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ISSUES IN THE FINANCING OF BASIC EDUCATION:

AN OUTCOMES APPROACH

The attached reference paper, funded by the Asian Development Bank and prepared by Dr Wadan Narsey, Associate Professor, Economics Department, The University of the South Pacific, examines the relationship between basic education expenditure patterns and outcomes. The paper focuses on Fiji data and is the result of work still in progress. A full report will be prepared for the Asian Development Bank later in the year.

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Executive Summary

All Forum countries currently place a heavy emphasis on the strengthening of basic education (pre-school and primary) in their countries.

2. Partly, this is a result of increasing evidence that levels of literacy and numeracy are under threat. In most countries, there is serious concern about significant urban:rural differentials in quality of education provided and the consequent academic performances of pupils.

3. Governments have therefore come under increasing community pressure to allocate greater levels and proportions of total public resources to improving the overall quality of basic education, and to bridge the yawning gaps between rural and urban education resources and outcomes. Specifically,

- (a) governments are being pressured by communities to take on full financial responsibility for the costs of pre-schools, so as to ensure that all children have access to quality pre-schools
- (b) to significantly reduce pupil:teacher ratios in primary schools to 20 or below (from their existing levels of above 25); and
- (c) to significantly increase aggregate funding for primary schools.
- (d) to establish junior secondary schools (Year 7 to 10) so as to provide better quality education for Year 8 examinations than is provided by primary schools.

4. However, there is increasing concern amongst Ministers of Education, that the resource allocation issues need to be considered with greater reference to education/academic "outcomes".

5. This has been the focal term of reference for this study which examines raw resources and examinations data for Fiji pre-schools, primary schools and junior secondary schools.¹

6. Case study evidence from Fiji is presented, arguing that with communities having to take on the bulk of the financial responsibility for preschools, this significantly disadvantages children from poorer families, who fail to attend pre-school.

7. One key factor is the significant urban:rural differences in raising independent funds for pre-school education. The data indicate that Government grants do have a significant impact on pre-school enrolments, especially in rural areas.

¹ Fiji was selected for the case study as it was the only country for which comprehensive data sets could be obtained for both resource allocation (pupils, teachers, finances) and for "academic outcomes" (performance in the national examinations (Year 8 being the one considered here). The consultant is extremely grateful to the Interim Minister for Education (Mr Nelson Delailomaloma) and Permanent Secretary (Mrs Emi Rabukawaqa) for making available the raw data required for the analysis. Confidentiality of individual schools has been maintained.

8. Evidence is also presented to show that while "preschoolers" do subsequently perform better academically, relative to those who did not attend pre-school (as would be expected), the differences are far more significant for children from poorer families, than for children from average or affluent families.

9. However, the study also argues that the current patterns of enrolments and unit costs in pre-schools (in comparison to primary enrolments and unit costs) imply that were Government to take full financial responsibility and especially for staffing (as they currently have in primary schools) this would have a major impact on the Education budget. This will tend to result from both the age profiles of current and likely future pre-school enrolments, and differentials in salary structures between a community funded preschool system, and one where teachers become part of the civil service structure.

10. The data on primary schools indicates that there are significant differences in academic performance between urban schools, and those in rural, remote and very remote areas. There are also significant differences in overall school funding and per pupil funding between urban and rural areas, resulting from differing capacities to raise funds independently. These differentials are maintained to a significant extent, despite Government's affirmative funding of rural and remote schools.

11. However, the data fails to show any significant positive relationship between higher per pupil funding or expenditures, and better academic performance. Neither does the data indicate positive correlation between aggregate funding per school, and better academic performance.

12. One major problem is that there is no market incentive system in place (as there is with private goods services sold in the market) to ensure that the price paid for education (resources made available by Government and the communities) reflects and/or is matched by good academic outcomes, which is the objective of the funding.

13. The data also fail to show any significant relationship between low pupil:teacher ratios and better academic performance. In fact the data indicates the contrary: better academic performance corresponds to high pupil:teacher ratios. These results remain even when the data are disaggregated for urban and rural schools.

14. Examination of the Year 8 performance of junior secondary schools surprisingly indicates that there is no systematic patterns of advantage over primary schools, despite the considerably higher unit costs of junior secondary schools.

15. The data indicates an urgent need for strong empirical research, in a joint exercise between education experts and economists, to identify the factors that are leading to good academic outcomes, and to reallocate financial resources to boost the efficiency and productivity of these factors throughout the education system.

Introduction

16. The provision of quality and relevant education is one of the thorniest socio-economic issues throughout the Forum member countries. It is recognised that there are major problems

regarding equity and access. The quality of basic education² is under scrutiny, as information emerges about a general decline in standards of numeracy and literacy. (Source: BELS Project).

17. In virtually all Forum countries, pre-school education has definitely taken hold and spreading at a high rate, largely driven by community efforts, focused in urban areas. Parents who rightly perceive education to be crucial to the economic future of their children, are attempting to ensure that their children get as good a "head-start" as they can.

18. In some countries, Governments are directly involved in pre-school, while in others, Governments have abstained from taking full responsibility although some Government contributions are forthcoming especially for rural areas.

19. In nearly all the latter countries, however, communities are increasing pressure on Government to become more fully involved, at least in the financing of pre-schools, on par with their roles in primary education. There is pressure, for instance, to make pre-school into simply another layer in the primary school system. It is important that the full resourcing implications of such a move, are understood, before policy decisions are made.

20. Primary education (as with secondary education)³ faces fundamental disparities between urban and rural areas. It is generally thought that there are significant urban:rural disparities in the quality of teachers, facilities, studying and travel environments, and overall resources, leading therefore to corresponding disparities in academic outcomes.

21. In response, most Governments are in the process of making policy decisions to dramatically increase financial and staffing resources to lagging areas and groups, such as by drastically reducing pupil:teacher ratios, or allocating large increases in funding.

22. It is surprising, however, that to date, there have not been any published data which specifically documents the extent of rural:urban or regional disparities in resourcing or academic performances, nor has there been any systematic linkages or correlation drawn between resourcing patterns and actual education outcomes.

23. For many of the Forum countries, it is crucial to draw the linkages between resourcing and academic outcomes, not just for purposes of ensuring economic efficiency for education spending, but to avoid unnecessary and unproductive increases in financial commitments, in a period when governments are in severe financial and fiscal crisis because of wider economic and political developments. As several of these Governments attempt to increase economic growth, there is little scope for Government budgets to expand in general, and even less scope for education budgets to expand either absolutely, or in terms of their share of the total budget.

24. In some countries, such as Tuvalu, the revenues available to Government have increased dramatically due to fortuitous circumstances⁴, and there are concomitant plans to

² Basic Education is here interpreted as pre-schools or early childhood education, primary schools, and junior secondary schools in so far as they provide Year 7 and Year 8 classes, which are usually provided by primary schools.

³ Secondary education systems are also unable to provide places for the large numbers of students who complete primary schools: there just aren't enough schools, class-rooms and qualified teachers to increase enrolments.

⁴ Tuvalu is expecting significant additional revenues from its sale of .tv internet domain.

increase Government expenditure, and particularly in the area of education. The latter focus is a positive development, but the evidence in this paper will suggest that the Tuvalu Government may need to focus the increases in funding, to link more directly to desired education outcomes, rather than a broad indiscriminate increase, which will be difficult if not impossible to reverse, should the incremental revenues dry up in the future.

25. Fiji provides an interesting case study for this meeting of the Forum Education Ministers. Not only does it have the second largest education system, but the sector has been continuously under the microscope for more than a decade, because of perceived differentials in academic performances, across communities and regions.

26. There has been much debate, the setting up of various task forces, the commissioning of various studies, the development of strategic plans, and last year the establishment of a comprehensive education commission.⁵ There is also in draft form, an Education Fiji 2020 document.

27. All these reports and strategic plans call for substantial injection of financial resources to tackle the problems perceived to be plaguing Fiji's education system, from pre-school to tertiary levels. The resource implications are likely to place significant upwards pressure on the Fiji budget.

28. However, there is very little substantive empirical analysis and documentation of the current patterns and realities of resource allocation, nor is there any attempt to empirically relate the resource issues to the educational outcomes. This paper attempts to fill this gap for basic education: pre-schools, primary education, and junior secondary schools in so far as they relate to patterns of resource allocation, and correspondence to academic outcomes, as indicated by primary examinations results.⁶

29. The resource allocation issues are amply documented in a number of studies. See for instance Bray (1998) for a range of problem areas. These studies by and large tackle the issues purely from economic parameters, such as funding per pupils, pupil:teacher ratios, shares of levels of education expenditure in total education budgets, education expenditures as proportions of total government budgets and total national GDP, etc. There is very little reference, if any, to education outcomes, which is the focus of this study.

30. Readers may also wish to refer to Tavola (2000) for a good survey of the qualitative and general description of basic education systems in the region. Tavola's study however does not pursue the overall internal resource allocation and efficiency issues, nor the relations to academic outcomes.

31. But, first, a caveat. In this study, examination marks are used as the indicator of schooling "outcome". Are primary school examination marks for English, Mathematics, Basic Science appropriate indicators of appropriate learning or teaching?

⁵ Thus in the space of two years, the Fiji Government has published a Strategic Plan for 2000- 2002 (1999), A Blueprint for Affirmative Action on Fijian Education and a voluminous Report of the Fiji Education Commission/Panel. The Report of the Education Commission will hereafter be referred to as RFIEC.

⁶ While this Study focuses on basic education (here interpreted as pre-school and primary education, there is a brief reference to secondary education requirements, because of the peculiarity indicated by demographic projections for the numbers of secondary age children.

32. What of the essential objectives of “socialising” children, teaching them to be good, knowledgeable and responsible citizens, contributing to the well-being of their communities, their nations; while retaining and strengthening the positive aspects of their culture and identity? What of the training required surviving with sustainable livelihoods, in an increasingly globalised and competitive international economy? Unfortunately, few countries if any, systematically apply any assessment system to test for the broader virtually intangible qualitative “education for life” characteristics.

33. The existing examination systems are used to assess performance, and select pupils for further study. And, ultimately, the skills acquired in English, Mathematics, Basic science. Skills in these areas, whether acquired through rote learning, or "real learning" as defined by pedagogical experts, do get applied in all walks of life in the global economy- for architects, engineers, accountants, farmers, businesses. Whatever may be the weaknesses of the existing systems of curriculum and assessment, they are taken as relevant and used here, purely because that's what we have.

34. It is emphasised that this study has been conducted purely from an economic perspective, and is therefore a mono-dimensional analysis. There is a need to integrate the kinds of analysis conducted here, to that of education experts who need to provide the essential foundations of good systems of teaching and learning. Economic and financial analysis can assist, but should not be the only factor to drive education reform.

Pre-School/Early Childhood Education

35. Fiji Ministry of Education data indicates that pre-school enrolment has been steadily growing over the last eight years. The number of schools have risen from 336 in 1992 to 494 in 1999, while enrolment has correspondingly also increased.⁷

Table 1	Pre-School Centres, Enrolments and Staffing				
	1992	1995	1998	1999	2000
No. of Centres	336	374	440	494	278
No of Teachers	422	429	489	484	349
Enrolment	8209	7034	7934	9223	7111
Pupils per Centre	24.4	18.8	18.0	18.7	25.6
Teachers per Centre	1.3	1.1	1.1	1.0	1.3
Pupils per teachers	19.5	16.4	16.2	19.1	20.4

36. It has been previously noted significant proportion of pre-schools close down, probably because of inability to maintain funding⁸.

37. Table 2 indicates that probably only a third of eligible children are enrolled in pre-school.⁹ Row 2 of Table 1 gives estimates of pre-school enrolments as % of Class 1

⁷ RFIEC (p.121) for 1992 to 1999 figures.

⁸ RFIEC (pp 121-122).

⁹ More precise data indicates that only about a third of 5 year olds not already in primary school are actually enrolled in pre-school. These crude percentages are good indicators of actual enrolment ratios.

enrolments. The data indicates that Fiji's preschools do not have significant urban:rural¹⁰ disparities: Very Remote pre-schools have a higher enrolment ratio than urban schools, although the "rural" category does have a lower proportion enrolled than the national averages.

Table 2 Summary Enrolments Data for Pre-schools (by location) (2000)

	Urban	Rural (>10km)	Very Remote	Totals
No of Pupils	3785	1653	1673	7111
% Class 1 Enrolments	37%	20%	62%	34%
Pupils/School	33	19	22	26
Pupil:teacher ratio	22	17	20	20

38. While Table 3 provides part of the explanation for this positive result. While Total Income per pupil shows the expected higher funding in urban areas (\$124 per pupil) compared to \$81 in Rural areas and \$57 in Very Remote areas.

39. Fee Incomes per Pupil are clearly the major contributor to the urban:rural disparities: Very Remote schools had an average fee of a mere \$8 per year, the Rural category had \$14 per year, while Urban schools having \$77 per year.

Table 3 Summary Income Data for Pre-Schools (by location) (2000)

	Urban	Rural	Very Remote	Total
Total Income (\$000)	470	133	96	699
Income/Pupil (\$)	124	81	57	98
Fee Income/Pupil (\$)	77	14	8	46
Govt.Grant/Pupil (\$)	9	35	24	19
GovtGrant as % of Total Income	8	44	42	19

40. However, Government Grants per student show strong discrimination in favour of rural areas. While Urban pre-schools receive only \$9 on average, Rural pre-schools receive \$35 and, somewhat anomalously in comparison to the latter, Very Remote pre-schools receive a somewhat lower \$24 per child. Clearly Government Grants even out, to some extent, the significant differences in resource availability between pre-schools in the Urban, Rural and Very Remote areas.

41. It should be noted that in aggregate, Government Grants currently provide only 19% of the total incomes of Pre-schools, although the average is higher for Rural Schools (at 44%) and Very Remote Schools (at 42%). Pre-schools are largely community financed at the moment.

¹⁰ The rural:urban classification has been adapted from the ones used by the Ministry of Education, which has several disaggregations for both the "urban" and "rural" categories. Here "rural" refers to schools located more than 10 km from a town and accessible by road, while "Very Remote" are those only accessible by boat, and/or air, or bush track.

42. Differences in specific items of expenditure are worth noting however, as they have a bearing on the quality of teaching and learning, and the overall cost implications for Government, were it to assume full responsibility for the financing of pre-schools.

43. Capital expenditure per pupil is fairly low (at an average of \$16 per pupil), varying from a mere \$4 in Very Remote schools, to \$10 in Rural schools, and \$23 per pupil in Urban schools. Expenditure on Teaching Materials is a paltry \$1.49 per child in Very Remote schools, rising to \$7.19 in Urban schools.¹¹

44. The largest component of expenditure is on the salaries of staff, who absorb some 61 percent of the total expenditure, with the schools in Very Remote areas, spending the largest proportion on this item- 76%.

Table 4 Summary Expenditure Data for Pre-Schools (by location) (2000)				
	Urban	Rural	Very Remote	All
Total Expenditure (\$000)	533	120	69	722
Total Expenditure/Pupil	141	72	41	102
Capital Expenditure/Pupil	23	10	4	16
Exp.Teaching Materials/pupil	7.19	3.87	1.49	5.07
SalaryExpenditure/TotalExpend (%)	58	67	76	61
Salary Expenditure/Staff	1806	840	642	1267

45. What is most significant is the average teachers' salary (\$1267) nationally, but a mere \$642 in Very Remote Schools and \$840 in Rural schools. These salaries are lower than what are received by unskilled workers in the private sectors in urban areas, lower than what the Fiji Civil service pays its cleaners, and a fraction of the minimum salary of primary school teachers (around \$7,000 per year) or the primary school average (of around \$11,579 per year).

46. Were Government to assume full financial responsibility for the pre-schools, including the payment of teachers' salaries, there is every likelihood of a expenditure blowout.

47. The current preschool unit cost is around \$100 per annum. The current unit cost in primary schools is around \$500 per year. A large part of the difference is due to the salaries paid currently in preschools (average of \$1270) and that paid in primary schools (average of \$11,579).

48. The Report of the Fiji Islands Education Commission (Nov 2000) recommended that pre-schools should have "equitable salary scales commensurate with levels of qualification". Were Government to take full responsibility for pre-schools, there will need to be major expansions of teacher training and curriculum development programmes

49. Given the international evidence on the importance of early childhood learning for long-term intellectual development of children it is unlikely that pre-school teacher training will be less rigorous than primary teacher training or less costly. It is unlikely that qualified pre-school teacher salaries could depart too significantly from the lower levels of primary teacher salaries. Teachers' unions would no doubt become an important factor.

50. It should be noted that major capital investments will also be required. Currently, only 29% of pre-school enrolments are housed in existing primary schools. 71% are housed in

¹¹ This level of expenditure would on average barely purchase a book per child, even in the Urban schools.

other locations, such as bures, separate houses, and religious facilities. There would need to be roughly an expansion of class-rooms by 12.5% to cater for the increases in enrolments. And similarly, an entire primary cohort (on par with Class 1 numbers) of teachers would need to be trained.

51. These estimates assume that only 5 year olds are fully funded by Government. But the data indicates that some 40% of pre-schoolers are below the age of 5. Were Government to provide free pre-school education, then it is quite likely that there would also be universal enrolment of 3 and 4 year olds. The Education Commission has in fact recommended that Early Childhood Education should encompass children “from birth to year 8”.

52. Given the implications for the numbers of teachers required to be trained and funded, and the number of extra class-rooms that would need to be built, the likely increases in the aggregate financial calls on the Education Budget, and the overall Government Budget, would simply and inevitably be unmanageable, especially for those economies which are currently facing difficulties.

53. The Ministries of Education need to examine bolstering the current system by widening the scope of its per capita funding and judiciously increasing the levels, in order to ensure that there is complete coverage of 5 year olds throughout the country. These efforts should depend on community efforts to establish and manage the pre-schools, with Government increasingly extending its role in teacher training and curriculum development. Down the line, Government could examine complete integration of the preschool system into its primary school system.

54. It is important, however, to realise that Government funding must ensure full extension of pre-schools to all the five year olds in the country, in the interests of providing equitable access to quality education to the children of the poorest families in the country.

55. The following section provides some evidence to suggest that this is vital, if the academic performance of the children from low income and deprived families is to have any hope of matching that of children from economically better off families.

Case Study: Impact of Pre-Schools on Academic Outcomes¹²

56. What exactly is the impact of pre-schools on children's academic performance? Does it really give pre-schoolers any significant advantage over those who do not go to pre-school? And does any advantage, if found to exist, last through later years or is it eventually eroded as non-preschoolers" catch up (and so perhaps is not necessary in the long run)?

57. Intuition, and international evidence suggests it should. But what exactly are the facts in PICs? There do not seem to be any documented studies.

58. To fill this gap, data was obtained from a multi-racial suburban school with children from a mixture of economic backgrounds, for three 2001 classes- 1, 3 and 7. Table 5 confirms the general pattern of improving pre-school attendance of most urban schools- with the overall percentage having attended increasing from 41% of the Class 7 pupils, to 68 percent of this year's Class 1.

¹² I am grateful to the Principal and staff of Tamavua Primary School, a multi-racial school run by a Committee on the outskirts of Suva, for their co-operation in obtaining the survey data.

Table 5 *Percent Attended Pre-school (by economic status)*

	Year 2001 Classes		
	Class 7	Class 3	Class 1
Average/Well-off ¹³	48	72	76
Poor	22	38	40
All	41	62	68

59. But Table 5 also confirms the existence of a wide gap between children from average and well-off backgrounds, whose pre-school attendance is twice that of those from poor backgrounds.¹⁴

60. Table 6 indicates that there is significant improvement in the average examination marks for those who attended pre-school as opposed to those who did not.¹⁵ The advantage for those in Class 6 was 15%, 8% for Class 3 and 11% for Class 1.

61. However, children from poor families, obtained more significant advantages from pre-schooling (66%, 8.2% and 10.8% respectively) that did those from Average families, for whom the impact was insignificant.

Table 6 *Percent Advantage In Maths Average Mark for Pre-schoolers (by economic status)*

Economic Status	Year 2001 Classes		
	Class 6	Class 3	Class 1
Average	-3.3	0.1	6.9
Poor	66.6	6.8	6.1
All	15.4	8.2	10.8

62. The patterns are even more consistent in English examination marks. Overall, the advantage for preschoolers was 11% in Classes 6 and 3 and 7% in Class 1. Again, children from poor families indicated significant improvements in their average marks- 34% at Class 6, 20% at class 3 and 7% at Class 1. Unusually, for Classes 6 and 3, pre-schoolers from average families were at some disadvantage (by -5% and -3%) compared to those who had not gone to pre-school.

Table 7 *Percent Advantage In English Average for Pre-schoolers (by economic status)*

Economic Status	Year 2001 Classes		
	Class 6	Class 3	Class 1
Average	-5.0	-3.4	6.3
Poor	33.6	20.3	8.9
All	11.1	10.9	7.2

63. Given that Ministries face such large increases in funding requirements for pre-schools, one relevant question is: are the advantages of preschooling sustained through later years? Or do non-preschoolers "catch up" somehow?

¹³ Economic status was defined thus: Poor: < \$5000 pa; \$5000<Average<\$15,000; Well-off > \$15,000.

¹⁴ The data also indicates that while only 20% of cohorts of girls of this school attended pre-school some 7 years ago, the proportion had risen to 75% currently, exceeding the rate for boys (63%).

¹⁵ For each class, the examinations marks for English and Mathematics were standardised around a mean of 50, and standard deviation of 10.

64. Table 8 traces the average mathematics marks of the year 2001 Class 7 cohort of students, through Classes 1, 3 and 6. The "preschooling" advantage in Class 1 was a very large 45%, declining to 15% by Class 3, but continuing through to Class 6. Again, for children from average families, the difference are fairly small (2%, 3% and -3% for the three classes). But for children from poor families, the difference is a significant 45% in Class 1, 46% in Class 3 and 67% in Class 6.

Table 8 Percent Advantage in Mathematics for 2001 Class 7 "Pre-schoolers" When Attending

	Class 1	Class 3	Class 6
Average	2.0	3.0	-3.3
Poor	45.0	46.3	66.6
All	45.0	15.1	15.4

65. Almost exactly the same patterns are evident when comparing the average examinations marks in English (Table 9). For the cohort as a whole, the advantage in Class 3 was 15%, declining to 11% by Class 6. However, for children of poor family backgrounds, the pre-schooling advantage was 43% in Class 3 and 34% in Class 6.

Table 9 Percent Advantage in English for 2001 Class 7 "Pre-schoolers" When Attending

	Class 1	Class 3	Class 6
Average	NA ¹⁶	-1.6	-5.0
Poor	NA	42.6	33.6
All	NA	15.4	11.1

66. The findings above should not be surprising. It would be expected that the home environments provided by poor families, both in terms of the human resource environment implicit in the persons in the household and the physical resources available, would generally not be as conducive to learning as in better off families. Pre-schools therefore have the capacity to provide one levelling factor for children from disadvantaged families.

67. The above data is drawn from only one suburban school. It would be surprising however if similar results were not to apply to schools throughout the country, especially in rural areas where children can be expected to be more disadvantaged, in terms of learning environments, especially for the poorest families.

68. It is therefore absolutely vital that pre-schooling not be neglected for children from poorer backgrounds, because it is precisely these children who obtain the greatest benefits from pre-schooling.¹⁷

69. There is a major anomaly that needs to be addressed. All Forum Governments are committed to providing free basic education. To date, this has focused on primary education, and for many, the policy is slowly being extended to secondary education. It is therefore ironical the very first years of basic education- pre-school or early childhood education, are not free to the same extent.

¹⁶ The School did not have available the records for the English examinations marks at Class 1.

70. The evidence of the case study indicates that children from poor families can be given an opportunity to improve their performance and bridge the gap with the children from better off families. Pre-schools have the potential to bridge one of the most enduring disparities in education- that between the academic achievement of children from the affluent classes and those from the poor.

PRIMARY SCHOOLS: RESOURCES¹⁸

71. Table 10 indicates that the 708 schools in the Fiji Ministry database are evenly scattered throughout the four location categories, with the largest proportion 29% being in Very Remote areas, while Urban areas had some 26 percent of all the schools. However, the urban schools had a much higher proportion of students (some 49 percent), with the Rural and Remote having around a fifth each, and the Very Remote having only 13% of the total primary enrolments.

Table 10 Summary Enrolment Data					
	Urban	Rural	Remote	V.Remote	Total
Number of Schools	181	142	205	180	708
Percentage	26	20	29	25	100
Number of Students	69447	26725	28446	18523	143141
Percentage	49	19	20	13	100
Students per School	384	188	139	103	202
Pupil:Teacher Ratios	29.2	23.9	23.9	21.5	25.8

Key

Urban: City, town, suburban (within 10 km of urban boundaries)

Rural: Between 10 and 20 kms from urban boundaries

Remote: More than 20 km from urban boundary but accessible by road

Very Remote: Accessible only by air, boat, foot track.

72. This is a natural result of the school sizes in the rural areas being considerably smaller than that in the urban areas. Thus the average Urban school enrolment was 384, more than three times that of Very Remote schools with an average of 103. Rural schools had an average of 188 which was still significantly higher than that for Remote schools with 139. Are these disparities in school sizes important factors in determining academic outcomes?

73. Despite the great variability in school sizes, the pupil teacher averages by location show less variation- the aggregate for urban areas was 29.2, that for Rural and Remote areas was 23.9, while that for Very Remote areas declined to 21.5.

74. It may be noted that while the pupil:teacher ratio for Very Remote schools on average is already some 26 percent less than that for Urban areas, recent policy statements of intentions of reducing multi-grade teaching is likely to lead to further reductions in pupil:teacher ratios, with corresponding impacts on unit costs. How exactly are academic outcomes affected by pupil:teacher ratios?

75. Table 11 indicates that the 708 primary schools analysed in the database received total revenues of some \$10.6 millions. While the usual patterns of resource allocation throughout

¹⁸Unless otherwise stated, the Classes 7 and 8 in Junior Secondary Schools (JSSs) are considered as part of the secondary school system. However, in this paper, there will be some comparisons drawn with the JSSs for Year 8 Examination Results and unit costs.

the developing world is for there to be an urban bias, the experience of Fiji is encouragingly the opposite.

Table 11 Summary Revenue Data					
	Urban	Rural	Remote	V.Remote	Total
Total Revenues (\$m)	4.7	1.7	2.4	1.7	10.6
Tot.Revenue/Pupil (\$)	82.6	75.5	93.4	105.6	86.6
Govt.Grant/Pupil (\$)	38.2	46.5	59.2	60.9	47.2
Govt.Fee Grant/Pupil (\$)	31.8	32.1	41.7	44.7	35.7
GovtGrant/Tot.Revenue (%)	46.2	61.6	63.4	57.7	54.5
Other Revenue/Pupil (\$)	44.4	29.0	34.2	44.7	39.4

76. With Total Revenue per Pupil nationwide being \$87, the Urban average was lower (at \$83). Schools in Remote areas had a higher figure of \$93 while those in Very Remote areas had an even higher average of \$106. The one anomaly was that of Rural schools (between 10 and 20 km of urban boundaries), which had the lowest average of \$75.

77. The figures for Government Grant per Pupil (and for its sub-item, Government Fee Grant per Pupil) gives a part of the explanation for the higher Total Income figures for Remote and Very Remote schools. While the Government Grant per Pupil was only \$38 in Urban schools, that for Rural schools was \$47, for Remote schools it was \$59 and Very Remote schools \$61. This Government's differential funding of Rural, Remote and Very Remote schools is commendable as a significant attempt to narrow the gaps in quality education, between urban and rural areas.¹⁹

78. What also stands out is that different locations evidence different capacities to raise revenues independently of Government, and some trends contradict the idea that Very Remote areas do not have a capacity to raise cash. Table 11 indicates that Other Revenue per Pupil in Very Remote schools on average is slightly higher than that for Urban schools, suggesting that there is excellent community commitment to the funding of education.

79. The above figures are national averages, of course. Disaggregation by districts reveals that there are extremely low revenues per pupil (\$17 to \$19) being collected for Rural schools in Ba-Tavua, Lautoka-Yasawa, and Ra, while smaller sums are being collected in Remote schools of Ba-Tavua (\$13 per pupil) and a mere \$5 per pupil in Very Remote schools of the same district. Such low revenues are probably not a matter of choice but reflect the economic capacity (or the lack of it). The scale of these numbers need to be kept in mind, when discussing "user pays" and "cost-recovery" issues in primary education.²⁰

80. The Internal Expenditure figures (Table 12) are by and large a reflection of the income figures. Urban and Rural schools tend on average to be in deficit (possibly indicating a greater reliance on loans) while Remote and Very Remote schools indicate small surpluses on their internal accounts.

81. As would be expected from the revenue figures, internal Capital Expenditure per Pupil is highest for schools in the Very Remote areas, followed by Remote schools than Urban

¹⁹ Disaggregation of Government Grants and Fee Grants per Pupil by districts suggests that schools in some locations benefit more on a per pupil basis than other comparable areas, probably because funds are allocated as block grants and some smaller schools may tend to benefit relatively more, at the margin.

²⁰ It is quite likely that these schools are in poverty-stricken areas of the cane belt, probably in hilly areas with poor quality farms.

schools. The patterns are similar for Instructional Materials Expenditure per Pupil, although the averages are less than \$7 per pupil for all categories.

Table 12 Summary Expenditure Data					
	Urban	Rural	Remote	V.Remote	Total
Total Internal Expenditure (\$m)	5.3	1.9	2.0	1.5	10.7
Surplus(+)/Deficit(-) (\$m)	-0.54	-0.14	0.38	0.21	-0.09
Tot.Internal Expenditure /Pupil (\$)	91.9	81.5	78.6	93.0	87.3
Tot.Int.Recurrent .Exp/Pupil (\$)	64.4	56.3	47.2	49.6	57.3
Tot.Int.Capital Exp.per Pupil	27.5	25.2	31.4	43.4	30.0
Exp.Instructional Materials/Pupil (\$)	3.3	4.9	5.5	6.6	4.5
Additional Exp.on Salaries/Pupil (\$)	23.9	7.8	5.3	3.9	14.3
Loan Repayments/Pupil (\$)	4.9	2.6	4.3	2.1	3.9

82. However, internal salary expenditure for additional staff is the highest for Urban schools (at \$24 per pupil), some three times more than for Rural schools, and four times that for Remote and Very remote schools. This ensures that Total Internal Recurrent Expenditure is higher for Urban and Rural schools than for Remote and Very Remote schools- a reversal of the trend so far.

83. The data on Loan Repayments per Pupil indicates that Urban schools do resort to loans somewhat more than Remote and Very Remote schools.²¹ The actual volumes of loans are probably not particularly high.²²

84. It should be noted that per pupil revenue and expenditure figures, while useful from an overall macro point point of view, are not particularly useful when it comes to analysing the total funds available to small schools. Of necessity , the majority of rural schools, because of geographical dispersion, have small enrolments. Government's funding formula, while trying to give some recognition to this fact, nevertheless cannot depart greatly from enrolment figures. Schools therefore end up with varying amounts of total revenue, with corresponding capacities for total expenditure.

85. Table 13 indicates that Government Grants per school, while averaging some \$9266 across the country, could only muster \$6152 per school in the Very Remote areas, \$8258 in Remote areas and \$8,578 in Rural areas. Urban schools, by sheer dint of large enrolments, were able to receive \$14,337 per school. Table 6 (Appendix) also indicates the significant differences, with Suva urban schools expectedly receiving almost twice the national average.

86. The data on Total Internal Expenditure per school and Non-Government funds spent per schools, indicates that the differentials arising from the Government funding formula are exacerbated by the very significant differences in the capacities of schools to generate their own funds. Urban schools on average spend \$34505 in comparison to Rural schools with \$15024, Remote schools with \$10961 and Very Remote schools with \$9403. Table 5 (Appendix) indicates that Urban Suva schools spend on average some \$52,660 in contrast to Very Remote schools in Ba-Tavua which spend a mere \$5339.

²¹ A contributing factor is probably proximity of Urban schools to financing institutions and personal relationships built up with school parents.

²² The levels of loan repayments (at 10%) suggests an aggregate debt for all the primary schools in the database, of around \$5m.

Table 13 Summary Schools Financial Data					
	Urban	Rural	Remote	V.Remote	Total
Government Grant per School	14337	8578	8258	6152	9266
Non-Govt. Funds Spent per School	20167	6447	2703	3250	7877
Total Internal Expenditure per School	34505	15024	10961	9403	17143
Schools Own Funds "Gearing"	141	75	33	53	85

87. Table 13 indicates that for every dollar provided by Government, Urban schools spend an additional \$1.41, Rural schools an additional 75 cents, Remote schools 33 cents, and Very remote Schools 53 cents.

88. What are the underlying causes of the differentials in independent fund raising. No doubt, much of the differences are explained by the differences in cash employment possibilities. However, the higher figure for Very Remote schools (relative to Remote schools) suggests that there are differences in community involvement and commitment to education, that could be strengthened through social engineering.

89. Where schools in disadvantaged locations are simply unable to raise funds, the Ministry needs to examine how their funding formula can provide some basic minimum resources necessary to maintain quality education, without seriously undermining efficiency considerations.

90. A number of other related factors, which have resource implications, may also be pertinent to the academic performance of children. It has been well established that the availability of a library, well stocked with books, can be extremely useful in improving the academic performance of pupils.²³ A crude indicator is the number of books per pupil. Table 14 indicates that the rural schools (with around 5.4 books per pupil) are better endowed than the schools in the urban areas (with about 3.5 books per pupil). On the surface of it, this suggests that the Ministry does not need to make any special efforts to allocate significant additional book resources, on average, to rural schools.

Table 13 Other Pertinent Factors					
	Urban	Rural	Remote	V.Remote	Total
Books per Pupil	3.5	5.3	5.3	5.5	4.5
Desk Places per Pupil	0.80	0.85	0.81	0.85	0.82
Percentage Boarding	0.1	1.5	7.9	7.9	2.9
Percentage Repeating	1.1	1.8	4.3	4.7	2.3
Percentage Travelling >3km	30	23	23	11	25
Percentage Walking >3km	1.8	5.2	9.6	5.4	4.4

91. However, data disaggregated by districts suggests that the above patterns are definitely reversed in some districts (such as Ra and Nadroga-Navosa) where the averages are considerably lower than the national averages. Secondly, the data on number of books per pupil, says nothing about the age, quality, or relevance of the books. And even if these latter characteristics were comparable across locations and districts, the presence of librarians or teachers willing and committed to the optimal utilisation of the books, could still be "make or break" factors, which determine whether the books are useful at all in the learning process. The Ministry of Education collects substantial and detailed data on books in the primary

²³ The "Book Flood" exercises in Fiji and across the Pacific provide supporting evidence of this.

schools libraries.²⁴ It would be useful if the numbers entered on the database could take account of the factors

92. Desk facilities for pupils are a somewhat basic consideration for the class-room learning situation. The data indicates that nationally, only 82 percent of the primary pupils have their own dedicated desk places.²⁵ Somewhat contrarily to expected outcomes, the Rural and Very Remote schools are slightly better endowed (with 85% endowment) than Urban schools (with 80% endowment). This may be a result of urban:rural drift.

93. One factor which places a heavy burden on the authorities attempting to maintain quality of schools through economies of scale, is the scattered nature of the rural dwellers. Having adequate school enrolments can require pupils to travel long distances. Having boarding schools is one response, although that is not without debate. Table 13 indicates that some 8 percent of pupils in Remote and Very Remote schools are boarders, with insignificant proportions of urban and rural schools.

94. What is surprising, however, is that some 30 percent of pupils in Urban schools, and 23 percent in Rural and Remote schools travel more than 3 km to get to school. While availability and relative cheapness of transport no doubt provide part of the explanation, it is also probably the case that parents select schools for their children, based on the dominant ethnicity of the school, as well as its religious affiliation or management.²⁶

95. The data on percentage of pupils walking more than 3 km to school indicates that significant proportions of pupils in Remote and Very Remote schools are probably arriving at school physically tired, with probable negative impact on their learning. Some 9 percent of pupils in Remote schools walk more than 3 km, as opposed to only 2 percent in urban schools and 5 percent in Rural and Very Remote schools.

96. In many of these localities, pupils are travelling past other schools which are closer to their homes, but which are not the preferred choice of the parents. The Ministry needs to develop information on the numbers of small schools with different management types, which are nevertheless in such close proximity to each other, as to make mergers a useful device in improving school size and quality. This issue, in Fiji's multi-ethnic and multi-religious context, is somewhat of a "thorny" problem requiring careful handling.

97. It may be useful for the Ministry to examine whether the statistics on deficiencies in academic performance of small schools could assist their efforts in merging inefficient small schools.²⁷

Unit Costs and Government/Community Shares

98. By far the largest expenditure item for primary schools in Fiji are the teachers, who are almost all paid for by Government. While the Ministry does have a salary database, it was

²⁴ Thus data is collected on book collections by class, as well as school disaggregations by fiction and non-fiction works.

²⁵ Presumably there is sharing of "dual desks" with three pupils, or pupils sit on benches or the floor.

²⁶ Each of the major ethnic groups, religions (Christian, Hindu and Muslim) and cultural groups are further divided into several denominations, each with its own school system.

²⁷ Some initial data is provided in this paper, although further work would need to be done.

not possible to access this database for the accurate information required for this exercise. Crude estimates have therefore been made of the unit teacher costs for Primary schools.²⁸

99. Aggregating all the expenditures for Government and Community, the data in Table 14 suggests that nationally, Government contributes some 92.5 percent of the annual costs of primary schools, while the community contributes some 7.5 percent, not a particularly high level. This is, of course, understandably the result of Government's stated policy of making primary education "free" for all children in Fiji.

100. There are some urban:rural differences, partly as a result of differential Government grants, and partly because of the efforts of urban schools to raise finance independently. Thus the community contribution rises to 11.1 percent for Urban schools, while the rural schools contribute between 3 and 6 percent.

101. The overall complete unit costs for primary schools therefore comes to some \$536 per year. By location, the unit cost rises from \$486 in Urban areas, to around \$560 in Rural and Remote schools, and by about the same amount again, to \$634 in Very Remote areas.

Table 13 Total Government and Community Contributions, and Unit Costs²⁹

	Urban	Rural	Remote	V.Remote	Total
Total Internal Expenditure (\$m)	5.3	1.9	2.0	1.5	10.7
Est. Govt. Expenditure On Salaries (\$m)	22.6	11.1	12.4	8.9	54.9
Est. Total Expenditure (Govt + Community) (\$m)	27.9	13.0	14.4	10.4	65.6
Est. Total Govt. Expenditure (\$m)	24.8	12.2	13.9	9.9	60.7
Est. Community Contribution (\$m)	3.1	0.8	0.5	0.5	4.9
Government Share in Primary	88.9	93.8	96.5	94.9	92.5
Community Share in Primary	11.1	6.2	3.5	5.1	7.5
Overall Unit Expenditure/Unit Costs (\$)	486	564	560	634	536

102. The actual differences in Unit costs between urban and rural areas are probably less than would be indicated by the above numbers, because in these estimates, the same unit salary has been crudely used across all locations. In reality, Rural schools will have lower unit salary costs, because Principal and Deputy Principal salaries are likely to be lower (given the smaller sizes of the schools in the rural areas) while the ordinary teachers themselves, are likely to be earning higher salaries in the urban areas, for a variety of factors.³⁰ And as we have seen above, favourable Government treatment for schools in rural areas, has also led to some evening out of the unit costs and unit expenditures, though not completely.

²⁸ 1999 Budget Estimates for salary expenditure in primary schools, amounted to \$63.681 (for an establishment of 4703) while the Actuals (indicated in the 2001 Budget) was \$64.159m. There were some 4745 teachers in the primary database with finance data, out of a total of some 5549 teachers in the complete database. I have therefore used an estimated unit salary of \$11,578 for the teachers in the finance database (which would lead to an aggregate salary bill of \$54.9m for the finance database and estimate of \$64.2m for the schools in the complete database).

²⁹ These estimates relate to the primary schools for which financial data exists in the Ministry database.

³⁰ More qualified and experienced teachers are likely to be found in the larger schools which are concentrated in the urban areas.

PRIMARY SCHOOLS: ACADEMIC OUTCOMES³¹

103. While Fiji primary education is meant to be free, the reality is that schools still engage in fund-raising through building fees, library fees. These efforts are by and large not successful in rural areas given the lack of cash employment and cash income.³² This inevitably results in urban schools being better resourced in total. Do these resource differentials have any impact on academic outcomes, as is commonly believed?

104. If perceived differentials in quality are not bridged in rural schools, parents look to migration to urban areas where schools are seen to be better endowed, teachers are thought to be more qualified and experienced, and where the final test for parents is that the academic performance of their children is thought and to be better, with their children being able to gain admittance to preferred secondary schools. *Are these perceptions correct?*

105. Table 14 gives summary figures on the percentages of children passing the national Year Eight Examination, which has in the past been taken as the "entrance examination" for secondary schools.³³ The data bears out to some extent, the popular ideas about urban:rural differentials. In English, Urban schools have significantly higher pass rates (of 89%) compared to Rural, Remote and Very Remote schools (the latter two categories having only 77%). Interestingly, in Mathematics and Basic Science, both Urban and Rural Schools are significantly higher than the schools in Remote and Very Remote schools. Table 15 gives the differences in means, which indicates similar trends.

Table 14 Percent Passing Year 8 Examination in

	Urban	Rural	Remote	V.Remote	Total
English	89.3	81.7	77.2	77.1	84.3
Mathematic	88.7	88.1	83.2	81.6	86.8
Basic Science	88.8	87.7	80.4	78.2	86.0

Table 15 Mean Marks of Year 8 Examination Results

	Urban	Rural	Remote	V.Remote	Total
English Mean Mark	73.2	65.1	61.0	60.1	67.9
Maths Mean Mark	70.7	69.0	64.8	62.5	68.4
Science Mean Mark	71.3	69.5	63.8	60.9	68.5

106. Tables 9 to 14 in the Appendix show clearly that when disaggregated by districts there are numerous locations where some 30 percent of all children "fail". This cannot but be demoralising to the local communities, especially when society at large believes that all children should be able to progress to secondary education. It is not surprising therefore, that rural people seek to migrate to urban areas in search of better education prospects for their children, even if the relocation forces them to live in squatter settlements with all the attendant discomforts of life.

107. This places heavy pressure on the Ministry of Education, which is charged by Government with ensuring that rural areas receive a quality of education which is conducive

³¹ While the resource databases for preschools and primary schools were provided in a raw form by the Ministry of Education, the examinations database was created and integrated by the Consultant, with the resources databases.

³² It has also been argued that some communities place greater emphasis on religious and community obligations than on the education of their children.

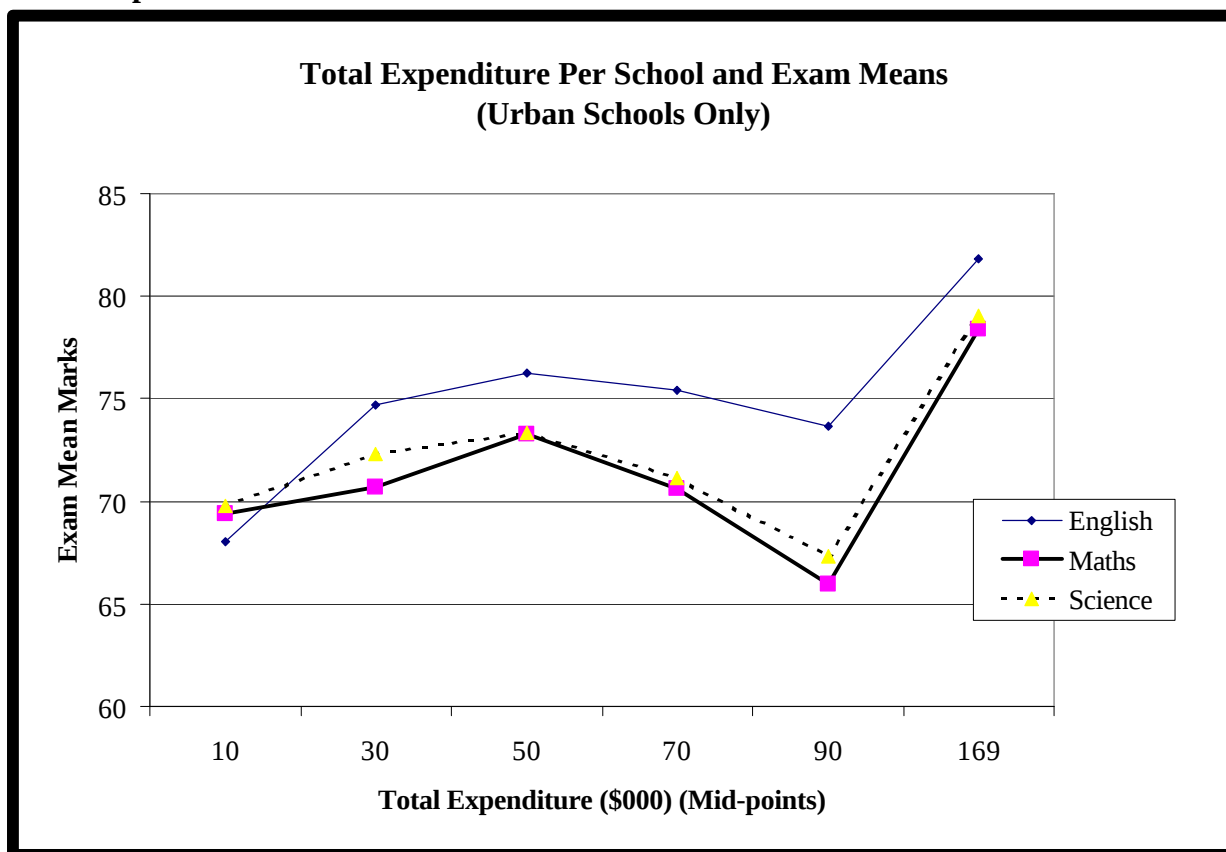
to good academic results. Communities pressure the Ministry of Education to be generous with funding; teachers associations pressure the Ministry to lower pupil:teacher ratios so as to improve teacher performance.

108. What is the evidence, however, that generous funding of schools (either on a school or per pupil basis) has any impact on academic outcomes? Do low pupil:teacher ratios lead to better academic performance? This study presents some preliminary findings.

Resources and Academic Outcomes

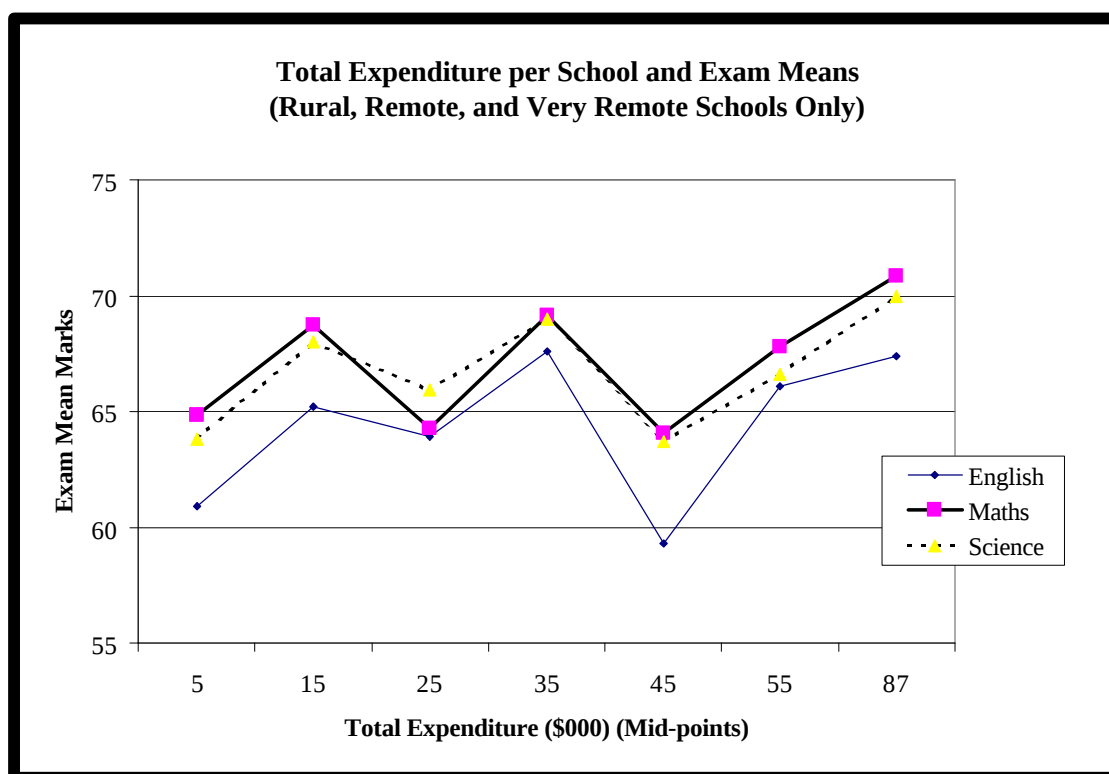
109. The following two graphs chart the average examinations marks in English, Mathematics and Basic Science for all primary schools, by the Total Expenditure per School band they fall in. Graph 1, which is for Urban schools shows an interesting upward trend peaking at \$60,000, but then a general downward trend until total expenditure levels reach \$90,000. The bulk of the urban schools are in these two trends, and the high performers at the far right, would seem to be a few of the elite large schools which are attracting the cream of the pupils.

Graph 1



Graph 2 indicates that the trend curves are all flattish, all below the 70% line (except for the far right category) and giving absolutely no reason to believe that increasing per school resources (up to \$55,000 per school) is going to be associated with better academic performance.

Graph 2



110. Graph 3 indicates that Total Revenue per Pupil would also seem to be virtually uncorrelated with academic outcomes. Being the average for all pupils in the country, the far right rise in Graph 1 is expected to be neutralised by the generally lower performance of very remote schools, which may also have a high per capita funding, because of their small sizes.

111. Of course, it would not be correct to argue from the above graphs and the data that resources "do not matter" when it comes to achieving good academic outcome. Of course, the provision of good laboratories, good libraries, computers, textbooks and books, must all in general encourage better academic performance of pupils. It would be expected, however, that such better performances would show up more definitively on the graphs.

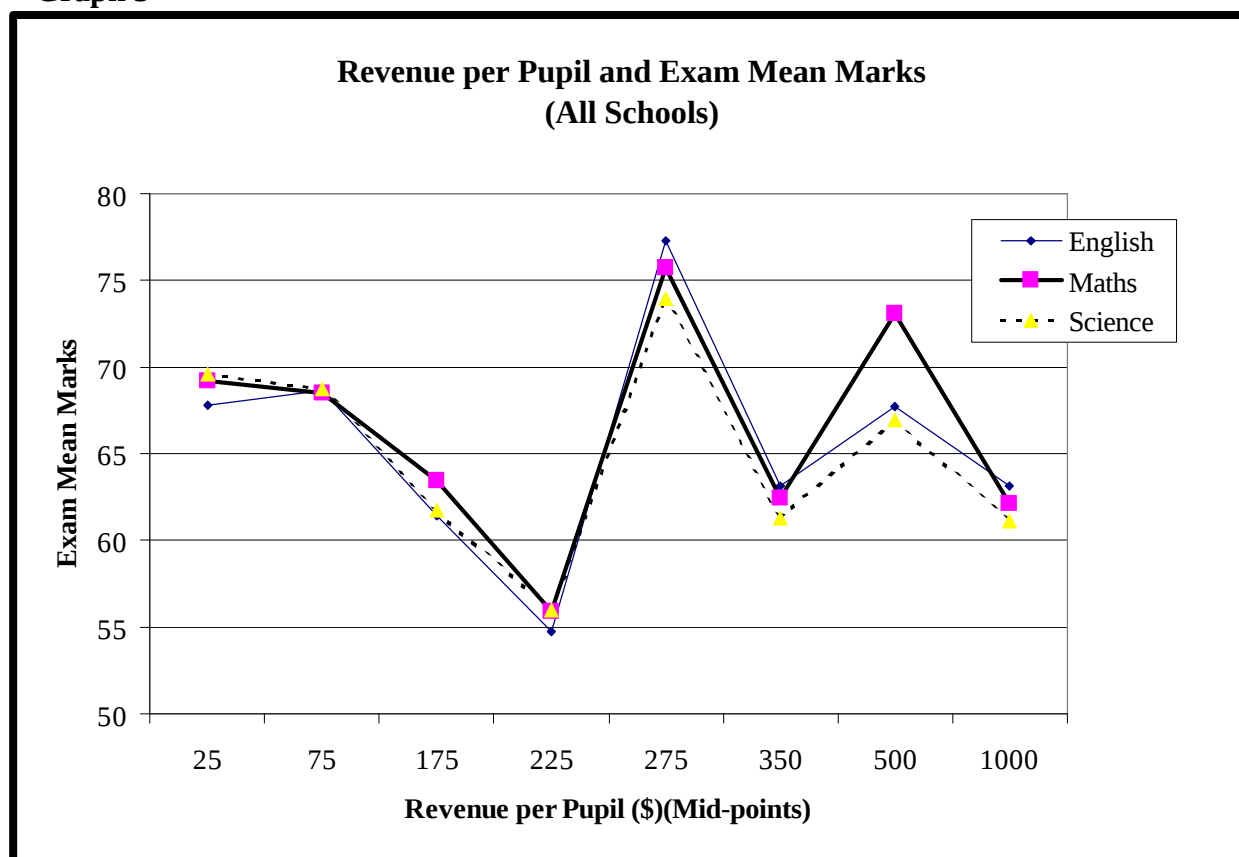
112. The fact that they don't would indicate that far more important than mere resourcing, are factors such as good principals and management, committed and dedicated teachers, and other factors which have not been analysed here, such as teacher qualifications, experience, multi-grade teaching at Year 8, etc.

113. What the graphs do indicate is that Ministries of Education, while generally attempting to improve the resourcing of basic education, must target the funds with greater focus, so as to have a direct impact on academic outcomes.

114. Is there a need to have salary structures, increments, bonus payments, and other financial incentives, more directly related to specific target improvements in academic outcomes? How this is done while being fair to teachers and without raising the ire of unions, would be a profound challenge to Ministries of Education. For certain, if the

initiatives succeed, pupils and parents would be the major beneficiaries, and rural:urban drift is likely to be curtailed from the currently high levels.

Graph 3

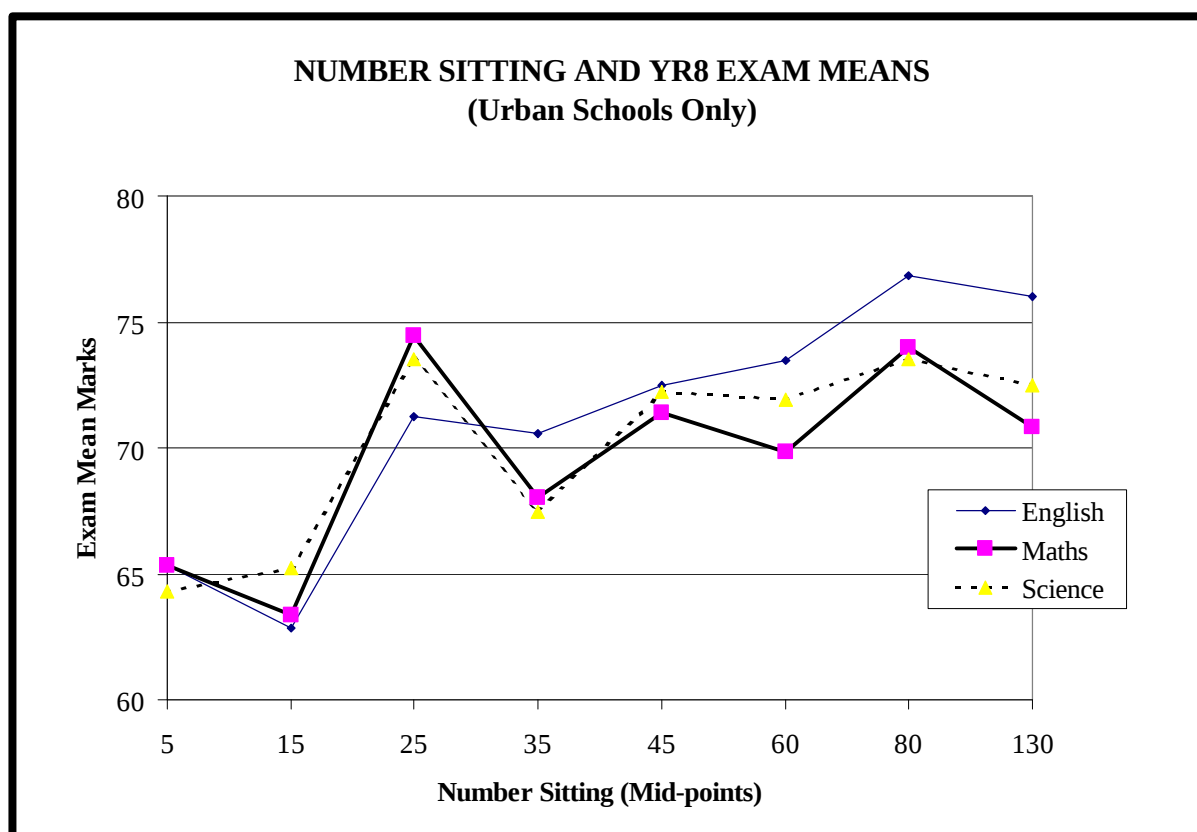


Does School Size, Class Size and Pupil:Teacher Ratios Matter?

115. Interesting trends seem to be indicated when exam performances are correlated with the numbers of pupils sitting the Year 8 examination from each school. Urban schools display a strong positive correlation (Graph 4), with an initial peak at around a pupil:teacher ratio of 35, with even these peaks being exceeded with the number sitting rising above 80 students. These crude correlations need to be refined further since numbers in excess of 40 are representing parallel streams.

116. The data for Remote and Very Remote schools is quite puzzling (and anomalous compared to the data for Urban schools), as it indicates a peculiar dip around the pupil:teacher ratio of 23, before the upward trend at the higher pupil:teacher ratios.

Graph 4

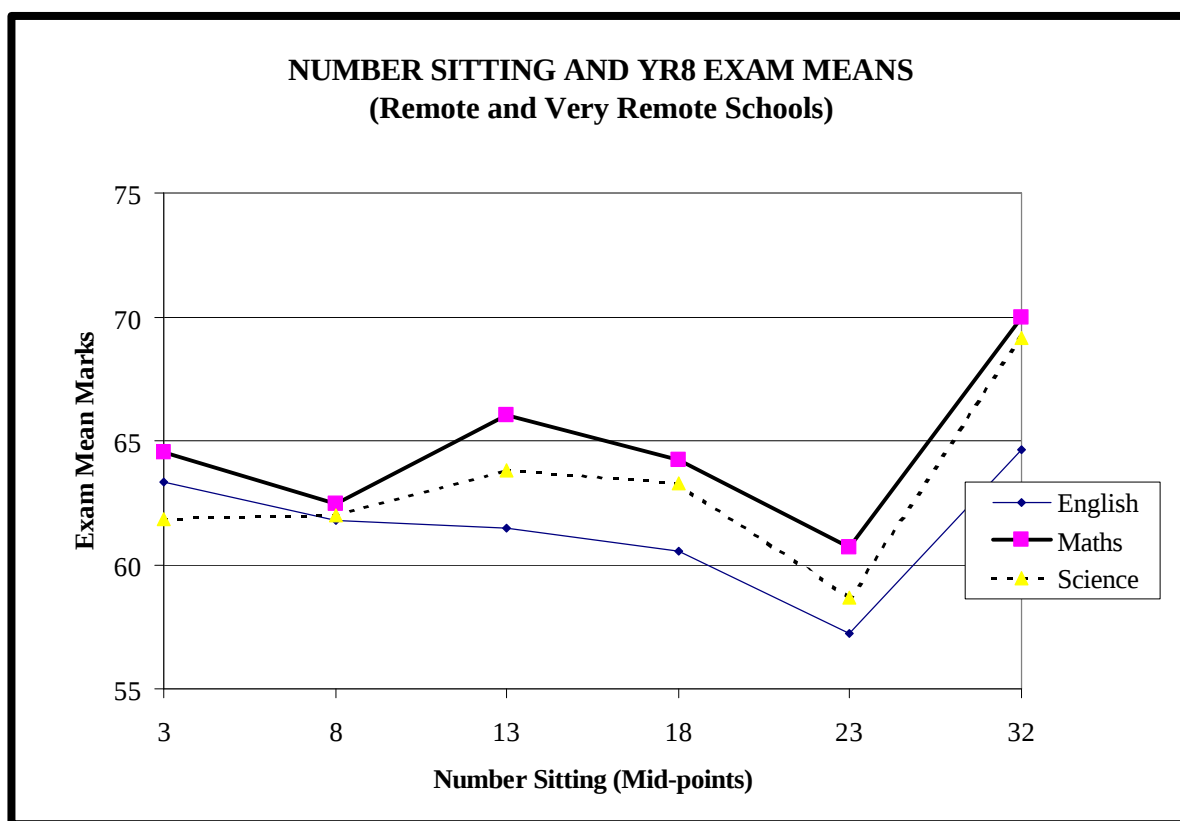


117. Extremely similar results are suggested when pupil:teacher ratios at the schools are correlated with examination mean marks. But now, even for rural schools, there is a slight upward trend of average mean marks, with increasing pupil:teacher ratios.³⁴

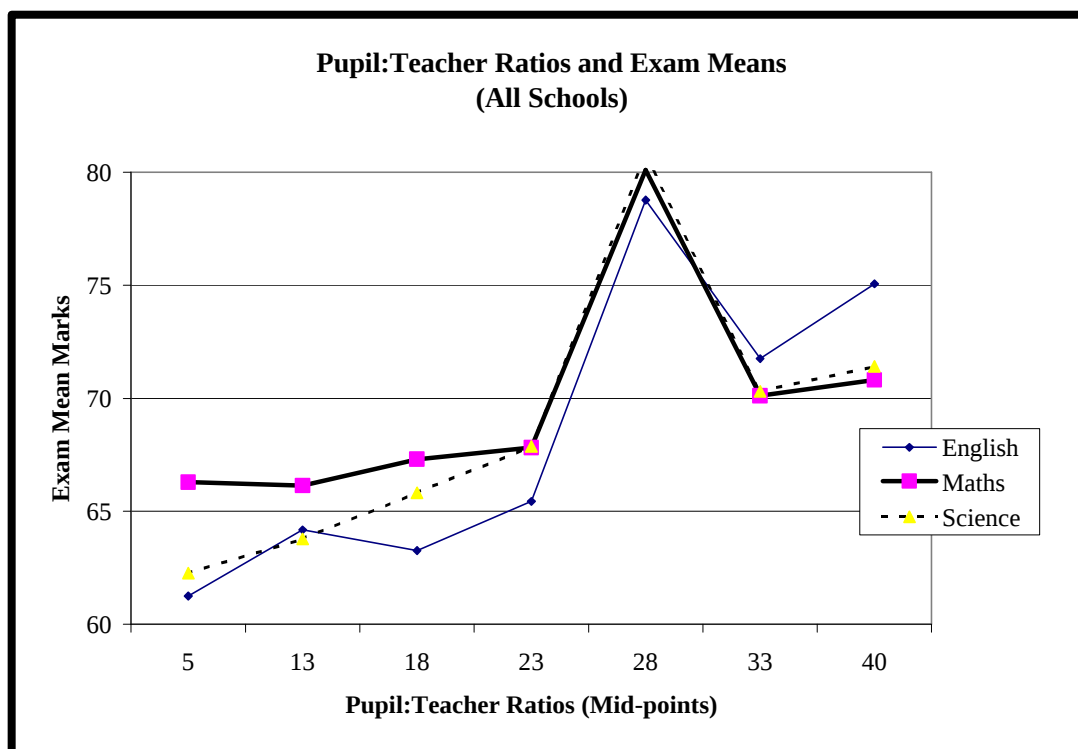
118. What the above graphs and associated data tables (Appendix) suggest is that small class sizes in urban schools are not correlated with better academic performance on average. And large class sizes do not preclude good academic performance.

³⁴ It is interesting that for rural schools (and contrary to urban schools), the means for English dips well below the means for Maths and Basic Science, indicating a general literacy problem in rural schools.

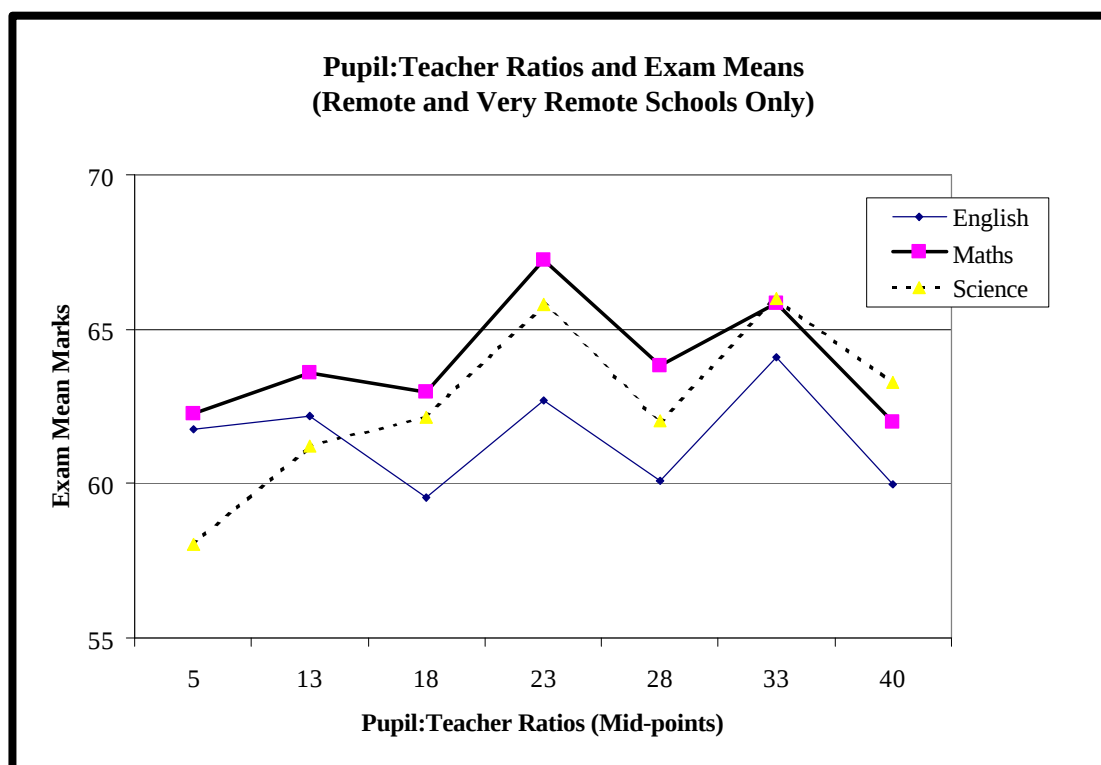
Graph 5



Graph 6



Graph 7



119. It would seem that the Ministry needs to examine other factors, rather than pupil:teacher ratios, as the primary target variables for policy manipulation, in order to improve academic performance. A reduction of 15% in pupil:teacher ratios from 30 to 25 (some countries are contemplating reductions to 20) would increase the number of teachers required by 25% and require an increase in the Education budget of around 16%.

120. Ministers of Education typically compete with other Ministers in Cabinet for increases of 10% and are grateful if they receive 5%. During times of economic crisis when the economy is contracting,³⁵ and Government budgets are under pressure to be slashed, Education Ministers struggle to maintain their budgets (which are suddenly seen as "social" expenditures) while the more overtly economic growth oriented ministries receive preferential treatment.

121. In such harsh fiscal environments, it would seem to be something of a luxury for Ministries of Education to give in to pressure to indiscriminately reduce pupil:teacher ratios in the country. The data on the contrary correlation with academic performance would suggest that little or no academic improvement in examinations performance is likely to eventuate, on average.

JUNIOR SECONDARY SCHOOLS: resources and academic outcomes

122. Junior secondary schools, which normally teach years 7 to 10 (i.e. primary classes 7 and 8, and secondary forms 3 and 4) were originally established, partly to improve the quality of the last two years of primary schools in rural areas where primary schools could not normally achieve economies of scale.

³⁵ As is the case currently with Fiji and the Solomons.

123. Table 16 indicates that the school sizes are quite large- certainly larger than primary schools for these locations. Their pupil:teacher ratios are also extremely generous, in comparison to that prevailing in primary schools (see below). The average pupil:teacher ratio is only 16.2, compared to 25.8 in primary schools. The differences prevail right across urban (18.5 versus 29.2 in primary), rural (16.4 versus 23.9 in primary), and remote schools (11.2 compared with 23.9 in primary).

Table 16 Summary Enrolment Data³⁶				
	Urban	Rural	Remote	All
No of Schools	9	14	9	32
No of Students	5932	5141	1829	12902
Students/School	659	367	203	403
Number of Teachers	320	313	164	797
Student:Staff Ratio	18.5	16.4	11.2	16.2

124. The generosity in staffing is matched by generosity in financial resources. Table 17 indicates that Total Revenue per Pupil is \$164 for JSS virtually double that for primary schools (\$87). The rising urban:rural gradient also exists for JSSs, with urban schools having a Total Revenue per Student of \$124, while Rural schools had \$185 and Remote schools had \$231.

Table 17 Summary of Revenue Data				
	Urban	Rural	Remote	All
Govt.Grants (\$m)	0.428	0.614	0.291	1.333
Other Revenue (\$m)	0.309	0.338	0.132	0.779
Total Revenue (\$m)	0.737	0.952	0.423	2.112
GovtGrant/student	72	119	159	103
OtherRev/Student	52	66	72	60
TotRev/Student	124	185	231	164

125. In large measure, Government Grants per Student drives the preferential funding of the Rural and Remote JSS (\$72, \$119, and \$159 respectively), but surprisingly, there is a similar but smaller gradient for the Other Revenue per Student (\$52, \$66, \$72)

126. Table 18 indicates a greater levelling out of the internal expenditure of JSS. The overall deficit situation for Urban schools indicates that by recourse to loan funds, Urban JSS are spending far more than they are receiving as income. Their "non-Government" sources of expenditure (at \$106 per student) is four times higher than that for Rural and Remote schools. The overall result is that the eventual Urban expenditure per student (\$179) is higher than that for Rural schools.

³⁶ This data relates only to those junior secondary schools for which there was financial data on the Ministry database. The aggregate numbers will therefore differ slightly from those published by the Ministry.

Table 18	Summary Expenditure Data			
	Urban	Rural	Remote	All
Total Expenditure (\$m)	1.059	0.761	0.340	2.160
Surplus(+)/Deficit(-) (\$m)	-0.322	0.191	0.083	-0.048
Recurrent Exp./Student	132	83	101	108
Capital Expenditure/Student	47	65	85	60
Total Expenditure/Student	179	148	186	167
NonGovtExp/Student	106	29	27	64
NonGovernmentGearing	148	24	17	62

127. With such generous funding per student (in comparison to primary schools), it is interesting to examine their the examinations outcomes in the Year 8 Examinations. As expected, the Urban schools do have better pass rates and Mean marks. Interestingly, the Remote schools do have some advantages over the Rural schools.

Table 19	Summary of Examinations Data			
	Urban	Rural	Remote	All
Perc. Passing English	92.7	77.7	83.9	86.4
Perc. Passing Maths	87.9	70.2	76.6	80.3
Perc. Passing Science	92.2	83.6	79.4	87.2
English Mean Mark	73.5	64.2	63.9	68.9
Maths Mean Mark	67.9	57.8	60.2	63.3
Science Mean Mark	73.5	65.8	63.2	69.3

128. What is more fascinating, however, is to compare the academic outcomes for JSS with that for primary schools. Table 20 gives the percentage advantage of JSS results over that for Primary schools.

Table 20	Percentage Advantage of JSS over Primary			
	Urban	Rural	Remote	All Schools
Perc. Passing English	3.9	-4.9	8.7	2.5
Perc. Passing Maths	-0.9	-20.3	-7.9	-7.5
Perc. Passing Science	3.8	-4.7	-1.2	1.5
English Mean Mark	0.5	-1.4	4.8	1.5
Maths Mean Mark	-3.9	-16.3	-7.0	-7.4
Science Mean Mark	3.1	-5.3	-0.9	1.1

129. In aggregate, the advantage that JSSs have over primary schools is quite minor, for English and Basic Science (2.5% and 1.5% in percentages passing, and 1.5% and 1.1% in Mean marks). However, there is a very surprising disadvantage in Mathematics, with primary schools doing better on average than JSSs- the disadvantage is -7.5% in percentages passing, and -7.4% in Mean Mark..

130. Disaggregation gives a clearer picture of the disparities in performance. In mathematics, all JSSs (whether in Urban, Rural or Remote areas) do worse on average than primary schools.

131. All Rural JSSs do worse than rural primary schools in all three subjects. It may be noted that Rural JSS have some 40% of all the JSSs students in the database being analysed.

132. The above results are extremely disturbing from the point of view of economic efficiency. Junior secondary schools do not have any significant advantage over primary schools in terms of academic outcomes. In some categories (Rural schools) the JSS actually do worse. In Mathematics everywhere, they do worse.

133. Yet JSS are far more costly to run than primary schools. While the analysis has not been done here for lack of data and time, JSS salaries will on average be significantly higher than that of primary schools. Government grants per JSS are higher on average than that for primary schools. And non-Government funds (community and loans) independently raised and spent, are about twice that for primary schools.

134. The unit costs of JSS are likely to be around twice that of primary schools, while their academic outcomes are either not significantly better in general, and worse in Rural areas, and for mathematics.

135. It seems imperative that the Ministry of Education further examine the nature of the problem and whether there is a need to rethink the role of junior secondary schools as facilitators of better outcome for Year 8 examinations.³⁷

Conclusion

136. This study has attempted to examine the patterns of resource allocation for pre-schools, primary and junior secondary schools, and to attempt to relate them to patterns of academic outcomes, as expressed in examinations results.

137. The Case Study evidence suggests that with communities having to take on the bulk of the financial responsibility for preschools, this significantly disadvantages children from poorer families, significantly lower proportions of whom attend pre-school. This is probably due to the significant urban:rural differences in raising independent funds for pre-school education. However, the evidence indicates that Government grants do have a significant impact on pre-school enrolments, especially in Rural and Very Remote areas.

138. The evidence from the Case Study indicates that while "preschoolers" do subsequently perform better academically, relative to those who did not attend pre-school (as would be expected), the differences are far more significant for children from poorer families, than for children from average or well-to-do families. This emphasises the crucial need for Government funds to be made available to ensure that there is complete pre-school coverage of children from poorer families.

139. However, it is also suggested that the current patterns of enrolments and unit costs in pre-schools (in comparison to primary enrolments and unit costs) mean that were Government to take full financial responsibility and especially for staffing (as they currently have in primary schools) this would necessitate a significant increase in the Education budget.

³⁷ This analysis has no data or commentary to make on the role of JSSs in facilitating academic outcomes at Form 3 and Form 4 levels.

140. This will tend to result from both the age profiles of current and likely future pre-school enrolments, and differentials in salary structures between a community funded preschool system, and one where teachers become part of the civil service structure.

141. The data on primary schools indicates that there are significant differences in academic performance between urban schools, and those in rural, remote and very remote areas. There are also significant differences in overall school funding and per pupil funding between urban and rural areas, resulting from differing capacities to raise funds independently. These differentials are maintained to a significant extent, despite Government's affirmative funding of rural and remote schools.

142. However, the data fails to show any significant positive relationship between higher per pupil funding or expenditures, and better academic performance. Neither does the data indicate positive correlation between aggregate funding per school, and better academic performance.

143. In a way, the result is not particularly surprising given the manner in which staffing resources, salary structures and scales, and overall financial assistance to schools are decided in the real world politics of the education systems.

144. In the normal market economy, when a good or service (a car, or fertiliser for instance) is bought by the consumer, the price paid by the consumer reflects the value that the consumer places on that product. This value is based on tastes, usefulness, productivity, etc of the product. The price varies with the value that is derived.

145. For a good like basic education, in a system where Government provides the bulk of the financing on a general perception of "need" based on factors such as numbers of pupils and staff, the size of school, the location of the school, there is no necessary link between resources made available and the academic output (value) desired from the product.

146. For salaries, the largest component of the costs of basic education, Government usually and understandably is driven largely by relations with the teachers and head-teachers unions and associations.

147. There are usually no lobby groups to ensure that larger fractions of the education budget are made available for non-salary items such as books, computers, laboratory materials, and other instructional materials which can do much to enhance the quality of basic education.

148. There are also no organised lobby groups of parents and pupils that can politically lobby Ministers of Education and Governments to ensure that their desired levels of academic outcomes are delivered by the schools in their areas which may otherwise be very well resourced as a result of Ministry efforts.

149. There may be some linkages between what parents make available through their private fees and the quality they obtain from the schools, but even this can be quite tenuous.

150. Education authorities need to examine, in consultation with teachers and their associations, for more constructive ways to use market incentives and disciplines to provide better education outcomes.

151. The data also fail to show any significant relationship between low pupil:teacher ratios and better academic performance. In fact the data indicates the contrary: better academic performance corresponds to high pupil:teacher ratios. These results remain even when the data are disaggregated for urban and rural schools.

152. Examination of the Year 8 performance of junior secondary schools surprisingly indicates that there is no systematic patterns of advantage over primary schools, despite the considerably higher unit costs of junior secondary schools.

153. The data indicates an urgent need for strong empirical research, in a joint exercise between education experts and economists, to identify the factors that are leading to good academic outcomes, and to reallocate financial resources to boost the efficiency and productivity of these factors throughout the education system.

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End

Appendix Tables

Table 1 Fee Income per Child (Pre-schools)

Division	District	Urban	Rural (>10km)	Very Remote	Totals
Central	Nausori	66	14	25	38
Central	Suva	117	9	2	92
Eastern	Eastern	0		1	1
Northern	Cakaudrove	0	3	2	2
Northern	Macuata-Bua	30	35	40	31
Western	Ba-Tavua	36	23	0	30
Western	Lautoka-Yasawa	72	22	13	50
Western	Nadroga-Navosa	50	19	20	35
Western	Ra	37	4		16
All		77	14	8	46

Table 2 Government Grants per Student (Preschools)

Division	District	Urban	Rural (>10km)	Very Remote	Totals
Central	Nausori	4	22	30	15
Central	Suva	0	30	0	4
Eastern	Eastern	0		25	24
Northern	Cakaudrove	0	37	0	18
Northern	Macuata-Bua	14	62	58	23
Western	Ba-Tavua	44	81	0	55
Western	Lautoka-Yasawa	6	29	35	17
Western	Nadroga-Navosa	23	20	53	27
Western	Ra	0	28		18
All		9	35	24	19

Table 3 Total Revenue per Student (by district and location)

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	54	83	91	114	75
Central	Suva	101	206	140	104	105
Eastern	Eastern	97	105	127	121	118
Northern	Cakaudrove	95	74	100	93	96
Northern	Macuata-Bua	67	63	96	94	83
Western	Ba-Tavua	91	51	143	82	75
Western	Lautoka-Yasawa	65	63	83	90	67
Western	Nadroga-Navosa	66	119	68	73	81
Western	Ra	148	53	89	105	102
Total		83	75	93	106	87

Table 4 Total Government Grant per Student (by district and location)

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	31	44	46	62	40
Central	Suva	39	61	112	45	42
Eastern	Eastern	68	51	61	75	73
Northern	Cakaudrove	37	34	61	47	51
Northern	Macuata-Bua	38	41	68	59	55
Western	Ba-Tavua	41	34	129	77	44
Western	Lautoka-Yasawa	35	46	49	59	40
Western	Nadroga-Navosa	45	90	37	30	51
Western	Ra	48	34	58	56	53
Total		38	47	59	61	47

Table 5 Total Internal Expenditure per School

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	23196	14800	10612	14629	14913
Central	Suva	52660	20971	24140	17021	42436
Eastern	Eastern	11645	7474	7782	7704	7970
Northern	Cakaudrove	29529	14102	10919	8539	11990
Northern	Macuata-Bua	16830	20101	9672	13909	12807
Western	Ba-Tavua	31589	12206	7227	5339	18002
Western	Lautoka-Yasawa	27664	17360	9947	6769	19550
Western	Nadroga-Navosa	26191	9687	11513	11490	13146
Western	Ra	50105	37556	12991	10978	20603
All		34505	15024	10961	9403	17143

Table 6 Government Grant per School

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	11728	6802	5786	7049	7441
Central	Suva	18715	7097	19500	5964	15711
Eastern	Eastern	9284	5581	5146	5980	6171
Northern	Cakaudrove	11728	6760	8524	5077	7699
Northern	Macuata-Bua	10608	11355	10788	7345	10393
Western	Ba-Tavua	11035	6292	12000	16200	8843
Western	Lautoka-Yasawa	15538	9536	7749	6738	11576
Western	Nadroga-Navosa	13038	14497	5065	5198	8819
Western	Ra	10055	9369	8031	7593	8396
All		14337	8578	8258	6152	9266

Table 7 Non-Government Funds Spent Per School

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	11468	7998	4826	7580	7472
Central	Suva	33945	13873	4640	11057	26724
Eastern	Eastern	2361	1892	2636	1723	1799
Northern	Cakaudrove	17801	7342	2395	3462	4292
Northern	Macuata-Bua	6222	8746	-1116	6564	2414
Western	Ba-Tavua	20554	5915	-4773	-10861	9158
Western	Lautoka-Yasawa	12125	7824	2198	31	7974
Western	Nadroga-Navosa	13154	-4810	6448	6292	4327
Western	Ra	40050	28187	4960	3385	12207
All		20167	6447	2703	3250	7877

Table 8 Community Share in Primary Education (%)

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	7.0	9.2	7.2	10.5	7.9
Central	Suva	16.3	17.6	5.1	14.8	15.9
Eastern	Eastern	2.9	3.1	4.9	3.1	3.1
Northern	Cakaudrove	11.2	8.0	3.0	5.3	5.1
Northern	Macuata-Bua	3.9	5.8	-1.3	7.4	2.3
Western	Ba-Tavua	12.9	5.2	-7.5	-11.1	7.5
Western	Lautoka-Yasawa	5.6	7.0	2.6	0.0	5.4
Western	Nadroga-Navosa	8.5	-5.3	7.7	7.3	4.5
Western	Ra	27.1	17.1	6.5	4.7	13.1
Total		11.1	6.2	3.5	5.1	7.5

Table 9 Percentage Passing Year 8 English Exam (by division and district)

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	84	73	70	60	77
Central	Suva	90	77	96	82	90
Eastern	Eastern	82	100	84	80	81
Northern	Cakaudrove	100	87	85	85	89
Northern	Macuata-Bua	86	87	71	64	78
Western	Ba-Tavua	79	82	90		81
Western	Lautoka-Yasawa	94	85	98	81	91
Western	Nadroga-Navosa	93	80	76	72	80
Western	Ra	90	80	73	73	79
Total		89	82	77	77	84

Table 10 Percentage Passing Year 8 Maths Exam (by division and district)

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	86	81	79	76	83
Central	Suva	86	83	89	89	86
Eastern	Eastern	94	97	72	82	83
Northern	Cakaudrove	97	92	88	86	90
Northern	Macuata-Bua	87	90	84	90	87
Western	Ba-Tavua	86	91	78		88
Western	Lautoka-Yasawa	94	91	98	78	92
Western	Nadroga-Navosa	92	86	80	76	83
Western	Ra	91	82	80	76	83
Total		88.7	88.1	83.2	81.6	86.8

Table 11 Percentage Passing Year 8 Science Exam (by division and district)

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	84	76	77	71	80
Central	Suva	87	77	93	70	86
Eastern	Eastern	82	100	72	81	81
Northern	Cakaudrove	96	89	89	87	90
Northern	Macuata-Bua	88	95	81	80	86
Western	Ba-Tavua	86	93	83		89
Western	Lautoka-Yasawa	94	91	97	78	93
Western	Nadroga-Navosa	91	83	75	72	81
Western	Ra	91	74	73	77	79
Total		88.8	87.7	80.4	78.2	86.0

Table 12 English Mean Marks in Year 8 Examinations

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	68.4	58.7	58.5	54.8	63.2
Central	Suva	74.4	56.7	68.4	61.3	73.2
Eastern	Eastern	68.9	71.4	59.4	59.7	60.4
Northern	Cakaudrove	76.7	68.3	63.6	63.9	67.1
Northern	Macuata-Bua	69.2	66.4	59.5	55.3	63.4
Western	Ba-Tavua	66.5	66.2	62.1		66.2
Western	Lautoka-Yasawa	76.4	69.1	69.7	62.0	73.4
Western	Nadroga-Navosa	75.1	65.4	61.5	61.8	65.9
Western	Ra	73.4	65.1	58.1	59.9	63.2
Total		73.2	65.1	61.0	60.1	67.9

Table 13 Maths Mean Marks in Year 8 Examinations

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	67.2	62.6	61.4	58.8	64.5
Central	Suva	68.9	61.6	65.1	65.5	68.4
Eastern	Eastern	66.5	70.4	56.7	61.8	62.1
Northern	Cakaudrove	76.2	70.5	66.0	64.5	68.5
Northern	Macuata-Bua	68.4	68.8	65.9	64.0	67.2
Western	Ba-Tavua	69.1	71.7	60.5		69.9
Western	Lautoka-Yasawa	74.8	73.7	74.7	60.9	73.7
Western	Nadroga-Navosa	73.3	66.5	64.4	64.3	67.1
Western	Ra	74.0	66.3	63.0	61.6	66.2
Total		70.7	69.0	64.8	62.5	68.4

Table 14 Science Mean Marks in Year 8 Examination

Division	District	Urban	Rural	Remote	V.Remote	Total
Central	Nausori	67.3	61.0	61.3	59.3	64.0
Central	Suva	69.7	57.4	68.3	58.4	68.8
Eastern	Eastern	62.6	70.4	54.5	59.9	60.2
Northern	Cakaudrove	77.9	67.0	65.8	64.6	68.5
Northern	Macuata-Bua	69.6	73.0	65.1	61.0	68.2
Western	Ba-Tavua	70.3	72.8	61.4		71.1
Western	Lautoka-Yasawa	74.9	75.0	75.8	59.9	74.0
Western	Nadroga-Navosa	72.9	65.5	62.5	64.7	66.2
Western	Ra	74.9	61.6	59.5	62.3	64.4
Total		71.3	69.5	63.8	60.9	68.5

Table 15 Numbers of Students Sitting and Mean Marks Obtained in

NOSITTING	MIDPOINT	English	Maths	Science
1- 10	5	62.7	64.4	63.2
11-20	15	61.8	65.7	64.6
21-30	25	63.2	67.1	66.6
31-40	35	70.5	71.6	71.1
41-50	45	70.2	69.1	70.4
51-70	60	72.6	70.5	72.1
71-90	80	76.5	73.3	73.5
>91	130	76.0	70.8	72.5

Table 16 Numbers Sitting and Mean Marks (Remote and Very Remote Schools

NOSITTING	MIDPOINT	English	Maths	Science
1- 5	3	63.3	64.5	61.9
6-10	8	61.8	62.5	62.0
11-15	13	61.5	66.0	63.8
16-20	18	60.6	64.2	63.3
21-25	23	57.2	60.7	58.7
26-30	32	64.6	70.0	69.2

Table 17 Numbers Sitting Mean Marks For Urban Schools Only

NOSITTING	MIDPOINT	English	Maths	Science
1- 10	5	65.3	65.4	64.3
11-20	15	62.9	63.3	65.3
21-30	25	71.3	74.5	73.5
31-40	35	70.5	68.0	67.4
41-50	45	72.5	71.4	72.2
51-70	60	73.5	69.8	71.9
71-90	80	76.9	74.0	73.5
>91	130	76.0	70.8	72.5

Table 18 Pupil:teacher Ratios and Exam Means (Remote and Very Remote Schools)

		English	Maths	Science
1-10	5	61.8	62.3	58.0
11-15	13	62.2	63.6	61.2
16-20	18	59.5	63.0	62.1
21-25	23	62.7	67.3	65.8
26-30	28	60.1	63.8	62.0
31-35	33	64.1	65.8	66.0
36-45	40	60.0	62.0	63.3

Table 19 Pupil:teacher Ratio and Exam Means (All Primary Schools)

		English	Maths	Science
1-10	5	61.3	66.3	62.3
11-15	13	64.2	66.1	63.8
16-20	18	63.3	67.3	65.8
21-25	23	65.4	67.8	67.9
26-30	28	78.8	80.1	80.7
31-35	33	71.8	70.1	70.3
36-45	40	75.1	70.8	71.4

Table 20 Perc. Diff. Between Rem/Very Remote Schools and All Schools

	Midpoint	English	Maths	Science
1-10	5	0.9	-6.1	-6.8
11-15	13	-3.1	-3.8	-4.0
16-20	18	-5.9	-6.4	-5.6
21-25	23	-4.2	-0.8	-3.1
26-30	28	-23.7	-20.3	-23.2
31-35	33	-10.7	-6.1	-6.1
36-45	40	-20.1	-12.5	-11.4

Table 21 Total Revenue/Pupil (by bands) and Examination Mean Marks

Band (\$)	Mid-point	English	Maths	Science
0-50	25	67.8	69.2	69.6
51-100	75	68.7	68.5	68.7
151- 200	175	61.4	63.4	61.8
201-250	225	54.7	55.9	56.0
251-300	275	77.3	75.7	74.0
301-400	350	63.1	62.5	61.3
401-600	500	67.7	73.1	67.0
601-	1000	63.2	62.1	61.1

Table 22 Total Expend/School and Mean Marks

Urban Schools			
Tot.Exp.Bands (\$000)	English Means	Maths Means	Science Means
0- 20	68.0	69.4	69.8
21 - 40	74.7	70.7	72.3
41- 60	76.3	73.3	73.3
61 -80	75.4	70.7	71.1
81 - 100	73.7	66.0	67.3
> 101	81.8	78.4	79.0
Rural, Remote, Very Remote			
Tot.Exp.Bands	English Means	Maths Means	Science Means
0- 10	60.9	64.9	63.8
11-20	65.2	68.7	68.0
21 - 30	63.9	64.3	65.9
31- 40	67.6	69.2	69.0
41-50	59.3	64.1	63.7
51-60	66.1	67.8	66.6
>60	67.4	70.9	70.0