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World Bank Office Manila 23rd Floor, The Taipan Place F. Ortigas Jr. Road, Ortigas Center Pasig City, Philippines Telephone: (63-2) 637-5855 Internet: www.worldbank.org.ph

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Head Office Street Address: 255 London Circuit Canberra ACT 2601 Australia

Postal address: GPO Box 887 Canberra ACT 2601 Australia

Telephone: +61 2 6178 4000 Fax: +61 2 6178 4880 ABN: 629 215 588 38

Manila Office Level 23 Tower 2 RCBC Plaza 6819 Ayala Avenue Makati City Philippines 1200





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PHILIPPINES Basic Education

71272



The World Bank in the Philippines Ortigas Center, Pasig City Telephone: +63-2-6375855 Internet: www.worldbank.org.ph Australian AID Manila Office Level 23 Tower 2 RCBC Plaza 6819 Ayala Avenue, Makati City Philippines

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Philippines: Basic Education Public Expenditure Review





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FISCAL YEAR

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ABBREVIATIONS AND ACRONYMS

ABM	Agency Budget Matrix	IRA	Internal Revenue Allotment
ADM	Alternate Delivery Mode	KRT	Key Reform Thrust
APIS	Annual Poverty Indicators Survey	LGC	Local Government Code
BEC	Basic Education Curriculum	LGU	Local Government Unit
BEIS	Basic Education Information	MDG	Millennium Development Goal
	System	MOOE	Maintenance and Other Operating
BESRA	Basic Education Sector Reform		Expenses
	Agenda	MTPDP	Medium-Term Philippine
BLGF	Bureau of Local Government Finance		Development Plan
BTr	Bureau of Treasury	NAT	National Achievement Test
CCT	Conditional Cash Transfer	NCA	Notice of Cash Allocation
CHED	Commission on Higher Education	NER	Net Enrollment Rate
COA	Commission on Audit	NG	National Government
CO	Capital Outlay	NSCB	National Statistical Coordination
CSR	Cohort Survival Rate		Board
DBCC	Development and Budget	NSO	National Statistics Office
	Coordinating Committee	PER	Public Expenditure Review
DBM	Department of Budget Management	PFSED	Physical Facilities and School
DECS	Department of Education, Culture,		Engineering Division
	and Sports	PETS	Public Expenditure Tracking Survey
DepED	Department of Education	PHP	Philippine Pesos
DPWH	Department of Public Works and	PPP	Public-Private Partnerships
	Highways	PS	Personal Services
DSWD	Department of Social Welfare and	PTR	Pupil-Teacher Ratio
	Development	RA	Republic Act
EDCOM	Congressional Commission on	SAOB	Statement of Allotments
	Education		Obligations and Balances
EFA	Education For All	SARO	Special Allotment Release Order
ESC	Education Service Contracting	SBP	School Building Program
FIES	Family Income and Expenditure	SEF	Special Education Fund
	Survey	STR	Student-Teacher Ratio
FFCCCII	Federation of Filipino Chinese	TESDA	Technical Education and Skills
	Chambers of Commerce and		Development Authority
	Industry Inc	TIMSS	Trends in International Math and
GAA	General Appropriations Act		Science Study
GDP	Gross Domestic Product	SEF	Special Education Fund
GER	Gross Enrollment Rate		
IPIN	Implicit Price Index		

PHILIPPINES Basic Education Public Expenditure Review

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Executive Summary

1. The 2010 Philippines Basic Education Public Expenditure Review (BEPER) provides an overview of public expenditures and outcomes in the basic education sector since 2000. The PER team intends this analysis to assist the Department of Education (DepED) in setting policy priorities and in making decisions on resource allocation, utilization, and management. In this review, we analyze trends in education performance as they relate to the Philippines' Education for All (EFA) goals and the objectives of the Basic Education Sector Reform Agenda (BESRA). Our analysis traces trends in government spending and their impact on basic education inputs and outcomes. We also examine the equity dimensions of the education outcomes and spending across geographic areas, households of different income levels, and gender. We examine in detail the processes for executing DepED's priority programs such as the provision of new teaching posts, school buildings, furniture, and textbooks, and we identify potential bottlenecks that slow implementation.

Philippine Basic Education Sector: Performance and Challenges

2. Although the Government of the Philippines has committed to the Millennium Development Goals (MDGs) and EFA goals by 2015, its level of investment in basic education is not sufficient for realizing these commitments. Although we have seen some positive signs with slight improvements in access and quality indicators and increases in government spending on classrooms and textbooks, the overall conclusion of this review is that the MDG and EFA targets will likely not be reached by 2015, given the current slow pace of progress. Indeed, the indicators for SY 2008-2009 are so far short of those targets that these would be difficult to achieve even if the present levels of spending were to be substantially increased and rapid gains were made in the efficiency of program implementation.

Declining Performance

3. The performance of the basic education sector has declined steadily since the late 1990s. Before 1990, the Philippines was considered one of the most highly educated developing countries. Its enrollment rates at all levels of education were higher than those of other countries with comparable, or even higher, income levels. However, since the late 1990s, the Philippines has lost ground to its neighboring countries. Enrollment rates significantly increased for these countries, but enrollment in the Philippines has declined. Both elementary and secondary school net enrollment rates have dropped from the peaks of over 90 percent and 70 percent in the 1990s to 84 percent and 60 percent, respectively, in 2008. Since 2000, the school-age population has grown at an average annual rate of 2.1 percent, far outpacing the average annual growth rate of 1 percent in school enrollment. The decline in school enrollments coincides with the increase in poverty over the 2003–2006 period. Although there is no household data to support our thinking, we suspect that the poor who could not afford the cost of schooling pulled their children out of schools. Thus, it is impossible to probe this important question directly in this review.

4. Repetition and dropout rates in basic education remain persistently high at around 5 percent and 15 percent, respectively. Out of 100 school-age children, only 42 enter grade 1 at age 6, and only 30 of them complete elementary school. Of the 30 age 6 entrants who do graduate from elementary school, only 26 make the transition to secondary school and of these, only 19

complete secondary school. Moreover, only 15 of the age 6 entrants complete secondary school in the stipulated ten years. These figures have remained almost unchanged since the 1980s. More in-depth analyses are required to understand the exact causes of repetitions and dropouts. Some of the reasons may be driven by factors outside the control of the school system. One likely cause that we note is the tendency among some parents to enroll their children later than the DepED-recommended age of six. Other reasons may be related to ways in which the education system is run, such as the quality of instruction at the secondary-school level and its relevance for the job market. Studies in the Philippines and other countries find that enrolling in school at older ages occurs because children are not ready for school.

5. Another equally important issue is that students learn only two-thirds of what they are supposed to learn at the primary level, and less than half at the secondary level. Although there has been improvement in the last two years in Grade 6 National Achievement Test (NAT) scores from 55 percent in SY 2005–2006 to 65 percent in SY 2007–2008, Science, Mathematics and English scores are still less than 60 percent. At the secondary level, mean Mathematics and Science scores remain below 50 percent. These findings highlight the urgent need to improve the quality of teaching and learning in public schools.

Persistent Inequalities

6. Education inequality in the Philippines shows up in income, gender, and geography. The major concern is the fact that it is the children and youth from poor families who either do not go to school at all, do not complete school, or drop out of school the earliest. Almost one-fifth of the poorest 20 percent are not in school, compared with only 2 percent of the richest 20 percent: a 15- to17-year-old teenager in the richest quintile is 4.4 times more likely to have graduated from high school than a peer in the poorest quintile.

7. In gender inequality, boys consistently lag significantly behind. The differences are particularly striking at the secondary school l level, where boys' net enrollment rate is almost ten percentage points below that of girls. Once enrolled, about 75% of the girls complete the entire secondary education but less than two-thirds among boys. A 2007 UNICEF study found that half of the boys who dropped out at older ages did so to work (Abuso et al. 2007). The same study found that one of the main reasons for dropping out was poverty.

8. Finally, divergent educational outcomes have persisted across regions. There are few signs that the previously lagging regions are catching up with the better performing ones. The Philippines' official statistics do not provide us with sufficiently detailed data on education outcomes to analyze the probable causes of the observed inequality, but it is highly likely that there are also substantial intraregional variations in all outcome indicators as well.

Why Have Basic Education Outcomes Declined?

9. Aside from the demand-side factors including poverty, the deterioration in performance in basic education can be attributed primarily to the decline in the government's effort to fund the public education system adequately, the bureaucracy's inability to quickly spend what is appropriated, and the government's inability to spend on the right activities. Clearly, the issues have much to do with the quantity, quality and efficiency of public spending.

Quantity of Public Spending

10. Government spending on education declined from over 4.2 percent of GDP in 1998 to 2.6 percent of GDP in 2008. Government spending on basic education also declined from 2.9 percent in 2002 to about 2.3 percent of GDP in 2005. This decrease translated into a steady decline in real spending per student, which dropped between 2000 and 2005. According to the DepED's own 2005 Multi-Year Education Spending Plan estimates, modest increases in 2007 and 2008 recorded in national and local government spending have been sufficient to fund only 80 percent of what was needed to meet EFA access and quality commitments.

11. The decline in public spending is due in part to a reduced public sector budget and partly to the decreasing priority given to education, particularly basic education. The deterioration in the government's fiscal position followed the Asian financial crisis in the late 1990s. Although the fiscal circumstances improved over the 2006–2008 period, the effects of the new revenue measures introduced in 2004 were offset by subsequent policy actions and the subpar performance of tax administration. This PER analysis reinforces the importance of enhancing the government's revenue efforts, as is repeated in other World Bank reports, to make available more fiscal resources for critical public expenditures in basic education.

12. Further, the government's annual budget decision-making gives decreasing priority to the education sector. The actual pattern of budget allocation suggests that among the main sector categories, although the education sector still receives the largest share of the government budget, in recent years basic education has been losing ground compared to some other sectors. In obligation terms, the share of national government spending on basic education dropped from 19 percent in 2002 to just below 15 percent in 2008, but during the same period the share of economic services, including infrastructure, increased from 27.3 percent to 31.6 percent. Basic education's share continued to fall even after 2005, when the fiscal situation began to improve. In addition, government spending on basic education has not kept pace with the rapidly growing school-age population thus putting increasing pressure on the public budget.

Quality of Government Spending

13. One likely channel of causation between levels of public spending and outcomes is the provision of inputs for education services. Providing adequate numbers and assessing the quality of key inputs, such as teachers, classrooms, textbooks, and classroom furniture, is essential for improving outcomes. To better understand which inputs are critical to improving basic education outcomes in the Philippines, available data make it possible to analyze the relationships between certain school characteristics and average learning outcomes, and to do so at different levels of aggregation.

14. The PER review analyzed the economic composition of government spending and related its findings to an analysis of input shortages. The PER finds that at the current level of enrollment, the total number of teachers in the system is sufficient to keep the elementary pupilteacher ratio at a reasonable level. However, there are still many teachers in nonteaching positions. Further, the pupil-teacher ratio varies significantly across regions. These findings suggest that at the current level of enrollment, greater efficiency in resource use is possible by redeploying teachers already employed in the elementary-school system, and by better coordination between DepED and Local Government Units (LGUs), many of which often hire what are called "locally funded" teachers to make up for teacher shortages at schools within their jurisdictions. However, at the secondary-school level, many more teachers would need to be hired even at the current level of enrollment. Finally, because double shifts in classrooms have a negative effect on students' test scores, the classroom shortage remains a serious obstacle to increasing enrollments and improving students' learning outcomes. Here again, regional variations appear to be a serious issue. The PER finds the recent positive trend in increasing per pupil expenditure on Maintenance and Operating Expenses (MOOE) encouraging, particularly MOOE grants to schools.

15. This PER analysis clearly shows that public spending matters. The insufficient public spending on basic education and the inefficient allocation of funds has resulted in persistent under-provision of key inputs, such as classrooms. Despite the construction of 41,546 classrooms in 2007, the pupil-class ratio at the elementary level has improved only marginally, because many of the new classrooms simply replaced dilapidated existing facilities. The PER analysis indicates that an estimated additional 32,000 classrooms are needed to meet projected increased enrollments. At the secondary-school level the situation is considerably worse, with a student-class ratio of 52.88.

16. The PER analysis also shows in turn that adequate provisions of these school inputs matter. Better pupil/student¹-teacher and class ratios and higher per-pupil government spending are positively correlated with better participation and completion rates at the regional level. At the municipal level, adequate school inputs, such as the presence of better qualified teachers and single shifts, correlate with better learning outcomes. Although these results cannot be interpreted in a causal manner the findings indicate that higher government spending and better input ratios are associated with better outcomes in public schools.

17. The available regional-level data clearly show positive correlations between government spending and education outcomes. These findings suggest that increasing spending in lagging areas is likely to narrow the geographic inequalities. An outcome of the poor coordination between the national government and LGUs is the inequitable distribution of public resources across geographic areas. National government spending on basic education is not related to regional per capita GDP (i.e., it is neither regressive nor progressive) but real per pupil spending on basic education by LGUs is positively correlated with regional real per capita GDP, i.e., it is regressive.² Since the national government does not have a policy for providing compensatory funding for poorer regions, total government spending on Capital Outlay(CO) and MOOE is biased towards richer regions. We note that since 2002, although the national government has reduced the regional variation in real per-pupil spending, the corresponding regional variation in LGU spending on basic education has increased.

¹ In the Philippines, pupils refer to the learners at the elementary level, while students are the learners at the secondary level*

²The relation between real per pupil spending and poverty ratios is also non-significant at the regional level. The PER team obtained data on regional real per capita GDP and regional poverty ratios from the National Statistical Coordination Board (NSCB) website. We did not include National Cash Allocation NCR in the analysis, since it has a real per capita GDP that is much higher than in any other region. Thus, we treat it as an outlier.

Efficiency of Government Spending: Budget Execution

18. Case studies conducted for this PER analysis show that because of operational inefficiencies and instability in the sector's policy environment, DepED's ability to spend the allocated budget quickly and efficiently is weak. Thus, merely increasing allocations to the sector, possibly by combining strengthened overall fiscal efforts and regaining the education sector's share in the total budget, is unlikely to produce direct results.

19. Comparing actual obligations³ to total allotments released by DepED in each fiscal year shows that nominal increases in total allotments have outpaced increases in total obligations, thus reducing budget execution ratios steadily from 97 percent in 2004 to 92 percent in 2008. Furthermore, except in 2007 total available appropriations increased even more rapidly than total allotments. However, these statistics mask much lower budget execution ratios for MOOE, and especially for CO, which range from 56.7 percent to 71.8 percent. These facts are particularly distressing, since MOOE and CO spending provides critical inputs for access to and quality of education.

20. The case studies quantify the extent of inefficiency in terms of both delay and lapsed appropriations. In some cases, program execution only began more than a year after the original appropriation was approved because of DepED's failure to issue implementing rules and guidelines or to release sub-allotments to the regions and to the school division offices for final execution. Lapsed appropriations reached PhP 9 billion (7.7 percent of the total available appropriations) and PhP 5.4 billion (4.2 percent of the total available appropriations) in 2005 and 2006, respectively. These amounts exceeded the combined total appropriations for school building, textbook procurement, and school furniture purchases for those years.

21. The case studies suggest two important systemic causes of poor execution: uncertainty or instability in the policy environment; and excessive complexity in certain administrative procedures. Policy uncertainty and instability is sometimes caused by DepED's need to interact with external actors, such as legislators whose consent is almost a prerequisite for the selection of classroom construction sites, or the Civil Service Commission, which must sign off on new teacher certification. However, in other cases DepED itself has been a source of policy instability and uncertainty.

22. The PER analysis suggests that although the basic education sector needs additional resources for rapidly expanding the supply of key inputs for quality education services, unless efforts are intensified to improve budget execution and even if resources were available, merely increasing allocation would be unlikely to result in actual increases in the larger number of critical inputs and their efficient deployment.

³"Actual obligations" are defined as those liabilities that are legally incurred and to which the government is committed to pay, either immediately or in the future. These obligations represent the closest the PER team could get to actual spending in the budget documents.

Slow Signs of Recovery

23. Since 2006, signs of improvements in government spending, input availability, and minor improvements in outcomes are encouraging. However, the pace has been, and is, too slow for the Philippines to meet its Education for All (EFA) and Millennium Development Goal (MDG) commitments.

24. Since around 2005, some of the outcome indicators have stopped declining. For example, completion rates increased from 66.5 percent to 71.4 percent for elementary in SY2005-2006, and 56.9 percent and 70.8 percent for secondary in in SY2007–2008. The increase in enrollment rates has been more modest. These encouraging trends coincide with some increases in government spending on basic education that began in 2006. However, real per-pupil spending is still below its 2000 level and is still far short of the international education commitments of the government. According to DepED's own 2005 Spending Plan projections, even combined National Government (NG) and LGU spending would have funded only 80 percent of the monies needed to meet EFA access and quality commitments in 2007 and 2008.

25. There are improvements in the quality of spending. MOOE spending has increased school-based management grants and MOOE grants are being released directly to schools. Because of greater resource availability created by expanded fiscal space, DepED has been able to hire thousands of teachers, to replace many dilapidated classrooms, and to build new ones. However, this report finds that there has been no improvement in the efficiency of public spending.

Moving Forward

26. This PER has produced compelling evidence of serious underfunding of basic education, which threatens the government's goal of achieving the MDG and EFA commitments. However, achieving a higher level of spending may demand much stronger fiscal efforts by the government, given the similarly pressing needs in other important sectors such as health and social protection, as well as economic infrastructure. In 2005 the government introduced the Basic Education Sector Reform Agenda (BESRA), which is a coherent, sound basic education reform agenda and policy framework. But BESRA's effectiveness is hampered by limited public resources available for the sector, inefficiency in the utilization of available resources, and a rapidly growing school-age population. If judged from the relative success of the reforms instituted since 2005, then the answers to improving education are already in place, but they need to be accelerated and reinforced. To reverse the decline and to meet the MDG and EFA goals, the government must increase and sustain its reform efforts.

27. However, to take full advantage of initial gains and to translate its expected benefits more quickly into desired outcomes, the government's current efforts can be complemented. First, by ensuring that more resources reach students in need. And second, by improving DepED's decision-making. Thus, the department's response to problems can use specific policy interventions that are based on objective data and sound analysis. Following these recommendations would address the issues of quantity, quality, and efficiency.

More and Better Managed Resources

28. For the Philippines to meet its MDG and EFA goals, the government must make more resources available on a per-pupil basis and implement a series of measures that will make expenditures count. Such measures range from reallocating the budget to make it responsive to local needs and to better coordinating national and local governments to improve their budget execution. In addition, it is essential to initiate a set of complementary actions, such as more effective partnerships with funders and providers in the private sector, and in other sectors of the government that can address causes of low enrollments outside the education sector. This objective can be accomplished by a combination of the following strategies:

29. **Increasing funding.** Gradually increase the national budget allocation to the basic education sector over the medium term. The estimates show that national and local government spending should increase substantially to a minimum of 3.2 percent of GDP by 2015. This increase should go into effect even if other quality improvement measures are not accounted for. Further, the increase should be more than 6 percent of GDP if there are improvements in the teacher-pupil ratios, prioritization of quality improvement measures such as teacher training, and elimination of shifts in classroom use.

30. **Improving budget execution.** To ensure allocated resources are effectively utilized in a timely manner, there should be a review of all relevant administrative actions. This review would identify where efficiency gains could be made by simplifying and streamlining procedures. A longer-term agenda would include major investments in strengthening the department's key management capacities, such as planning, procurement, and introducing internal management systems and practices that improve coordination across units and clarify the accountability of those responsible for specific aspects of program and project implementation.

31. **Allocating resources.** This report highlights the need to invest more in classroom construction and to ensure an adequate number of qualified teachers and of teaching and learning resources. This report finds that although there are already enough teachers in elementary schools overall, there is a problem of deployment, which is primarily because of teachers' geographic distribution. It is important to strengthen DepED's ability to project and plan for both future enrollments for provision of the required level of inputs, including new teacher hires. Increased and sufficient funds should be made available at the school level where they can do the most good.

32. Introducing explicit mechanisms to ensure more effective coordination of expenditure assignments between DepED and LGUs. National and local government NG and LGU spending on basic education should be tightly coordinated with DepED to provide for increased resources, especially in poorer regions. Doing so will require a stronger compact between national and local governments. This agreement should be designed to strengthen school-based management and to yield a more equitable allocation of resources in areas such as teacher deployment, targeting of capital expenditures, and provision of teaching and learning materials.

33. Enhancing cross-sectoral collaboration, ensuring the link between demand- and supply-side interventions. Studies in the Philippines have identified poverty and the high

opportunity cost of schooling, particularly for older boys, as a key deterrent to completing school. *Pantawid Pamilyang Pilipino Program* (4Ps), which is the government's Conditional Cash Transfer program (CCT), is expected to boost parents' incentives to keep their children in schools by granting cash grants to household with school-age children in exchange for constant school attendance. Using the recently launched CCT in a well-targeted effective manner is essential to addressing this issue and to ensuring the link between demand- and supply-side interventions.

34. **Increasing use of alternative delivery modes (ADMs) of education.** ADMs can help address the lack of inputs in critical areas and can also respond to learners in disadvantaged, difficult, or special contexts. In addition to responding to the problem of input shortages, appropriate ADMs can be used as a viable channel of learning for students whose access to learning is limited by poverty the out-of-school youths, and children in disaster and conflict-prone areas. With proper planning and implementation, quality education services could be provided through ADMs with fewer inputs and thus could also generate possible savings for DepED.

35. Enhancing public-private partnerships (PPP) within a coherent policy and regulatory framework. The government's Education Service Contracting (ESC) Program is an example of a successful public-private partnership in education in the Philippines. The program has been proven to be cost-effective in increasing access to schooling. It has done so by providing grants to households to enroll children who would otherwise have gone to public schools into certified private schools where space is available. Expanding the ESC program would significantly alleviate the pressure on the public school system to build thousands of additional classrooms to accommodate both current and future pupils.

Evidence-based Decision-making

36. The effectiveness of government interventions in basic education depends on the quality of data available for policy analysis and DepED's ability to institutionalize evidence-based decision-making. The quality of available data is poor and it is difficult to systematically coordinate different data sources needed to analyze trends in outcomes and spending in the subsector. To address this concern, DepED might pursue the following key strategies:

37. **Strengthening capacities for evidence-based decision-making.** DepED should gradually invest in building capacities for making its policy decisions based on objective analysis and evidence from policy research. Doing so should enable DepED to apply more rigorously its criteria of relative efficiency and cost-effectiveness in its budgetary decision-making.

38. **Improving availability of accurate and consistent data.** To consolidate and institutionalize evidenced-based decision-making, the government should invest in improving the coverage and quality of policy-relevant data. Doing so should be an urgent priority for basic education. Improvements should include the timeliness, quality, and better sampling of current household surveys, such as the Family Income and Expenditure Survey (FIES). The DepED's Basic Education Information System (BEIS) is a useful tool, but there is room for improving its data quality and ability to link with other sources of information in the sector can be improved.

39. **Tracking and monitoring allocation and spending.** Institutionalizing annual reviews of public expenditures and key programs and conducting periodic public expenditure tracking surveys (PETS) and school-level surveys would be worthwhile initiatives.. Appropriately measured and disseminated, PETS should enhance transparency and contribute to ensuring that education expenditures reach the intended beneficiaries. Expenditure tracking could focus first on the school MOOE by providing accurate and transparent information on actual inflows to schools and by identifying the extent and location of leakages.

40. **Institutionalizing the updating of the Multi-Year Spending Plan.** In the short run, the DepED should regularly update (e.g., every other year) the Multi-Year Spending Plan, which was initiated in 2005 as a basis for annual budget formulation. Regularly updating the spending plan would enable DepED to seek guaranteed allocation in the medium term, thus improving the predictability of resource flows and spending for priorities.

Introduction: Motivation and Structure

Motivation

41. The goal of the Basic Education Public Expenditure Review (BEPER) is to provide a detailed examination of the trends and patterns in public spending in the basic education sector and their relation to access, participation, equity, and learning achievement outcomes from 2002 to 2008. By documenting basic information and identifying the issues and challenges confronting the basic education sector in these areas, this PER clarifies the real issues confronting Philippine basic education and encourages serious discussions of the issues among a broad set of stakeholders in the sector. The PER findings are also intended to inform the government's budget decision making, as well as its medium-term reform priorities in the basic education sector.

42. Since one of the Review's goals is also to build local capacities in public expenditure analysis, the PER team was carried out in close partnership with several local researchers and selected government agencies.

Structure of Report

43. This Review covers the following set of topics in six chapters:

- Chapter 1 analyzes trends in education performance. Its focus is on gross and net enrollment, repetition, drop-out rates, cohort survival, completion, and learning achievement. The Review examines these factors in the context of Millennium Development Goals and Education for All goals and sector objectives.
- Chapter 2 examines regional, economic, and gender dimensions of equity in the basic education sector.
- Chapter 3 studies trends in government spending on basic education in relation to sector priorities and against the projections in the DepED's Multi-Year Education Spending Plan. It also makes preliminary estimates of future resource requirements for the basic education sector.
- Chapter 4 discusses the quality of government spending on basic education in terms of its composition and impact on inputs and outcomes, and its geographic allocation.
- Chapter 5 diagnoses bottlenecks in executing DepED's priority programs.
- Chapter 6 summarizes the policy implications of the main findings of the study and offers several recommendations.

Chapter 1 - Performance of the Philippine Basic Education Sector, 2002–2008: Access, Efficiency, and Quality

1. This chapter analyzes trends in access, retention, survival, completion, transition, and learning achievement over the period 2002 to 2008. Both this and earlier studies of the performance of the basic education system have been hampered by DepED databases that are neither comprehensive, accurate, nor timely. However, in 2002, DepED introduced a new, more accurate Basic Education Information System (BEIS). BEIS has been used extensively in the analyses presented in this Chapter. In addition, the analyses draw selectively on data from the 2004 Annual Poverty Indicators Survey (APIS) and DepED's annual National Achievement Test (NAT).

Access to Schooling: Trends in Enrollment Rates

2. The 1990s was a period of sizeable growth in access to schooling, which was reflected in improving participation rates at elementary and secondary levels. The net enrollment rate (NER) at the elementary level rose from 84.6 percent in 1990 to 92.7 percent in 2000. At the secondary level, it rose from 54.7 percent in 1990 to 62.3 percent in 2000. Total enrollment in the Philippine basic education system at both the public and private schools grew at an average annual rate of 2.7 percent from 1981–1999. This rate was faster than the population growth rate of 2.3 percent. In fact, enrollment in secondary schools grew very rapidly at an average annual rate of 4.5 percent between 1985 and 1992, particularly after 1987 when the government began to provide free secondary education.

3. By contrast, following the Asian financial crisis in the late 1990s, there has been a marked decline in enrollment rates, both in the gross enrollment rate (GER) and the net enrollment rate (NER). Total enrollment in public and private schools grew at an average annual rate of just under 1 percent from 2002–2008, which was much lower than the 2.7 percent annual average growth rate from 1981–1999. During the 1998–2008 period, the population of the country grew at an average annual rate of 2.04 percent, twice the pace of the increase in enrollments. More importantly, the six- to 11-year-old population and the 12- to15-year-old population grew at even higher average annual rates of 2.11 percent and 2.1 percent, respectively. These statistics imply that fewer and fewer children of school age enrolled in school during this period. Figure 1 illustrates the declining GER and NER at elementary and secondary levels. Indonesia, Malaysia, and Thailand, which were substantially behind the Philippines years ago, have now surpassed the Philippines with NERs of 95 percent, 97 percent, and 94 percent, respectively.

4. The elementary NER fell by about 7 percent from 2002 to 2008, bringing it to a level below what it was in 1990. The MDG of 100 percent elementary NER by 2015 will now be extremely difficult to achieve, even though the rate of decline decreased and the NER increased marginally in SY 2008–2009.⁴ After improving through the 1990s, the secondary-level NER was relatively stable from 2002 to 2008. A comparison of elementary and secondary NERs shows

⁴This increase is negligible and could be within the statistical margin of error. However, the NER estimates were performed by estimating population figures at the provincial level. See Annex 1 on Data and Methods for further details.

that although more than eight out of every 10 children between the ages of six and 11 enroll in elementary school, fewer than six out of every 10 children in the 12- to 15-year-old population enroll in secondary school.



Figure 1: Gross Enrollment Rate and Net Enrollment Rate, SY 2002–2003 to SY 2008–2009

Source: PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data.

5. The declining trend may result from the system's inability to provide sufficient classrooms for an increasing school-age population, particularly at the secondary level. The trend may also reflect a reduction in the proportion of families who enroll their children in school, especially among the poorer households who are usually those who enroll their children in public schools. To better understand the relative role of demand- and supply-side constraints in contributing to the worsening enrollment rates during the decade would require a separate study. The next chapters point to the role of declining government spending (supply-side spending) in worsening basic education outcomes until 2006 due to the lack of quality basic inputs, such as adequate numbers of teachers and overcrowded classrooms in many schools.

6. From 2002 to 2008 the proportion of over-age children in elementary schools remained high at 17 percent. This proportion is reflected in the persistent gap between the GER and NER and could be attributable to late entry to Grade 1. Many households send their children to school only after they reach age seven, which used to be the official primary school entrance age. In addition, repetition rates are high at the elementary level, particularly in the early grades, thus increasing the proportion of overage children in all grades.⁵Partly as a result of the "legacy" of late entry and repetition at the elementary level, the proportion of over-age children continues to be very high at almost 29 percent at the secondary-school level. If there are many over-age

⁵ The proportion of underage children is negligible at 0.13 percent for SY 2007-2008. The proportion of underage and over-age children in secondary school fell by about 1.4 percent during this period, which is reflected in a stable NER but a falling GER.

children in basic education, it increases the burden on the system, increases inefficiency, and reduces cost effectiveness. Further, high repetition rates often lead to increased dropout rates in later grades.

7. This analysis covers both private and public school enrollment. Although most of the student population is served by public schools, the share of enrollment in private schools at the elementary level has increased marginally over the last few years to a little over 8 percent in 2008. In contrast, the share of private enrollment at the secondary level declined by about 1 percent between 2002 and 2008 to 20 percent in SY 2008–2009. However, we note that private school enrollment reported by DepED are estimates extrapolated from data submitted by a sample of private schools. These variations in enrollment may not reflect the true situation. Further, because more private schools now submit data to DepED, the accuracy of the estimates may have improved in recent years.

8. The data show that over the period 2002 to 2008, the school-age population grew at over 2 percent but enrollment grew by less than 1 percent annually. These divergent trends demonstrate that unless there is an immediate and large increase in funding enrollment, MDG and EFA targets will not be met by 2015.

Trends in Internal Efficiency Indicators

9. Enrolling in school is essential, but staying in the system and obtaining a basic education is critical if the child and the community are to reap the benefits of schooling. Therefore, this Review analyzes trends in internal efficiency indicators, which include repetition, dropout, cohort survival, and completion rates at the elementary and secondary levels. These indicators are often used as indicators of the quality of schooling.

10. Many children who enter school do not reach the last grade of the cycle. Today, out of 100 school-age children, only 42 six-year-olds enter Grade 1 and 30 complete the elementary level. Of the 30 who do graduate from elementary school, about 26 move on to secondary school. Of these, only 19 complete high school, and only 15 of the 19 complete school in the stipulated 10 years.

11. A full diagnosis of the reasons for high dropout and repetition rates is beyond the scope of this PER report. However, a recent UNICEF study on why Philippine children drop out of school identified poverty as the prime reason (Abuso et al. 2007). Older boys drop out of school to help parents with livelihood activities or to find work as means of augmenting family income. Older girls dropout to take care of younger siblings and to enable their parents to go to work. The study emphasized that poverty interacted with school-related factors that motivate children to drop out, such as distance from school, overcrowded classrooms, quality and numbers of teachers, and academic requirements. The UNICEF study points to the need to address both demand- and supply-side constraints to retaining children in school and to enabling them to complete schooling. A policy tool that addresses demand-side constraints is the Conditional Cash Transfer (CCT).

12. **Elementary:** The Cohort Survival Rate (CSR) measures the proportion of children in the first grade who reach the last grade of elementary or secondary school. This indicator assesses

the efficiency of the system. A low CSR is caused by high dropout rates. It is generally argued in the literature that high dropout rates reflect school characteristics such as high pupil-teacher and pupil-classroom ratios, a crowded curriculum, and didactic teaching practices. Hence, dropout rates are useful proxies for school quality. Earlier studies (ADB and World Bank 1999; Manasan 2002, 2008) reported that elementary CSR in public schools remained at about 68 percent from 1990 to 2000, with minor fluctuations over the years. Thus, almost one-third of those enrolled in Grade 1 failed to reach Grade 6.

13. Table 1 shows the trend in CSR for elementary public schools over the period 2003 to

2008. The rates were computed using the reconstructed cohort survival method (see Annex 1 for details). The statistics refer only to public schools, since data were not available for the private sector. The data show that CSR remained below 71 percent until SY 2005–2006, which was largely driven by the high dropout rate of 15 percent in Grade 1.⁶ Dropout rates in other grades varied between 3 percent and 5 percent. However, there

Table 1: Cohort Survival and Grade 1 Dropout Rates for	or
Elementary Public Schools, SY 2003-2004 to SY 2007-20	08

School Year	Cohort Survival Rate (%)	Grade 1 Dropout Rate (%)
2003-2004	70.5	15.2
2004-2005	69.5	15.4
2005-2006	68.8	15.4
2006-2007	71.5	13.4
2007-2008	73.5	13.7

Source: PER Team's computations using data from DepED-BEIS and agespecific population projections based on NSO population data.

has been recent improvement. CSR increased to 71.5 percent in SY 2006–2007 and to 73.5 percent in 2007–2008. Nevertheless, more than one out of every four children who enter Grade 1 fails to reach Grade 6. This fact reflects a high degree of inefficiency and wastage in the system.

14. The slight improvement that occurred in CSR is attributable to a modest reduction in Grade 1 dropout rate in 2006, the year that BESRA was introduced. However, it is difficult to link improvements in the dropout rate directly to BESRA at the national level or in the very early stages of BESRA implementation. Further analysis that uses survey data at the school level would be necessary.

15. The goal of the Philippine EFA 2015 Plan is an 83 percent elementary CSR in 2015. However, from 1990 to 2007, CSR in public schools rose by only 5.3 percent in 17 years. The gains were concentrated in the last three years, but this represents an average annual growth rate of only 0.31 percent. If the long-term trend of 0.31 percent were to continue, then elementary CSR would reach only 76 percent in 2015, well below MDG and EFA targets. Although a decreasing dropout rate is encouraging, repetition rates remain highest in Grade 1 (about 5 percent). Repetition appears to have increased slightly from 5.12 percent in SY 2002–2003 to 5.67 percent in SY 2007–2008. (See Annex 2 for detailed tables.) An earlier assessment by DepED showed that repetition and dropout rates were highest among those children who had no

⁶To compute the expected cohort survival rate the reconstructed cohort survival method tracks the path a hypothetical cohort of children would take through the school years. Hence, it is driven by the current dropout and repetition rates in any given year.

preschool experience. Further in-depth analysis is needed to understand why repetition rates continue to be high while dropout rates have started to decline.

Sahaal Vaar	Cohort Survival Rate	Average Dropout Rate
School Teal	(%)	(%)
2003-2004	75.6	7.9
2004-2005	74.1	8.5
2005-2006	61.5	12.5
2006-2007	77.0	7.5
2007-2008	75.7	8.0

 Table 2: Cohort Survival Rate in Secondary Public Schools, SY 2003–2004 to SY 2007–2008

Note: Average dropout rate has been computed by averaging the dropout rates for all grades. These rates were individually computed using the reconstructed cohort survival method. *Source:* PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data.

16. **Secondary:** Although the CSR in public elementary schools was stable during the 1990s, public secondary-level CSR worsened from 75 percent in SY 1990-1991 to 68.7 percent in SY 1999-2000 (Manasan 2002). BEIS data show that this trend was reversed during the past decade. By SY 2007–2008 secondary CSR returned to 75 percent. Table 2 shows that after 2002, secondary CSR dropped again to a low of 61.5 percent in SY 2005-2006 before recovering the following year. The dropout rates are the highest in the first year of secondary school, although they average 7 percent to 9 percent in all years. Data for SY 2005–2006 show that although the dropout rate increased, CSR dropped markedly. However, these patterns are difficult to interpret since the Bridge Program was introduced in SY 2003-2004 to assist children in their transition from elementary to secondary school. The Bridge Program in English, science, and math helped incoming first-year students who were unprepared for the academic demands of secondary education. The students who were beneficiaries were identified based on a High School Readiness Test conducted in May 2004. However, the Bridge Program was implemented for only a year. Participants in the program are thus included for only one year in the data. Including them in the data distorts dropout rates for SY 2005–2006.

17. Secondary repetition rates increased slightly during the period of this analysis. The repetition rate for the first year of secondary school, for example, increased from 3.22 percent in SY 2002-2003 to 4.39 percent in SY 2007-2008 (See Annex 2 for detailed tables). This increase in repetition rates is a major concern, and further analysis is needed to understand the reasons for this poor performance.

Trends in Completion Rates

18. We define completion rates as the proportion of children enrolled in Grade 1 or Year 1 who complete elementary or secondary school.⁷ Using the reconstructed cohort survival method,

⁷According to DepED's definition, the difference between the cohort survival rate and the completion rate is that the cohort survival rate only measures students who reach the last grade, not those who graduate. The World Bank and UNESCO Institute of Statistics use a different calculation method to compute for Primary Completion Rate (PCR). The World Bank defines PCR as the ratio of the total number of students who successfully complete the last year of primary school in a given year to the total number of children of official graduation age in the population. In

the PER team computed completion rates to estimate what proportion of the cohort that entered Grade 1 completed secondary school.

19. Figure 2 shows that school completion rates fell in SY 2005–2006 before rising again in SY 2007-2008. The completion rate also showed a slight "dip" at the elementary level, in 2005 before recovering to a higher level in SY 2007–2008. We note that fewer than half the cohort that enrolls in Grade 1 in public schools completes secondary school. This statistic reflects the high dropout rate of about 15 percent in Grade 1, low transition rates of about 85 percent from elementary to secondary school, and high dropout rates of 9 percent to 10 percent in each year of secondary school.⁸



Figure 2: Completion Rate, SY 2003–2004 to SY 2007–2008

Source:PER team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data.

UNESCO's method, the PCR in the Philippines for both the World Bank and UNESCO has similar values; PCR has already reached the 90s mark.

⁸Completion rate can also be defined as the proportion of children who complete elementary or secondary school without repeating any grades. This definition would lead to lower completion rates due to repetition rates of the order of 4 percent to 5 percent in Grade 1 and Year 1 and 2 percent to 3 percent in other grades and years. For example, the completion rate for secondary school if we trace a cohort starting Grade 1 in SY 2007–2008 would fall to 34.9 percent if we were to apply the strict definition of completing elementary and secondary school in ten years, i.e., without any repetition).

Box 1: BEIS SY 2004–2005 Compared to APIS 2004 on Net Enrollment Rates

There are often discrepancies between school attendance figures obtained from the BEIS and those from surveys of the National Statistics Office (NSO), such as the Annual Poverty Indicators Survey (APIS).⁹ For example, in SY 2004–2005, BEIS net enrollment rates are reported to be 87.36 percent and 59.85 percent, respectively, for the elementary and secondary levels. The corresponding estimates from APIS 2004 are 93.67 percent and 84.91 percent. There are two main reasons for these discrepancies:

First, the data sources collect information differently. BEIS is an administrative reporting system for schools, the intent of which is to conduct a virtual census every school year. APIS is a household survey based on a stratified, clustered, random sample. It is intended to be representative only at the national and regional levels. Thus, the accuracy of BEIS figures depends on factors such as the extent to which schools submit completed BEIS forms and the accuracy of the data reported by schools, transmitted to the DepED national office, and recorded in the BEIS database,¹⁰ while the precision of APIS estimates depends on the size of sampling errors and the accuracy of household responses.

Second, the data sources have different reference periods for, and definitions and treatments of, the term "enrollment." In the BEIS, the reference period is an entire school year, and enrollment is a technical term that refers to a student being properly registered as of August 31 (see Definition of Terms under Facts and Figures in the DepED website: http://www.deped.gov.ph/factsandfigures/default.asp).In APIS, the reference period is the first six months of the survey year. APIS gives no significance to enrollment other than its everyday meaning, whatever the respondent may consider that to be. Moreover, survey respondents may have different interpretations and responses to the questions "Is (name of child) currently attending school? (If yes) What grade/year is (child) currently attending?" As noted in Keane (1970), an affirmative answer to the first question may include children who went to school for the whole year, those who dropped out at some point during the school year, and those who never attended school. One reason we still consider education outcome indicators from household data is that it is possible to compare these across income quintiles. Doing so is not possible if we use the BEIS data.

International Comparisons of Participation and Completion Rates

20. Comparisons of the Philippines with countries that have an income level (in per capita PPP terms) similar to that of the Philippines and to some neighboring countries with higher income levels, indicate that the Philippines' participation and completion rates are lower than average (See Figure 3). The average NER for this group of countries was 89 percent and the average completion rate was 86 percent. In addition, most of the countries shown in Figure 3 have increased their participation rates in recent years, but these rates have been declining in the Philippines. The pressure of a high population growth rate of 2.04 percent (2.1 percent of the school-age population) as a contributing factor to declining participation rates contrasts sharply

⁹ This issue is not new. Keane (1970) discusses differences in enrollment figures obtained from Bureaus of Public and Private Schools and from the Census of Population and Housing.

¹⁰ Two continuing problems with the BEIS data set are the non-reporting of ARMM (for example, in SY 2004–2005 and SY 2005–2006) and non-reporting of private schools, which is random. Private schools submit their BEIS forms in certain years, but not in others. However, DepED does extrapolate numbers for the country.

with the population growth in comparable countries such as Vietnam, which has a growth rate of 1.2 percent; Thailand, which has 0.6 percent; and Indonesia, at 1.6 percent. Earlier studies reported that the NER for the Philippines was higher than those of most of its Asian neighbors in the 1990s. Yet the deterioration of most outcome indicators for the Philippines since has resulted in elementary participation and completion rates being lower than those for most neighboring countries, including Indonesia, Malaysia, Thailand, and Cambodia.¹¹





a. Data are for 2008 except where indicated with (i): 2006 and (ii): 2007.

b.NER (SY2008–2009) and completion rate (SY2007–2008) figures for the Philippines are based on the PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data. c. NER data for Thailand is from the statistical tables of the 2010 UNESCO EFA Global Monitoring Report/UIS 2009. *Source:* UNESCO Institute for Statistics (UIS) in World Bank-EdStats, May 2010

Trends in Learning Achievement

21. Many observers argue that the most important, direct indicator of school quality is the learning achievement level of students. Manasan (2002) reported that mean scores in national elementary and secondary assessment tests remained below the passing rate of 70 percent despite improvements during the late 1990s.¹² The mean elementary achievement score improved from

¹¹We urge caution when comparing completion rates across countries, because different countries use different methods for computing this indicator. Moreover, many countries lack the time series data needed for computing completion data and rely on undocumented estimation procedures. For example, the Philippines completion rate (2007) reported in the World Bank 2009 World Development Indicators is 94 percent, which is as much as 20 percentage points higher than what we have computed for this report.

¹² The National Elementary Achievement Test (NEAT) was given to all Grade 6 students from SY 1993–1994 to SY 2001–02. The National Secondary Achievement Test (NSAT) has been administered to all fourth-year high school students since SY 1994.

40.1 percent in 1990 to 51.4 percent in 2000. At the secondary level, the mean achievement score rose from 35.6 percent in 1990 to 51.9 percent in 2000. Despite these improvements, the Philippines ranked very low in both mathematics and science in the Trends in International Mathematics and Science Study (TIMSS) in 1999.

22. DepED's National Education Testing and Research Center (NETRC) has administered a National Achievement Test (NAT) to Grade 6 pupils every year since 2005 (In 2003 and 2004, the NAT was administered to Grades 4 and 5 pupils, respectively.). At the secondary level, a NAT was administered in 2003 to students in Years 1 and 4, in 2004 to students in Years 2 and 4, in 2005 to students in Years 3 and 4, and beginning in 2006, administered every year to Year 2 students. These changes to the testing at the secondary level make comparisons over time difficult. In addition, there are methodological concerns with NETRC's design and analysis of the NAT tests that limit the usefulness of NAT scores as outcome measures.

23. Figure 4 shows that NAT scores fell for all subjects from SY 2004–2005 to SY 2005–2006 at the elementary level. However, the test scores have improved from a mean of 55 percent in SY 2005–2006 to 65 percent in SY 2007–2008. With mean achievement test scores lower than 60 percent, science remains a significant area of concern at the elementary level. The mean achievement level remains mediocre for mathematics, science, and English, but in Hekasi and Filipino recent improvements have brought means close to 70 percent. These results are consistent with the Philippines' performance in the 2003 TIMSS when it ranked 41st of 46 countries.



Figure 4: National Achievement Test – Mean Percentage Score (MPS), Grade Six, SY 2004–2005 to SY 2007–2008

Source: DepED-NETRC

24. Figure 5 shows a similar pattern at the secondary level. Mean scores in all subjects fell in SY 2005–2006 and then with the exception of mathematics, rose in SY 2006-07 and 2007-08. Mathematics scores fell every year except for a marginal improvement in SY 2007–2008. While there were recorded improvements in the mean scores in mathematics and science in the last two years of the review period, these remained below 50 percent.¹³

Figure 5: National Achievement Test – Mean Percentage Score (MPS), Secondary Level, SY 2004–2005 to SY 2007–2008



Source: DepED-NETRC

¹³We note that it is difficult to compare the achievement scores over time due to issues about test comparability including the fact that students in different years were tested in the first few years that the test was introduced.

Conclusion

25. The analysis in this chapter establishes that the recent performance of the basic education sector in the Philippines has been poor. Measures of access to schooling, and key indicators such as enrollment rates, which had improved during the 1990s, have fallen since 2000. Although measures of the public education system's internal efficiency, cohort survival, and completion rates have improved marginally at the elementary level since 2006, they remain low. These measures initially fell initially at the secondary level, but have recovered to 1990 levels since 2006. As measures of the quality of the education system, learning achievement levels have fluctuated but overall improved marginally since NAT was introduced in 2004 (except in Mathematics at the secondary level). However, mean learning achievement scores remain mediocre and making comparisons over years is difficult.

26. In short, the overall performance of the Philippines' basic education sector has deteriorated compared to its past position relative to other countries in the region. There are some signs that the declining trends of some key indicators have been reversed since the middle of the 2000s. However, the pace of the turnaround is not sufficient for the Philippines to meet either the EFA or the MDG targets of universal enrollment, let alone more ambitious goals of improving the quality of education to a level comparable to that of more successful economies in the region.

Chapter 2 - Equity Issues in Basic Education Outcomes

27. The findings in Chapter 1 highlight the need to look beyond national averages and explore differences in basic education outcome indicators between geographic areas and between different student profiles, such as household income levels and gender. Equal opportunity and access is a key objective of BESRA and is essential for meeting MDG and EFA targets. The available data show persistent patterns of significant geographic, economic, and gender inequalities in education outcomes.

Geographic Distribution of Outcomes

28. **Enrollment Rates**: Manasan (2002) examined historical trends in the regional differences in outcomes and found that elementary and secondary NERs were significantly unequal across regions during the 1990s. Manasan also reported that participation rates at the elementary level were better distributed geographically than at the secondary level.



Figure 6: Regional Differences in Elementary Gross Enrollment Rate and Net Enrollment Rate, SY 2002–2003 and SY 2008–2009

Source: PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data.

29. The BEIS data in Figure 6 show that the geographic inequality observed in the 1990s has persisted into the 2000s, and if anything, may have worsened. Over the period 2002 to 2008, the elementary GER and NER fell in almost every region. The standard deviations of these indicators demonstrate that regional differences also deteriorated. Regions IV-B and V had the highest elementary GER and NER in 2002 and 2008; Regions XII and ARMM had the lowest in both years.

30. Figure 7 shows that regional differences in GER and NER were greater at the secondary than at the elementary level. But unlike at the elementary level, secondary-level GERs and NERs

were marginally more equal across regions in 2008 than in 2002. Compared to their elementary counterparts during the 2002–2008 period, secondary GERs and NERs showed a more varied picture. GER and NER fell in some regions (as did the national mean), but rose in others. NCR and Region I had the highest GER and NER in both 2002 and 2008.





Source: PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data.

31. In general, regions that have high elementary-level participation rates also have high secondary-level participation rates. Regions with high GERs also had high NERs, and vice versa. However, GERs tended to be less equal across regions than were NERs. This observation indicates that the proportion of over-age (and possibly under-age) children is unequal across regions.

32. **Cohort Survival and Completion Rates**: During the 1990s, elementary-level CSR improved for all regions except NCR and Caraga (Manasan 2002). This trend continued until regional disparities in the elementary CSR and completion rates narrowed between 2002 and 2008. The national average also improved during this period.



Figure 8: Elementary Completion Rate, by Region, SY 2003–2004 and SY 2007–2008

Source: PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data

33. The secondary-level CSR deteriorated in all regions during the 1990s except for those in Mindanao, which registered slight improvements (Manasan 2002).¹⁴ The picture has been mixed since 2000. Some regions have shown slight improvement, but others have shown slight deterioration. The inequality in the completion rate at the secondary level widened across regions while the national average stagnated.¹⁵



Figure 9: Secondary Completion Rate, by Region, SY 2003–2004 and SY 2007–2008

Note: ARMM data for SY 2003–2004 had some inconsistencies. Hence, ARMM's completion rate for the said school year is treated as missing data.

Source: PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data.

¹⁴ The reason for the difference in the Mindanao regions is unclear.

¹⁵The standard deviations of regional completion rates came from DepED's computations, which were based on the BEIS. For unknown reasons these appear to be slightly different from the completion rates computed by the PER team.

34. **Learning Achievement:** Regional differences in learning achievement determined by the National Elementary Achievement Test (NEAT) show that in the late 1990s, most regions registered a decline and a few showed marginal improvements. At the secondary level, in the late 1990s the National Secondary Achievement Test (NSAT) scores showed more marked improvements for all regions except ARMM (Manasan 2002).

35. The NEAT and NSAT were replaced by the National Achievement Test (NAT) in 2002. Table 3 shows that mean elementary-level NAT scores improved in all regions and that secondary-level NAT scores improved in most regions. National mean NAT scores improved from SY 2005–06 to SY 2007–08, but regional inequalities worsened marginally. Although the standard deviations are lower than for other outcome indicators, when the team computed "effect" sizes, we found that there were substantial regional variations in NAT scores. Since the population of test-takers is very large, even small standard deviations may be significant. Effect sizes indicate that a region has a substantially different NAT score from the national mean. Table 3 illustrates these differences.¹⁶

	2005-2006	2007-2008	2005-2008	2005-2006	2007-2008	2007-2008
REGION		Elementary			Secondary	
	MPS	MPS	Effect Size	MPS	MPS	Effect Size
Region I – Ilocos	56.75	68.83	Medium	52.27	56.76	Large
Region II – Cagayan Valley	53.16	58.72	Large	47.99	44.37	Medium
Region III – Central Luzon	53.28	67.75	Medium	47.61	52.18	Medium
Region IVA – Calabarzon	56.99	68.40	Medium	45.06	47.74	Medium
Region IVB – Mimaropa	62.37	70.24	Medium	49.84	50.37	Small
Region V – Bicol	50.44	57.24	Large	41.32	40.21	Large
Region VI – Western Visayas	49.33	60.35	Medium	44.78	45.21	Medium
Region VII – Central Visayas	55.54	65.66	Small	50.84	52.62	Medium
Region VIII – Eastern Visayas	67.66	74.69	Large	65.33	65.53	Large
Region IX – Zamboanga Peninsula	57.08	67.56	Medium	49.51	55.64	Large
Region X – Northern Mindanao	54.02	62.95	Medium	45.50	47.50	Medium
Region XI – Davao	52.66	61.27	Medium	42.75	44.30	Medium
Region XII –	49.72	63.94	Small	42.03	46.73	Medium

Table 3: National Achievement Test – Mean Percentage Score (MPS), by Region

¹⁶We compute national mean and SD, excluding data for Region I, and label them *A* and *B*. We compute the mean for Region Iand label it *C*. Effect Size = (A - C)/B. If the absolute effect size lies between zero and 0.2 then we categorize it as a small effect, between 0.2 and 0.8 as a moderate effect, and greater than 0.8 a large effect.

	2005-2006	2007-2008	2005-2008	2005-2006	2007-2008	2007-2008
REGION	Elementary			Secondary		
	MPS	MPS	Effect Size	MPS	MPS	Effect Size
Soccsksargen/ Central						
Mindanao						
National Capital Region	47.02	62 30	Medium	40.48	13.02	Medium
(NCR)	47.02	02.50	Wiedium	40.40	43.92	Wiedium
Cordillera						
Administrative Region	56.09	60.93	Medium	44.86	49.15	Small
(CAR)						
Autonomous Region in						
Muslim Mindanao	45.27	47.04	Large	44.67	46.48	Medium
(ARMM)						
Caraga Region	70.83	75.55	Large	61.00	62.87	Large
Standard Deviation	6.751658	6.8578549		6.6709749	6.8512624	

36. The available basic education outcome indicators suggest substantial differences between regions and hence, geographic disparity in performance. Further, although the available data are disaggregated only to the regional level, there may be substantial intraregional variations in all outcome indicators. Further analysis with data at the level of municipalities or school divisions is needed to explore these intraregional disparities.

37. Differences in Basic Education Outcomes Across Income Quintiles. The term "education equity" traditionally defines the inequality of benefits experienced by the various income groups. Here, we explore the differences in education outcome indicators across income groups. To do so, we analyzed the latest available APIS 2004 household data. The definitions of the terms and methods appear in Annex 1 on Data and Methods.





38. The data show that not only does the first quintile have the worst outcomes, but also that it has the largest gap between it and the next quintile. This observation holds for both indicators, but it is most easily seen in the secondary NER (Figure 10). The implication is that if low

Source: Basic data from APIS 2004
income is a reason for low enrollment, then a demand-side intervention such as the CCT program can be an effective intervention to raise poor families' children's enrollment rates.

Gender Equity

39. Another key dimension of inequality that often concerns both policy-makers and society at large is gender. In many societies, there are uneven educational opportunities between genders. Girls often suffer from more limited learning opportunities, thus limiting both their future earning potential and their ability to participate fully in social and economic activities.

40. In the Philippines, gender disparity in elementary participation rates is marginal at the elementary level, but significant at the secondary level. (See Figure 11) However, unlike most developing countries, in the Philippines it is boys, not girls, who are disadvantaged in basic education. This pattern is consistent with past studies, although their implication have been ignored by policy-makers. For example, Estudillo et al. (2001) offer a possible reason for this gender difference in educational investments. These researchers found that parents in rural areas transfer land holdings to sons but invest in the education of daughters. They do so because they perceive a comparative advantage to having sons in farm activities and daughters in nonfarm activities. Their intention is to effect intergenerational transfers such that the overall lifetime wealth of the children will be equal. However, Alba (2001) suggests that women invest in education to compensate for the predominance of women in low-wage professions and industries, and to address the wage differential between men and women. A 2007 UNICEF study found that half of the boys who dropped out of school at older ages did so to work. Most of the remaining male dropouts left due to other financial reasons, such as the inability to pay for various school requirements and contributions (Abuso et al. 2007). Abuso's study investigated the reasons for high dropout rates in basic education in the Philippines and found that one of the main reasons for dropping out was poverty.

41. **Gender Disparity in Enrollment Rates:** At the elementary level, net enrollment rates continue to be slightly higher for girls compared to that of boys. This finding confirms the results in past studies. The gender gap widens at the secondary level. Girls' NERs are about 10 percentage points higher than those of boys.¹⁷

¹⁷We obtained the same results from APIS (2004) data. Girls tend to have better school participation rates than boys, and the gender differences are statistically significant.



Figure 11: Net Enrollment Rate, by Gender, SY 2002–2003 to SY 2008–2009

Source:PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data.

42. **Completion Rates by Gender:** At both the elementary and secondary levels girls have higher completion rates than do boys. These rates reflect higher dropout and repetition rates among boys. Figure 12 demonstrates that over the period 2002 to 2008, on average, girls' elementary and secondary completion rates are at least 10 percentage points higher than boys'.



Figure 12: Completion Rate, by Gender, SY 2003–2004 to SY 2007–2008

Source: PER Team's computations using data from DepED-BEIS and age-specific population projections based on NSO population data.

Box 2: Using Conditional Cash Transfers to Reduce Gender and Income Class Inequities in Education: Lessons from Mexico

Conditional cash transfers (CCTs) are increasingly used by developing countries to reduce income inequalities in health and education opportunities (in addition to being a tool to alleviate poverty). For the education sector, these have been a successful tool used by several countries to increase enrolment and attendance among children from the poorest households. A recent World Bank report summarizing several dozen impact evaluations of CCT programs in various countries concluded that "every program that has had a credible evaluation has found a positive effect on school enrolment, although those effects are sometimes found among some age groups and not others"(Fizbein et al. 2009: 129). The paper also reports how some countries including Bangladesh and India have successfully used stipend/scholarships in a manner similar to CCTs to target improving particular groups' education outcomes.

One of the best-known examples is the successful CCT program in Mexico. This program, initially entitled PROGRESA, and then more recently called "Oportunidades," has alleviated poverty and improved health and education outcomes of the poorest households in Mexico. In particular, it has been successful in substantially reducing the dropout of older girls from fifth to sixth grades. Evaluations of the PROGRESA found that the program was successful in significantly increasing school enrolment amongst the poorest targeted households for boys and girls at the primary and secondary level (Schultz 2000). It significantly reduced economic and gender inequalities in school enrolments for the PROGRESA localities, leading to more boys from working class background, as well as poor older girls, attending schools.

Conclusion

43. The government has sought to reduce education inequality and has developed a variety of policies and programs to achieve this objective. Despite these efforts, inequality in basic education continues to be a key issue. As indicated by our analysis, inequality in basic education in its various dimensions remains substantial. We measure geographic inequality in education outcomes at the regional level and must work with the absence of more disaggregated, and hence more meaningful, data. The analysis shows that inequalities have persisted since the 1990s and worsened for some of the indicators.

44. Education inequality among households by income groups remains substantial, as shown by the differences in outcome indicators, such as enrollment rates. The above finding on the relationship between income and educational outcomes points to the importance of cross-sectoral collaboration. For example, the CCT program of the government can have considerable effects on enrollment, dropout, and completion rates provided that households' increased interest in enrolling their children in school is met with an adequate number of classrooms and qualified teachers. This is a highly promising program that deserves strong support by DepED and other stakeholders. There are several ways that the government could enhance the effectiveness of the CCT program. For example, in line with the government's policy of convergence, DepED should give top priority to these poor areas and households in terms of teacher allocation, school/classroom construction, and provision of learning materials to meet increased demand for basic education arising from the program.

45. Contrary to the common pattern of gender inequality in other countries, in the Philippines, it is boys who are actually lagging behind girls in a range of education indicators. In some of the other countries in which girls' education lags behind that of boys, those countries' CCT programs give an extra grant for girls in addition to standard cash grant to families to encourage parents to send their girl children to school. The CCT program in the Philippines could adopt a reverse policy. By improving the quality of schooling, CCT could also increase returns to secondary education by inducing households to enable boys to complete high school.

Chapter 3 - Recent Trends in Government Spending on Basic Education

46. In this chapter the Review examines total government spending on basic education after 2001. It builds on earlier analyses to explore whether the declining trend in public financing of the sector continued since the Asian financial crisis of 1997 and, if so, how this is related to required inputs and the declining outcome trends discussed in Chapter 1. It also investigates the extent to which policy and reform measures have impacted public spending on basic education in recent years.

47. One of BESRA's main policy actions is to ". . .increase annual budget outlays to meet enrollment and cost increases, eliminate resource gaps and attain target goals" (DepED 2006). DepED adopted a Multi-Year Spending Plan in 2005 to provide a basis for making national government spending decisions for the sector (DepED, World Bank, and PIDS 2005). The plan provided financial projections, using alternative scenarios to project cost enrollment increases due to population growth and to cover costs to meet input deficiencies in the EFA targets.

Overall Trends in Government Spending on Basic Education



Figure 13: Government Expenditure on Education as a Percentage of GDP, 2002–2008

48. There are many causes for the deteriorating performance of the Philippine basic education system, including some demand-side factors that are not yet fully understood. However, there is compelling evidence that the deterioration in outcome indicators has coincided with the weakening of government support at the level of public spending on the education sector. Government spending on this sector increased from the late 1980s and stood at 4.2 percent of GDP in 1998. However, the decrease in the government's fiscal efforts in the wake of the 1997 Asian financial crisis translated into a corresponding shrinkage in public spending on education. Spending declined to 2.6 percent of GDP in 2008, despite the recovery in economic

growth, which recorded an annual average rate of 5.3 percent in constant 2002 prices. Figure 13 illustrates this growth.¹⁸

49. Figure 14 shows that total government spending on education is lower in the Philippines than in countries with similar income levels, including several poorer countries.¹⁹ Further, a regression analysis using panel data for 1998–2005 for these countries revealed that government spending on education as a share of GDP in the Philippines is less than half the predicted value of 5.7 percent for its level of per capita income. This result is consistent with an earlier study by Manasan (2002), who found that even as early as 1999, when the government was spending on education as a share of GDP and also on a per-pupil basis, spending on education as a share of GDP was lower in the Philippines compared with most neighboring Asian countries, including Malaysia and Thailand.



Figure 14: Share of GDP Spent on Education in Selected Countries

Note: Latest year figure for Mongolia is 2007 and 2005 for the Philippines. *Source:* World Bank, World Development Indicators; and PER Team's estimates for Philippines predicted GDP share

50. The decreasing proportion of GDP spent on the sector is an important indicator of lower government commitment to funding the sector. However, it is more revealing to examine the trend in the actual amount of public spending on basic education in total and per pupil. Table 4

¹⁸Although the national government accounts for over 90 percent of government spending on the sector, LGUs also spend on education. Thus, total government spending is the sum of national and local government spending. DepED spending dominates the NG spending on basic education, but a share of the spending on school building construction is financed by the School Building Program. This program is administered by the Department of Public Works and Highways (DPWH).

¹⁹The PER team chose 32 countries for this comparison. The team based its choices on countries' per-capita income being similar in purchasing power parity (PPP) to that of the Philippines. Unfortunately, comparative figures for basic education were not available, so the team used total education expenditures (including tertiary level).

shows that between 2002 and 2008, total government spending, both national and local, increased at an annual average rate of 7.1 percent in nominal terms, but only 1.8 percent in real terms.²⁰ When the team compared this with the 5.3 percent growth in real GDP during this period, it was evident that the growth dividend did not benefit the basic education sector. Real total government spending actually decreased between 2002 and 2005. An upward trend began only in 2006.²¹

		2002	2002 2003 2004 2005 2006 2007 2008						
In current prices (PhP millions)									
A.	National Government Spending on Basic Education	106,051	108,363	107,352	112,744	123,066	141,017	157,168	
B.	LGU Spending on Basic Education*	9,196	10,708	10,623	11,744	13,225	14,508	15,915	
C.	Total Government Spending on Basic Education	115,247	119,071	117,975	124,488	136,291	155,525	173,083	
				In 2002 pr	rices (PhP	millions)			
A.	National Government Spending on Basic Education	106,051	105,622	98,720	97,403	101,021	111,882	115,597	
B.	LGU Spending on Basic Education*	9,196	10,437	9,769	10,146	10,856	11,510	11,705	
C.	Total Government Spending on Basic Education	115,247	116,059	108,489	107,549	111,877	123,393	127,302	

 Table 4: Total Government Spending on Basic Education, 2002–2008

* Local government figures for 2007 and 2008 are projected based on 2002-2006 trends.

51. An approximate measure of the adequacy of government spending for providing necessary inputs for each enrolled student is public spending per pupil, adjusted for inflation. Table 5 reports a sharp decline from real spending per pupil of PhP 7,112 in 2002 to PhP 6,619 in 2005. This decline reflects the pattern of total government spending on basic education. Real perpupil spending began an upward trend, similar to total real spending in 2006. This increase continued from 2006 until 2008, when real per pupil government spending reached PhP 7,435.

²⁰ It is important to control for inflation by using constant prices to make figures comparable across years. (See Annex 1 on Data and Methods for details.)²¹ See Box 3 for a discussion on the use of alternative deflators to represent spending data in constant prices.

This level also coincided with marginal improvements — or at least an arresting of the deterioration — in some key outcome indicators

52. Nevertheless, despite the increases since 2006, real per-pupil spending was still substantially lower in 2008 than the PhP8,082 recorded in 1998, prior to the fiscal crisis.²² Not only has the spending on the sector not kept pace with the rapid growth in the school-age population, per-pupil spending has fallen despite declining enrollment rates.

		2002	2003	2004	2005	2006	2007	2008		
			In current prices (PhP)							
A.	National Government Spending on Basic Education	6,544	6,598	6,618	6,938	7,499	8,461	9,180		
B.	LGU Spending on Basic Education*	568	652	655	723	806	870	930		
C.	Total Government Spending on Basic Education	7,112	7,251	7,273	7,661	8,305	9,331	10,109		
				In 200	02 prices (1	PhP)				
A.	National Government Spending on Basic Education	6,544	6,432	6,086	5,994	6,156	6,713	6,752		
B.	LGU Spending on Basic Education*	568	636	602	624	662	691	684		
C.	Total Government Spending on Basic Education	7,112	7,067	6,688	6,619	6,818	7,403	7,435		

 Table 5: Total Government Spending per Pupil on Basic Education, 2002–2008

* Local government figures for 2007-2008 are projected

²²The team computed this per-pupil spending by using enrollment data from NSO, since the BEIS dataset was not yet in place in 1998. This figure is in 2002 constant prices for comparability.

Box 3: Total Government Spending per Pupil on Basic Education: 2002 to 2008

The graph below compares the trends in per pupil spending by national and local governments on basic education over the period 2002 to 2008 in nominal terms (current prices) with the trends in real terms (constant 2002 prices). The standard deflator used by the Philippine Government (the Implicit Price Index or IPIN), which is the same as the most often internationally used GDP deflator, was used to compute spending in real terms in the report.



Nominal vs. Real per Pupil Total Basic Education Expenditure, 2002 to 2008

A simple alternative deflator was also constructed, and is reported here, in an attempt to better reflect price changes in the education sector. Since about 85% of the spending in the basic education sector is on salaries, the "education deflator" was constructed taking 85% of a "compensation index" (available from the NSCB website) and 15% of the IPIN. Unfortunately, a wages index which would reflect changes in salaries in the basic education sector is not available. The compensation index reflects wage changes for other sectors such as construction and private services, but it is the only available wage index in the Philippines. As the graph illustrates, trends in real per pupil spending are very similar regardless of which deflator is used. In fact, with the "wage deflator," per pupil spending is somewhat lower every year. The only difference in the spending trend is that the upturn in per pupil spending begins a year earlier in 2005 when the education deflator is used compared with when the IPIN is used.

(The NSCB website (http://www.nscb.gov.ph/econindex/) reports the quarterly indices on compensation which may be used as "deflators to express a current value in real terms, as bases for wage formulation, and for forecasting or projections.)

Government Spending Compared to Overall Financial Requirements for Basic Education

53. Although these trends in government spending indicate the inadequacy of the government's effort in the sector, the spending trend alone does not show the impact of public spending on the basic education sector. The government's declining financial spending in the circumstances of these falling outcomes is particularly problematic.

54. Spending enough to fund growing enrollments, address input requirements, and finance key programs is a necessary, though not sufficient, condition to improve education outcomes. How much should the government have spent in the last few years to put the Philippines on track to reach the MDG and EFA goals? How much would have been "enough"? To answer these questions, we compare actual government spending on basic education with the financial projections outlined in the 2005 DepED Multi-Year Spending Plan.

55. The Multi-year Spending Plan modeled alternative financial projections for a 10-year period, using different assumptions for each set of projections. All figures were reported in 2005 prices. Figure 15 reports the actual increases in NG spending on the sector (DepED plus the School Building Program²³) and compares these with the projected increases in the 2005 Spending Plan. Recent increases in NG spending on basic education in 2007 and 2008 were large enough to finance growing enrollments based on Scenario 1; that is, enrollment growth driven purely by population and income growth. While still falling short of the projections in Scenario 2 for providing minimum service standards by meeting input requirements, the shortfall is a moderate 7 percent. However, these scenarios assume constant enrollment rates. Hence, spending trends consistent with these projections would only allow the Philippines to meet the current enrollment rate rather than achieve universal enrollment. More relevant scenarios would meet the EFA targets. However, even these goals are underfunded because the recent NG spending increases have been 37 percent lower than would be required to put the country on track to reach the EFA targets. These facts are reflected in Scenario 3. In addition, since the government did not spend at the level of the EFA Scenario 3 in 2006-2008, even if the government were to catch up with this scenario now, the resource gap would now be even larger.

²³ The School Building Program is appropriated outside DepED's budget and executed by the DPWH.



Figure 15: Actual National Government Spending Compared to 2005 Education Spending Plan

Note: See DepED, World Bank, and PIDS (2005) for details of financial projections. The scenarios chosen here are a subset of all the scenarios considered in this plan. Since major teacher redeployment and other reforms discussed in those scenarios were not realized until 2008, the figure does not include those scenarios.

56. Further detailed analysis using primary survey data at the school level is needed to clarify specific linkages between government spending on basic education with input requirements and outcome indicators. Nevertheless, comparisons with the 2005 Spending Plan illustrate that despite recent increases, the NG spending on basic education continues to be considerably lower than what is required to achieve EFA targets. This analysis, coupled with the falling outcome trends discussed in Chapter 1, highlights the growing inability of government to meet the basic education needs of its population.

Possible Reasons for National Government Spending Trends

57. The decline in public spending is partly due to a reduced public sector budget and partly because of the decreasing priority given to education, particularly basic education. The deterioration in the government's fiscal position followed the Asian financial crisis in 1997. When the fiscal circumstances improved somewhat around 2005, the share of NG spending declined on the education sector as a whole. The share of basic education fell sharply from 19.1 percent in 2002 to less than 15 percent in 2008. Further, government spending on basic education has been outpaced by the rapidly growing school-age population, thus, reducing the level of perpupil public spending at this level on basic education. Finally, poor budget execution is a persistent problem that also leads to reduced spending on the sector.

58. **Fiscal position and the role of debt servicing:** The national government's fiscal position deteriorated sharply with the Asian financial crisis in the late 1990s. The almost balanced budget of 1997 changed to a fiscal deficit of 1.9 percent of GDP in 1998. The deficit continued to worsen, peaking at 5.6 percent of GDP in 2002 because of lower tax collections in the aftermath of the crisis. Although economic growth (GDP growth in real terms) improved

after 2002, tax collections continued to fall from 17 percent of GDP in 1997 to 12.3 percent in 2004. The fiscal balance improved slightly after 2002, but only because the national government reduced expenditures on all sectors, including education.

59. Another consequence of the financial crisis was the increase in debt servicing, which accounted for an increasing share of NG spending from 18.6 percent in 2001 to 31.6 percent in 2005. Debt servicing requirements created a shrinking overall fiscal envelope available for all sectors, net of debt servicing until around 2005.²⁴ **Decreasing priority given to the basic education sector**: After 2004, revenue improved due to a set of one-off tax reforms and the corresponding growth in tax collection to 14.3 percent of GDP.²⁵ At the same time, the share of debt servicing was reduced to 21.3 percent of the total NG spending in 2008. Nevertheless, the increased fiscal position did not translate into a larger allocation to the basic education sector. Here, the share in the total primary spending actually decreased from the annual average of 18.1 percent in 2002–2005 to the annual average of 15.9 percent in 2006–2008. It is evident that the government's relative priorities shifted during the latter part of the 2000s in favor of infrastructure, such as communications, roads, and other transportation, whose share in the total primary spending increased from an average of 10.3 percent in 2002–2005 to 13.3 percent in 2006-2008 (Table 6).²⁶

60. Furthermore, even when social services received a higher share of the national budget in 2008, the government gave greater priority to other subsectors, such as health, social security, and welfare, rather than to basic education. However, the basic education sector continues to receive the bulk of national government education expenditure. An average of 84 percent of all education expenditure goes to basic education, although its share dropped to 71 percent in 2008. Given the constitutional requirement to prioritize education in budget allocation, DepED still receives the single largest appropriations of all the departments in the NG budget. Still, its status as the highest budgetary priority has clearly eroded in recent years relative to other sectors.

	=						
SECTOR	2002	2003	2004	2005	2006	2007	2008
ECONOMIC SERVICES	27.33	28.64	28.02	26.91	30.20	33.39	31.64
Agriculture, Agrarian Reform, and Natural Resources	6.29	6.69	5.78	7.28	6.49	7.87	5.63
Trade and Industry	0.73	0.46	0.58	0.52	0.55	0.68	0.51
Tourism	0.21	0.20	0.24	0.21	0.23	0.25	0.21
Power and Energy	0.27	0.19	0.30	0.27	0.36	0.66	0.52
Water Resource Development and Flood Control	1.12	1.18	1.26	1.02	1.51	1.61	1.45
Communications, Roads, and Other	9.73	11.32	11.12	8.87	12.78	14.38	12.77

Table 6: National Government Spending -	Shares (%) of Selected Sectors Net of Debt Servicing,
	2002-2008

²⁴ The only sector that showed a mild increase was General Administrative Services in 2004-2005.

²⁵ The key measures included the introduction of an excise tax in 2005 and an increase in the VAT rate from 10 percent to 12 percent in 2006. The tax/GDP ratio again declined and stagnated at 14 percent in 2007 and 2008, raising the fiscal deficit to 0.9 percent of GDP in 2008.

²⁶ All figures are in terms of obligations. It is possible that sectoral shares based on appropriations or allotments are different. Thus, the shares here are not only a reflection of priority accorded by the NG, but also of the differential execution efficiency of the various sectors.

SECTOR	2002	2003	2004	2005	2006	2007	2008
Transportation							
Other Economic Services	0.47	0.28	0.52	0.52	0.35	0.60	2.74
Subsidy to Local Government Units	8.50	8.32	8.22	8.21	7.93	7.33	7.81
SOCIAL SERVICES	41.64	40.05	41.67	39.55	38.46	36.47	39.95
Education, Culture, and Manpower	22.65	21.75	21.45	20.31	19.63	19.07	19.75
Development							
Basic Education	19.07	18.10	17.71	17.41	16.75	16.00	14.92
Health	2.62	2.09	2.41	2.15	2.19	2.08	3.03
Social Security and Labor Welfare	6.56	6.59	7.45	7.16	6.92	5.94	7.36
Land Distribution (CARP)	0.52	0.15	1.22	0.63	0.36	0.60	0.44
Housing and Community	0.14	0.51	0.27	0.47	0.83	0.90	0.53
Development							
Other Social Services	0.16	0.16	0.18	0.15	0.14	0.12	0.58
Subsidy to Local Government Units	8.99	8.80	8.69	8.68	8.38	7.75	8.25
DEFENSE	7.03	7.49	7.11	7.37	7.01	7.08	6.46
Domestic Security	7.03	7.49	7.11	7.37	7.01	7.08	6.46
GENERAL PUBLIC SERVICES	24.01	23.81	23.20	26.16	24.33	23.05	21.95

Source: DBM

61. **Population Growth**: Population growth is another source of strain on the public education budget. A high growth rate lowers the real resources available to each student. The funding level has recovered somewhat since 2006 to over PhP 7,000 in real terms per pupil, but it is still substantially below its 1998 level. However, this recovery is somewhat illusory, given the slow growth in enrollment. The average annual growth of enrollment has remained at just below 1 percent since 2002 which represents less than half of the estimated 2.1 percent annual increase in the number of school-age children. If schools had been able to enroll all such children, then per-pupil spending would have fallen even more dramatically to PhP 6,861 in real terms. This spending is even below the 2002 level.²⁷

62. **Budget Execution by DepED:** The PER team also analyzed national government spending data to determine whether the data could be explained by changes in the pattern of budget execution by DepED. The team wished to determine if DepED had performed poorly in translating its NG budget into actual spending, as reflected in obligations, until 2005, and if it had then improved its performance after 2006.

63. Figure 16 demonstrates that in real terms, per-pupil spending on basic education not only decreased as a share of the total approved national budget, as reflected by lower appropriations and allotments until 2005. Per-pupil spending also suffered from the spending controls the government mounted in response to the increasing debt service payments and cash shortage caused by the fiscal crisis (reflected in falling *allotments* until 2005). Furthermore, DepED could not fully execute even the portion of the budget that the government actually did release (*obligations* were lower than total allocations every year). It is clear that the spending increases in 2007 and 2008 resulted from an upswing in appropriations and total allotments, not from

²⁷The Review estimated these statistics by assuming that enrollment in public schools grew at the average annual population growth rate of 2.11 percent for six- to 11-year-olds and 2.1 percent for 12- to 15-year-olds.

better budget utilization. In fact, the budget execution reflected in obligations as a share of total allotments deteriorated marginally from 2006 to 2008.



Figure 16: National Government Spending per Pupil, 2002–2008

Source: Individual SAOBs for the various years

The Role of Local Government Spending on Basic Education

64. Basic education is largely the responsibility of the national government, and is mostly financed and delivered by DepED. However, LGUs also play an important role in providing supplementary funding in the sector. Given the national government's current budgetary constraints, organizing LGU resources could be the practical way to partly cover the funding gap.

65. Unlike NG spending on basic education, which began to increase only in 2005, LGU spending on the sector has grown consistently since 2002. LGU spending, even in real per-pupil terms, has outpaced both inflation and population growth. The LGU share of total government financing of basic education increased from an average of 7 percent in the early 1990s to an average of 9 percent in the 2002–2008 period. Real per-pupil spending by all LGUs rose by 21 percent from PhP 568 in 2002 to PhP 687 in 2008. Although similar to NG spending, this level was still much lower than LGU spending per pupil of PhP 748 (in constant 2002 prices) in 1998.

66. LGUs finance about 80 percent of their education spending, which is more than earmarked fund, the Special Education Fund (SEF), which is a locally raised tax collected as an additional levy on real property. This amount is expected to be earmarked for education purposes, specifically for the operation and maintenance of public schools; the construction and repair of school buildings, facilities, and equipment; educational research; purchase of books and periodicals; and sports development. Funding decisions are supposed to be made by the local

school board. In addition, many LGUs supplement the SEF with an allocation from their general fund. 28

67. In a well-functioning intergovernmental system, spending by national and local governments complement each other in an efficient manner. LGUs can finance those inputs that the national government does not supply in sufficient quantities. However, in the Philippines, there is no evidence of such a pattern of vertical coordination. Instead, there is some evidence that LGUs have often hired teachers to compensate for teacher shortages, even though the national government should have primary responsibility for supplying teachers. Unfortunately, in the absence of a detailed breakdown of LGU spending data, it is not possible for the PER team to comment further on the issue of whether LGUs finance specific inputs to complement NG financing. Other studies, such as Manasan and Castel (2009), suggest that the sharing of responsibility between DepED and the LGUs for financing basic education is not clearly defined. Manasan and Castel find that school-level data show a mismatch between needs of the school and SEF spending by LGUs.²⁹

Private Spending on Basic Education

68. **Household Spending:** In many developing countries, households spend their own money to supplement their children's education, either by sending them to public schools or to good private schools. The PER team analyzed household education expenditures for 2003 and 2006, years for which Family Income and Expenditure Survey (FIES) household data for the Philippines are available. These expenditures include spending on tuition and other fees, allowances, books, and supplies.

69. However, this analysis is limited, since the FIES household data do not distinguish between students who attend public or private schools. Thus, we cannot separate household spending on education by the type of school. In addition, these data are not segregated by grade attended, so it is not possible to estimate household spending on basic education. Table 7 reports household spending on all levels of education.

²⁸ The LGUs' general fund comes from the intergovernmental fiscal transfer from the NG to LGUs called the Internal Revenue Allotment (IRA), and from other locally raised revenues.

²⁹ A separate study on "Basic Education Financing through Local Government Units" is in process, with AusAID support, to further study these issues.

Education Expenditures and Components	2003	2006	Perc	ent Change
Total Expenditures	3,579.74	2,843.73	-20.56	***
	71.912	69.406		
Tuition and Other Fees	2,488.59	2,071.73	-16.75	***
	51.926	54.602		
Allowances	633.56	457.95	-27.72	***
	29.501	25.617		
Books	168.31	137.44	-18.34	***
	4.904	4.959		
Supplies	289.28	176.62	-38.95	***
	3.633	3.538		
Number of Households	16,480,393	17,403,482	5.60	
Percent with positive education expenditures	63.60	64.43		
Number of strata	1,574	1,566		
Number of primary sampling units	2,838	3,132		

Table 7: Average of Household Expenditures on Education per School-Age Household Member Conditional on Households Reporting Education Expenditures (in 2003 NCR adjusted prices)

Notes: Excludes households with positive education expenditures but no school-age members.

The numbers below the estimates are survey-design-consistent standard errors

*** - the difference between the 2003 and 2006 estimates is significant at 0.01 (two-tailed) level of significance.

** - the difference between the 2003 and 2006 estimates is significant at 0.05 (two-tailed) level of significance.

* - the difference between the 2003 and 2006 estimates is significant at 0.1 (two-tailed) level of significance.

70. Table 7 reports the mean of household expenditures on education per school-age household member for 2003 and 2006. The estimates are in 2003 NCR prices and are conditional on both the (sub) sample of households that reported spending on education, and the presence of school-age members.³⁰ Between 2003 and 2006, total expenditures on education per school-age member and its components declined significantly. The statistics that show relatively lower decreases are tuition and other fees and books; those that show relatively larger contractions are allowances and supplies.

71. Between 2003 and 2006, the average household education expenditures per school-age household in each quintile showed statistically significant declines. The exception was quintile 4, which registered a statistically significant increase. Moreover, the poorer the quintile, the larger

³⁰ For the variable "household spending on education per school-age member", school-age is defined as seven to 24 years old. There are two reasons for this. First, unlike the APIS, the FIES does not provide a roster of household members, but only gives the number of household members by various age groups such as less than one year old, one to six years old, seven to 14 years, 15 to 24 years old, and so forth. Second, education expenditures are not disaggregated by level of education, but lumped together. The assumption is that households that are reporting education expenditures, but not reporting any students who are between seven and 24 years old, are spending on pre-school education (for members younger than seven) or graduate school (for members older than 24 years) and are dropped from the sample.

the absolute values of the percent changes. Thus, it appears that households could not compensate for decreasing real government spending on education.

72. **Private Corporate Spending:** DepED has forged more than 400 partnerships with private sector corporations, nongovernment, and civic organizations through the Adopt-a-School program (DepED 2010). Through the program, DepED raised PhP 1 billion in 2000. Contributions increased to PhP 6 billion in 2008, which was equivalent to 3.5 percent of total government spending in the sector that year. In 2009, the contributions increased to PhP 7.2 billion. Nevertheless, these amounts were still not large enough to provide sufficient resources to put the country on track to achieve EFA targets established in the MYSP. DepED has spent a major portion (more than 90 percent) of the resources from this program on information, and technology acquisitions and programs. Five percent has been spent on health and nutrition programs and the remaining on other items and activities.

Education Service Contracting – Partnership with the Private Sector

73. According to a recent World Bank study on Education Service Contracting (ESC), the Philippines has one of the largest public-private partnership (PPP) in the world. The program covers more than 567,500 student beneficiaries, representing 8.8 percent of a total 6.46 million high school enrollments in SY 2008-2009 (Patrinos et al. 2010). The report concludes that this is a cost-effective program under which DepED contracts with certified private schools to accept students who would otherwise have been in overcrowded public schools. The program encourages households to invest in education. Thus, on average, the families of ESC grantees pay PhP 4,298 to cover the difference between the grant amount and the actual cost of tuition at the private school attended. The report recommends expanding the ESC program to ease the pressure to build tens of thousands of more classrooms in the public sector. It also explains that the first step would be for DepED to assess the capacity and demand for the program and to improve regulation.

Box 4: The Concession Schools Program of Colombia

Along with the recommended expansion of the ESC program, another PPP scheme that could be implemented is the system of contracting private school operators to manage public schools. This plan is similar to the Concession Schools Program introduced in Bogota, Colombia in 1999 (Barrera-Osorio 2007; Patrinos et al. 2009). Under this program, as a way to improve access to and quality of education for low-income students, the government engages private entities to manage public schools. The government provides the infrastructure, selects the students, and gives an annual pre-agreed per-pupil payment. Private operators have autonomy in terms of school management and relative flexibility to contract administrative and teaching staff. Private schools can also freely decide on and implement their pedagogic model. Twentyfive public schools are run under this scheme on 15-year contracts. These schools are located in the poorest areas in Bogota, which are experiencing a severe lack of primary and secondary schools. The program addresses the limitations of some demand-side interventions, such as the lack of requirement to demonstrate improved outcomes for continued public funding, by requiring concession schools to maintain an above-average score on the national academic test and to meet other performance standards set by the government.

Empirical analysis provides strong evidence of a direct effect of concessions schools in reducing dropout rates (Barrera-Osorio 2007). There is also some evidence that concession schools have an indirect impact on the dropout rates of nearby regular public schools, which have lower dropout rates compared with public schools outside the influence of concessions schools. This indirect impact is linked to positive externalities generated by extension community work done by concession schools.

Future Projections of Resource Requirements for Basic Education

74. DepED is currently working with the World Bank to update the 2005 Multi-Year Education Spending Plan. The updated plan will consider the latest enrollment projections and cost parameters. However, we can estimate how much the government would need to spend on basic education to achieve its objectives by 2015. Although there are many other factors, including demand-side and governance constraints, that cannot be tackled by merely increasing government spending, this report shows that decreased government spending before 2006 contributed to deteriorating basic education outcomes. Even recent spending increases in 2007 and 2008 fell considerably short of the funding needed to achieve EFA and MDG targets. International studies and a few papers that examine education in the Philippines, such as Orbeta (2005), conclude that increasing government spending on key inputs and quality improvement measures is a necessary, although not sufficient, condition to improving education enrollment and completion rates. Although measures such as the CCTs discussed earlier can alleviate demand-side constraints, providing sufficient numbers of good-quality schools and teachers is essential.

75. How much should the government spend in the next five years to put the country back on track to achieve its objectives for basic education? Table 8 considers and summarizes some alternative scenarios. The cost estimate for government spending on basic education, expressed

as a percentage of GDP, range from a minimum of 3.2 percent to a maximum of 6.08 percent of GDP by 2015. We note that this estimate includes both national and local government spending. It also includes any private corporate spending that the government can leverage for public schools.

	Scenario 1: NER target	Scenario 2: CSR target	Scenario 3: PTR variation	Scenario 4: Increase spending quality measures	Scenario 5: Eliminate shifts	Scenario 6: 3+4+5	Scenario 7: School level projections
Estimated public spending (% of GDP)	3.20%	3.31%	3.45%	4.10%	4.45%	5.55%	6.08%

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76. Scenarios 1 and 2 set targets for outcomes (100 percent net enrollment rate by 2015 for Scenario 1 and cohort survival rate targets for Scenario 2) that are in line with MDG and EFA targets for 2015. The projections estimate key input requirements for teachers, classroom construction, furniture, textbooks, and maintenance, and operating expenses. The estimates are based on enrollment projections to reach these targets (we add 30 percent to account for other expenditure). Current policies on pupil-teacher ratios and the shift system in place are used for costing these two scenarios.³¹

Scenarios 3 through 7 project government spending based on alternative quality 77. improvement options. Scenario 3 assumes a lower average elementary pupil-teacher ratio of 35:1, which accords with international norms. A lower pupil-teacher ratio is one of the key determinants of improved learning scores. Earlier studies have shown the importance of low pupil-teacher ratios in improving participation and completion rates. Scenario 4 projects gradually increasing discretionary spending on various quality improvement measures, such as teacher training and school-based management grants. Better-quality teachers are also highlighted as having a significant influence on improving test scores. Scenario 5 proposes elimination of the current shift system to single shifts in all schools. This change is in line with the finding that overcrowded classrooms have a negative impact on enrollment and completion, and that the double shift system has a negative impact on learning. Since requiring single shifts would entail building many more classrooms, the scenario also assumes that 20 percent of the spending on classroom construction could be saved by contracting out to the private sector via the ESC scheme. Scenario 6 assumes a combination of all the previously mentioned quality improvement measures. Scenario 7 uses school-level classroom and furniture requirement projections to estimate resource requirements. Under this scenario, there would be increased funding required for substantially classroom construction. This scenario also underlines the need to expand the ESC program. Regardless of which scenario is used, it is clear that to improve the very low level of education outcomes both national and local governments would need to substantially increase their spending on basic education from the current level of 2.27 percent of GDP.

³¹ See Annex 1 on Data and Methods for details on assumptions and computations used in each scenario.

Conclusion

78. Real government spending on education has declined from over 4.2 percent of GDP in 1998 to 2.6 percent of GDP in 2008. Real government spending on basic education also declined from 2.9 percent in 2002 to about 2.3 percent of GDP in 2005. These statistics indicate a steady decrease in real spending per student from 2000 to 2005. This reduction was partly due to the effect on the government's fiscal balance brought about by the Asian financial crisis in the late 1990s. It was also partly because of the decreasing priority given to education, particularly to basic education, whose share in the total national government budget declined from 19.1 percent in 2002 to less than 15 percent in 2008. Further, government spending on basic education has not kept pace with the rapidly growing school-age population, thus putting increasing pressure on the public budget.

79. The decline in real resources available to the education sector contributed to declines in basic education outcomes prior to 2006, when BESRA was introduced. One of the main policy actions of BESRA is directed at increasing real resources devoted to basic education. Although a better fiscal situation and lower debt payments contribute to recent spending increases and indicate that higher NG resources are available for all sectors, the relative share of basic education in NG spending continued to decline. The 2007 spike in spending may also represent catch-up spending. Local government units, and both households and private corporate donors in the private sector, play important roles in supplementing the availability of resources in the basic education sector. However, despite recent increases in NG spending, the combined resources from all public and private sources still fall very short of the resources required to achieve EFA goals. Government spending will need to be increased if the Philippines is to achieve its goals for the sector. Alternative projections estimate that both national and local government spending on basic education will need to increase at least 3.2 percent of GDP or as much as to 6 percent of GDP by 2015 to reach MDG and EFA targets.

Chapter 4 - Quality of Government Spending on Basic Education

80. In this chapter, we extend the expenditure analysis. We examine the quality of government spending on the basic education sector by the extent to which the allocation of public spending is in line with the marginal needs in the sector. Our analysis focuses on the composition of the public spending and its relation to input shortages and to the geographic distribution of public spending.

Economic Composition of Government Spending and its Relation to the Adequacy of Input Provision and Basic Education Outcomes

81. We ask if the government focused its spending on financing the key inputs that have the largest marginal impact on enrollment, completion, and learning outcomes. Although government spending data is not suitable for a detailed analysis at the school level, we can analyze the economic composition of national government spending and relate it to inputs and input shortages, if not directly to outcomes.³² Our analysis of the determinants of learning outcomes suggests that adequately funding teachers and classrooms is particularly relevant in the Philippines.

82. **The Impact of School-Related Inputs on Learning Achievement:** Students' learning outcomes are determined by a variety of factors, ranging from individual aptitude to household characteristics and school environment. Philippine data are not available to estimate effects of variables other than certain school characteristics. Hence, we performed a regression analysis, using as the dependent variable the NAT scores at the municipality level for SYs 2005–2006 and 2007-2008 for second-year secondary school students. We included municipality and division dummies.

83. The analysis shows that the school-related characteristics that have a significant positive impact on learning achievement are better pupil/student-teacher ratios, smaller school size, and having a school principal and better qualified teachers. This finding underlines the importance of having an adequate number of good-quality teachers in enhancing student learning in the Philippines. This result is also consistent with findings in other countries in the school-effectiveness/education production function estimation literature.

84. One of the key factors that has a significant negative impact on test scores is the shift system. Municipalities that had higher shares of schools using the double shift system had lower average test scores than did municipalities with higher share of schools that used the single shift system. This finding highlights the need for adequate numbers of classrooms and teachers, which would enable all students to get enough contact hours with their teachers. These facts imply that eliminating the shift system and having enough classrooms, teachers, and learning materials is essential if the public school system is to be able to give a quality education. Box 5 provides some details of the results of this analysis.³³

³² Unfortunately, the Bureau of Local Government Finance (BLGF) does not provide the economic composition of LGU spending data. Thus, we had to limit this analysis to national government spending data. In any event, more than 90 percent of the spending on the sector is by the national government.

³³ Taking the analysis one step further, regression residuals of these regressions can be interpreted in terms of efficiency. Thus, those schools with residuals above zero are more efficient than average and those with residuals

Box 5: School-Related Determinants of Learning Achievement

School Inputs: A higher teacher-student ratio affects test scores positively. All else constant, a 1 percent increase in teacher-student ratio will lead to 1.6 percent increase in test scores while a one-point increase in its increment will lead to 0.46-point increase in mean percentage scores. Classroom-to-student ratio and its increment do not have a statistically significant effect on achievement scores.

Enrollment: All variables related to the number of students enrolled have a negative effect on mean scores. The higher the ratio of first and second years enrolled in the school, the lower the score. This finding supports the idea that a higher concentration of students leads to dilution of limited school resources, including contact time with teachers.

Congestion: To control for school size and to avoid multicollinearity (a condition in which the regressors are highly correlated) problems, the team divided total school enrollment into quartiles and entered them into the regression as dummy variables. Compared to schools with lower enrollment, those with 500 or more students had significantly lower test scores. Also, students who came from schools operating with two shifts had lower mean percentage scores. A plausible explanation is that most schools with two shifts operate on resources meant for only one shift, while schools that have three or more shifts received additional inputs and funding.

School Quality: Most schools headed by a teacher-in-charge, Special Education (SPED), or vocational teachers have lower achievement scores compared to schools headed by a principal. However, when we added in municipality dummies, the negative effect remained only for schools headed by vocational teachers. This result probably captures other aspects of the school more than just the effect of school heads. Teacher quality, as reflected in having a higher proportion of better qualified teachers who are higher ranked, leads to significantly better scores.

Sources of Funding: Before we added division and municipality dummies, all variables pertaining to LGU funding sources for teachers had a negative impact on achievement scores. When we controlled for municipality and divisions, our models showed that most of the LGU effect disappeared and only the negative effect of parent-teacher-community association (PTCA)-funded teachers remained. This result may be because the proportion of LGU-funded teachers is closely correlated with other municipality characteristics.

below zero are more inefficient than average (Farell 1958, cited in Jacobs et al. 2006). Comparing the characteristics of more and less efficient schools might lead to some policy implications if efficiency were defined as applying to those schools that were better able to translate inputs into higher test scores. However, because of limitations of the data, this report's efficiency analysis does not reveal much about the factors that make some schools more efficient than others. In fact, the schools that are classified as efficient have almost the same characteristics as those that are classified as inefficient. One characteristic that does stand out is that the more efficient schools appear to be more flexible to changing circumstances. When these schools lose a principal, they tend to hire a replacement faster than do other schools. When enrollment increases so that these schools are forced to resort to two shifts, they are able to revert to one shift again the following year. These results imply that the factors that have the greatest impact on efficiency in translating inputs into better outcomes, such as higher achievement scores, might not be fully captured by the BEIS. In addition, the difficulty of this analysis was compounded because the BEIS and NETRC (test score) databases are not linked. Moreover, as mentioned earlier, there are problems with NETRC's design and analysis of the NAT tests that limit the usefulness of NAT scores as outcome measures. Further analysis using primary survey data is needed to thoroughly explore these issues.

Other School Characteristics: Although being an annex school does not have a significant effect on learning achievement, schools that are funded purely by local governments tended to have higher achievement scores. However, we note that there are very few of these schools).

85. **Economic Composition:** The share of NG spending on basic education devoted to Personal Services (PS) decreased steadily from 90 percent in 2002 to 82 percent in 2008. This trend reversed the continuously increasing share of NG spending on PS from 74 percent in 1990 to 90 percent in 2001. The share of Capital Outlay (CO) in total NG spending also fell from 5 percent of NG spending in 2002 to 3 percent in 2005 and then returned to 5 percent in 2008. The decline in the PS share has benefited Maintenance and Other Operating Expenses (MOOE), which has more than doubled from 5 percent in 2002 to 12 percent in 2008, thus reversing the declining trend in the 1990s. In the absence of data to establish the marginal returns to additional spending in different expense classes, it is difficult for us to comment on the relative shares of PS, CO, and MOOE in NG spending. However, our analysis of the trends in real spending on the various categories suggests that the rebalancing of allocation that we see among the expense classes is consistent with the sector's relative needs.

86. On a per-pupil basis, both PS and CO spending have followed a similar pattern, decreasing from 2000 to around 2005 and recovering thereafter, although per-pupil PS spending in 2008 did not reach the 2003 level. However, real per-pupil spending for MOOE has increased every year since 2002. It has more than doubled from PhP 338 in 2002 to PhP 828 in 2008, surpassing its earlier peak level of PhP 726 in 1990. Although the increasing trend started early in the decade, the more substantial increases occurred after 2006 when BESRA was introduced. From a policy perspective, the critical question is whether the current composition of spending is optimal, given the relative shortages of various inputs such as teachers and classrooms.

Table 7. National Government Spending on Dasie Education, by Expense Class, 2002–2000							
Particulars	2002	2003	2004	2005	2006	2007	2008
Shares (percent of total)							
Personal Services	89.8	90.3	89.4	89.4	87.4	82.6	82.4
MOOE	5.2	5.7	6.6	7.5	8.2	12.1	12.3
Capital Outlay	5.0	4.0	4.0	3.1	4.4	5.3	5.3
	Total spending (2002 prices in PhP millions)						
Total spending	106,051	105,622	98,717	97,403	101,013	111,882	115,596
Personal Services	95,282	95,387	88,248	87,046	88,258	92,404	95,222
MOOE	5,477	6,026	6,505	7,352	8,322	13,533	14,218
Capital Outlay	5,291	4,208	3,964	3,004	4,433	5,945	6,155
	Per pup	oil spending	g (2002 prio	ces in PhP	millions)		
Total spending	6,546	6,440	6,086	5,994	6,103	6,656	6,752
Personal Services	5,882	5,816	5,441	5,357	5,333	5,497	5,562
MOOE	338	367	401	452	503	805	831
Capital Outlay	327	257	244	185	268	354	360

Table 9: National Government Spending on Basic Education, by Expense Class, 2002–2008

Source: Individual SAOBs for the various years

87. **Impact on Teachers:** Apart from students, teachers are the most important of all inputs to an education system. International research confirms the key role played by teachers in improving learning achievement as well as in reducing dropout and repetition rates. Orbeta (2005) found that in the Philippines, better teacher-student ratios improved enrollment rates by attracting more children to school, retaining them in school, and hence, increasing cohort survival rates.³⁴ The analysis of the impact of school-related inputs on achievement scores earlier in this chapter also highlights the significant role played by having sufficient teachers as reflected in teacher-pupil ratios and schools having principals to lead them. Thus, it is important to investigate whether DepED has provided sufficient teachers for public elementary and secondary schools despite decreasing real spending on the sector since 2000.

88. Trends in PS spending are determined by both teacher pay level and the number of teachers. The pay level is important for recruiting and retaining qualified teachers. The number of teachers has direct bearing on the pupil-teacher ratio, an important contributor to learning outcomes.

89. The increases in PS spending in the 1990s were mostly attributable to increases in public school teacher salaries, which increased three-fold in real terms between 1985 and 1997. International comparisons suggest that public-school teacher salaries in the Philippines in the 1990s were higher than would be expected in other countries. For example, primary-school teachers' remuneration as a ratio of GNP per capita in the Philippines was three in 1997 compared to the mean in Asia of around 2.5 (Manasan 2002). More recent data from UNESCO for 2000 also confirm that in general, teachers in the Philippines are better paid than are their counterparts in developing countries.

90. During the 2000s, teacher salaries were revised upward in 2000, 2001, 2007, and 2008. However, in 2002 prices, average salaries for all teacher classes decreased from 2002 to 2005, and then increased because of the substantial raises awarded from 2006 to 2008. The average salary of Class 1 teachers was 11 percent lower in real terms in 2008 than in 2002, that of Class 2 teachers was 9 percent lower, and that of Class 3 teachers 3 percent lower. In contrast, the average annual salaries of Master teachers 1 and 2 were 3 percent and 8 percent higher, respectively, for the same period.

91. In the absence of recent internationally comparable evidence, we cannot determine whether the Philippines under- or overpays its teachers. Moreover, such judgments rest on more than international comparisons of salary and allowance levels. Many education systems have found it necessary to increase salary levels to attract and retain specialist secondary teachers, especially in mathematics and science. We need more recent evidence, including comparable international data, to assess the relation between teacher salaries in the Philippines and learning achievement.

92. When we consider the number of teachers, we find that DepED estimated that it had a deficit of 37,986 teachers in SY 2003–2004 in public elementary and secondary schools. Recent

³⁴It is not surprising that international research has demonstrated that better trained teachers have a statistically significant impact on student achievement levels. It is regrettable, therefore, that there are no available data on the proportion of teachers who are trained and who continue to receive good quality in-service training. This area would need to be investigated as part of the teacher management study mentioned earlier.

evidence indicates that DepED reduced this teacher deficit to 9,333 teachers by the end of SY 2007–2008 by creating 28,653 new teacher positions (Manasan 2008).³⁵ However, an analysis of the most recent BEIS data indicates that the number of DepED-funded teachers actually working in the public school system increased only 2.6 percent, from 411,582 teachers in 2002 to 422,099 teachers in 2007. This finding confirms anecdotal evidence that, while it is relatively easy for DepED to hire new teachers (that is, create new teacher positions), it has not been able to actually deploy these new teachers to schools with critical teacher shortages. Neither has DepED increased the number of teachers actually working in schools and not on leave.

93. When we include only nationally funded teachers who are actually working in school, our analysis of pupil/student to teacher ratios at the elementary and secondary levels shows that despite the worsening in enrollment rates, the ratio at both levels decreased only slightly between 2000 and 2005. By 2008, the ratios recovered to the level in 2002.



Figure 17: Pupil-Teacher Ratio in Public Elementary Schools, SY 2002–2003 to SY 2007–2008

Source: DepED-BEIS

³⁵ These estimates of teacher deficits were made by DepED using a color coding system of classifying schools based on input shortages. See Box 6 on Congestion Analysis for an illustration of how a more comprehensive analysis of input shortages could be performed.



Figure 18: Student-Teacher Ratio in Public Secondary Schools, SY 2002–2003 to SY 2007–2008

Source: DepED-BEIS

94. Although national-level elementary school pupil-teacher ratios are reasonable by international standards, there are substantial regional differences. For secondary schools, if we consider only nationally funded teachers, then the national-level student-teacher ratio is high by international standards. Moreover, secondary-school ratios usually do not exceed those of elementary schools, as is the case in the Philippines. Normally, the need to provide subject specialist teachers at the secondary level leads to lower student-teacher ratios. Box 6 illustrates this point.

95. **Locally hired teachers:** Our evidence indicates that LGUs have begun to fund teachers, particularly in areas where there are severe teacher shortages. At the elementary level, from 2002 to 2007 the share of locally funded teachers doubled from 4 percent to 8 percent. At the secondary level, the share increased from 15 percent in 2002 to 22 percent in 2007. Figure 18 shows that the limited data available on locally funded teachers from the BEIS indicate that additional hiring of locally funded teachers, particularly at the secondary level, accounts for why there have been recent improvements in the pupil/student to teacher ratio. If we considered only nationally funded teachers working in school, then the improvements would have been marginal at the national level.

96. This finding is somewhat surprising, since the Local Government Code states that LGUs are meant to use their SEF primarily for building construction and maintenance. LGUs' funding of teachers may appear positive in that it improves student-teacher ratios. However, it also raises some concerns about its impact on teaching quality. Because LGUs frequently pay much lower salaries and sometimes hire teachers with lower qualifications. There is mixed international evidence on how lower-paid contract teachers with lower qualifications compared to regular government teachers impact the quality of schooling. Additional analysis of primary survey data would be required to further explore this issue. Nevertheless, even from a teacher management standpoint, it is complicated to have two sets of teachers with different compensation packages

and sets of incentives. The study on local government funding of education now in progress will throw more light on these issues.

Box 6: An Alternative Method to Estimate Shortages

For a public school, too many students and too few teachers are two sides of the same coin. But how many students are too many and how few teachers are too few? To answer these questions, we need to solve dual computational problems. These problems are related, but not identical:

- 1. Given the number of teachers, classrooms, and chairs available in a public school, we estimate the full capacity of the school. Then for each school we deduce the number of excess students (or unutilized enrollment slots).
- 2. Given the current number of students in the various grade and year levels of a school, we determine the minimum number of teachers, classrooms, and chairs needed to serve these students. In doing so we keep in mind current DepED policies. Then for each school we infer the shortage (or surplus) of teachers, classrooms, and chairs.

DepED currently uses color coding schemes for teachers, classrooms, and seats. These codes classify schools based on indicator ratios, but do not solve either of the two computational problems.

To solve both computational problems, we tried a school-by-school simulation, using SY 2007–2008 BEIS data on 37,807 elementary schools and 6,523 secondary schools. For simulation purposes, we assumed that one teacher at the elementary level could teach all the subjects to one section of 45 pupils in any grade level. At the secondary level, we assumed that seven specialized teachers would be needed to deliver the complete curriculum to the typical stream of four sections in a high school, each with 45 students. In keeping with DepED policy in estimating shortages, we included only nationally funded teachers in our computations.

The estimations show that given the number of available classrooms, teachers, and seats, the aggregate national capacity is about 11 million students at the elementary level. The actual SY 2007–2008 enrollment was 12.3 million students. Thus, at the aggregate national level, the public elementary school sector appears to be operating at about 12 percent above full capacity. Nevertheless, although some elementary schools are congested, others are undersubscribed. The statistics below summarize the results at the elementary level:



• 11,773 elementary schools (31 percent of 37,807) were classified as congested;

- 5,728 (15 percent of 37,807) had surplus inputs (i.e., were undersubscribed);
- 20,305 (54 percent of 37,807, a majority) had an adequate number of teachers, classrooms, and seats;
- the 11,773 congested schools have 2.13 million aisle students, representing an average of about 180 aisle students per congested school;
- 5,728 undersubscribed schools have 854,000 unfilled slots, representing an average of 149 per school, equivalent to 8 percent below estimated capacity.

The simulation also shows that the major drawback for 1,214 of the congested elementary schools (10 percent of 11,773) is the lack of teachers. For these schools, the first priority is to acquire at least one additional teacher, not an additional classroom or chair. The key constraint for 1,672 of them (14 percent of 11,773) is the lack of classrooms. Finally, for the remainder 8,971 (76 percent of 11,773) congested schools the key limitation is the lack of chairs.

When we estimated teacher shortages, the simulation yielded a surprising finding:

- For the public elementary sector as a whole, a total of 344,818 teachers are needed but 348,220 national teacher positions are already available. Based on aggregate figures, there seems to be no teacher shortage.
- However, a school-by-school analysis shows that a total of 14,107 schools have a combined shortage of 32,216 teachers. In contrast, a total of 12,001 schools have a combined surplus of 35,618 teachers.

Thus, at the elementary level, teacher shortages might be solved for all public schools by redeploying teachers from schools with a surplus to schools with a shortage, as determined by current levels of enrollment. There are several practical and political constraints to redeploying teachers that must be considered. Further, since 2000 enrollment has not grown at the pace required to meet EFA goals. In fact, enrollment growth has not even kept pace with the growing school-age population, resulting in falling NERs. A full-scale teacher management study is needed to determine possible policy alternatives to meet future teacher needs in public elementary schools.

Please see Annex 4 for the corresponding situation in public secondary schools and for details of the methods used in the simulation.

97. **Impact on Classrooms and Classroom Furniture:** The second set of key inputs provided by NG and LGU funding is classrooms and classroom furniture. Providing enough classrooms to accommodate growing enrollment is essential to preventing overcrowding and to improving access. Consistent with the findings of several international studies, Orbeta (2005) found that student-classroom ratios have a significant impact on enrollment and learning achievement in the Philippines. To reduce overcrowding, the government policy has allowed schools with student-classroom ratios greater than 50 to hold classes in shifts. This policy is controversial, since many educators believe that students receive a poorer-quality education in double-shift schools because they have fewer contact hours with teachers. This belief is validated by the regression analysis reported earlier in this chapter. In fact, even with shifts, the number of students per class continues to be high at 52.88 for secondary public schools, as illustrated in Figure 19 below.



Figure 19: Pupil/Student-Class Ratio, SY 2002-2003 to SY 2007-2008

Source: DepED-BEIS

98. DepED estimated that it had a deficit of almost 32,000 classrooms in 2003. This deficit excluded the classrooms required to accommodate estimated enrollment increases. The pupilclass ratio deteriorated until 2004, but since 2007, DepED, aided by the School Building Program that is administered by the Department of Public Works and Highways (DPWH), has built 41,546 new classrooms. Nevertheless, the ratio improved only to 38.72 at the elementary level because many new classrooms merely replaced old, dilapidated ones they did not represent additional facilities.

99. Given the persistently high pupil/student-class ratios, especially at the secondary level, one of the priorities for DepED continues to be that of funding the construction of additional classrooms to reduce over-crowding and accommodate growing enrollment. DepED is also considering expanding the Education Service Contracting (ESC) scheme to subsidize enrollment of students in private schools with spare capacity that are located near crowded secondary public schools. Doing so would reduce DepED's burden of building additional classrooms and providing additional teachers in public secondary schools. As noted in the previous chapter, the Philippine experience shows that the ESC scheme is cost effective compared to building new schools and classrooms and hiring new teachers.

100. **Cost of Classroom Construction:** Because of its increasing use of the principal-led construction mode in the last three years, DepED-built classrooms tend to be cheaper, more complete, higher in quality, and more ready for immediate use than are the DPWH classrooms.³⁶

³⁶Under the principal-led construction scheme, the school principal/head takes the lead role in the planning, implementation, supervision, completion, and reporting of school building and classroom construction projects. Operating within the wider framework of School-Based Management (SBM), the scheme empowers school heads and gives them greater transparency and accountability in school building projects. This innovation was introduced in the World Bank-supported Third Elementary Education Project (TEEP), which was eventually mainstreamed by

DepED could also rationalize costs by using more precise BEIS data and a new algorithm to prioritize and coordinate the allocation of funds for major repairs and new construction. At present, DepED uses a color coding system to locate schools for new classroom construction, but uses a different procedure to identify classroom repairs. Despite the cost-saving measures now being implemented, NG capital outlays on classrooms and school furniture will have to increase given the growth of the school-age cohort and increasing enrollment and completion rates. Further, because LGUs also fund classrooms, to ensure that DepED makes additional provision in areas poorly funded by LGUs, there must be better coordination between national and local decision making.

Box 7: Other Critical Expenditures

MOOE: Earlier studies, such as those by Manasan (2002) and the 2005 Multi-Year Education Spending Plan (DepED, World Bank, and PIDS 2005), criticized the low, declining levels of MOOE spending in the 1990s. Since MOOE spending is on vital inputs in basic education, such as teacher training and instructional materials, the nominal level of NG spending of PhP 422 on MOOE per pupil in 2000 is too low. In fact, MOOE spending per pupil had halved during the 1990s.

Two of the components of the noticeable increases in MOOE spending between 2002 and 2008 are the School-Based Management grants introduced under BESRA and the School MOOE grants. These grants are given directly to schools to enable them to meet their own expenses. Given the persistently high dropout and repetition rates discussed in Chapter 1 and the importance of textbooks, instructional materials, and other interventions funded by MOOE, the increase in real spending and real per-pupil spending on MOOE is clearly a welcome trend. It will need to be sustained to finance key supply and demand-side initiatives. If we assume that teachers in the Philippines are being paid relatively better than their counterparts in other, comparable countries, the PS component of NG spending should increase only in proportion to growing enrollment. Doing so would allow for an increased share of MOOE in NG spending on basic education, which would be a positive development.

Textbooks: Through MOOE, DepED also funds textbooks, which are a key input needed to enhance the teaching-learning experience. (However, there were no available data to empirically include this in the regression analysis.) Examining the quality of textbooks is beyond the scope of this report, but we note that DepED has improved the availability of textbooks during the last few years by undertaking several reforms. According to DepED data, the student textbook ratio was 1:2.5 on average at both the elementary and secondary level in 2003. This ratio has improved to 1:1.2 at the elementary level and 1:1.7 at the secondary level.

Demand-side Initiatives: Other key initiatives funded by DepED are the demand-side initiatives designed to enhance enrollment and reduce dropout rates, particularly for the poorest households. The Third Joint World Bank-AusAID BESRA Review Mission reported that several demand-side interventions, such as school meals, education vouchers, and scholarships, have been initiated and have received increased budget allocations (World Bank and AusAID 2008). These interventions are funded by the MOOE component of NG spending. Real increases noted in MOOE spending are a welcome trend. The Government's Conditional Cash Transfer Program

DepED into its regular civil works program. Assessments of various school building projects indicate that the principal-led scheme is the most efficient mode of implementation. (See, for example, Governance Watch-Ateneo School of Government 2003, 2010.)

(i.e., the *PantawidPamilyang Pilipino Program* or 4Ps) is also an important demand-side initiative started in 2008. The 4Ps is not funded by DepED, but by the Department of Social Welfare and Development (DSWD). It is likely to have a considerable impact on reducing income inequality in education outcomes.

Geographic Distribution of Government Spending and Input Provision

101. The disparity in outcomes across regions that we noted in Chapter 2 suggests that there are similar disparities in the government's efforts to provide quality education services. Although a region is too aggregated a unit of analysis to establish causal relations government interventions with educational outcomes, we can assume that the inequality of outcomes is related, at least partially, to inequality of spending and input provision, even at the regional level. Available regional-level data do in fact show positive correlations between government spending and education outcomes, suggesting that increasing spending in lagging regions could lead to narrowing of the regional inequalities.

102. Past studies rarely examined the question of regional differences in government spending on basic education. Manasan (2002) is the exception. In his study, he noted unequal distribution of LGU SEF income and hence, LGU spending on education. The pattern he observed persists. On a real per-student basis, the highest spending region (Region XIV) spent around 50 percent more than the lowest spending region (Region VII) and 33 percent more than the national average in 2008. Furthermore, between 2002 and 2008, the top spenders (e.g., NCR and Region XIV) were among the regions with the highest government spending on a real per-pupil basis in every year and the lowest spenders (e.g., Region VII and XII) were consistently among the regions with the lowest spending level.

Region	LGU	NG spending	Total Spending
Region VII – Central Visayas	330	5,594	5,924
Region XII – Soccsksargen/Central Mindanao	265	5,820	6,086
Region IX – Zamboanga Peninsula	68	6,249	6,317
Region XI – Davao	347	6,035	6,382
Region IVA – Calabarzon	1,177	5,229	6,406
Region IVB – Mimaropa	189	6,273	6,462
Region X – Northern Mindanao	299	6,273	6,572
Region V – Bicol	146	6,429	6,575
Philippines	642	6,012	6,654
Region III – Central Luzon	649	6,022	6,671
Region VIII – Eastern Visayas	113	6,749	6,862
Caraga Region	146	6,797	6,944
Region VI – Western Visayas	322	6,845	7,167
Region II – Cagayan Valley	186	7,633	7,819
Region I – Ilocos	437	7,827	8,265
National Capital Region	2,624	5,691	8,315
Cordillera Administrative Region	274	8,620	8,894

 Table 10: Regional Disparities in Government Spending per Pupil on Basic Education, 2008(in 2002 constant prices, PhP)

Note: This table excludes National Government spending for central operations that cannot be disaggregated by region. *Source:* SAOB data from DepED for NG spending; LGU spending data from BLGF statements.

103. A major contributor to the persistent inequality in spending levels across regions is the nature of the funding source, the Special Education Fund (SEF), which is financed from property taxes. Thus, richer LGUs are better able to collect more SEF and so can allocate more resources to education. This finding implies that unless the national government consciously adopts a policy of geographic equalization or compensation, distribution of public spending across regions will always be regressive.

104. The bivariate correlation between NG and LGU spending in 2008 is negative and moderate (-0.25). This finding suggests that there might be a degree of compensation between NG and LGU spending, i.e., either that the NG spends more in poorer regions or vice versa to make up for funding shortfall. The negative correlation disappears when we remove the outlier regions, Regions III, IVA, and NCR, from the computation. In these regions the LGUs have far higher fiscal capacities than in the other regions. Hence, the NG tended to spend less on a per student basis. The NG's relatively low per-pupil spending may be because of the larger number of students in these relatively more urbanized regions. A more appropriate measure of whether spending is compensatory would be a correlation between changes in NG and LGU spending on basic education by region. If the national government were deliberately allocating more of its budget to fiscally disadvantaged regions, then the two variables should be negatively correlated. However, the data do not show such a pattern, at least not for the 2003-2006 period (Figure 20).



Figure 20: Changes in LGU Compared to NG Spending on Basic Education, 2003–2006

Source: SAOB data for NG spending; BLGF data for LGU spending

105. In fact, real per-pupil spending on basic education by the national government at the regional level does not have any significant relation to regional, real per capita GDP; that is, the national government does not spend significantly more in poorer regions.³⁷ Since the national government does not have an explicit policy that targets the poorer regions where LGUs spend a considerable sum, total government spending on CO and MOOE, in particular where LGUs spend a considerable sum, is clearly skewed towards richer regions. This bias could have negative consequences for future inputs and outcomes and that would further skew regional differences. The recent benefit incidence analysis done by Manasan et al. (2007) also found that LGU spending at elementary level was less progressive in 2007 relative to 1999.Manasan et al. also found that LGU spending at the secondary level became more regressive in 2007 relative to 1999 due to the widening disparity in the distribution of SEF income per student across regions.

106. Rather than an explicit geographic compensatory policy, DepED has a color-coding system of resource allocation that targets areas where more inputs, such as teachers and classrooms, can be provided to regions, divisions, or schools with shortages. In addition, when BESRA was introduced in 2006, Key Result Thrust 5 in the policy document explicitly discussed "...goal-based funding levels with equitable allocations to localities linked to LGU contributions" (DepED 2006: 20). This statement gave DepED the responsibility and authority to reduce local differences in education spending by more directly linking its funding with LGU contributions. But the effects of these policies are not visible, at least not at the regional level. Further analysis using updated LGU spending data after 2006, and local-level analysis at the LGU level using primary data, could assess whether there have been recent changes, particularly changes made

³⁷The relation between real per-pupil spending and poverty ratios is also nonsignificant at the regional level. We obtained the data on regional real per capita GDP and regional poverty ratios from the NSCB website. We omitted NCR was from the analysis since it has a real per-capita GDP that is much higher than any other region. Thus, we treat it as an outlier.

after the introduction of the new equity-based allocation formula to DepED MOOE allotments across schools.

Geographic Disparities in Input Provision

107. The disparity in the levels of government spending across region should reflect similar disparities in the level of input provisions. Earlier studies did not discuss regional disparities in input availability, but the BEIS data supports this assumption.

108. **Teachers and Classrooms**: Despite DepED's color-coding policy, which is meant to direct inputs to areas with poor input ratios, there are still wide regional variances in pupil/student to teacher and pupil/student to classroom ratios. (See Table 11) Although the national mean of the elementary pupil-teacher ratio improved slightly, regional inequality worsened in 2007 compared to 2002. This deterioration was indicated by a higher standard deviation in 2007. At the secondary level, the average student-teacher ratio improved. Unlike the elementary pupil-teacher ratio, regional dispersion of the secondary indicators remained about the same over time (it was marginally better in 2007 compared to 2002).

109. The national average of the elementary pupil-classroom ratio improved between 2002 and 2007. However, regional differences increased, indicating that the construction of new classrooms needs to be better targeted in the future. The regional differences in the secondary student-classroom ratio narrowed over that time, along with improvements in the national average.

Region Pupil/Student to Teacher Ratio Pupil/Student to Class Rati			atio					
	Eleme	entary	Secor	ndary	Eleme	entary	Secor	ndary
	2002-03	2007-08	2002-03	2007-08	2002-03	2007-08	2002-03	2007-08
Region I–Ilocos	27.91	25.72	30.27	32.34	34.24	31.53	50.87	48.45
Region II – Cagayan Valley	29.60	26.88	33.07	29.93	33.14	30.01	50.91	45.41
Region III – Central Luzon	35.61	33.74	39.23	37.96	40.81	39.28	56.34	56.27
Region IVA - Calabarzon	39.94	39.43	42.76	40.64	45.55	44.65	64.30	60.08
Region IVB – MImaropa	34.96	32.30	35.59	32.31	38.34	37.16	49.60	50.37
Region V – Bicol	33.32	33.64	35.78	32.65	37.25	37.37	53.57	49.55
Region VI – Western Visayas	31.21	28.64	35.00	31.28	36.57	33.85	52.29	49.44
Region VII – Central Visayas	37.54	34.36	44.38	34.57	41.97	40.02	57.92	52.07
Region VIII – Eastern Visayas	30.83	29.91	38.28	36.63	35.18	34.52	52.72	52.92
Region IX – Zamboanga Peninsula	32.97	32.14	37.10	31.57	37.14	36.71	50.48	55.23
Region X – Northern Mindanao	35.76	34.22	40.59	36.44	39.83	37.63	58.28	55.68
Region XI – Davao Region	36.77	33.76	38.96	32.64	41.96	40.04	51.03	53.50
Region XII – Soccskargen/Centr al Mindanao	37.43	34.53	40.44	32.87	43.34	41.28	61.12	53.36
Caraga	32.85	30.54	36.84	31.40	37.10	34.91	54.66	49.33
Autonomous Region in Muslim Mindanao (ARMM)	40.90	40.48	38.97	37.44	50.24	49.87	55.41	53.59
Cordillera Administrative Region(CAR)	27.79	25.26	29.75	26.67	30.94	27.80	51.65	45.01
National Capital Region (NCR)	38.76	38.83	37.47	31.98	50.27	50.13	58.67	56.86
Philippines	34.73	33.18	38.09	33.99	40.14	38.72	55.44	52.88
Standard Deviation	4.01	4.53	3.39	3.40	5.49	6.15	4.20	3.89

Table 11: Pupil/Student to Teacher Ratio and Pupil/Student to Class Ratio, by Region,
SY 2002–2003 and SY 2007–2008

Relation Between Inputs, Outcomes, and Government Spending

110. The "region" is the lowest level of disaggregation for which comprehensive, national government spending data on basic education are available. To analyze the complex relation between government spending, inputs, and basic education outcomes, we need to work with lower levels, such as divisions, municipalities, or school levels.

111. Nevertheless, to explore the relation between government spending, inputs, and outcomes we performed a correlation analysis at the regional level.³⁸ In this analysis we demonstrate that higher regional NERs at the elementary and secondary levels are positively correlated with higher regional government spending per pupil. In addition, regions with better pupil/student to teacher and pupil/student to classroom ratios also had higher NERs in elementary and high schools. Higher regional completion rates at the elementary and secondary levels are even more strongly correlated with higher regional government spending per pupil and better pupil/student to teacher and pupil/student to classroom ratios. Although these results cannot be interpreted in a causal manner, they are consistent with the assumption that higher government spending and better input ratios are associated with better outcomes in public schools at the regional level.³⁹

Conclusion

112. This chapter assessed the quality of public spending on basic education in terms of its composition and its relation to funding of critical sector inputs and geographic distribution. The regression analysis of the determinants of student learning outcomes suggested that keeping the pupil/student to teacher ratio and the pupil/student to classroom ratio low is important for facilitating better learning. The change in the composition of the basic education budget over 2002-2008, when the relative share of PS was reduced in favor of MOOE, is mostly positive, since the Philippine teachers tend to have been well remunerated in the past. Hence, the overall teacher shortage is not so severe. However, the reasonable student-teacher ratio, especially at the secondary level, has been achieved largely because the LGUs have stepped in to hire locally funded teachers. This situation creates a concern for the quality and the qualifications of these locally hired teachers, since they are not under DepED's direct management and are often paid lower salaries than are nationally funded teachers.

113. In contrast, despite the thousands of new classrooms that have been built in the last several years the classroom shortage has not been fully resolved because many of the new classrooms simply replaced old, dilapidated structures. DepED must continue to invest in building new classrooms. However, it is also advisable to expand the relatively effective Education Service Contracting scheme to utilize existing idle capacities of private schools.

³⁸We note that an analysis of this kind is sensitive to which regions are included or excluded, since there are only 17 regions in the country. In addition, all variables pertain only to government schools because data on all inputs, spending and outcomes were available only for these schools. The exception is that for NER, data were available for both public and private schools. However, to ensure consistency, in this report we use only public school enrollment. ³⁹However, achievement test scores display unexpected results at the regional level. Regions with better input ratios and higher government spending per pupil often had worse average achievement scores at the elementary and secondary levels. The reason is unclear, but it may be that the "region" is too high a level of aggregation for such an analysis. Or it may indicate that the allocations of public resources favor regions with a low quality of education. The achievement score analysis discussed in Chapter 1 explores this relation at the municipality level and finds that better teacher related inputs do have a significant positive impact on achievement levels.
114. A key issue that emerges from the analysis is the persistent geographic inequality in public spending. A regression analysis of the relation between government spending, inputs, and outcomes by region supports the view that more spending and more inputs lead to better outcomes. Despite its stated position of providing "equitable funding to localities," there appears to be no correlation between NG spending and regional income. Clearly, DepED does not favor poorer regions in its allocations, since there appears to be no correlation between NG spending and regional income. However, there is a positive correlation between regional income and local government allocation of resources for basic education. Thus, the current distribution of total government spending favors wealthier regions. Although the color-coding scheme is supposed to direct resources to those schools in greater need, its effects are not visible, at least not at the regional level.

Chapter 5 - Budget Execution and Operational Efficiency

115. Getting the allocation right is essential for assuring high-quality spending. But ultimately, the impact of public spending depends on the efficiency with which the allocated resources are translated into inputs, such as textbooks purchased or classrooms constructed. This chapter highlights challenges DepED faced in executing its budget and suggests some ways to improve operational efficiency of the basic education budget.

Box 8: Budget Execution Process in the Philippines

In the Philippines, the execution phase of the budget cycle starts on January 1, the beginning of the fiscal year, when the agencies are authorized to start incurring expenditures to perform their mandated functions.⁴⁰ However, the start of a fiscal year does not mean that agencies are automatically authorized to start spending. In the Philippines, as in many other countries, line agencies are required to go through a series of steps to secure releases of monies authorized by the legislature before they can start spending it.

The first step in the budget execution process is the release of allotments by the Department of Budget and Management (DBM). Once specific budget items are allotted to the agency, the agency can assign them to specific, authorized purposes and thus start the actual execution. Once the contracted services are rendered or goods are delivered, the agency pays the service provider/contractor for the completed job. To obtain the cash necessary for the final payment, the agency requests that DBM release the Notice of Cash Allocation (NCA). DBM issues NCAs based on the overall cash availability for the government, and on each agency's cash program. The agency can then process payments using the cash released through the NCA.

In general, DBM uses two different forms of allotment release, a comprehensive release on the basis of an Agency Budget Matrix (ABM) and an item-by-item release on the basis of a Special Allotment Release Order (SARO). The shares of the budget released through either method vary by agency, but for DepED, roughly 75 percent of the total budget is released through the ABM each year. This percentage covers the budget for items for which separate clearance is not required, such as salaries, other personal services (PS) items, and mandatory maintenance and operating expenses.

The portion of the ABM that requires clearance corresponds to budgetary allocations such as:

- confidential and intelligence funds;
- procurement of motor vehicles and motorized equipment;
- lump-sum appropriations in the agency budget for which there are no specific details;
- budgetary allocation by the legislature that provides additional amounts for programs or projects or which introduces new items in the agency's budget;
- budgetary items/provisions for conditional implementation under the president's veto message that are subject to specific guidelines to be issued by appropriate agencies.

⁴⁰ Although in theory the budget is executed against the General Appropriations Act (GAA) passed by the legislature for that fiscal year, it has become customary in the Philippines for Congress to pass the GAA well into the fiscal year. The Constitution anticipates such a situation, if not recurrence of it, and allows the government to operate with the previous year's GAA as "re-enacted." Hence, unlike in some countries such as the United States, the Philippine government does not risk not having an authorized budget to run the machinery and continue to operate.

Budget Execution Process

Some of DepED's priority programs and projects, such as purchases of textbooks and 116. school furniture, and classroom construction, are appropriated by nationwide, lump-sum items. The details of the final allocations are not specified in the General Appropriations Act (GAA). To execute these programs and projects, DepED must obtain clearance from DBM for allotment releases. Once DBM releases allotments for these items, the DepED Central Office then distributes specific amounts to the regional offices or other implementing units through suballotments. When they receive sub-allotments, the implementing units obligate the budget and enter into expenditure commitments to begin the funded activities. When DepED is ready to make payments (for example, to service providers or contractors), it requests a cash release from DBM with an Notice of Cash Allocation (NCA). Although some items may be combined in batches, SAROs are prepared and released on an item-by-item basis. NCAs are released without reference to specific spending purposes (that is, particular obligations incurred). Thus, for a relatively small but important portion of the budget, the question of allocative efficiency is not fully resolved at the budget formulation or approval stages. After the appropriations are authorized by Congress the Department Secretary has the discretion to allocate these lump-sum appropriations to specific geographic locations. Figure 21 depicts the budget execution process schematically.

Figure 21: Budget Execution Process



117. To further complicate management and analysis of budget execution, the Philippines' appropriation structure has many sources of budget authorizations as follows:

- approved appropriation in the GAA plus additional releases through the Special Allotment Release Orders (SAROs) charged from the national special purpose or lump-sum funds (i.e., Miscellaneous Personnel Benefits Fund, Pension Gratuity Fund, Priority Development Assistance Fund, and Calamity Fund);
- (ii) automatic appropriations of items based on legislative authorization other than the annual GAA (e.g., for the payment of the retirement and life insurance premium of personnel);
- (iii) continuing appropriations (i.e., carryover from the previous years for capital outlays and maintenance and other operating expenses); and
- (iv) supplemental budgets.

118. Tracking actual execution against the original authorization is a complicated task because there are many sources of appropriations. These sources include some from outside the agency itself (for example, transfers from special purpose funds and automatic appropriations that are not detailed in the GAA document) and from the previous year's authorization (continuing appropriations). This lack of transparency dilutes accountability for expenditure management.

119. To analyze the efficiency of budget execution administrators usually compare actual spending to the actual allotments released, regardless of the original appropriation sources. Because of the system of allotment releases, parts of the appropriations are often left unreleased. This gap shows up in the data as differences between the available appropriations and the total allotments released in a given year.⁴¹

120. Given the allotment release system in place, one way to measure budget execution efficiency is to compare the actual obligations to the total allotments released to DepED in each fiscal year. Table 12 summarizes budget execution measured this way. The data show that nominal increases in total allotments have outpaced increases in total obligations, thus reducing execution ratios steadily from 97 percent in 2004 to 92 percent in 2008. Furthermore, except in 2007, total available appropriations increased even more rapidly than total allotments. This evidence indicates that DepED may have a problem assimilating the government's explicit attempt to increase its budget allocations.

igures. Total Anothent Releases Compared to Total Obligations (in The minions)						
Particulars	2004	2005	2006	2007	2008	
Total available appropriations	108,090	118,819	133,880	148,164	174,778	
Annual increase (%)		9.93%	12.68%	10.67%	17.96%	
Total allotment	109,260	116,835	127,459	149,297	169,160	
Annual increase (%)		6.93%	9.09%	17.13%	13.30%	
Total obligations	105,646	111,893	120,694	139,889	155,522	
Annual increase (%)		5.91%	7.87%	15.90%	11.18%	
Utilization rate	97%	96%	95%	94%	92%	
Balance/unobligated amount	3,614	4,942	6,765	9,408	13,638	
% of balance to allotment	3.31%	4.23%	5.31%	6.30%	8.06%	

 Table 12: Utilization Rate Using Statement of Allotments, Obligations, and Balances (SAOB)

 Figures: Total Allotment Releases Compared to Total Obligations (in PhP millions)

Source: SAOBs from the DepED-Budget Division, 2004-2008

121. Table 13 shows additional details of budget execution patterns by expense class. The table shows that the execution ratio of the personal services (PS) items is close to 100 percent. Given the dominance of PS items in the entire DepED budget, total execution ratios also stay above 90 percent in each year. However, the statistics on the PS items mask much lower execution ratios for maintenance and other operating expenses (MOOE), and especially for capital outlay (CO), which range from 56.7 percent to 76.4 percent, respectively. It is these MOOE and CO items that fund critical inputs for priority service delivery programs and projects of the Department. The data also show that the MOOE execution ratios are relatively stable, at

⁴¹ For example, in 2006 and 2008, appropriations amounting to PhP6.401 billion and PhP5.618 billion, respectively, were not released to the Department. However, these monies correspond to relatively small shares of the total budget (4.8 percent and 3.2 percent of the total appropriations in 2006 and 2008, respectively). There are even cases (e.g., 2004, 2007) when the total allotments appear to exceed the total available appropriations, perhaps because of transfers from outside DepED or because of inaccurate reconciliation in DepED's internal financial reports.

least in the three years examined here, but those of CO fluctuate. This difference is not surprising, given the lumpy nature of capital expenditures. However, CO items managed by DepED tend not to be so lumpy, since most of them are school or classroom construction projects. These are relatively small-scale works, unlike, for example, major roads projects, and can be completed within a fiscal year. This fact implies that there may be some additional constraints to efficient execution of CO items beyond the usual lumpiness of capital investment projects.

osingutonis, s, osject of Experiature (in the minious)							
		2006		2007		2008	
PS*	Allotment	99,405		107,884		118,352	
	Obligations	99,231	99.8%	107,494	99.6%	119,305	100.8%
	Current	99,227	100.0%	107,438	99.9%	119,191	99.9%
	Continuing	4	0.0%	56	0.1%	114	0.1%
MOOE	Allotment	14,126		22,654		25,771	
	Obligations	10,148	71.8%	16,286	71.9%	19,044	73.9%
	Current	9,094	89.6%	10,851	66.6%	12,313	64.7%
	Continuing	1,054	10.4%	5,435	33.4%	6,731	35.3%
CO	Allotment	5,346		7,560		9,051	
	Obligations	3,028	56.7%	5,782	76.4%	5,856	64.7%
	Current	1,344	44.4%	3,342	57.8%	3,584	61.2%
	Continuing	1,684	55.6%	2,440	42.2%	2,272	38.8%
Total	Allotment	118,877		138,098		153,174	
	Obligations	112,407	94.6%	129,562	93.8%	144,205	94.1%
	Current	109,665	97.6%	121,631	93.9%	135,088	93.7%
	Continuing	2,742	2.4%	7,931	6.1%	9,117	6.3%

Table 13:	Utilization Rate Using SAOB Figures: Total Allotment Releases Compared to Total
	Obligations, by Object of Expenditure (in PhP millions)

* Net of automatic appropriations for Retirement and Life Insurance Premiums (RLIP) *Source:* SAOBs from the DepED-Budget Division, 2006-2008

122. Further disaggregation shows that sizable shares of the obligations against the previous year's authorizations (continuing appropriations) were made for both MOOE and CO. In other words, DepED is constantly executing its backlog budget, which serves as additional evidence that it is facing absorptive capacity constraints.

Case Studies of Program/Activity/Project (PAP) Budget Execution

123. To better understand the specific nature of the budget execution problems and the constraints that DepED may be facing in expediting utilization of the appropriated funds, we examined in detail the execution performance of four DepED programs/projects: (i) School Furniture Program; (ii) School Building Program;⁴² (iii) Procurement of Textbooks; and (iv) Hiring of New Teachers covering the period 2004-07.⁴³ The school furniture and school building

⁴² The official name of the program is Construction of Elementary and Secondary School Buildings in Areas Experiencing Acute Classroom Shortage.

⁴³ A close examination of the budget execution system of these centrally managed programs was done at the DepED Central Office level. We obtained examples through field visits to DepED Regional Office (RO) – Region VII (Central Visayas) and the School Division Offices (SDOs) of Cebu City, Cebu Province, Mandaue City, and Lapu-Lapu City. In the National Capital Region (NCR), we held interviews at various offices of DepED-Central Office,

items comprise 56 percent to 74 percent, respectively, of the capital outlays for the period. The lumpsums for textbooks represent 9 percent to 12 percent, of total MOOE.

124. The four items chosen for the case studies illustrate different areas of budget execution. Three of these are lump-sum programs. The School Furniture Program and the School Building Program are subject to the sub-allotment procedures within DepED. DepED acquires textbooks at the Central Office level and distributes them at the lower level units. Hiring of new teachers involves an entirely different set of procedures since it has to do with management of personnel.

125. For the case studies we first established the extent of under-utilization of the appropriated budget. We did so by collecting data on budget releases and obligations. To identify the bottlenecks we determined the chronology of budget execution for each program, the points during the budget execution process where there were delays. To find out why budget execution was delayed we interviewed DepED officials involved in the specific aspect of program implementation. And we formulated an interpretation of probable systematic causes of the underperformance for the selected Program/Activity/Projects (PAPs).

126. **Execution by Selected Program/Activity/Project (PAP):** Table 14 shows the budget execution ratios of the four programs selected for this analysis. The data show that the Government increased appropriations to all the programs except the School Furniture Program, which remained at the same level from 2005 to 2007. Allotments follow a similar pattern of increases, again except for the School Furniture Program. Obligations for the three programs also increased, especially in 2008.

127. The stagnant execution ratios of the Textbook and the School Furniture Programs make it clear that when the cumulative execution ratios fall below 100 percent in two consecutive years, some amounts of the original appropriation always lapse at the end of the second year. However, the execution performance of the School Building Program appears to be more positive, especially in 2007-2008. Although 2008 saw a sizable increase in the amount of obligations in the hiring of new teachers, this increase was still less than the increase in the appropriation. In 2008 alone, about PhP 2 billion would have lapsed at the end of the year.

128. For all programs, 2005 and 2006 appear to have been bottleneck years. Except for the hiring of new teachers in 2005, all four programs showed low execution ratios. The case studies explore some of the probable causes of the poor execution performance observed in those years. Although some of the causes may have been temporary, others are likely to be recurring, or even systemic, problems.

and at DepED RO-NCR and DepED-SDO of Quezon City. We also gathered data from DBM-Central Office Budget Management Bureau (BMB) B and DBM Regional Office – NCR.

Appropriations/Anotheness Compared to Congations, 2004–2000 (m r m)						
Particulars	2004	2005	2006	2007	2008	
Furniture	· · · · · · · · · · · · · · · · · · ·					
Appropriations	450,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,075,000,000	
Allotments	949,115,500	1,450,000,000	1,436,525,445	2,070,210,000	1,552,030,616	
Obligations	264,656,000	832,037,677	433,597,834	1,116,231,391	851,273,932	
%Obligations/Allotments	28%	57%	30%	54%	55%	
% Obligations/Appropriations	59%	83%	43%	112%	79%	
School Building Program						
Appropriations*	-	1,000,000,000	2,000,000,000	3,613,000,000	4,916,400,000	
Allotments	-	988,011,850	2,203,847,586	3,674,940,429	4,294,413,650	
Obligations	=	-	1,356,008,782	2,722,157,075	2,452,991,577	
% Obligations/Allotments		0	62%	74%	57%	
% Obligations/Appropriations		0	68%	75%	50%	
Textbooks	Textbooks					
Appropriations*	616,000,000	809,846,000	1,809,846,000	2,063,599,000	2,063,569,000	
Allotments	1,233,965,200	1,425,846,000	2,278,344,957	3,851,511,674	3,866,642,587	
Obligations	605,677,921	635,624,507	889,251,011	1,821,135,054	1,957,670,400	
% Obligations/Allotments	49%	45%	39%	47%	51%	
% Obligations/Appropriations	98%	78%	49%	88%	95%	
New Teaching Positions						
Appropriations	2,898,373,000	2,517,191,000	3,837,669,000	3,717,254,000	4,519,132,000	
Allotments	3,388,550,888	1,495,047,845	1,218,695,184	1,515,233,034	2,548,525,537	
Obligations	3,253,728,701	1,400,921,900	1,139,281,764	1,460,326,157	2,549,005,533	
% Obligations/Allotments	96%	94%	93%	96%	100%	
% Obligations/Appropriations	112%	56%	30%	39%	56%	

Ta	ble 14:	Utilizatio	n Rate	s of Sele	ected DepED	Programs:	
Appropria	tions/A	llotments	Compa	ared to (Obligations ,	2004-2008 ((in PhP)

*appropriations include supplemental budgets

129. **School Furniture Program:** A notable pattern in the School Furniture Program budget execution performance is the significant dip in execution in 2006, with the least obligation made against the new appropriation from that same year.⁴⁴ Although the budget execution ratio recovered and surpassed the amount of new appropriation in 2007, it was largely because DepED caught up on utilizing the continuing appropriation from the year before. The data also suggest that between 2005 and 2006, DepED managed to obligate a total of PhP832million against the original appropriation of PhP 1 billion in 2005, suggesting that the remainder (PhP168million) may have lapsed.

 Table 15: Implementation Timeline of the School Furniture Program, 2004–2005

Activity	2004 Program	No. of Days Lapsed	2005 Program	No. of Days Lapsed
Date of GAA approval	re-enacted		16-Mar-05	
ABM Release	n/a (PhP450 million)		5-Jul-05 (PhP1,000 million)	111

⁴⁴ However, we note that 2006 saw a re-enacted budget due to Congress' failure to pass the GAA for the whole year, entitles the Department to the same appropriation as the year before.

Activity	2004 Program	No. of Days Lapsed	2005 Program	No. of Days Lapsed
DepED Department Order Release	27-Oct-04		26-Aug-05	
Sub-ARO released from Central Office to ROs	15-Sep-05 (PhP302.45 million)	323	15-Sep-05 (PhP626.9 million)	72
Sub-ARO released from NCR-RO to the School Division Offices (SDOs) (sample)	16-Sep-05 (PhP2.8 million)	1	16-Sep-05 (PhP53.76 million)	1
(date received by SDOs)	7-Oct-05		7-Oct-05	21

130. Tracking the allotment releases reveals the roots of the problem in the backlog created in the prior years. Table 15 shows the chronology of allotment releases in 2004 and 2005. In 2004, DBM released PhP450 million of the original PhP1 billion appropriation for the program via ABM (that is, for items that do not require additional program-specific documentation from DepED). Yet, it took DepED until September of 2006 to sub-allot a part (PhP 302.45 million) of this release to the regional offices for actual execution. DepED officials cited the late (October) issuance of the DepED Order (DO) that specified implementation modalities of this program as the major reason for this delay.⁴⁵

131. Slow execution continued in 2005. Despite the delay in execution, DBM released the total 2005 appropriation (PhP1 billion), albeit somewhat late (July) in the fiscal year. But since the DO had been in place since October 2004, DepED was now in a position to release sub-allotments relatively soon — but still about two months later — after receiving the allotment release from DBM. At the same time DepED released sub-allotment (PhP302.45) against the previous year's authorization. Evidently, with nearly PhP1 billion worth of sub-allotments released near the final quarter of the year, the regional offices did not have enough time to obligate most of the allotted budget. Furthermore, the central office did not sub-allot all of the allotments released by DBM (PhP1 billion) to the regional offices, thus automatically limiting the amount that could have been obligated. Finally, to complicate the matter further, DepED issued a new DO in August 2005. The new DO overrode the DO issued less than a year earlier and introduced significant changes in the program's implementation modalities, including the units in charge of implementing the program.⁴⁶

⁴⁵ Why it took so long for DepED to prepare the DO was not fully explained.

⁴⁶Instead of being centrally implemented, procurement was transferred to the division office level. This change aligned with the DepED's decentralization policy. The division offices were also given flexibility in determining the material for desks and armchairs to be bid out in their respective divisions. This practice followed the DepED standard dimensions and designs. The responsibility for this program was also transferred from the Physical Facilities and School Engineering Division to the Procurement Service Unit.



Figure 22: Budget Utilization of the School Furniture Program, 2004–2008

Source: DepED-Budget Division

132. In 2006, the Government operated under a re-enacted 2005 budget. DepED obtained the same PhP 1 billion appropriations for the School Furniture Program as in 2005. However, because of the implementation setbacks experienced in 2003 and 2004 and having the guidelines for the 2005 program issued only in the latter part of 2005, and because sub-allotments to division offices for the 2006 program were issued only on February 14, 2007, DepED was unable to implement any of the 2006 appropriation during the year, On February 20, 2007, DepED issued the guidelines for the 2006 School Furniture Program (DepED Order No. 12, s.2007). As Figure 22 shows, the backlog continued to reduce execution efficiency in 2007, when DepED failed to obligate most of the 2007 appropriation for the program.

133. Contrary to assertions that delays in budget execution result from DBM's tight control of allotment releases, our detailed review of the execution of the School Furniture Program, at least for 2004–2007, locates the main source of the weakness inside DepED. One of the main reasons for the repeated delays in releasing sub-allotments and execution of the program appears to be the frequent changes in DepED's policies and guidelines for implementing the program. This problem may be because the years 2004-2006 were a turbulent period for DepED with the sudden departure of the secretary, the introduction of BESRA, and the implementation of a number of changes in the ways programs were managed. For example, issuing two DOs in less than a year was a direct result of the change of leadership and the corresponding change in the Department's approach to the program. Although it is legitimate for new leadership to introduce new approaches, even if there were only a temporary instability in the Department's policies it clearly affected execution efficiency of the program and had negative effects lasting more than a year or two.

134. **School Building Program:** DepED's experience with the School Building Program in 2004-2008 reveals other causes of execution problems. Figure 23 shows that this program also suffered considerable execution delays in this period, with no activity whatsoever recorded in

2005 and less than half of the appropriation obligated in 2006. Although the amount executed increased in 2007, the ratio remained low despite the increase in appropriation that year.



Figure 23: Budget Utilization of the School Building Program, 2005–2008

Source: DepED-Budget Division

135. This case is partly a story of a new policy causing start-up delays similar to the case of the School Furniture Program. Until 2005, the School Building Program had been the main responsibility of the Department of Public Works and Highways (DPWH), although DepED had also been managing 10 percent of the Program's budget from year 2000. But since 2005, DepED has received appropriations for building schools directly in areas experiencing acute classroom shortage. DPWH has also continued to implement a School Building Program funded from a Special Purpose Fund. For DepED, the newness of this program resulted in some initial changes in the way programs were implemented.

136. Two other problems are DepED's need to follow legal mandates and to negotiate with outside actors, such as members of Congress, local chief executives, and certain civil society organizations (CSOs) in selecting specific sites for school building construction. The first step in the execution of the project is to prepare a priority list of recipient schools at which DepED hopes to build new classrooms. DepED uses the BEIS and the color-coding scheme to identify these schools. In addition, DepED is obliged by Republic Act 7884 (the Roxas Law) to consult with and receive consent from representatives of each legislative district concerned. Anecdotes suggest that this process can become lengthy if the legislators are not readily available for consultations or do not agree with DepED's priority list.

137. Initial uncertainty and delayed determination of basic policy on the program implementation also contributed to DepED's failure to obligate the allotment in 2005. In interviews, DepED officials cited several reasons for this delay. First, the unit in charge, the Central Office's Physical Facilities and Schools Engineering Division (PFSED), became

operational only in January 2005. However, it was not yet fully prepared to formulate and issue a new policy immediately, since the School Building Program was new for DepED. Furthermore, a particular provision in the GAA required DepED to prioritize implementation by LGUs and NGOs, such as the Federation of Filipino-Chinese Chambers of Commerce and Industry, Inc. (FFCCCII), even though this provision appeared to contravene the Implementing Rules and Regulation of the Procurement Law (Republic Act 9184) issued in 2004. Confusion over which legal requirement prevailed temporarily paralyzed DepED. Once DepED chose to effect part of the program through LGUs and the FFCCCII, it was further slowed by having to wait for LGUs to voluntarily submit letters of intent, and for the FFCCCII to choose project sites first. DepED was to cover areas not chosen by the FFCCCII, but the latter's delay in identifying their project sites hampered DepED from implementing its portion of the program.

138. Hence, in contrast to the School Furniture Program, what stands out in the case of the School Building Program is the effect of externally imposed requirements, such as the legal requirements inserted by the legislators that required program administrators to follow certain procedures for program implementation. There were also internal causes of delay, much like the case of the School Furniture Program. The School Building Program started in 2005, which precisely coincided with the period of turbulence in DepED. The changes in leadership led to repeated issuing of DepED orders on the program's implementation guidelines as well as specific changes in the way the program was to be implemented (Table 16).

	2005 Program	2006 Program	2007 Program
Guidelines (Date, Secretary/OIC)	DepEDOrder No.4, s. 2005 (5/4/2005, Abad) DepEDOrder No.32, s. 2005 (6/14/05, Bacani) DepEDOrder No.65, s. 2005 (12/29/05, Hidalgo)	DepEDOrder No.3, s. 2006 (1/24/06, Hidalgo)	DepEDOrder No.10, s. 2007 (2/9/2007, Lapus)
Mode of Implementation	1 st priority – construction by NGOs such as FFCCCII; 2 nd priority – construction by LGU and PTCA; 3 rd priority – construction by DepED through contracting	To be undertaken by DepED through contracting or under Memorandum of Agreement (MOA) between LGU and DepED SDO	To be undertaken by DepED through contracting using Principal-led Scheme or by LGU through MOA

Table 16: Key Changes in the School Building Program Implementation Modalities, 2005–2007

139. **Textbook Procurement:** Among the reforms that followed the implementation of the 2001 Governance of Basic Education Act was a new Textbook Policy (2004).⁴⁷ To ensure

⁴⁷DepED Memorandum No. 289, s.2004. "Textbook Policy".

uniform and quality learning nationwide, the new policy adopted standardized titles and synchronized purchases.⁴⁸

140. The execution ratios of the textbook program were generally better than for the previous two programs, except in 2004 when DepED failed to obligate any part of the PhP616 million appropriations for the program. Nevertheless, the patterns in budget execution were similar in terms of the dominance of the backlog from the previous year's appropriations. Further, the levels of obligations could not keep pace with the rates of increases of the appropriations at least in 2005-2007 (Figure 24).



Figure 24: Budget Utilization of the Textbook Procurement Program, 2004-2008

Source: DepED-Budget Division

141. A particular feature of the textbook program was that procurement-related delays were a major source of execution problems. The development of the textbook content had once been the responsibility of the Instructional Materials Corporation of the DepED. However, since the passing of the Book Publishing Industry Development Act (Republic Act 8047) in 1995, this responsibility was shifted to private publishers.

142. In creating its List of Approved Textbooks, DepED oversees an evaluation process that includes the expert judgment of academicians, administrators, and curriculum specialists.⁴⁹ Textbooks must pass or be approved by three of the four evaluators to get on the approved list. The evaluation of textbooks is based on both content and form. Prior to the introduction of the

⁴⁸Before 2004, the textbook program had many titles for each subject, different texts for the same grade or year level, and errors in content.

⁴⁹ The evaluation process involves two levels: private-sector review of materials by two reviewers, and DepED's own evaluation, in which two reviewers come from either the Bureau of Elementary Education or the Bureau of Secondary Education).

current process and in response to a scandal about the quality of textbooks, evaluation could take from two weeks to a month per book on average. The length of time needed depended on whether it was an elementary or high school book. The new four-step process doubles the time for evaluation, including revisions, if any, from 45 days to three months. Assuming no delay, the entirety of the four-step evaluation process shown below can add up to 245 calendar days.⁵⁰

Step 1. DepED issues a Textbook Call.
Step 2. Publishers submit textbooks and teacher's manual (TXs/TMs).
Step3. DepED-IMCS processes TXs/TMs and identifies/contracts evaluators/reviewers.
Step 4. DepED-IMCS conduct and manage content evaluation focusing on three main
elements – the evaluation is divided into four groups:
- Coverage of Learning Competencies (LCs)
- Subject Matter Content
- Presentation and Language
Step 5. An independent committee computes the aggregate of weighted ratings by the four
separate groups to determine the ranking of the TXs/TMs.
Step 6. DepED- IMCS releases copies of Team Evaluation Rating Sheets and TXs/TMs with
marginal notes to concerned publishers.
Step 7. Publishers whose TXs/TMs have aggregate weighted ratings greater than or equal to
the cut-off score submit to the DepED-BAC sealed offers for the copyright
authorization fee.
Step 8. DepED determines the TXs/TMs to be printed and delivered based on weighted ranks
for quality and price.
Step 9. Publishers make the necessary revisions on the TXs/TMs in preparation for DepED
bidding for printing and delivery.
Source: DepED-IMCS 2007 TX Call Guidelines for Elementary Math, Science & Health, and English.

143. The next stage of procurement is the supply and delivery of books.⁵¹ Based on the allocation list prepared under the GAA of 1999 and refined under the World Bank-funded Social Expenditure Management Project and Third Elementary Education Project, regions are allocated their budgets for their particular purchases. The procurement process for the supply and delivery of textbooks can take up to 242 days from bid opening to delivery. Previously, preparation for the procurement took only 47 days.

Steps	No. of days required
Step 1. Bid Call and Tendering	45*
Step 2. Pre-Bid conference	1
Step 3. Bid Opening	1
Step 4. Technical and Financial Evaluation	15

 Table 18: Procurement Process for Textbook Printing and Delivery (242 days)

⁵⁰ "The Textbook Procurement Process," PowerPoint presentation by Instructional Materials Council Secretariat (IMCS) for the National Textbook Delivery Workshop, September 27, 2007.

⁵¹ Locally funded purchases are done on a regional basis, following national competitive rules. Foreign-assisted purchases (for example, covered by the World Bank or donor-funded projects) procurement is done by zone (four zones covering 16 regions), and uses international competitive bidding rules. The four zones are: Zone 1 (Northern and Central Luzon Regions), Zone 2 (Metro Manila and Southern Luzon Regions), Zone 3 (Visayas Region), and Zone 4 (Mindanao Regions).

Step 5. Deliberation and Awarding	15
Step 6. Contracting Period	15
Step 7. Printing Period	60
Step 8. Delivery Period	90
Total	242

*30-45 days standard per RA 9184/World Bank guidelines

Source: DepED-IMCS 2007 TX Call Guidelines for Elementary Math, Science & Health and English.

144. In total, the whole process, from title to delivery, can take more than 500 days for a new book to reach the end-user's hand. But again, this is only the average duration of the process. The process can take even longer if it encounters some problems along the way. Even with the two-year validity of MOOE appropriations, this length of time means that unless DepED is able to start the process within the first semester of the first year of the appropriation's validity, it runs the risk of losing the appropriation before the procurement process is completed. Fortunately, revision of the content happens only once every five years and subsequent supply will only depend on reprinting and delivery.

145. In practice, procurement does not always go smoothly. DepED's experience in 2005 illustrates the kinds of difficulty that can be faced by a government agency involved in a complex procurement process. In 2005, the new Textbook Policy, which had been issued in July 2004, was still being operationalized. Coincidentally, DepED was in the process of updating instructional materials and curriculum. Doing so required the review and re-evaluation of the old textbooks, and the purchase, if needed, of a new batch of textbooks and teachers' manuals (TXs/TMs). Finally, the reform of the DepED procurement process was too recent for the system to be ready. DepED itself was going through several simultaneous changes in policy and operations. Thus, the education bureaucracy had to respond to the high degree of uncertainty that characterized the internal environment.

146. During the latter part of 2005, IMCS and the DepED Procurement Service began preparation for the purchase of 15 million new elementary textbooks (PhP810 million worth of books). Between October and December 2005, DepED issued a request for bids, to which 18 bidders responded. The process took its course and actual textbook deliveries occurred between January and February 2007. From tender to actual delivery of textbooks to end-users, the procurement took nearly 17 months. If the pre-procurement stage which took six months, is added, then the entire process took 23 months.

Procurement Stage	Date Completed
Start of Tendering Process	October 2005
Submission of Bids	December 9, 2005
Completion of Technical and Financial Assessments	February 2006
Request to Award	May 30, 2006
Notice to World Bank on Awards	June 13, 2006
Notice of Award to Suppliers	June 15, 2006
Notice to Proceed/Letter of Credit	September 2006
Start of Printing	September 15, 2006
Start of Delivery	November 20, 2006

 Table 19: Actual Chronology of Events: Supply and Delivery of Sibika 1-3, HEKASI 4-6 and

 Araling Panlipunan 1-4 (Under SEMP 2005)

Actual Delivery	January-February 2007
Source: Second Social Expenditure Management Project (SEMP2) Project Comple	etion Report, prepared by DepED-
Project Development and Evaluation Division (August 13, 2007).	

147. Yet again, budget execution in 2006 experienced a backlog effect. Since the 2005 textbook budget of PhP 810 million was unspent, it was carried over in its entirety for implementation in 2006. The Department also received an additional PhP 810 million from the 2006 budget, re-enacted on the basis of the 2005 budget. Finally, a supplemental budget was passed in October to add PhP1 billion, increasing the 2006 appropriation to PhP 1.81 billion. Altogether, these three sources of appropriations meant that the Department had PhP2.62 billion in appropriations available for its textbook purchase in 2006.

148. During the entire year of 2006 DepED managed to obligate only PhP 889 million against these relatively large appropriations. The SAROs issued by DBM on February 9 and July 11 divided this amount in two obligations. To facilitate implementation, the new secretary of DepED decided to sub-allot the textbook funds to the regions. The releases were for the purchase of textbooks and teacher's manuals by Regional Offices (PhP 310 million), and to defray the distribution and monitoring costs by the Division Offices (PhP 332 million). DepED also faced the prospect of having PhP 549 million lapse from the continuing appropriation from 2005. Thus, the department resorted to transferring the unexpended amount to the DBM-Procurement Service.⁵²

Table 20. Anothent Releases/ ITalister, FT 2000							
DBM Releases	Purpose	DepED Releases	Amount				
SARO#B-06-00198 (February	Distribution	Sub-ARO to	PhP332 million				
9, 2006)	and monitoring of TXs/	Regional					
	TMs by Division Offices	Office/Division					
		Office(November					
		20, 2006)					
SARO#BMB-B-06-0000216	Purchase of TXs /TMs	Sub-ARO to	PhP310 million				
(July 11, 2006)	by Regional Offices	Regional					
		Office/Division					
		Office (July 13,					
		2006)					
Transfer to DBM-PS	Programmed for the		PhP549 million				
Request (December 20, 2006)	procurement of						
_	TXs/TMs						

 Table 20: Allotment Releases/Transfer, FY 2006

Source: DepED Budget Accounts, SARO and Sub-ARO Releases for FY 2006

149. **New Teacher Deployment:** Because of constantly increasing enrollment and a corresponding shortage of teachers in certain areas, the GAA provides a lump-sum allocation for new staff positions. These monies comprise funding requirements for the creation of new teaching and non-teaching positions for the current year; and funding requirement for the teaching and non-teaching positions newly created in prior fiscal years, subject to actual deployment to schools, SDOs, and newly legislated/established secondary schools. Unlike the

⁵² This was the second time DepED attempted to transfer the textbook procurement budget to DBM-Procurement Service just before the appropriation was to lapse. COA has noted this as inconsistent with the government's own financial management rules.

three programs discussed earlier, the deployment of new teaching positions entails an additional layer of complexity, because there are several agencies involved besides DepED itself. For instance, DBM's role is not limited to issuing SAROs and NCAs to DepED. Approvals of the creation of new teacher items must be sent through the DBM Central Office and a Notice of Salary Compensation Action (NOSCA) must be issued by DBM regional offices. Once the teachers have been selected, their appointment papers have to be attested by the Civil Service Commission (CSC), which validates the required documents submitted by the new teachers, after verification by the Professional Regulatory Commission (PRC). The example illustrates how the complexity of the administrative process involved in new teacher deployment contributes to slow budget execution.

150. Table 21 summarizes the key steps taken in deployment of new teachers to selected School Division Offices in Visayas (Region VII). After the GAA is passed with a line item for new teacher hiring, the process starts with the DepED secretary requesting the DBM secretary to create a certain number of new teaching positions. Unlike the School Furniture Program and the School Building Program in which there were clear bottlenecks such as DepED Central Office's delay in issuing sub-allotments to the Regional Offices, the implementation of new teacher deployment progresses through relatively stable intervals. Each critical milestone, such as DBM approval of DepED's original request, DBM issuance of NOSCA, etc., is cleared within about one or two months. One step in the whole process that takes longer is the final clearance by the CSC of the proposed recruitments. The CSC's job is to attest to the proper professional qualifications of the job applicants. The chronology in Table 21 shows that this final step of the process can take four (as was the case for Mandaue City) to six months (as in Cebu Province). According to the CSC regional office in Region VII we visited, the long delay is almost inevitable, given their limited staffing vis-à-vis the work load. In this particular office, two CSC employees handled as many as 2,000 applications of personnel actions each month.

151. The complexity of the entire process appears to be the main reason it takes so long to hire and deploy new teachers. Nevertheless, a more detailed examination of the process in 2007 indicated that more careful, efficient management of the process by DepED could expedite some of the steps. The following observations describe some instances in which DepED could have handled some of the steps in the process more efficiently in 2007 (see Table 21):

(i) It took from April 2 to June 12 for the DBM Central Office to approve DepED's request for the creation of new teaching positions. This delay happened because in mid-May, DepED submitted a revised allocation list that included new teaching positions allotted for special groups such as *madrasah*, technical-vocational, and mobile teachers. Usually, it would only take a month for DBM to issue the approval. Had DepED been able to submit a final list in April, the DBM approval might have been obtained within the same month.

(ii)The issuance of NOSCA by the DBM RO across the SDOs took between one and six weeks. According to a DBM Regional Director we interviewed, the DBM RO can usually prepare the NOSCA within a week if there are no problems in the documents forwarded by the DepED RO. However, problems can arise from delays in the submission of revised deployment reports. Problems also emerge from the fact that it is only the Regional Director (DBM) who can sign the NOSCA. Thus, when the director is absent/unavailable, the NOSCA has to wait for his or her return. The variations in the NOSCA turnaround time

across SDOs suggest varying levels of accuracy in the submission of deployment reports by these SDOs. Better handling of documents by some of the SDOs could have cut the processing time.

Document/Activity	Responsibility Center	Division of Cebu	Division of Mandaue	Province of Cebu	Division of Lapu-Lapu
Request for creation of new	From DepED	2-Apr-07	2-Apr-07	2-Apr-07	2-Apr-07
teaching positions	Central Office to DBM Central Office				
Approval by DBM Central	From DBM Central	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07
Office and request for	Office to				
deployment report	DepEDCentral Office				
Allocation to ROs	From	18-Jun-07	18-Jun-07	18-Jun-07	18-Jun-07
	DepEDCentral				
	Officeto DepED				
Memo to SDOs	From DepED RO to	26-Jun-07	26-Jun-07	26-Jun-07	26-Jun-07
	DepED SDO				
Submission of deployment	DepED SDO		3-Aug-07		
report to DepED RO					
DepED RO endorsement of	DepED RO	13-Jul-07	9-Aug-07	14-Jul-07	5-Jul-07
deployment report to DBM RO					
Issuance of NOSCA	DepED RO	27-Jul-07	16-Aug-07	21-Aug-07	27-Jul-07
Publication/Advertisement of	DepED SDO	9-Aug-07	13-Jul-07	31-Aug-07	31-Jul-07
Vacancies					
Signing of Appointment Paper by SDOs	DepED SDO	27-Aug-07	1-Sep-07	28-Sep-07	21-Aug-07
Transmittal to CSC of List of	DepED SDO	Accredited	25-Sep-07		13-Sep-07
Teachers to be Hired and their		by CSC			
required docs					
Date stamp received by CSC			25-Sep-07	19-Oct-07	
Attested by CSC			8-Jan-08	29-Jan-08	6-Nov-07
Released by CSC			24-Jan-08	04-Apr-08	05-Feb-08

Table 21:	Implementation Timeline of New Teacher Deployment for Selected SDOs in Region VII,
	2007

152. Because the process of preparing the NOSCA and the CSC attestation is long and circuitous, new teachers typically assume office several months after the school year starts. The entire process, including CSC attestation, of deploying new teachers can take up to 10 months. By the time all the required steps have been taken, it is typically January of the following year before the new teacher can finally begin teaching. To have the teachers start earlier, some school division superintendents risk having the new teachers report for work without the CSC attestation. But even then, teachers are reporting in September, about two months after the start of the school year.

153. Even though the SDOs we visited for this case study had relatively high capacity, were well organized, and located in a highly urbanized area, it still took them a long time to have the new teachers assume office. The situation is likely to be worse for SDOs with lower administrative capacities. Such SDOs are often located in rural or remote areas. For SDOs in Region VII, while schools wait for new teachers to assume office, other teachers must fill in. In some cases, until the new teachers arrived the number of students per class reportedly rose from 45 to around 80 to 100 students.

154. Some of the delays were also due to inefficient handling of the steps by the SDOs. In 2007, the CSC disapproved a number of Region VII's applications. The CSC sent them back to the SDOs because of one procedural deficiency or another, such as a missing document. Some of the reasons cited were:

- the candidate did not meet the rating requirement prior to promotion;
- the item was not vacant;
- the SDO failed to publish the vacancy announcement;
- the announced position (item) was not found in the template;
- the incumbent who "owned" the item as indicated in the appointment was different from the one appearing in the template;
- the agency template showed that the item belonged to someone other than the applicant;
- the position was filled before 10 calendar days from the publication of the vacancy announcement.

155. The data show that virtually all of the disapprovals emanated from the one SDO that covered the entire province of Cebu outside of the cities in the metro Cebu area. This finding suggests a possible mismatch between the work load and the SDO's administrative capacity.

	Depl	DepED-Cebu Province											
	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Total
Appointments	362	234	411	635	2	24	242	153	122	502	118	197	3,002
Received													
Disapproved	31	41	45	154		9	25	20	19	33	14	75	466
	DepED-Lapu-Lapu												
	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Total
Appointments	2	33	34	3			31	82	88	48	8	36	365
Received													
Disapproved	1									3	1		5
	DepED-Mandaue												
	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Total
Appointments	78	19	20			18	30	38	68	15	9	9	304
Received													
Disapproved	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 22: Number of Appointment Papers Received and Disapproved

Source: CSC

156. Many of the delays could be eliminated if both SDOs and the CSC were more careful. For example, if the agencies used a common checklist, the SDO could double-check the supporting document before forwarding the applications to CSC, and the CSC clerk who received the applications could recheck them. By doing so, the agencies could reduce the number of faulty submissions.⁵³ Good record keeping should also minimize these errors.⁵⁴

157. Finally, there is the critical issue of low efficiency in the teacher allocation process. This happens partly because of the slow partial execution of the allocated budget for new teacher deployment. According to the SDOs we interviewed, the additional new teaching positions they receive every year are not enough to cover their actual needs. For example, in Lapu-Lapu City's south district, nine out of the 13 schools are coded code, with the student-teacher ratio varying from 52.43 to 62.57. The required number of additional teaching positions to turn all red-coded schools into orange-coded was 24, but the SDO received only nine new teaching positions. In 2008, even with an additional allocation of one teacher for each of the red schools, the student-teacher ratio still remained in the red code. This fact confirms the finding highlighted in Chapter 3, that although the national government has been able to allocate thousands of additional teaching positions to address teacher shortages, the number of teachers actually deployed on the ground has been far fewer than the teaching positions allocated in the budget.

Selected	Total	Total	Pupil-	Color	Additional	Pupil-	Required
schools in	Enrollment	Teachers	Teacher	Code	Teacher	Teacher	no. of
Lapu-Lapu			Ratio		per 2008	Ratio with	additional
City SDO					Allocation	additional 1	teacher to
						teacher for	reach the
						each red	orange
						school	code
Maribago	1,206	23	52.43	Red	1	50.25	1
Agus	806	15	53.73	Red	1	50.38	1
Abuno	982	18	54.56	Red	1	51.68	2
BagongSilang	852	15	56.80	Red	1	53.25	2
Saba Basbas	742	13	57.08	Red	1	53.00	2
Basak	2, 293	40	57.33	Red	1	55.93	6
Gun-ob	1, 556	27	57.63	Red	1	55.57	4
SubaMasulog	991	17	58.29	Red	1	55.06	3
Sudtonggan	876	14	62.57	Red	1	58.40	4
Total		262			9		24

Table 23: Sample of Teacher Deployment Analysis of SDO Lapu-Lapu City, SY 2007–2008

158. Since they receive fewer teachers than they need, the SDOs must prioritize the deployment of new teaching positions. To do so, they must take into account a variety of factors such as student ratio, class organization, number of students, and the number of special teachers

⁵³ Since there are only two people in the North Field Office, CSC could make use of student volunteers who are doing on the job training.

⁵⁴ The CSC North Field Office in the Region VII keeps only one logbook, which is not computerized, for all the applications received. Further, the office does not record the reasons for returns/disapproval. In the Cebu Province SDO, like some other SDOs, the files of appointments are not organized, there are different custodians for different levels, and they do not track the movement of the applications. The reasons for the disapproval can only be found by reviewing individual copies of appointments, which are not kept in any kind of order.

who are underloaded. To address the shortfall in the number of teachers, some SDOs set up night classes to accommodate the growing number of enrollees. However, night school could not be sustained because of the lack of teachers for the second shift.

Conclusion

159. By using an in-depth case study approach, our analysis of the operational efficiency of the DepED budget has revealed many deficiencies that have important implications for participation, retention, completion, and learning achievement. The four budget items we chose for the case studies are not fully representative of the DepED budget execution as a whole, but they are critical components of the Department's CO and MOOE budgets. Efficient execution of each of these components is essential if DepED is to narrow input shortages in textbooks, classrooms, and teachers.⁵⁵

160. The case studies show slow, incomplete budget execution by DepED, quantified the extent of inefficiency in terms of delay and the lapsing of appropriations, and suggested several possible causes of these weaknesses. First, much of the delay has been caused by DepED's inability to expedite the process. Contrary to frequent allegations that slow budget execution is due to DBM's slowness or refusal to release the budget, more often DepED was unable to sub-allot the released allotments to continue the budget execution process smoothly.⁵⁶

161. In our initial interviews, weak financial management capacities within DepED were mentioned as an important source of operational inefficiency. Capacity limitations may be a valid constraint, but the case studies suggest that more important systemic causes are uncertainty or instability in the policy environment and excessive complexity in certain administrative procedures. Policy uncertainty/instability is sometimes caused by DepED's need to interact with external actors, be they legislators whose consent is virtually required for the selection of

⁵⁵ A possible limitation of this particular set of case studies is that the period chosen for the analysis, 2004–2007, may be an anomalous period, given the extent of policy and operational changes DepED introduced during those years. If this period is atypical, then recurrence of severe budget execution problems that we observed in some of the years may be less likely to repeat themselves in the future. However, there is some evidence to suggest that weak budget execution has been a recurring problem beyond this study's specific time period. For example, the World Bank-ADB (2003: 70) joint public expenditure review referred to budget execution problems in "the purchase of textbooks and desks, the hiring of new teachers and non-formal education programs." The reported obligation-to-allotment ratio for textbooks in 1997 and 1998 were 42 percent and zero, respectively. However, the report also cited low allotment-to-appropriation ratios of 30 percent and 36 percent in 1996 and 1997, respectively. It is possible that the low obligation-to-allotment ratios and the obligation-to-allotment ratios. Either way, the possibility that our findings may be limited to a specific time period does not invalidate one of our main findings: that policy changes slow down budget execution by creating uncertainty over the directions and the ways in which programs are implemented.

⁵⁶ The case studies did not examine the effect of the timing of NCA releases on budget execution, which is another frequently alleged reason by line agencies for poor performance. The current transaction recording system of the government does not permit the direct association of individual NCA requests and releases with specific allotments and obligations. Therefore, it is possible that final execution of the budget (i.e., disbursement for payments against services rendered/goods delivered) is even slower because of slow or partial releases of NCAs by DBM. However, this possibility is immaterial to this study because we measure budget execution at the level of obligations rather than by payments.

classroom construction sites, or with the CSC, which needs to sign off on new teacher attestation. However, in other cases, DepED itself has been a source of policy instability and uncertainty.

162. The introduction of new policies created uncertainty. These new policies and improvements were intended to improve DepED's ability to provide quality education services in a timely manner and were urgently needed, but the dilemma was, and is, that they have clearly contributed to slow budget execution and hence, at least initially, to slow program delivery. Two critical questions are, can DepED quickly learn new ways of operating, and can future changes be introduced more gradually based on DepED's realistic absorptive capacity.

163. These major findings lead to the following policy implications. First, as desirable as they may be, policies, operational changes, or rule changes create a risk of implementation failure. Therefore, ideally, DepED should carefully consider the operational impacts of new policies and procedures before fully introducing them, or perhaps consider phased implementation.

164. Second, although it is more difficult to reduce external sources of operational uncertainty, especially if these are legislative mandates, DepED could at least identify such sources systematically and develop an advocacy plan to eliminate or reduce them, where possible. For example, doing so could include a proposal to amend the Roxas Law or other legislation that affects DepED operations.

165. Third, procedural complexity leads to operational inefficiency. The complexity in an administrative procedure is usually due to the Government's (or legislators') desire to regulate the bureaucracy, thus minimizing undesirable behavior such as corruption in procurement or hiring of unqualified persons as teachers. However, these concerns should be balanced with considerations of efficiency in service delivery. The case studies, especially of textbook procurement and new teacher hiring, suggest that the balance may favor control at the cost of efficiency. Selective reviews of administrative procedures that are truly excessive. It may be possible to eliminate some steps or to institute alternative, more expeditious ways to achieve a comparable level of control. Computerizing certain transactions would also expedite processing of some procedures by speeding up the handling of paperwork and also reducing the scope for human error.

Chapter 6 - Policy Recommendations: Making Expenditures Count

166. In 2005 the government introduced the Basic Education Sector Reform Agenda (BESRA), a coherent reform agenda/policy framework. If judged by the initial, albeit modest, gains achieved in outcomes and enhanced mobilization of resources, then the answers to improving access to quality education are already in place. To be able to catch up with the level of performance required to meet the MDG and EFA targets, the government need only ensure that it steps up and sustains these reform efforts. However, the effectiveness of the reforms is hampered by limited public resources available for the sector and by inefficiencies in the utilization of available resources. In terms of allocation, the quality of spending for critical inputs has improved, with more resources being directed towards critical inputs such as textbooks and classrooms. However, the impact of spending is reduced by the insufficient volume of resources, which cannot keep pace with the rapid population growth and the operational inefficiency in its execution. Nevertheless, in terms of its geographic distribution, the quality of public spending is still suboptimal, since it does not channel more resources to poorer regions in the country.

167. To take full advantage of initial gains and to translate its expected benefits more quickly into desired outcomes, the government should complement the ongoing efforts by effecting the following sets of additional measures. First, more resources need to reach students in need. Accomplishing this goal means allocating more to basic education and improving operational efficiency of budget execution. Second, DepED's decision making must improve so that the Department can devise specific policy interventions to adequately and promptly respond to particular problems. Interventions should be based on objective data and sound analysis. Doing so would address the issues of quantity, quality, equality, and efficiency that we discuss in this report.

More and Better Managed Resources

168. The level of public resources currently devoted to basic education is not sufficient for the Philippines to meet its MDG and EFA goals. The government needs to make more resources available on a per-pupil basis and to implement a series of measures to make expenditures count. Such measures range from reallocating the budget to be responsive to local needs and to improving coordination between national and local governments to expediting budget execution. A set of complementary actions would also be beneficial. These actions might include more effective partnerships with the private sector, both as funders and providers, and with other sectors of government that are in a position to help address causes of low enrollments and to respond to basic learning needs outside the education sector. This objective can be accomplished by a combination of the following strategies:

169. **Increasing funding.** The target should be to gradually increase per-pupil spending to a level sufficient for providing quality education. Doing so would mean increasing the national budget allocation to basic education over the medium term. However, sustainable increases may only be possible with stronger efforts to collect revenues. To achieve MDG/EFA enrollment or completion rate targets by 2015, DepED can estimate the total spending requirements based on enrollment projections. The estimates may indicate that national and local government spending would have to increase very substantially to a minimum of 3.2 percent of GDP by 2015 even if other quality improvement measures are not accounted for. This minimum would increase to

more than 6 percent of GDP if pupil-teacher ratios are improved, more is spent on quality improvement measures such as teacher training, and shifts in classroom use are eliminated. However, we stress that an increase in the budget should be reinforced by a well-defined expenditure plan indicating the short- and medium-term budget requirements needed to achieve targets and fund its reform commitments. Such a plan would be a basis for seeking guaranteed allotments in the medium term that would improve the predictability of resource flows and spending for priorities.

Improving budget execution to ensure that allocated resources are effectively 170. utilized in a timely manner. Unless DepED's capacity to execute its budget and implement programs/projects is simultaneously enhanced, significant funding increases may not result in corresponding improvements in outcomes. Improving budget execution could start with a review of all relevant administrative actions. Doing so would identify where efficiency gains can be made through simplifying and streamlining procedures while also ensuring transparency and accountability. A longer-term agenda would include considerable investments in strengthening the department's key management capacities, including planning and procurement. The agenda could also introduce internal management systems and practices that improve coordination across units, and which clarify accountability of those responsible for specific aspects of program and project implementation. Developing a good management information system (MIS) would also be a worthwhile investment. Improving the way the BEIS data are updated and linked to other MISs such as financial, procurement and asset management information systems would be essential. Development of a financial MIS should be done in coordination with the oversight agencies in charge of building a government-wide system (i.e., COA, DBM, and BTr).

171. Allocating resources in a manner that is more responsive to school-level needs and that corresponds to minimum standards and goals. The report illustrates the importance of avoiding school congestion, hence, the need to address classroom construction shortages. The report also shows that it is important to provide adequate teaching and learning resources and a sufficient number of qualified teachers. Until the government fully addresses the classroom shortage, there must be an increase in the allocation for classroom construction. More should be done through the more cost-effective principal-led scheme implemented by DepED than through the DPWH modality. It is neither necessary, nor is it probably feasible in the short run, given the fiscal constraint, for the public sector to provide all the required classrooms to increase enrollment. DepED can and should rely more extensively on the Education Service Contracting (ESC) scheme to leverage idle capacities in private schools.

172. Although there is sufficient number of teachers in elementary schools, the problem is primarily in their geographic distribution and their quality and performance. In future rounds of deployment, DepED should continue to target new teacher positions to the shortage divisions. The proportion of new teaching positions allocated to the secondary schools should be increased and, in consultation with the Department of Budget Management, DepED should undertake a review of the administrative procedures for the transfer of vacant secondary teacher positions to address serious shortages of teachers at the secondary level. It will be important to strengthen DepED's capacity to project future enrollments and plan for provision of the required level of inputs. To develop a more concrete set of policy options for improving teacher quality and performance, we recommend a detailed study of teacher management.

173. Both more and enough funds should be made available at the school level, where they can do the most good. The application of the new equality-based school MOOE formula in the DepED's subsequent budgets would enable each school to address its own varying needs and requirements. To minimize the risk of bottlenecks and delays in the decentralization and use of resources, DepED must provide intensive training to develop the skills of the implementing units in the procedures, reporting requirements, and accountabilities involved in the process of downloading of funds. Simplification of, and greater transparency in, the downloading procedures is an important requisite to facilitate the provision and utilization of resources.

174. Introducing explicit mechanisms to ensure more effective coordination of expenditure assignments between DepED and LGUs. To provide for increased resources, especially in poorer regions, national and local government spending on basic education should be tightly coordinated. Doing so will require a stronger compact between national and local governments, one which is designed to strengthen school-based management and to yield a more equitable allocation of resources in areas such as teacher deployment, targeting of capital expenditures, and provision of teaching and learning materials. This compact could include, for example, DepED entering into an explicit agreement (e.g., via a memorandum of agreement) to fund a specific number of additional teachers if the corresponding LGU built additional classrooms according to the DepED specifications. The national government could also either require matching grants from LGUs for NG assistance to minimize substitution, which usually happens when LGUs reduce their education spending after receiving more national government assistance for education, or to provide matching grants to relatively resource-poor localities. Since DepED lacks legal authority to impose cooperation from LGUs, such schemes would work only on a voluntary basis. It may be worthwhile to try several different schemes with willing LGUs. Pilot projects would not only identify which approaches might work best, but also reveal what practical obstacles might crop up in implementation. Hence, proper adjustments can be introduced if the government were to decide to pursue such schemes more broadly.

175. Enhancing cross-sectoral collaboration, ensuring the link between demand- and supply-side interventions. The government has recently launched a conditional cash transfer (CCT) program called Pantawid Pamilyang Pilipino Program (4Ps). This program is expected to boost parents' incentives to keep their children in school by giving cash grants to households with school-age children in exchange for continuous school attendance. Recent evaluations of CCT programs in the Philippines and elsewhere demonstrate that such programs can target the intervention to increase school enrollment and attendance. Studies in the Philippines have identified poverty and the high opportunity cost of schooling, particularly for older boys, as a key deterrent to completing school. Using the recently launched CCT in a well-targeted and effective manner would be essential to addressing this issue. At the same time, DepED should ensure that the increasing school participation resulting from demand-side interventions is matched by sufficient planning and provision of classrooms, teachers, teaching and learning materials, and other critical inputs. The active participation of the DepED in the interagency coordination committee and in the monitoring and evaluation of the 4Ps program should be able to identify supply-side and coordination problems early on and make any necessary adjustments.

176. Increasing use of alternative delivery modes (ADMs) of education to help address the lack of inputs in critical areas and to respond to learners in disadvantaged, difficult, or special contexts. The report supports the immediate adoption of alternative modes of delivering

formal education, especially in congested schools and other areas that are seriously lacking in the necessary inputs to effectively provide services through conventional schooling. In addition to responding to the problem of input shortages, appropriate ADMs can also be used as a viable channel of learning for students whose access is limited by poverty, for out-of-school youths, and for those students who live in disaster and conflict-prone areas. There are several ADMs that have been successfully tested and later implemented by DepED, such as the Instructional Management by Parents, Communities and Teachers (IMPACT) and the Modified In-School and Off-School Approach (MISOSA). With proper planning and implementation, good-quality education services could be provided through ADMs with fewer inputs (in relation to conventional delivery) and thus, could also generate possible savings for DepED. However, to realize the implementation of ADMs on a wider scale, the DepED, in close coordination with its regional and division offices, must effectively integrate ADMs into its internal planning and budgeting processes. An evaluation of these ADMs will need to be carried out in the immediate term to ensure that these ADMs remain cost-effective strategies to improve access of the poor and disadvantaged learners to basic education.

Enhancing public-private partnerships (PPP) within a coherent policy and 177. regulatory framework. The Philippines has one of the largest public-private partnerships program in education in the world. Aside from the extensive resources mobilized through corporate and other private sector initiatives for public schools, the growth of nongovernment alternatives to financing and provision of education has been dramatic over the years. These alternatives include the Education Service Contracting (ESC) program of Government, which subsidizes students' access to private schools. The initial findings of a recent World Bank study on the efficacy of the ESC schemes are that it has been successful and cost effective in increasing access to schooling. ESC has achieved its success by providing grants to households to enroll children in certified private schools where space is available. These children would otherwise have gone to public schools. The study recommends expanding the use of the ESC program to alleviate the pressure on the public school system, and to build thousands of additional classrooms to accommodate students in already overcrowded classrooms as well as future enrollees. To enhance its scope, DepED would need to estimate the capacity and demand for ESC in a systematic manner. The parallel Education Voucher Scheme, which meets the same goals as the ESC, can be integrated in the program funding of the ESC. Another possible area for PPP expansion is the system of contracting private school operators to manage public schools, in a manner similar to the Concessions Schools program introduced in Colombia.

Evidence-based Decision Making

178. The effectiveness of government interventions in basic education depends on the quality of data available for policy analysis and DepED's capacity to institutionalize evidence-based decision making. The current quality of available data is poor. It is difficult to systematically assemble different data sources to analyze trends in outcomes and spending in the subsector. To address this concern, DepED might pursue the following key strategies:

179. **Strengthening capacities for evidence-based decision making.** Over time, DepED needs to invest in building its ability to make policy decisions. These decisions should be based on objective analysis and evidence from policy research, which should enable DepED to apply more rigorously its criteria of relative efficiency and cost-effectiveness in its budgetary decision

making. Better data would allow DepED and other stakeholders to address many of the questions raised in this review. Detailed research in various areas will need to be undertaken to guide effective resource allocation, for example, the reasons for system problems such as falling participation rates and changes in other outcome indicators. Research could also explain the problems' relation to government spending; causes of poorer performance of male students; reasons for late enrollments of a number of school-age children; in-depth review of teacher deployment procedures and the relative efficiency of national and LGU appointments; what combination of classrooms, teachers, and learning materials would provide the greatest improvement in learning outcomes, and the funds needed to resource that combination. Although the lack of data makes the answers to these questions elusive for now, once such data are routinely collected, most of the analyses needed to inform these sorts of issues can and should become a routine for DepED.

180. In line with the government's objectives of improving equity of access to quality education, DepED, in collaboration with DBM and the National Economic and Development Authority (NEDA), could start using data from national household surveys (e.g., Family Income and Expenditure Survey or the Annual Poverty Indicator Survey) to regularly analyze and assess education indicators and to relate these analyses to household socioeconomic and demographic characteristics.

181. Another set of recommended measures would be to increase the allocative efficiency and geographic equity of the DepED budget by deliberately allocating the marginal increases in the budget to those items or programs that have proven to be cost-effective or that have shown potential in producing good outcomes, and to discontinue, or at least reduce, allocations to those programs deemed ineffective. To identify the relative effectiveness of existing programs, the DepED could perform an evaluation of all its programs. DepED may not currently have the capacity to evaluate all its existing programs in a single year. If so, then the proposed program evaluations can be evaluated over a specific time period, e.g., three years.

182. **Improving availability of accurate and consistent data.** To codify and institutionalize evidenced-based decision making, the government will need to invest in improving the coverage and quality of policy-relevant data as an urgent priority for basic education. Prioritization includes improving the timeliness, quality, and coverage (i.e., better sampling) of existing household surveys, such as the Family Income and Expenditure Survey (FIES). The DepED's Basic Education Information System (BEIS) has proven to be a useful tool, but its data quality and ability to link with other sources of information in the sector could be improved. An in-depth assessment of BEIS's data content, validation, and a review of its process of collecting, computing, and managing administrative data would be highly relevant to efforts to rationalize resource allocation and enhance program planning. It would also improve the quality of key data required to inform policy and decision making. As a first step, DepED could revisit BEIS's content by reviewing the data elements that comprise the current system. Doing so would not only assist the school heads who will collect and record the raw data, but also help the planning officers who will be analyzing, aggregating, and using the data.

183. In future national and sub-national PERs, a greater portion of accurate data would bring increased thoroughness to the exercise. To improve the quality of PER analysis, we recommend

that DepED identify where there is relevant, but currently unused, data. DepED should also identify areas for which data is not being collected and to put in place mechanisms to do so.

184. **Tracking and monitoring allocation and spending.** Institutionalizing annual reviews of public expenditures and key programs and conducting periodic public expenditure tracking surveys (PETS) and school-level surveys would be worthwhile initiatives. Appropriately measured and disseminated, PETS can enhance transparency and help ensure that education expenditures reach the intended beneficiaries. As an immediate focus, expenditure tracking could highlight the school MOOE by providing accurate and transparent information on actual inflows to schools and by identifying the extent of leakages and their locations. International experience with similar PETS (such as the first PETS done in Uganda in 1996) has shown that public disclosure of such information has a tremendous positive impact on reducing leakages and ensuring that resources due to schools are rightfully channeled to them.

185. **Institutionalizing the updating of the Multi-Year Spending Plan.** In the short run, the DepED would be well advised to regularly update (e.g., every other year) its Multi-Year Spending Plan, which was initiated in 2005 as a basis for annual budget formulation. This review shows that DepED's actual spending has fallen short of its estimates to achieve EFA targets, even with the spending increases in 2007 and 2008. Regularly updating the spending plan would enable DepED to seek guaranteed allocations in the medium term to improve the predictability of resource flows and spending for priorities. As a related activity, analytical inputs from the proposed evaluation of DepED programs mentioned above should inform the spending plan updating.

Annex 1: Data and Methods

1. In this annex we discuss the data sources and methods used in the report. We also provide definitions of all key technical terms used in the report. Finally, we note some of the limitations of the available data that we have drawn on in the report.

Government Spending Data Analysis

2. **Data Sources:** The Philippine government is mandated by law to provide free public education in the elementary and high school levels (Art XIV Sec. 2(2), 1987 Constitution). The Department of Education (DepED) is the main agency by which this provision is implemented. However, there are other public sector agencies that contribute to the provision of basic education. The Department of Public Works and Highways (DPWH) implements a Special Purpose Fund (SPF) called the School Building Program (SBP). SBP is identified by the legislature and monitored by DepED as a main source of infrastructure spending for basic education. In addition, local government units (LGUs) also spend on basic education services.

3. We obtained data on national government spending on basic education from the annual Statements of Allotments, Obligations and Balances (SAOB) of DepED and the Obligation and Implementation Status Report of the DPWH. We acquired obligations data for other national government education spending from the Department of Budget and Management (DBM) Fiscal Statistics Handbook (FSH), and Budget of Expenditures and Source of Financing (BESF) for certain fiscal years. Appropriations data came from the General Appropriations Act (GAA) documents. We obtained data on automatic and continuing appropriations from the National Expenditure Program (NEP) documents. Local government units also spend on basic education. LGU spending data on basic education came from the Bureau of Local Government Finance (BLGF) from 2002 to 2006. Data for more recent years were not available.

4. Other data sourced from the DBM are the implicit price index (IPIN), which DBM used as the deflator with the base year of 2002; gross domestic product (GDP); and total national government (NG) expenditures for all sectors. We obtained international data from the World Bank's Education Statistics (EdStats) database.

5. **Definitions and Methods:** Appropriations reflect what the government is allowed to spend through the GAA or national budget, but do not represent actual spending (see Table 24). Furthermore, there are two additional kinds of appropriations that are not reported in the GAA but are allowed to be spent. These are continuing and automatic appropriations. Continuing appropriations are appropriations from the preceding fiscal year that have not already been allotted. Since all appropriations are typically available for departments to spend over two succeeding fiscal years, these monies can be used by the department in the current fiscal year. Automatic appropriations are appropriations authorized by standing legislation. This type of appropriation does not require additional action by government. An allotment is defined as an authorization to obligate that is issued based on appropriations. Any obligation issued is defined as a legally incurred liability that government is committed to pay now or in the future. Disbursements are defined as the actual release of funds for obligations. In budget data analysis, it is ideal to use actual payments or disbursements made by the government. However, the accounting method used in the Philippines makes it impossible to match disbursements to the

actual service rendered. It is also difficult to get details of disbursement by allotment class and by program/project. Thus, the data that best approximates actual government spending is reflected in obligations, which show the amount the government has promised to pay. In this report we analyze government spending data from 2002 to 2008. We define basic education national government spending as obligations of DepED plus the SBP, unless otherwise specified.

Public Expenditu	ıre Terms	Definition	Source
		 The ceiling on obligations that could be incurred by the government in a given budget year. This ceiling is supported by estimated financial resources. This includes proposed new, continuing, and automatic appropriations (i.e., New + Automatic + Continuing Appropriations). 	National Expenditure Program (NEP) or Proposed National Budget
	New	An authorization made by law or other legislative enactment, directing payment out of government funds under specified conditions or for specific purposes.	General Appropriations Act (GAA) or National Budget
Appropriations	Continuing	 An authorization to support obligations for a specified purpose or project, even when these obligations are incurred after the budget year. Appropriations for capital outlay (CO) and maintenance and other operating expenses (MOOE) are valid for a total of two succeeding fiscal years. 	National Expenditure Program (NEP) or Proposed National Budget
	Automatic	An authorization made annually or for some other period prescribed by law, by virtue of standing legislation that does not require periodic action by Congress (e.g., Retirement and Life Insurance Premium).	National Expenditure Program (NEP) or Proposed National Budget
Allotments		Authorization issued by the DBM to an agency, which allows the latter to incur obligation for specified amounts contained in a legislative appropriation	Statement of Allotments, Obligations and Balances (SAOB)
Obligations		Liabilities legally incurred and committed to be paid for by the government either immediately or in the future.	Statement of Allotments, Obligations and Balances (SAOB)
Disbursements		Settlement of government obligations and/or accounts payable by cash; movement of cash from the BTr or from an authorized disbursing officer to the final recipient. Disbursement is synonymous with liquidation/settlement/payment of an obligation.	Bureau of Treasury (BTr)

Table	24:	Definitions	of Public	Expenditure	Terms in	the	Philippi	ines

Source: DBM, Glossary of terms, BESF.

6. Using these definitions, we computed various indicators to assess the trend of basic public education spending. They include:

• Nominal national government (NG) basic education spending, which is the amount of spending (obligations) by the national government (DepED plus SBP) on basic education in current prices;

- Local government basic education spending, which is the amount of spending on basic education by the LGUs;
- Real NG basic education spending, which is the amount of spending of the NG in 2002 prices.

It is nominal NG spending multiplied by the factor $\frac{1}{IPINdeflat \, or_{2002}}$;

- Nominal per-pupil spending:
 - NG spending on basic education, which is the sum of spending of the DepED and the SBP divided by the number of students enrolled in public elementary and secondary schools;
 - LGU spending on basic education, which is the spending of LGUs on basic education divided by the number of students enrolled in public elementary and secondary schools;
 - Total government spending on basic education, which is the sum of NG and LGU spending on basic education divided by the number of students enrolled in public elementary and secondary schools.
- Real per-pupil spending:
 - National government spending on basic education, which is nominal NG spending

on education per pupil multiplied by the factor $\frac{1}{IPINdeflator_{2002}}$; (IPIN is the

Implicit Price Index, which is the GDP deflator)

- LGU spending on basic education, which is LGU spending on education per pupil multiplied by the factor $\frac{1}{1}$;

$$\overline{IPINdeflator_{2002}}$$

- Total government spending on basic education, which is total government spending on basic education per pupil multiplied by the factor $\frac{1}{IPINdeflat or_{2002}}$.
- Public expenditures by expense class:
 - Personal services (PS) spending on salaries and wages;
 - Maintenance and other operating expenses (MOOE) –recurrent expenditures other than for PS, such as purchase of textbooks, midday meals, and scholarships;
 - Capital outlays (CO) examples are construction of school buildings and the purchase of school furniture.

7. **Data Limitations:** The available data have several limitations. First, as noted earlier, it is not possible to collect national level data on actual disbursements. Thus, as in earlier studies, we use obligations to approximate actual spending. Second, LGU spending as reported by the BLGF cannot be separated for elementary or secondary levels, nor by expense class. Even in aggregate such data are only available up to 2006. We have estimated LGU spending on basic education for 2007 and 2008 based on past growth rates. Third, national obligations data for some essential programs, projects or activities, such as spending on textbooks and furniture, are not disaggregated by elementary or secondary levels, perhaps because DepED uses pooled procurement practice for such inputs. Fourth, the national obligations data do not have disaggregated spending data available at the regional level. For example, if DepED transfers

money to regional offices for furniture, it is recorded as "obligated" under the category of regional operations in the SAOB. However, there is no way to determine what proportion of the transferred amount was actually spent at the regional or sub-regional levels. Finally, there is no government spending data available for the region of ARMM.

Basic Education Inputs and Outcomes Data Analysis

8. **Data Sources:** We used data from the Basic Education Indicators System (BEIS), which was instituted by DepED in 2002, to analyze the trends in education inputs and outcomes for period 2002–2008. Learning achievement data were based on National Achievement Test (NAT) scores that we obtained from the planning division of DepED. To compute indicators such as enrollment ratios we projected age-specific population data based on population data obtained from the census from the National Statistics Office (NSO) for the year 2000.

9. **Definitions and Methods**

Participation Rates

- Gross Enrollment Ratio (GER):
 - Elementary GER = Total enrollment in Grades 1-6 divided by 6- to 11-year-old population;
 - Secondary GER = Total Enrollment in first to fourth year of high school divided by 12- to 15-year-old population.
- Net Enrollment Ratio (NER):
 - Elementary NER = 6- to 11-year-olds enrolled in Grades 1-6 divided by 6- to 11year-old population;
 - Secondary GER = 12- to 15-year-olds enrolled in first to fourth year of high school divided by 12- to 15-year-old population.

10. We obtained enrollment data for the GER and NER from public and private school enrollment from the BEIS. Since the census shows that 2000 is the latest year for which population data are available, we estimated age-specific population projections by using the following methods. We used provincial population growth rates to calculate total provincial population from 2001 to 2008. We then applied the proportion of children of each age (6- to 15-year-olds) in 2000 to the provincial population estimates to project age-specific provincial population numbers. This method assumed that the age distribution of provincial population was stable from 2000 to 2008. These population projections may have yielded more accurate GERs and NERs than those available in BEIS that were computed by DepED, for which DepED used a fixed population growth rate for all years at the national level.

Internal Efficiency Indicators

11. The team used the reconstructed cohort method (RCM) used by UNESCO to compute these indicators. To construct a flow chart and compute all the internal efficiency indicators, this method used enrollment data for two consecutive years, also the number of repeaters by grade

and the number of graduates for the current year. All data were obtained from the BEIS. The formulae for these flow rates are as follows:

Promotion Rate is the percentage of school children enrolled in a given grade/year who are promoted to the next grade/year at the end of a given school year.

Promotion Rate =

```
(Number of children enrolled in Grade X+1 in Year Y+1 – Repeaters in Grade X+1)*100
Number of children enrolled in Grade X in Year Y
```

Repetition Rate is the percentage of pupils/students enrolled in a given grade/year in a given school year who study in (or repeat) the same grade/year the following school year.

Repetition Rate =

(Number of repeaters in Grade X)*100 Number of children enrolled in Grade X in Year Y

Dropout Rate is the number of pupils/students who leave school during the year, and also those who complete the grade/year level but fail to enroll in the next grade/year level the following school year divided by the total number of pupils/students enrolled during the previous school year.

Drop-out Rate =

(Number of children enrolled in Grade X in Year Y – Repeaters in Grade X – [Number of children enrolled in Grade X+1 in Year Y+1 – Repeaters in Grade X+1])*100

Number of children enrolled in Grade X in Year Y

Grade X = Grade 1 or first year of high school Grade X + n = succeeding grades/year levels Year Y = current school year Year Y + 1 = next school year

12. The flow chart is also used to compute the following indicators:

- Cohort Survival Ratio (CSR) is the proportion of enrollees at the beginning grade or year who reach the final grade or year (this can be calculated with and without repetition).
- Completion Rate is the percentage of first year entrants (grade one pupils or first-year high school students) who complete/finish their full term (this can be calculated with and without repetition)



Figure 25: Sample Elementary Reconstructed Cohort Survival Flow Diagram, SY 2003–2004

Source: Calculations were based on UNESCO's reconstructed cohort formula; Education for All: The Year 2000 Assessment Technical Guidelines (International Consultative Forum on Education for All 1998).

Input indicators

- Pupil-Teacher Ratio is the number of pupils enrolled in a level (i.e., elementary/secondary divided by the total number of elementary/secondary teachers in a given school year).
- Pupil-Classroom Ratio is the number of pupils enrolled in a level (i.e., elementary/secondary divided by the total number of classrooms in elementary/secondary in a given school year). For the purposes of this study, we considered only academic classrooms in our PCR computation. We excluded other instructional classrooms such as home economics rooms, laboratories, and computer rooms. We also computed the pupil-class ratio. Here, we included classrooms being used for multiple shifts.
- Pupil-Seating Ratio is the number of pupils enrolled in a level (i.e., elementary/secondary divided by total seating capacity). Seating furniture in public elementary and secondary schools in the Philippines include desks (one each for two students), sets of tables and chairs (each set for two students) and armchairs (one armchair for one student); hence, total seating capacity = (Desks x 2) + (Table-chair sets x 2) + Armchairs.
- 13. We obtained all data for input indicators from the BEIS database.

14. **Data Limitations:** The data on inputs and outcomes have several limitations. Except for enrollment data, all other input and outcome data are available only for public schools. There are no available data for private schools. Even the enrollment data that include private school enrollment are based on DepED extrapolations, since only some private schools submit their data to DepED. According to DepED, the number of private schools that submit data has been getting

closer to 100 percent in recent years. In addition, we note that BEIS data and population projections may have some margin of error. Therefore, minor movements in indicators such as enrollment rates should not be given undue importance, since they are likely to be within the margin of error of the population and enrollment estimates. There are also many inconsistencies in data for the region of ARMM. Finally, experts comment that the learning achievement data in the form of NAT scores are not comparable over time, because the tests were not standardized in this manner.

Household Data Analysis

15. **Data Sources for Family Income and Expenditure Survey:** The Family Income and Expenditure Survey (FIES) is a triennial national survey conducted by the National Statistics Office (NSO). For this report, we used the two most recent available data from FIES, conducted in 2003 and 2006. FIES covered a total of 42,094 households in 2003. FIES 2006 surveyed 38,483 households.

16. Although the FIES questionnaire lists individual-level data in the household member (HHM) roster, such data are not available in the publicly released data set. For this study we used only data on household expenditure on education. We analyzed this data by income quintile and region. We derived per-capita spending on education to obtain an indicator of education spending per HHM who is of school age. To approximate this amount, the denominator for per-capita spending on education is the number of HHMs who are between seven and 25 years old (i.e., HHMs deemed to be of school age rather than the total number of HHMs. We note that the way HHM counts and age categories are presented in the FIES datasets prevented further refinements in the count of HHMs by age range.

17. All income and expenditure data for FIES 2006 are expressed in 2003 prices to adjust for overall price inflation. We used regional Consumer Price Index (CPI) data obtained from NSCB. To adjust for spatial price differences, we further adjusted 2003 and 2006 FIES data to NCR levels by using official regional poverty thresholds for 2003 also from NSCB. We weighted all summary statistics by using the appropriate raising factor provided in the FIES dataset.

18. **Annual Poverty Indicators Survey**: We used survey-based education indicators from the results of the 2004 Annual Poverty Indicators Survey (APIS)⁵⁷, which covered 42,789 households and contains information on 203,222 individuals. The APIS questionnaire asked four questions on education: current enrolment status, current grade or year level, reason for not attending school, and highest educational attainment. The first three questions were asked of HHMs between six and 24 years old (total of 84,019 individuals). The last question was asked of all HHMs above six years old.

19. **Definitions and Methods:** We performed the analysis for this study by using the HHMlevel data set, in which each individual from the same household had identical household-level data. We adjusted household per-capita expenditures to NCR levels using poverty threshold data, and used this adjusted per capita expenditure to generate expenditure quintiles.

⁵⁷ Although the more recent APIS survey was conducted in 2007, these data were not publicly available as of this writing.

20. We assumed that in line with official policy, children enter Grade 1 when they are six years old and we expect them to graduate from high school at the age of 15. We weighted all statistics by using the appropriate raising factor provided in the APIS data set

21. **FIES Data:** Using FIES data, we disaggregated household expenditures on education as follows:

- **Tuition:** spending on matriculation and tuition fees in cash and kind
- **Books:** spending on books in cash and kind
- **Supplies:** spending on school and other supplies (notebooks, pencils/pens, bond paper/pad paper, newspaper/magazines, comics/pocketbooks, others) in cash and kind
- Allowance: spending on allowance for family member studying away from home in cash and kind
- **Total**: Tuition + Books + Supplies + Allowance

22. As noted above, to reflect the effect of inflation, we adjusted prices to 2003 levels by using regional CPI, which we applied to 2006 data. We obtained estimates of household consumption expenditures in NCR 2003 prices as follows: y_{it} is the nominal household consumption expenditures of the *i*th household in the sample of the *t*th survey year (t = 2003, 2004, 2006). Since prior examination of the data showed that there were no zero or missing observations for y_{it} , we specified the following log-linear regression equation:

(1)
$$\ln y_{it} = \boldsymbol{\alpha}_t' \mathbf{g}_{it} + \boldsymbol{\beta}_t' \mathbf{x}_{it} + \varepsilon_{it},$$

where \mathbf{g}_{it} is a set of mutually exclusive dummy variables g_{rit} , where g_{rit} equals one if the *i*th household in the *t*th survey year resides in region *r*, and zero otherwise; \mathbf{x}_{it} and ε_{it} are, respectively, a (column) vector of exogenous characteristics of, and a scalar unobserved error term associated with, household *i* in survey year *t*, and α_t and β_t are coefficient vectors.

23. The reason we used the logarithmic transformation of y_{it} rather than its level as the dependent variable in Equation (1) is that the distribution of y_{it} for each year *t* is positively skewed, so that the error term of a cross-section regression with y_{it} as the dependent variable is likely to be heteroskedastic, with larger error variances being more likely for larger values of y_{it} . In contrast, the natural logarithm of y_{it} has a cross-sectional distribution that is more like that of a normally distributed random variable.

24. We assumed that Equation (1) was estimated by survey regression techniques. The predicted value for NCR of the natural logarithm of household i's consumption expenditures in year t is given by

(2)
$$\ln y_{it}^* = \hat{\alpha}_t^* + \hat{\beta}_t' \mathbf{x}_{it},$$

where $\hat{\alpha}_t^*$ is the estimated coefficient for year *t* of the NCR dummy variable⁵⁸ and $\hat{\beta}_t$ is the vector of coefficient estimates of household characteristics \mathbf{X}_t . The predicted residual is given by

$$\hat{\varepsilon}_{it} = \ln y_{it} - \ln y_{it},$$

i.e., the predicted residual is the difference between the actual and predicted values of the natural logarithm of consumption expenditures of the *i*th household in year t.⁵⁹ (We note that $\ln y_{it}$ is the predicted value at the regional location of residence of household *i*.) We defined

(4)
$$\ln y_{it}^* \equiv \ln y_{it}^* + \hat{\varepsilon}_{it}.$$

We obtained the consumption expenditures in NCR 2003 prices of the *i*th household in the *t*th survey year as

(5)
$$\tilde{y}_{it}^* = \exp\left(\ln y_{it}^*\right) \cdot \frac{p_{2003}^*}{p_t^*},$$

where p_t^* is the CPI for NCR in year *t*. Dividing \tilde{y}_{it}^* by household size yielded real household consumption expenditures per household member, which is our proxy for permanent income that we used in the text as the basis of categorizing households and children into income quintiles.

To approximate per-student spending on education using FIES data, which does not 25. provide the number of HHMs currently enrolled, we divided HH spending on education by the number of HHMs that were most likely school age (between seven and 25 years old). This result gave us the per-capita spending on education, which we calculated as total HH spending on education

no. of HHMs aged 7-25yo

26. **APIS Data:** We derived the following education outcome indicators by using APIS data:

- **Enrolment:** an individual is enrolled if she/he is attending school at any grade or year level during the survey period;
- **Enrolment Rate:** proportion of individuals of a certain category (or base) who are enrolled; we calculated this proportion for HHMs of basic education age (six- to 15-year-olds);
- **Primary enrolment:** if individual is enrolled in primary school (Grades 1 through 6);
- **Primary enrolment rate:** proportion of individuals of official primary school age (six- to 11-year-olds) who are enrolled in primary school;

⁵⁸In the regressions, NCR is actually designated as the left-out category.

⁵⁹ By assumption, this residual is independent of geographic influences that are reflected by \mathbf{g} . If it is not, then the vector \mathbf{g} consists of endogenous regressors and the OLS estimates presented here would be biased.
- **Secondary enrolment:** if individual is enrolled in secondary school (first through fourth year of high school);
- **Secondary enrolment rate:** proportion of individuals of official secondary school age (12-to 15-year-olds) who are enrolled in secondary school;
- Education deficit 1: number of years an individual of any age who is currently enrolled in primary or secondary school is behind in her/his schooling; for example, if a student is seven years old, she/he should be in Grade 2 but is enrolled in Grade 1, then she/he has an educational deficit of 1 year;
- Education deficit 2: number of years an individual who is of basic education age (between six and 15years old) and is behind in her/his schooling regardless of enrolment status (this number includes deficit of individuals who dropped out or never attended school).

27. **Concentration Curves and Indexes**⁶⁰: One measure for inequality in education indicators is the concentration curve. This curve is similar to a Lorenz curve, but modified to accommodate categorical data. To derive this curve, we assigned individuals according to a ranking variable (here, adjusted per-capita expenditure) and plotted the cumulative distribution of an education indicator on a graph. If an indicator is concentrated towards the rich (for example, education attainment), this curve would appear below the 45-degree line. A more bowed-in curve indicates a greater bias for the rich. But if an indicator is concentrated towards the poor (for example, dropping out), this curve would appear above the 45-degree line, and a more bowed out curve indicates greater bias for the poor.

28. The concentration index (CI) is an inequality measure based on the concentration curve. It is a ratio of the area between the 45-degree line and the concentration curve and the area below the 45-degree line (area of full inequality). It results in a numerical measure of inequality that in absolute values goes from zero, or perfect equality, to one, or perfect inequality. For indicators that are biased towards the rich (i.e., bowed in a concentration curve) this index would be positive, while for indicators that are biased towards the poor (a bowed out curve) this index would be negative.

29. Each CI presented in this study has an associated standard error (Std.Err.) statistic, which we used to gauge the significance of the index. We used the standard error to calculate the *t*-statistic for the CI, which we derived as $t = \frac{\text{CI}}{\text{Std Err}}$. We then used it to test hypotheses.

30. Since they are estimates from survey data, concentration curves are subject to sampling error. Hence, visual inspection is not a reliable basis for determining stochastic dominance. The correct inference can only come from testing hypotheses. Two such tests that we used are the multiple comparison approach (MCA) and the intersection-union principle (IUP).

31. When comparing two curves A and B, regardless of whether both are concentration curves or one is either a Lorenz curve or the line of equality, MCA rejects the null hypothesis that there is no dominance in favor of the alternative hypothesis of dominance for A if going in one direction (e.g., cumulatively from the lowest to the highest ranked observations), we find

⁶⁰For a more detailed introduction to concentration curves and indices, see the World Bank's technical note at:http://siteresources.worldbank.org/EXTEDSTATS/Resources/3232763-1171296378756/concentration.pdf.

that *A* is significantly higher than *B* at least one point; and, going in the opposite direction, we never find that *B* is significantly higher than *A*. Further, we took into account the fact that we conducted multiple testing in the derivation of the critical value of the decision rule. A problem with the MCA is that it may have a large α (i.e., the probability of committing a Type I error (of rejecting non-dominance, even if it is true)), since its decision rule requires only one testing point to be statistically different.

32. The alternative, the IUP, rejects the null hypothesis in favor of the alternative hypothesis if we found that the ordinates of the two curves were statistically different at all points in the cumulative distribution being tested. Accordingly, a problem with the MCA is that reducing α correspondingly reduces the power of the test $(1 - \beta)$, so that it has a low ability to detect dominance when it is true.

33. Given the features of the tests, our best strategy was to use both in the analyses of equity in the text.

34. **Data Limitations:** The FIES and APIS data for schooling were not segregated by whether a child is attending private or public school. Thus, it was impossible to do a benefit incidence analysis. In addition, it was difficult to interpret household expenditure on education data, since households that send their children to private schools would be likely to spend much more than would those that send their children to public schools. Finally, while APIS has information about education outcomes, FIES has information about household expenditure on education. However, because the two surveys use different sampling methods, it is difficult to link the two data sets.

Determinants of Learning Achievement/Efficiency Analysis

35. **Data Sources:** We obtained National Achievement Test (NAT) scores administered to Year 2 students at the secondary level during school years 2005–2006, 2006–2007, and 2007–2008 from the National Education Testing and Research Center (NETRC). NETRC conducted achievement tests for Year 2 students starting in February 2006 to determine the eligibility of the students to advance to third year.⁶¹The examination measured competencies in English, science, mathematics, Filipino, and social studies.

36. We obtained school characteristics from the BEIS School Statistics Module. The BEIS was started in 2002 by the Research and Statistics Division of DepED. It was intended for monitoring and performance evaluation. Among the variables that we used in this study were enrolment, number of shifts, classroom utilization, school furniture, position of teaching personnel, and LGU-funded teachers.

37. We merged BEIS and NAT datasets for the three school years by using unique school IDs assigned by DepED for each school. We merged 4,151 schools for SY 2005–2006, 4,143 schools for SY 2006–2007, and 4814 schools for SY 2007–2008.

⁶¹DepEDOrder No. 27, s.2005. "Remedial Instruction Programs in High School."

38. **Definitions and Methods:** In their study, Behrman and Oliver (2000) noted that most researchers used an education production function to examine how student, household, school, and community inputs are combined to yield education outcomes. According to Orbeta (2008), there are three methods commonly used for estimating the function: contemporaneous, value-added, and cumulative.

39. The contemporaneous method is so called because it looks at the relation between achievement scores and inputs at year t. A criticism of this method is that it fails to account for the fact that learning is a cumulative process, that what the child knows at year t is an aggregation of inputs from the past to year t. Failure to account for the influence of the past limits the value of the analysis (Glewwe 2000).

40. The value-added method accounts for this problem by examining the relation between the difference in test scores at year (t) and year (t-n) and the inputs at year t.

41. The cumulative method, considered to be the most comprehensive (Orbeta 2008; Todd and Wolpin 2003), uses a history of inputs as regressors of achievement scores.

42. Hanushek (1997) conducted a literature review in which he cites the following as commonly used measures of resources available to schools:

- Real resources of the classroom (teacher education, teacher experience, and teacher-pupil ratios);
- Financial aggregates of resources (expenditure per student and teacher salary);
- Measures of other resources in schools (specific teacher characteristics, administrative inputs, and facilities).

43. When these resources are available we use them as regressors. The BEIS School Statistics Module collects information on enrollment, number of shifts, classroom utilization, school furniture, position of teaching personnel, and LGU-funded teachers. Financial measures were not available at the school level.

44. **School Inputs:** The inputs we used in our regression analysis were the resources available to the secondary school, second-year cohort that took the test. Since it was possible to track the inputs given to the second-year cohort during their first year, we also included inputs for the first year (year (t-1)) as regressors. For example, for the test given in SY 2005–2006 to the second-year cohort, we included inputs for SY 2004–2005 in the regression. To account for the inputs that were allocated to the relevant cohort during the test year, we also included the changes between second year inputs at year (t) and first year inputs at year (t-1).

45. **Enrolment:** To allow easier interpretation of school input ratios, we used enrollment data for first and second years in the regression.⁶² Ratios of first-year enrollment (year (t-1)) and second-year enrollment (year t) during the NAT year are indicators of competition for limited school resources.

⁶² If enrollment were not included as a regressor, it would be difficult to interpret student-teacher ratios and studentclassroom ratios, because the effects are confounded.

46. **Congestion:** As discussed in Chapter 4, when resources are limited, schools use multiple shifts to accommodate all enrollees. We used dummy variables for schools with two, three, and four shifts to examine whether the shift system has an effect on achievement scores.

47. **School Quality:** As proxy measures for school quality, we used data on school heads and positions of teaching personnel. We assumed that a school headed by a principal would be better managed because principals receive training on school management. We used dummies for schools that are headed by personnel other than principal in the regression. As our proxy for the quality of teaching personnel we used BEIS data on the template position of teachers (a teacher ranking system that depends on qualifications and years of experience). Those who occupy Teacher 3 and Master Teacher positions have higher educational attainment and more years of teaching experience.⁶³

48. **Sources of Teacher Funding:** As discussed in Chapter 3, because LGUs have been hiring teachers to compensate for shortages in nationally-funded teacher positions, LGU spending on basic education has grown consistently over the years. These funds could either be from the SEF or LGUs' main budgets. Unfortunately, detailed data on how much each LGU spends on teachers was not available. However, BEIS provides data on the number of teachers disaggregated by source of funding, i.e., the number of teachers funded from the LGU's main budget, SEF municipality, or SEF province/city. Some schools also tap the Parents-Teachers-Community Association (PTCA) as a source of teacher funding, so we also included these data in the regression.

49. Chapter 3 also mentions that data on the amount of national government expenditure that was actually spent per school were not available. In the absence of any NG or school-level expenditure data, we added division level dummies to the regressions.

50. **Other Characteristics:** There are schools in the dataset that are classified as annex schools. Such schools are managed by main schools. There are also some schools that are fully funded by local governments. We included these two variables in the regression as dummy variables. Doing so enabled us to examine if being an annex school that may or may not be fully funded by LGUs leads to different achievement scores compared to a main school or schools funded by the national government.

51. Another constraint is that data for students, household, and community characteristics, presumably major contributors to learning outcomes, were not available. Thus, we added dummy variables for municipalities to control for the effect of these missing variables. However, we note that they are imperfect proxies.

52. We used four models to examine the determinants of test scores among schools. The regressors are:

a) **Core (Model 1):** teacher to student ratio in year t-1, classroom to student ratio in year t-1, first year enrollment in t-1, teacher to student ratio increment, classroom to student ratio increment, enrollment increment, ratio of first years enrolled in year t-1, ratio of

⁶³ A teacher is promoted to Teacher 3 level after 24 years of teaching experience.

second years enrolled, dummies for size, dummies for shifts, proxies for school head and teacher quality, proxies for sources of teacher funding, indicator variable if school is an annex, indicator variable if school is mostly locally funded, and year dummies.

- b) **Division** (**Model 2**): core plus division dummies. Since data on national government spending was not available at the school level, we added division dummies as proxies for the support that each school receives from the national government.
- c) **Municipalities (Model 3):** core plus municipality dummies. Estimation of an education production function should include controls for household characteristics. Since there were no available data, we controlled for demographic characteristics by adding municipality dummies.
- d) **Division and Municipality (Model 4):** core plus division plus municipality dummies. Annex 2 provides detailed tables of the results using these different models.

53. **Model Fit:** Models 1 to 4 show significant differences in goodness of fit: the adjusted R^2 is 0.062 for Model 1 and 0.492 for Model 4. We found that Models 1 and 2 were heteroskedastic. ("Heteroskedasticity" is defined as a condition that arises when regressors (variables) monitored over a specific period of time, are not constant. The resulting variances can cause the standard errors of the coefficients to be underestimated and hence, lead to a false judgment of statistical significance.) Despite the inclusion of division and municipality dummies in models 2 to 4, all four models failed the test for omitted variables. This failure implies that substantial components of education production, primarily those related to student and household characteristics, were not captured in these models. Thus, the results should be viewed with caution.

54. We conducted a pooled analysis on efficiency. First, we added the residuals per school and took the means of regressors across years. For regressors that were in their binary form, such as school heads and shifts, we examined the percent of schools that experienced change from year (t) to year (t+1). The table below describes the two binary variables. For instance, the variable "principal to no-principal SY 2005 to SY2006" pertains to schools that moved from having a principal in 2005 to having no principal in 2006. Schools that moved from having no principal in 2005 to SY2006." We applied the same methods to movements in shifts.

Variable	Description			
principal to no-principal SY 2005 to SY2006	% of schools with principals in 2005 who had no principals in 2006			
principal to no-principal SY 2006 to SY2007	% of schools with principals in 2006 who had no principals in 2007			
no-principal to principal SY 2005 to SY2006	% of schools with no principals in 2005 who had principals in 2006			
no-principal to principal SY2006 to SY2007	% of schools with no principals in 2006 who had principals in 2007			
1 shift to 2 shifts SY2005 to SY2006	% of schools with 1 shift in 2005 who had 2 shifts in 2006			
1 shift to 2 shifts SY2006 to SY2007	% of schools with 1 shift in 2006 who had 2 shifts in 2007			
2 shifts to 1 shift SY2005to SY2006	% of schools with 2 shift in 2005 who had 1 shift in 2006			

2 shifts to 1 shift SY2006 to SY2007	% of schools with 2 shifts in 2006 who had 1 shift in 2007
	111 2007

55. We grouped the residuals into four quartiles. We classified those in the first quartile as schools (with above average efficiency), those in second and third quartiles as averagely efficient schools, and those in the fourth quartile as having below average efficiency.

	Residual/Efficiency
Quartile 1	Less than -0.1709535
Quartile 2	Greater than or equal to -0.1709535 & less than -4.09e- 14
Quartile 3	Greater than or equal to -4.09e-14 & less than 0.1644905
Quartile 4	Greater than or equal to 0.1644905

56. We conducted a sensitivity analysis to examine whether the results would hold when analysis was restricted to a data subset. We truncated the data at the lowest 5 percent and highest 95 percent of the residual. We regrouped the schools with the following cut-off points:

	Residual/Efficiency
Quartile 1	Less than -0.1472497
Quartile 2	Greater than or equal to -0.1472497 & less than -4.09e-14
Quartile 3	Greater than or equal to -4.09e-14 & less than 0.1364865
Quartile 4	Greater than or equal to 0.1364865

57. Annex 2 provides detailed tables for the results of the efficiency analysis.

58. **Data Limitations:** As noted, a major constraint we faced in doing this analysis was that data needed for the value-added and cumulative methods were not available. No achievement tests were conducted at least twice for the same cohort in recent years.⁶⁴ Although most analyses on education production function explore relationships at the level of an individual student, another limitation of the analysis is that data on achievement scores is available only at the school level.

Resource Projections for Government Spending on Basic Education

59. **Data Sources:** We obtained enrollment projections data by region from DepED. These enrollment projections are based on the Philippines achieving the target cohort survival ratio of 85 percent (EFA goal) by 2015. We used these projections as the basis for the financial resource projections for all the alternative scenarios. The only exception is Scenario 1, which we have based on our own enrollment projections. In our projections we assumed that the Philippines would achieve a 100 percent Net Enrollment Rate (NER) by 2015 (MDG goal). The difference in enrollment projections is minor, since improving the Cohort Survival Rate (CSR) also results in close to 100 percent NER.

⁶⁴In his paper, Orbeta (2008) was able to use the value-added approach because in SY 2002-2003, the National Diagnostic Test (NDT) was given at the beginning of the school year and the National Achievement Test (NAT) towards the end of the school year. The National Education Testing and Research Center (NETRC) stopped administering NDT starting SY 2003–04.

60. We obtained current numbers of teachers, classrooms, and furniture from BEIS and cost parameters for all inputs from DepED. We assumed that teacher salaries were or are revised upwards as planned by DepED from 2009–2012.

61. **Definitions and Methods:** Our estimations use alternative assumptions for seven alternative scenarios. Except for Scenario 3, all scenarios assume a PTR of 45:1 as projected by DepED. All scenarios use classroom and shortage computations based on DepED's estimations. We derive our estimates for teacher, classroom, and furniture requirements at the regional level in all scenarios except Scenario 7, which uses classroom projections at the school level.

62. All scenarios assume a 1:1 textbook ratio and a per student MOOE provided to every student. Finally, we assume 30 percent additional government spending for administrative and quality improvement expenditure over and above what was spent on these key inputs.

63. Scenario 1 assumes that the elementary and secondary NER will be 100 percent in 2015. Scenarios 2 to 7 assume that the elementary and secondary CSR will be 85 percent, which is in line with DepED's targets. Scenario 3 varies the PTR to be lower at 35:1 for the elementary level, thus raising the number of total teachers that need to be hired. Scenario 4 assumes that DepED spends increasing additional amounts on quality improvement measures, such as teacher training and school-based management grants reaching 60 percent in additional spending over and above what DepED will spend on key inputs. Scenario 5 assumes that all shifts are eliminated, thus substantially increasing the number of classrooms required. We also assume that by increasing use of the ESC scheme there will be a 20 percent reduction in the number of classrooms required. Scenario 6 incorporates all the quality improvement measures in the previous scenarios (3, 4, and 5) using Scenario 2 as the base case. Finally, Scenario 7 uses Scenario 2 as the base case but projects classroom requirements at the school level. Scenario 2 also assumes that all shifts are eliminated, thus substantially increasing the number of classrooms needed.

64. **Data Limitations:** Although we used the latest available data for these resource projections, DepED is currently working with the World Bank to update the 2005 Multi-Year Spending Plan (DepED, World Bank, and PIDS 2005). Thus, our projections should be treated as preliminary. The updated spending plan will use latest available data on enrollment projections and cost parameters to estimate in extensive detail future resources required for the sector.

Table 25: Elementary Flow Rates by Grade, SY 2003–2004 to SY 2007–2008*									
School Year	Flow Rates	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
		(%)	(%)	(%)	(%)	(%)	(%)		
	Promotion rates (p)	79.73	92.43	94.36	95.08	94.17	96.30		
2003-2004	Repetition rates (r)	5.12	2.74	1.93	1.34	1.08	0.47		
	Dropout rates (d)	15.15	4.84	3.71	3.59	4.74	3.23		
	Promotion rates (p)	79.30	92.22	94.03	94.57	93.62	95.77		
2004-2005	Repetition rates (r)	5.30	2.79	1.95	1.42	1.10	0.53		
	Dropout rates (d)	15.40	4.98	4.02	4.01	5.28	3.70		
	Promotion rates (p)	78.64	91.57	93.49	93.97	93.08	96.01		
2005-2006	Repetition rates (r)	6.06	3.30	2.43	1.83	1.55	0.82		
	Dropout rates (d)	15.31	5.13	4.07	4.20	5.37	3.17		
	Promotion rates (p)	80.72	92.37	94.33	94.79	93.72	96.41		
2006-2007	Repetition rates (r)	5.67	2.85	1.98	1.45	1.21	0.59		
	Dropout rates (d)	13.62	4.78	3.68	3.76	5.07	3.00		
	Promotion rates (p)	80.67	93.16	95.21	95.63	94.34	96.66		
2007-2008	Repetition rates (r)	5.67	2.76	1.81	1.33	1.12	0.55		
	Dropout rates (d)	13.66	4.08	2.98	3.04	4.54	2.79		

Annex 2: Reference Table for Chapter 1 and 4

Table 25. EL . CX 2002 2004 4. CX 2007 2000* .

* Computed using the Reconstructed Cohort Method

Table 26: Secondary Flow Rates by Year Level, SY 2003–2004 to SY 2007–2008*

		First Year	Second Year	Third Year	Fourth Year
School Year	Flow Rates	(%)	(%)	(%)	(%)
	Promotion rates (p)	87.58	89.27	88.98	93.40
2003-2004	Repetition rates (r)	3.22	2.67	2.28	1.14
	Dropout rates (d)	9.20	8.06	8.74	5.46
	Promotion rates (p)	88.08	88.76	89.01	93.14
2004-2005	Repetition rates (r)	2.22	2.40	1.95	1.05
	Dropout rates (d)	9.70	8.83	9.04	5.82
	Promotion rates (p)	91.45	84.15	83.94	91.13
2005-2006	Repetition rates (r)	5.64	4.64	3.72	1.47
	Dropout rates (d)	2.91	11.21	12.34	7.40
	Promotion rates (p)	86.06	89.75	88.24	92.57
2006-2007	Repetition rates (r)	4.37	4.39	3.11	1.42
	Dropout rates (d)	9.56	5.86	8.65	6.01
	Promotion rates (p)	86.95	87.74	88.51	92.23
2007-2008	Repetition rates (r)	4.39	3.73	3.13	1.32
	Dropout rates (d)	8.66	8.53	8.37	6.45

* Computed using the Reconstructed Cohort Method

School Year	Element: (Public an (%	ary GER d Private) %)	Elementary NER (Public and Private) (%)		
	Male	Female	Male	Female	
2002-2003	109.68	108.15	89.90	91.51	
2003-2004	107.81	106.16	88.39	90.25	
2004-2005	105.96	104.62	86.42	88.34	
2005-2006	103.26	101.63	83.88	85.81	
2006-2007	102.21	100.48	83.02	84.75	
2007-2008	102.15	100.30	82.76	84.47	
2008-2009	102.39	99.87	83.19	84.32	

Table 27: Elementary Gross Enrollment Rate and Net Enrollment Rate, by Gender, SY 2003–2004 to SY 2008–2009

Table 28: Secondary Gross Enrollment Rate and Net Enrollment Rate, by Gender, SY 2003–2004 to SY 2008–2009

School Year	Seconda (Public an (%	ry GER d Private) %)	Secondary NER (Public and Private) (%)		
	Male	Female	Male	Female	
2002-2003	81.66	88.50	54.88	64.20	
2003-2004	82.97	90.21	56.04	65.76	
2004-2005	81.83	89.44	54.94	64.87	
2005-2006	79.06	86.24	53.74	63.46	
2006-2007	78.52	84.77	53.68	63.20	
2007-2008	79.57	85.09	54.02	63.03	
2008-2009	80.97	85.62	55.11	63.76	

Table 29: Elementary Repetition Rate, by Gender, SY 2003–2004 to SY 2007–2008

Male (%)								
School Year	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
2003-2004	6.01	3.54	2.62	1.87	1.55	0.67		
2004-2005	6.22	3.61	2.62	1.95	1.55	0.76		
2005-2006	7.09	4.27	3.25	2.52	2.22	1.21		
2006-2007	6.64	3.73	2.66	1.98	1.70	0.84		
2007-2008	6.72	3.58	2.46	1.84	1.59	0.78		
		Fei	male (%)					
School Year	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
2003-2004	4.09	1.85	1.19	0.79	0.62	0.27		
2004-2005	4.25	1.89	1.22	0.87	0.65	0.32		
2005-2006	4.87	2.23	1.55	1.11	0.88	0.44		
2006-2007	4.57	1.90	1.26	0.90	0.72	0.34		
2007-2008	4.47	1.85	1.13	0.81	0.65	0.33		

Male (%)								
School Year	First Year	Second Year	Third Year	Fourth Year				
2003-2004	4.98	4.15	3.49	1.78				
2004-2005	3.37	3.72	3.04	1.60				
2005-2006	6.89	7.11	5.78	2.37				
2006-2007	6.46	6.67	4.74	2.19				
2007-2008	6.57	5.68	4.73	2.04				
		Female (%)						
School Year	First Year	Second Year	Third Year	Fourth Year				
2003-2004	1.41	1.29	1.19	0.59				
2004-2005	1.06	1.15	0.99	0.57				
2005-2006	2.50	2.29	1.86	0.72				
2006-2007	2.13	2.17	1.60	0.75				
2007-2008	2.12	1.88	1.71	0.71				

Table 30: Secondary Repetition Rate, by Gender, SY 2003–2004 to SY 2007–2008

Table 31: National Achievement Test Mean Percentage Scores (MPS) and Test Takers, by Region,2005–2007

REGION		2	2005	20	06	200)7
		No. of Test- takers	Total Score (MPS)	No. of Test- takers	Total Score (MPS)	No. of Test- takers	Total Score (MPS)
Autonomous Region in Muslim Mindanao (ARMM)	mean					156	47
	sd					98	16
	obs					13	1
Region V – Bicol	mean	146	43	186	42	169	41
	sd	206	10	209	8	193	8
	obs	, ,	392	40)6	44	8
Region II – Cagayan Valley	mean	150	49	175	44	152	45
	sd	150	11	169	10	153	9
	obs	,	217	24	43	27	2
Region IVA - Calabarzon	mean	265	49	299	49	279	50
	sd	317	13	338	13	308	13
	obs		393	41	13	469	
Cordillera Autonomous Region (CAR)	mean	89	45	109	46	102	50
	sd	140	8	150	8	151	10
	obs		163	16	57	16	2
Caraga	mean	150	64	185	64	170	66
	sd	201	12	211	12	182	12
	obs		147	14	46	15	0

Region III – Central Luzon	mean	271	50	305	50	287	55
	sd	288	13	308	11	297	12
	obs		365	3'	377		9
Region VII – Central Visayas	mean	146	52	206	48	182	53
-	sd	140	13	169	9	152	13
	obs		334	32	27	33	7
Region XI – Davao	mean	195	44	258	45	243	47
	sd	261	11	320	11	284	10
	obs		183	19	93	19	2
Region VIII – Eastern Visayas	mean	139	67	174	66	167	67
	sd	144	13	168	13	150	14
	obs		294	29	98	31	5
Region I – Ilocos	mean	148	57	183	55	163	61
	sd	191	15	227	14	203	15
	obs		388	39	9/ 	42	7
Dogion IVD							
MIMAROPA	mean	127	53	186	50	139	52
	sd	159	147	206	12	143	12
National Canital	obs		14/	1:	52	24	
Region (NCR)	mean	668	42	819	44	712	45
	sd	464	1.0	490	8	459	8
Dogion V	obs		162	10	57	1/	5
Northern Mindanao	mean	172	47	223	46	205	51
	sd	190	12	231	13	234	14
	obs		187	19	91	20	2
Region XII - Soccsksargen	mean	174	43			212	50
	sd	190	11			223	14
	obs		167			19	8
Region VI – Western Visayas	mean	180	46	210	45	188	47
	sd	200	12	211	10	194	12
	obs		432	4'	77	51	3
Region IX – Zamboanga Peninsula	mean	156	52	194	50	189	59
	sd	201	13	223	12	223	13
	obs		180	18	89	18	7
NATIONAL	mean	194	50	238	49	213	52
	sd	251	14	283	13	252	14
	obs	4	4,151	4,1	43	4,8	14

VARIABLES	Model 1 Core	Model 2 with Division	Model 3 with Municipality	Model 4 with Municipality and	
	Core	Dummies	Dummies	Division Dummies	
y1 tchr-student ratio (ln)	-0.0295***	0.0122**	0.0153***	0.0160***	
	(0.00605)	(0.00575)	(0.00562)	(0.00562)	
y1 classroom- student ratio					
(ln)	0.0261***	0.00808	0.00884	0.00793	
	(0.00685)	(0.00613)	(0.00614)	(0.00614)	
TSR increment	0.347	0.406	0.456*	0.460*	
	(0.298)	(0.278)	(0.247)	(0.247)	
CSR increment	0.217	0.0614	0.168	0.148	
	(0.332)	(0.301)	(0.264)	(0.264)	
Enrollment in Y1	-6.53e-	5.00.05%			
	05***	-5.00e-05***	-3.95e-05***	-4.06e-05***	
	(8.51e-06)	(8.14e-06)	(9.90e-06)	(1.01e-05)	
Enrollment change	-3.40e-05	-4.05e-05	-2.91e-05	-3.25e-05	
	(2.79e-05)	(2.51e-05)	(2.87e-05)	(2.87e-05)	
Ratio of 1st years to total	-0 462***	-0 283***	-0 112**	-0 115**	
	(0.0632)	(0.0568)	(0.0561)	(0.0561)	
Ratio of 2nd years to total	(0.0032)	(0.0500)	(0.0501)	(0.0501)	
enrollment	-0.491***	-0.481***	-0.420***	-0.413***	
	(0.0782)	(0.0656)	(0.0608)	(0.0608)	
size2	-0.0130*	-0.00540	-0.00638	-0.00636	
	(0.00681)	(0.00584)	(0.00582)	(0.00582)	
size3	-0.0368***	-0.0345***	-0.0223***	-0.0223***	
	(0.00731)	(0.00653)	(0.00667)	(0.00668)	
size4	-0.0801***	-0.0659***	-0.0572***	-0.0575***	
	(0.00966)	(0.00865)	(0.00906)	(0.00911)	
have2shift	-0.0310***	-0.0235**	-0.0247**	-0.0250**	
	(0.00933)	(0.0109)	(0.0116)	(0.0116)	
have3shift	-0.00100	0.00359	-0.00111	-0.000246	
	(0.0173)	(0.0175)	(0.0253)	(0.0253)	
have4shift	0.00541	0.0141	0.00761	0.00689	
	(0.0291)	(0.0287)	(0.0344)	(0.0345)	
Officer-in-Charge head	0.0378	-0.0346*	-0.0166	-0.0164	
	(0.0234)	(0.0195)	(0.0187)	(0.0187)	
Head teacher head	0.0354***	-0.00599	-0.00650	-0.00672	
	(0.00884)	(0.00712)	(0.00735)	(0.00734)	
Teacher-in-Charge head	-0.0334***	-0.0129**	-0.00657	-0.00742	
	(0.00724)	(0.00631)	(0.00635)	(0.00635)	
Master teacher head	0.0228	-0.0424	-0.00130	-0.00124	
	(0.0405)	(0.0384)	(0.0311)	(0.0310)	
Special Education head	-0.393***	-0.198***	-0.200	-0.201	
	(0.00746)	(0.0253)	(0.190)	(0.190)	
Vocational teacher head	-0.0231	-0.0337**	-0.0500**	-0.0503**	
	(0.0259)	(0.0160)	(0.0240)	(0.0240)	

Table 32:	Achievement	Score Ana	lysis Results
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Proportion of teacher 3 and				
above	0.0712***	0.0252*	0.0262*	0.0268*
	(0.0148)	(0.0143)	(0.0153)	(0.0153)
PTCA-funded teachers (%)	-0.171***	-0.0863**	-0.102***	-0.101***
	(0.0415)	(0.0392)	(0.0378)	(0.0378)
LGU-funded teachers (%)	-0.0834***	-0.0190	0.000303	0.00390
	(0.0274)	(0.0229)	(0.0237)	(0.0237)
SEF municipality-funded	0.0(22**	0.0572**	0.0220	0.0100
teachers (%)	-0.0623**	-0.0573**	-0.0220	-0.0199
	(0.0296)	(0.0286)	(0.0270)	(0.0270)
SEF province/city-funded				
teachers (%)	-0.112***	0.0238	0.00761	0.00403
	(0.0246)	(0.0234)	(0.0232)	(0.0232)
Dummy for annex school	-0.0520***	-0.00842	-0.0160	-0.0158
	(0.0107)	(0.0106)	(0.0107)	(0.0107)
Dummy for locally funded				
school	0.0961*	0.0806	0.0634*	0.0663*
	(0.0536)	(0.0492)	(0.0384)	(0.0384)
Year=2006	0.0120*	0.00556	0.00468	0.00454
	(0.00709)	(0.00587)	(0.00519)	(0.00518)
Year=2007	0.0436***	0.0490***	0.0491***	0.0492***
	(0.00649)	(0.00537)	(0.00470)	(0.00470)
Constant	4.186***	4.136***	4.423***	3.825***
	(0.0376)	(0.0407)	(0.112)	(0.270)
Observations	13108	13108	13108	13108
Adjusted R-squared	0.062	0.378	0.491	0.492

*** p<0.01, ** p<0.05, * p<0.1; Standard errors in parentheses. Models 1 and 2 report robust standard errors to correct for heteroscedasticity.

Table 33: Results of Efficiency Grouping (Full Sample)	
Characteristics of Schools with Above-Average Efficiency Compared to Average Efficiency	ency

VARIABLES	Mean		one-taile	two-tailed t- test	
	above	average	above <average< th=""><th>above>average</th><th>above=average</th></average<>	above>average	above=average
teacher-student ratio	0.0229	0.0232	0.1744	0.8256	0.3488
classroom-student ratio	0.0174	0.0171	0.8316	0.1684	0.3368
teacher-student ratio increment	0.0015	0.0011	0.9456	0.0544**	0.1087
classroom-student ratio increment	0.0015	0.0011	0.9727	0.0273**	0.0545*
first year enrollment	268.8985	286.9412	0.051*	0.949	0.1021*
enrollment change	-40.7698	-44.9744	0.9875	0.0125**	0.0249**
ratio of first year to total enrollment	0.3112	0.3117	0.3573	0.6427	0.7145
ratio of second year to total enrollment	0.2591	0.2602	0.0614*	0.9386	0.1228
proportion of teacher 3 and above	0.1556	0.1467	0.9385	0.0615**	0.123
total enrollment	884.1301	938.7567	0.0736*	0.9264	0.1472
proportion of teachers	0.0145	0.0164	0.1892	0.8108	0.3783

funded by PTCA					
proportion of teachers funded by LGUs	0.0257	0.0320	0.0307**	0.9693	0.0614*
proportion of teachers funded by muni. SEF	0.0287	0.0263	0.7783	0.2217	0.4435
proportion of teachers funded by prov. SEF	0.0474	0.0440	0.8173	0.1827	0.3653
principal to no- principal SY2005 to SY2006	0.0633	0.0638	0.4787	0.5213	0.9574
principal to no- principal SY2006 to SY2007	0.0657	0.0597	0.7592	0.2408	0.4816
no-principal to principal SY2005 to SY2006	0.0761	0.0497	0.9988	0.0012***	0.0024***
no-principal to principal SY2006 to SY2007	0.0593	0.0493	0.8946	0.1054	0.2108
1 shift to 2 shifts SY2005 to SY2006	0.0088	0.0068	0.7391	0.2609	0.5218
1 shift to 2 shifts SY2006 to SY2007	0.0176	0.0096	0.9714	0.0286**	0.0573*
2 shifts to 1 shift SY2005 to SY2006	0.0120	0.0108	0.6259	0.3741	0.7482
2 shifts to 1 shift SY2006 to SY2007	0.0096	0.0104	0.4067	0.5933	0.8135

*** statistically significant at 0.01 level of significance, ** statistically significant at 0.05 level of significance, *statistically significant at 0.1 level of significance

Efficiency							
	Mean one-tailed t-test			two-tailed t-test			
VARIABLES	below	average	below <average< th=""><th>below>average</th><th>below=average</th></average<>	below>average	below=average		
teacher- student ratio	0.0236	0.0232	0.8025	0.1975	0.3949		
classroom-student ratio	0.0180	0.0171	0.9996	0.0004***	0.0009***		
teacher-student ratio increment	0.0015	0.0011	0.9412	0.0588*	0.1175		
classroom-student ratio increment	0.0014	0.0011	0.9427	0.0573*	0.1146		
first year enrollment	276.7521	286.9412	0.2063	0.7937	0.4126		
enrollment change	-42.8432	-44.9744	0.8326	0.1674	0.3348		
ratio of first year to total enrollment	0.3085	0.3117	0.0093***	0.9907	0.0186**		
ratio of second year to total enrollment	0.2586	0.2602	0.0141**	0.9859	0.0282**		
proportion of teacher 3 and above	0.1557	0.1467	0.9415	0.0585*	0.117		
total enrollment	908.5450	938.7567	0.236	0.764	0.4719		
proportion of teachers funded by PTCA	0.0154	0.0164	0.3357	0.6643	0.6713		
proportion of teachers	0.0250	0.0320	0.0127**	0.9873	0.0254		

Table 34:	Characteristics of Schools with Below-A	Average Efficiency Compared to Avera	ge
	Efficiency	у	

funded by LGUs					
proportion of teachers funded by muni. SEF	0.0296	0.0263	0.8403	0.1597	0.3194
proportion of teachers funded by prov. SEF	0.0489	0.0440	0.9022	0.0978	0.1956
principal to no-principal SY 2005 to SY2006	0.0673	0.0638	0.66	0.34	0.6801
principal to no-principal SY 2006 to SY2007	0.0681	0.0597	0.8355	0.1645	0.329
no-principal to principal SY2005 to SY2006	0.0569	0.0497	0.8188	0.1812	0.3624
no-principal to principal SY2006 to SY2007	0.0489	0.0493	0.4766	0.5234	0.9531
1 shift to 2 shifts SY2005 to SY2006	0.0136	0.0068	0.968	0.032**	0.0641*
1 shift to 2 shifts SY2006 to SY2007	0.0128	0.0096	0.8038	0.1962	0.3924
2 shifts to 1 shift SY2005to SY2006	0.0088	0.0108	0.2748	0.7252	0.5496
2 shifts to 1 shift SY2006 to SY2007	0.0104	0.0104	0.4991	0.5009	0.9981

*** statistically significant at 0.01 level of significance, ** statistically significant at 0.05 level of significance, *statistically significant at 0.1 level of significance

			ciency		
	M	ean	one-tai	two-tailed t-test	
VARIABLES	above	below	above <below< th=""><th>above>below</th><th>above=below</th></below<>	above>below	above=below
teacher-student ratio	0.0229	0.0236	0.0545**	0.9455	0.109
classroom-student ratio	0.0174	0.0180	0.0095***	0.0189***	0.9905
teacher-student ratio increment	0.0015	0.0015	0.4673	0.5327	0.9346
classroom-student ratio increment	0.0015	0.0014	0.573	0.427	0.854
first year enrollment	268.8985	276.7521	0.2824	0.7176	0.5647
enrollment change	-40.7698	-42.8432	0.8097	0.1903	0.3807
ratio of first year to total enrollment	0.3112	0.3085	0.961	0.039**	0.0781*
ratio of second year to total enrollment	0.2591	0.2586	0.7373	0.2627	0.5254
proportion of teacher 3 and above	0.1556	0.1557	0.4918	0.5082	0.9836
total enrollment	884.1301	908.5450	0.2985	0.7015	0.5969
proportion of teachers funded by PTCA	0.0145	0.0154	0.3459	0.6541	0.6918
proportion of teachers funded by LGUs	0.0257	0.0250	0.5883	0.4117	0.8233
proportion of teachers funded by muni. SEF	0.0287	0.0296	0.4061	0.5939	0.8122
proportion of teachers funded by prov. SEF	0.0474	0.0489	0.3652	0.6348	0.7304
principal to no-principal	0.0633	0.0673	0.3428	0.6572	0.6856

Table 35: Characteristics of Schools with Above-Average Efficiency Compared to Below-Average Efficiency

SY2005 to SY2006					
principal to no-principal SY 2006 to SY2007	0.0657	0.0681	0.4051	0.5949	0.8102
no-principal to principal SY 2005 to SY2006	0.0761	0.0569	0.9731	0.0269**	0.0539*
no-principal to principal SY2006 to SY2007	0.0593	0.0489	0.8749	0.1251	0.2502
1 shift to 2 shifts SY2005 to SY2006	0.0088	0.0136	0.1272	0.8728	0.2543
1 shift to 2 shifts SY2006 to SY2007	0.0176	0.0128	0.8366	0.1634	0.3269
2 shifts to 1 shift SY2005to SY2006	0.0120	0.0088	0.7847	0.2153	0.4306
2 shifts to 1 shift SY2006 to SY2007	0.0096	0.0104	0.4204	0.5796	0.8408

*** statistically significant at 0.01 level of significance, ** statistically significant at 0.05 level of significance, *statistically significant at 0.1 level of significance

	compared to	Average En	liciency (Truncated	i Sampie)	
	M	ean	one-taile	two-tailed t-test	
VARIABLES	above	average	above <average< th=""><th>above>average</th><th>above=average</th></average<>	above>average	above=average
teacher- student ratio	0.0229	0.0233	0.1715	0.8285	0.343
classroom-student ratio	0.0173	0.0171	0.7049	0.2951	0.5902
teacher-student ratio increment	0.0011	0.0013	0.2084	0.7916	0.4167
classroom-student ratio increment	0.0012	0.0012	0.4699	0.5301	0.9398
first year enrollment	266.7989	287.3278	0.0337**	0.9663	0.0674*
enrollment change	-41.2648	-44.8645	0.964	0.036**	0.072*
ratio of first year to total enrollment	0.3114	0.3116	0.4444	0.5556	0.8887
ratio of second year to total enrollment	0.2596	0.2600	0.3078	0.6922	0.6156
proportion of teacher 3 and above	0.1540	0.1474	0.8596	0.1404	0.2808
total enrollment	874.6549	940.5885	0.0423**	0.9577	0.0847*
proportion of teachers funded by PTCA	0.0148	0.0163	0.282	0.718	0.564
proportion of teachers funded by LGUs	0.0272	0.0308	0.1598	0.8402	0.3197
proportion of teachers funded by muni. SEF	0.0277	0.0266	0.6327	0.3673	0.7346
proportion of teachers funded by prov. SEF	0.0548	0.0421	0.9983	0.0017***	0.0034***
principal to no-principal SY 2005 to SY2006	0.0686	0.0619	0.7685	0.2315	0.463
principal to no-principal SY 2006 to SY2007	0.0614	0.0583	0.6397	0.3603	0.7205
no-principal to principal SY 2005 to SY2006	0.0677	0.0490	0.9834	0.0166**	0.0332**
no-principal to principal SY2006 to SY2007	0.0561	0.0499	0.7746	0.2254	0.4508

 Table 36: Characteristics of Schools with Above-Average Efficiency

 Compared to Average Efficiency (Truncated Sample)

1 shift to 2 shifts SY2005 to SY2006	0.0089	0.0062	0.7937	0.2063	0.4126
1 shift to 2 shifts SY2006 to SY2007	0.0169	0.0089	0.9678	0.0644*	0.0322**
2 shifts to 1 shift SY2005to SY2006	0.0125	0.0102	0.7142	0.2858	0.5717
2 shifts to 1 shift SY2006 to SY2007	0.0107	0.0098	0.5949	0.4051	0.8102

*** statistically significant at 0.01 level of significance, ** statistically significant at 0.05 level of significance, *statistically significant at 0.1 level of significance

	Compared to Average Efficiency (Truncated sample)												
	M	ean	one-tail	ed t-test	two-tailed t-test								
VARIABLES	below	average	below <average< th=""><th>below>average</th><th>below=average</th></average<>	below>average	below=average								
teacher-student ratio	0.0229	0.0233	0.1935	0.8065	0.3871								
classroom-student ratio	0.0177	0.0171	0.9723	0.0277**	0.0553*								
teacher-student ratio increment	0.0013	0.0013	0.4853	0.5147	0.9706								
classroom-student ratio increment	0.0014	0.0012	0.8525	0.1475	0.295								
first year enrollment	293.7038	287.3278	0.6778	0.3222	0.6443								
enrollment change	-46.1315	-44.8645	0.3012	0.6988	0.6024								
ratio of first year to total enrollment	0.3109	0.3116	0.3224	0.6776	0.6448								
ratio of second year to total enrollment	0.2589	0.2600	0.0905*	0.9095	0.181								
proportion of teacher 3 and above	0.1509	0.1474	0.7187	0.2813	0.5626								
total enrollment	961.7766	940.5885	0.6746	0.3254	0.6507								
proportion of teachers funded by PTCA	0.0170	0.0163	0.6196	0.3804	0.7608								
proportion of teachers funded by LGUs	0.0294	0.0308	0.3529	0.6471	0.7057								
proportion of teachers funded by muni. SEF	0.0307	0.0266	0.8693	0.1307	0.2614								
proportion of teachers funded by prov. SEF	0.0502	0.0421	0.9774	0.0226**	0.0452**								
principal to no-principal SY 2005 to SY2006	0.0614	0.0619	0.4798	0.5202	0.9596								
principal to no-principal SY 2006 to SY2007	0.0703	0.0583	0.9068	0.0932*	0.1865								
no-principal to principal SY 2005 to SY2006	0.0606	0.0490	0.9145	0.0855*	0.171								
no-principal to principal SY2006 to SY2007	0.0419	0.0499	0.144	0.856	0.2879								
1 shift to 2 shifts SY2005 to SY2006	0.0134	0.0062	0.9692	0.0308**	0.0616*								
1 shift to 2 shifts SY2006 to SY2007	0.0098	0.0089	0.5991	0.8018	0.4009								
2 shifts to 1 shift SY2005 to SY2006	0.0089	0.0102	0.3521	0.6479	0.7043								
2 shifts to 1 shift SV2006 to	0.0116	0 0098	0.6799	0 3201	0.6403								

Table 37: Characteristics of Schools with Below-Average Efficiency

SY2007					
*** statistically significant at 0	01 lovel of sign	ificanaa ** stati	stigally significant at 0.0	5 lovel of significance	*statistically significant

*** statistically significant at 0.01 level of significance, ** statistically significant at 0.05 level of significance, *statistically significant at 0.1 level of significance

Unipareu to Delow-Average Enficiency												
VARIABLES	M	ean	one-taile	d t-test	two-tailed t-test							
	above	below	above <below< th=""><th>above>below</th><th>above=below</th></below<>	above>below	above=below							
teacher-student ratio	0.0229	0.0229	0.5014	0.4986	0.9972							
classroom-student ratio	0.0173	0.0177	0.0896*	0.9104	0.1792							
teacher-student ratio increment	0.0011	0.0013	0.2537	0.7463	0.5074							
classroom-student ratio increment	0.0012	0.0014	0.1594	0.8406	0.3188							
first year enrollment	266.7989	293.7038	0.0337**	0.9663	0.0674*							
enrollment change	-41.2648	-46.1315	0.9686	0.0314**	0.0628*							
ratio of first year to total enrollment	0.3114	0.3109	0.6138	0.3862	0.7724							
ratio of second year to total enrollment	0.2596	0.2589	0.7783	0.2217	0.4435							
proportion of teacher 3 and above	0.1540	0.1509	0.6668	0.3332	0.6665							
total enrollment	874.6549	961.7766	0.0403**	0.9597	0.0806*							
proportion of teachers funded by PTCA	0.0148	0.0170	0.2188	0.7812	0.4377							
proportion of teachers funded by LGUs	0.0272	0.0294	0.3054	0.6946	0.6108							
proportion of teachers funded by muni. SEF	0.0277	0.0307	0.2368	0.7632	0.4737							
proportion of teachers funded by prov. SEF	0.0548	0.0502	0.8186	0.1814	0.3629							
principal to no-principal SY 2005 to SY2006	0.0686	0.0614	0.7531	0.2469	0.4937							
principal to no-principal SY 2006 to SY2007	0.0614	0.0703	0.1976	0.8024	0.3953							
no-principal to principal SY 2005 to SY2006	0.0677	0.0606	0.7545	0.2455	0.491							
no-principal to principal SY2006 to SY2007	0.0561	0.0419	0.9411	0.0589*	0.1178							
1 shift to 2 shifts SY2005 to SY2006	0.0089	0.0134	0.1574	0.8426	0.3148							
1 shift to 2 shifts SY2006 to SY2007	0.0169	0.0098	0.9292	0.1416	0.0708*							
2 shifts to 1 shift SY2005 to SY2006	0.0125	0.0089	0.794	0.206	0.4119							
2 shifts to 1 shift SY2006 to SY2007	0.0107	0.0116	0.4203	0.5797	0.8407							

Table 38: Characteristics of Schools with Above-Average Efficiency Compared to Below-Average Efficiency

*** statistically significant at 0.01 level of significance, ** statistically significant at 0.05 level of significance, *statistically significant at 0.1 level of significance

Annex 3: Reference Tables for Chapter 3

Table 59: Governin	Table 39: Government Spending on Education, 2002–2008										
In current prices	2002	2003	2004	2005	2006	2007	2008				
National (with SBP)	125,311	129,311	128,673	134,129	146,516	166,482	184,148				
National	123,311	127,311	126,967	133,278	144,145	165,354	182,502				
1.0 Basic Education (DepEd + SBP)	106,051	108,363	107,352	112,744	123,066	141,017	157,168				
1.2 DepEd											
	104,051	106,363	105,646	111,893	120,694	139,889	155,522				
	2,000	2,000	1,706	851	2,372	1,128	1,646				
a School Building Program (obligations)											
	15,686	17,074	17,538	17,508	18,617	19,159	20,809				
c SUC											
	755	662	1,053	830	1,826	1,733	1,587				
d. CHED											
	2,161	2,609	2,085	2,403	2,359	3,724	3,246				
e. TESDA											
	658	603	645	644	648	849	1,338				
f. DOST											
Local Government Units' Spending	9,196	10,708	10,623	11,744	13,225	14,508	15,915				
Basic Education Spending (with SBP)	115,247	119,071	117,975	124,488	136,291	155,525	173,083				
Total Education Spending (w/ SBP)	134,507	140,018	139,296	145,873	159,741	180,990	200,063				
Total Education Spending	132,507	138,018	137,590	145,022	157,370	179,862	198,417				

Table 39: Government Spending on Education, 2002–2008

Table 40: Government Spending on Education, 2002–2008 in Constant Prices In 2002 prices 2008 2002 2003 2004 2005 2006 2007 125,311 126,040 132,086 135,440 National (with SBP) 118,326 115,878 120,271 National 123,311 124,091 116,758 115,143 118,324 131,192 134,229 1.0 Basic Education (DepEd + SBP) 106,051 105,622 98,720 97,403 101,021 111,882 115,597 1.0 DepEd 104,051 103,673 97,151 96,668 99,074 110,987 114,386 SUC 15,686 15,282 15,305 2 16,642 16,128 15,126 15,201 CHED 755 968 717 1,499 1,375 1,167 3 645 4 TESDA 2,161 2,543 1,918 2,076 1,936 2,955 2,387 5 DOST 658 587 593 556 532 673 984 9,196 10,437 9,769 10,146 10,856 11,510 11,705 Local Basic Education Spending (with SBP) 107,549 127,302 115,247 116,059 108,489 111,877 123,393 Basic Education Spending (SAOB) 113,247 114,110 106,920 106,814 109,931 122,498 126,092 Total Education Spending (w/ SBP) 134,507 136,477 128,095 126,024 131,127 143,597 147,145 Total Education Spending 132,507 134,528 126,526 125,289 129,180 142,702 145,935

	Table 41: Government Spending on Education, % GDP, 2002–2008											
As	% of (GDP	2002	2003	2004	2005	2006	2007	2008			
<i>A</i> .	Nati	ional (with SBP)	3.161%	2.996%	2.641%	2.467%	2.429%	2.504%	2.456%			
A.	Nati	onal	3.111%	2.949%	2.606%	2.451%	2.651%	3.041%	3.356%			
	1.0	Basic Education (DepEd with SBP)	2.675%	2.510%	2.204%	2.073%	2.040%	2.121%	2.096%			
	1.0	DepEd OSEC	2.625%	2.464%	2.169%	2.058%	2.219%	2.572%	2.860%			
	2	SUC	0.396%	0.396%	0.360%	0.322%	0.309%	0.288%	0.278%			
	3	CHED	0.019%	0.015%	0.022%	0.015%	0.030%	0.026%	0.021%			
	4	TESDA	0.055%	0.060%	0.043%	0.044%	0.039%	0.056%	0.043%			
	5	DOST	0.017%	0.014%	0.013%	0.012%	0.011%	0.013%	0.018%			
В.	Loca	al	0.232%	0.248%	0.218%	0.216%	0.219%	0.218%	0.212%			
C.	Tota	al Education Spending (with SBP)	3.393%	3.244%	2.859%	2.683%	2.648%	2.722%	2.668%			
C.	Tota	l Education Spending (SAOB data used)	3.343%	3.198%	2.824%	2.667%	2.609%	2.705%	2.646%			

Table 41. C 0/ CDD 2002 2008 4 C.

Table 42: Government Spending on Education, % of NG Spending Net of Debt Service,

	2002–2008								
		2002	2003	2004	2005	2006	2007	2008	
<i>A</i> .	National (with SBP)	22.53%	21.60%	21.23%	20.71%	19.94%	18.89%	18.44%	
A.	National	22.17%	21.26%	20.95%	20.58%	19.62%	18.76%	18.27%	
	1.0 Basic Education (DepEd with SBP)	19.07	18.10	17.71	17.41	16.75	16.00	17.84	
	1.0 DepEd OSEC	18.71%	17.77%	17.43%	17.27%	16.43%	15.87%	15.57%	
	2 SUC	2.82%	2.85%	2.89%	2.70%	2.53%	2.17%	2.08%	
	3 CHED	0.14%	0.11%	0.17%	0.13%	0.25%	0.20%	0.16%	
	4 TESDA	0.39%	0.44%	0.34%	0.37%	0.32%	0.42%	0.32%	
	5 DOST	0.12%	0.10%	0.11%	0.10%	0.09%	0.10%	0.13%	
В.	Local	1.65%	1.79%	1.75%	1.81%	1.80%	1.65%	1.59%	
C.	Total Education Spending (with SBP)	24.18%	23.39%	22.98%	22.52%	21.74%	20.54%	20.03%	
C.	Total Education Spending (SAOB data used)	23.83%	23.05%	22.70%	22.39%	21.42%	20.41%	19.87%	

Obliga	ation Bas	is; Net of	Debt Ser	vicing			
PARTICULARS	2002	2003	2004	2005	2006	2007	2008
ECONOMIC SERVICES	27.33	28.64	28.02	26.91	30.20	33.39	31.64
Agriculture, Agrarian Reform, and	6.29	6.69	5.78	7.28	6.49	7.87	5.63
Natural Resources							
Trade and Industry	0.73	0.46	0.58	0.52	0.55	0.68	0.51
Tourism	0.21	0.20	0.24	0.21	0.23	0.25	0.21
Power and Energy	0.27	0.19	0.30	0.27	0.36	0.66	0.52
Water Resource Development and Flood Control	1.12	1.18	1.26	1.02	1.51	1.61	1.45
Communications, Roads, and Other Transportation	9.73	11.32	11.12	8.87	12.78	14.38	12.77
Other Economic Services	0.47	0.28	0.52	0.52	0.35	0.60	2.74
Subsidy to Local Government Units	8.50	8.32	8.22	8.21	7.93	7.33	7.81
SOCIAL SERVICES	41.64	40.05	41.67	39.55	38.46	36.47	39.95
Education, Culture, and Manpower	22.65	21.75	21.45	20.31	19.63	19.07	19.75
Development							
Basic Education	19.07	18.10	17.71	17.41	16.75	16.00	14.92
Health	2.62	2.09	2.41	2.15	2.19	2.08	3.03
Social Security and Labor Welfare	6.56	6.59	7.45	7.16	6.92	5.94	7.36
Land Distribution (CARP)	0.52	0.15	1.22	0.63	0.36	0.60	0.44
Housing and Community Development	0.14	0.51	0.27	0.47	0.83	0.90	0.53
Other Social Services	0.16	0.16	0.18	0.15	0.14	0.12	0.58
Subsidy to Local Government Units	8.99	8.80	8.69	8.68	8.38	7.75	8.25
DEFENSE	7.03	7.49	7.11	7.37	7.01	7.08	6.46
Domestic Security	7.03	7.49	7.11	7.37	7.01	7.08	6.46
GENERAL PUBLIC SERVICES	24.01	23.81	23.20	26.16	24.33	23.05	21.95

Table 43: Sectoral Distribution of National Government Spending: Obligation Basis: Net of Debt Servicing

Table 44: Government Spending on Basic Education per Pupil											
Nominal per pupil spending	2002	2003	2004	2005	2006	2007	2008				
Basic Education (DepEd + SBP)	6,544.41	6,598.49	6,617.86	6,938.40	7,499.37	8,460.50	9,179.54				
Local	567.51	652.01	654.88	722.72	805.90	870.42	929.53				
Basic Education (DepEd + SBP+Local))	7,111.92	7,250.51	7,272.74	7,661.12	8,305.27	9,330.92	10,109.08				
Real per pupil spending											
Basic Education (DepEd + SBP)	6,544.41	6,431.61	6,085.72	5,994.31	6,156.03	6,712.53	6,751.52				
Local	567.51	635.52	602.22	624.38	661.54	690.59	683.67				
Basic Education (DepEd + SBP+Local)	7,111.92	7,067.13	6,687.93	6,618.69	6,817.58	7,403.11	7,435.19				

		2002	2004	20101 Dy L		<u>200</u>	2000
	2002	2003	2004	2003	2000	2007	2009
I. LEVELS	106 051	100 202	107 240	117 744	172 055	111017	157 1/7
Nomunau	100,001	108,505	107,349	112,/44	125,055	141,017	13/,10/
	100,/59	104,045	103,039	109,266	117,000	155,524	148,/98
Personal Services	95,282	97,862	95,965	100,756	107,517	116,467	129,467
MUOE	5,477	6,183	7,074	8,510	10,138	17,057	19,332
Total Capital	5,291	4,318	4,310	3,478	5,401	7,493	8,368
DepEd Capital Outlay	3,291	2,318	2,604	2,627	3,029	6,365	6,723
School Building Program	2,000	2,000	1,706	851	2,372	1,128	1,646
Real (In 2002 prices)	106,051	105,622	98,717	97,403	101,013	111,882	115,596
Recurrent	100,759	101,414	94,753	94,399	96,580	105,937	109,441
Personal Services	95,282	95,387	88,248	87,046	88,258	92,404	95,222
MOOE	5,477	6,026	6,505	7,352	8,322	13,533	14,218
Total Capital	5,291	4,208	3,964	3,004	4,433	5,945	6,155
DepEd Capital Outlay	3,291	2,259	2,395	2,269	2,486	5,050	4,944
School Building Program	2,000	1,949	1,569	735	1,947	895	1,210
II. PER PUPIL							
Nominal	6,546	6,607	6,618	6,938	7,499	8,459	9,180
Recurrent	6,220	6,344	6,353	6,724	7,170	8,010	8,691
Personal Services	5,882	5,967	5,916	6,200	6,552	6,987	7,562
MOOE	338	377	436	524	618	1,023	1,129
Total Capital	327	263	266	214	329	449	489
DepEd Capital Outlay	203	141	161	162	185	382	393
School Building Program	123	122	105	52	145	68	96
Real (In 2002 prices)	6,546	6,440	6,086	5,994	6,156	6,712	6,752
Recurrent	6,220	6,184	5,842	5,809	5,885	6,355	6,393
Personal Services	5,882	5,816	5,441	5,357	5,378	5,543	5,562
MOOE	338	367	401	452	507	812	831
Total Capital	327	257	244	185	270	357	360
DepEd Capital Outlay	203	138	148	140	152	303	289
School Building Program	123	119	97	45	119	54	71
Deflator (IPIN=2002)	100	103	109	116	122	126	136
BEIS Enrolment Factor (no ARMM)	16.20	16.40	16.22	16.25	16.41	16.67	17.12
. ,							12.99

Table 45: National Government Spending on Education by Expense Class

	2001	2002	2003	2004	2005	2006
I. Levels (In current prices, in PhP)						
Total LGU Education Spending	9,705,422,039	9,196,343,958	10,707,605,461	10,623,102,817	11,743,676,176	13,224,541,768
General Fund	1,931,555,199	1,798,643,978	1,881,136,166	1,629,447,777	1,616,235,372	1,773,381,423
Special Education Fund	7,773,866,839	7,397,699,980	8,826,469,294	8,993,655,040	10,127,440,804	11,451,160,345
II. Shares of Total LGU Education						
Spending						
General Fund	19.9%	19.6%	17.6%	15.3%	13.8%	13.4%
Special Education Fund	80.1%	80.4%	82.4%	84.7%	86.2%	86.6%
III. Share of Total LGU Spending						
Total LGU Education Spending	7.1%	6.5%	6.9%	6.6%	7.0%	6.9%
General Fund	1.4%	1.3%	1.2%	1.0%	1.0%	0.9%
Special Education Fund	5.7%	5.3%	5.7%	5.6%	6.0%	5.9%

 Table 46:
 LGU Spending on Basic Education

		2002	2003	2004	2005	2006	2007	2008
	In curre	nt prices, in N	Aillion PhP					
I.	Obligations							
A.	National	125,311	129,311	128,673	134,129	146,516	166,482	184,148
	1 Basic Education	106,051	108,363	107,352	112,744	123,066	141,017	157,168
В.	Local	9,196	10,708	10,623	11,744	13,225	13,225	13,225
C.	Total Education Spending	134,507	140,018	139,296	145,873	159,741	179,707	197,373
II.	Appropriations							
Α.	National	124,343	127,429	130,821	134,427	143,538	163,034	176,227
	1 Basic Education	105,083	106,481	109,500	113,042	120,087	137,569	149,247
В.	Local	9,196	10,708	10,623	11,744	13,225	13,225	13,225
C.	Total Education Spending	134,507	140,018	139,296	145,873	159,741	179,707	197,373
Ш	. Allotments							
Α.	National	127,250	130,336	130,566	138,064	150,690	174,595	196,406
	1 Basic Education (Total Allotment)	107,990	109,388	109,245	116,679	127,240	149,130	169,426
	1 Basic Education (Current + Automatic Appropriations)	105,145	106,140	106,331	113,978	123,993	141,036	160,256
В.	Local	9,196	10,708	10,623	11,744	13,225	13,225	13,225
C.	Total Education Spending	136,447	141,043	141,189	149,808	163,915	187,820	209,631
	In 2002	2 prices, in M	illion PhP					
I.	Obligations							
A.	National	125,311	126,040	118,326	115,878	120,271	132,086	135,440
	1 Basic Education	106,051	105,622	98,720	97,403	101,021	111,882	115,597
В.	Local	9,196	10,437	9,769	10,146	10,856	10,493	9,727
C.	Total Education Spending	134,507	136,477	128,095	126,024	131,127	142,579	145,167
II.	Appropriations							
A.	National	124,343	124,206	120,302	116,136	117,826	129,351	121,424
	1 Basic Education	105,083	103,788	100,695	97,661	98,576	109,147	103,149
В.	Local	9,196	10,437	9,769	10,146	10,856	10,493	9,727
C.	Total Education Spending	136,447	137,476	129,836	129,424	134,554	149,016	129,680
III	. Allotments							
A.	National	127,250	127,039	120,067	119,278	123,698	138,523	144,456
	1 Basic Education (Total Allotment)	107,990	106,621	100,460	100,803	104,448	118,319	124,612
	1 Basic Education (Current + Automatic Appropriations)	105,145	103,456	97,781	98,469	101,783	111,897	117,868
В.	Local	9,196	10,437	9,769	10,146	10,856	10,493	9,727
C.	Total Education Spending	136,447	137,476	129,836	129,424	134,554	149,016	154,183

Table 47: National Government Basic Education Appropriations, Allotments & Obligations, 2002–2008

	2002	2003	2004	2005	2006	2007	2008
Rea	al Per Pupil, I	n PhP	-	-		-	
I. Obligations							
A. National							
1 Basic Education	6,544	6,432	6,086	5,994	6,156	6,712	6,732
B. Local	568	636	602	624	662	629	567
II. Appropriations							
A. National							
1 Basic Education	6,485	6,320	6,207	6,010	6,007	6,547	6,024
B. Local	546	611	570	598	634	602	542
III. Allotments							
A. National							
1 Basic Education (Total Allotment)	6,664	6,492	6,193	6,204	6,365	7,098	7,258
1 Basic Education (Current + Automatic Appropriations)	6,489	6,300	6,028	6,060	6,202	6,713	6,865
B. Local	546	611	578	600	634	602	602
MEMO ITEMS:							
IPIN (2002=100)	100.00	102.59	108.74	115.75	121.82	126.04	135.96
BEIS Enrollment no ARMM(in Millions)	16.20	16.42	16.22	16.25	16.41	16.67	17.17

Real Per-Pupil Spending			20	002		
(IPIN 2002=100)	Municipalities	Citian	Ducuincas	Total I CII	NC	Total Snowding
Regions 1 llogos	Nunicipalities	112 50	144.92	220.02	7 574 01	7 012 05
Region 2 Cagovan	61.72	29.29	57.69	157.67	6.075.06	7,913.03
Region 2-Cagayan	215.02	<u> </u>	212.07	544.57	5 427 21	5 071 99
Region 3-Central Luzon	213.03	421.26	212.97	1 014 44	7.042.60	3,971.00
Region 4A-Calabarzon	292.40	421.20	300.79	1,014.44	7,042.00	8,057.04
Region 4B-Mimaropa	101.89	53.46	91.50	246.84	-	246.84
Region 5-Bicol	37.21	28.25	49.56	115.02	6,560.56	6,675.58
Region 6-Western Visayas	65.40	213.86	85.52	364.77	6,778.77	7,143.55
Region 7-Central Visayas	53.32	203.72	54.31	311.36	5,286.21	5,597.56
Region 8-Eastern Visayas	45.24	40.22	48.68	134.14	6,761.73	6,895.87
Region 9-Zamboanga Peninsula	22.42	54.05	19.96	96.44	6,623.72	6,720.16
Region 10-Northern Mindanao	67.18	203.02	52.51	322.72	5,337.05	5,659.77
Region 11-Davao Region	56.05	271.23	54.72	382.00	6,737.99	7,119.99
Region 12-	65.26	137.72	53.23	256.21	5,160.50	5,416.71
SOCCSKSARGEN/Central Mindanao						
Region 14-Cordillera Administrative	54.86	216.62	69.85	341.33	7,886.54	8,227.87
Region						
Region 15-National Capital Region	134.55	1,984.44	-	2,118.99	5,763.74	7,882.73
Region 16-Caraga	38.11	59.54	32.34	129.99	6,316.39	6,446.38
Total	105.02	344.39	96.70	546.11	5,852.72	6,398.83
Real Per-Pupil Spending (IPIN 2002=100)			20	003		
Regions	Municipalities	Cities	Provinces	Total-LGU	NG	Total Spending
Region 1-Ilocos	87.18	94.76	121.91	303.85	7,371.62	7,675.47
Region 2-Cagayan	59.01	40.98	65.37	165.36	6,935.07	7,100.44
Region 3-Central Luzon	193.45	145.69	172.26	511.40	5,761.13	6,272.53
Region 4A-Calabarzon	399.68	384.09	335.26	1,119.03	5,722.64	6,841.67
Region 4B-Mimaropa	51.10	89.75	64.00	204.86	4,087.99	4,292.85
Region 5-Bicol	40.30	46.10	55.27	141.67	6,361.38	6,503.05
Region 6-Western Visayas	66.20	193.37	90.78	350.35	6,660.00	7,010.35

 Table 48: Real Per-Pupil Spending by Region

Region 7-Central Visayas	60.77	218.30	45.72	324.79	5,174.21	5,499.00
Region 8-Eastern Visayas	41.97	40.84	52.07	134.88	6,533.75	6,668.63
Region 9-Zamboanga Peninsula	23.95	45.36	19.74	89.05	6,459.66	6,548.71
Region 10-Northern Mindanao	78.27	181.18	57.26	316.71	5,885.40	6,202.12
Region 11-Davao Region	59.62	242.11	45.38	347.11	5,570.34	5,917.45
Region 12-	73.47	133.13	63.52	270.13	5,642.35	5,912.47
SOCCSKSARGEN/Central Mindanao						
Region 14-Cordillera Administrative	66.12	186.11	46.73	298.96	7,905.20	8,204.16
Region						
Region 15-National Capital Region	195.98	2,491.34	-	2,687.32	5,573.09	8,260.41
Region 16-Caraga	42.54	65.32	37.35	145.21	6,263.94	6,409.15
Total	122.12	393.35	95.11	610.57	5,774.76	6,385.33
Real Per-Pupil Spending			20	04		
(IPIN 2002=100)						
Regions	Municipalities	Cities	Provinces	Total-LGU	NG	Total Spending
Region 1-Ilocos	73.31	96.90	127.27	297.48	7,080.89	7,378.37
Region 2-Cagayan	67.12	38.49	68.07	173.67	6,763.95	6,937.62
Region 3-Central Luzon	186.53	114.94	128.00	429.46	5,489.92	5,919.38
Region 4A-Calabarzon	343.29	302.90	472.99	1,119.18	4,725.65	5,844.83
Region 4B-Mimaropa	47.27	49.86	59.97	157.10	3,546.84	3,703.94
Region 5-Bicol	41.00	48.31	61.16	150.47	6,078.47	6,228.94
Region 6-Western Visayas	67.57	203.73	78.63	349.93	6,438.59	6,788.52
Region 7-Central Visayas	58.73	223.55	43.46	325.74	5,119.78	5,445.52
Region 8-Eastern Visayas	31.64	50.61	28.28	110.52	6,254.26	6,364.78
Region 9-Zamboanga Peninsula	24.28	34.39	26.43	85.10	6,040.64	6,125.74
Region 10-Northern Mindanao	67.80	188.37	58.00	314.17	5,774.54	6,088.71
Region 11-Davao Region	53.47	179.85	44.72	278.05	5,364.22	5,642.26
Region 12-	69.61	113.91	70.19	253.71	5,185.18	5,438.89
SOCCSKSARGEN/Central Mindanao						
Region 14-Cordillera Administrative	61.76	162.07	49.45	273.27	7,709.95	7,983.22
Region						
Region 15-National Capital Region	128.61	2,368.17	-	2,496.77	5,476.91	7,973.68
Region 16-Caraga	44.68	43.99	43.57	132.24	6,028.29	6,160.53
Total	106.83	365.36	106.24	578.43	5,457.63	6,036.06

Real Per-Pupil Spending (IPIN 2002=100)			20	005		
Regions	Municipalities	Cities	Provinces	Total-LGU	NG	Total Spending
Region 1-Ilocos	103.42	116.43	171.43	391.28	6,901.21	7,292.49
Region 2-Cagayan	62.43	42.44	57.59	162.47	6,668.82	6,831.29
Region 3-Central Luzon	178.54	116.92	202.61	498.08	5,516.08	6,014.15
Region 4A-Calabarzon	341.46	398.00	393.78	1,133.24	4,665.08	5,798.31
Region 4B-Mimaropa	54.97	48.29	59.10	162.35	5,699.85	5,862.20
Region 5-Bicol	45.05	46.77	25.83	117.65	5,126.16	5,243.81
Region 6-Western Visayas	79.30	199.21	105.33	383.84	6,405.21	6,789.05
Region 7-Central Visayas	56.79	224.28	50.50	331.57	5,181.31	5,512.88
Region 8-Eastern Visayas	32.68	42.83	43.09	118.59	6,171.95	6,290.54
Region 9-Zamboanga Peninsula	25.29	29.44	22.44	77.16	5,788.81	5,865.97
Region 10-Northern Mindanao	64.12	175.97	64.88	304.97	5,810.43	6,115.40
Region 11-Davao Region	55.36	266.39	46.57	368.32	5,285.96	5,654.28
Region 12-Soccsksargen/Central Mindanao	78.25	126.16	56.54	260.95	5,268.89	5,529.84
Region 14-Cordillera Administrative Region	58.06	199.77	34.72	292.55	7,899.64	8,192.19
Region 15-National Capital Region	128.63	2,341.04	-	2,469.67	5,248.72	7,718.39
Region 16-Caraga	45.53	53.31	60.25	159.09	6,095.98	6,255.07
Total	109.72	382.48	108.07	600.27	5,418.86	6,019.13
Real Per-Pupil Spending (IPIN 2002=100)			20	06		
Regions	Municipalities	Cities	Provinces	Total-LGU	NG	Total Spending
Region 1-Ilocos	86.51	167.79	136.44	390.74	6,937.33	7,328.07
Region 2-Cagayan	73.19	30.10	73.60	176.89	7,080.93	7,257.83
Region 3-Central Luzon	234.41	151.51	212.39	598.31	5,618.12	6,216.42
Region 4A-Calabarzon	357.66	404.46	364.50	1,126.62	4,904.04	6,030.66
Region 4B-Mimaropa	60.87	55.68	53.36	169.91	5,930.79	6,100.70
Region 5-Bicol	49.10	57.27	31.67	138.05	5,933.49	6,071.53
Region 6-Western Visayas	70.49	195.15	79.98	345.61	6,501.82	6,847.44
Region 7-Central Visayas	62.72	223.77	62.18	348.67	5,098.58	5,447.24
Region 8-Eastern Visayas	42.01	42.75	31.31	116.08	6,307.15	6,423.23

Region 9-Zamboanga Peninsula	27.32	24.57	28.81	80.70	6,044.77	6,125.47
Region 10-Northern Mindanao	71.19	179.13	69.51	319.84	5,828.93	6,148.76
Region 11-Davao Region	58.36	262.18	51.24	371.79	5,553.40	5,925.19
Region 12-Soccsksargen/Central	84.19	117.28	73.64	275.10	5,503.04	5,778.14
Mindanao						
Region 14-Cordillera Administrative	63.65	156.62	65.76	286.04	7,834.17	8,120.20
Region						
Region 15-National Capital Region	60.26	2,599.02	-	2,659.28	4,944.25	7,603.53
Region 16-Caraga	42.76	52.28	55.64	150.68	6,141.90	6,292.57
Total	111.44	418.45	104.60	634.49	5,535.36	6,169.84

Table 49: Department of Education Regional Basic Education Spending (Obligations) by Expense Class, 2002–2008									
Obligations by Expense Class	2002	2003	2004	2005	2006	2007	2008		
			Total Amount of	Current and Continu	ing Appropriation				
Region 1-Ilocos	6,930,319,599.00	6,949,911,403.48	6,970,643,167.48	7,234,251,312.32	7,642,732,317.58	8,601,296,800.78	9,871,724,426.94		
Personal Services	6,703,447,599.00	6,760,980,949.86	6,715,373,030.77	6,980,745,188.60	7,327,469,028.73	7,948,739,044.83	8,659,263,033.31		
MOOE	224,372,000.00	104,683,429.62	238,678,722.11	206,632,074.77	239,328,641.47	561,529,544.00	754,232,428.88		
Capital Outlays	2,500,000.00	84,247,024.00	16,591,414.60	46,874,048.95	75,934,647.38	91,028,211.95	458,228,964.75		
Financial Expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Region 2-Cagayan	4,378,884,545.00	4,543,380,175.26	4,607,467,138.65	4,801,445,915.49	5,325,606,689.77	5,735,057,249.04	6,491,669,385.20		
Personal Services	4,183,518,073.00	4,391,883,275.21	4,400,313,310.82	4,506,871,897.54	5,011,078,493.54	5,175,865,724.52	5,746,554,746.86		
MOOE	183,306,961.00	150,096,900.05	189,853,436.28	241,852,747.95	241,488,126.61	443,032,803.72	531,796,203.90		
Capital Outlays	12,059,511.00	1,400,000.00	17,300,391.55	52,721,270.00	73,040,069.62	116,158,720.80	213,299,182.44		
Financial Expenses	0.00	0.00	0.00	0.00	0.00	0.00	19,252.00		
Region 3-Central Luzon	9,039,619,085.57	10,009,258,178.77	10,125,610,910.18	10,926,115,175.11	11,884,944,417.62	12,953,663,804.20	14,862,463,561.36		
Personal Services	8,695,933,873.94	9,630,133,727.54	9,676,918,905.15	10,324,396,952.70	10,961,342,254.92	11,518,308,319.88	13,000,003,350.49		
MOOE	342,835,211.63	360,547,076.17	358,804,362.04	392,526,857.33	585,963,985.52	1,030,750,805.43	1,312,629,975.42		
Capital Outlays	850,000.00	18,577,375.06	89,876,073.55	209,062,637.83	337,613,389.68	404,604,228.89	549,827,867.95		
Financial Expenses	0.00	0.00	11,569.44	128,727.25	24,787.50	450.00	2,367.50		
Region 4A-Calabarzon	13,334,275,650.63	11,394,152,766.52	10,031,736,629.20	10,691,213,636.71	12,087,221,162.07	13,482,145,102.27	15,133,508,477.59		
Personal Services	12,819,949,557.00	10,954,197,451.15	9,591,269,353.20	10,148,371,486.64	11,145,065,370.31	11,993,322,548.14	13,323,292,115.06		
MOOE	492,201,571.63	410,735,281.25	362,929,316.50	399,821,316.79	495,592,678.49	805,499,775.51	1,294,611,532.71		
Capital Outlays	22,124,522.00	29,220,034.12	77,523,359.50	143,020,833.28	446,557,033.27	683,322,778.62	515,604,829.82		
Financial Expenses	0.00	0.00	14,600.00	0.00	6,080.00	0.00	0.00		
Region 4B-Mimaropa	0.00	2,516,615,088.02	2,275,308,716.58	3,926,303,665.16	4,348,754,410.53	4,896,117,089.23	5,412,069,532.00		
Personal Services	0.00	2,342,721,609.34	2,120,526,396.93	3,692,983,322.60	4,012,086,380.30	4,256,736,193.25	4,762,764,290.12		
MOOE	0.00	155,904,240.60	125,110,118.84	173,415,554.73	227,626,555.24	438,805,617.82	446,457,918.39		
Capital Outlays	0.00	17,989,238.08	29,667,600.81	59,904,787.83	109,040,356.60	200,575,278.16	202,847,323.49		
Financial Expenses	0.00	0.00	4,600.00	0.00	1,118.39	0.00	0.00		

Region 5-Bicol	7,894,628,650.33	7,939,005,206.07	8,004,436,158.30	7,254,883,881.11	8,950,451,633.88	11,047,267,630.31	11,392,619,449.84
Personal Services	7,593,289,268.80	7,653,763,605.13	7,675,411,936.33	6,971,509,706.63	8,404,811,496.40	8,980,452,605.22	9,945,286,621.25
MOOE	284,953,713.53	275,322,974.97	301,031,364.99	235,199,976.86	359,225,000.15	512,769,338.14	1,069,340,251.51
Capital Outlays	16,385,668.00	9,918,625.97	27,992,856.98	48,174,146.12	186,407,065.33	1,554,045,241.40	377,975,375.46
Financial Expenses		0.00	0.00	51.50	8,072.00	445.55	17,201.62
Region 6-Western Visayas	10,034,229,679.41	10,135,534,379.86	10,137,573,042.28	10,676,131,965.37	11,402,372,545.02	12,466,765,714.09	13,624,498,883.69
Personal Services	9,676,502,335.30	9,800,958,781.00	9,719,058,438.81	10,106,818,127.35	10,856,547,108.77	11,486,661,848.67	12,433,532,116.12
MOOE	323,432,157.11	328,576,147.12	342,608,014.29	402,405,443.69	373,197,488.94	729,639,015.39	997,149,168.73
Capital Outlays	34,295,187.00	5,999,451.74	75,906,589.18	166,908,394.33	172,389,478.86	250,464,850.03	193,385,865.84
Financial Expenses	0.00	0.00	0.00	0.00	238,468.45	0.00	431,733.00
Region 7-Central Visayas	6,823,953,124.94	6,887,049,318.70	7,036,361,106.55	7,499,356,347.79	7,849,562,323.54	8,959,778,995.27	10,137,005,355.28
Personal Services	6,638,961,332.22	6,760,796,402.81	6,743,482,003.89	7,143,119,105.72	7,343,163,602.28	8,203,210,234.64	9,062,389,165.89
MOOE	159,217,306.87	119,031,857.51	250,144,209.07	272,616,906.72	316,652,625.50	634,867,515.95	836,148,135.64
Capital Outlays	25,774,485.85	7,221,058.38	42,734,893.59	83,620,335.35	189,746,095.76	121,701,244.68	238,468,053.75
Financial Expenses		0.00	0.00	0.00	0.00	0.00	0.00
	5 017 441 404 00	6 010 074 004 60	< 150 00 < 000 00	< 111 005 COD 20	6 052 051 525 26		0.001.001.407.11
Region 8-Eastern Visayas	5,917,441,494.00	<u>6,012,374,224.60</u> 5,775,263,428,00	6,159,226,022.30 5,844,801,735,02	6,411,985,698.20	6,953,871,527.36	6 004 303 071 00	8,801,801,497.11
MOOE	170 278 180 00	222 610 706 60	260 726 287 28	0,120,189,280.00	207 161 652 59	496 450 492 04	742 622 148 54
Conital Outlaws	179,378,189.00	12 500 000 00	44 608 000 00	62 060 671 60	145.002.071.25	218 860 061 02	250 007 607 01
Einensist Ennenses	0.00	13,300,000.00	44,098,000.00	03,000,071.00	0.00	0.00	0.00
Financial Expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Design 0 Zambaanaa	4 700 777 295 94	4 701 010 027 12	4 669 062 074 00	1 769 022 942 56	5 270 407 174 07	5 700 272 686 20	6 272 016 911 25
Peninsula	4,709,777,363.64	4,701,010,037.13	4,008,902,974.90	4,708,952,842.50	3,270,407,174.97	3,799,372,080.30	0,572,910,811.55
Personal Services	4,517,420,324.73	4,614,117,027.41	4,451,355,259.06	4,514,372,703.01	4,822,924,166.62	5,160,659,691.81	5,677,706,069.20
MOOE	147,954,829.32	135,948,278.72	146,403,485.41	193,079,767.59	334,394,899.69	464,959,772.78	489,777,558.59
Capital Outlays	44,402,231.79	31,752,731.00	71,204,230.43	61,480,371.96	113,088,108.66	173,753,221.71	205,433,183.56
Financial Expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Region 10-Northern Mindanao	4,417,520,266.95	5,057,964,045.81	5,054,753,380.86	5,389,492,132.13	5,718,315,773.30	6,353,960,585.94	7,255,525,884.91
Personal Services	4,265,981,240.70	4,893,068,203.01	4,878,737,841.61	5,124,479,543.83	5,410,503,644.51	5,826,120,097.04	6,514,938,543.95

MOOE	136,119,026.25	161,895,842.80	159,221,270.17	230,132,493.00	238,166,352.24	418,578,930.56	500,437,457.84
Capital Outlays	15,420,000.00	3,000,000.00	16,794,269.08	34,867,052.82	69,622,534.08	109,261,147.38	239,385,471.12
Financial Expenses	0.00	0.00	0.00	13,042.48	23,242.47	410.96	764,412.00
Region 11-Davao Region	5,707,334,915.99	4,860,446,487.54	4,860,444,591.31	4,992,167,775.31	5,466,559,781.54	6,109,230,653.69	6,959,829,408.52
Personal Services	5,509,907,392.02	4,638,602,150.92	4,562,483,444.74	4,746,314,696.59	5,023,548,836.32	5,560,493,491.12	6,138,764,673.44
MOOE	175,060,753.97	181,393,844.62	226,493,024.57	192,318,417.72	289,340,701.30	429,734,939.42	648,258,939.16
Capital Outlays	22,366,770.00	40,450,492.00	71,468,122.00	53,534,661.00	153,670,243.92	119,002,223.15	172,805,795.92
Financial Expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Region 12- Soccsksargen/Central	3,925,606,913.71	4,428,392,044.69	4,223,082,790.46	4,570,441,736.04	5,088,315,635.58	5,639,706,021.45	6,445,084,847.32
Mindanao							
Personal Services	3,771,350,703.48	4,273,486,008.00	4,023,000,814.50	4,332,451,990.00	4,654,616,430.47	5,010,772,975.28	5,588,452,323.82
MOOE	152,256,210.23	153,929,784.17	183,077,475.96	189,243,617.85	264,886,637.92	559,816,318.73	581,674,048.42
Capital Outlays	2,000,000.00	976,252.52	17,004,500.00	48,746,128.19	168,812,567.19	69,116,727.44	274,958,475.08
Financial Expenses		0.00	0.00	0.00	0.00	0.00	0.00
Region 14-Cordillera Administrative Region	2,417,286,349.54	2,509,965,846.41	2,532,600,454.75	2,713,647,348.20	2,839,993,999.87	3,191,121,685.82	3,581,223,444.92
Personal Services	2,294,556,913.51	2,361,027,771.00	2,387,778,228.50	2,513,922,715.21	2,615,140,234.67	2,854,394,794.93	3,151,267,922.18
MOOE	101,206,436.03	101,287,385.41	114,893,838.25	122,371,649.99	132,772,010.00	240,117,435.95	269,425,551.63
Capital Outlays	21,523,000.00	47,650,690.00	29,928,388.00	77,352,983.00	92,081,755.20	96,609,454.94	160,529,971.11
Financial Expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Region 15-National Capital Region	9,765,642,284.00	9,909,763,497.06	10,258,202,963.86	10,622,538,275.37	10,812,437,249.09	12,431,719,312.89	14,562,056,552.33
Personal Services	9,066,688,118.00	9,362,707,112.11	9,506,959,484.15	9,850,492,428.20	10,038,942,616.04	11,107,969,363.14	12,847,742,232.53
MOOE	640,079,166.00	453,230,584.95	619,469,068.71	547,780,925.57	599,681,765.18	829,096,855.06	1,192,360,933.30
Capital Outlays	58,875,000.00	93,825,800.00	131,756,061.00	224,264,921.60	173,812,867.87	494,653,094.69	521,953,386.50
Financial Expenses	0.00	0.00	18,350.00	0.00	0.00	0.00	0.00
Region 16-Caraga	3,262,257,372.00	3,336,039,204.00	3,284,475,862.00	3,535,345,514.59	3,735,822,254.28	4,265,015,522.15	4,910,948,630.58
Personal Services	3,102,358,550.00	3,186,183,493.00	3,118,346,045.00	3,328,032,975.05	3,529,111,741.21	3,826,006,925.81	4,221,677,862.62
MOOE	134,750,029.00	123,986,052.00	134,622,446.00	175,230,674.54	177,046,573.37	342,324,848.75	398,519,086.67
Capital Outlays	25,148,793.00	25,869,659.00	31,493,859.00	32,081,865.00	29,663,939.70	96,673,575.08	290,751,681.29

PHILIPPINES : Basic Education Public Expenditure Review

Financial Expenses	0.00	0.00	13,512.00	0.00	0.00	10,172.51	0.00
Total Regional	98,558,777,316.91	101,271,669,903.92	100,230,885,909.66	106,014,253,221.46	115,377,368,896.00	129,731,841,471.29	145,814,946,148.94
Personal Services	94,560,480,558.70	97,399,890,995.49	95,415,816,228.48	100,405,072,119.67	107,667,969,207.62	115,904,016,930.27	128,781,896,718.40
MOOE	3,677,123,561.57	3,440,180,476.56	4,023,066,440.47	4,203,364,171.70	5,172,525,695.20	8,927,983,001.15	12,065,451,339.33
Capital Outlays	321,173,196.64	431,598,431.87	791,940,609.27	1,405,675,108.86	2,536,572,224.37	4,899,830,060.85	4,966,363,125.09
Financial Expenses	0.00	0.00	62,631.44	141,821.23	301,768.81	11,479.02	1,234,966.12

Table 50: Department	Table 50: Department of Education Regional Basic Education Spending (Obligations) by Levels by Expense Class, 2002–2008											
II. By Levels	2002	2003	2004	2005	2006	2007	2008					
Region 1-llocos	4 405 157 000	4 594 000 950	4 506 400 012	4 720 1 (7 700	4 (74 459 200	5 154 010 526	5 107 012 541					
Division Offices-	4,405,157,000	4,584,000,850	4,596,409,813	4,/30,16/,/98	4,6/4,458,306	5,154,912,536	5,187,012,541					
Elementary Education	2 005 272 000	4 560 297 070	4 550 094 912	4 692 274 102	4 621 027 222	5 020 422 009	5 026 456 005					
Personal Services	3,993,373,000	4,300,387,079	4,339,984,813	4,085,274,105	4,051,057,552	3,030,433,098	3,030,430,903					
	37,294,000	23,013,771	30,425,000	40,893,095	43,420,974	124,479,438	150,555,050					
Capital Outlays	0	0	0	0	0	0	0					
Financial Expenses												
Division Offices-	1 849 513 000	1 930 862 005	1 961 305 000	2,036,875,264	2,082,686,800	2 364 756 561	2 399 084 086					
Secondary Education	1,019,919,000	1,950,002,005	1,901,905,000	2,000,070,201	2,002,000,000	2,001,700,001	2,377,001,000					
Personal Services	1,623,809,000	1,881,411,204	1,883,347,000	1,966,807,391	2,001,580,757	2,197,663,165	2,219,098,825					
MOOE	75,617,000	49,450,801	77,958,000	70,067,873	81,106,044	167,093,395	179,985,262					
Capital Outlays	0	0	0	0	0	0	0					
Financial Expenses			0	0	0	0	0					
^												
Region 2-Cagayan												
Division Offices-	2,886,664,605	3,032,085,664	3,053,801,000	3,302,380,379	3,282,215,165	3,535,199,620	3,702,584,996					
Elementary Education												
Personal Services	2,826,641,144	2,982,694,947	2,992,040,000	3,231,364,769	3,199,582,404	3,433,928,642	3,493,266,583					
MOOE	60,023,461	49,390,717	61,761,000	71,015,610	82,632,761	97,804,454	201,341,156					
Capital Outlays	0	0	0	0	0	3,466,524	7,977,258					
Financial Expenses												
Division Offices-	1,049,673,339	1,148,572,952	1,160,138,533	1,327,526,939	1,326,465,491	1,477,886,215	1,598,606,823					
Secondary Education												
Personal Services	987,918,633	1,087,444,143	1,094,822,000	1,241,178,403	1,245,921,270	1,356,205,390	1,442,598,962					
MOOE	61,754,706	61,128,809	65,316,533	86,348,536	80,544,220	121,680,825	134,242,357					
Capital Outlays	0	0	0	0	0	0	21,746,252					
Financial Expenses			0	0	0	0	19,252					
^							-					
Region 3-Central Luzon												
Division Offices-	6,588,225,972	6,804,107,007	6,803,555,708	7,182,681,874	7,117,861,424	7,970,588,496	8,150,304,635					
Elementary Education												
Personal Services	6,473,039,612	6,684,373,811	6,676,310,179	7,059,568,004	6,993,566,196	7,576,736,745	7,760,268,000					

MOOE	115,186,360	119,733,196	96,342,793	91,028,547	124,295,228	363,383,962	351,848,954
Capital Outlays	0	0	30,902,736	32,085,323	0	30,467,789	38,187,681
Financial Expenses			, ,				0
^							
Division Offices-	2,306,708,649	2,429,651,612	2,435,220,656	2,623,889,532	2,667,456,352	3,110,929,418	3,255,924,347
Secondary Education							
Personal Services	2,164,473,781	2,283,229,525	2,280,382,746	2,448,664,807	2,510,640,761	2,761,549,171	2,928,319,000
MOOE	142,234,868	146,422,087	127,433,757	124,055,951	156,802,113	319,861,726	311,078,217
Capital Outlays	0	0	27,392,583	51,040,047	0	29,518,072	16,524,762
Financial Expenses							2,368
Region 4A-Calabarzon							
Division Offices-	8,948,992,625	7,800,652,647	6,722,238,860	6,934,446,834	7,249,846,202	8,040,861,550	8,354,081,669
Elementary Education							
Personal Services	8,803,013,609	7,628,311,886	6,564,919,646	6,845,683,474	7,160,486,000	7,764,547,218	7,927,094,178
MOOE	145,979,016	172,340,762	112,444,239	87,252,262	89,279,028	276,314,332	426,987,491
Capital Outlays			44,874,975	1,511,099	81,174	0	0
Financial Expenses							
Division Offices-	3,147,558,950	2,803,336,312	2,431,274,998	2,618,874,335	2,732,339,102	3,275,475,071	3,583,923,143
Secondary Education							_
Personal Services	2,967,983,450	2,663,088,155	2,305,603,639	2,457,488,611	2,570,782,000	2,944,308,414	3,221,054,146
MOOE	179,575,500	140,248,157	125,671,359	159,570,839	160,521,153	331,166,657	362,868,997
Capital Outlays	0	0	0	1,814,885	1,035,949	0	0
Financial Expenses							
Region 4B-Mimaropa							
Division Offices-Elementa	ry Education		1,430,256,500	2,510,395,965	2,598,001,849	2,877,401,878	3,013,356,000
Personal Services			1,408,130,500	2,469,127,957	2,558,118,840	2,786,943,000	2,873,006,000
MOOE	0	37,925,000	22,126,000	41,268,008	39,883,009	90,458,878	140,350,000
Capital Outlays			0	0	0	0	0
Financial Expenses							
Division Offices-Secondar	y Education		516,808,650	965,271,448	1,012,326,233	1,141,651,030	1,194,934,892
Personal Services			487,950,000	903,456,323	956,966,981	1,041,626,051	1,090,141,137
MOOE	0	79,909,349	28,858,650	60,911,624	55,359,251	100,024,979	104,793,755
Capital Outlays			0	903,500	0	0	0
Financial Expenses							

Degion 5 Bigol							
Division Offices	5 202 266 242	5 556 092 074	5 601 257 100	5 100 514 010	5 700 120 404	6 215 217 679	6 112 662 656
Elementary Education	5,502,200,545	5,550,085,974	5,001,257,190	5,109,514,910	5,709,150,404	0,213,317,078	0,415,002,050
Personal Services	5,199,923,447	5.460.528.974	5.501.702.190	5.033.793.716	5.627.867.322	6.044.722.939	6.126.180.538
MOOE	102.342.896	95.555.000	99.555.000	72,706,769	79.161.297	160.418.719	266.237.821
Capital Outlays	0	0	0	3.014.425	2,101,785	10.176.020	21.244.297
Financial Expenses				-,	_,	_ 0, 0, 0 _ 0	
1							
Division Offices-	1,811,879,306	1,938,586,420	1,935,405,116	1,758,000,499	2,058,635,727	2,315,825,602	2,467,729,899
Secondary Education							
Personal Services	1,717,462,342	1,837,045,745	1,834,041,145	1,681,115,303	1,939,236,078	2,144,601,170	2,234,391,108
MOOE	94,416,963	98,040,675	97,879,501	76,431,241	117,795,332	152,926,410	212,987,072
Capital Outlays	0	3,500,000	3,484,470	453,955	1,596,246	18,297,676	20,334,516
Financial Expenses							
Region 6-Western Visayas							_
Division Offices-	6,476,887,338	6,715,642,972	6,611,448,220	6,739,084,574	6,867,403,197	7,563,562,728	7,586,071,686
Elementary Education							
Personal Services	6,403,942,338	6,642,340,312	6,538,137,220	6,632,055,202	6,771,255,144	7,359,520,804	7,323,083,368
MOOE	72,588,000	73,302,660	73,311,000	107,029,372	96,107,792	204,041,924	262,978,118
Capital Outlays	357,000	0	0	0	0	0	0
Financial Expenses							10,200
	2 (20 420 55 (0.040.040.000	0.040.555.040	0.000.000.000	2 005 540 402	2 2 4 4 500 552	2 102 525 0 50
Division Offices-	2,620,438,756	2,840,761,077	2,840,557,962	2,932,009,674	3,007,548,482	3,366,580,773	3,403,727,969
Secondary Education	0 471 600 756	2 (00 002 150	0 (01 050 0 (0	0 000 001 011	0.000.005.000	2 00 6 1 60 0 61	2 102 144 0 62
Personal Services	2,471,690,756	2,688,903,450	2,681,853,962	2,777,751,911	2,827,825,707	3,096,169,861	3,133,144,063
MOOE	148,748,000	151,857,627	158,704,000	154,257,763	179,550,888	270,410,912	270,319,383
Capital Outlays	0	0	0	0	0	0	0
Financial Expenses							264,522
Region 7-Central Visavas							
Division Offices-	5 132 698 223	5 041 954 193	5 074 563 277	5 176 898 313	5 168 156 488	5 948 263 525	6 092 939 311
Elementary Education	5,152,090,225	2,011,201,120	2,07 1,203,277	2,170,090,010	2,100,120,100	5,510,205,525	5,072,757,511
Personal Services	5,081,283,296	5,002,024,759	5,005,612,036	5,120,493,277	5,090,818,409	5,742,367,614	5,807,873,415
MOOE	51,214,214	39,929,434	68,251,919	56,405,036	77,338,080	205,895,911	285,065,896
Capital Outlays	200,713	0	699,323	0	0	0	0
Financial Expenses			*				
Division Offices-	1,297,726,195	1,323,286,667	1,343,676,874	1,514,782,507	1,580,727,342	1,919,508,611	2,019,142,741
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Secondary Education							
Personal Services	1,249,649,474	1,281,345,471	1,274,653,583	1,439,177,199	1,488,081,272	1,705,215,069	1,805,913,957
MOOE	47,736,397	41,889,265	68,345,833	75,605,308	92,646,070	214,293,542	213,228,784
Capital Outlays	340,323	51,932	677,458	0	0	0	0
Financial Expenses							
Region 8-Eastern Visayas							
Division Offices-	4,159,592,000	4,348,448,000	4,335,628,000	4,421,953,193	4,526,631,852	5,050,309,517	4,982,528,515
Elementary Education							
Personal Services	4,106,955,000	4,245,589,000	4,282,769,000	4,364,725,193	4,471,643,548	4,773,384,244	4,758,930,326
MOOE	52,637,000	101,859,000	52,859,000	56,720,680	54,988,304	276,925,273	223,598,190
Capital Outlays	0	1,000,000	0	507,320	0	0	0
Financial Expenses							
Division Offices-	1,223,217,281	1,323,506,000	1,322,745,023	1,437,833,000	1,437,833,000	1,689,783,440	1,769,328,192
Secondary Education							
Personal Services	1,159,163,281	1,259,102,000	1,253,732,000	1,361,393,000	1,361,393,000	1,647,449,639	1,610,270,522
MOOE	64,054,000	64,404,000	69,013,023	76,440,000	76,440,000	42,333,801	159,057,670
Capital Outlays	0	0	0	0	0	0	0
Financial Expenses							
Region 9-Zamboanga Penin	sula						
Division Offices-	3,235,109,465	3,365,860,535	3,258,863,718	3,271,482,868	3,264,395,095	3,638,569,180	3,781,332,938
Elementary Education							
Personal Services	3,202,091,000	3,330,294,000	3,225,992,000	3,222,600,400	3,217,191,458	3,525,429,178	3,618,597,347
MOOE	33,018,465	35,566,535	32,871,718	48,882,468	47,203,638	113,140,002	162,735,591
Capital Outlays	0	0	0	0	0	0	0
Financial Expenses							
Division Offices-	945,862,101	1,015,119,915	989,140,442	1,043,008,146	1,037,438,707	1,226,433,422	1,257,510,871
Secondary Education							
Personal Services	898,510,016	966,440,000	942,221,634	988,451,022	980,635,884	1,112,434,073	1,141,716,825
MOOE	47,352,085	48,679,915	46,918,808	54,557,124	56,802,823	113,999,349	115,794,047
Capital Outlays	0	0	0	0	0	0	0
Financial Expenses							

Region 10-Northern Mindan	120						
Division Offices-	3,025,351,580	3,593,699,546	3,595,497,204	3,698,711,867	3,743,058,445	4,116,932,801	4,245,865,150
Elementary Education							
Personal Services	2,987,496,076	3,545,876,000	3,544,732,622	3,612,415,928	3,686,769,531	3,998,487,314	4,087,526,891
MOOE	37,855,504	47,823,546	50,764,581	86,294,738	56,288,914	118,445,423	157,626,610
Capital Outlays			0	0	0	0	0
Financial Expenses							
	000 400 004	1 104 500 004	1 110 200 120	1 174 565 070	1 200 056 502	1.260.520.526	1 400 570 417
Division Offices-	929,423,294	1,124,509,324	1,110,798,138	1,174,565,373	1,209,056,783	1,368,529,526	1,433,573,417
Secondary Education	977 721 (10	1.061.200.000	1 057 225 507	1 102 200 450	1 120 050 219	1 249 957 220	1 217 977 025
Personal Services	51,701,619	1,061,390,000	1,057,335,507	1,102,260,456	1,139,050,318	1,248,857,220	1,317,867,035
MOOE	51,/01,6/5	63,119,324	53,462,630	12,293,075	/0,003,123	119,672,021	115,676,382
			0	0	0	0	0
Financial Expenses							
Region 11-Davao Region							
Division Offices-	3,811,617,672	3,271,689,896	3,208,739,588	3,276,087,911	3,832,460,896	3,828,679,930	3,928,009,609
Elementary Education							
Personal Services	3,757,874,585	3,205,411,000	3,132,620,529	3,235,853,961	3,763,850,924	3,705,709,160	3,745,389,824
MOOE	53,743,087	49,248,104	63,211,837	40,233,950	68,609,972	122,970,770	182,619,785
Capital Outlays	0	17,030,792	12,907,222	0	0	0	0
Financial Expenses				0	0	0	0
Division Offices-	1,414,998,335	1,230,571,735	1,237,727,927	1,298,322,618	875,344,296	1,517,381,903	1,541,904,264
Secondary Education							
Personal Services	1,331,555,859	1,168,150,000	1,164,681,215	1,228,215,414	819,375,677	1,382,322,440	1,389,831,109
MOOE	83,442,476	62,421,735	67,118,712	70,107,204	55,968,619	135,059,463	151,503,301
Capital Outlays	0	0	5,928,000	0	0	0	569,854
Financial Expenses							
Region 12-Soccsksargen/Central Mindanao							
Division Offices-	2.612.996.744	3.017.903.591	2.812.954.000	2.938.521.000	2,992,624,239	3.344.025.000	3.483.645.000
Elementary Education	,~,- ~,	- , , - , - , - , - , - , - , - , -	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,	,	-,,,500	_ ,,,
Personal Services	2,569,479,263	2,969,973,274	2,765,973,000	2,891,589,000	2,949,929,033	3,228,014,000	3,287,047,000
MOOE	43,517,481	47,930,317	46,981,000	46,932,000	42,695,206	116,011,000	196,598,000
Capital Outlays			0	0	0	0	0
Financial Expenses				0	0	0	0

Division Offices-	890,519,833	1,070,408,688	1,060,694,000	1,122,606,000	1,142,681,582	1,364,509,000	1,399,861,000
Secondary Education							
Personal Services	843,648,028	1,011,978,000	1,005,216,000	1,062,262,000	1,087,349,306	1,232,538,000	1,266,959,000
MOOE	46,871,805	58,430,688	55,478,000	60,344,000	55,332,276	131,971,000	132,902,000
Capital Outlays			0	0	0	0	0
Financial Expenses							
Region 14-Cordillera Admir	nistrative Region						
Division Offices-	1,548,108,000	1,620,722,919	1,635,584,620	1,677,950,271	1,720,582,535	1,887,922,006	1,926,660,007
Elementary Education							
Personal Services	1,525,399,000	1,593,308,319	1,614,250,000	1,654,614,641	1,698,968,790	1,844,818,168	1,864,395,709
MOOE	22,709,000	22,414,600	21,334,620	23,335,630	21,613,744	43,103,838	62,264,298
Capital Outlays			0	0	0	0	0
Financial Expenses				0	0	0	0
Division Offices-	571,998,912	629,664,235	631,667,962	675,503,708	687,684,611	779,341,617	794,496,910
Secondary Education							
Personal Services	540,116,912	593,556,364	596,179,000	637,324,857	650,372,853	719,725,158	734,101,146
MOOE	31,882,000	35,538,653	35,488,962	37,820,538	37,311,758	59,616,459	60,395,764
Capital Outlays			0	358,313	0	0	0
Financial Expenses							
	. .						
Region 15-National Capital	Region						
Division Offices-	5,513,156,855	5,863,925,856	5,764,033,353	5,770,627,903	5,984,671,049	6,460,320,540	2,743,047,148
Elementary Education							
Personal Services	5,325,531,855	5,697,023,160	5,551,164,049	5,646,097,813	5,804,571,732	6,208,706,883	2,638,911,000
MOOE	187,625,000	166,902,696	212,869,304	124,530,090	180,099,317	251,613,657	104,136,148
Capital Outlays			0	0	0	0	0
Financial Expenses				0	0	0	0
Division Offices-	3,437,567,691	3,747,034,893	3,703,456,317	3,819,337,391	3,343,350,184	4,163,288,082	980,630,486
Secondary Education							
Personal Services	3,170,833,691	3,514,254,000	3,389,412,210	3,528,064,024	3,101,817,705	3,770,481,221	885,392,229
MOOE	266,734,000	232,780,893	314,025,757	291,273,367	241,532,479	392,806,861	95,238,257
Capital Outlays			0	0	0	0	0
Financial Expenses							

Region 16-Caraga							
Division Offices-	2,275,288,000	2,357,265,827	2,275,413,085	2,372,333,123	2,431,395,295	2,655,954,264	2,743,047,148
Elementary Education							, , ,
Personal Services	2,215,100,000	2,301,253,000	2,223,656,734	2,324,272,604	2,390,969,037	2,577,275,898	2,638,911,000
MOOE	60,188,000	49,493,819	43,725,226	48,060,519	40,426,259	78,668,193	104,136,148
Capital Outlays			8,030,887	0	0	0	0
Financial Expenses							
Division Offices-	647,098,000	687,161,069	693,640,735	749,437,889	776,829,167	903,180,922	980,630,486
Secondary Education							
Personal Services	600,387,000	644,511,000	643,415,123	697,312,631	726,381,487	816,231,000	885,392,229
MOOE	46,711,000	40,605,964	49,139,704	52,125,258	50,447,680	86,949,922	95,238,257
Capital Outlays			1,073,032	0	0	0	0
Financial Expenses			12,876	0	0	0	0
Division Offices-Elementary	65,922,112,421	68,585,967,725	66,780,244,136	69,113,238,783	71,162,892,443	78,288,821,248	76,334,149,009
Education							
Personal Services	64,473,143,226	67,423,388,767	65,587,994,518	68,027,530,043	70,016,625,700	75,601,024,905	72,986,938,083
MOOE	1,075,921,483	1,133,029,158	1,094,834,237	1,048,589,373	1,144,043,523	2,643,675,775	3,279,079,841
Capital Outlays	557,713	29,549,800	97,415,142	37,118,167	2,182,959	44,110,333	67,409,236
Financial Expenses	0	0	238	1,200	40,261	10,236	721,849
Division Offices-Secondary	24,144,183,641	25,955,310,054	25,374,258,334	27,097,844,322	26,978,403,858	31,985,061,193	30,081,009,526
Education							
Personal Services	22,604,923,842	24,568,255,418	23,894,846,765	25,520,923,351	25,407,411,057	29,177,377,042	27,306,191,293
MOOE	1,388,832,475	1,374,927,941	1,440,813,230	1,522,209,701	1,568,163,827	2,759,867,323	2,715,309,504
Capital Outlays	340,323	12,126,696	38,555,543	54,570,700	2,632,194	47,815,748	59,175,385
Financial Expenses	0	0	42,795	140,570	196,779	1,081	333,343

Annex 4: Measuring Congestion in Public Schools

1. The public's general perception is that public schools, especially elementary schools, are overcrowded with students and underprovided with teachers, classrooms, and in some schools, chairs and textbooks. This impression is reinforced by news video footage of severely overcrowded classrooms in some NCR schools. But we ask how many public schools can be classified as "congested," "just right," or "undersubscribed". Further, for each school deemed to be congested, we ask what constraint is that most immediately blocks or limits its capacity. Is it the lack of teachers, lack of classrooms, lack of chairs, two or all three of the foregoing? We also ask how great the shortage (or surplus) is of teachers, classrooms, and chairs in each public school.

2. With scarce resources and high enrollments, DepED faces two computational problems, related but different:

- a) Given the current number of students in the various grade/year levels, DepED must find the minimum number of teachers, classrooms and chairs needed to serve these students "within DepED standards." For instance, if there are 110 pupils in Grade 1, 95 in Grade 2, 85 in Grade 3, 70 in Grade 4, 60 in Grade 5, and 55 pupils in Grade 6, how many teachers, classrooms and chairs are needed in all? From these calculations DepED can infer the shortage (or in some cases, surplus) of teachers, classrooms and chairs^{65.}
- b) Given the number of teachers, classrooms and chairs available in a public school, DepED must estimate the "full capacity" of the school. Given the current level of resources in a school, how many students can the school handle "within DepED norms"? For instance, if a public elementary school has 15 teachers, 10 classrooms, and 520 chairs, how many pupils can it effectively teach within DepED norms? And if such a school has an actual enrollment of, say 550, would that be too many, just right or could we say the school is undersubscribed? From these calculations, DepED can estimate the number of excess students (or unutilized enrollment slots, as the case may be).

3. The solution of one problem does not lead directly to the solution of the other. DepEd has long since recognized and tried to solve the first problem. The DepED color-coding scheme illustrates the results. There are actually three separate color-coding schemes, each based on a BEIS-based indicator ratio: pupil-teacher ratio (PTR), pupil-classroom ratio (PCR), and pupil-seat ratio (PSR). These three ratios could be used to generate three sequentially arranged lists of schools, each list arranged from highest priority (i.e., the so-called red schools) to the lowest priority (i.e., the so-called sky blue and blue schools).

4. Because there are three queues, each public school must position itself in each of three separate lines: one queue waiting for additional teachers, another queue for additional classrooms, and a third queue for additional chairs. The color-coding schemes cannot produce a single consolidated queue. Further, because the color schemes are defined by ratios instead of absolute quantities, the ratios cannot be used as bases for the usual pro rata allocations of government resources.

⁶⁵ The lack of textbooks is not addressed in this note.

5. Until recently DepED has not recognized the second computational problem. Yet it is very important, because it provides a more direct way of measuring school congestion. The need for estimating full capacity arose because of the need to estimate the demand for Education Service Contracting (ESC) slots⁶⁶ in private secondary schools. Under the 20-year-old DepED-managed Government Assistance to Students in Private Education (GASTPE) program, students who cannot be accommodated in public secondary schools are offered partial financial assistance to seek schooling in nearby private secondary schools. Doing so at least partially decongests public schools, This showed the need to estimate the full capacity of public secondary schools and subsequently to estimate the number of "aisle students"⁶⁷ in them. These aisle students are precisely the target clientele of the ESC program. The specific topic of this note is how to estimate the full capacity of public elementary and secondary schools, determine the number of aisle students, and thus measure congestion in public schools.

Parameters for Determining the Full Capacity of a Public School

6. Given the number of teachers, classrooms, and chairs in a public school, we ask how DepED can determine the full capacity (or effective capacity) of the school. We suggest using the following parameters or assumptions to estimate full capacity:

- a) The norm class size. *What is the maximum number of elementary pupils that a teacher can teach effectively in a classroom?* For the initial simulation, for an elementary monograde class, we set the target class size at 45. For an elementary multigrade class involving two grades, we set the target class size at 45 as well. At the secondary level, we set the norm class size at 45.
- b) The classroom capacity. For consistency, we set the classroom seating capacity equal to the target class size.
- c) The number of shifts allowed. Although some public schools actually offer two or even three shifts in NCR, for pedagogic and safety reasons we compute the full capacity of a school on the basis of two shifts at most. Even then, we allow a second shift only if there are enough teachers, appropriate facilities, and a safe environment for students and pupils to report early in the morning or end classes with enough light. *First, we assume that except for those schools that are already offering two shifts, public elementary schools will offer only one shift. For secondary schools we assume that schools in urban area or cities, if there are enough teachers available, will be allowed to offer a second shift. We assume that all other secondary schools will offer only single shifts.*

⁶⁶ Annually, there are about 580,000 ESC grantees and voucher holders at the secondary school level but the potential demand, i.e., the number of aisle students, is more than double that number.

⁶⁷ If the full capacity of a public school is 700 but its actual enrolment is 800, we say it has 100 "aisle students". These students remain enrolled in the public school, have not been turned away, are overstraining the resources of the school, and have to sit or stand in the aisles. They could also be referred to as excess, overflow, spillover or standing-room-only students. The counting of aisle students presupposes the prior determination of "full capacity" of a public school.

- d) The teacher subject specialization ratio. We assume that at the elementary school level, one teacher is enough to teach all the elementary school curriculum subjects. We assume that at the secondary level, schools need seven specialized teachers to deliver the complete secondary curriculum to a stream of four sections: one section each in the first, second, third, and fourth years.
- e) The criterion for defining "congested" and "undersubscribed." Initially, we set this criterion at 45 (the target class size) and use it for categorization. We refer to any school with more than 45 aisle students as "congested." In contrast, we label a school with more than 45 unfilled enrolment slots as a "roomy" or undersubscribed school. We refer to all other schools as "just right".

Formula for Estimating the Full Capacity of a Public Elementary School

7. For our numeric simulation we define the "full capacity" of a public elementary school as the minimum of three quantities based on the number of teachers, classrooms, and seats. If the elementary school has **T** teachers (national⁶⁸ teacher positions), **C** classrooms,⁶⁹ and **S** chairs,⁷⁰ then full capacity is the minimum of:

QUANTITY (assuming	REMARKS
target class size is 45)	
T*45	CAPACITY BASED ON TEACHERS ONLY: This is the
	number of students which the available T elementary level
	teachers can teach effectively.
C*SHIFTS*45	CAPACITY BASED ON CLASSROOMS ONLY: This is
	the number of students which can fit into the available C
	classrooms, taking the no. of shifts into consideration.
S*SHIFTS	CAPACITY BASED ON CHAIRS ONLY: This is the
	effective seating capacity based on available S chairs, taking
	into consideration the number of shifts.

EXAMPLE 1: Suppose a public elementary school offering only one shift has10 teachers, six classrooms and 280 chairs. For this school, FULL CAPACITY = MINIMUM { 10*45, 6*1*45, 280*1 } = MINIMUM { 450, 270, 280 } = 270. Although the 10 teachers could teach as many as 450 students but there are enough chairs for 280, the classroom capacity is only 270 students. School capacity equals 270 pupils. In this example it is the lack of classrooms (not teachers, not chairs) that most immediately blocks school capacity. If actual enrollment is 300 students, then the implied number of aisle students is 30 (i.e., 300-270). But if actual enrollment is 250, then the implied number of unfilled enrollment slots is 20

⁶⁸ For the initial simulations, we define "national teachers" as all national teacher positions assigned to the elementary school, including the SPED teacher positions but excluding preschool teachers, who are mostly contracted by private service providers. "Enrollment" includes SPED but not preschool teachers, who are usually subcontracted to private service providers.

⁶⁹ These are "academic classrooms" and exclude science labs, computer rooms, Industrial Arts shops, etc.

⁷⁰ As used in this note, the generic term "chair" means a one-seater. Thus, a two-seater desk or a two-seater tableand-chair set is counted as two chairs. A typical single-seat chair is counted as one chair.

(i.e., 270-250). In this example the shortage of teachers and classrooms cannot be estimated unless we know the details of enrollment by grade level.

EXAMPLE 2: Suppose the public elementary school above has facilities that enable it to offer two shifts. For this school, FULL CAPACITY = MINIMUM $\{10*45, 6*2*45, 280*2\}$ = MINIMUM $\{450, 540, 560\}$ = 450. Although the supply of classrooms and shifts has effectively doubled to 540 and 560 respectively, there are still only 10 teachers who can effectively teach only 450 pupils (in 10 sections). Thus, full capacity is 450 and this level is immediately blocked by the lack of teachers (not classrooms, not chairs).

8. The data used to run the numerical simulations is from the SY 2007–2008 BEIS data. We performed school-by-school computations on the 37,800 elementary schools and 6,532 public secondary schools in the BEIS.

Preliminary Results on Congestion in Public Elementary Schools

- 9. The graph below summarizes the results of the simulation:
 - 11,773 elementary schools (31 percent of 37,807) can be classified as "congested"⁷¹
 - 5,728 (15 percent of 37,807) are considered to be undersubscribed.



• 20,305 (54 percent of 37,807, a majority) are judged as "just right."

10. The aggregate national capacity is about 11,028 million students, compared to the actual 2007–2008 enrollment of about 12,304 million students. Based on the national totals, the public elementary school sector appears to be operating at about 12 percent (i.e., 12.304/11.028 - 1)

⁷¹ A school where 45 is the standard class size is deemed congested if it has more than 45 aisle students. Conversely a school is considered to be undersubscribed if it has more than 45 unfilled enrolment slots. All other schools are classified as "just right".