansion

Unit construction cost	\$10,000 or less
------------------------	------------------

System Financing

Government revenues	14–18 % of GDP (depending on percent GDP)
Education spending	20% (as share of government revenues)
Primary education spending	50% (as share of total education recurrent spending)

* Benchmarks to be applied flexibly on the basis of country circumstances

However, this framework applies to countries that need and want to improve their primary education completion rates. It does not apply to goals for other levels of education.

Note 36. Alternative methodologies for costing education MDGs

For EFA FTI countries or candidate countries, investigate the usefulness of different methodologies that have been developed to estimate the costs of achieving EFA goals. (See the World Bank draft, 2004, "Costing the Education MDGs: A Review of the Leading Methodologies.")

"Costing the Education MDGs" discusses the World Bank's Maquette for MDG Simulation (WB-MAMS) Model. WB-MAMS is a new methodology for assessing costs currently being developed at the World Bank. It emphasizes World Bank and donor interactions with ministries of finance. The results are used to evaluate intersector allocations necessary to reach the MDGs, as well as the timing of additional public spending. Ethiopia is the first country that has been studied under the MAMS framework. (See Withers and Tan, n.d.).

In the WB-MAMS model, the user chooses a baseline level of spending on primary education, which is set within an aggregate budget constraint generated by the World Bank's RMSM-X macroeconomic model. Users also specify the timing of spending on primary education (e.g., front-loaded or back-loaded) and its distribution across three inputs: classrooms, teachers and non-salary spending. Once these choices are specified, the model applies assumed unit costs to compute the corresponding number of primary school classrooms and teachers that the available resources will buy. The education MDG outcome is then estimated as a function of the number of classrooms and teachers, the amount of spending on non-salary spending, the under-five child mortality rate and structural elasticity parameters that enter the MDG production function.

The MAMS model has the advantage of performing the baseline costing exercise within an explicit macroeconomic framework, the stability of which has been established within the RMSM-X model. MAMS, however, also has some weaknesses. First, the mathematical structure of the education MDG production function is somewhat of a "black box" and will not be easily understood by nontechnical policymakers in ministries of finance or education. Second, the model assumes that we have structural knowledge about the process driving education outcomes; assumptions regarding the structure cannot be reliably validated. Third, at present the MAMS model only considers the cost of achieving the MDGs for the first cycle of primary education (grades one through four) and is not sufficiently disaggregated to a) form the foundation of a comprehensive sector development and spending plan covering all levels of education; b) provide operational guidance to staff in the education ministry as they seek to design specific policies and interventions in efforts to achieve the MDGs; and c) clarify the structural constraints within the education sector that may require action outside the education sector to address. Fourth, the model does not account for the macroeconomic effects of additional spending on GDP growth and inflation over time.



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Example 1. The rationale for public expenditures in education

For a nice introduction that explains the nature of the review and states the fundamental questions to be answered and the rationale for public expenditure in education, see Maldives Public Expenditure Review, December 6, 2002, pp. 33–34.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2003/03/14/000094946_03011004002111/Rendered/PDF/multi0page.pdf.

Example 2. Accurate population estimates key to accurate estimates of enrollment rates

The World Bank conducted a PER for Croatia in 2000, just prior to the country's first census since 1989 and after the war with Serbia. Using the 1989 census data from Croatia's Central Bureau of Statistics yielded alarming estimates of gross enrollment rates for a country that traditionally had had very high enrollment coverage—only 83 percent for basic education. When the Croatia CEM was completed in 2002, the 2001 census could be used to estimate gross enrollment rates: 97 percent for basic education and 80 percent for secondary education. In other words, using the 1989 census data yielded grossly inaccurate estimates for basic education.

Example 3. Total education expenditures illustrated

For an example of a nice table showing total education expenditures, including government budget and private expenditures, as well as external financing, see *Cambodia, Enhancing Service Delivery Through Improved Resource Allocation and Institutional Reform*, Integrated Fiduciary Assessment and Public Expenditure Review, September 8, 2003, p. 40.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2003/09/24/000090341_20030924104425/Rendered/PDF/256110KH.pdf.

Example 4. Albanian budget reallocations

Eight months into the fiscal year (August 2003) the Albanian government made these reallocations within the budget. In this case the reductions in planned allocations for the education sector were small (under 1 percent), but in some countries mid-year reallocations can be significant.

Sector	Adjustment in million lek
Education	-100
Health	-30
Labor/social affairs	-59
Agriculture	+150
Finance	+54
Local government	+85

Example 5. Importance of correcting for inflation

If trend data on expenditures are not corrected for inflation, calculations of percentage annual changes can be seriously misleading—see below for Albania's education expenditures (currency is in millions of *lek*).

	2000	2001	2002	2003	2004
Original series total	16,421	19,488	19,021	22,200	26,474
Nominal annual % increase		18.68	-2.40	16.71	19.25
% change in price		6.9	6	3.7	4.2
		1.069	1.06	1.037	1.042
Deflator	100	106.90	113.31	117.51	122.44
Deflated series	16,421	18,230	16,786	18,892	21,622
Deflated annual % increase		11.02	-7.92	12.55	14.45
Real % increase since 2000			2.22	15.05	31.67

Example 6. Argentine expenditures by level of government

For an example of a nice table of expenditures by different levels of government, see *Argentina. Reforming Policies and Institutions for Efficiency and Equity of Public Expenditures*, September 10, 2003, p. 31.

URL: http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2003/10/03/000094946_03092504152660/Rendered/PDF/multi0page.pdf.

Example 7. Regional PERs in decentralized government

For an example of an analysis of the education sector in a decentralized context, see this regional (as opposed to national) PER: *Mexico, State-Level Public Expenditure Review: The Case of Veracruz-Llave*, October 8, 2003, p. 29.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2003/11/10/000090341_20031110114220/Rendered/PDF/251621ME01ther1r0cvr0in0the0system1.pdf.

Example 8. Regional differences in spending

In Kazakhstan the provinces collect the taxes and for some taxes are allowed to keep what they raise. The oil-rich province of Mangistau spends 4.3 times the amount per student that a poor province (South Kazakhstan) spends. In Poland local governments use locally generated taxes to “top up” their subventions for education from the central government. On average rural jurisdictions contribute an additional 3 percent to the subvention; mixed rural/urban areas, 4 percent; urban areas and Warsaw, 39 percent. However, although rural areas contribute a much smaller percentage to total education resources for their schools, their contributions constitute 45 percent of their total budgets, as opposed to 30 percent of the total budgets for urban areas.

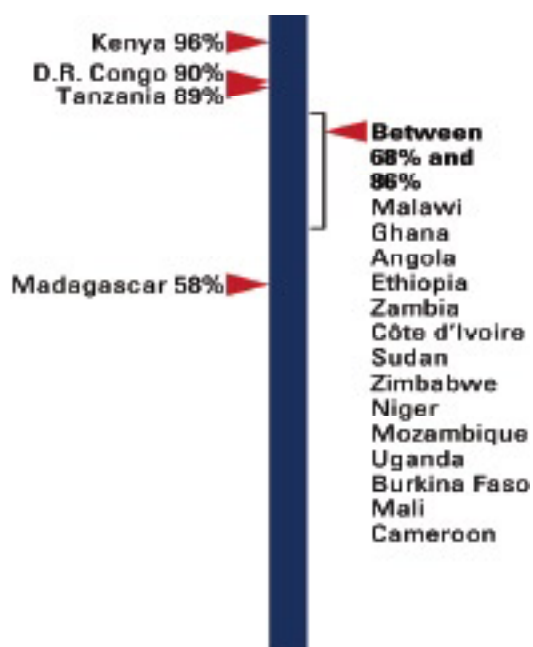
Example 9. Accounting for differences in funding between educational levels

The fact that in 1998 Poland was spending 1.84 times basic education per student expenditures for preschool and 0.96 times for upper secondary education

was a warning flag. Why was preschool relatively expensive? What was going on in upper secondary education? The answer to the latter turned on intergovernmental financing arrangements. In Poland the financing responsibility for pre-tertiary education is split between two levels of local government. The level responsible for upper secondary education has little tax-raising authority and has to depend almost entirely on the inadequate central subvention to pay for secondary education, whereas the level responsible for basic education has significant tax-raising authority and is able to “top up” the central subvention.

Example 10. Spending on primary school teachers

Spending on primary school teachers in Sub-Saharan Africa as a percentage of the recurrent wage bill varies wildly.



Source: Bruns, Mingat and Rakatomalala (2003). Reported in *WDR 2004: Making Services Work for Poor People*, figure 2.6, p. 40.

Example 11. Regional, welfare and gender variations in enrollment, survival and completion rates

The Benin 2004 PER for education found disparities by district, urban/rural location, and gender in access, survival and completion rates for primary education. It also reports enormous disparities between poor and rich households—disparities that increase dramatically as the levels of education increase. The access rate among the poorest households is less than 60 percent, compared with more than 100 percent for the richest households. Only 16 percent of 12-year-olds from the poorest households complete 6 years of primary education, compared with almost 90 percent of the richest.

Regional and Gender Disparities in Access, Completion and Survival Rates for Primary Education, Benin 2002–03 (percent)						
	All students			Girls		
	Access	Completion	Survival	Access	Completion	Survival
Atacora-Donga	83	38	46	73	25	34
Atlantique-Littoral	98	50	50	90	40	44
Borgou-Alibori	57	36	63	53	28	53
Mono-Couffo	129	66	51	118	46	39
Ouémé-Plateau	117	59	51	104	47	45
Zou-Collines	121	54	44	107	39	37
Rural	92	42	46	82	29	35
Urban	113	64	57	105	52	49
Benin	99	50	51	89	38	42

Source: Table 3.5, Benin: Enhancing the Effectiveness of Public Spending—A Review of Three Sectors, The World Bank, December 2004.

Notes: Access rate = new entrants in grade 1 divided by population of 6-year-olds; completion rate = non-repeaters in grade 6 divided by population of 12-year-olds; survival rate is calculated by cross-section method and is the product of access and completion rates.

Source: *Annuaire Scolaires*, 2002–03.

Disparities in Education Indicators by Wealth Index, Benin 2000–01 (percent)					
	Primary Education			Gross enrollment ratio	
	Access	Completion	Survival	Primary	Lower secondary
Poorest quintile	58	16	28	47	8
4th quintile	82	31	38	67	12
3rd quintile	102	37	37	83	20
2nd quintile	94	50	53	98	30
Richest quintile	101	89	88	116	71
Benin	86	46	53	81	30

Sources: Table 3.6, Benin: Enhancing the Effectiveness of Public Spending—A Review of Three Sectors, The World Bank, December 2004; Demographic and Health Survey, 2001.

Example 12. Regional and gender variations in learning achievements in Benin

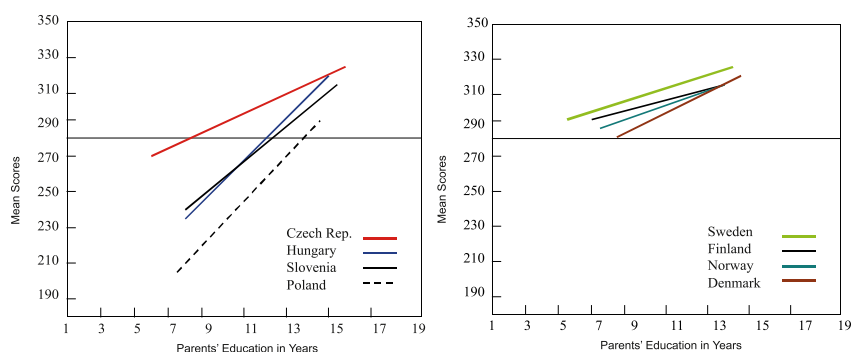
Benin shows significant regional variations in pass rates on the primary school leaving examination: students in Zou-Collines had double the pass rates of those in Atacora-Donga.

Primary school leaving examination (Certificat d'Études Primaires, CEP) pass rate by gender and region, Benin, 2002						
Region	Boys		Girls		Total	
	Registered	Passed (%)	Registered	Passed (%)	Registered	Passed (%)
Atacora-Donga	6,980	30.1	2,771	27.1	9,751	29.2
Atlantique-Littoral	11,040	50.9	8,138	49.6	19,178	50.3
Borgou-Alibori	8,052	37.6	4,333	33.1	12,385	36.0
Mono-Couffo	11,359	62.9	4,967	58.5	16,326	61.6
Ouémé-Plateau	11,403	51.1	6,652	48.9	18,055	50.3
Zou-Collines	9,252	64.7	4,806	56.8	14,058	62.0
Benin	58,086	51.1	31,667	47.7	89,753	49.9

Sources: Table 3.8, Benin: Enhancing the Effectiveness of Public Spending—A Review of Three Sectors, The World Bank, December 2004; *Annuaire Scolaires*.

Example 13. Socioeconomic effects on literacy

As the graph shows, public policy can make a difference. It shows the relationship between the literacy scores for 16–25-year-olds, measured in the OECD's International Adult Literacy Survey, and their parents' education measured in years. Each line in the chart was drawn to encompass the range of parents' education in that country from the 10th to the 90th percentiles. These lines are known as socioeconomic gradients. The graph shows that the Scandinavian countries are able to reduce the relationship between the parents' education—ordinarily a powerful predictor of children's learning achievements—and their children's learning outcomes. In contrast, ECA countries are much more elitist.



Source: OECD, 1997, *Literacy Skills for the Knowledge Society*.

Example 14. Moldovan regional and income-based bias increases in higher grades

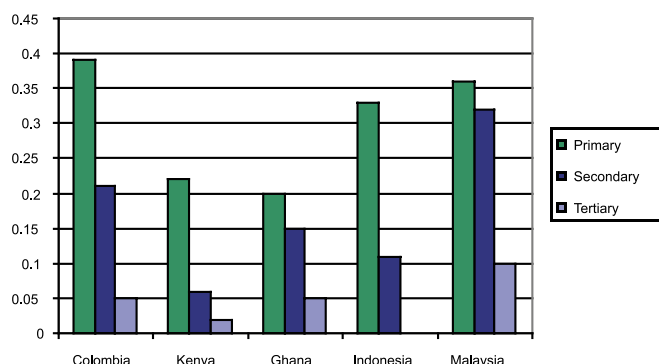
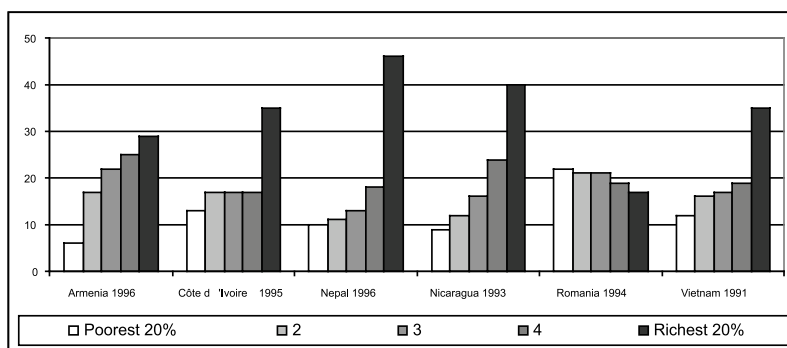
The table shows for Moldova that public expenditures on education per child are biased toward children from non-poor families and toward children in urban families. Per child subsidies do not vary much at the primary or even lower secondary grades by consumption quintile or residential location. These results reflect the nearly universal enrollments at these levels. The major differences by consumption quintile and residential location occur at the upper secondary and tertiary levels because children from non-poor quintiles and from families in urban areas have significantly higher gross enrollment rates at these levels than children from poor families or from families in rural areas. Annual per family subsidies are biased toward the poor because poor families have larger families and more children in school. For example, the poorest quintile has an average of 1.8 children per family, the wealthiest, 0.6. Public expenditures are biased toward urban families because, regardless of consumption quintile, children in urban families are more apt to be enrolled, especially in upper secondary and tertiary education, than children in rural families.

Benefits Incidence Analysis by Consumption Quintile per Child and per Family, 1999 (lei)						
Per capita consumption quintile	Per child subsidy (cumulative across all levels of education)			Per family subsidy (annual)		
	All	Urban	Rural	All	Urban	Rural
I	4,877	5,834	4,573	386	396	382
II	5,285	6,015	5,035	324	333	320
III	5,471	6,489	4,920	278	304	265
IV	6,083	6,745	5,520	264	305	235
V	6,655	7,177	5,261	233	290	151

Source: Household Budget Survey, World Bank calculations.

Example 15. Public education expenditures by consumption quintile for five countries

The first graph shows the distribution of public education expenditures by consumption quintile. The poor get a smaller share of the pie. The second graph shows the proportion of the public subsidy received by the poorest quintile by level of education. In most countries expenditures at the primary level are equitable or pro-poor. But the situation deteriorates at higher levels of education, becoming seriously inequitable at the tertiary level.



Example 16. Tracking pro-poor expenditures in education

For a nice example of a PER that is tightly linked to the poverty reduction strategy and focuses on monitoring pro-poor expenditures in education, see United Republic of Tanzania, Public Expenditure Review FY03: Managing Public Expenditures for Poverty Reduction, *Report on Fiscal Developments and Public Expenditure Management Issues*, June 2003.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2003/11/05/000012009_20031105103021/Rendered/PDF/268070TA.pdf.

Example 17. Education conditional transfer programs in Bangladesh

For an interesting discussion of an education conditional transfer program, see *Bangladesh: Public Expenditure Review*, May 25, 2003, p. 51.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2003/08/01/000094946_03071904003640/Rendered/PDF/multi0page.pdf.

Example 18. Colombian voucher system

The Colombia voucher system expanded educational supply for the poor. It was established in late 1991 to expand secondary school capacity and had these characteristics:

- Cost-sharing between central and local governments (80–20 split).
- Voluntary municipal and school participation
- Targeting using poverty mapping.
- Grade 5 graduates qualify; vouchers renewable yearly up to grade 11.
- Variable value of voucher up to ceiling, with annual inflation adjustment.

It used a lottery system to allocate the vouchers to the poor, creating a random assignment experiment that could be evaluated. The evaluation showed these results, for example: relative to lottery winners, a lower percent of lottery losers were currently enrolled in private school (53.9 percent versus 69.9 percent), and a lower percent completed the 8th grade (63.2 percent versus 74.4 percent).

Example 19. Subsidy of private schools in Poland

In Poland private schools that receive public subsidies also charge fees. Private preschools are subsidized, per capita, at the rate of 75 percent of the average unit cost in the public preschools. Primary, lower secondary, and upper secondary non-public institutions that are “accredited” receive, per capita, 100 percent of the average unit cost in the public schools. Since students in the postsecondary programs are past the compulsory age for education, government pays 70 percent of the average public unit cost for students in private postsecondary programs. Private tertiary institutions receive no public subsidies. (“Poland: PEIR for Education.” Background paper for “Poland: Towards A Fiscal Framework For Growth.” Report 25033-POL, November 2002.)

Example 20. Prevalence of bribes and other hidden fees

- In Moldova students have a website that shows the bribes required to enter different university faculties. (See *Moldova’s Education Sector: A Financing Strategy to Leverage System-Wide Improvement*, February 2002.) In some countries of the former Soviet Union, wealthier parents buy places for their children in good academic upper secondary schools closely

affiliated with a university to increase the chances of their children's acceptance at that university.

- The Albania 2002 LSMS showed that 7 percent of students buy tutoring lessons. Of these, about 55 percent bought the lessons from their own teachers or other teachers in their school.

Example 21. Determinants of education and health outcomes in Peru

For a nice analysis of the multisectoral determinants of education and health outcomes, see *Peru: Restoring Fiscal Discipline for Poverty Reduction, A Public Expenditure Review*, October 24, 2002, p. 57.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2002/11/22/000094946_02111304005120/Rendered/PDF/multi0page.pdf.

Example 22. The Hungarian higher education system is plagued by inefficiencies

At the time of the transition the Hungarian higher education system used all “factors of production”—labor, curriculum, and capital—inefficiently, resulting in high unit costs. The roots of the inefficiencies in Hungarian higher education were complex. The system had been seriously fragmented after the communist takeover in 1947. By the beginning of the 1990s, 90 higher education institutions had been established. Only 3 enrolled more than 2,500 students; half enrolled fewer than 500. The creation of a large number of very small institutions resulted in diseconomies of scale in institutional administration and the provision of student services. It also forced expensive duplication of courses in the basic disciplines, particularly mathematics, foreign languages and the basic sciences. Higher education had also shifted its emphasis from instruction in the humanities, law and theology to the laboratory and applied sciences. This shift increased demand for laboratories, workshop space and small group instruction, all of which drove costs up sharply.

The high cost of higher education in the mid-1990s was also attributable to practices of elitist education that had been adopted much earlier. Teaching relied heavily on tutorials and seminars rather than lectures. The high cost of college and university instruction was primarily due to the employment of exceptionally large numbers of teachers. In 1994, the system-wide average ratio of students to instructional staff in Hungary was 6.9, in contrast to between 12.9 and 29.3 in the OECD countries. The excessive use of staff was traceable to light teaching loads, small classes and high requirements for in-class instruction. The average professor taught only 6.9 hours a week, while the average OECD professor taught between 8 and 12 hours.

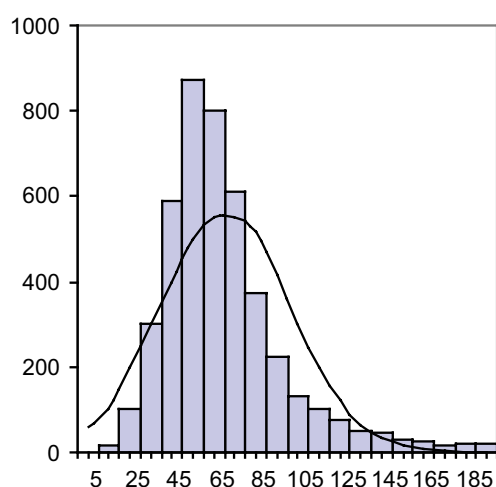
Hungarian students spent an average of about 27 hours a week in class while their counterparts in the West spent only 12 to 16 hours. The intensity of direct instruction in Hungary was balanced by relatively light expectations for

independent study and library work. The typical Hungarian student spent less than a quarter of the time working independently compared with the typical Western student. The result was that the average cost per year of higher education was US\$5,189 per student—about 1.4 times per capita GDP. By contrast, in Western Europe a year of higher education cost 0.3 to 0.6 times per capita GDP (Golladay 1997).

Example 23. Benin's skewed pupil-teacher ratios.

Almost 40 percent of primary schools have an average pupil-teacher ratio of more than 70 to 1. The variation in pupil-teacher ratio at the school level is large and the distribution is skewed to the left (see chart). This reflects poor teacher management, the lack of effective norms regarding acceptable pupil-teacher ratios and the lack of incentives for teachers to go to schools with the greatest needs. The government has tried to address this issue by recruiting contractual teachers to specific schools; permanent teachers, however, continue to be transferred according to request.

Variation in pupil-teacher ratio in primary schools, 2002–03



Source: Chart 3.2, Benin: Enhancing the Effectiveness of Public Spending—A Review of Three Sectors, The World Bank, December 2004.

Example 24. Former communist countries maintain low student-teacher ratios

After the transition, former communist countries used many more teachers and non-teaching staff than countries in the West, as a result of small class sizes, light teaching loads and teachers trained to instruct in only a single subject after the primary grades. For example, in Georgia for grades 1 to 11 the average student-teacher ratio was about 10:1 for the country as a whole and only 3:1 for small secondary schools (Perkins 1998). In the Russian Federation, federal regulations limited class sizes to no more than 25 students, but it was not uncommon for rural classes to have only 3 to 5 students. Teachers of the Russian Federation are contracted for 18 instructional hours per week. Their annual load of 666

instructional hours is light compared with that of teachers in OECD countries—for example, in the Netherlands the load is 1,000 hours per year, and in France 923 hours (World Bank 1999; OECD various years). Data from Ukraine show the effects of single subject teaching in grades 5–11. In 1993 the student-teacher ratio in the primary grades that had one teacher (grades 1–4) was 20:1, but in grades 5–11, which used specialized teaching, the average ratio was 11:1.

Although data on non-teaching staff were not generally available, those data that did exist hinted at further inefficiencies in the former Soviet Union countries. For example, in 1993 Ukraine had a ratio of 1.37 non-teaching staff to every teacher at the preschool level and a ratio of 0.71 for grades 1–11. In 1999 for all levels of education Moldova had a ratio of 1.35 non-teaching staff to one teacher, in contrast to the 1992 average ratio for OECD countries of 0.58 non-teaching staff for every teacher (OECD various years).

Example 25. Cost-benefits for various potential building materials in Ethiopia

The next three tables give an excellent example of a cost-benefit analysis of alternative construction materials for Ethiopia. They identify hollow concrete block as the most cost-beneficial material.

Alternative construction materials (Ethiopia)			
Material	Advantages	Disadvantages	Maintenance
Chika (mud and thatch)	<ul style="list-style-type: none"> Cool in dry and hot weather Cheap initial investment Depletes forest Not popular with community, students 	<ul style="list-style-type: none"> Does not resist termites Washes away in rain 	High
Concrete element	<ul style="list-style-type: none"> Resists termites and rain 	<ul style="list-style-type: none"> Costly initial investment 	Low
Stone	<ul style="list-style-type: none"> Resists fire, termites, rain 	<ul style="list-style-type: none"> Costly initial investment 	Low
Hollow concrete block (HCB)	<ul style="list-style-type: none"> Resists fire, termites, rain Better insulation 	<ul style="list-style-type: none"> Need stable foundation, supervision 	Low
Brick	<ul style="list-style-type: none"> Comfortable and cool 	<ul style="list-style-type: none"> Many trees cut to burn brick Weak in rainy season 	High
Corrugated iron sheets	<ul style="list-style-type: none"> Cheap initial investment 	<ul style="list-style-type: none"> Susceptible to corrosion Not heat resistant Not popular with community or students 	High

Source: Harry Patrinos

Material	Capital (Investment)	Recurrent (Maintenance)	Life time* (years)	Cost/year lifetime
Concrete element	213,000	2,130	40	7,455
Stone	189,284	1,893	40	6,625
Brick	170,400	5,000	30	10,680
Hollow concrete block	127,800	1,278	30	5,538
Chika	85,200	6,000	10	14,520
Corrugated iron sheet	31,950	5,000	10	8,195

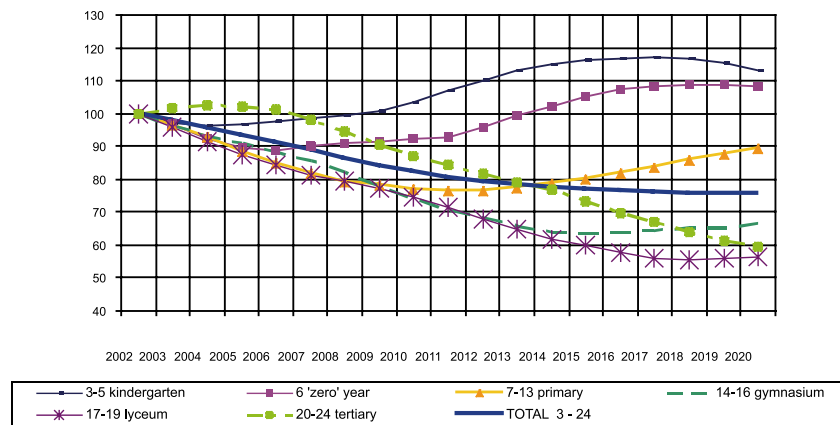
* With full maintenance.
 Source: "Participatory Evaluation of EICMA" (Educational Institutes Construction and Maintenance Agency), a report to Ministry of Education and SIDA, 1992.
 Source: Harry Patrinos.

Material	Full Maintenance	Half Maintenance	Transportation Difficulties: Cost Escalation		
			10%	20%	30%
Concrete element	6%	9%	7%	5%	2%
Stone	8%	11%	9%	6%	3%
Brick	5%	11%	9%	6%	2%
Hollow Concrete Block	17%	23%	19%	13%	8%
Chika	(base case)	(base case)	(base)	(base)	(base)

* Rate of return calculation based on savings due to selection of material versus cost of chika.
 Source: Harry Patrinos.

Example 26. Translating declines in student population in Poland into cost savings

In Poland by 2010 relative to 2000, the sector faces a 22 percent decline in the school-age population across all levels of education; by 2020, a 28 percent decline. Poland's demography promises a significant savings dividend if the government can adjust the size of its educational labor force and close and consolidate schools to capture the reduced costs of smaller cohorts. For example, the 1998 unit cost of a primary school student in 1998 was \$1,496. If all those who were 7–14 years old in 1998 had been enrolled, the cost for the 4.9 million children would have been \$7.4 billion. In 2010 the 7–14-year-old cohort is projected to decline to 3.1 million children. Using 1998 unit costs, this smaller cohort translates into a savings of \$2.7 billion, although not all of these savings can be realized because inputs are "lumpy"—even if a class shrinks by 50 percent you still need a teacher, unless classes can be consolidated. If a school loses a third of its students, it cannot be closed and its fixed costs saved unless it can be merged with another school. ("Poland: PEIR for Education." Background paper for *Poland: Towards A Fiscal Framework For Growth*, Report 25033-POL, November 2002.)

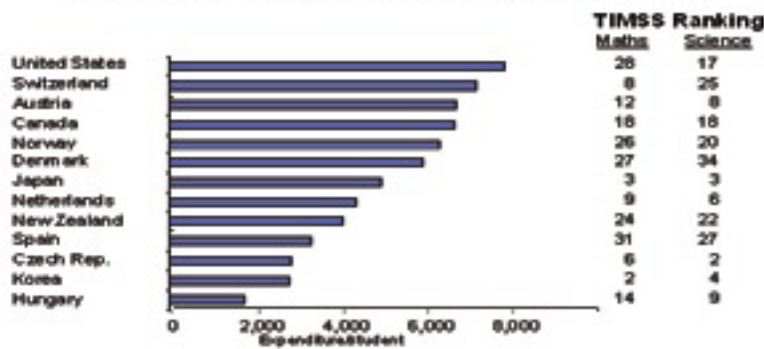


Example 27. Effects of curricula on innovation-driven growth in Croatia

In Croatia employers, teacher unions, university faculty and independent analysts identified the curriculum at all levels of education as the major culprit and barrier to developing the human capital that Croatia needs to support innovation-driven growth. (Croatia: Country Economic Memorandum: A Growth and EU Integration Strategy. Volume 1 Summary Report, January 2003.)

Example 28. Per student spending has little effect on learning outcomes

There is little relationship between per student spending and learning outcomes, as measured by the Third International Mathematics and Science Study (TIMSS).



Source: Elizabeth King.

Example 29. Measuring system performance in Uganda

See the discussion on operational efficiency in *The Republic of Uganda: Public Expenditure Review 2003*, Supporting Budget Reforms at the Central and Local Government Levels, September 2003, p. 69 ff.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2003/12/05/000012009_20031205105639/Rendered/PDF/271350UG.pdf.

Example 30. Policy recommendations from Argentina

For a nice matrix of short- and medium-term policy recommendations, see *Argentina: Reforming Policies and Institutions for Efficiency and Equity of Public Expenditures*, September 10, 2003, p. xiv ff.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2003/10/03/000094946_03092504152660/Rendered/PDF/multi0page.pdf.

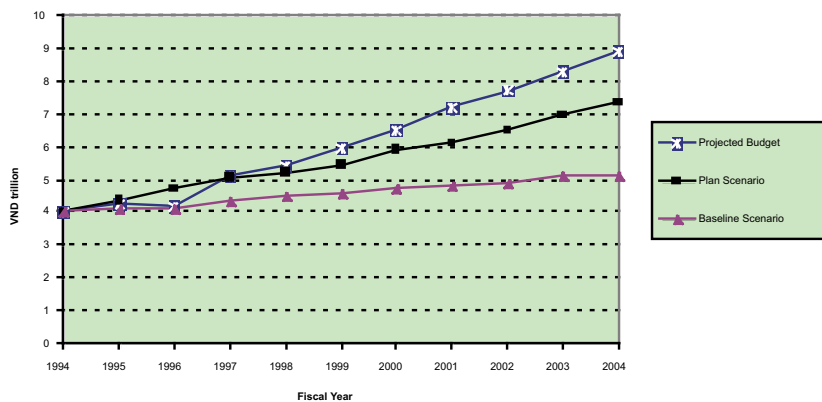
Example 31. Links between government plans and public expenditures

For a discussion of public expenditures tightly linked to government plans for the education sector (education sector reform), see *Pakistan, Public Expenditure Management: Strategic Issues and Reform Agenda*, (Volume I), January 28, 2004, p. 47 ff.

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2004/02/06/000090341_20040206113547/Rendered/PDF/256650PK.pdf.

Example 32. Alternative enrollment scenarios in Vietnam

The Vietnam Education Financing Sector Study (1997) showed the fiscal implications of alternative enrollment scenarios.



References and Resources

Examples of Good PERs in Education

- Maldives PER (FY02): sophisticated treatment in a context of limited data.
- Brazil Municipal Education Resources, Incentives, and Results (FY03): good treatment of intergovernmental fiscal relations; good example of an in-depth analysis of the sector.
- Turkey Public Expenditure and Institutional Review (FY02) and Benin: Enhancing the Effectiveness of Public Spending: A Review of Three Sectors (FY05): good examples of broad and yet deep analysis of the sector.

Statistical Sources

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- UNESCO Institute for Statistics. URL: <http://www.uis.unesco.org/>.
- EFA FTI. URL: <http://www1.worldbank.org/education/efati/>.
- Educational Attainment and Enrollment Around the World. URL: <http://www.worldbank.org/research/projects/edattain/edattain.htm>.
- EdStats: Internal website at <http://sima.worldbank.org/edstats/>. External website at <http://www1.worldbank.org/education/edstats/>.
- Development Data Platform (includes World Development Indicators): <http://DDP/> (internal website)

Relevant Thematic Groups

- Economics of education (contact: Alec Gershberg and Dina Abu-Ghaida)
- Decentralization (contact: Dana Weist)
- Administrative and civil service reform (contact: Gary Reid, Ranjana Mukherjee)

Relevant Websites

- Economics of education: <http://www.worldbank.org/education/economicsed/index.htm>, in particular the section on public expenditures analysis: http://www.worldbank.org/education/economicsed/finance/public/public_index.htm Expenditure online: <http://www1.worldbank.org/publicsector/pe/index.htm>
- Public Services Research (including PETS and QSDS): http://econ.worldbank.org/programs/public_services/

- World Development Report, 2004: <http://econ.worldbank.org/wdr/wdr2004>.

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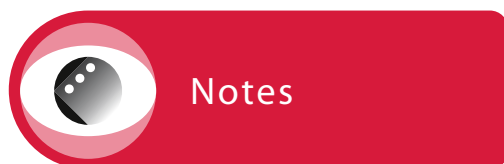
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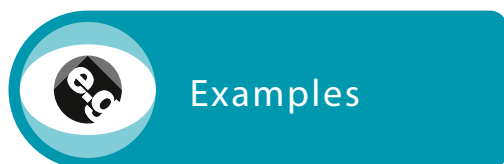
Specific Guidance for **HEALTH**



Preparing PERs



for Human



Development

