Impact of Cost Sharing on Education Reform of Secondary Education (ROSE II)

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Executive Summary

The new world economic environment is characterized by simultaneous rapid changes in technology, networking, and globalization. These changes also force industrial restructuring in technology-adopting countries such as Jamaica. This means that Jamaica's labor force must become increasingly flexible, capable of adapting to new information, networking, and communication demands in the current technological age in order to adopt or adapt international technologies or to invent their own.

Increasing flexibility requires continuous training, the key foundations of which are adequate and student-centred primary and secondary education for all. Jamaica has made a solid start in this direction with its ongoing education reforms, but there remain significant legacies of inequity of school quality and access by various social groups, depending on location, historical tradition, social class of students, and other school characteristics. The disparities relate to factors such as teacher experience, the percentage of university graduates who are trained teachers in the schools, access to instructional materials and information technology, libraries, and relevant labs.

The continuing reform and upgrade of the secondary school system is a major component of the government's long term strategy to address these deficiencies. In a context of tight budget constraints, cost sharing was introduced as an important aspect of the effort to finance these reforms. Consideration is being given to increasing the level of cost sharing in secondary education, with appropriate protection of the poor. However, such efforts must consider both the positive effects of cost sharing on school financing and the negative effects on the demand for education by the household, the possibilities of using a sliding scale that amounts to charging by the ability to pay, and the problems of noncompliance by households. Here, noncompliance means that some students who attend school neither pay fees nor apply for benefits.

This study has two objectives. The first is to analyse the current cost-sharing scheme in Jamaica, in terms of the amount of funds collected from students and the use of the funds, the impact of the scheme on the equitable financing of secondary education, and its impact on various aspects of education demand and student life. The second objective is to identify strategies for making cost sharing more equitable in the light of public financing constraints. Three specific research questions are considered, as follows:

1. How can the existing cost-sharing scheme mobilize household resources without adversely affecting education demand, in particular, enrollment and attendance?
2. Is it justified to raise the fees of the highly selective secondary high schools accompanied by an expanded scholarship scheme to support students from poor background?
3. What might be the impact of enforcing household compliance?

To investigate these questions, data were collected from two basic sources:

1. The secondary administrative data of the MOEYC; and
2. Two primary surveys:
    a. An attempted census of secondary schools of all types using a full survey questionnaire that was delivered to the schools for completion.
    b. A semistructured open format survey-discussion with parents-guardians of students who did not comply with the requirements of the cost-sharing program even though they attend school during the last year.

The findings of the study suggest that, in the context of the current budget constraint, government has significant room to increase the contribution of the private sector to the reform of secondary education in the upcoming ROSE II project.

With respect to the first research question, the general finding is that subject to any possible shift in the general character of demand, more resources can be mobilized from households by charging the wealthier students higher fees. If this is done, it would also cause a net increase in household education expenditure, taking into account both the demand and supply effects of the fee increase. However, such a move would immediately require strong and efficient measures to identify and protect the poor while preventing a growth in leakage as the assistance from government looks more appealing in the face of higher fees. This can be equivalent to more assistance under the cost sharing. In addition, government should give serious consideration to the following: (1) tightening targeting to minimize leakage to the wealthy, and (2) upgrading and supporting the entrepreneurial initiatives of schools, as long as these do not impose additional burdens on staff time.

The second issue concerns the justification for raising the fees of the highly selective secondary high schools accompanied by an expanded scholarship scheme to support students from poor background. The key findings are that, given the significant differences in per student transfers from government across school types and the high likelihood of leakages in the financial assistance programme, government has considerable leverage to correct the imbalances between schools through a program that raises fees in the traditional high schools and technical high schools. This can be done by ensuring that both the student-teacher ratio and the budget subventions per student converge. Such a move would have to be subject to the principle that the poor are adequately protected, either through increasing subventions to the comprehensive and new secondary schools or scholarships to the poor, or some combination of these two options. Such an initiative would generally raise the net household demand for education, after considering both the demand and supply effects of the increase in fees in the elite schools.

In relation to protection of the poor, use should be made of the basic household education expenditure function identified in Annex II to define a program of financial assistance (scholarships) that is based on a separation of the component of the costs of education that the household should bear based on its supernumerary income and the component the government should contribute. The relevant equation for assistance is specified in Annex II. Once the supernumerary income of the household is an explicit component of that program of scholarships, the explicit

sliding fee design would continue to ensure that the better-off household receive a lower subsidy, given the other necessary school expenditures, up to some point at which the subsidy is wiped out. Similarly, considering both the positive marginal supply effect and the negative demand effect of fees, the higher the fees the higher will be the net subsidy to the household. Poor students going to schools that charge higher fees will receive suitable support to offset the negative demand effects of the higher fees. The sliding fee design also means that the schools that are good enough to charge higher fees and to attract wealthier students to pay such fees will tend to do without the subsidies and could still be significantly better off than other schools. Other policy interventions are needed to address this situation. School attendance *at some minimum rate should be a condition for a student to actually receive benefits due*.

It should be observed here that the proposed PATH programme to social assistance through the Ministry of Labor and Social Security, as currently designed, does not meet enough of these requirements. Its administrative procedures are not sufficiently tailored to the school environment, its benefits of J$300 per month per beneficiary are generally too small to cover even the fees required of the poor, and its coverage is not likely to be wide enough to serve as an adequate basis for providing necessary education assistance to poor students. Adoption of the PATH in its current form as the basis for managing the education needs of the poor is an excessively risky move, given that Jamaica must not falter in the move to upgrade the quality and accessibility of the education system.

Finally, given the key proximate causes of noncompliance, enforcement of compliance by the delinquent households will be a complex exercise. Enforcement would have to be based on a redesigned social effort to educate the public about options for education finance, application procedures, and deadlines, backed by suitable support in the application process. These education initiatives must be supported by an upgraded capacity in guidance counseling and social work to address satisfactorily the complex concerns and challenges of parents or guardians who are noncompliant. Such a process would challenge the current technical and managerial capacities of the school guidance counseling system, already preoccupied with managing the cost sharing. Expansion of capacity in this area would increase the general cost of education to the society, but the net payoff is likely to be positive in the sense of better attendance and a greater intake of fees to finance the upgrade in school quality.

Introduction and Rationalization

Government in Jamaica has been spending large sums of public funds to improve the educational outcomes achieved by all schools, to bring traditionally disadvantaged schools up to comparable levels with historically elite schools, and to raise the level of household demand for education by making secondary education accessible to all eligible school-age students. This is part of its general “safety net strategy” in which it is expected that commitment to guaranteeing the capacity to cope with globalization, and the effects of education spending on domestic demand and domestic supply capacity, would give businesses the confidence to invest. As the basis for ensuring financial viability of the school upgrading effort in a context of a tight budget constraint, government has instituted a cost-sharing scheme for the five-year secondary schools,

based especially on school fees, designed to ensure that the private sector shares reasonably in the financial burden of school upgrading, in particular with the operating costs. A substantial amount of public expenditure has also gone into provision of targeted financial assistance to the poor, to ensure that all social groups have sufficient access to the education supply. The poor are not to be denied access because they cannot afford the effective fees charged under the cost-sharing scheme. In the context of Jamaica, effective fees may or may not be approved by government because of other contributions charged by schools.

Problems of inequality and noncompliance persist in the system. In terms of school quality, inequity relates to teacher education and experience, instructional materials, infrastructures, and the welfare profile of schools, among the upgraded comprehensive schools, new secondary high schools, and elite traditional and technical high schools. The elite schools retain many of their historical advantages. The World Bank's (1999) sector study on secondary education found that when total public and household contribution are taken into account, total resources available to schools are highly unequal across school types. The percentage increase in fees is generally higher among schools which are attended predominantly by students from lower quintiles. Many students neither pay fees nor apply for student financial assistance and many schools also find ways to charge a "contribution" that can sometimes exceed the level of government-approved fees.

As government approaches the extension of the reform program, it must consider ways of increasing private sector sharing of the financial burden of the reforms. This must be done in ways that simultaneously reduce the inequities of the system and increase access to high quality schools by the disadvantaged. Increase in fees is one option to be considered along with suitable protection for the poor and enforcement of compliance with public policy. In this context, in order to set effective fees, it is important to identify the level of demand for education by various types of households and the influence of effective fees on that demand. In such identification, account must be taken of how the scale and quality of supply influence fees. Such analyses can help policymakers determine the scale of resources (budgets) that should be made available to schools through the device of cost-sharing fees, especially in the light of the wealth profile of their characteristic student intake.

Thus, this study has two objectives. The first is to analyse the current Cost-Sharing Scheme in Jamaica, in terms of the amount of funds collected from students and the use of the funds, the impact of the scheme on the equitable financing of secondary education, and its impact on various aspects of education demand and student life. In addition to the amount collected from students, this analysis will also consider how much is collected for daily operations from budgetary and other sources. The second objective is to identify strategies for making cost sharing more equitable in the light of public financing constraints. Identification of suitable strategies will be based in part on an evaluation of the fee-setting mechanism(s) of the cost-sharing scheme in terms of the instrument(s) used to determine fees, in particular, the justification for the ceiling and floor, and actual fees collected by schools as compared to the endorsed fees of the Ministry. In addition, there will be an evaluation of the process of collecting fees in terms of different methods-sanctions applied to ensure compliance, the determination of needy students for a particular level of assistance, and the impact of the scheme on attendance and other areas of student

life. The analysis will seek to identify alternative funding strategies to ensure a more equitable distribution and, in particular, will include an assessment of whether, in the light of current elasticities of demand for education and social policy goals, a price discrimination mechanism might be applicable in the Jamaica case — that is, whether the highly selective former secondary high schools should charge their more affluent students more in order to finance more scholarships to students from poorer backgrounds.

Three specific research questions are considered, as follows:

1. How can the existing cost-sharing scheme mobilize household resources without adversely affecting education demand, in particular enrolment and attendance?
2. Is it justified to raise the fees of the highly selective secondary high schools accompanied by an expanded scholarship scheme to support students from poor background?
3. What might be the impact of enforcing household compliance?

This analysis will be based partly on a survey of secondary schools designed to yield school-level data that can be used to build on the MOEYC's studies on cost sharing and the World Bank (1999) sector study. This survey results from an attempt at a census that was incomplete because of low response from schools. Classification of schools in the survey will be based on that used by the Ministry to identify school-types in the cost-sharing program (see Annex III). The instrument for analysis of the fee setting mechanisms and the achievement of compliance with fee payment requirements is presented in Annex IV.

Analysis of the impact on students will be based in part on an explicit household expenditure function developed using SLC data and designed to assess matters such as the impact of cost sharing, in particular various fee structures and assistance and targeting arrangements on demand, with specific reference to areas such as enrolment, attendance, and instructional materials (books, etc., and book rentals). The expenditure function is of a modified Stone-Geary type to allow identification of the household wealth characteristics net of minimum necessary "subsistence" expenditures on education. Such subsistence expenditures are essentially a focus of government's social policy to ensure that no student is denied a certain minimum level of education in Jamaica. The modification to Stone-Geary introduces a device similar to the marginal fees of Houthakker (1951a; 1951b; 1960) in order to capture the influence of supply on the fees paid by households and thus to endogenize the supply effects into the demand model and eliminate potential simultaneous equation bias (Halverson, 1978). Households generally desire to send their children to schools that they consider to be of a high standard. However, the level and quality of supply of a school affects the fees charged by the school and this factor endogenously modifies the negative influence of price on demand.

The report comprises two broad chapters in addition to these introductory perspectives, along with the Summary of findings and recommendations and the Executive Summary. Chapter I provides background data and analysis, and a specification of the key issues and prioritized problems of the cost-sharing system. Chapter II documents the findings of the empirical investigations and estimations. On the basis of the analyses and in the light of discussions on strategy with the MOEYC, recommendations are also presented in Chapter II as to the general

with the MOEYC, recommendations are also presented in Chapter II as to the general and specific aspects of the strategy of cost sharing in Jamaica. These are presented in the Summary and recommendations.

Chapter I: Background

The new world economic environment is characterized by simultaneous rapid changes in technology, networking, and globalization. Most of the technological change is coming from the OECD countries, currently driven by a large R&D budget that approximated $520 billion in the last year — more than the combined economic output of the world's 30 poorest countries (UNDP, 2001:3, 46). The technical change is increasingly driven by the dynamics of market competition. In the OECD countries, "more than 60% of research and development is now carried out by the private sector … in response to market pressures …" The patterns of technological change are also changing. Globalization and technological revolutions "are combining to create a new network age." In contrast to the industrial age, which was based on vertically integrated firms, "the network age is structured along horizontal networks, with each organization focusing on competitive niches. These new networks cross continents …" (UNDP, 2001:4). These changes of technologies also force industrial restructuring in technology-adopting countries such as Jamaica. This means that Jamaica's labour force must become increasingly flexible, capable of adapting to new information, networking, and communication demands in the current technological age in order to adopt or adapt international technologies or to invent their own. Failure to address this problem will result in continuing inability to solve the social and economic problem of unemployment (James, 2002). The reform and upgrade of the secondary school system is a major component of government's long term strategy to increase Jamaica's capacity to adopt international technologies and thus to restructure its industries in accordance with developing challenges.

The results of the reforms are critical for the performance of the Jamaican economy in the process of globalization because secondary graduates are still the majority of the workforce and are used heavily by the emerging sectors of the economy. The percentage of total employed persons with at least secondary education has grown substantially in the last decade. It increased from 55% in 1990 to 70% in 2001 (Table 1). Among the unemployed, the percentage with secondary education has also increased from about 77% in 1990 to 84% in 2001 (Table 2). Most persons in the labour force with only secondary level education are currently absorbed into government employment in social and community services (25%), wholesale and retail distribution and tourism services (23%), and agriculture (22%) (Table 3). In recent years, government has instituted policies to support the development of tourism and especially of information and communications technology. Both sectors make intensive use of low-level human capital as provided by secondary graduates. As a result, the share of distribution and tourism in the employment of secondary graduates has been growing, from 20% in 1991 to 23% in 2001, mainly because of the growth of tourism over the years. Similarly, the share of transport and information-communications technology, which is focused on digital call centres and similar labour-intensive IT services, has increased from 4.8% in 1991 to 6.4% in 2001. At the same time, the share of

manufacturing employment of secondary graduates has fallen significantly, from 12% in 1991 to about 8% in 2001, reflecting rapid decline and business closures in textiles and apparel (as distinct from productivity growth) (James, 2002). This type of industrial absorption of the secondary graduates is likely to intensify with an upgrading of the average level of education of the workforce and with related increasing efforts to adopt and adapt new technologies and establish new innovative industries.

Table 1: Persons Employed and Educational Attainment, Jamaica, 1990-2001

Last School Attended	Year											
	1990 (n=2661)	1991 (n=2612)	1992 (n=6179)	1993 (n=2584)	1994 (n=2555)	1995 (n=2799)	1996 (n=1176)	1997 (n=2598)	1998 (n=7036)	1999 (n=2384)	2000 (n=2183)	2001 (n=2042)
Early childhood	0.1	0.3	0.1	0.0	0.1	0.0	0.2	0.4	0.2	0.5	0.2	0.3
Primary	38.7	33.3	30.0	22.5	22.3	19.8	22.6	43.3	38.6	20.1	13.6	18.9
Secondary	55.1	58.0	64.0	69.8	71.2	72.8	67.9	47.0	51.0	69.7	75.4	70.7
Tertiary	4.8	5.3	5.1	6.8	5.4	6.1	7.1	9.0	9.6	9.2	10.0	9.2
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.3	0.4	0.6
None	1.3	3.1	0.9	0.9	1.0	1.3	1.5	0.3	0.6	0.3	0.5	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Jamaica Survey of Living Conditions

Table 2: Persons Unemployed and Educational Attainment, Jamaica, 1990-2001

Last School Attended	Year											
	1990 (n=439)	1991 (n=352)	1992 (n=727)	1993 (n=338)	1994 (n=307)	1995 (n=255)	1996 (n=102)	1997 (n=288)	1998 (n=593)	1999 (n=230)	2000 (n=231)	2001 (n=176)
Early childhood	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.7	0.0	0.9	0.0	0.6
Primary	20.5	8.0	10.9	9.8	10.8	5.9	16.7	35.1	24.0	8.3	9.1	9.7
Secondary	77.5	88.9	85.7	86.4	87.0	91.8	74.5	60.4	71.5	87.4	84.9	84.1
Tertiary	1.6	2.6	3.2	3.3	1.3	2.4	7.8	3.8	4.4	2.6	6.1	5.1
Other	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.9	0.0	0.0
None	0.2	0.6	0.3	0.6	0.7	0.0	0.0	0.0	0.2	0.0	0.0	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Jamaica Survey of Living Conditions

Table 3: Industry Structure of the Employed by Education Level, Jamaica, 1991– 2001												
Highest School Level	**Industry**	**Year**										
		1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Early childhood	Agriculture	100.0	20.0	0.0	100.0	0.0	0.0	66.7	26.7	45.5	80.0	85.7
	Mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Manufacturing	0.0	0.0	0.0	0.0	100.0	0.0	0.0	6.7	18.2	0.0	0.0
	Metal prods., machinery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Electricity, water, gas	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	0.0	0.0	0.0
	Construction	0.0	20.0	100.0	0.0	0.0	0.0	0.0	13.3	18.2	0.0	0.0
	Wholesale-retail trade	0.0	40.0	0.0	0.0	0.0	0.0	11.1	26.7	0.0	20.0	0.0
	Transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0
	Finance-insurance-real estate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Community-social services	0.0	20.0	0.0		0.0	0.0	11.1	20.0	18.2	0.0	14.3
	Total	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0
Primary	Agriculture	51.5	51.8	47.0	45.3	44.4	39.4	41.0	42.8	45.6	38.4	42.2
	Mining	0.2	0.8	0.7	1.1	0.9	0.0	0.7	0.3	0.0	0.3	0.3
	Manufacturing	5.2	3.9	4.1	4.6	3.4	4.2	4.8	5.4	3.1	2.7	3.9
	Metal prods., machinery	0.5	0.3	0.2	0.4	0.4	0.2	0.9	0.9	0.8	0.3	0.5
	Electricity, water, gas	0.3	0.3	0.2	0.0	0.4	0.0	0.3	0.6	0.2	0.3	0.8
	Construction	4.4	5.3	5.9	6.2	5.1	6.5	8.5	7.9	8.0	10.4	6.0
	Wholesale-retail trade-hotels	15.2	15.5	16.7	17.1	19.0	21.8	16.8	18.9	15.1	19.2	17.6
	Transport and communication	3.0	2.1	2.4	3.2	4.3	4.4	3.9	3.4	4.6	4.0	3.9
	Finance-insurance-real estate	1.0	1.8	1.2	1.8	3.4	2.6	1.3	1.4	1.3	0.7	0.8
	Community-social services	18.7	18.2	21.7	20.6	18.8	20.9	21.7	18.5	21.3	23.6	24.1
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Secondary	Agriculture	22.8	27.8	21.8	20.0	20.8	22.6	12.8	17.4	22.7	22.2	22.5
	Mining	0.6	0.6	0.9	0.7	0.9	0.6	0.6	0.5	0.5	0.6	0.8
	Manufacturing	12.3	11.0	11.0	12.1	11.2	9.2	9.7	9.3	8.7	7.4	7.8
	Metal prods., machinery	0.4	0.9	0.9	0.8	0.7	1.1	1.1	1.1	1.0	1.3	1.2
	Electricity, water, gas	1.0	0.6	0.5	0.6	0.4	0.5	0.7	0.8	0.6	0.8	0.8
	Construction	7.2	6.9	8.4	7.5	9.0	9.9	9.0	8.8	9.8	9.3	9.1
	Wholesale-retail trade-hotels	20.3	18.1	19.4	21.6	21.2	21.4	23.7	23.1	21.8	23.8	23.4
	Transport and communications	4.8	3.5	4.3	5.5	5.2	5.8	6.2	6.5	6.0	6.7	6.4
	Finance-insurance-real estate	4.0	3.3	4.2	4.9	4.8	4.8	6.9	5.4	3.3	4.4	3.2
	Community-social services	26.8	27.4	28.6	26.4	25.8	24.2	29.4	27.2	25.6	23.5	24.8
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Tertiary	Agriculture	2.2	3.9	2.3	4.3	1.8	2.5	1.7	2.5	1.8	1.8	0.5
	Mining	0.0	2.6	0.6	0.7	1.2	1.3	1.7	0.9	1.4	1.4	1.1
	Manufacturing	8.0	6.7	10.3	4.3	7.1	9.4	6.8	6.8	6.9	5.5	3.7
	Metal prods., machinery	3.6	1.0	0.0	0.0	1.8	0.6	0.0	1.2	0.9	0.5	0.5
	Electricity, water, gas	0.0	0.6	0.6	1.4	1.8	1.3	2.1	1.3	4.1	2.8	2.7
	Construction	5.1	2.2	1.1	1.4	2.4	0.6	1.3	3.4	3.7	0.9	2.1
	Wholesale-retail trade-hotels	21.0	14.7	16.6	13.7	11.2	8.8	12.0	13.2	8.2	10.6	13.3
	Transport and communications	5.1	3.9	2.9	5.0	3.5	5.7	5.6	6.4	5.5	7.8	8.0
	Finance-insurance-real estate	5.8	12.2	16.6	18.7	13.5	12.6	18.8	13.7	16.4	17.4	13.3
	Community-social services	49.3	52.2	49.1	50.4	55.9	57.2	50.0	50.5	51.1	51.4	54.8
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Computed from the Survey of Living Conditions and the Labour Force Survey, 1990-2001

For the population 15 years or older, the mean number of years of schooling was at 5.3 years in 1997. This compares unfavourably with 8.7 years for Barbados and 7.8 years for Trinidad and Tobago (UNDP, 2001). With respect to the working population, 15-65 years, the country's mean has been essentially stable at about 8.4 years since 1990, and more important, since 1997 when the first of the cohorts fully trained under the ROSE reforms would have begun to appear in the labour market. So the average worker is now educated up to the first cycle of secondary education (Table 4)[1] and this means that, broadly speaking, in terms of human capital, Jamaica is gearing up fairly well for the changing industrial challenges, but relative to the challenge of continuing industrial restructuring ahead, the average level of secondary education reflected in the above data is still too low.

Table 4: Mean Years of Schooling in Jamaica, 1991- 2001

Years of Education	Year										
	1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
0-3	7.7	4.6	3.4	4.4	3.3	2.0	2.7	3.5	9.8	7.6	8.6
4-6	28.1	28.5	24.7	23.3	19.9	17.7	22.7	21.0	17.8	16.4	18.0
7-9	30.4	32.3	31.1	33.0	36.0	36.9	32.6	32.8	34.4	37.7	36.6
10-11	27.5	29.3	34.1	34.3	35.2	36.3	33.5	33.8	30.1	29.7	28.8
12-16	6.3	5.3	6.6	5.1	5.7	7.1	8.2	8.8	7.7	8.5	7.3
17+	-	-	-	-	-	-	0.4	0.2	0.3	0.2	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean years	8.7962	8.1138	8.6151	8.4939	8.7217	9.11	8.8067	8.8757	8.4515	8.6087	8.458

Source: Jamaica Survey of Living Conditions

With regard to the impact of the secondary reforms on the mean number of years of schooling, these indicators also demonstrate that secondary reforms will take a very long time to have any dramatic effect on either the mean years or the quality of schooling. To speed up the process, the older age cohorts in the labour force must also become the focus of life-long education initiatives with opportunity to complete secondary education for all. In addition, the country must redouble its efforts to upgrade the quality and industrial relevance of secondary education and to speed up the process of ensuring that all social groups share equitably and relevantly in the ongoing secondary education reforms. The issue of equity is therefore of critical importance in the current efforts at secondary education reforms. Given its leading role in the education system, Government is the major institution that must take the initiative to ensure the necessary upgrade and expansion.

[1] SLC data for Trinidad and Tobago indicate that the corresponding figure for that country in 1997 was 8.7 years; not significantly different from that for Jamaica.

The Supply of Secondary Education

In Jamaica, public secondary education is offered to the 12-17 age group and is provided in two cycles. The first cycle caters to students in grades 7-9 of all age, primary and junior high, secondary high, comprehensive high, and technical high schools. The upper cycle is provided in grades 10 and 11 of these schools (with the exception of all age and junior high schools) and in the agricultural, technical and vocational schools. Some secondary high schools continue to sixth form (grades 12 and 13) where students are prepared for entry to tertiary institutions. There is a general shortage of places for students at the upper secondary and tertiary levels. Though efforts have been made to increase access to secondary education, each year a number of graduates from the junior high and all age schools cannot be placed in the upper secondary programme. Presently, most of the secondary level institutions are over-crowded, including those on the shift and extended day systems. At present, approximately 28% of secondary-level institutions are operating on the shift system and most of these are former comprehensives (Table 5).

The government's commitment to the concept of human development as a major conceptual tool guiding policy in support of personal, social, and economic development has been upheld and reiterated by the Ministry of Education, Youth, and Culture through its continued effort to reform secondary education. With the assistance of the World Bank, its expressed intent of achieving improved access, equity, quality, and relevance has been advanced with the completion of Phase 1 of the Reform of Secondary Education (ROSE I), with major emphasis on student-centred learning processes. The government is pursuing a policy of providing universal secondary education by the year 2005.

Table 5: Shift Patterns among Secondary School Types, 2000–01

Organisation	School Type					
	Secondary High		Comprehensive High		Technical High	
	No.	Percent	No.	Percent	No.	Percent
Full day	48	85.7	37	48.1	11	84.6
Shift	6	10.7	33	42.9	2	15.4
Extended	2	3.6	7	9.1	0	0.0
Total	56	100.0	77	100.0	13	100.0

Source: MOEYC. Comprehensives were phased out in 2001 but the data on shifts for the actual schools remain valid.

The Quality of School Supply

In addition to the level of education, industrial success rides heavily on the quality of education. In this regard, concerns about quality over the years have led to significant policy adjustments by government (World Bank, 1999). Recommendations from various studies have guided government policies relative to innovations at the secondary level, placing priority on providing equal educational opportunities for all students through the rationalization of the programmes

offered. The Reform of Secondary Education (ROSE I) saw the continuation of the reforms that started with the upgrading of some new secondary schools in 1988. Phase I of the reform saw the development, revision, and implementation of a common core curriculum and curriculum support materials in grades 7-9 of secondary level schools with special emphasis on all age schools. This common core curriculum utilizes an integrated approach to learning and emphasizes the acquisition of skills such as problem solving, creative thinking, and working in teams. In this respect, and in anticipation of the growing demands for labour-force readiness placed on the secondary schools, the minimum curriculum requirement now prescribed is language and mathematics. Government is also undertaking an important pilot project to develop school specialization based on aptitude and strengths — Centres of Excellence — based on resource sharing. Transport arrangements are made available to move students between schools, and curricula are synchronized for that purpose. The Grade 9 examinations are being targeted as the basis for tracking students to the specialist schools according to aptitude and strengths.

Currently, after the upgrading of the new secondary and the comprehensive schools, there are only three school types, secondary, technical, and vocational-agricultural, in numbers as reported in Table 5. There are still all age and primary and junior high schools serving the 7-9 population. However, all indications are that the primary and junior highs are voluntarily changing their internal composition into primary only, since no new grades 7-9 students are placed in the traditional primary and junior highs because the schools complain that they do not have the capacity to teach such students. Also, there is only one junior high school. The number of all age schools is similarly falling quite rapidly. Discussions with principals and Ministry officials indicate that there is also a strong tendency for the school types to converge. The traditional elite schools are beginning to offer the best technical-vocational training in metalwork, woodwork, technical drawing, agriculture, and the like.

In general, under the education reforms, the average new entrant from the secondary school system to the labour market since 1997 has also been instructed under an upgraded and more student-centred curriculum and in better general instructional circumstances, with greater access to digitised information and computing power. Still, the poor performance of students in external examinations in some subjects, especially English Language and Mathematics, continues to be a cause for concern. Though the results since the 1998-99 academic year show some improvement in each successive year, there is still room for improvement. In particular, the upgrading projects are producing some desired throughput and learning outcomes, but not consistently so in all areas since 1998, when many of the upgrading projects were coming towards completion. For example, with respect to those achieving Grade III or better, the "acceptable performance" rate in English A increased from 41% in 1998-99 to about 48% in 2000-01 and to about 55.3% in 2001-02 (Table 6). There were broadly similar improvements in French and Spanish. In social studies, the acceptable performance rate actually declined or remained essentially unchanged up to 2000-01 and then rebounded in 2001-02. In Caribbean history, there has been steady decline since 1998. More important perhaps, in 2001-02 only in three of the eight subject areas did students show an improvement in the performance rate. Similarly, in the five areas of science education, there was really improvement only in mathematics, with the acceptable performance rate at Grade III or better growing from 26.1% in 1998-99 to 37.4% in 2000-01. However, acceptable performance was down again in 2001-02, with the rate falling to 28.7%,

near to the 1998 level. There was also a decline in acceptable performance rate in chemistry. In all business subjects, there were substantial improvements (Table 6).

Overall, in 2001-02 as compared to 2000-01, there is striking data that in 5 of the 8 language-arts areas, there was a significant decline in the acceptable performance rate. In the area of science, 3 of the 5 areas either stagnated or declined in the acceptable performance rate. In technical-vocational area, acceptable performance similarly declined in 10 of the 13 areas. So, four years into the end of the first five years of ROSE I, students who were mostly trained under the ROSE curriculum could not generally improve performance overall when compared to those who were not similarly trained. One reason for this is that teachers in many of the schools have little experience in training students for the CXC, since their schools have only recently been converted to full secondary schools.

The deficiencies and inequities show up as unequal performance among schools of various types. A very broad but useful indicator is the acceptable performance rate in the subject areas among students in each of the school types. Students from the traditional high schools achieved an acceptable performance rate of 62.2% in 2002, compared to 43.6% for the other secondary high and 55.9% for the comprehensive high (Table 7). Another view of this problem of inequality comes from SLC data comparing school types by the CXC examination performance of graduates with only secondary education. In terms of the percentage of graduates with acceptable performance in at least 4 O-level subject passes, the evidence is that the traditional secondary high and the technical high are clearly similar in quality and very different from those that were new secondary and comprehensives. In 1999, approximately 21% of the graduates of the traditional high schools and 16% of the graduates of the technical highs performed acceptably in at least 4 CXC-GCE O-level subjects and of these 5.6% of traditional school graduates and 4.4% of technical high graduates had 5 CXC O-level passes or better. Moreover, these percentages have remained fairly constant for the traditional high schools since 1999 but have improved significantly for the technical highs. In 2001, 24% of the technical high school graduates had 4 O-levels or better, which meant that in terms of the basic examination success profile of its secondary graduates who have not gone on to higher studies, the technical school was comparable to the traditional highs. The previous new secondary had a profile with less than 2% having such success and the previous comprehensives have a profile with less than 5% performing acceptably in 4 or more subjects in 2001. Just as interesting, 83.3% of the secondary graduates of the previous new secondary schools and 69% of the previous comprehensives could not attain the acceptable standards, even though these rates were improvements from 90% and 77%, respectively, for 1999. The contrasting figures for the traditional highs and the technical highs are 54.7 and 49.3, respectively (Table 8).

Discussions with officials in the Ministry of Education confirm that much of the problem lies in the process of upgrading of schools to the CXC level. For example, apart from instructional materials and other differences, a significant number of the teachers in the upgraded schools are managing and training for the CXC-level examinations for the first time and have not accumulated sufficient skills in this highly specialized and very demanding teaching activity. It is this type of persisting problem that ROSE II and other government initiatives are designed to address.

Table 6: Subjects Passed at the General Proficiency Level, Jamaica, 1998-99–2000-01

Subjects	Number of Students Sitting				Percentage Obtaining Grades I-III			
	1998-99	1999-00	2000-01	2001-02	1998-99	1999-00	2000-01	2001-02
Arts-Languages								
English A	18,168	17,318	18,316	19,136	41	41.2	47.9	55.3
Social studies	5,615	6,218	7,056	8,006	57.8	60.3	50.7	61.9
Caribbean history	4,782	4,752	5,055	5,055	70.3	72.6	70	62.1
English B	6,709	6,763	6,767	6,724	55	52.4	56.2	48.4
French	424	434	449	544	48.1	61.1	52.3	60.3
Spanish	2,059	2,032	2,280	2,729	55.3	67	65.5	62.3
Rel. education	1,645	1,761	1,848	2,122	79.8	83.1	84.5	76.1
Geography	3,318	3,430	3,377	4,021	60.9	67.7	68	54.9
Music[a]	0	20	34	NA	0	75	41.2	na
Sciences								
Biology	3,066	3,246	3,696	3,744	50.8	51.5	47.9	50.7
Chemistry	1,997	2,296	2,471	2,545	52.5	41.4	48.4	40.2
Physics	1,924	2,188	2,368	2,637	43.2	38.2	39.3	40.5
Integrated science 1	1,709	1,949	2,473	2,916	76.7	73.3	74.5	78.1
Mathematics	16,854	16,038	16,095	18,076	26.1	26.8	37.4	28.7
Technical-vocational								
Agricultural sci (S.A.)[b]	681	815	935	1,058	63.1	88.1	87.6	83.7
Agricultural sci (D.A.)	397	310	280	357	67.3	72.9	67.1	69.2
Visual arts	1,402	1,495	1,739	NA	84.3	91.8	51.7	na
Building technology	328	349	331	415	86.9	84	88.2	62.9
Clothing & textiles	1,016	1,002	1,195	1,279	82.1	90.5	90.0	80.0
Electrical technology	536	584	686	824	78.2	72.3	69.2	61.1
Electricity-electronics	717	870	898	1,027	59.8	78.6	56.6	65.2
Food & nutrition	2,504	2,605	2,940	3,263	81.1	75.4	87	77.5
Home management	1,734	1,917	2,090	2,381	89.9	92.9	90.6	81.1
Information technology	1,810	2,518	3,538	4,044	71.5	80.7	49.0	81.1
Mech. eng. technology	256	248	261	300	54.3	77.8	70.9	61.3
Metals	298	412	467	553	69.8	60.4	73.7	71
Technical drawings	2,474	2,573	2,891	3,154	86.3	77.7	76.8	67.5
Woods	626	647	789	962	73.5	90.6	78.3	70.2
Business								
Office procedures	4,954	3,709	3,679	3,892	65.5	78.3	76.2	71.6
Principles of accounts	8,450	6,892	6,588	6,801	47	65.6	73.2	51.3
Principles of business	9,097	7,588	7,508	7,514	55.9	79.8	80.5	76.1
Shorthand	223	127	125	86	39.5	23.6	35.2	33.7
Typewriting	2,905	2,670	2,354	2,067	31.8	30.9	40.7	32.4

Source: Caribbean Examination Council (CXC) Office, Jamaica.

a. Music was not offered in 1998.

b. Data refers to students achieving proficiency in both crop-soil and animal science.

Table 7: CXC Subject General Proficiency Rate by School Type, Jamaica, 2001–02

Type of School	Number of Schools	Subjects Taken	Subjects Passed at General Proficiency Level	Acceptable Proficiency Rate
Secondary high	76	28,813	12,569	43.6
Traditional high	51	69,662	43,358	62.2
Technical high	13	14,720	7,361	50.0
Comprehensive	7	4,816	2,691	55.9
Vocational	2	221	127	57.5
Total	149	118,232	66,106	55.9

Source: Caribbean Examination Council

Table 8: Examinations Performance Profile of Employed Workers with Up to Secondary Education by Type of School Attended, Jamaica, 1999-2001

		School Type			
	Highest Exams Passed	New Secondary	Comprehensive High	Secondary High	Technical High School
1999	None	90	76.5	55.5	52.9
	CXC Basic-JSC	6.7	9.8	11.9	11.8
	2-Jan CXC-GCE O'Level	1.6	6	11.4	19.1
	4-Mar CXC-GCE O'Level	1	6	15.6	11.8
	5+ CXC-GCE or 1-2 A'Level	0.7	1.6	5.6	4.4
	3 or More GCE A'Level	0	0	0	0
	Total	100	100	100	100
2000	None	88.7	74	56.8	43.8
	CXC Basic-JSC	6.8	10.5	10	15.1
	2-Jan CXC-GCE O'Level	2.2	8.3	9	11
	4-Mar CXC-GCE O'Level	1.9	6.1	17	23.3
	5+ CXC-GCE or 1-2 A'Level	0.3	1.1	6.3	6.9
	3 or More GCE A'Level	0	0	1	0
	Total	100	100	100	100
2001	None	83.3	69.3	54.7	49.3
	CXC Basic -JSC	11.7	15.3	11.9	12.7
	2-Jan CXC-GCE O'Level	2.9	10.2	10.8	14.1
	4-Mar CXC-GCE O'Level	1.7	4	16.3	15.5
	5+ CXC-GCE or 1-2 A'Level	0.5	1.1	5.3	8.5
	3 or More GCE A'Level	0	0	1.1	0
	Total	100	100	100	100

Source: SLC and LFS, various years.

Household Evaluation of School Quality

The private business sector continues to be concerned that secondary school graduates are "lacking the basic job skills and proper work attitude" and that new labour force entrants and

older workers lack adequate literacy and numeracy, thereby making the training of technical skills more difficult (World Bank, 1999). A recent survey of business representatives in the Jamaica Trade Adjustment Team confirmed that these concerns still exist in the business community (James, 2002). Much of the problem may have to do with the irrelevance of content in the learning and problem-solving process. For example, in mathematics there continues to be a general mathematics curriculum in which the vast majority of content-related examples come from physics and mechanics and similar disciplines. Very few come from the areas of business and economics, or other facts of the curriculum in which the majority of students register. This could pose a significant problem of exposition, learning, and retention of mathematics in most classrooms. The problems continue to exist in conjunction with a significant problem of inequity of school quality and access by various social groups, depending on location, historical tradition, social class of students, and other school characteristics (World Bank, 1999). The disparities usually relate to factors such as the percentage of university graduates who are trained teachers in the schools, access to instructional materials and information technology, libraries, and relevant labs. Plans are afoot to increase the number of graduate teachers in the schools in order to improve students' performance.

However, since the decision to use school supply is ultimately that of the household, an important form of assessment of school quality is that which is now provided as household opinions collected in the SLC. The Jamaican household typically rates the school system quite highly (Table 9). In 2002, the first year in which an adequately sized random poll of opinions were collected through the SLC, 33.2% of all the opinions of the responding households rated their schools as very good and 56% as good. The ratings show some striking differences among the income groups. First, the percentage of the income group rating its schools as "very good" generally rises with the income quintile. Thus, of all poor households, only 21% rated their schools as very good. This rises to 36.4% in quintile 3, to 42.9% in quintile 4 and to 52.4% in quintile 5. The opposite trend is consequently evident among the households rating the schools as "good," suggesting, *inter alia,* that households mainly classify schools into these as the contrasting categories (Table 10). In the poorest, 67.5% rated the school as good, compared to 55.4% of the households in quintile 3, 49.1% in quintile 4, and 36.5% of the rich. The results suggest that richer households generally think they are going to better schools than poor people do. The perspective is confirmed when it is observed that of all the households which evaluate their schools as very good, only 14.1% are in the poorest quintile while 22.2% are in quintile 5, even though the poorest quintile makes up a greater share of the sample than does the wealthiest (Table 11).

Table 9: Household Evaluation of Secondary Schools, All Types, 2002

Quality of School	Number	%
Very good	297	33.2
Good	501	56
Neither good nor bad	83	9.28
Bad	10	1.12
Very bad	3	0.34
Total	894	100

Source: SLC, 2002. Note that these data are for enrolled persons up to secondary level. Information on same school can appear more than once, if more than one person in HH attending that school.

Table 10: Household Evaluation of Secondary Schools by Consumption Quintile, All Types, 2002

	Quintile				
Quality of School	**Poorest (n=194)**	**2 (n=178)**	**3 (n=184)**	**4 (n=212)**	**5 (n=126)**
Very good	21.7	17.4	36.4	42.9	52.4
Good	67.5	66.3	55.4	49.1	36.5
Not good or bad	10.3	14.6	6.5	6.1	9.5
Bad	0.5	1.7	1.6	0.5	1.6
Very bad	0.0	0.0	0.0	1.4	0.0
Total	100.0	100.0	100.0	100.0	100.0

Source: SLC, 2002. Note that these data are for enrolled persons up to secondary level. Information on same school can appear more than once, if more than one person in HH is attending that school.

Table 11: Household Evaluation of Secondary Schools by Consumption Quintile, All Types, 2002

	Quintile					
Quality of School	**Poorest**	**2**	**3**	**4**	**5**	**Total**
Very good (n=297)	14.1	10.4	22.6	30.6	22.2	100.0
Good (n=501)	26.2	23.6	20.4	20.8	9.2	100.0
Not good or bad (n=83)	24.1	31.3	14.5	15.7	14.5	100.0
Bad (n=10)	10.0	30.0	30.0	10.0	20.0	100.0
Very bad (n=3)	0.0	0.0	0.0	100.0	0.0	100.0

Source: SLC, 2002. Note that these data are for enrolled persons up to secondary level. Information on same school can appear more than once, if more than one person in HH is attending that school.

The Demand for Education

The most general indicator of effective household demand for education is the per capita real expenditure on education. Since 1991, real per capita demand for education has grown substantially, albeit in an uneven manner. After 1994 and the introduction of cost sharing, the overall rate of growth continued to be positive and unstable. Of significance is that in 1999 and 2000, real education consumption per capita declined by 6% per annum before picking up again by 9% per annum in 2001 (Table12). Such fluctuations may reflect the variations in the capacity of government to support household consumption and also pick up sudden changes in fees. However, overall growth was strong relative to the rest of the economy as is evident by an overall increase in the share of education in total consumption from 2.0% in 1994 to 3.3% in 2001.

Demand is spread unevenly among the social groups in society. Among the income classes, the richest were able to consume 8.4 times the per capita education of the poor in 2001 (Table 13). However, after substantial gains in equity since 1994 and the introduction of cost sharing, inequality has again been rising since 1998 and it is perhaps not coincidental that this coincides with a falling average level of spending on education. Examination of the data in Table 13 reveals that the decline seems to be due essentially to a general reduction of education spending by the poor in quintiles 1 and 2 since 1998.

Table 12: Trends in Demand for Education (Education Consumption Per Capita), Jamaica (1991-2001)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Consumption (constant 1990 prices)	6,080	6,586	6,805	7,652	7,793	7,230	9,076	9,440	9,396	8,797	9,550
Education	85.1	171.2	142.9	153.0	194.8	137.4	208.7	330.4	310.1	290.3	315.2
Education as % of consumption	1.4	2.6	2.1	2.0	2.5	1.9	2.3	3.5	3.3	3.3	3.3
Growth of education demand (%)	-	101	-17	7	27	-29	52	58	-6	-6	9

Source: SLC, various years.

Enrolment

Underlying the expenditure data is real demand, one indicator of which is enrolment. In 1999-2000, the number of students enrolled at the secondary level in public institutions was 226,384 and this increased to 227,540 in 2000-01 (Table 14). Of the total number of 11–14 year olds enrolled in 2000-01, 97% were at the lower secondary level, grades 7-9. Of the total 15–16 year olds enroled, 58.3% were at the upper levels, grades 10 –11. The share of 15-16 year olds in the upper cycle seems low and may be partly the result of the fact that many students join the labour market at the end of the first cycle rather than pursue further education. It is also possible that there is late entry into grade 7 closer to 12 years rather than to 11 years (Table 15). Even more important, the number students in 6th form is a very small share, about 10%, of the 17-19 age group, again indicating pressures that lead to early exit from the school system.

Table 13: Mean Annual Per Capita Consumption of Education by Quintile, 1992-2001, Current Prices (J$)

	Quintile					Ratio of Q5-Q1
Year	**Poorest**	**2**	**3**	**4**	**5**	
1992	75	166	246	398	1085	14.5
1993	121	203	345	683	1221	10.1
1994	218	392	624	803	1662	7.6
1995	399	559	702	957	2237	5.6
1996	-	-	-	-	-	-
1997	309	588	1247	1774	4518	14.6
1998	1362	2223	2970	3769	6028	4.4
1999	1282	2001	2740	3701	6920	5.4
2000	1333	2418	3022	3896	8340	6.3
2001	1127	1833	3153	4889	9507	8.4

Source: SLC various years.

Table 14: Enrollment in Secondary Schools by Type of School, 1998-2001

	1998-99		1999-00		2000-01	
School Type	**No.**	**Enrolment**	**No.**	**Enrolment**	**No.**	**Enrolment**
All age - Grades 7-9	356	24231	356	19163	353	14998
Primary and junior high	90	24728	90	22249	89	20176
Junior high	1	517	1	486	1	504
Secondary high	59	76042	59	77913	135	174094
Comprehensive high	75	86098	75	89185	0	0
Technical high	14	16657	14	16931	14	17270
Vocational-agricultural	3	677	3	457	3	498
Total government	598	228950	598	226384	595	227540
Private	60	14370	46	14293	46	16292
Jamaica	658	243320	644	240677	641	243832

Source: ESSJ various years.

Table 15: Structure of Enrolment in Secondary Schools by Grade and Age Group, 1998-2001

	1998-1999						1999-2000						2000-2001					
	11-14		15-16		17-19		11-14		15-16		17-19		11-14		15-16		17-19	
Grade	**No**	**Col%**	**No**	**Col %**	**No**	**Col %**	**No**	**Col%**	**No**	**Col %**	**No**	**Col %**	**No**	**Col%**	**No**	**Col %**	**No**	**Col %**
7-9	358	97.0	95	44.2	4	4.3	282	96.6	82	36.8	5	5.8	269	96.7	73	41.7	0	0.0
10-11	10	2.7	117	54.4	79	84.0	10	3.4	140	62.8	66	75.9	9	3.3	102	58.3	74	90.2
12-13	1	0.3	3	1.4	11	11.7	0	0.0	1	0.5	16	18.4	0	0.0	0	0.0	8	9.8
Total	369	100.0	215	100.0	94	100.0	292	100.0	223	100.0	87	100.0	278	100.0	175	100.0	82	100.0

Source: SLC various years.

Welfare (Consumption) Profile of Enrolment

SLC data reported in Table 16 indicate concentration of the school population of the previous comprehensive high schools (40%) and new secondary high schools (50%) in the poorest two consumption quintiles, a situation which does not apply to the traditional secondary high schools (30%) and the technical high schools (14%). Even more interesting, the poor plus the vulnerable in quintile 3 account for 63% of the students in the new secondary and the comprehensive highs, and about 54% in the traditional highs. It is clear that over the years, the social structure of the population in the traditional high schools has converged significantly to that of the new secondary high schools and comprehensives. However, convergence is not complete and this is most clearly evident in the fact that the students from the poorest quintile are concentrated in the comprehensive highs and that 24% of the students in these schools are poor, compared to 18.8% in the newer secondary schools and 14.4% in the traditional highs. In this respect, the newer secondary schools are somewhat more akin to the traditional high schools than they are to the comprehensive schools which they resemble in most other respects. This profile is as much a matter of the systematic selection biases in the allocation of students among schools by the Ministry, as it is about the types of schools that poor people can afford.

Table 16: Quintile Distribution of Students by School Type, 2001

Quintile	New Secondary	Comprehensive High	Traditional Sec High	Technical High	Vocational-Agricultural	Total
Poorest	18.18	23.85	14.14	0.00	0.00	15.5
2	31.82	16.92	16.21	14.71	35.71	17.5
3	13.64	23.85	24.83	17.65	14.29	23.3
4	22.73	20.77	25.86	32.35	28.57	24.9
5	13.64	14.62	18.97	35.29	21.43	18.8
Total	4.49	26.53	59.18	6.94	2.86	100.0

Source: SLC, 2001.

Attendance

Effective demand for education is attendance and participation in school — the student in school in active contact with peers and teachers. The data in Table 17 show attendance rates since 1994. Estimates for 1994 and 1995 refer to a reference 5-day period, while estimates for 2001 were collected for a reference 20-day period, so the former are likely to be more accurate. Nevertheless, it seems safe to suggest that based on this data, attendance in school has not grown since 1994 as rapidly as it must, especially when viewed in the light of the increase in assistance to households under the cost-sharing program. It may well have stagnated.

Table 17: Attendance Rate in Primary and Secondary Schools, Jamaica, Selected Years

Attendance Rate (Days-Full)	1994	1995	2001
20 days (full)	83.9	80.3	77.0
15-19	7.8	7.3	12.9
10-14	2.8	4.1	6.7
0-9	5.5	8.3	2.7

Source: SLC.

Some Quality Indicators in Demand

There is considerable evidence from the experience with extra lessons that household education demand is heavily influenced by the quality of supply and that this influence operates through household perception that "extra lessons" play an important role in what students learn, when they learn it, how they retain it, and how they apply the learning to life. Extra lessons are one of the main forms of private quality control at the primary and secondary levels. They provide students with ways to extend effective contact hours and school days beyond the comparatively low 5 contact hours and 190 days per year of the formal system (World Bank, 1999:8, 9). They also provide extra opportunity for students who exit the formal secondary system before completion of O-level or A-levels. This segment of the education system is competitive and entrepreneurs put considerable effort into refinement of teaching techniques, being on call to students, compliance with assignment deadlines, and maintaining discipline in order to guarantee effective learning outcomes. Household expenditure on extra lessons has generally been higher than on tuition, fees, and books for the official system of schooling and has grown steadily over the years from 17% in 1996 to 24.1% in 2000, indicating that the relative efforts by the household to upgrade quality have intensified over the years through limited substitution of extra lessons for other forms of education spending per student (Table 18).

Table 18: Structure of Mean Annual Cost of Schooling and School Related Item (Constant 1990 Prices), Jamaica, 1994 to 2000

Category	1994 Real	1995 Real	1996 Real	1997 Real	1998 Real	1999 Real	2000 Real
Tuition and fees	341.78	336.80	307.97	513.21	465.97	406.98	491.4
Extra lessons	373.79	302.11	380.28	519.08	485.18	506.55	519.52
Books	206.87	164.21	143.79	234.84	82.6	154.77	149.12
Transport.	350.35	302.62	462.78	498.78	523.71	496.4	463.14
Lunch & snacks	608.33	578.76	720.33	982.78	905.02	848.93	821.27
Uniforms	178.64	173.27	168.53	195.67	165.6	143.71	129.92
Other supplies	72.38	66.64	59.26	88.8	77.61	70.16	69.33
Total	2,132.14	1,924.42	2,242.94	2,519.95	2,339.74	2,220.52	2,152.3
Extra lessons % of total	17.5%	15.7%	17.0%	20.6%	20.7%	22.8%	24.1%

Source: SLC, PIOJ & STATIN (2000).

These data seem to illustrate that parental support rises with an improvement in the supply of schooling opportunity that households find worthwhile. They indicate that in the learning experience, what is most important to the household is quality: opportunity to learn as time spent in class, with a competent and highly (financially) motivated teacher present and providing instruction, and time spent doing homework with sufficient access to the teacher in that process (World Bank, 1997:5). At the level of the specific school attended, parents generally desire to send their children to "successful" schools or will make every effort to complement the school quality with efforts such as extra lessons. Table 19 provides supporting evidence. The major spenders on extra lessons perceive their schools as either good or very good. Within the groups spending between $2,000-4,000 per month and $6,000-8,000 per month, the majority think their schools are very good and yet spend significantly on extra lessons.

Table 19: Distribution of Household Quality Ratings by Level of Expenditure on Extra Lessons, 2002

	<$2,000		$2,000 <$4,000		$4,000 <$6,000		$6,000 <$8,000		$8,000 <$10,000		$10,000+	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Very good	6	37.5	12	50	19	79.1	13	52	3	60	8	66.7
Good	9	56.3	12	50	5	20.8	10	40	2	40	2	16.7
Neutral or worse	1	6.3	0	0	0	0	2	8	0	0	2	16.7
Total	16	100	24	100	24	100	25	100	5	100	12	100

Source: SLC.

Education Financing by Government

Since government is the main supplier of schooling and education services, one critical issue concerns its ability to finance the supply process either on the recurrent budget or through development loan financing, with implications for recurrent debt servicing, or through user fees (cost sharing) charged to the private sector by the educational institutions. The government budget over the last decade reflects the high priority given to secondary education reform, financed with significant inputs from the international financial institutions such as the World Bank and the IDB (James, 2002).

During the 1990s, efforts to improve access, equity and quality of education continued, and after 1994 government spending increased steadily from J$6,210.7 billion to J$18,147.5 billion in 2000, raising the share of spending on education to reflect national development priorities (Table 20). However, in 1997, the ratio of spending on education to total spending reached its peak at 14.5% and since then has fallen to 10.8% in 2000. The extent of national and government spending on education is clearly constrained by the size of the government debt and related debt servicing, which has grown from 24.1% in 1991-92 to absorb 58.3% of budgeted expenditures in 2000-01. Capital expenditure as a share of the education budget has adjusted from year to year with the development obligations undertaken by government. In 1997, the share fell to 5.4% and was 5.8% in 1999 and 5.4% in 2000, reflecting the end of several initiatives to upgrade the primary system and the secondary schools (Table 21).

Table 20: Relative Importance of Education in Budget Expenditure, Jamaica, 1991-92 — 2000-2001(Million J$)

	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01
GDP	44,901.8	73,261.7	99,974.7	132,226.9	169,728.8	220,523.9	220,523.9	231,778.7	256,790.2	303,358.0
GOJ budget	17,463.8	25,098.1	43,301.4	68,255.5	81,209.2	114,959.5	115,042.7	12,9030	157,597.2	167,388.0
GOJ debt servicing	4,210.6	12,750.7	16,818	36,157.2	37,679.3	52,034.6	56,210.2	68,242.6	97,335.2	97,506.6
GOJ budget without debt	13,253.2	12,347.4	26,483.4	32,098.3	43,529.9	62,924.9	58,832.5	60,787.4	60,262.0	69,881.4
MOEYC budget	2,019.3	2,639.3	5,515.8	6,210.7	8,994.8	12,211.0	16,718.3	16,743.8	17,209.6	18,147.5
GOJ budget as % of GDP	38.9	34.3	43.3	51.6	47.8	52.1	52.2	55.7	61.4	55.2
GOJ debt servicing as % of GDP	9.4	17.4	16.8	27.3	22.2	23.6	25.5	29.4	37.9	32.1
GOJ debt servicing as % of GOJ Budget	24.1	50.8	38.8	53.0	46.4	45.3	48.9	52.9	61.8	58.3
MOEYC budget as % of GOJ budget	11.6	10.5	12.7	9.1	11.1	10.6	14.5	13.0	10.9	10.8
MOEYC budget as % of GDP	4.5	3.6	5.5	4.7	5.3	5.5	7.6	7.2	6.7	6.0

Source: Ministry of Finance & Planning

Table 21: Size and Structure of Public Expenditure on Education, Jamaica, 1987–88 to 1997–98 (J$ million in Current Prices)

Year	Recurrent	Capital (A)	Capital (B)	Total Capital	Total Expend.	Capital (B) as % of Total Capital Expend.	Capital B as % of Total Expend.	Capital as % of Total Expend.	Recurrent as % of Total Expend.
1987-88	687.0	7.3	39.2	46.5	733.5	84.3	5.3	6.3	93.7
1988-89	825.9	36.3	169.2	205.5	1,031.4	82.3	16.4	19.9	80.1
1989-90	1,045.8	36.8	172.5	209.3	1,255.1	82.4	13.7	16.7	83.3
1990-91	1,275.5	46.2	154.9	201.1	1,476.6	77.0	10.5	13.6	86.4
1991-92	1,837.0	102.8	101.8	204.6	2,041.6	49.8	5.0	10.0	90.0
1992-93	2,383.4	73.6	190.6	264.2	2,647.6	72.1	7.2	10.0	90.0
1993-94	5,081.3	83.2	364.0	447.2	5,528.5	81.4	6.6	8.1	91.9
1994-95	5,550.8	150.4	524.5	674.9	6,225.7	77.7	8.4	10.8	89.2
1995-96	8,334.8	90.0	739.0	829.0	9,163.8	89.1	8.1	9.0	91.0
1996-97	11,368.8	121.2	1,044.1	1,165.3	12,531.4	89.6	8.3	9.3	90.7
1997-98	15,930.9	236.1	680.0	916.1	16,847.0	74.2	4.0	5.4	94.6
1998-99	15,936.1	646.3	918.4	1,564.7	17,500.8	58.7	5.2	8.9	91.1
1999-00	16,405.5	494.9	522.8	1,017.7	17,423.2	51.4	3.0	5.8	94.2
2000-01*	17,370.0	500.0	500.0	1,000.0	18,370.0	50.0	2.7	5.4	94.6

Source: MOF, various years, PIOJ (various years); World Bank (1999). Estimates and Expenditure. Recurrent Expenditure includes only those disbursements directly related to education, and excludes spending on arts, culture, information and broadcasting, and youth development services, which fell under other ministries, as ministries have been periodically reorganized. To ensure consistency over time, only education spending is used.
*Data for 2000-01 are provisional, not actual expenditure.

With regard to resource allocation, in 1999-2000, approximately J$23,491 per secondary-school pupil was spent from the recurrent budget (Table 22). Estimates for 2000-01 show an overall increase to J$28,566, but this is concentrated in the spending on vocational and agricultural schools. In this category, total spending increased by about 33.2% while spending on other secondary schools did not change significantly (Table 22).

Table 22: Ministry of Education, Youth and Culture Per Capita Recurrent Expenditure by School Type

School Level	1999-00 J$	2000-01 J$
Average early childhood	5,156	7,577
Average primary	18,326	18,560
Special education	92,151	96,546
Secondary		
Secondary high	2,7801	27,340
Technical high	33,394	3,2967
Vocational and agricultural	82,711	110,246
Grades 7-9 of all age, primary and junior high	21,546	20,294
Average secondary	23,491	2,8566
Average tertiary	116,721	111,817

Source: ESSJ, 2002

In its sector analysis, the World Bank (1999) found significant inequality in the per student allocation of fees among school types. In particular, general budget transfers to secondary schools for 1999-2000 were estimated at US$480 per student for comprehensive highs, US$650 per student for secondary high schools, and US$883 per student for technical and vocational-agricultural highs. After considering the SLC data on the distribution of students by quintile in each school type, the Bank concluded that "It is also apparent that the distribution of public expenditure on secondary education has benefited the rich, who receive a substantially greater percentage of total recurrent public expenditure than the poor" (World Bank, 1999:7-10).

Cost Sharing in Education Finance

Official cost sharing was introduced at the secondary level (except all age and primary and junior high) in 1994-95 as a measure to achieve social equity as well as budgetary and economic goals. However, if *actual* rather than *official* fees are considered, unofficial cost sharing was evident in the system for a long time. Prior to the 1994-95 academic year, the Ministry of Education was responsible for funding the daily operations within the secondary schools through a per capita grant. This proved inadequate to cover the operating costs of the school (World Bank, 1999). The World Bank (1999) records that approximately 95% of the budgetary allocation to secondary schools went to salaries and related expenses. Only about 2.5% was available for instructional materials and 2.5% for other operational areas such as utilities and minor maintenance.[2] Budgetary constraints did not allow a significant increase over time. Government introduced cost sharing as the solution to this problem while retaining full responsibility for the emoluments of

[2] Daily operational expenses usually include instructional materials, public utilities and minor maintenance,: class materials, books, supplies, utilities, maintenance of classrooms, equipment, laboratories, sports, and other facilities, as well as the use of medical services, libraries, and other services and materials, food, and lodging.

the teaching and administrative staff. Cost-sharing fees are legally the property of government and are set and collected by the secondary schools, after approval by the Ministry following its consideration of past expenditures and justification of the present budget. There is a specific provision for text book assistance, with associated book charges per student of J$1,000, up to A-levels.

Fee Setting Mechanisms

Fees may only be charged for capital development with the Ministry's prior approval for the plans and method of financing. The amount of money available to be expended on these areas varies across schools, as it is dependent on variables such as enrolment, compliance rate, and fee per pupil (World Bank, 1999). The best evaluation available to date is that "Schools are required to submit a financial management report that outlines their estimated expenditures for the following school year and proposes the fee to be charged. Based on this information, the MOE&C assesses how reasonable the proposed fee is and may approve as proposed or adjust it downward" (World Bank, 1999). However, the specific mechanism for setting the fees needs to be clarified and perhaps updated, especially to clarify the adjustments necessary to bring fees in line with the required development of capacity and quality.

Private Sector Contribution

Without denying the value of "fee-free" education if affordable by the society, successful introduction of the scheme has established the principle that, under conditions of severe budgetary restraints, beneficiaries of the public education system in Jamaica should (and do) contribute to its development and operation through payment of fees (World Bank, 1999). Government has made the commitment, however, that in the process the poor and vulnerable must be protected. The Education Ministry provides financial assistance for needy students who cannot pay the fees. Through the guidance counsellors or other qualified school staff, students are identified through a means test and requests submitted on their behalf for assistance with a portion, or the full fees, as is deemed necessary. Although not a part of the official direct fees, schools normally charge an additional contribution that is sometimes as high or higher than the direct and officially approved fees. The total of fees and contributions can represent a substantial financial burden for poor households.

Financial Assistance Procedures

In terms of means testing, the documented knowledge is that "The MOE&C also puts a financial assistance program (FAP) to support those unable to pay either a portion or the entire fee. In 1998, FAP covered about 62 percent of the fees-books of students in the bottom quintile" (World Bank, 1999).

According to officials interviewed at the MOEYC, the core responsibility for seeking benefits under the financial assistance program is that of the parent and student. If a student cannot pay required fees, parents must ask the guidance counsellor of the school to arrange for fi-

nancial assistance. At this stage, the guidance counsellor provides the student-parent with the application form prescribed and supplied by the MOEYC. This form is filled in by the parent with the assistance as necessary of the guidance counsellor or other school personnel. The MOEYC perceives this assistance as important for preventing falsification and fraud. As an additional control and verification mechanism, the data declared on the form by the parent-student must be certified by a Justice of the Peace or any of several acceptable community persons. The MOEYC has no other mechanisms for ascertaining the accuracy of the information provided by the parent or the school. Completed and certified forms are then returned to the school, which can also seek additional verification if it deems such to be necessary, but this is not an obligation of the guidance counsellor. In practice, inconsistencies are considered and then evidence is sought by the guidance counsellor in order to judge eligibility. Once satisfactory applications are received, the school applies the scoring mechanism set out by the Ministry for the determination of eligibility.

Initially, the MOEYC did not give the schools any thresholds for the scoring and simply provided the scores as guidelines for the evaluation of the application. This changed in 2001 when the Ministry began to give guidelines for scoring applicants on all the data collected and for translating the scores into assistance for fees. There are now 5 categories of assistance provided based on the scores of students. These are as follows: Full assistance; 75%; 50%; 25% and 0. For each category, there are maximum and minimum thresholds. It is not clear what standards of poverty are implied in the thresholds, and in particular whether the standards bear any relationship to poverty as defined by the Survey of Living Conditions.

Within the context of the thresholds, a recommendation is made as to the sum to be provided for the applicant. The guidance counsellor has the option and discretion to reject applications, and in the process to take into account any special circumstances deemed relevant, without any specific oversight from the Ministry. However, special circumstances are reported to the MOEYC. In general, the thresholds are based on monthly household surplus cash — available cash on a monthly basis — and it seems clear that the needy is defined in these terms even though no specific definition has been provided by the Ministry. The application forms seek to elicit a household income statement and then apply thresholds after making allowances for home production and minimum expenditure needs. No provisions are made for food, transport, medical, shelter, and other expenses.

Once thresholds are applied and assistance determined for each student, the school prepares a spreadsheet of recommended fees and assistance, including special circumstances, and submits a copy to the relevant Regional Office of the Ministry for action. In the Regional Office, a judgement sample of arbitrary size is taken of the submissions and checks are made to see if the scores are consistently linked to the recommendations of fees and assistance. Ministry officials report instances in the past when the scores were out of line — for example, as low scores receiving high assistance. This is partly because the procedures give unrestricted room for extra considerations not raised on the forms.

It is important to observe that all of the process is paper-based and not computerized either at the school or at the Ministry, so that the volume of inefficient work is considered to be “enor-

mous" by both the Ministry officials and the schools, and significant errors are expected to arise. In addition, the Regional Offices have no way of checking the accuracy of the recommendations or the legitimacy of the special circumstances reported. Nevertheless, officials indicate that if inconsistencies are found, these are referred back to schools — indeed, even the whole package might be sent back. If no inconsistencies are found, the MOEYC pays the recommended assistance. The MOEYC reports that there were rejections last year — when the thresholds were introduced — but no records of these rejections and the reasons for them are available since the Ministry generally pays what is asked. The only records at the Ministry are of what it pays. An average of about J$300 million per year was spent in 2001-02 and the annual amounts have been increasing over the years. The rate of increase is affected by the fees and by requests for help, which are growing. This posture of paying what is requested illustrates the type of practice that tends to be adopted, even by government, when the cost of a more information-driven system is high and budget constraints are tight.[3]

Key Issues and Prioritized Problems

The general goal underlying government's education policy, particularly the increase in cost sharing, is the need to improve access to secondary schooling across the society while raising the quality of the schooling delivered. This in turn raises a number of consequential matters and problems addressed in this section of the study. Those addressed in this study are the following: (1) the effects of increasing cost sharing on the demand for education generally and on enrolment and attendance in particular; (2) the room to increase cost-sharing fees to reflect ability to pay, while protecting the interests of the poor; and (3) in the light of continuing problems with noncompliance, the consequences of enforcing compliance. Each is addressed below.

What Are the Effects of Increasing Cost Sharing on Education Demand?

One concern is that the government budget is tightly constrained by the evolving burden of debt servicing and its capacity to finance upgrading is correspondingly limited. This raises the question of the capacity of the private sector, in particular households, to finance the upgrades through increased cost sharing. Cost sharing (or user fees) defines the component of the cost of a government programme not borne by the government. Any increase in cost sharing also raises the potential burden on the household. The basic question raised by an increase in user fees is whether or not increase to some levels, while raising the capacity of schools to finance their supply of education, can deter households from undertaking the vital upgrades of education demand needed to support industrial transformation and the elimination of remaining problems of underdevelopment. Might the scheme not result in a tendency for the relatively better off persons in society to concentrate the consumption of education in their favour because less fortunate households cannot compete in financing the upgrading of the school attended by their children? Might inequity not increase because of wide differences in the ability to pay, even if the poor are protected to some extent? Moreover, in this context, there is also the important question of the zeal and tactics of fee collection. As has been repeatedly found in the Jamaica Food Stamp program

[3] Relevant details are available in the Chapter on Findings.

(SLC, 1997 and other years), it is possible to conduct business with the disadvantaged in ways that discourage their participation. And, it is also possible to do so with the tactics that bring net losses to schools in terms of school climate, the self-esteem of children, and other relevant factors. The crucial question that must be addressed is therefore: *How can the existing cost-sharing scheme mobilize household resources without adversely affecting education demand, in particular enrolment and attendance?*

Fees are a major factor affecting household demand for education and fee setting is the foundation of the cost-sharing scheme. The adequacy of fee-setting influences the overall nature of the effort to raise resources from households. An increase in fees can foster a decline in education demand in some households, and the effect is greater the more elastic the demand for education. At the same time a rise in fees can induce the household to increase demand for education if the fees allow schools to improve the quality of the school product sufficiently and in comparison with other schools to reduce inequity among social groups and school types.

Some light can be shed on the question of the net effects of fees based on the estimated size of the net supply and demand effects estimated with an identified household expenditure function. Annex I sets out the methodology followed in this study in estimating such a function. Through an appropriate device to make the influence of fees on supply endogenous, the function describes the net effects of the quality and quantity of education supply on the fees on the one hand and the influence of fees due on the household education expenditure. Thus, it allows estimation of the net impact of an increase in cost sharing on the household expenditure function.[4] Using the methods of quantile regression, a function is estimated to describe the mean household expenditure, the 75th percentile expenditure characterizing wealthier households, and the 35th percentile characterizing the poor and vulnerable households. It is possible to use the results of the study to gauge, for each quantile and for the mean household, the likely net effects of an increase in cost-sharing fees. Thus, it can be determined if an increase in fees will increase or reduce household demand among the rich. Further, using the functions estimated for the 75th percentile and the 35th percentile, the impact of an increase in cost-sharing fees on equity can be monitored in a fairly direct manner.

Using the census of schools, significant data will also be made available on real effects such as enrolment, attendance, demand for books, and other forms of education demand. In this context, equity issues are also addressed through the differentiation among schools.

Where demand is found to be sufficiently elastic for the threat of a net negative effect to be significant among some groups of households, it is necessary to examine other ways of raising household resources. Here, the alternatives to be considered are measures for relatively greater emphasis such as contributions, tuck shops, the PTA, and other school fund raising initiatives. The evidence collected in the school census will provide information on the comparative roles of these factors in the various types of schools. If it is found that in some schools the capacity for such income-creating initiatives allows the schools to raise substantial resources, this might sug-

[4] The effects of cost-sharing on enrolment and attendance could be correspondingly estimated.

gest that it is appropriate to encourage greater self-reliance among schools in at least some of these areas. The one to be favoured would be those that employ relatively less of the time of school officials and relatively more of the time of parents and guardians.

However, in this regard, an issue of concern is whether the fees are systematically related to any plans for school development, and whether such plans are reflected in the budgets and fees approved by the MOEYC. It is likely that, given the absence of budgetary contributions, the contributions are the rational foundations on which the school can acquire computers, class and other instructional materials, undertake repairs and maintenance, develop suitable physical infrastructure and sporting facilities, finance utilities, and ensure security, among other matters, and perhaps most important, financial assistance to needy students. Schools also face regular problems of teachers going on study leave, maternity leave, long-term vacation leave, and other absence. The replacements must be funded out of school budgets in some cases. Some measure of the capacity for mobilizing household resources among various school types for meaningful daily operations can be obtained by considering the comparative performance of schools in these areas.

Some evidence exists of the existing patterns. It is normally expected that the inequity of education demand among households should change as the government support for the education spending of the poor increases their capacity to consume education relative to other social groups. Given that education is a significant share of household consumption, significant education subsidies should also alter the overall distribution of nonbasic consumption by freeing up the household resources of the poor for other consumption purposes. In particular, the distribution of nonbasic consumption after subtracting education subsidies should be more equitable than that of general consumption.

SLC data suggest that the general trend since 1992 has been to reduce inequality in education. However, there are two distinct periodic effects evident in the data. Between 1992 and 1995, the advantage of the rich over the poor fell from education consumption of 14.5 times that of poor households to about 5.6 times. However, after 1998, the trend to growing inequity seems to have returned after the early gains. In 1998, the rich consumed 4.4 times the education of the poor. However, this has now grown steadily to 8.4 times in 2001 (see Table 13 above). The range can sometimes be quite misleading since it takes into account only a limited amount of the available data and not the entire distribution. A more comprehensive and more stable measure of the inequality in a distribution is given by the GINI coefficient of inequality.

With respect to consumption of education, the GINI confirms both a high level of inequality and the overall substantial decline in inequality since 1994, when cost sharing was introduced. In 1992 and 1993, before cost sharing, the indicator of education inequality was above 0.70. After the introduction of cost sharing in 1994-95, the GINI fell to 0.67, then to 0.58 in 1998 and subsequently was at 0.61 in 1999 and 2000 (Table 23). Notice, however, that the disturbing tendency to an increase in inequality in consumption of education after 1998 is confirmed as the GINI coefficient increased overall to 0.66 in 2001, which is virtually the same as it was in 1994 when cost sharing was introduced. It is also extremely important to observe that the indications are that the overall dramatic fall in education inequality is not a characteristic of all other con-

sumption, with respect to which inequality has remained consistently around 0.38 since 1992. Similarly, the inequality of consumption after taking out basic food expenses remains around 0.42 over the entire period 1992 to 2001 and the inequality of consumption after taking out both food and education remains at around 0.43. Thus, the data seems to support the hypothesis that, rather than being the result of general improvement in the economy or similar general factors, it is the targeted education programs that are having a significant effect on the inequities of education (Table 23).

Table 23: GINI Indicators of Inequality, Jamaica, 1992-2001

Year	Education Gini	Consumption GINI	Consumption Less Food	Consumption Less Food & Education
2001	0.6699	0.384	0.4522	0.4500
2000	0.6165	0.379	0.4241	0.4314
1999	0.6102	0.379	0.4341	0.4459
1998	0.5823	0.372	0.4175	0.4337
1997	0.7254	0.416	0.4517	0.4486
1996	0.6608	0.361	0.4149	0.4195
1995	0.6759	0.362	0.4309	0.4337
1994	0.6768	0.382	0.4481	0.4515
1993	0.7062	0.372	0.4393	0.4389
1992	0.7566	0.375	0.4604	0.4558

Source: Computed from SLC various years

How Can Fees Be Raised While Protecting the Poor?

Once user fees are increased, the rising potential burden on the household raises the need for financial assistance for the poor to cover fees and related costs and thus to ensure they are not denied access. In turn, any such program requires that the poor are adequately identified for the benefits, and thus introduces the question of the cost-efficiency and accuracy of the methods of identification, especially in the light of the implications of inaccuracy for government financing on the one hand and the household burden on the other. With respect to cost-efficiency, it is important to note that the difficulties and costs of managing a poverty targeting system rises with the degree of accuracy required and that the latter increases with the level of fees and the associated incentives for vulnerable but nonpoor households to lie about their household characteristics in order to get the benefits. Consequently, a question that arises is this: *Is it justified to raise the fees of the highly selective secondary high schools accompanied by an expanded scholarship scheme to support students from poor background?*

To address this question, it is first necessary to consider the particular methods of school financing, in particular the per student dependence on government subventions by rich and poor households. If it is determined that the rich depend on the state for relatively more assistance per

student than do the poor, then this suggests that in terms of the ability to pay there is at minimum a case for providing equal per capita assistance, by reducing transfers to the rich or increasing their fees. Of course, this would require appropriate provisions to guarantee that such initiatives do not hurt poor students in the institutions attended by the rich. In order to determine if such a policy would result in an improved school system, it is necessary to form a reasonable judgement using the estimated household expenditure functions. In particular, using the functions, it can be determined if, given the demand elasticities, an increase in fees will increase or reduce net household demand among the rich. Further, using the functions estimated for the 75th percentile and the 35th percentile, the impact of an increase in cost-sharing fees on equity can be monitored in a fairly direct manner.

How Can Compliance Be Enforced without Adverse Effects on the Poor?

Collection of fees is an important aspect of cost sharing. There are various arrangements and efficiencies of collection. It should be kept in mind that, in terms of payment arrangements, some students pay by bank deposits, some make direct payments in school, and some approach the guidance counsellor for assistance from the Ministry. All schools would normally have measures in place to ensure payment of fees. These measures might include refusal of books (implied in book rental) specific arrangement with the bursar for payment of fees within a given time, letters to parents and meetings with parents to arrange payment, public mention in devotion that there are outstanding students, refusal of reports in cases not judged to be genuinely needy, withholding of CXC results, monthly payments, and even the more old-fashioned herding of nonpaying students into special rooms. The relative importance of each measure could have a bearing on school morale.

Financial assistance is provided for needy students in fee paying schools, but despite the availability of government support there are some students who do not pay and do not apply for assistance from guidance counsellors. Estimates by the World Bank (1999) are that the programme has an average noncompliance rate of approximately 15%, comprising students who have not been paying fees or making any attempt to obtain assistance for paying them. It has also been observed that the compliance rate is lower among schools with the smaller fees, thus putting these schools at even more disadvantage in terms of the ability to finance their supply of education (World Bank, 1999).

> According to the MOE&C's data, 18 percent of students in 1995 and 17 percent in 1996 neither paid nor sought financial support. Only 61 percent of students paid fees in full in 1995 and 54 percent in 1996. The respective percentage for those paid in part were 16 percent in 1995 and 14 percent in 1996. About 8 percent sought full or partial support in 1995 and 17 percent in 1996. Over the two year period, the share of students who paid in full declined, while those who sought partial support increased, while the noncompliance rate (i.e. neither paid nor sought support) remained the same for the two years. (World Bank, 1999)

One fundamental problem created by noncompliance is that a significant segment of the potential labour market tends to receive inadequate education when noncompliance translates to nonattendance and similar behaviours. There are also students who receive partial payment con-

cessions under the JTA agreement and there is some contention between the Ministry and teachers about this facility. If a fee is say $6,000, the JTA agreement says 50% should be paid by the Ministry, but the Ministry says the calculation should be 50% paid less $1,000 for the book fees. The study will determine how the concession is actually calculated and whether the actual practice is favourable or problematic for the school. By Ministry policy, the book rental should be included in the fees.

One aspect of this problem relates to the willingness of households to pay fees and to seek benefits in cases where this is necessary. However, the World Bank's (1999) study provides few real clues about the reasons for noncompliance of households. The general idea is correct that this is fundamentally a problem of poverty, linked to the catchment of households by certain types of school and the level of fees charged: "both the compliance rates and the fee levels varied by school type.… New Secondary Schools came last in both fee level and compliance.… This is indicative of the fact that students who attended the selective secondary high schools and technical highs tend to come from higher socioeconomic backgrounds and could afford to pay fees." With respect to fee increases, the Bank found that "schools that enrol the largest proportion of poor students imposed the largest percentage of fee increases."

Given any level of noncompliance, an increase in fees also increases the revenue losses to upgrade the school system. At the same time, enforcement of compliance can generate adverse consequences. Thus, a crucial question to be answered is this: *What might be the impact of enforcing household compliance?* The answer clearly depends on the reasons for noncompliance.

Subject to the overriding role of poverty, there is clearly variation among the poor that suggest that there are other reasons for noncompliance that compound the problem of poverty. As noted above, households are more or less rational in the sense that they can perceive a good benefit and take it unless there are overriding reasons not to take it. Thus, it is unlikely that student would be withheld from school if it is widely known that a reasonable financial benefit exists and is accessible. The most likely reason for failure to take a benefit is therefore likely to be either ignorance of the existence of the program, lateness of response, or some other factor such as social stigma. It makes sense to rule out ignorance because word gets around quickly in school, the program is widely advertised in the newspapers and radio, and is normally announced in devotion and other school gatherings. Factors such as lateness and stigma are more likely to be the important causes of noncompliance.

Important factors normally considered in the explanation of noncompliance by the poor are "stigma" typically linked to loss of self esteem, the poor quality service of social services suffering from underfunding by government, lack of knowledge of the existence of benefits, and benefits that are simply too small relative to the cost of obtaining them (Bitran, 2002: 24, 39,47). However, it is unlikely that this would play a significant role in the context of Jamaica, where there is a high social disposition to take advantage of services without paying for them even when they are not free and where there is a tendency for the rich to try to get the free services targeted for the poor. The evidence provided by the Ministry of Education is that the requests for financial assistance sent by the schools tend to be paid by the Ministry, including cases of full assistance. Thus, the problem of poor quality of support for the financial assistance program is

hardly likely to lead the poor to bypass benefits in this case. One cannot discount the factor of ignorance, since an individual family may not know even when broad-based advertisements are used to increase public awareness. However, in the case of a program targeting school students it is unlikely to be the main cause. Word gets around in schools very quickly and a student would have to be entirely new to the system to be completely out of the loop of information about available benefits that even the rich try to take advantage of.

With respect to the complementary costs of education, contributions and other costs such as transport affect the demand for education. However, it is known that in Jamaica, the poor are generally committed to education as a means of socially mobility and are among those who mostly purchase extra lessons and other education supply at many times the fees of secondary school. Thus, even though the level of fees is likely to be a factor, it is unlikely to be the main factor affecting the failure to take advantage of the financial benefits made available to complement household funds. A factor that is likely to deter compliance is a long and cumbersome administrative process. However, long application and registration procedures are normal in the school enrolment process and the application for benefits is unlikely to add excessively to this. Moreover, schools have instituted professional assistance for this purpose through the guidance counsellor.

Some lessons can be learned from the experience of the Food Stamp Program. In the case of the food stamp program, for example, Table 24 shows that households did not seek benefits for several different rational reasons that might all be linked to poverty. For example, in 1998 14.2% of eligible households did not bother to apply because they found that officers were late in arriving at the administration centres, 31.8% found that the administrative accommodations were too cumbersome, and 20.4% found that the lines were too long.

Table 24: Self-Reported Reasons Why Households Did Not Receive Food Stamps, JSLC 1992-98

Reasons	1992	1993	1994	1995	1996	1997	1998
Lateness of officer	16.3	16.4	17.8	17.2	11.4	13.5	14.2
Rudeness of officer	4.3	5.8	7.8	6.5	8.1	2.8	3.9
Disorderly lines	29.9	22.3	15.5	14.7	35.2	5.7	5.6
Inadequate accommodation	0.5	3.7	2.5	0	5.5	54.1	31.8
Transportation difficulties	8.4	9.8	13.3	15.5	15.2	6.4	15.3
Long lines	7.8	18.0	18.3	15.9	11.3	11.1	20.4
Not in mail	7.7	7.5	0	15.3	5.3	-	2.8
Other	25.0	16.5	24.7	14.9	8.1	6.4	6.0

Source: SLC.

In 2001, households who did not apply for benefits, including the poor, similarly gave a variety of important reasons for not seeking benefits. Specifically, Table 25 shows that among the poorest quintile, 19.1% did not apply because they *did not know how to apply* for food stamp benefits and 13.0% felt the value of the benefits were too small to be worth the trouble of seek-

ing them. Just as important, 55.6 made an independent judgement, from whatever information source they had, that they were not eligible for benefits. Stigma was a nontrivial factor, deterring as much as 7.1% of the nonapplicants.

Table 25: Self-Reported Reasons for Individuals Not Applying for Food Stamps, by Quintile

Consumption Quintile	Did not consider self eligible	Did not know how to apply	Value too small	Did not want stigma	Other	Total
Poorest	55.6	19.1	13.0	7.1	5.1	100
2	52.4	19.1	18.2	6.7	3.5	100
3	56.4	14.4	19.3	8.0	1.8	100
4	65.6	10.1	21.3	6.2	2.8	100
5	72.0	7.8	12.4	6.2	1.6	100
Jamaica	60.2	14.2	15.4	7.2	3.0	100

Source: SLC.

In general, it seems clear that based on the experience of the food-stamp program it could be expected that compliance would be influenced by factors such as social stigma, inadequate information, the requirements of compliance, and the general cost of compliance in terms of time and other resources.

The *2000-2001 Report on the Status of Cost Sharing* by the Ministry of Education, Youth and Culture refers to a study by the PIOJ in which the findings on the proximate causes of non-compliance are as follows:

- Parents felt that they should not pay. Government should.
- Parents heard of the programme but were not sufficiently informed, so could not avail themselves of the assistance.
- Parents felt a level of embarrassment to apply for the assistance.
- The application form asked for too much personal information; some items forced the applicant to supply false information (e.g. spouse's income).
- Some schools were not accommodating and hence were not helpful.

Preliminary discussions with authorities and with selected groups of noncompliant households also suggest that, in addition to the immediate causes of poverty and related inability to pay, important among the reasons for noncompliance are the culture of negligence and problems associated with the life-styles of the poor, including factors that are linked to dysfunctional and broken homes. Enforcement of compliance in that context can have adverse effects, unless it is well-managed.

This study will provide some update on the relative importance of these proximate causes. In this case, a number of semistructured interviews will be conducted with the households of noncompliant students from a selected set of schools in St. Catherine.

Ministry Concerns with the Adequacy of Targeting

The precise method of means testing is unknown. Also not known is the exact extent to which students pay the portion of the fees not covered by government or the extent to which schools comply with government regulations. Concerning school compliance, the World Bank (1999) described the situation as follows:

> …. not all schools report their revenue from fees to the MOE&C, although it is their legal obligation to do so. In fact, of the 144 schools that were surveyed at the end of the first term (December) of 1995 and 1996 by MOE&C, only 137 schools in the first year and 120 schools in the second year responded. (World Bank, 1999)

Concerns have been expressed by Ministry officials about the accuracy of the completed form, with the main reasons for concern being that inaccuracy will tend to raise demands on the budget and will also lead to improper targeting. It is the position of the Ministry that the proper targeting of households is critical to the affordability and successful implementation of the policy of financial assistance. The significance of this is growing with the commitment to guarantee a place to all students by 2005.

Guidance counsellors are generally not trained in the implementation of the means-testing and other aspects of the financial assistance program. Ministry officials report that guidance counsellors received "a limited amount of training — a briefing" in preparation for the implementation of the means-testing procedures. Moreover, there is no documentation of the briefing provided. Instead, the Ministry operates on the general belief that the guidance counsellors already have a good base of information on each student that allows them to judge the true situation. The main reason given by the MOEYC officials for not providing more extensive training, however, is that the Ministry does not yet perceive that it wants to go in the direction of full training because it would rather direct the time of the guidance counsellor and other school officials into actual counselling and provision of other necessary services to students rather than to management of the financial assistance program. However, the option of putting additional skills in the schools is not now available because the additional costs cannot be afforded. This would raise the issue of a larger pool of students needing assistance and the basis on which assistance would be provided to such students. Senior officials of the Ministry insist that tightening of the targeting is worth the effort. However, there are indications that a solution to the problem of inefficient means-testing, if it is found to exist, will have to be sought without any expansion of the bureaucracy of the Ministry.

In general, with respect to the scale of the financial assistance program, there is no government policy to meet all requests for assistance submitted by the schools. Up to now requests have been met, but this practice is not guaranteed to continue. However, the most senior officials with whom discussions were held indicated that the policy evolving is one of meeting all legiti-

mate needs that arise — "government will have to find the money." The policy therefore seems to be that the Ministry will seek to protect the poor and is not willing to let some poor students fall out through its budgetary cracks because of inability to pay fees.

Ministry officials expressed satisfaction with the targeting forms and thresholds but not with the logistics for implementation. Several weaknesses of the means-testing system have been identified by MOEYC officials. These include the absence of detailed and computerized records for each child. The spreadsheets of recommended fees that are sent to the Ministry provide some information but these are not very useful in interpreting the performance of the system. The available data cannot trace applications and allocations relative to payout for each student. Schools are normally asked by the Ministry to send a list of students who have not paid and have not applied but in this and other respects the Ministry reports poor compliance from the schools. This also means that records of noncomplying students are not well kept even though preliminary discussions with schools indicate that this might be related to the volume of paper work involved and the costs of the administrative arrangements required to comply with Ministry requests.

The PATH Alternative

The Ministry is considering alternatives to the existing systems of means-testing, in order to grapple better with the volume of work involved. One consideration is for the MOEYC to participate in the recently established "one path" Programme of Advancement Through Health and Education (PATH) to social assistance through the Ministry of Labour and Social Security. The programme replaces the three major existing social assistance programmes, namely: (1) The Old Age and Incapacity Programme; (2) The Food Stamp Programme; and (3) The Outdoor Poor Relief Programme. PATH provides cash grants for health and education for the poorest persons in the society who do not have the funds to support themselves. The grants amount to J$300 or about US$6 per month per beneficiary. However, there is no clear indication that the methods proposed by the Ministry of Labour and Social Security can apply to education financing to redress the problems of inequitable access described above. This study will shed some light on the suitability of PATH as the basis for meeting the education needs of the poor.

Identifying the Poor and Means Testing

Effective application of a program of support for the poor requires adequate identification of the poor — a fairly difficult and expensive proposition — and this is one reason cost sharing has imposed a substantial burden on the participating schools, which are the main administrators of the program. The basic mechanism of identification is to obtain household income and living standards data from all students seeking to obtain benefits under the scheme and apply appropriate indicators and thresholds to determine those who are poor.

One reason for the problem of identification is that the meaning of poverty has been the subject of considerable controversy. The current consensus is that a poverty line should be set in relation to both social conventions in the society and the purpose at hand, to say nothing of

budget constraints. In the context of the social programmes of Jamaica, it is common for government to use the official poverty line generated with SLC data as the identifier of the poor. However, in the context of an education program, it is crucial that the concept of poverty takes account of the burden imposed on the household by its efforts to comply with the social goals of higher and more competitive education. As we have seen above, for some families that burden can be substantial at any time, especially if one takes account of the customary expenditures reflecting what Orshansky (1965:5) called "social conscience and custom." The matter of social conscience and custom is usually an important factor guiding the appeals by applicants of the decisions of school officials about their eligibility for benefits. *The significant amount of subjective judgement involved is one reason a process that fairly protects the poor also needs to involve an appeals mechanism.* It is of course true that a family could maintain its core physical status if income spent on education were diverted to other consumption but that is hardly interesting nowadays. However, given the competitive pressures on society arising from globalization and the need for a suitable response through secondary education for all, Jamaica today hardly wishes to countenance any view that there should be any large degree of arbitrariness in the choices of households to send school-age children to secondary school. In the case of the poor, it is the set of all expenses associated with the education of the child that must feature in the definition of poverty. Put differently, once income-expenditure is the focus, it is necessary to define the poor in terms of a concept of supernumerary income that takes full account of all basic education expenses demanded by society.

Another reason for the problem of identification is that if the program of benefits is attractive enough, the nonpoor have a significant incentive to misreport the facts about their income and living standards (Bitran, 2001:9). The experience with the loans and grants of the Students' Loan Bureau (SLB), at least one other targeted programme in Jamaica, indicates a significant tendency to misrepresentation when the subsidized services are desirable by all (James, 2000). It is therefore likely that, as was the case with the SLB, effective identification of the poor will have to be accompanied by an opportunity for the school, or even more appropriately the Ministry, to utilize a variety of means, including random visits to home and work, and application of known and appropriately high legal sanctions against liars, to underscore the importance of accurate reporting. Adequate reporting combined with effective use of modern information technologies can result in a cost-effective means-testing. But again, such procedures should be accompanied by an appropriate mechanism for appeal of the decisions of those managing the means-testing process.

Additional Equity Issues: Redistribution of Collected Fees

The introduction of the cost-sharing scheme resulted in a significant increase in the funds available for instructional materials and the other operational costs faced by the schools, up from 2% of budget before the scheme to 14% currently (World Bank, 1999). Contributions would obviously boost such resources. From the evidence on equity of education consumption and education performance, the user fees, even when imposed to some extent on poor households, seem to be having some positive effects in terms of the improvement of equity of access and improvement of quality all around, partly because households might be in a better moral position to pres-

sure schools to deliver better quality. However, even with the solution of sliding fees as implied in equation (3), there would still be supply-side (school-level) concerns about the equity of cost sharing and contributions linked to it. Schools vary in their capacity to collect fees and contributions consistent with their plans for throughput and outcome, depending on the social and financial wealth characteristics of their student body. The result is a significant variation in capacity to cover daily operational expenses, and hence varying degrees of inadequate funding, with most of the problems concentrated in schools with a high share of poor households. This issue will have to be addressed by other policies, including the possibility of some type of levy mechanism for redistributing collected fees.

Chapter II: Findings

The Chapter reports the findings of the empirical studies to address the priority issues and challenges of the cost-sharing system in Jamaica. It also updates some findings reported in the World Bank (1999) sector study with respect to these challenges. Two sources of data are used: (1) secondary data from the MOEYC, and (2) primary data collected from the officials of the schools.

Secondary School Response Patterns

The attempt to conduct a census failed because of the late starting date relative to the date of school closure and the reporting date for this study. Of the 152 schools interviewed, a total of 47 or about 31% responded, leaving the study with only a nonrandom sample. The response rate among school types is comparatively high for the new secondary schools, with 7 or 50% of 14 responding. Among the traditional high schools, 19 or 41% of 46 responded, while among the comprehensive highs, 19 or 25% of 76 responded.

The representation of respondents in the school types (Table 26) is reasonable, if not strictly random, and provides some basis for gauging the relative importance of fees, contributions, and other sources of revenues in the total. The fractions will be used in inflating to the population of schools in each school type and for the population as a whole, but one should not treat the results as if generated by a random sample.

Table 26: Response Patterns in Secondary School Cost-Sharing Census, 2002			
School Type	Number of Schools Responding	Total Number of Schools	% Responding
Agri-vocational high	0	3	0.0%
Comprehensive high	19	76	25.0%
Secondary high	7	14	50.0%
Traditional high	19	46	41.3%
Technical high	2	13	15.4%
Total	47	152	30.9%

Effects of Cost Sharing on Education Demand

How can the existing cost-sharing scheme mobilize household resources without adversely affecting education demand, in particular enrolment and attendance?

The first element of the question is whether an increase in fees can raise more resources from households without negatively affecting education demand. The identified Stone-Geary Expenditure Function for Jamaica that is used to consider this question is:

$$\begin{aligned}\ln EDUCPC = {} & 1.96+0.111\ln BK+0.134\ln UNIF+0.153\ln TRANS+0.354\ln LUNCH \\ & +0.925\ln FEENR- \\ & 0.78\ln FEE+0.048\ln SUPRNU+1.004\ln ENRHH \\ & +0.119COMP+0.134HIGH\end{aligned}$$

The explanatory power of the variables associated with the identified coefficients is substantial and as expected. These are reported in Annex II. Each variable is statistically significant, with absolute values of all t-statistics in excess of 2 and with coefficients having exact probabilities of Type II error of less than 1%.

Experimentation with the quantile regressions revealed that the best fitting pair of quantile functions are to be found at the 35^{th} quantile, which essentially describes education demand for the poor households and the 75^{th} quantile, which essentially describes education demand for the households that are more wealthy. The results are reported in Annex II. For the average education expenditure of households in the neighbourhood of the 35^{th} percentile, which identifies poor households, the regression is:

$$\begin{aligned}\ln EDUCPC = {} & 1.78+0.086\ln BK+0.099\ln UNIF+0.211\ln TRANS+0.413\ln LUNCH \\ & +0.946\ln FEENR-0.822\ln FEE+0.024\ln SUPRNU+.983\ln ENRHH\end{aligned}$$

In contrast, the average education expenditure of households in the neighbourhood of the 75th percentile, which identifies rich households, the regression is

$$\ln EDUCPC = 1.96+0.108\ln BK+0.121\ln UNIF+0.149\ln TRANS+0.373\ln LUNCH +0.925\ln FEENR- 0.757\ln FEE+0.036\ln SUPRNU+1.04\ln ENRHH +0.118COMP+0.138HIGH$$

With respect to the question of the net effects of an increase in fees, the coefficient of interest is the net fee elasticity. The identified demand functions indicate an average net per student fee elasticity of demand equal to 0.145 (Annex II, Table A2.1).[5] By enabling an improvement in the supply to meet household demand, a small (1%) increase in fees can bring about a net relative improvement of demand of about 0.145% (or a net increase of 0.15 percentage points). The data (Annex II, Table A2.4) from the quantile regression suggests that among poor households, the net fee impact elasticity is lower than average at 0.124. Thus, a one percent increase of fees among poor households will only increase education expenditures by a net of 0.12%. In contrast, a one percent increase in fees among richer households will be a much greater increase of education expenditures by just about 0.17%. Put differently, resources can be mobilized by charging the wealthier students higher fees. If this is done, it would also cause a net increase in education expenditure. *However, such a move would immediately require strong and efficient measures to identify and protect the poor while preventing a growth in leakage as the assistance from government looks more appealing in the face of higher fees.*

The bootstrapping method of estimation of standard errors also allows testing of hypotheses relating to the difference of the coefficients of the 35th percentile and the 75th percentile (Annex II, Table A2.5). The results are of the form:

$$\ln EDUCPC_{75}-\ln EDUCPC_{35} =0.022\ln bk-.062\ln TRANS + 0.062\ln FEE$$

These results indicate that the difference in the coefficients characterizing the rich and poor households is only significant in the cases of basic book expenditures, basic transport expenditures, and fees. The specific relations implied are the following:

- An increase in necessary transport outlays *lowers* the difference between the per capita education expenditures of the households.
- An increase in necessary expenditure on books at the same rate for all households *increases* the difference between the per capita expenditures of households.
- An increase in fees at the same rate for all households *increases* the difference between the per capita expenditures of households.

[5] That is (0.925-0.78)lnFEE.

However, increases in fees at different rates for different households would not tend to cause greater inequality among households and could reduce inequality. Complementary evidence from the census of schools indicate that if cost-sharing fees are increased, it is the students of the schools in which the poor are concentrated that would be most adversely affected. The data in Table 27 show that among school types, 31.6% of the comprehensive high schools indicate that the loss of financial assistance and the requirement to pay cost sharing would result in a fair number of students dropping out or not enroling, as compared to 42.1% indicating that a few would be affected and 26.3% indicating that none would be affected. About 16.7% of the new secondary high schools indicate that a fair number would be affected. No traditional high school reported that a fair number would be affected. With respect to the effects on attendance, 10.5% of the comprehensive high schools indicate that the loss of financial assistance and the requirement to pay cost sharing would result in a negative effect on attendance for many students. No other school type signaled such a strong effect on attendance. About 15.8% felt that a fair number would be affected, as compared to 16.7% of the new secondary high schools and only 5.3% of the traditional high schools. The general conclusion that is warranted is that cost-sharing increases would affect the poor substantially and quite differently from the way they would affect the wealthy. Additional household resources can be raised through fees without negatively affecting enrolment and attendance, but mainly from the relatively wealthy households that cluster in the traditional high schools and technical high schools.

Table 27: Effect of Cost Sharing on Students by School Type

		Number of Students Affected (%)				
Effect on Students	**School Type**	**None**	**Few**	**Fair Number**	**Many**	**Total**
Students do not register—drop out	Compr. (n=19)	26.3	42.1	31.6	0.0	100.0
	Sec. High (n=6)	50.0	33.3	16.7	0.0	100.0
	Trad. High (n=18)	72.2	27.8	0.0	0.0	100.0
Attendance affected negatively	Compr. (n=19)	36.8	36.8	15.8	10.5	100.0
	Sec. High (n=6)	16.7	66.7	16.7	0.0	100.0
	Trad. High (n=19)	52.6	42.1	5.3	0.0	100.0
No access to books	Compr. (n=19)	47.4	31.6	15.8	5.3	100.0
	Sec. High (n=6)	16.7	33.3	50.0	0.0	100.0
	Trad. High (n=19)	42.1	42.1	5.3	10.5	100.0

Source: Secondary school survey, 2002.

The smaller elasticity among the poor also suggests that it might be appropriate to consider other means of raising household resources than by using fee increases. As indicated above, the options are contributions, tuck shops, the PTA, and other school fund raising initiatives. The evidence reported in Table 28 indicates that comprehensive high schools rely relatively more on

tuck shops, interests, and other incomes (3.5%) than do the traditional high schools (1.3%) that are attended by the rich. Similarly, the new secondary high schools are able to rely substantially on relatively more contributions (9.4%) than do the traditional high schools (1%). After taking into account the possibility of under-reporting, the results suggest two conclusions. The first is that when compared with the performance of the new secondary schools with less affluent households, there is substantial underutilized potential to increase dependence on contributions in the traditional high schools in order to mobilize household resources. This would complement the potential for increased fees in the light of the relatively high net demand elasticity of rich households. The second conclusion is that, given the low net demand elasticity of fees, it might be appropriate to shift attention from fees to other income sources for the comprehensive schools, especially in areas such as the tuck shops, interests, and other incomes, in order to mobilize household resources. The household resources would be mobilized in these cases through increased involvement in the activities of the school with a view to upgrading school quality. This takes advantage of the tendency for households to support initiatives if the expectation is a better school for their children. Government may choose to complement such efforts with suitable measures to minimize the use of professional teachers' time in the fund raising efforts of comprehensive and new secondary schools.

Table 28: The Structure of the Revenues of Schools by School Type, 2001-02

Income Type	Comprehensive High	Secondary High	Traditional High	Technical High
Budgeted salary subvention	2,293,345,319	468,301,401	1,634,429,660	505,174,293
% of total	81.0%	68.1%	72.5%	75.8%
Actual subvention	2,381,494,488	520,442,134	1,841,281,565	558,157,456
% of total	84.1%	75.7%	81.7%	83.7%
Fees collected	329,062,453	83,585,547	361,403,244	84,935,530
% of total	11.6%	12.2%	16.0%	12.7%
Subventions and fees	2,710,556,941	604,027,681	2,202,684,809	643,092,986
% of total	95.7%	87.9%	97.8%	96.5%
Contributions	22,412,290	64,839,658	19,987,000	0
% of total	0.8%	9.4%	0.9%	0.0%
Tuck shop, interests, and other incomes	99,689,093	18,558,454	30,264,668	23,481,725
% of total	3.5%	2.7%	1.3%	3.5%
Income available for daily operations	451,163,835	166,983,659	411,654,912	108,417,255
% of total	15.9%	24.3%	18.3%	16.3%
Total	2,832,658,323	687,425,793	2,252,936,477	666,574,711

Source: Ministry of Education and Survey of Secondary Schools.

With regard to the concern for the link between the fund raising efforts and the plans for disposal of finance, the data in Table 29 indicate how finances collected are linked to the plans of schools agreed to in relation to acquisitions of computers, instructional materials, and the like.

The data suggest a broad-based focus in all schools on improving the quality of instructional materials, equipment, utilities, and the like. There is no reason to suggest that the finances collected would be diverted to other pursuits. Thus, taken in the context of the data in Table 28 and the tightening constraint on the education budget, it is reasonable for government to support these initiatives as a way of increasing the resource intake from household, subject to the provision that the burden for their management and development is not shifted to the teaching staff.

Table 29: Purpose of Collecting Contributions by School Type, 2001-02

	School Type		
Expenditure Items	**Comprehensive High (Mean, J$)**	**Secondary High (Mean, J$)**	**Traditional High (Mean, J$)**
Purchase of computers	0.00	284,009.00	456,413.16
Instructional material	1,418,758.00	2,345,726.50	492,500.00
Other equipment	200,000.00	947,106.00	299,999.48
Maintenance of equipment	252,605.00	132,901.00	319,181.26
Building development	0.00	1,432,320.00	1,001,249.16
Maintenance of school	208,452.00	1,403,738.50	128,503.52
Utilities	444,077.00	1,468,741.50	1,020,002.96
Sports facilities	328,443.81	377,186.50	389,434.56
Security	83,724.50	497,531.00	299,999.48
Travel & transportation	333,360.00	419,622.00	90,005.36
Welfare-medical care	216,527.50	1,032,285.00	204,780.00
Staff development	22,100.00	132,901.00	49,990.72
PTA projects	265,420.00	238,500.00	469,004.55
Other	739,478.33	4,436,484.00	299,825.00

Source: Secondary School Survey, 2002

How Fees Can Be Raised while Protecting the Poor

Is it justified to raise the fees of the highly selective secondary high schools accompanied by an expanded scholarship scheme to support students from poor background?

As indicated above, to address this question, it is first necessary to consider the particular methods of school financing, in particular the per student dependence on government subventions by rich and poor households. The data in Table 30 reveals that the traditional high schools are able to obtain a higher transfer per student than the comprehensive schools and the new secondary schools, although some convergence has clearly been occurring. The data indicate that while comprehensive high schools and nontraditional secondary high schools received J$26,149 per student and J$23,131 per student respectively, the technical high schools received transfers

of J$32,899 per student and the traditional secondary high schools received transfers of J$28,544 per student. Thus, taken together with Table 16, the evidence continues to suggest, consistent with World Bank findings, that per capita government financial assistance to schools is still skewed in favour of schools that tend to attract the wealthier households.

One reason for the disparities seems to be that the technical high and traditional high schools are able to attract a substantially higher quality of teacher than the other school types. Since government meets the commitment to pay the recruited teacher, the result is a substantial difference in the per student transfers for teacher support among the schools (Table 31). Taking into account dissimilar student-teacher ratios among schools, the result is a correspondingly higher transfer of budget benefits per student of J$27,202 in the traditional high schools and J$31,187 in the technical high schools, as compared to J$21,748 in the new secondary high schools and J$24,661 in the comprehensive high schools. These are significant differences in per student terms when one considers that the fees per student are in the range of J$3,000 to J$9,000. Moreover, it has to be kept in mind that leakages might exist in the financial assistance programme, given the capacity of the better-off households to pursue benefits they do not deserve on the basis of their poverty status. It is perhaps in this area of per student transfers for salaries that government has the greatest leverage to correct the imbalances between schools. If the student-teacher ratios are made to converge, government can adopt the principle of making the subvention per student or per teacher similar across all schools, subject to the principle that the poor are protected. Such a move would reduce the subventions to the traditional secondary schools while increasing fees and while increasing subventions to the comprehensive and new secondary schools and scholarships to the poor.

Table 30: Per Student Budgetary Transfers by School Type

Secondary School Type	Number of Schools	Enrolment	Total Budgetary Transfer (J$)	Per Student Budgetary Transfer (J$)	Per Student Budgetary Transfer (US$)
Agricultural-vocational	3	1,054	51,355,258	48,724	1,015
Comprehensive high	76	92,993	2,431,704,389	26,149	545
Secondary high	14	21,533	498,087,711	23,131	482
Technical high	13	16,198	532,892,761	32,899	685
Traditional high	46	60,084	1,715,019,804	28,544	595
Total	152	191,862	5,229,059,923	27,254	

Source: Secondary School Survey, 2002

Table 31: Per Student Salary Transfers by School Type

Secondary School Type	Number of Schools	Enrolment	Total Salary Transfer (J$)	Per Student Salary Transfer (J$)	Per Student Salary Transfer (US$)
Agricultural-vocational	3	1,054	48,962,708	46,454.18	967.80
Comprehensive high	76	92,993	2,293,345,319	24,661.48	513.78
Secondary high	14	21,533	468,301,401	21,748.08	453.08
Technical high	13	16,198	505,174,293	31,187.45	649.74
Traditional high	46	60,084	1,634,429,660	27,202.41	566.72
Total	152	191,862	4,950,213,381	25,800.91	537.52

Source: Secondary School Survey, 2002

In considering the increase in fees, some additional light can be shed by the relative dependence on fees to finance school operations among the various school types. The data in Table 32 show that of all fees provided, about 67% come from the household. There is significant inequality among school types in this area. Among school types, the largest share of fees paid by the household is paid to the technical high schools (77%). The traditional high schools collect from households at about the same rate as for the nation as a whole (67%). The smallest share contributed by the households is collected by the comprehensive high schools (57%) and 64% for the newer secondary high schools, with the former explained mainly by the higher concentration of very poor (Quintile 1) (Table 16) households in comprehensive schools. One reason for the share of household fee payments in traditional schools to be relatively low, almost comparable to that of the newer secondary high schools, is that the fees of the former are kept low by the large salary transfers to finance higher quality teachers. It is worth emphasizing in this context that about the same percentage (63%) of students in comprehensive schools and newer secondary high schools tend to come from poor households, but that the poorest students (Quintile 1) are concentrated (24%) in the comprehensive schools (Table 16). About 54% of the households in the traditional high schools are from the lowest 3 consumption quintiles, compared to 63% for the newer secondary high schools. Note however, that only about 14.4% of the students in the traditional highs are very poor, compared to about 18.8% in the newer secondary high schools. In the technical highs, which are generally regarded as being of the same substantive quality as the traditional highs, only about 31% of students in such schools are likely to come from households in quintiles 2 or 3 and none from quintile 1 (Table 16).

Table 32: The Structure of Secondary School Fees and Contributions Collected, by School Type, 2001

Income	Agricultural -Vocation	Compre-hensive	Secondary High	Traditional High	Technical High	All Schools
Salary subvention	48,962,708	2,293,345,319	468,301,401	505,174,293	1,634,429,660	4,950,213,381
Fees paid by students	5,719,110	186,620,953	53,549,037	56,782,262	278,214,044	580,885,406
% of total fees	70.1	56.7	64.1	66.9	77.0	67.0
Fees assistance from Ministry	2,392,550	138,359,070	29,786,310	27,718,468	80,590,144	278,846,542
% of total fees	29.3	42.0	35.6	32.6	22.3	32.2
Fees assistance from Member of Parliament	50,000	4,082,430	250,200	434,800	2,599,056	7,416,486
% of total fees	0.6	1.2	0.3	0.5	0.7	0.9
Total fees	8,161,660	329,062,453	83,585,547	84,935,530	361,403,244	867,148,434

Source: Ministry of Education, Study by Van Reel

It is also important to note the comparative level of fees charged when considering re-alignment to increase the flow of resources from the wealthier students. The data in Table 33 provide an SLC-based update of the information on fees paid to schools of various types. The fees reported must be assumed to include "contributions" paid by the household, since the SLC instructions do not make such distinctions. Such fees vary across schools and in 2001-02 ranged from J$3,500 to J$8,300. SLC data indicate that the highest fees are charged by the elite secondary high schools, which averaged J$5,353, approximately 8% more than the average of J$4,965 achievable by the comprehensives. The other new secondary high were only able to charge fees averaging J$3,477, about 64% of that averaged by the elite secondary high schools. On average, fees tend to rise with the quintile of consumption, indicating that the poor also tend to attend less well-funded schools than their wealthier neighbours.

Table 33: Fees by Quintile and by School Type, 2001-02

Category	School Fee
Quintile	
Poorest (n=76)	3,925
2 (n=76)	4,255
3 (n=106)	6,135
4 (n=107)	5,166
5 (n=77)	5,578
School Type	
New secondary (n=22)	3,477
Comprehensive (n=130)	4,965
Secondary high (n=290)	5,353
Jamaica (n=442)	5,142

Source: SLC

Another perspective is provided by the data from the administrative cost-sharing files. These data (Table 34) show that the highest fees were approved for the elite secondary high schools, which averaged J$5,674. The average approved for the comprehensive high was J$4,838. The other new secondary high schools were able to charge fees, averaging J$5,036, somewhat above the average fees approved for the comprehensive highs but well below that of $7,104 approved for the traditional highs. In all cases, except the agricultural-vocational schools, average fees collected were below the average charged by schools, suggesting a general tendency to comply with Ministry mandated maximum fees. The technical high schools succeeded in collecting the highest average fees of J$6,015 per student, followed by the traditional secondary high schools at J$5,244.

Table 34: Per Capita Household Fee Payments by School Type, 2002

School Type	Average Endorsed School Fee	School Fee Collected Per Student	Payments by Student	Household Payments as % of Collected Fees	Ministry Payments Per Student	Ministry Payments as % of Collected Fees	% of Households in Quintile 1
Agri-Voc	5,500	7,744	5,426	70.1	2,270	29.3	0.0
Comprehensive	4,838	3,539	2,007	56.7	1,488	42.0	23.8
Secondary high	5,036	3,882	2,487	64.1	1,383	35.6	18.8
Traditional high	7,104	5,244	3,506	66.9	1,711	32.6	14.4
Technical high	6,223	6,015	4,630	77.0	1,341	22.3	0.0
Jamaica	5,674	4,520	3,028	67.0	1,453	32.2	

Source: Ministry of Education

However, notice that these disparities of fees do not mirror the wealth advantages of the rich. Recall, for example, that the data in Table 13 show that, in per capita terms, the wealthy in quintile 5 consume about 8.4 times more education than the poor in quintile 1. However, they pay only about 36% more in fees for such an advantage and receive more government support per student in the process. The compelling implication is that significant room exists to solicit a greater effort by the wealthy to finance their own education.

Looked at from the perspective of transfers, since the rich depend on the state for relatively more assistance per student than do the poor, there is evidence that substantial improvements in the financing of schools can be achieved by providing equal per capita assistance, and thereby reducing per student transfers to the rich and increasing their fees. The results of the estimation of the household expenditure function indicate that such a move would not deter demand for education among the rich. Indeed, the net elasticity of demand is about 0.17, suggesting that a 1% increase in fees would stimulate a net increase of 0.17% in education demand after both demand and supply effects are considered (Annex II). Given the lower response of the poor, the case is simultaneously made for protecting the poor through financial assistance.

In relation to protection of the poor, once fees are defined to include subsidies, the identified model in Annex II readily suggests a program of subsidies that is based on a separation of the component of the costs of education that the household should bear and the component the government should contribute. Specifically, for S the subsidy, the relevant basic equation is:

$$0.78\ln S_{HH} = 1.96+0.111\ln BK+0.134\ln UNIF+0.153\ln TRANS+0.354\ln LUNCH$$
$$+0.925\ln FEENR-0.78\ln FEE+1.04\ln ENRHH+0.119COMP+0.134HIGH$$
$$0.048\ln SUPRNU$$

That is to say, the basic expectation is that government would provide support to poor households to meet the subsistence costs of education and let their supernumerary incomes be used to fund the remaining costs along with a portion of the fees. The equation indicates an explicit sliding fee design, with the better-off household receiving a lower subsidy, given the other necessary school expenditures, up to some point at which the subsidy is wiped out. Similarly, considering both the positive marginal supply effect and the negative demand effect of fees, the higher the fees the higher will be the net subsidy to the household. So poor students going to schools that are able to charge higher fees will receive suitable support to offset the negative demand effects of the higher fees.

The sliding fee design means that the schools that are good enough to charge higher fees and to attract wealthier students to pay such fees will tend to do so without the subsidies and could still be significantly better off than other schools. Other policy interventions are needed to address this situation.

To the extent that fees are the basis of school funding, the SLC data suggests that higher fees for the wealthy can result in greater benefit to students, subject to the principle of sliding fees and the complete protection of the poor as defined in terms of their supernumerary income. However, the data on attendance suggests that the attendance rate has not tended to rise despite the education assistance provided to households. The net fee elasticity only will translate to effective demand if the student actually turns up and participates to receive the education paid for. While participation cannot be mandated, it is perhaps appropriate to suggest here that, in the light of the stagnation of school attendance and the critical significance of attendance in effective education demand, higher fees would only yield the expected benefits to the poor in Jamaica *if attendance at some minimum rate is made a condition for a student to actually receive benefits due*.

The PATH Alternative Revisited

The above data shed some light on the wisdom of using the PATH to social assistance through the Ministry of Labour and Social Security as the basis for providing assistance to all poor students. The crucial observation to be made is that the PATH proposal of J$300 per month for the needy student does not cover the average endorsed fees of any of the secondary schools in the education system, and certainly does not address the additional requirements of contributions. Furthermore, the benefits are well below the fees of the traditional high schools and technical high schools into which the poor will have to be drawn as part of the process of ensuring equita-

ble access to all schools. Even though there is no clear definition of how the poorest are identified, indications from officials at the Ministry of Labour and Social Security are that only persons in decile 1 will be considered. However, such a definition of eligibility would be inadequate to deal with the problems of necessary access and equity in education. In particular it would miss the majority of the poor as defined under the SLC, and even more important would also miss the majority of the poor defined after considering necessary minimum expenditures on education, such as transport, lunch and snacks, books, and contributions.

Other aspects of the PATH procedure are also not clear, including the arrangements for dealing with household objections to decisions by the Ministry of Labour when these are unfavourable. Within the current cost-sharing system, discretion on these matters rests with the school but this might not be consistent with targeting by the Ministry of Labou and Social Security. The Ministry of Labour has linked education performance, especially attendance, to social benefits. This initiative is sensible in principle but means that attendance data would be needed by the Ministry of Labour as part of the basis for verifying the eligibility of students for benefits. There is no indication in the programme of how such a requirement will be satisfied.

Such considerations imply that adoption of the PATH in its current form as the basis for managing the education needs of the poor is an excessively risky move, given that the country cannot afford to falter in the move to upgrade the quality and accessibility of the education system. Until the matters raised are clarified, the management of the education needs of the poor should remain with the MOEYC.

How Can Compliance Be Enforced without Adverse Effects on the Poor?

What might be the impact of enforcing household compliance?

The findings on compliance with the requirements of the cost-sharing scheme are among the most important for this study. The data in Table 34 above show that the comprehensives collected an average of J$3,539, about 67% of the average for the traditional highs, while the new secondary high schools collected a slightly greater average of J$3,882, about 74% of the average fee for the traditional secondary high schools. In general, consistent with the evidence on the concentration of poor households by school type, the data seem to suggest that the extent of household dependence on government for fee assistance is closely related to their general and extreme poverty status. The higher the share of extreme poor in the school type, the higher the degree of dependence on government. One implication of the patterns of participation indicated by this analysis is that the problem of compliance is concentrated in the comprehensive schools where the poorest students are concentrated. The data from the *Ministry Report on Cost Sharing, 2000-2001* confirm this insight. A long-term pattern can be computed by using the average of the patterns observed in the years for which data are available since the start of the program (Table 35). The data show that the highest long-term rate of noncompliance is found in the comprehensive highs, where the poorest households are concentrated.

Table 35: Percentage Noncompliance by School Type, Selected Years

School Type	1995-96	1996-97	1999-00	2000-01	Long-Term Average
Comprehensive highs	13.1	20.3	13.3	10.7	14.35
Secondary high schools	9.4	13.8	5.8	5.7	8.675
Technical highs	8.4	15.7	7.3	11.6	10.75

Source: Ministry of Education

These findings are complemented by the results reported in Table 27 above, which clearly show that the officials of the school system expect that the negative effects of cost sharing would be concentrated in the former comprehensive and new secondary schools. It is therefore useful to consider the reasons given by the households in such schools for their noncompliance.

A semistructured survey of household heads in St Catherine, the bell-weather parish of Jamaica, provides some specific and interesting indications of the reasons for noncompliance found in the comprehensive and new secondary schools. Households identified as noncompliant, in the sense of not applying for assistance and not paying fees were sampled and interviewed. Responses were sought from the guardian about (1) "why did not apply"; and (2) "why did not pay." The count of results (Table 36 and Table 37) indicates that the most important reason for not applying is that parents were either not informed or were informed but missed the application deadline anyway. The presence of significant internal family problems over which parent is responsible for the child were the next most important reasons. The reasons for nonpayment are mainly economic. Most guardians indicated having a job but were still unable to pay, or were simply unemployed. However, there is also a significant social problem of fractured households in which there is a quarrel over which parent is responsible for the child or in which the child "cussed out" the responsible parent who then refused to pay.

Table 36: Reasons for Noncompliance — "Why Did Not Apply" — Comprehensive, Secondary, and Traditional Highs

Reasons for not applying, given did not pay	Comprehensive		Secondary		Traditional		Total	
	No.	%	No.	%	No.	%.	No.	%
Deadline passed	5	10	8	16	3	6	16	32
Pride–stigma–self-reliance	1	2	1	2	-	-	2	4
Family problem — quarrel over who is responsible to maintain the child	4	8	2	4	1	2	7	14
Questions too personal	-	-	3	6	1	2	4	8
Inadequate knowledge	2	4	-	-	-	-	2	4
Process too slow	-	-	1	2	-		1	2
Special circumstances (such as illness)	2	4	1	2	-	-	3	6
Not aware of programme	8	16	6	12	2	4	16	32
Other	-	-	1	2	-	-	1	2

Source: Semistructured Interviews

Table 37: Reasons for Noncompliance — "Why Did Not Pay"— Comprehensives, Secondary, and Traditional Highs

Reasons for not paying, given did not apply	Comprehensive		Secondary		Traditional		Total	
	No.	%	No.	%	No.	%	No.	%
Working but cannot afford it	2	4	4	8	4	8	10	20
Unemployed	13	26	11	22	3	6	27	54
Father-mother not supporting child living with relatives	11	22	10	20	3	6	24	48
Special circumstances (such as death and illness)	2	4	2	4	1	2	5	10
Too many children	-	-	2	4	2	4	4	8
Was at penal institution	1	2	-	-	-	-	1	2
Other	-	-	-	-	1	2	1	2

Source: Semi-structured Interviews

Given the key proximate causes of noncompliance, there is no simple way to enforce compliance. Enforcement would have to be based on a well-designed social effort to educate the public about options for education finance, application procedures, and deadlines, backed by suitable support in the application process. However, these education initiatives would have to be supported by suitably trained guidance counsellors and social workers competent to address the concerns and challenges of parents or guardians identified with a child not attending school, as well as to assist with the enforcement of attendance once these concerns are addressed satisfactorily. The data in Table 29 above lend support to the view that once compliance is enforced under the management of a strong social-work programme, the gains for school quality will be considerable since increased fees and contributions tend to be put towards school improvement.

Summary

This study addressed the following three (3) key questions:

1. How can the existing cost-sharing scheme mobilize household resources without adversely affecting education demand, in particular enrolment and attendance?
2. Is it justified to raise the fees of the highly selective secondary high schools accompanied by an expanded scholarship scheme to support students from poor background?
3. What might be the impact of enforcing compliance?

With respect to the first question, the general finding is that subject to any possible shift in the general character of demand, more resources can be mobilized from households by charging the wealthier students higher fees. If this is done, it would also cause a net increase in household education expenditure, taking into account both the demand and supply effects of the fee increase. However, such a move would immediately require strong and efficient measures to iden-

tify and protect the poor while preventing a growth in leakage as the assistance from government looks more appealing in the face of higher fees. This can be equivalent to more assistance under the cost sharing. In addition, government should give serious consideration to the following: (1) tightening targeting to minimize leakage to the wealthy, and (2) upgrading and supporting the entrepreneurial initiatives of schools, as long as these do not impose additional burdens on staff time.

The second issue concerns the justification for raising the fees of the highly selective secondary high schools accompanied by an expanded scholarship scheme to support students from poor background. The key findings are that, given the significant differences in per student transfers from government across school types and the high likelihood of leakages in the financial assistance programme, government has considerable leverage to correct the imbalances between schools through a program that raises fees in the traditional high schools and technical high schools. This can be done by ensuring that both the student-teacher ratio and the budget subventions per student converge. Such a move would have to be subject to the principle that the poor are adequately protected, either through increasing subventions to the comprehensive and new secondary schools or scholarships to the poor, or some combination of these two options. Such an initiative would generally raise the net household demand for education, after considering both the demand and supply effects of the increase in fees in the elite schools.

In relation to protection of the poor, the key is to use the basic household education expenditure function to define a program of financial assistance (scholarships) that is based on a separation of the component of the costs of education that the household should bear and the component the government should contribute. Once the supernumerary income of the household is an explicit component of that program of scholarships, the explicit sliding fee design would continue to ensure that the better-off household receive a lower subsidy, given the other necessary school expenditures, up to some point at which the subsidy is wiped out. Similarly, considering both the positive marginal supply effect and the negative demand effect of fees, the higher the fees the higher will be the net subsidy to the household. Poor students going to schools that charge higher fees will receive suitable support to offset the negative demand effects of the higher fees. The sliding fee design also means that the schools that are good enough to charge higher fees and to attract wealthier students to pay such fees will tend to do without the subsidies and could still be significantly better off than other schools. Other policy interventions are needed to address this situation. School attendance *at some minimum rate should be a condition for a student to actually receive benefits due*.

It should be observed here that the proposed PATH programme to social assistance through the Ministry of Labour and Social Security, as currently designed, does not meet enough of these requirements. Its administrative procedures are not sufficiently tailored to the school environment, its benefits of J$300 are generally too small, and its coverage is not likely to be wide enough to serve as an adequate basis for providing necessary education assistance to poor students. Adoption of the PATH in its current form as the basis for managing the education needs of the poor is an excessively risky move, given that Jamaica must not falter in the move to upgrade the quality and accessibility of the education system.

Finally, given the key proximate causes of noncompliance, enforcement of compliance by the delinquent households will be a complex exercise. Enforcement would have to be based on a redesigned social effort to educate the public about options for education finance, application procedures, and deadlines, backed by suitable support in the application process. These education initiatives must be supported by an upgraded capacity in guidance counseling and social work to address satisfactorily the complex concerns and challenges of parents or guardians who are noncompliant. Such a process would challenge the current technical and managerial capacities of the school guidance counseling system, already preoccupied with managing the cost sharing. Expansion of capacity in this area would increase the general cost of education to the society, but the net payoff is likely to be positive in the sense of better attendance and a greater intake of fees to finance the upgrade in school quality.

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Annex I: A Stone-Geary Education Expenditure Function for Jamaica

Per Capita Household Demand for Education (EDUCPC)

If it is assumed that education consumption is essentially a household decision, then the impact of the cost-sharing scheme on students can be investigated through the general effect on per capita household education demand (EDUCPC). This variable embodies all aspects of effective demand for education, including attendance, instructional materials such as books and book rentals. For example, attendance is embodied through expenditures for necessary transportation to and from school. *Of course, one of the advantages of working with a per capita variable in a study of education demand is that it helps greatly in eliminating heteroscedasticity from the disturbance terms of the estimated regressions.* It is expected that this demand would vary directly with the number of enrolled students per capita in the household (ENRPC).

The analysis of household demand for education is based on specification that, with respect to household incomes, the demand for education is essentially a component of the Stone-Geary Expenditure System (Geary, 1949-50; Stone, 1954) and would normally be specified as one of the demand functions within that system. The Stone-Geary mechanism suggests that the household first puts aside all necessary (subsistence) expenditures, including education. In the case of education, the necessary expenditures include books and associated materials (BK**)**, uniforms and related accessories (UNIF), fees charged by the school (FEE), and transportation expenses (TRANS). All of these necessaries are expected to vary within a narrow band across household quantiles. The data in Table A1.1 reports standard statistics for each of these variables along with others used in the general demand function. It is worth considering some aspects of the variation among cases of the variables in the demand function.

Basic Education Expenses BK and UNIF

It is generally expected that, where some minimum standard of education is necessary for effective participation by persons in the labour market, expenditures on BK and UNIF in the secondary school system would tend to rise as the general challenges of globalization and economic development increase. This is partly because of the wider range of information that must be absorbed in the secondary school system and the increasing number of contact hours needed for the dissemination of that information. The World Bank (1999) has already suggested that the number of contact hours in Jamaica is too low in the light of the standards of international competitors. An increase in BK and UNIF could be expected to have a *significant positive* influence on total education demand. The expectation is confirmed in the data in Table A1.2, which show that the correlation with education expenditure of book expenditure and expenditure on uniforms is positive and fairly strong at about 0.49 and 0.47, respectively. However, as these expenditures rise with the necessary increase in education effort, the poor would be at an increasing disadvantage and arrangements for book and uniform subsidies must be correspondingly restructured to ensure their protection.

Transport (TRANS)

Transport expenditure is another necessity that varies with the efforts of the household to enforce school attendance and with distance of the household from the school. Transport expenditure varies positively with the rate of attendance of enrolled students in a household and with the associated level of education demand. Total education expenditures therefore tend to rise with the level of necessary transport expenditures. At the same time, the greater the level of necessary transport expenditures in the household's education effort, the greater is expected to be the level of education demand by wealthier households. Here too, there is significant room for designing transportation assistance to the poor such that the attendance and associated education consumption effort can match that of wealthier households.

Fees (FEE)

In a cost-sharing system, fees (FEE) are one of the main elements of education costs to be borne by the household. They represent a core component of subsistence education demand in a fee-paying school system. In this definition, fees include the contributions reported by household members in response to questions posed in the SLC but it should be noted that schools and the Ministry distinguish "fees" sanctioned by the Ministry from other contributions sought from students. The distinction is important partly to remind the reader that "official fee-sharing" is not the same as general cost sharing, which includes many other forms of financial and in-kind contributions requested by schools for the delivery of their services. As the necessity for higher levels and quality of education rises over time, and as the government proves increasingly incapable of complete financing of education, fees are expected to rise, whether as user fees in public schools or as private market driven prices. It is assumed that education is a normal good for all quantiles of consumption, so that as fees rise the demand for education is expected to fall. Rapid increases in fees can therefore restrict the demand for education in circumstances in which rising education demand is desirable.

For any given level of fees, the wealthier households will tend to demand a higher level of education than would the poor because of greater ability to pay for the necessary education. If a flat fee is set by schools, under the control of government, then the poor will generally be at a significant disadvantage in terms of the amount of education they access. However, if FEE carries the expected sign, then some type of price discrimination would be a feasible solution to the problem. The essential challenge would be to find a sufficiently low level of FEE to charge the poor such that their education demand would be about the same level as that of the wealthier household and this could be achieved through a system of assistance to the poor that results in a lower fee even as fees are allowed to rise (Bitran, 2001:9). To find this price, one needs a reasonable estimate of the slope of the education expenditure function, differentiated by quantiles, and this will be provided using SLC data. Application of the result to the design of the cost sharing system would require a reasonable means-testing device. We return to this later.

Supernumerary Income (SUPRNU): Payment by Ability and Benefits by Need

Supernumerary income (SUPRNU) is the income remaining in the household budget after all subsistence expenditures have been met. The concept provides a natural basis for defining the poor for policy purposes. The Stone-Geary argument is that after subsistence expenditures have been met, the household then allocates the remaining supernumerary budget to additional education in proportion to some identifiable parameter. It is generally expected that for normal goods such as education, expenditures would rise with supernumerary income and that it is this factor that contributes most to inequitable access among households. Thus, a central issue in the analysis is whether there is strong evidence of a positive relationship between supernumerary income and education expenditure that makes the fees and contributions rise as supernumerary income rises to reflect the ability to pay principle. In the LSMS, household income is estimated through the proxy of household consumption expenditure. The accuracy of measurement of SUPRNU depends especially on the accuracy of measurement of subsistence expenditures. In the case of Jamaica, the definition adopted varies with the socioeconomic grouping of the household. For households in consumption quintiles 4 and 5, it is appropriate to use the estimated poverty line as a measure of the total value of subsistence. For households in quintiles 1-3, it is appropriate to use only food consumption.

As could be expected, the per capita supernumerary income of households in decile 10 (the richest), is significantly higher than for those in decile 1, being about 20 times the amount.

Table A1.1: Selected Statistics for Model Variables

Category or Statistic	BK	UNIF	TRANS	FEENR	FEE	ENRPC	SUPRNU
Decile 1	1,539.2	2,654.0	9,359.5	2,091.9	6,485.7	0.4	10,666.0
Decile 2	1,762.4	2,331.5	10,177.9	2,428.4	6,989.5	0.4	21,738.5
Decile 3	3,052.9	3,246.6	12,630.8	2,527.0	7,220.0	0.5	28,775.8
Decile 4	3,372.0	3,152.9	10,625.2	2,602.8	6,560.4	0.5	37,230.3
Decile 5	3,140.9	2,740.0	13,040.4	5,240.5	9,210.3	0.4	45,727.5
Decile 6	3,901.9	3,258.3	15,387.9	3,712.7	7,090.5	0.5	56,078.1
Decile 7	3,887.8	3,674.8	10,951.0	4,127.1	7,391.5	0.4	75,257.0
Decile 8	4,086.0	3,611.0	11,121.5	4,466.1	7,989.1	0.5	87,638.7
Decile 9	5,046.7	4,128.8	12,090.6	4,593.6	7,771.0	0.5	106,772.9
Decile 10	6,228.8	4,638.2	20,968.9	5,569.4	8,789.6	0.5	20,3901.6
Mean	3,683.5	3,355.0	12,540.0	3,936.1	7,621.0	0.5	73,318.0
Median	2,500.0	2,475.0	9,000.0	3000.0	6,350.0	0.5	56,444.9
Mode	2,000.0	2,000.0	7,200.0	2,500.0	5,000.0		
Std E	182.9	124.0	629.4	210.2	285.3		2,456.2
Skewness	4.9	2.9	4.3	6.6	3.0		4.8
Kurtosis	40.4	12.8	28.7	71.8	16.1		39.1
COV	119.9	92.5	113.6	88.4	62.0		96.2

Table A1.2: Correlation Matrix for Model Variables

	lgtotexpcap	lgbk	lgunif	lgtransp	lgfeenr	lgfee	lgenrHH	lgsuprnu	lglunch
lgtotexpcap	0.100	0.493	0.472	0.448	0.212	0.271	0.335	0.483	0.687
lgbk	0.493	1.000	0.459	0.125	0.129	0.351	0.189	0.418	0.334
lgunif	0.472	0.459	1.000	0.271	-0.150	0.345	0.358	0.251	0.452
lgtransp	0.448	0.125	0.271	1.000	-0.173	0.174	0.255	0.043	0.385
lgfeenr	0.212	0.129	-0.150	-0.173	1.000	0.529	-0.379	0.382	-0.201
lgfee	0.271	0.351	0.345	0.174	0.529	1.000	0.217	0.117	0.215
lgenrHH	0.335	0.189	0.358	0.255	-0.379	0.217	1.000	0.101	0.286
lgsuprnu	0.483	0.418	0.251	0.043	0.382	0.117	0.101	1.000	0.195
lglunch	0.687	0.334	0.452	0.385	-0.201	0.216	0.286	0.195	1.000

The Core Demand Function

Since education is a normal good, the general specification of the education demand function is essentially as a double-log Engel expenditure function in which the basic education expenditures are decomposed and explicitly represented (Chung, 1994). The specification therefore features some of the properties of the "addilog" demand functions of Houthakker (1960). In particular, the basic education demand function is specified as

$$\ln EDUCPC = \ln A + B_1 \ln BK + B_2 \ln UNIF + B_3 \ln TRANS + B_4 \ln FEE + B_5 \ln SUPRNU + u$$

where lnEDUCPC is the log of the household education expenditure per capita, lnBK is the log of outlays on books, lnUNIF is the expenditure for lunch and snacks and uniforms, lnFEE is the log of the fees charged by the school and a proxy for the price of education, lnTRANS is the log of transport of students to and from school for enrolled student and hence for actual school attendance, and lnSUPRNU is the log of supernumerary income per capita. Observe that B_5 is the marginal budget share going to education from the supernumerary income, SUPRNU, in response to the improvement in the income status of the household. The term "u" is a stochastic disturbance. Also, notice that all the indicators of minimum necessary consumption of various components are measured *at their going prices*.

The Endogeneity of the Supply Price

Education is supplied by different schools, with each type having a characteristic effect on both the parental demand effort and quality of outcomes. Schools feature variable strengths in respect of factors such as library, computer facilities, science labs, mathematics labs, language labs, music archives and other studio facilities, sports facilities, security, and the general morale and reputation. We formulate a dummy variable to distinguish schools as classified by the MOEYC, in particular secondary high schools (HIGH) and recently upgraded comprehensive schools (COMP). The effects of all other levels of education are captured in the intercept. Reduc-

ing inequity among schools in this respect is one of the major policy goals of government, as the basis for increasing household demand and the quality of student outcomes. It is therefore very important for policymakers to identify the level of educational demand by households that will be achieved from different fee structures, and the level and structure of resource supports (as fees collected) that will elicit certain supply outcomes from each school type, given the household characteristics of students.

Since demand varies inversely with fees and since the quality of outcomes and the related supply of effective education to students affect the fees the school can charge, the result is a problem of simultaneous-equation bias that arises because in the estimation of the coefficient on FEE, the effect of the quality and quantity of education supply on the fees collected must be separated from the influence of fees due on the household education demand. The solution we adopt is to identify a household education demand through a "reduced form" relationship which also contains a "marginal fee" that picks up the effects of differences between fees by school type-quality (Houthakker, 1951a, 1951b; 1960; Halverson, 1978). Specifically, the marginal fee variable measures the difference between the fees that would be paid for a better school and the fees actually paid currently. One approach here is to estimate a maximum fee payable for the best school to which the student can move, less the actual fees paid. Another way might be to recognize that where the household receives benefits from government and from other gifts, the actual component of the fees paid by the household would only allow consumption of a lower level school. Thus, one can define the government contribution plus gifts as the addition to that actually paid by the household needed in order to supply the extra education to the household. To find a proxy for these, we assume an "equilibrium scenario" with respect to household demand and school supply. This is the same as measuring the marginal fees in terms of the average total fees due to the school per student (FEENR). These should carry a positive sign and eliminate or minimize any (upward) potential simultaneous equation bias in the coefficient measuring demand response. These marginal fees vary with the location of the schools and the associated characteristics of the households served by the schools. In terms of policy, one would treat these as contributions to the household required to upgrade their normal level of education consumption. One also expects some linear relationship between FEE and FEENR but if the coefficients take the right signs in the regression, the problem is ignored unless it leads to a strict singularity.

Number Enrolled Per Capita (ENRPC): AreThere Economies of Scale?

Once FEENR is introduced into the model, it is natural to introduce the number enrolled per capita (ENRPC) for the purpose of balancing the units on both sides of the relationship specified. The number of enrolled persons per capita is expected to have a positive association with education spending per capita. It is also likely that there might be some scale effects as larger households can spread some costs, such as transport and books, more economically over the family. This implies that the coefficient on ENRPC is likely to be greater than one, so that the per capita assistance to be given to the poor will decline with household size.

Final Specification

Thus, we finalize the specification of (1) as

$$\ln EDUCPC = \ln A + B_1 \ln BK + B_2 \ln UNIF + B_3 \ln TRANS + B_4 \ln FEENR + B_5 \ln LUNCH + B_6 \ln FEE + B_7 \ln SUPRNU + B_8 \ln ENRPC + B_9 HIGH + B_{10} COMP + u$$

In general, the expectations associated with the specification are tied to the signs and sizes anticipated for the coefficients. These are summarized in Table A1.3.

Table A1.3: Expected Signs of Regression Coefficients of Estimated Education Expenditure Function

Variable	Coefficient and Expected Sign
Intercept	>0
lnBK	$0<B_1<1$
lnUNIF	$0<B_2<1$
lnTRANS	$0<B_3<1$
lnFEENR	$0<B_4<1$
lnLUNCH	$0< B_5<1$
lnFEE	$B_6<0$
lnSUPRNU	$0<B_7<1$
lnENRPC	$B_8>1$
HIGH	$0<B_9$
COMP	$0<B_{10}$

In addition to satisfying the usual additivity condition, the specification allows use of the identified coefficients to assess the effects of the policy variables such as government contribution of fees to needy students and hence of greater participation by household in the program of financial assistance, alternative specifications of basic spending to include or exclude education, household consumption status defined in the light of the definition of basic consumption. The concept of basic noneducation expenditures would depend on the household. The behaviour of the Stone-Geary expenditure system depends on the total expenditure data and hence on the wealth status of the households, so consideration of the general effects of other policies on household income which then affects allocation to education spending. In particular, with cross-sectional data for households, one can use identified coefficients in (2) to predict the allocation (or expenditure share) going to education expenditures as a function of total expenditure and thus can examine how applicable social policy would affect the education effort of the household (Chung, 1994).

Estimation

Cross-sectional regression, especially of household income and consumption data, is notorious for heteroscedastic disturbances (Prais and Houthakker, 1955). However, we proceed to use OLS estimation on the assumption that the logarithmic transformation of the data and the use of variables in per capita form will tend to reduce the likelihood of such heteroscedasticity.

The log transformation compresses the variable scales is a legitimate alternative to weighted least squares, and might generally be preferred because of greater ease of interpretation of the resulting regression and avoidance of introduction of a new variable that is typical of weighted least squares. Moreover, it is worth noting that it gives coefficients that are straightforward elasticities (percentage change in the dependent variable induced by a percentage change in the regressor).

To deal with the possibility of negative SUPRNU in a log transformation, we add a suitably large constant to each observation. However, in the assignment of benefits, we treat all such cases of zero supernumerary income as automatic qualifiers for full government subsidies plus an "earned income credit" to assist with living expenses.

Demand for Education by Selected Quantile Households

Given that efficient targeting is fundamental to a protection of a large number of poor in a program that offers benefits that are quite attractive to the rich, it is appropriate to consider the model of the mean path of EDUCPC, as shaped by the vector of identified covariates, as applicable only to households in the neighborhood of the mean. This is particularly important in the light of the fairly high degree of skewness and kurtosis of the variables reported in Table A1.1 above. Those households on fairly distant quantiles are not as very well represented by the mean and the disturbance term u cannot be treated as merely accidental error. Indeed, even without the problem of heteroscedasticity, the skewness and kurtosis data raises the distinct possibility that the term u may not have the same distribution for all values of the variables in the vector of covariates (Koenker and Hallock, 2000:1,2). Thus, for effective design of the assistance to the poor, the mean path is not all we need to know about the behavior of education demand. Instead, it is necessary to examine the behavior of the function at least at those quantiles in which the poor are likely to be found in order to obtain a more informative picture of the response of such households to various incentives to consume education. The effect of running a quantile regression would also be to take account of any residual presence of heteroscedasticity in the transformed variable lnEDUCPC. The difference with the OLS procedure is that the function identified at the quantile minimizes the sum of absolute deviations about the selected quantile, such as at the median or at the 25^{th} percentile (1^{st} quartile). Outputs are interpreted in the same way as with the more common OLS estimation used to specify the mean path.

Determining Household Assistance

Government Contribution to the Household (S)

As economic pressures rise on households to increase their spending on education as a condition for economic development in Jamaica in the foreseeable future, fees in general, and user fees for public education in particular, are likely to continue to rise. These rising fees place an increasing burden on the budgets of the poor and can be an effective barrier to their consumption of adequate levels of education services. As a condition for ensuring equitable access to education and a minimum necessary educational capacity of all members of the labour force, government must mitigate the negative effects of rising fees by providing assistance in accordance with the needs of the poor (S). To achieve the lower effective fees to the household, the mechanism used at present in Jamaica is for government to pick up the fee tab for poor households. If education is a normal good, and given that households are not foolish, such assistance is expected to be positively associated with per capita education consumption as long as the fees charged are used to improve school quality. In particular, the higher the level of assistance provided relative to the fees charged, the higher the level of consumption of education by poor household quantiles, and the higher is likely to be the level of mean consumption among all households, with that of the poor catching up to the rich because of the lower net fees they pay (Bitran, 2001:8,9).

Once an expenditure scale can be predicted, one can use data on the structure of household spending to form elasticities and thus to determine the impact of changes in the cost-sharing scheme on students' enrolment, attendance, instructional materials such as books and book rentals, and so on. Equation (2) provides a natural basis for determining a "demand side" assistance program for the household in the form of payments to the schools on their behalf that also satisfy significant transparency and effectiveness criteria. Adequate schooling must be treated as a basic need in Jamaica in the light of the national development goals. It is reasonable to assume that government has a responsibility to guarantee that such needs are fulfilled within the context of the social safety net. Once a range of new and remedial programs are introduced as the foundation on which externalities are to be created for private enterprise to keep up with international competition and as the basis for improving the employability and flexibility of workers, provision of a sufficient subsidy for the poor as a guarantee of basic needs is a tool that would make it possible to implement the reforms while increasing fees to cover the daily operational needs of schools. Equation (2) weights the components of basic education need using the elasticity of response of the household to the adjustment of the costs of meeting those needs. In this case, the relevant elements of the equation are B_1lnBK (covering books, etc.), B_2lnUNIF, and B_3lnTRANS. The subsidy provided for the poor household can also vary directly with characteristics such as number enrolled and household size, B_6lnENRPC (on the grounds that the choice to educate students is a collective household choice with associated shared household burdens), and wealth status on the principle that the higher the wealth of the household, the lower the subsidy.

With respect to the household contribution, it is appropriate to target the supernumerary income with a constant of proportionality. That means payment in accordance with

B_5lnSUPRNU, allowing the contribution to rise as supernumerary income rises to reflect the ability to pay principle (Bitran, 2001:8). Supernumerary income is the difference between household income and its subsistence expenses but can be adjusted to make allowances for factors such as tax liabilities and the level of household assets. It is crucial that supernumerary income be defined to take into account "contributions" charged by the school. Household income might be estimated through a proxy such as total consumption expenses or some other device.

These considerations point to a type of "log gap formula" for providing a subsidy equal to the fee and other basic subsistence education expenditures, less the discretionary component that is proportional to the supernumerary income. That is, taking into account the hypothesized signs above, benefits are distributed on the following general formula:

$$\ln S = B_1 \ln BK + B_2 \ln UNIF + B_3 \ln FEENR - B_4 \ln FEE + B_5 \ln TRANS - B_6 \ln SUPRNU + B_7 \ln NRHH + B_8 HIGH + B_9 COMP + u$$

where S is the periodic (annual) subsidy to the household. Observe that conditions can be set for lnSUPRNU such that if the supernumerary income approximates zero or becomes negative, then a positive "earned income credit" is implied for the household. The formula has good potential for measures that mitigate potential negative effects on the poor and for achieving equity of access, while allowing effective targeting.

Annex II: The Explanatory Power of the Estimated Models

With respect to the explanatory power of the model, the analysis of variance (Table A2.1) indicates that the identified equation has substantial analytical power. Its R^2 is 0.94 with adjusted R^2 of 0.93 and the associated F value characterizing model probability is 314.8 with level of significance of less than 1% (Table A2.2). Other diagnostic indicators (Table A2.3) are RMSE of 0.14 and a coefficient of variation of 1.58.

Table A2.1: Identified Parameters of Education Expenditure Function

Variable	DF	Parameter Estimate	Standard Error	t-value	Pr>|t|
Intercept	1	1.966	0.261	7.53	<0.0001
LnBK	1	0.111	0.014	8.19	<0.0001
LnUNIF	1	0.135	0.018	7.50	<0.0001
lnTRANS	1	0.153	0.012	12.64	<0.0001
lnLUNCH	1	0.354	0.017	21.01	<0.0001
lnFEENR	1	0.925	0.031	29.69	<0.0001
LnFEE	1	-0.780	0.037	-20.83	<0.0001
lnENRHH	1	1.005	0.038	26.14	<0.0001
lnSUPRNU	1	0.048	0.018	2.66	0.0084
COMP	1	0.119	0.051	2.32	0.021
HIGH	1	0.134	0.051	4.62	<0.0001

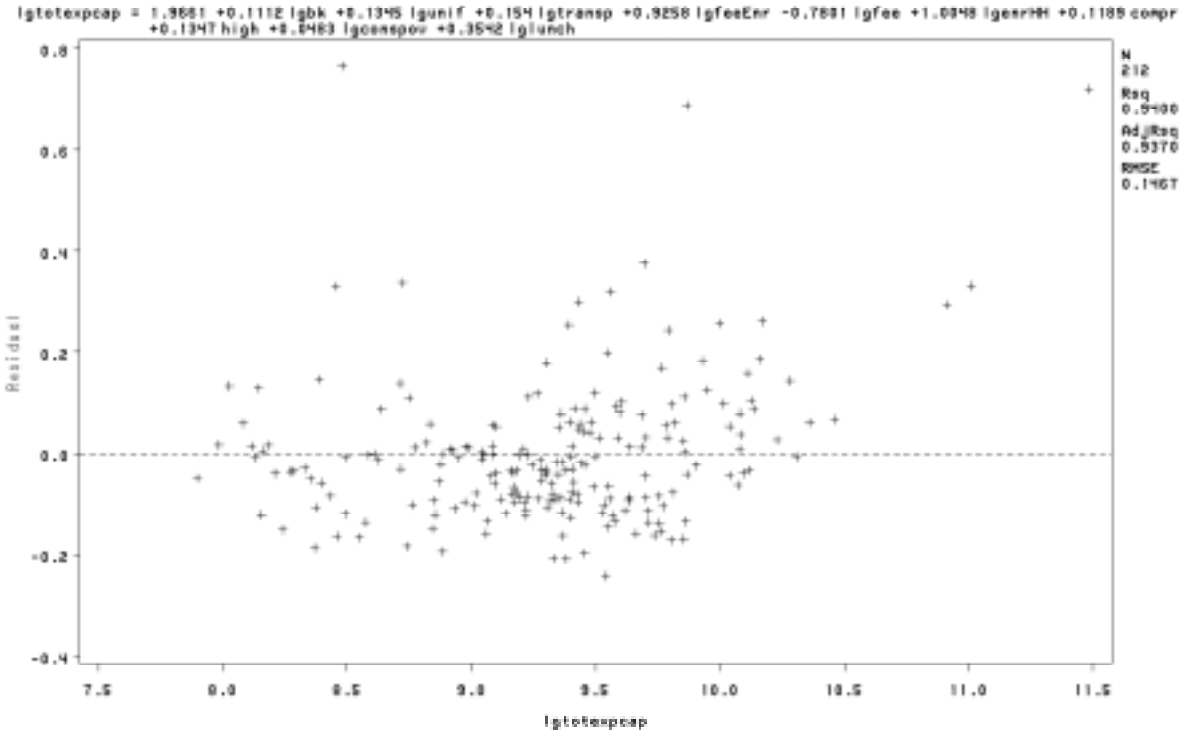
Table A2.2: Selected Regression Diagnostics	
Root MSE	0.147
Coefficient of variation	1.576
R^2	0.94
AdjR^2	0.937

Table A2.3: Analysis of Variance for Identified Model

Source	DF	Sum of Squares	Mean Square	F Value	Pr.>F
Model	10	67.7	6.77	314.8	<.0001
Error	201	14.4	0.02		
Total	211	72.1			

With respect to possible problems of multicollinearity, the correlation matrix (Annex I, Table A1.2) indicates that, as expected, there is some correlation between FEE and FEENR. However, the variables are included on analytical grounds and the signs of the coefficients are as expected. Moreover, there is no substantive difficulty with interpreting the coefficients. Thus, we ignore the problem.

The Residual PLOT of the residuals against the predicted value of expenditure per capita also provides no strong signals of heteroscedasticity. The sample size of 215 cases is sufficiently large to allow some comfort in the assumption that the residuals are good enough proxies for the analytical disturbances. But for the presence of some extreme values that give a hint of possibly excessive influence of certain cases in the association of the residuals and therefore some mild traces of heteroscedasticity, the predicted values of lnEDUCPC, the plot suggests that the use of both the log transform and the per capita values have effectively resulted in broadly random residuals that are not systematically correlated with the regressors. It is not necessary to resort to weighted least squares. The OLS estimates will do and we get the added advantage of having estimated coefficients that are elasticities (Gujarati, 1988; Ryan, 1997). With respect to simultaneous equation bias, one can draw some comfort from the results of an application of Wold's "proximity theorem" which indicates that if the standard error of regression is significantly smaller than the standard error of the variable that is designed to eliminate simultaneous equation bias, then such bias would be asymptotically negligible (Wold and Faxer, 1957). The standard error of regression is about 0.02 (Table A2.4) while that of the variable lnFEENR is significantly different at 0.03, suggesting that not much asymptotic simultaneous equations bias remains in the estimates.



Considering the mild traces of heteroscedasticity and observing that the residuals seem to be grouped into two subsets approximately below and above the mean, it was decided to search for a pair of quantile regressions that could describe the behaviour of the two subsets. Quantile regression has the additional advantage of allowing a more complete description of the stochastic relationships among the variables. Experimentation revealed that the best fitting pair of quantile functions are to be found at the 35th quantile, which essentially describes education demand for the poor households and the 75th quantile, which essentially describes education demand for the households that are more wealthy. The results are reported in Table A2.5. For the average education expenditure of households in the neighbourhood of the 35th percentile, which identifies poor households, the regression is:

lnEDUCPC = 1.78+0.086lnBK+0.099lnUNIF+0.211lnTRANS+0.413lnLUNCH
+0.946lnFEENR-0.822lnFEE+0.024lnSUPRNU+.983lnENRHH

In contrast, for the average education expenditure of households in the neighbourhood of the 75th percentile, which identifies rich households, the regression is

lnEDUCPC = 1.96+0.108lnBK+0.121lnUNIF+0.149lnTRANS+0.373lnLUNCH
+0.925lnFEENR-
0.757lnFEE+0.036lnSUPRNU+1.04lnENRHH
+0.118COMP+0.138HIGH

Specifically, with respect to the question of the net effects of an increase in fees, the coefficient of interest is the net fee elasticity. The identified demand functions indicate an average net per student fee elasticity of demand equal to 0.145 (Table A2.1).[6] By enabling an improvement in the supply to meet household demand, a small (1%) increase in fees can bring about a net relative improvement of demand of about 0.145% (or a net increase of 0.15 percentage points). The data (Table A2.4) from the quantile regression suggests that among poor households, the net fee impact elasticity is lower than average at 0.124. Thus, a one percent increase of fees among poor households will only increase education expenditures by a net of 0.12%. In contrast, a one percent increase in fees among richer households will be a much greater increase in education expenditures by just about 0.17%.

The bootstrapping method of estimation of standard errors also allows testing of hypotheses relating to the difference of the coefficients of the 35th percentile and the 75th percentile (Table A2.5). The results are of the form

$$\ln EDUCPC_{75} - \ln EDUCPC_{35} = 0.022 \ln bk - .062 \ln TRANS + 0.062 \ln FEE$$

These results indicate that the difference in the coefficients characterizing the rich and poor households is only significant in the cases of basic book expenditures, basic transport expenditures, and fees. The specific relations implied are the following:

- An increase in necessary transport outlays lowers the difference between the per capita education expenditures of the households.
- An increase in necessary expenditure on books at the same rate for all households increases the difference between the per capita expenditures of households.
- An increase in fees at the same rate for all households increases the difference between the per capita expenditures of households.

However, increases in fees at different rates for different households would not tend to cause greater inequality among households and could reduce inequality.

[6] That is (0.925-0.78)lnFEE.

Table A2.4: Regression Results for Quantile 75 and 35

Lgtotexp	Coef.	Std. Err.	T	Bootstrap p>|t|	[95% Conf.	Interval]
Q35						
LnBK	.0857428	.0131931	6.50	0.000	.0597282	.111757
LnUNIF	.0985273	.0182213	5.41	0.000	.0625978	.1344567
LnTRANS	.2114378	.0200782	10.53	0.000	.1718469	.2510288
LnLUNCH	.4130468	.0316373	13.06	0.000	.3506633	.4754304
LnFEENR	.9462318	.0182955	51.72	0.000	.9101561	.9823075
LnFEE	-.8220183	.0197682	-41.58	0.000	-.860998	-.783038
LnENRHH	.9834744	.0247941	39.67	0.000	.9345845	1.032364
LnCONSPO	.0239994	.0102222	2.35	0.020	.0038429	.044156
COMP	.0547609	.0539971	1.01	0.312	-.0517125	.1612344
HIGH	.0649939	.0578154	1.12	0.262	-.0490087	.1789964
CONS	1.782223	.1628225	10.95	0.000	1.461164	2.103282
Q75						
LnBK	.1082891	.0140495	7.71	0.000	.0805858	.135992
LnUNIF	.121044	.0281921	4.29	0.000	.0654537	.1766342
LnTRANS	.1493058	.0222053	6.72	0.000	.1055206	.193091
LnLUNCH	.3729284	.0535863	6.96	0.000	.2672649	.4785918
LnFEENR	.9245161	.0417275	22.16	0.000	.8422363	1.006796
LnFEE	-.7570949	.0491469	-15.40	0.000	-.8540046	-.6601853
LnENRHH	1.041977	.0419637	24.83	0.000	.9592318	1.12472
LnCONSPO	.0368234	.0184652	1.99	0.047	.000413	.0732338
COMP	.1178762	.0504298	2.34	0.020	.0184368	.2173156
HIGH	.1387699	.0579347	2.40	0.018	.0245321	.2530077
CONS	1.963388	.2236671	8.78	0.000	1.522353	2.40442

Simultaneous quantile regression — Number of obs = 212
bootstrap(20) SEs — 75 Pseudo R2 = 0.7490
35 Pseudo R2 = 0.8247

Table A2.5: Regression Results for Difference in Coefficient of Quentile Regressions

lgtotexp	Coef.	Std. Err.	T	Bootstrap p>|t|	[95% Conf.	Interval]
LnBK	.0225463	.0142872	1.58	0.116	.0056256	.0507183
LnUNIF	.0225167	.0215244	1.05	0.297	.0199258	.0649593
lnTRANS	-.062132	.0269212	-2.31	0.022	-.1152162	-.0090478
lnLUNCH	-.0401184	.0422543	-0.95	0.344	-.123437	.0432002
lnFEENR	-.0217157	.0349567	-0.62	0.535	-.0906447	.0472132
LnFEE	.0649234	.0372005	1.75	0.082	-.0084298	.1382767
lnENRHH	.058503	.0450215	1.30	0.195	-.030272	.1472781
lnCONSPO	.012824	.0211137	0.61	0.544	-.0288088	.0544567
COMP	.0631152	.0439695	1.44	0.153	-.0235854	.1498159
HIGH	.073776	.0513015	1.44	0.152	-.0273822	.1749342
CONS	.1811652	.3471401	0.52	0.602	-.5033383	.8656687

75-.35 Interquantile regression — Number of obs = 212
bootstrap(20) SEs — 75 Pseudo R2 = 0.7490
35 Pseudo R2 = 0.8247

Annex III: Classification of Secondary Schools in Jamaica, 2002

High Schools 1-29-02		
School Type	**School Name**	**Bursar Paid***
Agri-vocational high	Marymount High	F
Agri-vocational high	Knockalva Agricultural	P
Agri-vocational high	Elim Agricultural	F
Agri-vocational high total		
Comprehensive high	Denham Town High	P
Comprehensive high	Holy Trinity High	P
Comprehensive high	Kingston High	P
Comprehensive high	Vauxhall High	P
Comprehensive high	Tivoli Gardens High	F
Comprehensive high	St. Anne's High	P
Comprehensive high	Papine High	P
Comprehensive high	Tarrant High	P
Comprehensive high	Charlie Smith High	F
Comprehensive high	Penwood High	P
Comprehensive high	Trench Town High	F
Comprehensive high	Norman Manley High	P
Comprehensive high	Pembroke Hall High	P
Comprehensive high	Clan Carthy High	P
Comprehensive high	Edith Dalton James High	P
Comprehensive high	Donald Quarrie High	P
Comprehensive high	Mavis Bank High	P
Comprehensive high	Haile Selassie High	P
Comprehensive high	Yallahs High	P
Comprehensive high	Robert Lightbourne High	P
Comprehensive high	Port Antonio High	P
Comprehensive high	Buff Bay High	P
Comprehensive high	Fair Prospect High	P
Comprehensive high	Islington High	P
Comprehensive high	Carron Hall Vocational	
Comprehensive high	Tacky High	P
Comprehensive high	Oracabessa High	P
Comprehensive high	St. Hilda's Diocesan High	F
Comprehensive high	Browns Town High	P
Comprehensive high	Muschett High	P
Comprehensive high	Cedric Titus High	P
Comprehensive high	Maldon High	P

High Schools 1-29-02		
School Type	**School Name**	**Bursar Paid***
Comprehensive high	Anchovy High	P
Comprehensive high	Cambridge High	P
Comprehensive high	Knockalva Technical High	P
Comprehensive high	Green Island High	P
Comprehensive high	Merlene Ottey High	P
Comprehensive high	Grange Hill High	P
Comprehensive high	Little London High	P
Comprehensive high	Petersfield High	P
Comprehensive high	Maud McLeod High	P
Comprehensive high	Newell High	P
Comprehensive high	Lacovia High	P
Comprehensive high	B. B. Coke High	P
Comprehensive high	Maggotty High	P
Comprehensive high	Balaclava High	P
Comprehensive high	Lewisville High	P
Comprehensive high	May Day High	P
Comprehensive high	Mile Gully High	P
Comprehensive high	Porus High	P
Comprehensive high	Christiana High	P
Comprehensive high	Bellefield High	P
Comprehensive high	Winston Jones High	P
Comprehensive high	Cross Keys High	P
Comprehensive high	Central High	P
Comprehensive high	Edwin Allen High	F
Comprehensive high	Alston High	P
Comprehensive high	Denbigh High	P
Comprehensive high	Bustamante High	P
Comprehensive high	Lennon High	P
Comprehensive high	Thompson Town High	P
Comprehensive high	Garvey Maceo High	F
Comprehensive high	Spaldings High	P
Comprehensive high	Kemps Hill High	P
Comprehensive high	Claude McKay High	P
Comprehensive high	Jonathan Grant High	P
Comprehensive high	Waterford High	P
Comprehensive high	Tacius Golding High	P
Comprehensive high	Spanish Town High	P
Comprehensive high	Ewarton High	P
Comprehensive high	Glengoffe High	P
Comprehensive high	McGrath High	P
Comprehensive high	Bog Walk High	P
Comprehensive high	Greater Portmore High	P
Comprehensive high	Ascot High	P
Comprehensive high	Bridgeport High	P

High Schools 1-29-02		
School Type	**School Name**	**Bursar Paid***
Comprehensive high total		
Secondary high	Mona High	P
Secondary high	Seaforth High	P
Secondary high	Brimmer Vale High	P
Secondary high	Ocho Rios High	P
Secondary high	Aabuthnott Gallimore High	P
Secondary high	Albert Town High	P
Secondary high	William Knibb Memorial High	P
Secondary high	St. James High	P
Secondary high	Godfrey Stewart High	P
Secondary high	Black River High	P
Secondary high	Kellits High	P
Secondary high	Old Harbour High	P
Secondary high	Guys Hill High	P
Secondary high	Cumberland High	P
Secondary high total		
Technical high	Dunoon Park Technical High	F
Technical high	Kingston Technical High	F
Technical high	St. Andrew Technical High	F
Technical high	St. Thomas Technical High	P
Technical high	St. Mary Technical High	P
Technical high	Marcus Garvey Technical	P
Technical high	Herbert Morrison Technical High	F
Technical high	Frome Technical High	P
Technical high	St. Elizabeth Technical High	F
Technical high	Holmwood Technical High	F
Technical high	Vere Technical High	F
Technical high	Dinthill Technical High	F
Technical high	Jose Marti Technical High	F
Technical high total		
Traditional high	Rusea's High	F
Traditional high	Convent of Mercy "Alpha"	F
Traditional high	Kingston College	F
Traditional high	St. George's College	F
Traditional high	Camperdown High	F
Traditional high	Wolmer's Boys School	F
Traditional high	Wolmer's Girls School	F
Traditional high	Ardenne High	F
Traditional high	Calabar High	F
Traditional high	Excelsior High	F
Traditional high	Holy Childhood High	F
Traditional high	Immaculate Conception High	F
Traditional high	Jamaica College	F
Traditional high	Merl Grove High	F

High Schools 1-29-02		
School Type	**School Name**	**Bursar Paid***
Traditional high	Oberlin High	F
Traditional high	The Queens School	F
Traditional high	St. Andrew High	F
Traditional high	St. Hugh's High	F
Traditional high	Meadowbrook High	F
Traditional high	Gaynstead High	F
Traditional high	Campion College	F
Traditional high	Priory High	F
Traditional high	Morant Bay High	F
Traditional high	Happy Grove High	F
Traditional high	Titchfield High	F
Traditional high	St. Mary High	F
Traditional high	York Castle High	F
Traditional high	Ferncourt High	F
Traditional high	Iona High	F
Traditional high	Westwood High	F
Traditional high	Cornwall College	F
Traditional high	Montego Bay High	F
Traditional high	Mount Alvernia High	F
Traditional high	Manning's High	F
Traditional high	Hampton School	F
Traditional high	Munro College	F
Traditional high	Manchester High	F
Traditional high	Bishop Gibson High	F
Traditional high	DeCarteret College	F
Traditional high	Clarendon College	F
Traditional high	Knox College	F
Traditional high	Glenmuir High	F
Traditional high	St. Jago High	F
Traditional high	St. Mary's College	F
Traditional high	St. Catherine High	F
Traditional high	Charlemont High	F
Traditional high total		
Grand total		
* F=Bursar Paid, P=MOEYC Paid		

Annex IV: World Bank-Ministry of Education, Youth & Culture Secondary School Cost Sharing Programme Questionnaire

Name of School: _____

School Code:

Address: _____

Region:

School Type:

Respondent: _____

1. What is the total school enrolment in the 2001-2002 academic year?
   Number [ ]

2. Does this school offer a sixth form programme?

   □ Yes 2 □ No

3. Did you receive any money for daily operations from the Ministry of Education in the 2001-2002 academic year?

   □ Yes 2 □ No (Go to Quest. 5)

4. If yes, please state the amount received for:

Payments	Amount (J$)
Normal Subventions	
Other (specify)	

5. Are students in this school required to pay school fees

   □ Yes 2 □ No

6. What cost sharing fees (excluding book rentals) were charged and collected from students for the years:

School Year	Amount Charged (J$)	Amount Collected (J$)
1995-96		
1996-97		
1997-98		
1998-99		
1999-00		
2000-01		
2001-02		

7. Is the cost-sharing fee approved by MOEYC usually in keeping with amount requested by this school?

1 □ Usually the same 2 □ Usually less (by more than 10%) 3 □ Sometimes more

8. What is the total amount of other fees-contributions collected in the 2001-02 academic year?

Fee	Amount (J$)
Other School Contribution	
Book Rental	

9. Are these fees related to any plan (development or otherwise) for the school

□ Yes 2 □ No (go to question 11)

10. If yes, has MOEYC agreed to these plans?

□ Yes 2 □ No

11. Do you obtain other revenues from any of the following sources?

Source	Amount (J$)
Local Alumni (past students-old boys-old girls)	
Direct Contribution from Alumni Abroad	
Parents-Teachers Association	
Tuck Shop	
Interest on Fixed deposits or Other Savings	
Other Business and Events	
Special Assistance from MOEYC	
Member of Parliament-Caretaker	
Church	
Other (List) ---------- ----------	 ---------- ----------

12. Does the school distinguish fees from contributions?

□ Yes 2 □ No

13. Were contributions collected for any of the following?

Source	Contribution per Student (J$)	Total Amount (J$)
Purchase of computers		
Purchase for other class instructional material		
Purchase of other equipment		
Maintenance of equipment		
Building Development		
Maintenance of school		
Public utilities		
Sports		
Security		
Travel & Transportation		
Student Welfare, incl. medical care, insurance and other financial assis-tance		
Staff Development		
PTA		
Any other Expense		
Total		

14. State the number of students for which Teacher's Concession was requested?

Number

15. Do you have teachers on study leave, maternity leave, vacation leave, special leave or other absence?

□ Yes 2. □ No

16. If yes, how many?

Number

17. How many of these teachers have been replaced?

Number

18. If any replaced, how do you pay these replacements?

□ Subvention (go to 20) 2. □ Cost Sharing advance 3. □ Other

19. Does the Ministry reimburse your school for these (locum tenen) expenses?

1. □ Yes (go to question 21) 2 □ No

20. If no, indicate the reason

Reason	Yes	No
Non-submission of claim	□	□
Late submission of claim		
Other (specify)		

21. Indicate the number of students that are in the following categories:

Method of Payment	Did Not Seek Government Assistance	Did Seek Government Assistance
School Fee Paid by Voucher	(Full Payment)	(Partial Payment)
School Fee Paid in Cash	(Full Payment)	(Partial Payment)
Parents did not pay school fee		

22. Are all revenues from fees recorded in your main accounting system?

1. □ Yes 2 □ No

23. Are all income from "contributions" recorded in your main accounting system?

□ Yes 2 □ No

24. In order to encourage payment of fees, do you employ any of the following measures?

Measure	Yes	No
Refusal of rental books without specific arrangement with school for payment in a given time.	□	□
Letters to parents-meetings with parents, indicating that fees are outstanding in an effort to arrange payments.	□	□
Mention in devotion that there are students with outstanding fees	□	□
Refusal of school reports in cases not judged to be genuinely needy	□	□
Withholding of CXC or other examination results.	□	□
Allow payment in monthly instalments?	□	□
Restricting students' access to classes and other school facilities.	□	□
Other (Specify) ---------- ----------	□	□

25. Indicate all those that are involved in determining if a student is eligible for financial assistance:

Member of Staff	Yes, as head of committee	Yes, as member of committee	Yes, as only decision maker	Yes, as arbitrator	Not involved
1. Guidance Councillor	□	□	□	□	□
2. Bursar	□	□	□	□	□
3. Principal	□	□	□	□	□
4. Vice Principal(s)	□	□	□	□	□
5. Senior Teacher(s)	□	□	□	□	□
6. Other Teacher(s)	□	□	□	□	□
7. External Reps. (PTA etc)	□	□	□	□	□

26. State number of student assistance applications referred for arbitration

Number [ ]

27. Indicate your assessment of the financial assistance questionnaire and the scoring scheme

Facility		Poor	Fair	Good	Excellent
1.	Clarity of questions	□	□	□	□
2.	Appropriateness of questions	□	□	□	□
3.	Completeness of questions	□	□	□	□
4.	Ability to verify responses	□	□	□	□
5.	Scoring of questions	□	□	□	□
6.	Thresholds for approval	□	□	□	□
7.	Overall usefulness in identifying students in need	□	□	□	□
8.	Ease of use (For parents-Guardians)	□	□	□	□
9.	Time requirements for completion of documents	□	□	□	□
10.	Adequacey of training received by school staff	□	□	□	□

28. List, in order of importance, criteria on the form or otherwise that you consider most useful in identifying students in need of assistance.

A. _____
B. _____
C. _____
D. _____
E. _____

29. Indicate the effect of the cost sharing scheme on students that may be finding it difficult to pay

Situation		*Number of Students Affected*			
		None	Few	Fair Number	Many
1.	Students do not register or they drop out when faced with fees	□	□	□	□
2.	Students' attendance is affected negatively	□	□	□	□
3.	Students do not have access to all or some books	□	□	□	□

30. Assess the quality of the following school facilities

Facility		Poor	Fair	Good	Excellent
1.	Buildings in general	□	□	□	□
2.	Science Laboratories	□	□	□	□
3.	School Library	□	□	□	□
4.	Computer Facilities	□	□	□	□
5.	Math Labs	□	□	□	□
6.	Language Labs	□	□	□	□
7.	Music Facilities	□	□	□	□
8.	Sport facilities	□	□	□	□
9.	Security	□	□	□	□
10.	Classroom facilities	□	□	□	□
11.	School morale & reputation	□	□	□	□
12.	Teacher Quality	□	□	□	□
13.	Instructional material	□	□	□	□