

Report No. 10564-BR

Secondary Education and Training in Brazil: Adapting to New Economic Realities

(In Two Volumes) Volume I: Executive Summary and Main Text

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Human Resources Operations Division
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Latin America and the Caribbean Regional Office

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CURRENCY EQUIVALENTS

Currency Unit = New Cruzado (January 1989-March 1990)
 = Cruzado (from February 1986 to January 1989)
 = Cruzeiro (prior to February 1986)

AVERAGE EXCHANGE RATES

NCz\$ 1.00 = US\$ 0.16390 (November 16, 1989)
US\$ 1.00 = NCz\$ 6.10000 (November 16, 1989)

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1988 US\$ 1.00 = Cz\$ 262.02
1987 US\$ 1.00 = Cz\$ 39.23
1986 US\$ 1.00 = Cz\$ 13.66
1985 US\$ 1.00 = Cr\$ 6.20

FISCAL YEAR

January 1 - December 31

SECONDARY EDUCATION IN BRAZIL:
ADAPTING TO NEW ECONOMIC REALITIES

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GLOSSARY OF ACRONYMS

CEE	Conselho Estadual de Educação State Council on Education
CEFAM	Centro de Formação e Aperfeiçoamento do Magisterio Teacher Training Centers
CENDEC	Centro de Treinamento Para O Desenvolvimento Economico Training Center for Economic Development
CQP	Cursos de Qualificação Profissional (SENAI) SENAI Professional Training Course
EDUTEC	Programa de Melhoria do Ensino Tecnico Industrial e Agrícola Program for strengthening Industrial and Agricultural Technical Education
FAE	Fundo de Assistencia Escolar Foundation for Assistance to Students
FINSOCIAL	Fundo de Investimento Social Social Investment Fund
FUNDACENTRO	Fundação Jorge Duprat Figueiredo de Segurança e Medicina do Trabalho National Foundation for Occupational Safety, Hygiene and Medicine
FUVESP	Fundação Vestibular do Estado de São Paulo University Entrance Testing Service of the State of Sao Paulo
HH	Domicilio Household
HP	Habilitação Profissional (SENAI) SENAI Professional Training Program
IBGE	Fundação Instituto Brasileiro de Geografia e Estatística Brazilian Institute of Geography and Statistics
ICM	Imposto sobre Circulação de Mercadorias State Value-Added Tax
INEP	Instituto Nacional de Estudos e Pesquisas Educacionais National Institute for Studies and Research on Education
IPEA	Instituto de Planejamento Economico e Social Institute for Economic and Social Planning

MEC	Ministerio da Educação Ministry of Education
MPAS	Ministerio da Previdencia e Assistencia Social Ministry of Social Security
NGO	Non-Governmental Organization Organização Não-Governamental
PNAD	Pesquisa Nacional por Amostra Domiciliar National Household Survey
PNAE	Programa Nacional de Alimentação Escolar National Program for School Feeding
PROTEC	Programa de Expansão e Melhoria do Ensino Técnico Program for the Expansion and Improvement of Technical Education
SEEC	Serviço de Estatística da Educação Educational Statistics Service
SENAI	Serviço Nacional de Aprendizagem Industrial National Service for Industrial Training
SENAC	Serviço Nacional de Aprendizagem Comercial National Service for Commercial Training
SENAR	Serviço Nacional de Aprendizagem Rural National Service for Rural Training
SM	Salario Minimo Minimum Salary
TO	Treinamento Ocupacional (SENAI) SENAI Occupational Training
VTE	Vocational and Technical Education
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development

PREFACE

This report is based on the findings of a mission which visited Brazil in November 1988. The mission was led by Barbara Bruns (senior economist), and included Donald Winkler (public administration specialist), World Bank, and consultants Steven Hoenack (labor economist), Joao Batista Gomes-Neto (statistician) and Genuino Bordignon (education specialist). The secondary school student achievement tests cited in this report were designed and administered by Dr. Heraldo Vianna of the Carlos Chagas Foundation, Sao Paulo, under contract with the Ministry of Education and the World Bank. Marlaine Lockheed of the World Bank contributed to the analysis of the test results (Annex I). Research assistant Ayda Kimemia prepared the Statistical Appendix, and the report and annexes were processed through all stages by Laura Sifuentes.

This report owes much to the assistance and insights of numerous Brazilian government officials, particularly those in the Ministry of Education responsible for secondary and technical education, and human resources division staff of IPEA (Institute for Economic and Social Planning). In addition, an early draft of the report benefitted greatly from the comments of a distinguished panel of reviewers comprised of the following Brazilian and international education experts. None of these reviewers, of course, bears responsibility for any errors of fact or interpretation which may remain in the report.

Dra. Guiomar de Mello, University of São Paulo;
Dra. Teresa Rcserley Neubauer da Silva, Carlos Chagas Foundation;
Dr. Arthur Divonzir Gusso, National Institute for Studies and Research on Education;
Dr. Alberto de Mello e Souza, Federal University of Rio de Janeiro;
Dr. Roberto Macedo, Ministry of Economy, Finance and Planning (MEFP);
Dr. Ricardo Paes de Barros, Institute for Economic and Social Planning (IPEA);
Dr. Heraldo Vianna, Carlos Chagas Foundation;
Dr. Ernesto Schiefelbein, UNESCO;
Dr. Mark Blaug, University of London; and
Dr. Richard Sabot, Williams College.

PREFÁCIO

Este relatório está baseado nas conclusões da missão que visitou o Brasil em novembro de 1988. A missão foi chefiada por Barbara Bruns (economista senior) e dela participaram Donald Winkler (especialista em administração pública) do Banco Mundial, e consultores Steven Hoenack (economista especializado em mercado do trabalho), João Batista Gomes-Neto (estatístico) e Genuino Bordignon (especialista em educação). Os testes de desempenho para os alunos do segundo grau, mencionados neste relatório, foram preparados e ministrados pelo Dr. Heraldo Vianna da Fundação Carlos Chagas, de São Paulo, mediante contrato com o Ministério da Educação e o Banco Mundial. Marlaine Lockheed do Banco Mundial contribuiu para a análise dos resultados dos exames (Annex I). Ayda Kimemia, assistente de pesquisa, preparou o Anexo Estatístico, e Laura Sifuentes processou o relatório e os anexos, em todos os seus estágios.

Este relatório recebeu a valiosa colaboração e contribuição de vários funcionários do Governo brasileiro, principalmente do Ministério da Educação, encarregados do ensino de segundo grau; bem como dos funcionários da divisão de recursos humanos do Instituto de Planejamento Econômico e Social (IPEA). Um esboço do relatório recebeu também o grande benefício dos comentários de um ilustre grupo de revisores composto dos seguintes especialistas em educação, brasileiros e de nível internacional. Naturalmente, nenhum desses especialistas é responsável por qualquer erro referente a fatos ou a interpretação que possa haver.

Dra. Guiomar de Mello, Universidade de São Paulo;
Dra. Teresa Roserley Neubauer da Silva, Fundação Carlos Chagas;
Dr. Arthur Divonzir Gusso, INEP;
Dr. Alberto de Mello e Souza, Universidade Federal do Rio de Janeiro;
Dr. Roberto Macedo; Ministério da Economia, Fazenda e Planejamento (MEFP);
Dr. Ricardo Paes de Barros, IPEA;
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Dr. Ernesto Schiefelbein, UNESCO;
Dr. Mark Blaug, Universidade de Londres; e
Dr. Richard Sabot, Williams College.

EXECUTIVE SUMMARY

- i. This year, the Brazilian secondary school system^{1/} will graduate approximately 600,000 students. For a country of almost 150 million people, with a labor force of over 50 million and a 16-18 year old population of more than 9 million, 600,000 graduates represent a small trickle of individuals equipped with the knowledge, skills and potential for higher education and/or entry into the managerial and professional streams of the world's ninth largest industrial economy.
- ii. The average educational attainment of the Brazilian population lags that of other Latin American countries and other middle-income countries by a substantial margin. In 1980, 60% of the Brazilian labor force had either no education or had not completed primary school, whereas in Korea the corresponding percentage was 16% and in Turkey, 26%. Within South America, only Bolivia has a higher share of the labor force with no education than Brazil.
- iii. The gap between Brazil and other countries is acute at the secondary level. In 1987, Brazil's total secondary enrollments represented only 37% of the secondary school-aged population, well below the average for middle-income developing countries, 59%. Countries such as Chile, with a 70% enrollment rate, and Korea, with 95% of secondary aged students attending school, are even further ahead.
- iv. This report analyzes the structure and some of the salient problems of Brazilian secondary education. The report is not exhaustive; it focuses on a few questions of strategic importance for Brazil, namely: What should be the balance between general education and occupational/technical training at the secondary level in the coming decades? What should be the roles and responsibilities of the public and private sectors in providing secondary education? What can be done to improve equality of access to secondary education and its role in the process of social mobility? And, above all, in an era when Brazil cannot afford to spend more on public services of any kind, what can be done to improve public school quality with existing education resources?
- v. In adopting this strategic perspective, many other issues of crucial importance for secondary education are treated only superficially. These include issues of curriculum content, inefficiencies in the pattern of intergovernmental financing and transfers, and, most importantly, problems of teacher quality, training and remuneration. Detailed analysis of teacher training and the labor market for teachers at both the primary and secondary levels is critical for a full consideration of the state of Brazilian education and for the design of policies to improve education quality and efficiency. However, to do justice to this complex set of issues was beyond the scope of this report.
- vi. It is clear from even a cursory look at the Brazilian education system that the overriding problems are at the primary level, and this has a determining influence on what can be done at the secondary level. Indeed, the report concludes that the principal constraint to raising Brazil's exceptionally low secondary school participation rate is the low rate of graduates from

^{1/} This report discusses Brazilian secondary education as it has been structured since the major education reform of 1971. In Brazil this level is known as "Segundo Grau" and comprises ninth, tenth, eleventh and sometimes twelfth grades. It should not be confused with "ensino secundario," which was part of the pre-1971 system of secondary school which covered the fifth to eleventh grades.

primary school. Although close to 100% of children begin primary school in Brazil, less than 40% of every entering class ever finishes the eight-year primary cycle, and the majority of these students only do so after substantial (and costly) repetition.

vii. This report, focused on secondary education, was conceived in the context of a series of World Bank reports on Brazilian education. A 1988 World Bank report "Public Spending on Social Programs: Issues and Options" reviewed overall problems of resource allocation across social sectors and across different levels of the education system. Efficiency issues within Brazil's primary, secondary and higher-level education systems have been pursued further in a series of reports focused on each level of the education system: a 1986 report examined primary education,^{2/} and a report completed in 1991 analyzed issues in higher education.^{3/} The objective of the reports on specific levels, including the present one, was to examine major issues, and identify policies that could improve the allocation and utilization of public resources at that level. The key assumption underlying the analysis of all four reports is the need for Brazil to give priority to primary education, which has the highest economic returns for society as a whole and is of fundamental importance for the evolution of a cohesive and stable democratic society.

viii. A major motivation for undertaking the present report was to contribute to the ongoing debate in Brazil about the nature of secondary education. Whereas fairly broad consensus exists with respect to the basic objectives of primary education, very different philosophies of secondary education exist, most notably regarding the extent to which secondary schooling should provide general education rather than occupationally-oriented training. Compared to other countries, Brazil invests relatively little in general secondary education and invests heavily in both non-formal occupational training (through the SENAI/SENAC/SENAR network)^{4/} and formal technical education (through the federal technical schools, SENAI secondary schools, and technical education programs in state secondary schools). These educational alternatives not only equip Brazilian youths with different degrees of cognitive understanding and different sets of skills; they also have different costs. Vocational training and technical education are much more costly per student hour. On the other hand, vocational training programs typically involve many fewer hours of instruction. They also result in much less diversified learning.

ix. This report examines the efficiency of current spending on secondary education and vocational training in order to identify reforms that could improve secondary-level education without diverting resources away from the primary level, where so much needs to be done. A major obstacle to such reform is the lack of policy coherence and administrative coordination. The principal problems in secondary education today are at the state level, but states lack ideas, resolve and resources for addressing these. On the other hand, the federal government invests substantial money and efforts in the federal technical schools -- an elite network of high quality, high cost schools. But

2/ Brazil: The Finance of Primary Education, World Bank (1986).

3/ Higher Education Reform in Brazil, World Bank (1991).

4/ SENAI (Servico Nacional de Aprendizagem Industrial); SENAC (Servico Nacional de Aprendizagem Comercial); and SENAR (Servico Nacional de Aprendizagem Rural).

because of their high costs per student, these are not a viable model for secondary education more generally in Brazil.

x. Chapter I outlines the low average educational attainment of the Brazilian population by international standards and traces the evolution of the formal education and vocational training systems in the context of Brazilian economic development over the past forty years. It suggests that while underemphasis of formal secondary education may not have seriously constrained Brazil's economic development in the past, it may emerge as a constraint in the future. Heavy investments in specialized, short-term occupational training may have compensated in the past for the weaknesses of the formal school system; SENAI (the publicly-funded institute for industrial skills training) and SENAC (the sister institute for commercial skills training) respectively train over 500,000 and 1 million individuals per year.

xi. However, as the Brazilian economy becomes more technologically sophisticated, more diverse and, most importantly, more open to international competition, manpower needs are changing more rapidly and are increasingly difficult to foresee. This has two major consequences for the labor force and for the education system. First, it suggests that the minimum levels of general education that a worker requires in order to remain flexible and trainable throughout his or her working life are increasing. Training courses of 100 hours cannot possibly augment individuals' cognitive skills to the same extent as three years of secondary school. General education gives individuals a cognitive base for the development of more sophisticated technical skills -- whereas vocational training does not. The demand for labor in Brazil, as elsewhere in the world, is becoming increasingly intensive in general skills and in sophisticated technical skills. Yet in Brazil today, the average urban worker has not completed more than five years of primary school. Without at least a full primary education and -- for many jobs -- a secondary education, workers are unlikely to have the knowledge and adaptability required for productivity in a rapidly evolving economy.

xii. Second, as the pace of technological change increases it becomes harder and harder to give workers specialized skills training efficiently in an institute setting, rather than on the job. The costs of keeping training facilities up-to-date escalate enormously, and can rapidly drive down the cost-effectiveness of skills training. Technological change also reduces the time that a worker can expect to practice a particular craft and earn a return on specialized training. Institute-based training, which served Brazil well during the early, relatively unsophisticated phases of its industrialization process may be far less appropriate for the Brazilian economy of the 1990s and twenty first century. Failure to adjust education and training systems to new economic realities may impede Brazil's future economic evolution.

xiii. Chapter II describes five critical characteristics of the secondary system that provide background for the analysis of policy options. These are: i) the rapid growth of secondary school enrollments in the 1960s and 1970s (averaging 11% per year from 1960-1980) and stagnating enrollments since 1980; ii) the diversity of secondary level education in Brazil (which in fact has important advantages), in terms of course content, administration and unit costs, and differences in quality that are reflected in significant differences in student achievement on a 1989 standardized test, controlling for students' socioeconomic background and other factors; iii) the important role of the private sector in overall supply (with 35% of total enrollments), and the heterogeneous character of private schools (tuitions range from roughly US\$ 3 per month to over US\$ 500 per month); iv) the inequity of public spending on secondary education, with low spending per student in state and

municipal schools and high subsidies to a small minority of relatively well-off students at federal technical and SENAI secondary schools; and v) the lack of strategic vision in public policy for secondary education and inefficient, overcentralized administration of public school systems.

xiv. Chapter III focuses on quality problems at the secondary level. The overriding problem is the low quality of the schools administered by the states, which 90% of public students attend. Because of high repetition rates, state schools on average must finance over six student-years of instruction in order to produce each graduate from a three-year program. Dropout rates at state schools are such that of every 100 students who enter, only 42 ever graduate. State schools enjoy far fewer resources per student than do other Brazilian secondary schools: spending per student in state schools averages about US\$ 250 per year, as compared with over US\$ 1,700 at the federal technical schools and more than US\$ 1,800 per year at SENAI secondary schools. But the report points out that spending per student at state schools is not far from the annual average for public schools in other countries (an estimated US\$ 234 in Chile, US\$ 243 in Colombia). And in these countries, even though the secondary school population is less selective, graduation rates are significantly higher -- raising the possibility that other public systems are doing a more efficient job of education than Brazilian state schools.

xv. The low quality of state schools was also evident from the results of the standardized achievement test of Portuguese and mathematics administered to a sample of 2,600 third-year secondary students in four states in 1988. There were significant differences in student performance -- particularly in mathematics -- which cannot be attributed to student background factors. The lowest average achievement was among students in state schools, particularly those studying at night and in teacher training programs. Students in SENAI secondary schools also scored poorly. Students in the private schools sampled, by comparison, scored consistently higher, and there was no difference in private schools between day and night shift students. Students in the elite federal technical schools scored significantly above all other groups, reflecting both the high quality of those schools and the selectivity of their students. (Students are admitted on the basis of competitive entrance exams.)

xvi. What are the sources of low effectiveness of spending in state schools, and what can be done to improve it? The report concludes that overcentralization, poor management, and lack of performance incentives at the school level are the key issues at the state level. It points to a number of policy options for addressing these problems that have yielded results in other countries. These include: introduction of incentives for school performance and progressive decentralization in the direction of school-based management; regular use of student achievement tests as a basis for evaluating school system progress; and policies to improve the performance of private schools and stimulate stronger competition with the public system.

xvii. The chapter notes that the heterogeneity of the Brazilian secondary system and the growing interest in municipalization of education in many parts of the country are potentially strong assets in improving education quality. They offer opportunities for experimentation with a variety of different models of school organization and school system reform and for administrators and researchers nationwide to evaluate and disseminate successful approaches. The chapter concludes that municipalization of primary and secondary education, being considered at present in a growing number of states, is a potentially effective way to improve the efficiency and accountability of Brazilian school systems. To achieve these benefits, however, it is imperative that state and federal authorities develop strong complementary roles in order to help equalize revenue disparities across

municipalities and to provide technical assistance. Independent, directly-elected local school boards might also help ensure the professionalism of municipal school systems.

xviii. Policies to strengthen the performance of private schools are an important part of an overall program to improve secondary education quality. The private sector in Brazilian education, particularly at the secondary level, accounts for an important share of enrollments and, as suggested by the achievement test data, may be more cost-effective on average than most Brazilian public education. Government policies should concentrate on stronger substantive oversight of private schools, as in fact is the policy at present, and avoid reverting to the counterproductive tuition price controls often used in the past. This could involve actions such as: school accreditation reviews which are serious examinations of all aspects of school performance and repeated at regular intervals; inclusion of private schools in the administration of regular student achievement tests by state officials, with results sent to parents and communities, and; the annual publication of performance reports on all accredited private schools.

xix. Chapter IV examines the inequitable allocation of public education resources across schools. About 20% of total public spending on secondary education goes to support the federal technical schools, which have only 3.4% of total public enrollments. About 2% of total public secondary education spending goes to SENAI secondary schools which have 0.4% of all secondary students. Students in these schools pay no tuition and receive an education costing approximately US\$ 1800 per student per year. The socioeconomic background of students in these costly schools (which admit students via competitive examinations and interviews) is significantly higher than the average background of students at state and municipal schools.

xx. The report suggests ways in which the equity of public spending on high cost technical education could be improved, principally by expanding enrollments more rapidly than physical plant, and linking schools with industry to lower equipment costs. It also recommends expanded programs to attract low-income students to federal technical and SENAI secondary schools, such as those the Federal Ministry of Education and SENAI are already adopting. Increasing low-income students' share of enrollments in federal technical and SENAI schools is feasible, if entering students have access to remedial programs. Over the long-term, it may also be feasible to reduce gradually these schools' costly emphasis on equipment-intensive training, because a high share of graduates are university-bound and the attraction of these schools for many students is the high overall quality of the teaching and the strong emphasis on science and math.

xxi. Chapter IV also analyzes efficiency problems associated with the way in which Brazilian vocational training is financed. The SENAI and SENAC vocational training systems -- whose combined budgets in 1987 were approximately equal to total state and municipal level spending on formal secondary education -- are financed almost exclusively by a payroll tax and training services are provided "free" to individual workers and enterprises. Significant inefficiencies can arise under such a system, because: i) there are no incentives for trainees to make sure that they work at the skills for which they are trained, ii) there are no incentives for employers to choose the most efficient sources of training among alternative public and private suppliers, and iii) employers have an incentive to overutilize certain types of skilled workers, particularly those with high-cost skills. All of these problems are exacerbated in the case of equipment-intensive, institute-based industrial training such as SENAI provides, due to the high costs of industrial equipment and the need for constant investment to avoid obsolescence. Replacing a part of the payroll tax with a system of charges for

training in which costs are shared by employers and employees depending on the employee's tenure with the firm could substantially alleviate these incentive problems.

xxii. Chapter V evaluates the prospects for progress in Brazilian secondary education over the next decade. Far from catching up with other countries, Brazil's secondary enrollments stagnated over the 1980s decade. Secondary school enrollments from 1980-87 grew by only 2% per year, about equal to the growth of the secondary school-age population. At the current rate of enrollment growth, Brazil would not reach even 50% secondary school participation until the year 2010. The main constraint to faster secondary enrollment growth is the lack of throughput from the primary school system. Unless progress is made in reducing primary school repetition and dropout rates, which are exceptionally high in Brazil, secondary school enrollments are unlikely to increase more by than 2.5% per year over the coming decade.

xxiii. Even this relatively low rate of enrollment growth could have important public finance implications, depending upon which types of secondary schooling grow fastest. If all new enrollments after 1990 were in federal technical schools, annual public expenditures on secondary education would increase by 20% per year in real terms, as compared with 3.5% per year real expenditure growth if the current distribution of enrollments remained more or less constant. On the other hand, because of their higher internal efficiency, a scenario in which all incremental enrollment growth was in federal technical schools would result in almost 20% more graduates by the year 2000. Unfortunately, this potential benefit is outweighed by the fact that total public expenditure on secondary education would have to double in real terms; in Brazil's current fiscal circumstances increases of this magnitude must be considered unsustainable.

xxiv. The projections presented in Chapter V also indicate the potential contribution of the private sector. If enrollment growth after 1990 were faster in private than in public schools -- as was the case in the 1970s and from 1986-88 -- substantial financial savings for the public sector could result and a higher number of graduates could be expected. The implication is that policies to stimulate the expansion of private schools at the secondary level, by avoiding tuition controls, improving oversight of private school quality and providing better information about private schools to parents and students, could be important for Brazil.

xxv. Finally, Chapter V sets out four priority issues for Brazilian secondary education over the decade of the 1990s: i) achieving cost-effective improvements in the quality of state schools; ii) strengthening the performance of private schools and stimulating increased competition with the public school system, iii) improving the incentives for the efficient delivery of vocational training and improving the equity of high-cost technical education, and iv) developing efficiency-enhancing roles for federal, state and municipal education authorities.

xxvi. Implicit in all of these options is more administrative autonomy at the school level and a new role for education officials at all three levels of government. The new government role would place much stronger emphasis on accreditation, oversight, school performance evaluation, technical assistance and financial intermediation, and would place reduced emphasis on direct school administration, with many functions devolved to the schools.

xxvii. The national discussions during 1988 to define the new Constitution included numerous debates over aspects of the education system. To a large extent, secondary education

remained the forgotten child of Brazilian education in these discussions. Although major changes in the organization and financing of SENAI and SENAC were extensively discussed and finally rejected, the very central question of whether or not the whole system of secondary, technical and vocational education in Brazil as currently structured and financed is appropriate for Brazil's future, was strikingly absent. Meaningful debate on the sources of quality problems in state-level secondary education and new directions for addressing these were also lacking. The associations of private schools proved themselves an effective lobby in catalyzing certain Constitutional provisions which they believe will reduce the role of Government in determining private school tuition levels, but this too was achieved without any apparent national consensus on the broader question of the role of the private sector in secondary -- or primary or tertiary -- education. This report raises some major issues in Brazilian secondary education and draws together data that can aid in the analysis of policy options. The present state of Brazilian secondary education offers much to stimulate further national thinking and debate.

MATRIX OF RECOMMENDED POLICY MEASURES

OBJECTIVES	IMMEDIATE ACTIONS	LONGER TERM ACTIONS
<p>Improve the Quality of State-level Secondary Education.</p>	<ul style="list-style-type: none"> - Introduce standardized student testing as a tool for measuring school (and school system) performance objectively. - Strengthen basic curriculum by increasing hours of teaching of core subjects (Portuguese, Math, Science, History) - Transform state technical schools into science and math magnet schools, reducing need for expensive equipment. - Develop a stronger technical assistance role at the state level, to identify weak schools and work with these to improve performance. 	<ul style="list-style-type: none"> - Professionalize the selection of school directors and increase their control over school personnel and school financial resources. - Introduce incentives for school performance (gradually link directors' and teachers' evaluations and bonus pay to school progress in meeting specified performance objectives).
<p>Strengthen the Performance of Private Schools.</p>	<ul style="list-style-type: none"> - Introduce regular private school accreditation reviews. - Publish annual performance reports on private schools and distribute to parents. 	<ul style="list-style-type: none"> - Include private schools in standardized achievement tests and publish results.
<p>Improve Public Vocational Training Efficiency.</p>	<ul style="list-style-type: none"> - Include SENAI secondary schools in the administration of regular student achievement tests. - Reduce payroll tax transfers to SENAI and SENAC to the level of their actual expenditures on training. 	<ul style="list-style-type: none"> - Seek ways to lower equipment and shop costs, such as equipment-sharing programs with local industry.
<p>Improve the Equity of Federal Technical Schools.</p>	<ul style="list-style-type: none"> - Continue current program to rationalize network, closing underutilized schools and adding shifts to demanded-schools. - Expand enrollments more rapidly than physical plant to reduce unit costs. - Attract more low-income students via special campaigns and offer remedial programs, when necessary, for these students. 	<ul style="list-style-type: none"> - Seek ways to lower equipment and shop costs, such as equipment-sharing programs with local industry.

OBJECTIVES	IMMEDIATE ACTIONS	LONGER TERM ACTIONS
<p>5. Develop Efficiency-Enhancing Role for Government.</p>	<p>- Strengthen state education secretariats' capacity for: (a) design, administration and analysis of achievement tests for public and private secondary students at least every two years; (b) curriculum evaluation and development, design and implementation of in-service teacher training programs, and other central support services for the benefit of all public and private schools; (c) private school oversight and accreditation; and (d) annual public school performance evaluations and budget reviews.</p>	

RESUMO

i. Este ano, no Brasil, cerca de 600.000 alunos concluirão o segundo grau.^{1/} Para um país que conta com quase 150 milhões de habitantes, uma força de trabalho de mais de 50 milhões de pessoas e acima de 9 milhões de jovens entre 16 e 18 anos de idade, 600.000 formandos representam uma parcela ínfima de indivíduos com conhecimentos, aptidões e potencial suficientes para ascender ao ensino superior e/ou iniciar suas atividades profissionais na sociedade que mobiliza a nona maior economia do mundo industrial.

ii. A média de escolaridade da população brasileira fica consideravelmente aquém da de muitas nações latino-americanas e da de outros países com nível médio de renda. Em 1980, 60% da força de trabalho brasileira não contavam com qualquer tipo de escolaridade ou não chegaram a concluir o 1º grau, enquanto que na Coreia tal percentagem se resumia a 16%, e na Turquia, a 26%. Na América do Sul, apenas a Bolívia possui uma parcela de mão-de-obra não-educada maior que a do Brasil.

iii. A defasagem existente entre o Brasil e outros países é especialmente acentuada no ensino secundário. Em 1987, estimava-se que o total de alunos matriculados no 2º grau no Brasil, representava apenas 37% da população com idade escolar correspondente, bem abaixo do percentual de 59% dos países em desenvolvimento com nível médio de renda. Países como o Chile, com um índice de matrículas da ordem de 70% ou como a Coreia, onde 95% dos adolescentes freqüentam as escolas de 2º grau, encontram-se num estágio muito mais avançado.

iv. Este relatório visa analisar tanto a estrutura quanto alguns dos principais problemas do ensino médio brasileiro. Contudo, não se pretende discutir exaustivamente o tema, e sim enfocar certas questões estrategicamente importantes para o país, tais como: Qual deveria ser o equilíbrio entre educação de nível geral e formação profissional/técnica no 2º grau? Quais deveriam ser as responsabilidades e funções dos setores público e privado na prestação de ensino médio no Brasil? O que poderia ser feito para melhorar o acesso igualitário ao ensino médio e seu conseqüente papel no processo de mobilidade social? E, acima de tudo, num momento em que o Brasil não pode permitir-se qualquer gasto adicional com serviços públicos, o que pode ser feito para aprimorar a qualidade das escolas da rede oficial utilizando-se apenas os recursos atualmente disponíveis?

v. Ao adotar esse tipo de abordagem estratégico, muitas outras questões de vital importância para o ensino médio são tratadas apenas superficialmente neste relatório. Dentre elas estão o conteúdo dos currículos, as distorções no financiamento da educação pública e nas transferências de recursos intergovernamentais, e, sobretudo, os problemas referentes à capacidade, formação e remuneração dos professores. Para se obter uma visão completa do estado atual do sistema educacional brasileiro, e de formular políticas adequadas com vistas a aprimorar a qualidade e eficiência do mesmo, seria necessário fazer uma análise pormenorizada do processo de formação dos professores de 1º e 2º graus, bem como das características de seu mercado de trabalho. Entretanto, temas tão complexos exigem um estudo mais profundo, o que ultrapassa o âmbito deste relatório.

^{1/} Neste relatório, "segundo grau" e "ensino secundário" (ou mesmo "ensino médio") são utilizados como sinônimos.

vi. Mesmo a partir de uma visão superficial, torna-se óbvio que os principais problemas do sistema educacional brasileiro se concentram no 1º grau, o que influencia de forma marcante o que pode ser realizado no nível médio. De fato, este relatório conclui que o principal obstáculo a ser superado antes de que se possa elevar significativamente a baixíssima taxa de matrícula no 2º grau no Brasil, é o reduzido número de alunos que concluem o ciclo primário. Apesar de que quase 100% das crianças brasileiras iniciam o ensino básico, menos de 40% de cada turma inicial conclui o 1º grau, a maioria depois de muita repetição, o que eleva os custos da formação.

vii. Este documento concentra-se na problemática do ensino médio e faz parte de uma série de relatórios elaborados pelo Banco Mundial sobre o sistema educacional brasileiro. Em 1988, o Banco preparou um relatório denominado Public Spending on Social Programs: Issues and Options (Gastos Públicos com Programas Sociais: Questões e Alternativas), no qual apresentou uma análise geral dos problemas relativos à alocação de recursos nos diferentes setores sociais e nos distintos níveis do sistema educacional. As questões referentes à eficiência no uso de recursos dentro de cada um dos níveis educacionais foram examinadas em relatórios específicos: Brasil: Os Aspectos Financeiros do Ensino Primário^{2/}, elaborado em 1986, e A Reforma do Ensino Superior no Brasil^{3/}, concluído em 1991. O objetivo desses relatórios é analisar os principais problemas de cada nível de ensino, e identificar políticas que poderiam aprimorar a utilização de recursos públicos no sistema educacional do país. Esses quatro relatórios partem da premissa básica de que o Brasil precisa tratar prioritariamente do ensino de 1º grau, por ser este o setor que propicia o maior retorno econômico para a sociedade como um todo, e por sua importância fundamental para um processo democrático estável e coeso.

viii. Um dos principais motivos que levaram o Banco a elaborar este relatório foi o debate ora em curso no Brasil sobre a natureza do ensino médio no país. Não obstante o amplo consenso sobre os objetivos básicos do ensino primário, existem diferentes linhas de pensamento quanto ao papel a ser desempenhado pelo ensino secundário, sobretudo se este deve conferir prioridade a uma educação geral ao invés de uma formação profissionalizante. Em comparação com outros países, o Brasil destina relativamente poucos recursos para a educação geral de nível médio, e investe substancialmente tanto em cursos profissionalizantes informais (através da rede SENAI/SENAC/SENAR)^{4/} quanto na formação técnica acadêmica (através das escolas técnicas federais, as escolas técnicas do SENAI e programas de capacitação técnica das redes estaduais de ensino secundário). Essas alternativas educacionais não só proporcionam distintos graus de conhecimento e de aptidão aos jovens brasileiros, como também apresentam custos diferenciados. Cursos profissionalizantes e de formação técnica são mais onerosos em termos de hora/estudante. Entretanto, cursos profissionalizantes requerem menos horas de instrução e proporcionam uma formação muito menos diversificada.

ix. Este relatório analisa a eficiência dos atuais gastos com o ensino secundário e com os programas de capacitação profissional, buscando identificar possíveis formas de aperfeiçoamento do sistema sem, contudo, desviar recursos do nível de ensino primário, onde ainda há tanto para ser feito.

2/ Brazil: The Finance of Primary Education, World Bank (1986).

3/ Higher Education Reform in Brazil, World Bank (1991).

4/ SENAI (Serviço Nacional de Aprendizagem Industrial); SENAC (Serviço Nacional de Aprendizagem Comercial); e SENAR (Serviço Nacional de Aprendizagem Rural).

Um grande obstáculo a ser superado é a falta de coerência política e de coordenação administrativa no setor. Atualmente, o principal problema do 2º grau no Brasil é a baixa qualidade do ensino nas redes estaduais. Os Estados não dispõem de políticas, recursos e vontade política para tratar do assunto. Por outro lado, o Governo Federal gasta muito com as escolas técnicas federais -- uma rede de escolas de alto nível e custo elevado, acessível apenas a uma pequena elite. Todavia, devido ao ser elevado índice de custo por estudante, as escolas técnicas federais não constituem um modelo viável de ensino secundário para o Brasil como um todo.

x. O Capítulo I examina o baixo índice de escolaridade da população brasileira em comparação com os padrões internacionais vigentes e descreve a evolução tanto do sistema educacional formal quanto do profissionalizante no contexto do desenvolvimento econômico brasileiro dos últimos quarenta anos. Aparentemente, a falta de priorização do ensino secundário não acarretou, no passado, sérias dificuldades para o desenvolvimento econômico do país, porém isso poderá ocorrer futuramente. Em anos anteriores, os grandes investimentos destinados a cursos profissionalizantes de curta duração parecem ter compensado o fraco desempenho do ensino secundário brasileiro; o SENAI (o serviço nacional de aprendizagem industrial), e o SENAC (instituto congênere, voltado para a aprendizagem comercial) formam, respectivamente, de 500.000 e 1 milhão de pessoas por ano.

xi. Contudo, à medida que a economia brasileira se torna tecnologicamente cada vez mais sofisticada, mais diversificada e, sobretudo, mais aberta à concorrência internacional, a natureza da demanda por mão-de-obra muda mais rapidamente e torna-se mais difícil de ser antecipada. Isso afeta a força de trabalho e o sistema educacional do país de duas formas. Primeiramente, está aumentando o nível mínimo de educação geral requerido por um trabalhador, para que ele continue passível de treinamento e adaptável a diferentes ocupações, ao longo de sua vida profissional. Cursos profissionalizantes de apenas 100 horas de duração não conseguem, de maneira alguma, proporcionar o mesmo grau de conhecimento que três anos de ensino secundário. A educação geral forma nos indivíduos a base cognitiva que permite o desenvolvimento de competências técnicas complexas; a educação profissionalizante, pela sua natureza focalizada, não tem esse efeito. A demanda por mão-de-obra no Brasil, assim como no resto do mundo, está-se tornando cada vez mais concentrada em conhecimentos gerais e em competências técnicas complexas. Não obstante, no Brasil de hoje, o trabalhador urbano médio não cursou mais do que cinco anos de escola primária. Sem pelo menos uma educação primária -- e, para muitos empregos, uma educação secundária -- é pouco provável que os trabalhadores venham a ter as condições de adaptação e os conhecimentos necessários para que sejam produtivos numa economia em rápido desenvolvimento.

xii. Em segundo lugar, à medida que os avanços tecnológicos vão ocorrendo, torna-se cada vez mais difícil formar adequadamente trabalhadores especializados em centros de treinamento, ao invés de no próprio ambiente de trabalho. Para manter centros de treinamento atualizados tecnologicamente, se precisa utilizar grandes somas de recursos, o que diminui drasticamente a eficiência deles. Avanços tecnológicos também reduzem o tempo em que um trabalhador pode esperar exercer uma determinada ocupação e, portanto, lucrar com o seu treinamento especializado. No Brasil, o sistema nacional de formação profissional cumpriu seu papel durante a fase inicial e não muito complexa do processo de industrialização do país. No entanto, talvez ele não esteja capacitado para atender as atuais e futuras necessidades da economia brasileira. O desenvolvimento econômico do Brasil poderá estar ameaçado se os sistemas de ensino e de formação profissional não forem adaptados à nova realidade econômica do país.

xiii. O Capítulo II descreve as cinco características essenciais do ensino secundário que fundamentam a análise de possíveis políticas a serem adotadas. São elas: i) o rápido crescimento das matrículas no 2º grau nas décadas de 60 e 70 (média anual de 11% entre 1960 e 1980) e a estagnação do mesmo desde 1980; ii) a diversidade do 2º grau no Brasil em termos de currículo, administração, custos unitários, e qualidade; iii) o importante papel do setor privado no ensino secundário (35% do total de matrículas) e a natureza heterogênea dos colégios particulares (as mensalidades variam, aproximadamente, de US\$3 a US\$500); iv) o desequilíbrio dos gastos públicos no que se refere ao ensino secundário, com um baixo investimento por estudante nas escolas estaduais e municipais e subsídios elevados para uma minoria relativamente próspera de estudantes em escolas técnicas federais e em escolas secundárias do SENAI; e v) a ausência de uma estratégia política definida para o ensino secundário e a ineficiente e excessiva centralização administrativa da rede oficial de escolas.

xiv. O Capítulo III trata da qualidade do ensino secundário. O principal problema a ser superado é o baixo nível das escolas estaduais, frequentadas por 90% dos estudantes da rede pública. Devido ao elevado índice de repetências, essas escolas gastam, em média, seis anos de estudos para formar um aluno num programa de três anos. O índice de desistência é tal que de 100 alunos inicialmente matriculados, apenas 42 concluem o curso. As escolas estaduais contam com recursos substancialmente menores do que outras instituições brasileiras de ensino secundário: os gastos por aluno atingem, aproximadamente, US\$250 por ano, em comparação com os mais de US\$1.700 anuais nas escolas técnicas federais e os cerca de US\$1.800 nas escolas secundárias do SENAI. Entretanto, este relatório demonstra que os gastos por aluno nas escolas estaduais brasileiras não divergem da média anual encontrada em outros países (US\$234 no Chile, US\$243 na Colômbia). Contudo, apesar do ensino secundário ser menos seletivo nesses países, o número de formandos é consideravelmente maior -- fato que aventa a hipótese de que, aparentemente, outros sistemas educacionais públicos sejam mais eficientes que a rede oficial brasileira.

xv. O baixo qualidade do ensino estadual foi também demonstrado resultados obtidos por 2.600 alunos num teste padronizado realizado em três estados em 1988. A grande discrepância no desempenho dos alunos -- especialmente no que se refere à prova de matemática -- não pode ser totalmente atribuída a fatores de nível sócio-econômico. Os piores resultados pertenciam a estudantes das escolas estaduais, especialmente de cursos noturnos do magistério. Alunos das escolas secundárias do SENAI também não foram bem-sucedidos. Em comparação, os estudantes provenientes de colégios particulares, quer de cursos noturnos ou diurnos, alcançaram sistematicamente melhores resultados. Já os alunos das escolas técnicas federais alcançaram um desempenho bem superior ao dos demais grupos, o que reflete o alto nível pedagógico dessas instituições e o seletivo grupo ao qual se destinam (para serem aceitos, os alunos devem ser aprovados num exame classificatório).

xvi. Quais são as causas da baixa produtividade das escolas estaduais, e o que pode ser feito para corrigir essa situação? Este relatório conclui que as principais questões ao nível estadual são: excessiva centralização, deficiências administrativas, e falta de um sistema que incentive maior produtividade no sistema escolar. Várias políticas alternativas para abordar essas problemas surtiram efeito em outros países, tais como; a introdução de um sistema de incentivos que leve em conta o desempenho das escolas, a implantação de um processo gradual de descentralização com vistas a lograr a autonomia administrativa das mesmas; a utilização periódica de testes de avaliação a fim de medir o progresso do sistema educacional; e a formulação de políticas que visem aprimorar a rede particular e estimular a concorrência com o sistema público.

xvii. Esse capítulo também mostra que a heterogeneidade do ensino secundário brasileiro e o interesse cada vez maior na municipalização do ensino público em várias partes do país são fatores capazes de levar à melhoria do sistema. O Brasil apresenta um amplo campo de experimentação para diferentes modelos organizacionais e reformas educacionais e oferecem oportunidades para que administradores e pesquisadores de todo o país avaliem e divulguem medidas bem-sucedidas. Conclui-se, portanto, que o processo de municipalização dos dois níveis de ensino - 1º e 2º graus - ora considerado por um número crescente de Estados, pode ser um meio eficaz para aprimorar a eficiência e confiabilidade do sistema educacional brasileiro. Contudo, para atingir esses objetivos, é imprescindível que autoridades estaduais e federais adotem medidas complementares a fim de equilibrar as receitas municipais e prestar assistência técnica aos municípios.

xviii. Políticas que visem fortalecer o desempenho das escolas particulares são igualmente importantes para melhorar a qualidade do ensino médio. A rede privada, especialmente de 2º grau, é responsável por uma grande parcela de matrículas e, conforme demonstram os resultados dos testes padronizados, muitas dessas escolas tem uma relação custo/benefício bem acima da média da maioria das escolas públicas do país. O Governo deve desenvolver a sua capacidade de monitorar a qualidade de ensino da rede privada ao invés de controlar, de forma contraprodutiva, o preço das mensalidades. Tais políticas incluiriam: a revisão periódica das licenças de funcionamento, mediante avaliação estrita de todos os aspectos vinculados ao desempenho da escola; a participação sistemática dos alunos em testes de avaliação do rendimento aplicados por funcionários da rede oficial de ensino (e o envio dos resultados aos pais e às escolas); e, a publicação periódica de relatórios sobre o desempenho dos colégios particulares credenciados.

xix. O Capítulo IV examina a desigualdade existente na alocação de recursos para as diferentes escolas. Cerca de 20% do total de recursos do sistema educacional de 2º grau são destinados às federais que contam com apenas 3% dos alunos matriculados na rede oficial de ensino. Outros 2% desses recursos vão para as escolas secundárias do SENAI, que possui apenas 0,4% dos alunos de nível secundário. Estes estudantes não pagam mensalidades e o custo anual por estudante eleva-se a US\$1.800. O nível sócio-econômico dos alunos que freqüentam essas onerosas escolas é consideravelmente mais alto do que o dos alunos das escolas estaduais e municipais.

xx. Neste relatório são apresentadas propostas para contrabalançar os altos custos dessa formação técnica, a saber, a elevação do número de alunos em ritmo mais acelerado do que a ampliação das instalações físicas e a vinculação das escolas a empresas, a fim de reduzir os custos com equipamentos. Também são recomendadas políticas que favoreçam o maior acesso de estudantes de baixa renda às escolas técnicas federais e escolas secundárias do SENAI, tais como as já sendo implementadas pelo Ministério da Educação e pelo próprio SENAI. Mediante a introdução de medidas corretivas, é possível adotar políticas que visem facilitar o acesso de estudantes de baixa renda a essas escolas. A longo prazo, talvez seja possível reduzir a importância conferida por essas escolas ao treinamento industrial com base no manejo de equipamentos, que torna muito elevado o custo da formação, visto que seu maior atrativo é a alta qualidade do ensino e a ênfase no estudo de matérias como ciências e matemática, e que a maioria dos formandos irá, posteriormente, para a universidade.

xxi. O Capítulo IV analisa ainda as distorções no financiamento dos cursos profissionalizantes. Os orçamentos do SENAI e SENAC em 1987 equivaliam aproximadamente ao total de recursos alocados para os setores estadual e municipal de ensino secundário. SENAI e SENAC são financiados quase exclusivamente por imposto sobre a folha de pagamento das empresas, que não obriga os usuários do

treinamento a arcarem com os custos. Grandes ineficiências podem surgir num sistema, tais como: i) os usuários não veem tanto incentivo em fazer bom uso das competências técnico-profissionais adquiridas; ii) os empregadores não são incentivados a procurar a opção mais eficiente para o treinamento de seus empregados (por exemplo, usando escolas particulares em vez de centros do SENAI ou SENAC); e iii) os empregadores veem incentivos a sobre-utilizar trabalhadores que requerem formação de custo elevado que requerem formação de custo elevado. Todos esses problemas são agravados num sistema institucional de formação industrial com ênfase no manejo de equipamentos, tal como o fornecido pelo SENAI, devido ao elevado custo dos equipamentos industriais e à constante necessidade de investimento na atualização dos mesmos. A substituição de parte do imposto sobre a folha de pagamento por um sistema de pagamento pelos serviços de formação, no qual os custos seriam compartilhados por empregador e trabalhador proporcionalmente ao cargo ocupado por este último junto à empresa, poderia reduzir substancialmente esses problemas.

xxii. O Capítulo V avalia os possíveis progressos do ensino nesta década. Em vez de se igualar ao de outros países, as taxas de matrículas no 2º grau brasileiro mantem-se inalterado durante toda a década de 80. Entre 1980-87, as matrículas aumentaram apenas 2% ao ano, percentual igual à taxa de crescimento da população com idade para cursar o 2º grau. Caso o nível das matrículas permaneça o mesmo, o Brasil só será capaz de atingir 50% de participação no 2º grau no ano 2010. O maior obstáculo a um rápido crescimento das inscrições no nível médio é o reduzido número de estudantes que conclui o ciclo primário. A menos que se verifique algum progresso com relação aos taxas índices extraordinariamente elevados de repetência e evasão no 1º grau, é improvável que durante a próxima década o crescimento das matrículas no 2º grau seja maior que 2,5% anuais.

xxiii. Mesmo esse crescimento de 2,5% ao ano pode acarretar importantes implicações para as finanças públicas do país. Se, após 1990, todas as novas matrículas se concentrarem nas escolas técnicas federais, as despesas públicas com ensino secundária ao aumentarão cerca de 20% ao ano em termos reais, comparados com 3,5% - caso a distribuição atual das matrículas permaneça mais ou menos constante. Por outro lado, devido ao maior grau de eficiência interna das escolas federais, se tal concentração viesse a ocorrer, haveria um crescimento de 20% no número de formandos até ao ano 2000. Infelizmente, as vantagens desse benefício são superadas pelo fato de que, em termos reais, o total dos gastos públicos com o ensino secundário dobraria: a atual situação fiscal do Brasil não pode suportar aumentos dessa magnitude.

xxiv. As projeções contidas no Capítulo V também assinalam as possíveis contribuições do setor privado. Um crescimento mais rápido das matrículas nas escolas particulares em comparação aos escolas públicas -- como ocorreu na década de 70 e entre 1986-88 -- acarretaria substancial economia de recursos para a rede oficial e resultaria num maior número de formandos. Políticas que estimulem a expansão das escolas privadas de 2º grau, evitando o controle de preços das mensalidades, melhorando a supervisão do desempenho dos colégios e fornecendo informações mais precisas a estudantes e pais de alunos poderiam ser importantes para o Brasil.

xxv. Para concluir, o Capítulo V levanta quatro questões prioritárias para o ensino secundário na década de 90: i) aprimorar a qualidade e eficiência das escolas públicas; ii) fortalecer o desempenho das escolas particulares e estimular maior concorrência com a rede oficial de ensino; iii) aprimorar a eficiência da formação profissional e contrabalançar os elevados custos do ensino técnico; e iv) desenvolver atividades que estimulem a eficiência administrativa das autoridades federais, estaduais e municipais do ensino.

xxvi. Implícita em todas essas opções de política está um maior autonomia das unidades escolares, e também um novo papel para os governos, focalizado nos processos de credenciamento, supervisão e avaliação de desempenho das escolas, bem como assistência técnica e mediação financeira. Esse novo papel colocaria menos ênfase nos questões administrativas cotidianas das escolas, os quais seriam passadas às unidades escolares.

xxvii. Em 1988, o amplo debate nacional envolvendo a elaboração da nova Constituição incluiu várias discussões sobre aspectos do sistema educacional. Até certo ponto, o 2º grau foi o "primo pobre" da educação brasileira nessas discussões. Não obstante intensos debates sobre profundas mudanças organizacionais e financeiras no âmbito do SENAI e do SENAC, mudanças essas que posteriormente foram rejeitadas, a questão central sobre a adequação futura da formação técnica, profissional e do ensino secundário propedeutico permaneceu quase intocada. Também não foram debatidos os problemas da qualidade do 2º grau estadual, nem os meios para solucioná-los. A associação de escolas particulares provou ser um lobby efetivo ao lograr incluir certas disposições que, segundo seus membros, limitarão o papel do Governo no controle dos preços das mensalidades da rede privada. Esse objetivo foi alcançado sem que existisse, contudo, um consenso nacional sobre a questão mais ampla do papel do setor privado no ensino secundário -- ou primário, ou terciário. Este relatório levanta algumas das principais problemas do ensino secundário e consolida dados que podem ajudar a análise de políticas alternativas. A crise atual do ensino do 2º grau no Brasil demanda a atenção da sociedade brasileira.

ESQUEMA DAS DIRETRIZES POLÍTICAS RECOMENDADAS

OBJETIVOS	MEDIDAS IMEDIATAS	MEDIDAS DE LONGO PRAZO
1. Aprimorar a Qualidade do Ensino Médio Estadual.	<ul style="list-style-type: none">- Efetuar testes padronizados de avaliação para os estudantes como forma de avaliar objetivamente o desempenho (e o sistema pedagógico) das escolas.- Aprimorar os currículos básicos, aumentando a quantidade de horas de instrução de matérias essenciais (Português, Matemática, Ciências, História).- Transformar as escolas técnicas estaduais em centros de excelência que enfatizem ciências e matemática, reduzindo, assim, a necessidade de equipamentos caros.- Desenvolver atividades de assistência técnica a nível estadual a fim de identificar as escolas deficientes e auxiliá-las no aprimoramento de seu desempenho.	<ul style="list-style-type: none">- Profissionalizar o processo de seleção dos diretores das escolas, bem como suas funções de controle de pessoal e de recursos financeiros.- Introduzir um sistema de incentivos que leve em consideração o desempenho das escolas (vincular, gradualmente, as avaliações dos diretores e professores a um sistema de bonificação à medida que a escola atingir seus objetivos).
2. Fortalecer o Desempenho das Escolas Particulares.	<ul style="list-style-type: none">- Revisar periodicamente o credenciamento das escolas particulares.- Publicar um relatório anual sobre o desempenho das escolas particulares.	<ul style="list-style-type: none">- Incluir os alunos das escolas particulares nos testes padronizados de avaliação.
3. Aprimorar a Qualidade da Formação Profissional de Rede Pública.	<ul style="list-style-type: none">- Incluir os alunos das escolas secundárias do SENAI nos testes padronizados de avaliação.- Reduzir a parcela da taxa de contribuição previdenciária correspondente ao SENAI e ao SENAC a um nível que acorde com seus gastos atuais de prestação de serviços de formação.	<ul style="list-style-type: none">- Buscar meios para reduzir os custos com equipamentos e manutenção, criando programas de utilização compartilhada de equipamentos com indústrias locais.

OBJETIVOS	MEDIDAS IMEDIATAS	MEDIDAS DE LONGO PRAZO
4. Racionalizar a Rede e Aumentar a Eqüidade do Acesso nas Escolas Técnicas Federais.	<ul style="list-style-type: none">- Continuar a implementação do atual programa de racionalização da rede, fechar escolas com capacidade ociosa e acrescentar turnos nas escolas mais freqüentadas. - Elevar as matriculas em ritmo mais acelerado do que a ampliação das instalações físicas, a fim de reduzir os custos por aluno. - Atrair um maior número de estudantes de baixa renda e, sempre que necessário, oferecer-lhes curso de apoio.	<ul style="list-style-type: none">- Buscar meios para reduzir os custos com equipamentos e manutenção, criando programas de utilização compartilhada de equipamentos com indústrias locais.
5. Desenvolver Atividades que Estimulem Maior Eficiência Administrativa.	<ul style="list-style-type: none">- Fortalecer a capacidade das Secretarias Estaduais de Educação para que elas possam: (a) elaborar, administrar e analisar, no mínimo a cada dois anos, testes padronizados de avaliação dos alunos das redes privada e oficial de ensino; (b) avaliar e elaborar currículos, formular e implementar programas de formação de professores em seus locais de trabalho e outros serviços de apoio; (c) supervisionar e credenciar escolas particulares; e (d) tornar as escolas unidades orçamentárias e vincular dotações de recursos a resultados (rendimento escolar e outros).	

I. CHANGING EDUCATIONAL NEEDS OF THE BRAZILIAN ECONOMY

A. Brazilian Educational Attainment

1. Brazil has one of the least-educated populations of any middle-income developing country. Among these countries, Brazil is a notable "outlier" both in its educational structure and the educational attainment of its population. In 1980, fully 60% of the Brazilian labor force had either no education or had not completed primary school, whereas in Korea the corresponding percentage was 16% and in Turkey 26%. Within South America, only Bolivia has a higher share of the labor force with no education than Brazil. (Psacharopoulos and Arriagada, 1986).

2. Brazil lags seriously in its investments in secondary education, as can be seen from Table 1.1. In 1987, total Brazilian secondary school enrollments represented only 37% of the population aged 16-18 while the average participation rate for countries of Brazil's level of per capita GDP in 1986 was 59% (World Bank, 1989). Countries such as Korea achieve far higher levels of secondary school enrollment: 95% in 1986, and other Latin American countries are also far ahead of Brazil; in Chile, 70% of the secondary school-age population is enrolled, and in Uruguay 71%.

	1965	1986
Brazil	16%	37% (1987)
Korea	35%	95%
Chile	34%	70%
Mexico	17%	55%
Average, Upper Middle-Income Countries ^{b/}	29%	59%

a/ Gross enrollment rates, UNESCO definition: total secondary enrollments as a percentage of the relevant secondary school aged population. In Brazil, most secondary schooling is for three years, so the 16-18 year old population was used.

b/ World Bank definition of upper middle-income countries: per capita GDP between US\$ 1,810 and \$7,410 in 1986.

Source: World Development Report. Brazil data from Ministry of Education.

3. Despite these strikingly low levels of "human capital" formation as conventionally measured,^{1/} the Brazilian economy clearly achieved impressive growth in the decades 1950-1980.

^{1/} Most measures of human capital formation are based on years of formal schooling completed. A limitation of this measure is that usually it does not capture investments in vocational training, which are more important in Brazil than in many other countries. Also, measures based on "years of schooling" do not take into account the effects of schooling quality. Research by Behrman and Birdsall (1983, 1985) suggests that as much as two-thirds of conventionally estimated returns to (years of) schooling may actually be returns to quality.

Recent studies suggest that this growth was associated with an industrialization strategy that emphasized heavy investments in physical capital and, relative to other countries, low investments in education. Thus, although labor productivity grew rapidly from 1960-1980, it appears not to have reflected improvements in the "quality" of the labor force so much as investments in modern capital plant. One indicator of this is that the share of national income going to labor over the period remained low relative to other countries, and the returns to capital -- protected by favorable tax policies -- were high. (Maddison, 1989). Throughout the 1970s, the period of the Brazilian growth "miracle," the average real earnings of industrial employees rose more slowly than the growth of per capita GDP, and real wages for workers at the bottom of the wage scale barely rose at all in real terms.^{2/}

4. A substantial body of international empirical studies and theoretical work suggests that Brazil's past development strategy may not be viable in the future and that low education levels could emerge as an important constraint to Brazil's future growth. Following the work of Denison (1962, 1967), who found that about 40% of the growth of per capita income in the U.S. economy from 1948-73 could be attributed to increases in the education levels of the labor force or advances in knowledge, similar growth accounting studies for a range of countries have found important contributions to aggregate output growth from education. In particular, it appears that education may have a substantial "payoff" at stages in the development process when other development options have been exploited, for example, when economies have achieved a relatively high degree of industrial development (i.e., have moved beyond the phase where capital constraints are most binding.) (Foster, 1989)

5. Indeed, since 1980 the growth of manufacturing output per worker and average wages in manufacturing in Brazil have been strikingly slower than in countries such as Korea and Colombia. This raises at least the possibility that Brazil's relatively limited supply of workers equipped with solid literacy, math and basic science skills is contributing to a slowing of industrial productivity growth and, consequently, stagnation in industrial wages. From 1980 to 1985, gross output per worker fell by almost 25% in Brazil, while increasing in Korea by almost 40% and in Colombia by close to 20%. Over the same period, real earnings per employee in manufacturing increased by about 20% in Korea, 22% in Colombia, and 11% in Chile, while declining in Brazil by 7% (Appendix Tables 1 and 2).^{3/}

6. Education can be an important factor in economic growth even in largely agricultural economies. A study of Malaysia's impressive 4% per year per capita income growth performance from 1961-76, for example, concluded that heavy investments in schooling over the period explained up to 60% of growth. (Smith, 1983). Studies conducted by the World Bank in eighteen countries

^{2/} According to Maddison, p. 103, from 1970-80, the average earnings of industrial employees rose in real terms by 57%, real GDP per capita rose by 78%, and the real minimum wage rose by 5.2%.

^{3/} Of course part of these differences can be attributed to the difficulty Brazil has had in the 1980s in adjusting to the second oil shock and reduced access to foreign borrowing. But some of these adjustment difficulties may themselves be related to the capital-intensive route Brazil chose in the 1960s and 1970s and that route may itself have seemed necessary as a short-cut to "development" in the face of the relatively small size of the educated labor force.

have also demonstrated that education and training had direct impacts on farmers' crop production; in areas where technology was changing (and this is an important delimiter) farmers with four years of education had productivity on average almost 10% higher than uneducated farmers (Jamison and Lau, 1982). Finally, over the past 30 years, close to 100 different studies -- including in Brazil -- of the economic payoff both to individuals and society from investments in education have demonstrated consistently high social as well as private returns (generally over 15% and often over 20%), both in absolute terms and compared to other investments (Annex Table III). These results hold even after downward adjustments are made in line with recent critiques that these estimates fail to consider the impact of individual ability, schooling quality, and other factors not measured.

B. Education Investments and Postwar Economic Growth

7. There are several reasons why Brazil's low average levels of formal schooling may not have emerged as more of a constraint to growth in the past. First, Brazil has pursued a frankly dualistic development strategy, with investment and output growth heavily concentrated in the Southeast. Average education levels in this region have long been higher than the national average -- although still low in comparison with other countries. In 1987 for example, the secondary school participation rate in the Southeast was 46%, as compared to the national average of 37% (Appendix Table 7). Thus, the skilled manpower supply in the region of greatest demand has been greater than is suggested by aggregate statistics. Second, Brazil has given priority to the expansion of university and post-graduate level education before mass primary and secondary-level education was achieved.^{4/} A relatively high level of university graduates, compared to other developing countries, may have helped support Brazil's capital-intensive development strategy. Another way of viewing the Brazilian pattern is that emphasis was given to vertical integration of the education system rather than horizontal expansion, which would have emphasized access to basic education for a larger share of citizens.

8. Third, Brazil has invested heavily in occupational training as an alternative to formal education. Since the 1940s, a sizeable part of Brazil's total public spending on education has been channeled to a network of training institutes for skilled industrial (SENAI) and commercial (SENAC) workers; since 1975, there have also been generous tax incentives for enterprises which carry out in-plant training programs. As compared with the formal secondary school system which graduates 500,000 students per year, SENAI trains over 500,000 and SENAC over 1 million individuals per year and government-subsidized training programs in industry reach an estimated additional 1-2 million individuals per year. There is a very great difference in course length, and coverage, however; a secondary school graduate has completed 2,700 hours of classes over three years, whereas the average SENAI course is 150 hours and the average SENAC course is only 60 hours. Moreover, whereas secondary school students have by definition completed eight years of primary school in Brazil, about half of SENAI and SENAC students have not done so. Nonetheless, De Moura Castro (1979) concluded that at least until the early 1970s, SENAI's relatively short courses for youths with no more than four years of primary schooling were effective in preparing trainees for blue-collar industrial and basic commercial occupations.

^{4/} See De Moura Castro (1986), pp. 104-105.

9. The combined effect of these factors (plus significant immigration of educated workers from Japan and Europe) helped Brazil to avoid serious skills bottlenecks during a rapid process of basic industrialization. Nevertheless, skilled workers were relatively scarce throughout the 1960s and 1970s, as indicated by high private rates of return to both secondary education and vocational training. Estimates of education rates of return for the period since 1980 do not exist, but labor market data suggest that scarcities in high skill categories persist and may be increasing, given the changing structure of the Brazilian economy.

C. Secondary Education and Training in an Evolving Economy

10. The increasing complexity of industrial production processes worldwide is resulting in demand for broader segments of the labor force equipped with strong literacy, numeracy and basic science knowledge than in the past. Brazil is not immune to these trends. Already today, in the cutting-edge industrial firms in Brazil, a lathe operator no longer operates a lathe; he operates a computer controlling the lathe. As the Brazilian economy becomes more technologically sophisticated, more diverse and, most importantly, more open to international competition, manpower needs are changing more rapidly and are increasingly difficult to foresee. This has two major consequences for the labor force and for the education system. First, it suggests that the minimum levels of general education that a worker requires in order to remain flexible and trainable throughout his working life are increasing. Yet in Brazil today, the average urban worker has not completed more than four years of primary school. Without at least a full primary education and -- in most countries -- a secondary education, workers are unlikely to have the knowledge and adaptability required for productivity in a rapidly evolving economy.

11. Second, as the pace of technological change increases it becomes harder and harder to give workers specialized skills training efficiently in an institute setting, rather than on the job. The costs of keeping training facilities up-to-date escalate enormously, and can rapidly drive down the efficiency of skills training. Technological change also reduces the time that a worker can expect to practice a particular craft and earn a return on specialized training. Institute-based training, which served Brazil well during the early, relatively unsophisticated phases of its industrialization process may be far less appropriate for the Brazilian economy of the 1990s and twentieth century. Failure to adjust education and training systems to new economic realities could substantially impede Brazil's future economic evolution.

12. SENAI is currently grappling with these problems. As the agencies are well aware, the quickening pace of technological change is changing the entire cost-benefit structure upon which institute-based training in Brazil was predicated -- and raising the possibility that for manufacturing skills which require hands-on experience with sophisticated equipment, there may be no cost-effective way to provide training outside of an industrial setting, where expensive equipment can earn a return from production as well as training.

13. Table 1.2 shows the changing structure of employment in Brazil over the past several decades. The shift from an agrarian to an industry and services-dominated economy is clear. After 1980, there are also indications of a decline in industrial employment in favor of service sector employment. The rapid growth of knowledge-based industries and white collar and other service occupations in Brazil, as in other countries, poses challenges for education and training systems. Productivity growth in the tertiary sector may depend on workers' general education levels to a much

larger extent than did productivity growth in basic manufacturing. Irrespective of this, economists such as T.W. Schultz have observed that the greatest productivity benefits from education in all sectors of the economy arise from increases in the capacity of individuals to respond to economic incentives and in their capacity to innovate, both of which are arguably associated with increases in the average attainment levels and quality of general education, rather than with specialized occupational training.

	<u>AGRICULTURE</u>	<u>INDUSTRY</u>	<u>SERVICES</u>	<u>TOTAL</u>
Shares of Employment (%)				
1950	59.9	13.7	26.4	100.0
1960	53.7	13.1	33.2	100.0
1968	43.4	18.2	38.4	100.0
1970	44.3	17.9	37.8	100.0
1980	29.3	24.9	45.8	100.0
1985	28.6	22.1	49.3	100.0
Growth in employment (% per annum)				
1950-60	1.7	2.3	5.2	2.84
1960-70	0.7	6.0	4.0	2.70
1970-80	-0.3	7.4	5.9	3.90
1980-85	4.0	2.0	6.0	4.50
Sources: 1950, 1960, 1970, 1980 Censuses; IBGE, Anuario Estatístico 1987/88, pp.104-117.				

14. These trends pose serious challenges for the Brazilian secondary education system, which today is characterized not only by low participation rates, but also by declining academic quality and substantial inefficiency. Meeting this challenge will require development of a strong national consensus in favor of reform of general secondary education, and changes in public policy regarding private education and vocational training. To date, Brazilian secondary education has been marked by frequent changes in policies and, at times, the incoherent pursuit of conflicting objectives. For example, the major reform of secondary education in 1971 resulted in a national decree that all secondary schooling (public or private) should be considered terminal in the sense that all graduating students should have a vocational skill equipping them to join the formal labor force.^{2/} At the same time, however, the federal government was devoting massive resources to expanding the network of federal universities and private universities and faculties were growing even faster. Despite government efforts, the "vocationalization" policy was very unevenly applied. Particularly in the

^{2/} It should be noted that the idea that secondary education should be heavily vocational -- particularly in developing countries -- was very much in vogue at the time among educators worldwide, and was actively promoted in Brazil by external aid agencies such as USAID and the World Bank.

private sector, few secondary schools made significant changes in their curriculum beyond the addition of accounting, teacher training and other low cost "white collar" vocational courses. This was for good reason; many students did not wish to terminate their schooling at the secondary level when the opportunities for university education were growing.

15. In meeting the challenge of reform in secondary education, Brazil has some important advantages. The lack of coherent national policy and the fragmentation of institutional responsibilities has produced a potentially valuable feature of the Brazilian education system -- diversity. As shown in this report, secondary schools in Brazil are characterized by extreme differences in unit costs, efficiency, quality, and equity of access -- ranging from the elite federal technical schools to much lower quality, state-level secondary schools. In formal secondary education, there are federal, state, municipal, and SENAI schools and a large private sector. Many state, municipal and private schools offer technical and vocational specialties as well as the general secondary curriculum. In the training sector, in addition to the publicly-funded SENAI and SENAC, there is a diverse world of private training schools and institutes. This diversity provides rich opportunities for testing and adapting alternatives.

16. These opportunities are not at present being exploited. Alternative approaches (to secondary schooling and to training) are almost never directly compared by policymakers in terms of costs and effectiveness. As a result, administrative inertia rather than coherent national policies tends to guide resource allocation. Although the federal Ministry of Education has notional overall responsibility for secondary education, it does not control vocational training, and it lacks the capacity for evaluation and research that might give it credibility as a coordinating agency of national policy.

17. The important role of the private sector in overall supply -- over 40% of schools and about 33% of formal secondary enrollments are private, and an unknown but significant number of vocational training schools are private -- is a major contributor to this diversity. Far from only serving the elites, a large number of private secondary schools have tuition levels below the average cost of state schools, and enrollment trends indicate that many students who have access to public secondary schools actually choose instead to pay for private schools -- even though the lower costs of those schools would suggest a lower quality education than they could receive for free in a public school. In Sao Paulo state, for example, tuition in late 1987 at 600 private schools monitored by the state education council ranged from US\$ 3/month to over US\$ 500/month. Almost one-quarter of the schools had tuition below US\$ 25 per month, the approximate cost per student of a state school. In the Northeast state of Ceara, the range in early 1988 for 146 schools was only slightly narrower -- from US\$ 5-75 per month and in Parana in late 1988, at 94 private schools, tuition ranged from US\$ 2 to US\$ 73 per month.

18. Government regulation of the private sector in secondary education has been uneven and sometimes contradictory; for over fifteen years (from 1970-1988), the federal government subsidized families with private school enrollees, thereby stimulating demand, but also often held down private school tuition rates below costs, curtailing the growth of supply. In 1984 alone, the fiscal cost of tax deductions claimed for private school tuition (and other costs such as transport) for all levels of education was estimated by the Ministry of Finance as over US\$ 200 million; perhaps \$50 million of this was for secondary education, roughly equal to 10% of total public spending on secondary education that year. Although the elimination of the tuition tax deduction beginning in 1989 was a step in the right direction for equity reasons, there are numerous other ways, examined in

subsequent chapters, in which government regulation of the dynamic private sector in secondary education still fails to advance public objectives.

D. Education and Training Investments: Setting Priorities

19. Considerable research has been done on the returns to education in Brazil (see Box 1). Unfortunately, the results to date do not enable us to address conclusively such key questions as: which is a better investment, technical or general education? or, which is a better investment, vocational training or formal education? The problem is that most available studies rely on census data that provides very limited information about the type of school and or training institute individuals attended. Individuals are classified in census data only by the number of years of formal schooling they ultimately achieved and the last type of school they attended. Thus, it is impossible to tell if individuals in a census sample benefitted from SENAI and SENAC programs, for example. As a result, no study has been able to compare returns to formal schooling directly with returns to vocational training.

20. Nor is it possible to tell whether students who graduated from technical programs at the secondary level and subsequently went on to attend university received any incremental benefit from their technical training. This is an important question given the large number of Brazilian secondary students that are enrolled in technical or vocational "tracks," but subsequently go on to university. Would they ultimately do any better or worse in the labor market if their secondary education had been strictly general college preparation? Given the diversity of schools and types of training available in Brazil, and the differences in cost between general and technical education, these are important limitations of existing rate-of-return studies for policy purposes.

21. Studies of the private returns to education in Brazil during the 1960s do indicate that graduates from both general and technical secondary schools could expect high future earnings, i.e. high private returns to their education. Using 1970 census data, Psacharopoulos estimated the private rate of return to general secondary education to be 25%. (For comparison, his estimate of the private returns to higher education in 1970 was 14%.) His analysis did not allow differentiation of the returns to general versus technical secondary education.

22. Psacharopoulos' updated estimates based on 1980 census data indicated that the private rate of return to secondary education declined over the decade of the 1970s, to 16.4% for students in general secondary programs and 19.8% for students in technical secondary programs. The higher, 19.8%, return does not refer to SENAI and SENAC vocational training. It refers only to students whose last schooling was a full secondary school program with a technical or vocational orientation (which are offered by the federal technical schools, state and private secondary schools, and SENAI's very small network of secondary schools).

23. What do the higher private returns to technical secondary education tell us? Several alternative conclusions are possible. First, due to conditions in the labor market in the 1970s, demand for secondary graduates -- or dropouts -- who had followed a technical or vocational track may really have been higher than the demand for students who took only the general secondary curriculum. A second alternative is that demand for students (or dropouts) from technical tracks might have been higher in part because the quality of technical schools was higher and thus, those students represented all-around better educated individuals. As is documented in this report, the

Box 1: MEASURING EDUCATIONAL (EXTERNAL) EFFICIENCY

Is public expenditure on education providing the right numbers of individuals with the types of education and skills which Brazil requires? This is a basic question that countries ask of their education systems, a concept referred to as external efficiency. Although there are many unmeasurable benefits to individuals and society from education, the most commonly used indicator of how efficiently a given country's education system prepares students for productive roles in the economy is the rate of return to education, calculated on the basis of graduates' earnings.

Education rate-of-return studies ideally estimate both private and social rates-of-return. The private rate of return is the discount rate that would equalize the benefits an individual receives (measured in terms of his or her increase in earnings as a result of each additional year of education) and the direct and indirect costs of the additional schooling. Direct costs are out-of-pocket expenses (tuition, books, fees, transport, etc.). These, however, are generally much less important than the indirect cost of forgone income, or an estimate of what the individual would have earned were he or she not still in school. In practice most private rates of return are measured using a shorthand functional relationship pioneered by Mincer (1974), in which direct costs of education are ignored. This yields a rough, but useful, estimate of the private rate-of-return to incremental years of schooling.

The social rate-of-return is a broader measure, which compares the benefits and costs to society as a whole if individuals attain more years of education. In practice, in addition to the individuals' increased income, social benefits include only such easy-to-measure items as income taxes paid. Research has indicated, however, that there are other important social benefits from education (such as improved citizenship or contributions to the productivity of other workers or, for women, lower fertility and healthier babies) that generally cannot be measured. Thus, social rates-of-return are probably underestimated. The social rate of return also adjusts for the full costs to society of whatever schooling an individual receives. Because publicly provided education is tuition-free in almost every country, social rates of return to education are almost always lower than private returns.

Rate-of-return studies essentially assume that incremental earnings associated with additional schooling occur because education increases the human capital of the individual. This "human capital" approach has been criticized — increases in earnings associated with schooling might occur because employers use education as a screening device to pinpoint more able or disciplined individuals (and not their increased human capital) or because more educated individuals are also those from families with influence to obtain the best jobs.

However, studies which control for students' ability (Boiasiere, Knight, and Sabot) or which measure the impact of schooling on individuals who are self-employed, in order to rule out employer screening (Jamison and Lau), suggest strongly that schooling itself makes people more productive.

Education rate-of-return estimates have now been carried out in a large number of countries and, for some countries, at several different points in time. Despite the crudeness of the measure, three results appear consistently in these studies. First, rates of return for education, typically in the range of 10%-30%, are generally high relative to other types of investment in a given country. Second, the returns to primary of education, which are as high as 20% in many countries, are almost always higher than returns to secondary, vocational and higher education. Third, the gap between private and social rates-of-return is greatest at higher levels of education, with private returns usually greatly exceeding social returns. This suggests that society should concentrate "public" resources on primary and possibly, secondary education, and that higher education should predominantly be financed by the individual students who benefit from it. Finally, as might be expected, education rates of return tend to decline slightly over time as countries expand their educational systems. However, as noted by Psacharopoulos (June 1987), returns to education, particularly in developing countries, continue to be above 10%, which implies that investments in educational expansion are still attractive relative to most alternative investments.

average quality of federal technical schools (which spend six times more per student than general state schools) is unquestionably higher than that of other schools. However, it is impossible to know for certain the extent to which these results reflected returns to schooling at high-cost federal technical or SENAI schools, as opposed to much lower-cost state technical schools or private schools with a technical or vocational track.

24. A third possibility is that technical programs attract, on average, higher aptitude individuals and that this accounts to some extent for their better success in the labor market. There is certainly some evidence that this is true for students at federal technical schools, which (controlling for a range of other individual and school variables) perform consistently better on standardized achievement tests. This is not surprising, given that the federal technical schools select students on the basis of highly competitive entrance exams, which makes it likely that these schools have smarter students to begin with.

25. Finally, it is possible that students in technical secondary programs during the 1970s were more likely than students in general programs to terminate their education at the secondary level rather than go on to university. As a result, the census sample of students from general programs might be an adversely selected one, i.e., only those who did not do very well in secondary school. This could also make the "return" to general secondary schooling appear lower.

26. The real difficulty is that even if it were clear that the higher returns to "technical/vocational" training reflected labor market factors and not individual aptitudes or school quality, the policy implications would be unclear. As this report documents, Brazil has an extremely diverse array of technical/vocational secondary programs, with large differences in per student costs and administration. Which types of program would be the ones to expand? It is impossible, from available rate-of-return studies, to say.

27. Regarding the returns to (non-formal education) vocational training, De Moura Castro's research on SENAI graduates in the early 1970s yielded similarly high estimates of rates of return to SENAI training: 24% (for youths who took SENAI training after four years of primary school), 12% (for youths with eight years of formal schooling), and 23% (for SENAI plus secondary school). Unfortunately, De Moura Castro's research has not been updated, or extended to SENAC. SENAI, and especially SENAC enrollments have expanded even more rapidly than formal education since the early 1970s, and it appears that one factor in the rapid increase in numbers has been a proliferation of shorter-term, lower-cost programs. With slower economic growth in the 1980s and a large increase in trainees, private returns to both general secondary school and vocational training may have fallen somewhat. But for many types of skills they still appear to be high enough to attract fee-paying students to the significant number of private schools and training institutes that exist in Brazil.

28. Despite the difficulty in drawing precise policy conclusions from rate-of-return studies, they do indicate some important overall trends. Existing studies suggest that unless demand for skilled labor has fallen significantly in the 1980s, more investments (which can be privately as well as publicly financed) in education and training make sense from society's point of view. Indeed, for a country with Brazil's low average educational attainment there seems to be little risk of overinvesting in education. But on two critical issues -- the relative benefits of investments in general education vs. vocational training, and the relative benefits of investments in school quality vs. quantity (or expanded access) -- they tell us relatively little.

29. The expansion of vocational training relative to general education that has occurred over the last two decades, and the likelihood that the increasing sophistication of the Brazilian economy will over time increase the demand for graduates with a full secondary school education, raise the possibility that Brazil may now need to increase its emphasis on general secondary school education relative to shorter-term specific skills training for industry and commerce. This follows not so much from quantitative estimates of past and current rates of return as from qualitative observations about the likely evolution of Brazil's economy.

II. SECONDARY AND VOCATIONAL EDUCATION IN BRAZIL: CRITICAL CHARACTERISTICS

30. Critical characteristics of the Brazilian secondary education and vocational training can be summarized in five points. These five points capture much of the information necessary for analysis of policy choices. More detail on several of these points is included in the Annexes.

A. Secondary school enrollments grew rapidly until the recessionary 1980s, but are still very low given Brazil's per capita income. Vocational training enrollments, which are high by international standards, followed a similar pattern of rapid growth in the 1970s and stagnation from 1980-85.

31. Secondary School. Brazil is far behind such countries as Korea, Mexico and Colombia in its rate of secondary school enrollment, with an enrollment rate only slightly above 35%, compared to 73% in the other three countries.^{6/} To some extent, the difference is compensated for by an extensive system of vocational training, but many training students have not completed the full eight years of primary school and most take short (less than one year) courses that are not equivalent to secondary school.

32. Although secondary school participation in Brazil is low by international standards, enrollments grew rapidly from a very small base after 1950, and particularly between 1960 and 1980 (Chart I). In 1960, less than 5% of the 16-18 age group was enrolled in secondary school (about 275,000 students). By 1980, enrollment had grown tenfold to 2.8 million students, or 35% of 15-19 year-olds. The rate of enrollment expansion over these two decades -- about 11% per year -- was faster than for other levels of the education system.^{7/}

33. Underlying the national enrollment rate is some regional variation, but less than might be expected. In 1985, gross enrollments ranged from 25% in the North to 42% in the Southeast (Appendix Table 7). Enrollment growth has been consistently higher in the less developed North,

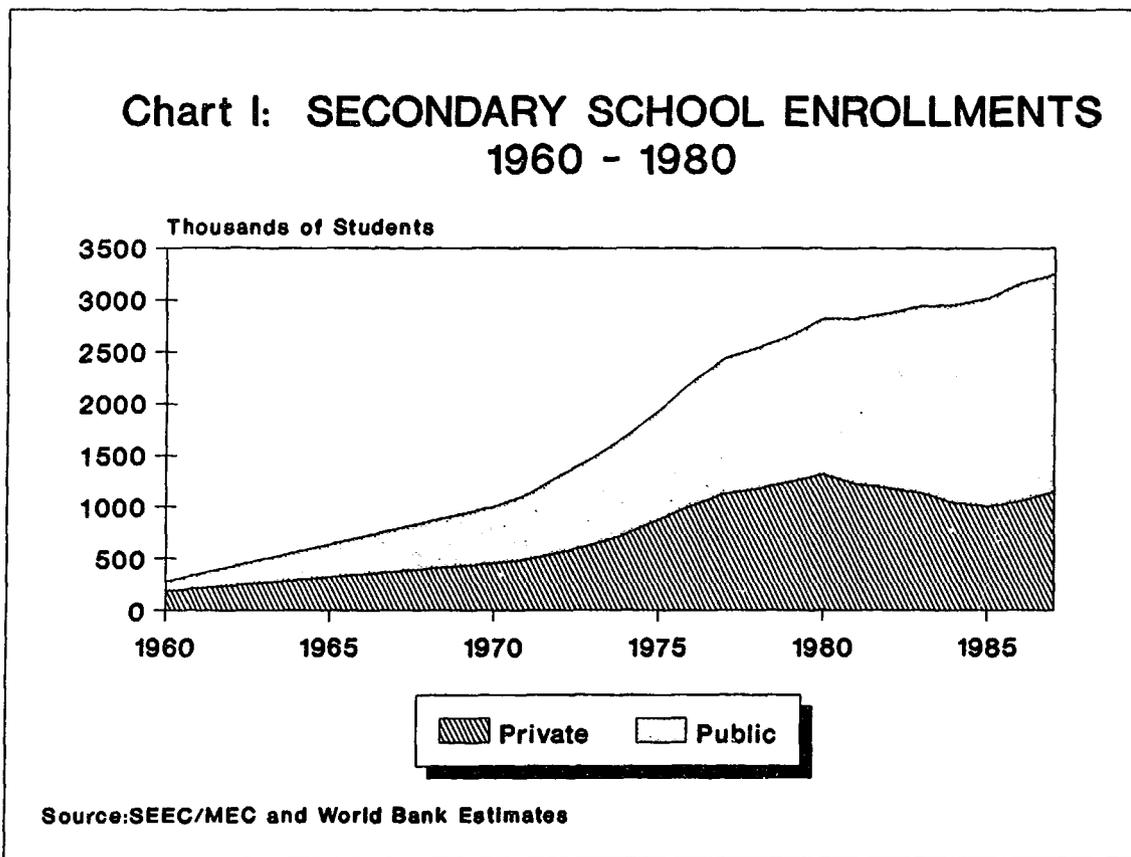
^{6/} Throughout this report, secondary enrollments are discussed on a gross basis because most international education statistics use this measure. The gross enrollment rate is the total number of students enrolled as a share of the population of secondary school age, as defined by a country's education system. In Brazil, the legal age range for secondary school is 15-19, but most programs are only for three years. Therefore, for the purpose of this report, secondary enrollments are compared to the population aged 16-18, and not 15-19.

Net enrollments refer to the students who are in the legal age range. Thus, gross enrollments count overage students and net enrollments do not. The difference in Brazil is significant; as shown in Appendix Table 5, in 1987 the net secondary enrollment rate in Brazil was 25%, as compared to a gross enrollment rate of 37%.

^{7/} In the 1970s, however, higher education (and post-graduate) enrollments expanded at faster rates than secondary enrollments.

Center-West and Northeast regions than in the Southeast and South since the 1960s; in both of the latter regions, enrollments actually declined slightly between 1980 and 1985.

34. In contrast to expansion of 11% per year in the 1960s and 1970s, secondary enrollments nationally stagnated after 1980, increasing by just 1.4% per year between 1980 and 1985. Unofficial estimates indicate some rebound in enrollment growth since 1985, averaging an estimated 3.8% per year from 1985 to 1987. But even this rate of expansion is little barely above the rate of population growth. As a result, over this decade the gross enrollment rate has increased only marginally, from 35% in 1980 to an estimated 37% in 1987.



35. The stagnation in secondary enrollments during the 1980s appears mainly to reflect a stagnation in the throughput of graduates from the primary school system. Rapid growth of secondary schooling until 1980 may be seen as a process of catching up with the production of graduates by the primary school system, which had expanded earlier. In 1960, a relatively small share of primary school graduates went on to secondary school; by 1982, an estimated 75-80% of

primary graduates continued on to secondary school. Since 1980, the number of primary school graduates annually has remained about 850,000-880,000. The share of graduates who go on to secondary schools (the "transition ratio") may be going up; available national enrollment data are inconsistent and inconclusive on this (see Rosemberg, 1989). If the absolute number of primary graduates is not growing, the transition ratio may be expected to increase, particularly if supply constraints are not significant and private returns to secondary schooling have not declined.^{8/} Evidence discussed later in this Chapter suggests that for most parts of the country supply is not constrained and existing public and private schools could expand enrollments faster than they are currently doing.

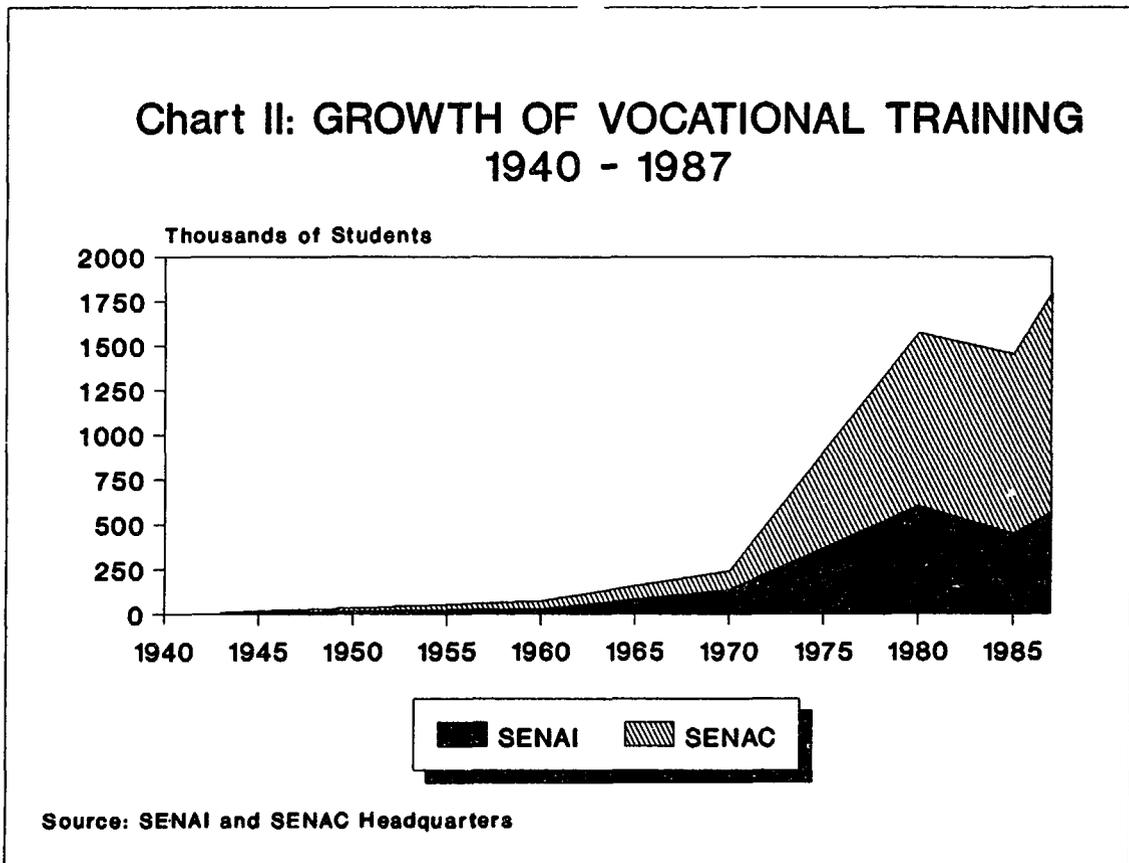
36. Vocational Training. Although it is difficult to compare vocational training enrollment rates across countries due to the heterogeneity of programs and differences in the age span of eligible workers, Brazil has one of the most extensive publicly-financed programs in Latin America, and the region is generally considered to lead the world in institute-based training. The Brazilian system consists of SENAI (Serviço Nacional de Aprendizagem Industrial), which directly trains about 500,000 industrial workers per year; SENAC (Serviço Nacional de Aprendizagem Comercial), which directly trains about 1,000,000 workers in commerce and services each year; and SENAR (Serviço Nacional de Aprendizagem Rural), which trains roughly 200,000 workers per year in a variety of trades applicable in rural areas. There is also an active for-profit private sector in vocational training, although there is no centralized information about it and no available estimates of enrollments in these schools nationally. SENAC researchers have unofficially estimated that enrollments in private commercial skills training schools could be on the order of 30-50% as high as SENAC's.^{9/}

37. As can be seen in Chart II, enrollments in SENAI and SENAC were lower than formal secondary enrollments until 1970. In the 1970s, however, their enrollments exploded, increasing by

8/ One factor almost certainly related to students' decisions regarding whether or not to pursue secondary schooling is age. A basic prediction of human capital theory is that the older an individual is, the less he/she will invest in education and training -- because the opportunity costs of staying in school increase and because the time period over which a return (in the form of higher wages) on incremental education may be collected is reduced. The age range of students in Brazilian secondary schools is extremely dispersed -- with over 30% of all students beyond the legal cutoff-age of 19 -- and there is a significant age difference between those students graduating from primary school who do not go on to secondary school and those who do: according to the PNAD data, the average age of individuals who graduated from primary school in 1981 and were not enrolled in secondary school the following year was 19.2 years old. Primary graduates who did continue on to secondary school were 16.9 years old, on average. Thus, it may be expected that improvements in school quality and other actions to reduce dropout and repetition rates in Brazilian primary schools will affect the probability of students continuing on with secondary schooling, i.e., contribute to an increase in the transition ratio above 80% over time.

9/ Because of the high capital costs of establishing an industrial training school, private vocational schools predominantly offer commercial skills training (secretarial, accounting, computer programming and data processing, beautician, etc.). Thus, they may tend to compete more in SENAC's market than SENAI's. Private industrial vocational schools also exist, however.

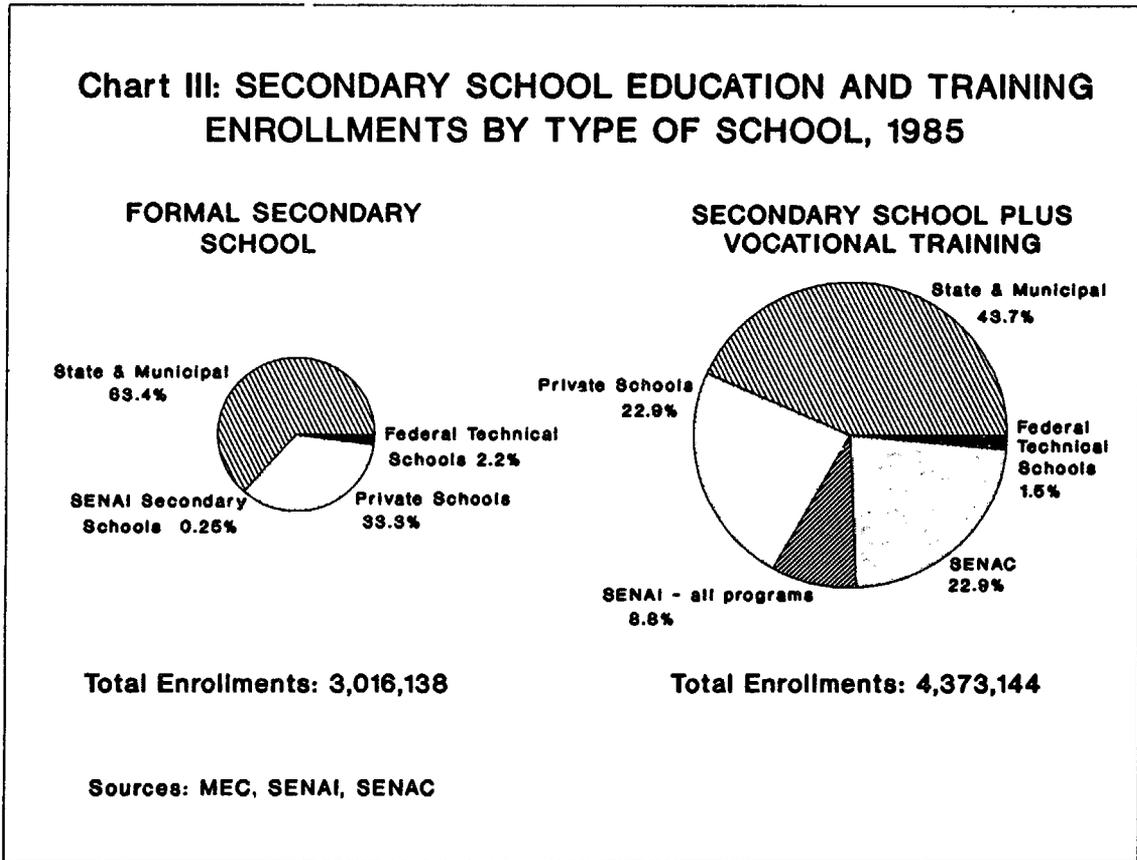
21% per year. One factor behind this enrollment growth was the automatic expansion of SENAI and SENAC budgets (based upon 1% payroll taxes levied on formal sector enterprises) during a period of rapid economic growth. A second important factor was the innovativeness of both agencies in developing a heterogeneous mix of training courses, especially shorter-term training, distance teaching using radio and television, and enterprise-based programs, all of which lowered the average costs of training and permitted increased enrollments.



38. Similar to the formal secondary system, SENAI and SENAC experienced a decline in enrollments from 1980-85. Since 1985, both agencies have expanded at a more rapid rate (11% per year) than formal secondary enrollments. Because SENAI and SENAC budgets are tied to payroll taxes,^{10/} enrollment fluctuations may be supply driven, related to cyclical variations in receipts, more than demand driven. The fact that both agencies generally retain 30% or more of their annual receipts for investments unrelated to training, does give them some flexibility in protecting program size during economic downturns.

^{10/} SENAR's budget is not. SENAR receives its funds from the Ministry of Labor.

39. Whether supply or demand driven in the case of vocational training, it can be concluded that the decline in formal secondary enrollment growth from 1980-85 was not caused by a shift in demand towards vocational training (assuming that there was no expansion in private vocational training enrollments over this period.) The pattern appears to be a broad decline in investments in human capital during the recessionary early 1980s. The faster growth of training enrollments since 1985, however, suggests the possibility of a demand shift towards vocational training. To evaluate this properly however would require more detailed data on student characteristics and annual budgets than SENAI and SENAC make public.



40. Aggregate Spending. Low secondary enrollments are associated with low public spending on this level of education. Brazil's public investment in secondary education is much below that of other Latin American countries. In 1980, the average country in Latin America allocated 25.6% of public education spending to secondary education, while Brazil allocated only 8.4%. In Latin America, only El Salvador spends a smaller proportion of public education funds on secondary education than does Brazil.^{11/}

^{11/} Rojas (1987).

Table 2.1: PUBLIC SECONDARY EDUCATION AND TRAINING EXPENDITURE AND ENROLLMENTS BY TYPE OF SCHOOL, 1985					
	EXPENDITURE		1985 ENROLLMENTS	COST PER STUDENT	
	(billions Cz\$ ^{a/})	(millions US\$ ^{b/})		Cz\$	US\$
SECONDARY EDUCATION					
Federal Technical	4.7	119	67,657	69,328	1,759
Agricultural	1.5	37	13,568	107,886	2,727
Industrial	3.2	82	54,089	59,655	1,516
SENAI Secondary Schools	0.6	14	7,543	73,864	1,880
State/Municipal Schools	18.7	476	1,912,488	9,778	249
State	18.0	458	1,780,155	10,111	257
Municipal	0.7	18	132,333	5,290	136
SUBTOTAL	23.9	609	1,987,688		
VOCATIONAL TRAINING					
SENAI (excluding secondary schools)	3.0	76	378,723	7,863	200
SENAC	2.0	51	1,002,505	1,998	51
SUBTOTAL	5.0	127	1,381,228		
GRAND TOTAL	28.9	736	3,368,916		

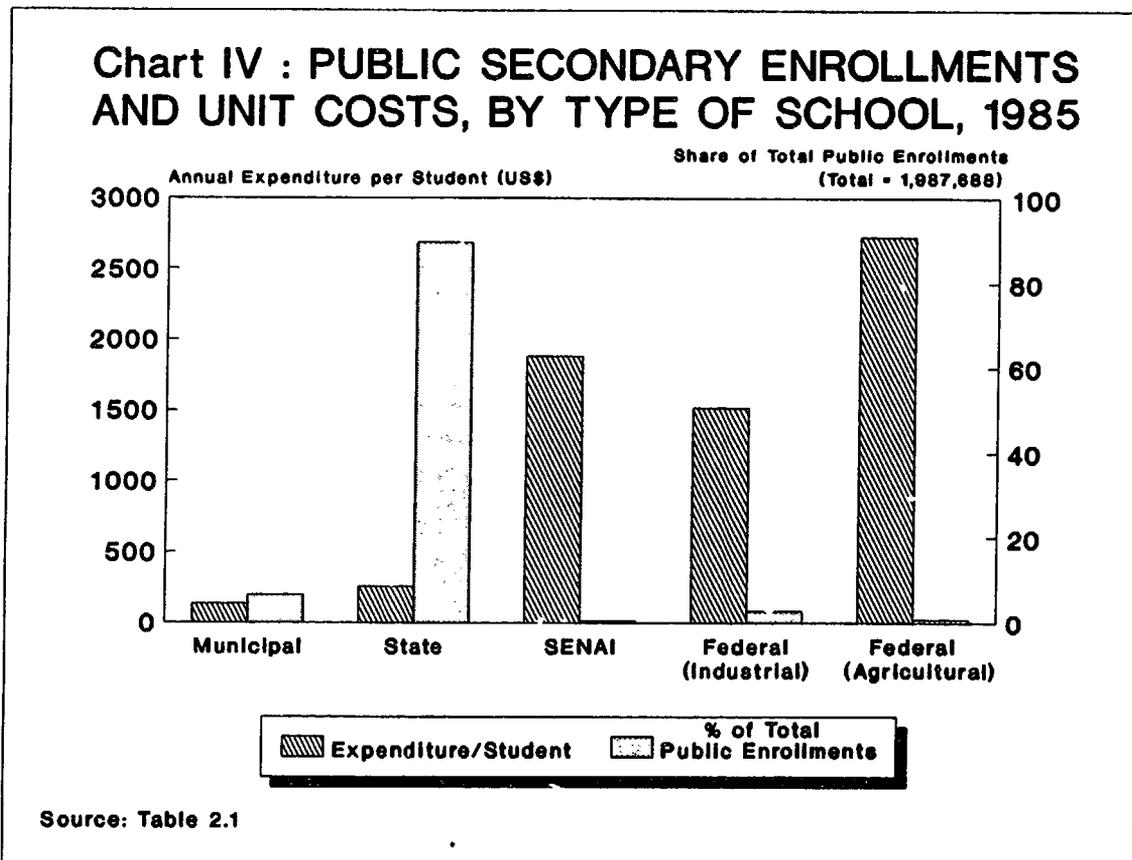
a/ 1985 level of expenditure, converted to 1987 Cruzados.
b/ Converted at average exchange rate for 1987, US\$1.00=Cz\$39.28.
Sources: IPEA, MEC, SENAC, SENAI, World Bank Reports and Appendix Table 20.

41. Low public spending is compensated in part by high enrollments in private schools at the secondary level (currently about one-third of secondary enrollments) and substantial private spending on both tuition and other school-related expenses, such as books, transportation, etc. The total of such private spending is estimated to account for about 45% of all public and private spending on secondary schooling in 1985. Low public spending is also compensated to some extent by public spending on vocational training. In 1985, SENAI and SENAC's estimated actual expenditures on training (US\$ 141 million) were equal to about 23% of total public spending on formal secondary schooling, but this was an exceptionally low year. In 1987 SENAI and SENAC revenues totalled US\$ 555 million, higher than total (1985) state and municipal level spending on formal secondary schooling.^{12/}

^{12/} SENAC's total revenues in 1987 were US\$ 191 million, but the agency spent only US\$ 84 million on training. SENAI's total 1987 revenues were US\$ 364 million, but it did not report actual expenditures. See SENAC, Relatorio Geral 1987 and SENAI, Relatorio Anual do Sistema SENAI 1987.

42. Total public spending on secondary education is unevenly divided between technical education and general education. About 22% of the total goes for technical education, in either federal technical schools or SENAI secondary schools. These schools, however, represent less than 2% of total secondary enrollments and only 3.4% of public secondary enrollments. Within SENAI, the 17 secondary schools represent about 15% of total expenditure, but only 1% of total enrollments. The high costs of a full secondary technical education, ranging from US\$1,500 to US\$ 2,700 per student in 1985, are clear from Table 2.1.

43. Despite the striking growth of public vis-a-vis private secondary enrollments since 1980 (discussed later in this chapter), the government commitment to public secondary education appears weak. Public spending on secondary education increased at the state level from an estimated US\$ 192 per student in 1983 to \$257 per student in 1985, but public spending over the period increased much more for university and postgraduate education. As a result, secondary education's share of total education spending was lower in 1985 (7.9%) than in 1980.^{13/}



^{13/} There is some evidence that Ministry of Education funding of secondary education as a proportion of total education spending has increased slightly since 1986 (Gomes, 1988).

B. Secondary-level education in Brazil is diverse, in terms of course content, administration, and unit costs. Within the public sector, quality is generally poor; the exceptions are the highly select, high cost federal technical schools and SENAI secondary schools.

44. Secondary education is provided by all three levels of government -- federal, state, and municipal. The private sector, with 35% of enrollments in 1987, also plays an important role. Chart IV shows enrollments and unit costs by type of school.

1. State Schools

45. Over 96% of public enrollments and almost two-thirds of total secondary enrollments are in state and municipal schools, hereafter in this report referred to as state schools.^{14/} State schools are open to all students who have completed primary school, operate 180 days per year and 5 hours per day (900 hours of instruction per year). The general secondary program is three years, or 2700 hours of instruction. A small share of students (less than 10%) take technical or occupational programs that require a fourth year of classes. Another 20-30% take courses, such as teacher training and accounting, which commonly include a year of apprenticeship.

46. State schools offer a wide array of different occupationally-oriented programs. All courses, however, lead to a full general secondary degree adequate for college entrance. Students may specialize in primary sector (agricultural), secondary (industrial) and tertiary sector (service) curricula and may do so to differing degrees: habilitacao basica, habilitacao parcial, or habilitacao plena, in ascending order of intensity.^{15/} Nationally, about 37% of students take no specialization, and 12% take habilitacao basica, or the most general type of vocational orientation. Over half of all students, however, take habilitacao parcial or plena. Within the latter categories, the most popular specialties by far are teacher training and accounting, which enroll 20% and 15% of all secondary students, respectively (Baquero and Oliveira, 1987).

47. In most cases occupationally-oriented and general curriculum programs are offered in the same schools and state budgets do not allow disaggregation of their unit costs. Much state-level "training" -- for specialties such as teaching, accounting, clerical assistant, etc. -- involves no machinery or other special supplies. However, a few states maintain a distinct network of specialized technical (industrial and agricultural) schools, although in general these account for less than 10% of total state enrollments. These schools are designed along the lines of the federal technical schools, but conditions at state technical schools are often deplorable. Budget constraints do not permit adequate investments in training equipment and maintenance; machinery is often non-functioning and the equipment that does work is largely obsolete. Teaching personnel are less well paid than teachers in federal technical or SENAI/SENAC schools, and consequently are of lower technical quality.

^{14/} Municipal schools account for 7% of public enrollments and 4% of total enrollments. The problems of municipal schools closely parallel those of state schools, so this section does not treat them separately.

^{15/} Basica programs include little actual skills training. Parcial trains students to the level of assistant technician. Plena includes full occupational training, for example as a dental technician, accountant, or (primary or secondary school) teacher.

Many state technical schools in fact are unable to offer an education very different from that of a general state school.

48. Two-thirds of all secondary school students in state and municipal schools attend school at night, as compared with 56% of all secondary students and 55% of private secondary students. Most night classes are held in schools used for primary school during the day. Most night school teachers are teaching their second or even third shift that day. Although only 36% of secondary students work, over 70% of those who attend night classes are employed. Night school attendance is not confined to students from the lowest-income families in Brazil. According to 1982 PNAD data, students from all but the top income quartile were more likely to study at night than in day programs. (see Appendix Table 11). Night sessions help state (and private) schools lower the marginal costs of expansion, but it appears that the high share of enrollments at night basically reflects student demand.

49. Secondary schools operated by the states and municipalities are mainly financed by state general revenue sources. Federal secondary education transfers to the states represent less than 3% of total state secondary education expenditures (as compared with 16% at the primary level). In 1986, states spent close to 20% of their total budgets on education but only 9% of their education spending on secondary schools.

50. The administration of state secondary schools is highly centralized. All teacher recruitment and assignment decisions are made by the state secretariats. There is no expenditure authority at the level of schools or even regional *delegacias*; supplies are all procured centrally and delivered to the schools. Curriculum design and textbook selection are also handled centrally. Except for recent efforts in a few states such as Parana to involve parent organizations and communities in school maintenance, maintenance is also handled centrally and most states have large backlogs of requests for repairs.

51. Unit costs in state and municipal public schools vary across and within regions,^{16/} but are in general low -- averaging an estimated US\$ 250 per student (for state schools) in 1986. This figure is low even taking into account the sharing of many costs (such as building construction and maintenance) with primary schools.^{17/} Federal transfers favor the Northeast, but have played only a mildly redistributive role at the secondary level.

52. Although variations do exist across states and within state systems, the dominant pattern of state secondary education nationwide is low quality schooling. Weak and disorganized school administrations, sluggish and overblown bureaucracies, low paid and unmotivated teachers and, in

^{16/} There have been no systematic studies of regional variations in per student expenditures at the secondary level, but a 1986 study of primary education sponsored by the Ministry of Education found a tenfold range in direct costs per student between the lowest-spending state (Piaui, with US\$ 33 per student) and the highest-spending state (Rio de Janeiro, with US\$ 306 per student). The average direct expenditure per primary student was US\$ 147. A similar degree of regional variation around the average expenditure per student (US\$ 250) at the secondary level is very likely.

^{17/} In the state of Sao Paulo, for example, of 1,498 schools that offer secondary school classes, all but 162 share facilities with primary schools.

recent years, crippling teacher strikes are common features of the state-level schools. In 1988, the state (primary and secondary) schools of Rio de Janeiro, for example, lost 90 days of the 180 day school year to strikes. Sao Paulo state schools were closed by a teachers' strike for three months in 1989. Strike disruptions, as well as low school quality, contribute importantly to high dropout rates (29% in the first year and 22% in the second) and repetition rates (22% in the first year) in state schools -- and to the dismal statistic that only an estimated 42% of students who begin state secondary schools ever graduates.

53. Twenty years ago state-level secondary schools were of generally high quality and played an important role in the upward social mobility of a significant number of Brazilians. Bright children of middle-income and poor families who managed to complete primary school could be confident of an education comparable to that of good quality private schools. In addition, states such as Sao Paulo maintained larger "magnet" schools, with entrance by competitive examination, which guaranteed graduates strong chances of admission to top universities.

54. The deterioration in state school quality can be traced to a number of specific causes examined in the following chapters. An underlying issue is the trade-off between quantity and quality. Enrollments in state secondary schools since the 1960s have expanded faster than state-level expenditures on secondary education. States responded to the pressure from growing numbers of primary school graduates by rapidly adding new public school classes, commonly using existing primary school buildings to hold secondary school sessions at night. The growth of classes demanded rapid recruitment of new teachers, and the average quality of the public secondary school teaching stock began to decline.^{18/} Over time, growing pressures on state budgets resulted in declining average wages for teachers and contributed to the inability of teacher training schools to attract good students.^{19/}

2. Federal Technical Schools

55. The 23 federal industrial and 37 federal agricultural schools together account for only 3.4% of public secondary students (and 2% of all secondary students) but absorb 20% of total public spending on secondary education. The schools are administered by the Ministry of Education (MEC). They have high quality facilities and unit costs (US\$ 1,500-2,700 per year) close to those of Brazil's top universities. Students are selected by competitive entrance exams. The industrial schools receive on average more than 7 applicants per place; the agricultural schools are considerably less competitive, averaging less than 2 candidates per place.

^{18/} The average formal qualifications of teachers at all levels have increased significantly over the past two decades, however. Part of the reason why secondary school teaching quality has declined appears to be that the rapid expansion of higher level education after 1970 drew many of the best teachers away from secondary schools.

^{19/} Costa Ribeiro (1988) found that education departments had the highest rates of unfilled student "places" (40% unfilled) at leading Brazilian universities in 1988, because insufficient candidates attained the minimum test scores required for acceptance.

56. Particularly at the industrial technical schools, the student body is skewed towards upper income groups -- with approximately 17% of day students coming from families with income above 13 SM and 50% with income of more than 6 SM.^{20/} Only an estimated 9% of federal technical students come from families with income below 2 SM. Those technical schools that operate night shifts, however, appear to reach students from significantly lower-income families.

57. The federal technical schools operate six hours per day, 180-days per year, four year programs. Thus, total course hours for graduation (4,750) are significantly higher than for state secondary schools (2,700). Many federal technical schools operate only one (daytime) shift. The agricultural schools, which tend to be located in the interior of the state, usually board students; this is the main explanation for their higher per student costs. Federal technical schools boast higher rates of graduation (74%) than the average for either private or state schools, and their repetition rates are low.^{21/} Although all of the federal technical schools have shop facilities or agricultural production facilities designed to ensure that students learn practical skills, a large share of graduates in fact go on to university and enter white collar, professional occupations. Only 25% of federal technical school students are female.

58. The federal technical school system was created in the 1960s, with the objective of establishing one school of each type in every state. This objective has been achieved and a few states have more than two federal technical schools. The schools have enjoyed substantial and relatively stable financial support from the federal budget. Teachers are paid on the same scale as professors at federal universities, and their salaries are high relative to salaries at state secondary schools and private schools. They are similar to salary levels for SENAI secondary school teachers. In late 1988, the entry level salary for a federal technical school teacher was Cz 210,000 per month (seven times the minimum wage, about US\$ 280 per month at the prevailing exchange rate), for a forty hour work week, and the average salary was about ten times the minimum wage, or \$400 per month. By comparison, the average salary for a state school teacher was in the range of two-three times the minimum salary (US\$ 80-120 per month); however, this is for a twenty hour week.

59. During the recent constitutional discussions, a proposal to transfer the federal technical schools to the respective states was debated, but finally rejected. Despite their attachment to the central government, the federal technical schools have a surprising degree of operational autonomy. School directors play a significant role in teacher recruitment and control school assignments (although they cannot lay off teachers). Although in principle the federal Ministry is responsible for the design of curriculum, selection of materials and school maintenance, in practice most technical

^{20/} Based upon data from the sample of federal technical students which participated in the 1988 secondary school achievement test. See Appendix Table 34.

^{21/} Interestingly, despite low repetition rates, the percentage of students who are "overage" at federal technical schools -- 74% -- is little different from the percentage at state secondary schools (78%). One explanation given is that sometimes students who have already completed secondary school elsewhere but have not passed the vestibular for the universities they wish to attend, enroll in federal technical schools with the intention of eventually reapplying for university admission.

school directors out of necessity find ways to take care of these directly, given their great distance from Brasilia. Student selection is largely handled at the school level.

3. Federally-financed Vocational Training

60. Each year, approximately 1.6 million individuals complete SENAI and SENAC training programs, as compared with the roughly 550,000 students graduated from Brazilian secondary schools. Although many SENAI and SENAC trainees are adults, the majority falls within the age range of secondary school. These autonomous public training organizations thus represent an important alternative path to formal education for Brazilian youths.

61. SENAI and SENAC are administered by the National Federations of Industry and Commerce, respectively, which are private associations of employers. The agencies' budgets, however, come from a one percent payroll tax on industrial enterprises (in the case of SENAI) and commercial enterprises (in the case of SENAC). Enterprises having more than 500 employees are levied a payroll tax rate of 1.2%. Industrial enterprises can be exempted from the extra 0.2% if a special training agreement is signed with SENAI, and about forty industrial enterprises have been exempted from the entire 1.2% payroll tax because they have special accords which require them to operate their own training institutions.

62. The Ministry of Social Security collects the payroll tax and distributes it to the national headquarters of SENAI and SENAC, which in turn distribute funds to their regional offices, which provide the training. In principle, the Ministry of Labor oversees the training policies of SENAI and SENAC; in practice, the two organizations are very autonomous.

63. Although most SENAI and SENAC courses are relatively short-term (the average SENAI course is 185 hours and the average SENAC course is 60 hours), SENAI operates a network of 17 full secondary schools, which offer a four year technically oriented program. About 1% of SENAI's enrollments nationally are in this "Habilitação Profissional" (HP) program. Total course hours for the HP program are even greater than at the federal technical schools, about 5,600 hours over four years; during the fourth year students work in enterprises as apprentices. Another 8% of SENAI enrollments are in specialized courses for post-secondary students, called "Cursos de Qualificação Profissional" (CQP).

64. SENAI and SENAC have pioneered the development of training programs closely tailored to the manpower needs of individual industries. Their responsiveness to industrial and commercial markets has traditionally been a major factor in their effectiveness in supplying well-trained and easily employable graduates. It is also reflected in the heterogeneous array of training courses they offer, in terms of content, length, and unit costs. As documented in Appendix Tables 15 and 22, in 1985 at SENAI's Sao Paulo branch, costs per student ranged from US\$ 29 for the 80-100 hour "Treinamento Industrial" courses to almost US\$ 7,000 over four years for the 4,300 hour HP program. The great majority of SENAI's enrollments are in short courses aimed at skills upgrading - almost 50% of total enrollments are for short-term training in enterprises -- and 37% of enrollments are in the equally short-term "Treinamento Ocupacional" program (TO), with costs per student of less than US\$ 100.

65. Given the lower capital costs of commercial training, SENAC courses tend to be more uniform in terms of average course length and costs. No information about costs by program is available from SENAC, however.

66. SENAI and SENAC are quite decentralized to the regional branches, which control programming, curriculum, teacher recruitment and firing, administer all funds, conduct research and evaluation, and oversee the quality of all schools. Individual schools have limited autonomy. In general, the regional branches are efficient at handling these functions, and school quality is consistently good. The cost-effectiveness of SENAI and SENAC training has never been evaluated, however.

67. In addition to SENAI and SENAC, the federal government provides tax incentives to private enterprises which provide their own training. Law 6297, passed in 1975, allowed enterprises to deduct up to 8% of their income tax liability for training purposes. Participating firms submit plans to the of the Ministry of Labor for approval. They can then either provide the training themselves or contract with SENAI or SENAC to provide the training. Currently, some 4,200 enterprises participate in the program, training an estimated 1 - 2 million workers per year. As smaller firms generally don't have large enough work forces to benefit from this incentive, most of the beneficiaries have been larger firms. There are no available evaluations of the full costs or effectiveness of the enterprise-based training, however.

4. Costs and Quality

68. There exist large differences in average per student expenditure across different types of public schools. Direct comparisons must be made with care, since course hours vary and some capital costs and administrative overhead may be accounted for differently, but the orders of magnitude shown in Table 2.2 leave little doubt that the typical education a student receives at federal technical schools and SENAI technical schools is qualitatively different from that of a state or municipal secondary school. Average annual per student costs of the technical education offered by the federal government and SENAI are seven to ten times higher than average per student costs of general secondary education provided by states and municipalities. The principal factors explaining these cost differences are the more expensive facilities and equipment of the federal and SENAI technical schools, higher teacher salaries, approximately 15% more instructional hours per year, and lower student-teacher ratios.

69. How do these spending differences affect the quality of education offered? Other than Ministry of Education data on dropout, repetition and graduation rates at different schools, and data on how graduates of different schools do on university entrance examinations, no systematic comparisons of school quality at the secondary school level exist. To provide some partial answers, in November 1988 the Ministry of Education and the World Bank commissioned the Carlos Chagas Foundation to design and administer a standardized test of secondary school achievement in two core subjects, Portuguese and Mathematics. The test was administered to 2,600 third-year secondary students at 66 schools in four states (Ceara, Bahia, Sao Paulo and Parana). The test and results are discussed in Annex I. Table 2.2 shows how average student scores at the different types of schools correlate with per student expenditure differences.

Table 2.2: ANNUAL EXPENDITURE PER STUDENT AT DIFFERENT SCHOOLS, 1985 AND MEAN STUDENT ACHIEVEMENT TEST SCORES, NOVEMBER 1988			
	EXPENDITURE PER STUDENT	AVERAGE TEST SCORES ^{a/} (% correct)	
		PORTUGUESE	MATHEMATICS
FEDERAL TECHNICAL SCHOOLS Industrial	\$1,516		51
State Secondary Schools	\$257		
Day		51	28
Night		41	23
Teacher Training (day)		45	23
SENAI Secondary Schools	\$1,880	48	28
Private Schools ^{b/}	\$525		
Day		58	46
Night		57	49
Teacher Training (night)		49	25

^{a/} Portuguese test consisted of 35 questions; math test consisted of 45 questions.

^{b/} Annual average tuition for 1988, estimated from November 1988 monthly tuition reported by schools and students participating in the achievement test; range was about US\$ 75-770 per year. For comparison, the average annual secondary school tuition reported by households in the 1982 PNAD was US\$ 403; the average of annual tuition reported by private schools to the Sao Paulo state education commission (September 1987) was US\$792 per year; a 1985 research study in Sao Paulo estimated private school unit costs as US\$670-698 per student (Braga and Cyrillo); the average tuition level reported by private schools to the state education council in Ceara was US\$ 396 per year in March 1988, and in Parana (November 1988), US\$ 312 per year. In all cases, the range in private school tuition rates underlying these averages is extremely broad.

Sources: Public school cost data from Table 2.1. Private school costs and student achievement data from MEC/World Bank/Carlos Chagas Foundation Student Achievement tests, 1988. See Appendix Tables 23-39.

70. Except for the SENAI secondary schools, whose students scored lower than would be expected, the schools ranked in terms of student performance in the same order as their per student expenditure. As discussed in Annex I, these rankings did not change when student scores were controlled for students' socioeconomic background (parents' education, father's occupation, and family income), although there were clear differences in students' average socioeconomic status at the different types of schools. Students at SENAI secondary schools had the highest average socioeconomic status, followed closely by students at the federal technical schools. General secondary schools students had lower average socioeconomic levels, and students at teacher training schools had by far the lowest of all. The rankings were consistent in all four states and there was little absolute difference in mean test scores across regions for the same type of school. This may

mean that the differences in per student expenditure that exist across states and regional differences in average private school tuition levels reflect differences in regional price levels more than anything else.

71. Overall, the achievement test results make clear that what kind of secondary school a Brazilian student attends has a great effect on his or her cognitive achievement. There appears to be two reasons why. First, there are significant differences in the average socioeconomic level of students at different types of schools; the data indicate clearly that students from different social classes are "tracked" into different types of secondary schools in Brazil. And, as is found in every country, students of higher socioeconomic status tend to score higher on standardized tests. Interestingly, the Brazil data also implies that lower class students who somehow find themselves in "higher-class" schools perform just as well on standardized tests as their richer classmates.

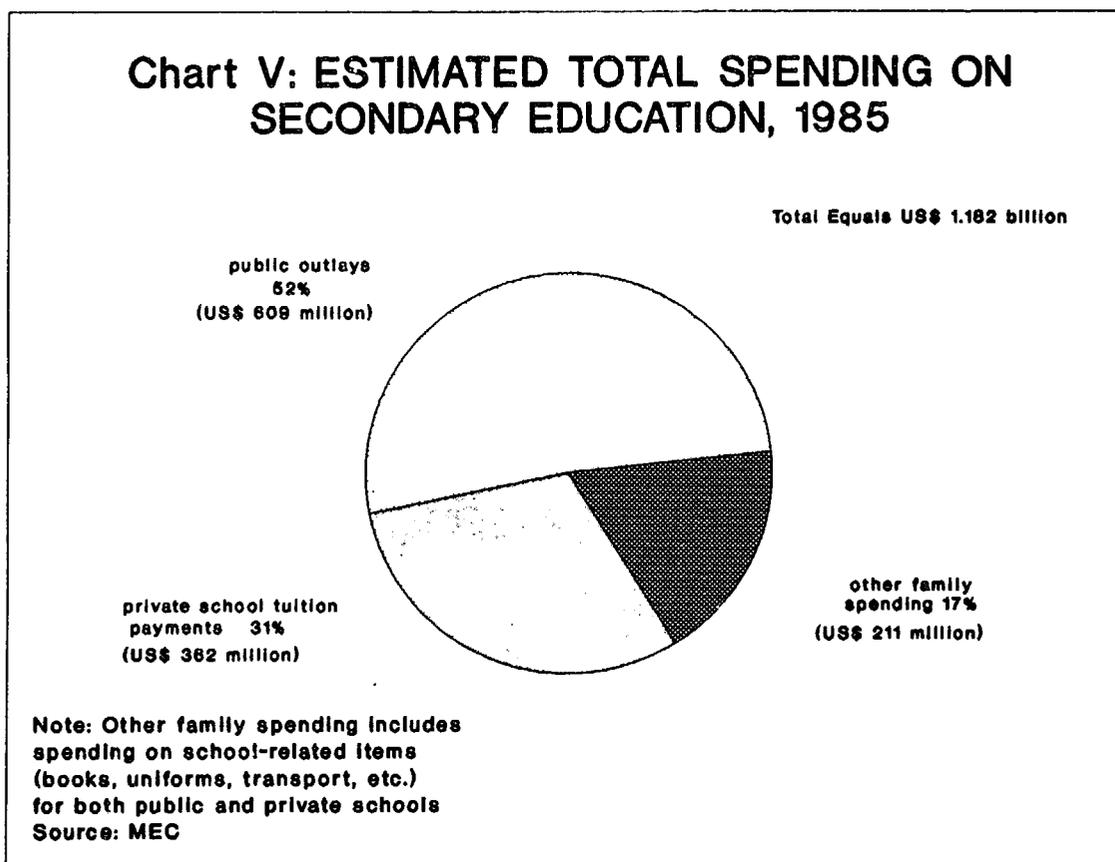
72. Even after student background effects were accounted for, however, there remained significant unexplained differences in student achievement at different types of schools, particularly in mathematics. The test results imply that students of identical socioeconomic background would score at least 50% higher on the mathematics test if they were studying at a federal technical school, rather than a teacher training or SENAI school, and about 20% higher if they were in a private school. The specific reasons behind these schools' higher student scores are not clear, however. Given the fact that federal technical schools and some private schools select their students on the basis of entrance exams, it is likely that differences in students' innate ability are an important underlying factor. Surprisingly, average teacher salary levels did not appear to have a measurable effect on student scores. As was expected, hours of instruction in math and Portuguese did have some effect. These and other test results are discussed in Annex I.

C. A large, diverse private sector serves the poor as well as upper income groups. Demand is income and price elastic and has moved up and down accordingly in the last decade. Most of the demand for private schooling is probably due to the low quality of public schools rather than lack of public school spaces.

73. Private education plays an important role in Brazil. Twelve percent of primary school pupils, 35% of secondary school pupils, and 59% of university pupils are enrolled in private institutions. Private secondary schools enrolled over 1.1 million students in 1987. At 1985 unit costs, the public sector would have had to increase its spending by US\$ 362 million, i.e. almost 60% of total 1985 public secondary education spending, were it to decide to finance all secondary school instruction publicly. Another way of looking at the importance of private secondary education is the following. The secondary education gross enrollment rate was 35% of the 16-18 age group in 1985. Were the supply of private secondary education abruptly to disappear, public secondary schools could only educate 23% of the age group, approximately equal to the level of educational opportunity available in 1973.

74. In addition to formal secondary schools, which are regulated by state governments, a fairly dynamic and almost wholly unregulated sector of private "cursos livres" exists, which enroll large numbers of students of secondary school age seeking instruction in everything from hair cutting to computer programming. The cursos livres most closely tied to secondary education are the "cursinhos"--intensive academic "cram" courses which prepare graduating secondary students to take university entrance examinations ("vestibular"). A survey of students taking the 1987 entrance

examination for universities in the state of Sao Paulo (FUVEST) revealed that 50% of all applicants and 60% of all those accepted took a cursinho; 18.5% of students took a cursinho for over one year. The majority of students who take cursinhos attend public secondary schools; thus, the cursinho can be viewed as remedial secondary education which should be included in total secondary education expenditures. However, there are no data on either the number of students enrolled in such courses nor the average matriculation fees they pay.^{22/}



75. Overall, the private education sector can be accurately described as fairly dynamic and extremely heterogeneous in terms of the quality of instructional services it offers. Although most older private schools were founded originally by religious orders, most of the growth of enrollments since the 1960s has been in private for-profit schools, many of which were initially established as cursinhos and subsequently expanded into full-fledged secondary schools. In addition, in several cities there exist "chains" of for-profit private secondary schools, such as Faculdades Objectivo in Sao Paulo (which has also expanded to offer higher-level education) and GEO in Fortaleza. These

^{22/} In the state of Sao Paulo alone, about 8900 private educational establishments are registered with the Private School Syndicate. Approximately half offer "cursos livres," one-quarter are pre-schools, and the remaining one-quarter offer either primary or secondary education.

"chains," which use aggressive marketing techniques such as radio advertising, apparently benefit from name recognition and possible economies of scale in administration. It is generally agreed, however, that the formal private education market has become increasingly risky over the past decade because of the volatility of student demand and the uncertainty of government policy (particularly with respect to tuition price controls, which have dampened profits).

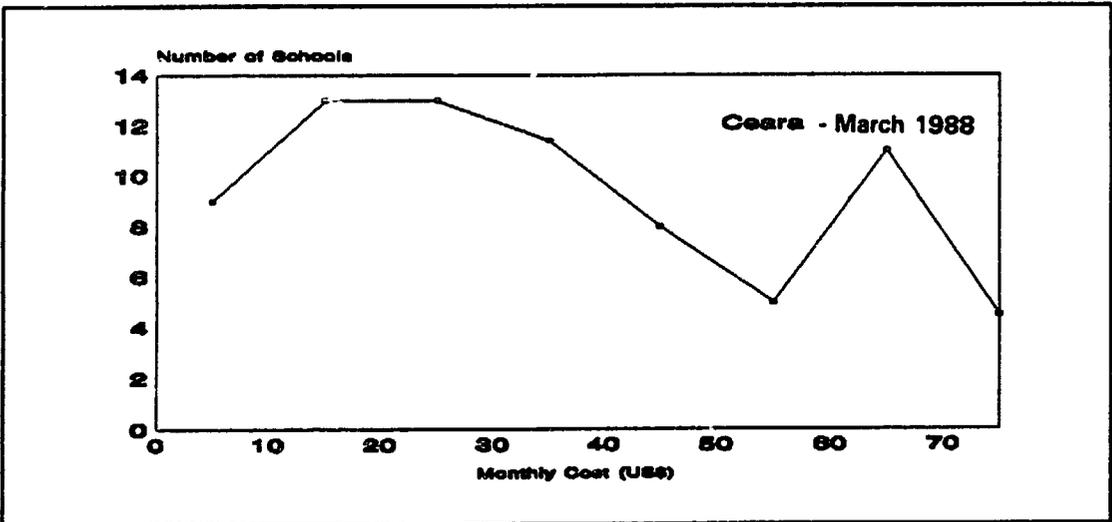
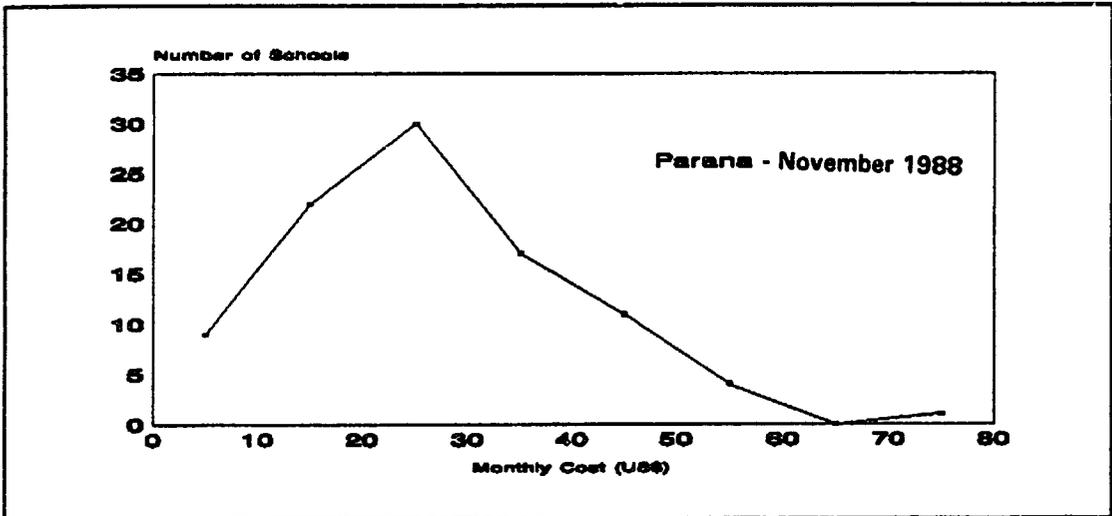
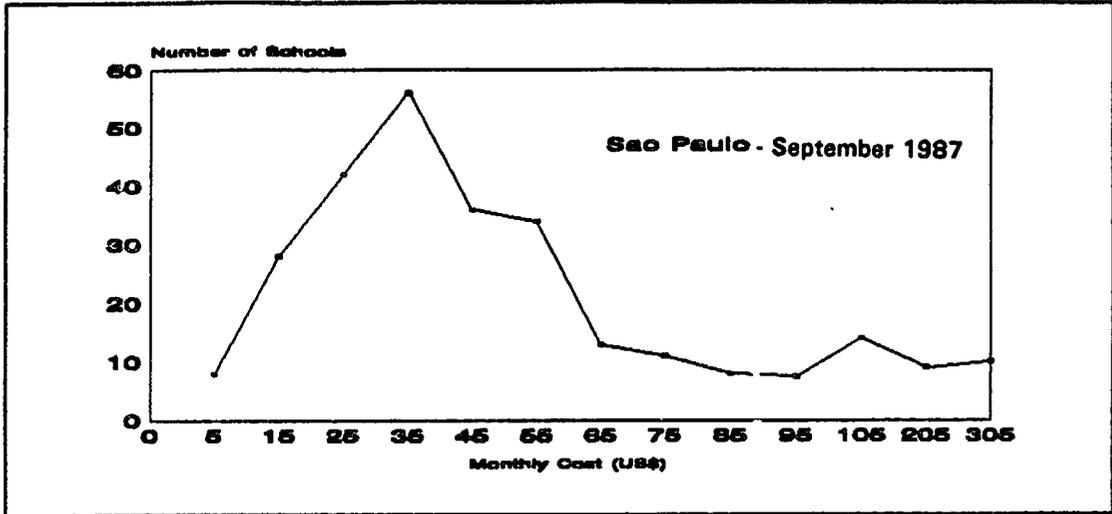
	INCOME QUARTILE				
	FIRST	SECOND	THIRD	FOURTH	TOTAL
Percent of Students Enrolled in Private Secondary Schools	23%	31%	34%	51%	43%
Average Monthly Private Secondary School Tuition Paid in 1982 (US\$)	7.36	12.13	19.07	41.96	33.58
Average per Capita Family Income of Children in Private Secondary Schools in 1982 (US\$)	30.50	46.94	83.52	255.67	193.79
Tuition as a Share of per Capita Family Income	24%	26%	23%	16%	17%
Source: 1982 PNAD. Also see Annex III.					

1. The poor do attend private schools

76. Almost 30% of low-income secondary students attend private schools. As can be seen from Table 2.3, private school participation increases with family income, but a high proportion of students from even the lowest income quartile attend private schools. It is clear that a heterogeneous supply of private schools exists -- with low-cost schools supplying instruction to low income families and high-cost instruction to high income families. As a ratio of per capita family income, the cost of private education does not vary greatly by income quartile, except for the top income group, which spends proportionately less on private schooling.

77. The large number of low-cost schools in the private secondary school market is visible from data provided by the state education councils in Sao Paulo, Parana and Ceara (Chart VI). Although the range in reported tuition levels is enormous -- particularly in Sao Paulo -- in all three states by far the largest number of schools are in the low tuition segment of the market. Unfortunately, no data exist on the distribution of enrollments across schools of different tuition levels. Data from the private schools which participated in the MEC/World Bank student achievement tests suggests that high-tuition private schools may generally be larger than low-tuition schools. Thus, although low-tuition schools clearly dominate the market in terms of number, the distribution of enrollments across the two segments of the private school market may be somewhat more equal.

Chart VI: DISTRIBUTION OF PRIVATE SCHOOLS, BY MONTHLY TUITION LEVELS IN SAO PAULO, PARANA AND CEARA, 1987 AND 1988



Source: Sao Paulo State Education Commission, September 1987; Parana State Education Council, November 1988; Ceara State Education Council, March 1988 (See Statistical Appendix, Table 42).

2. Volatility in recent enrollments

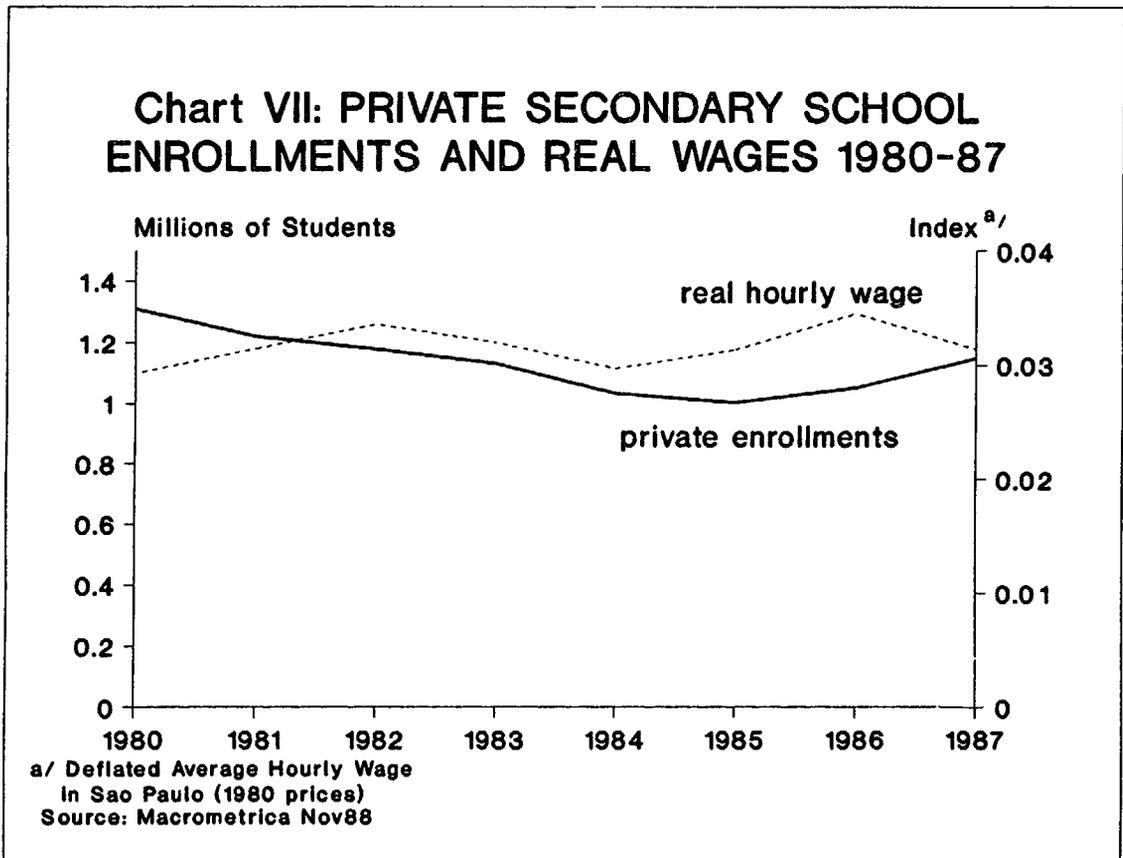
78. In 1960, the secondary school system was largely private, with two-thirds of total enrollments in private, mainly religious, schools. During the 1960s, however, the public sector, particularly at the state level, expanded secondary places more than 19.4% per year, double the rate of enrollment growth in the private sector. By the end of the decade over half (55%) of total secondary school places were in public schools.

79. Public school expansion slowed during the 1970s, to just over 10% per year, and private school enrollments began increasing slightly more rapidly. This change to a large extent reflected a shift in demand towards private schools associated with students' and parents' rejection of the 1971 national "vocationalization" policy which mandated a curriculum emphasis on occupational training in secondary schools. Although legally required in all schools, private schools tended to implement the policy change to a lesser degree. By the end of the 1970s, private schools' share of total secondary enrollments rose slightly to about 48%. Private enrollment growth over the decade remained strong, at 10.9% per year.

80. A striking trend since 1980 has been a sharp increase in the volatility of demand for public versus private schooling. Between 1980 and 1985, there was a 25% decline in private school enrollments and a 33% increase in public school enrollments in a context of stagnating overall enrollments. Over the five years, more than 300,000 students left private schools and public school enrollments increased by more than 400,000. Private enrollments declined in every region.

81. The decline in private enrollments from 1980-85 is attributable to two phenomena: (i) the economic recession that reduced personal incomes and, thus, decreased demand for private secondary education and (ii) increases in the supply of public secondary education. Partial data available for 1985-87 shows a reversal of the trend, with sharp increases in private school enrollments in 1986 (4.7%) and especially in 1987 (9.1%), suggesting a shift of some public school students back to private schools as the Plano Cruzado raised real incomes and government price controls held down private school tuition. Price controls were lifted after 1987, however, and initial data from the state of Sao Paulo for 1988 and 1989 show a shift back in favor of the public schools. Out of a total secondary school enrollment of only 3.2 million students, enrollment shifts of the magnitude experienced during the 1980s -- and the capacity of both the public and private sectors to accommodate them by adjusting supply -- are impressive.

82. National time series data on private school prices do not exist, so it is difficult to evaluate the role of private school tuition changes in the demand volatility since 1980. Government officials suggest that the decline in private school enrollments during the first part of the decade (1980-1982) was associated with a rising trend in private school prices, which increased faster than the increase in real wages. After 1982, as depicted in Chart VII, there is a strong correlation between the changes in private school enrollments and movements in average real wages, with a one year lag. Such a lag might be expected, reflecting students' reluctance to change schools in the middle of an academic year. This data broadly corroborates results of research done in the early 1970s which estimated the income elasticity of family expenditures on education to be relatively high, in the range of 1.3 (in Sao Paulo) to 1.6 (in Rio de Janeiro). (World Bank, 1979, p. 37).



83. Existing data do not permit an analysis of which private schools lost enrollments to public schools during the early 1980s, but it is reasonable to assume that the rate of substitution is highest at the low-tuition segment of the market. Volatility in these schools' enrollments is consistent with a general picture of relatively small, recently established private schools located in the peripheral low-income neighborhoods of large cities, operating mostly at night and with limited administrative overhead. It is likely that the price elasticity of demand is significantly higher in this segment of the market than in the high-tuition segments. Research on the determinants of demand for different types of private schooling (in terms of price) and the quality of low-cost private versus public schooling are of high priority.

3. Are private schools of higher quality?

84. There is a certain amount of evidence suggesting that private schools, on average, are higher in quality than public schools (excluding the federal technical schools). Available evidence includes: pass rates on university entrance examinations, which tend to be higher for graduates of private secondary schools; the fact that graduates of private schools are less likely than public school

students to need to take "cursinhos" to pass the vestibular exams,^{23/} and; the lower average dropout and higher graduation rates of private schools. In 1984, 23.7% of students entering public secondary schools dropped out by year's end; the corresponding number for private secondary schools was 14.4%.

85. As discussed earlier, the results of the secondary school achievement test presented in Table 2.2 corroborate this picture. Even controlling for family income, sex, age, hours of work, the socioeconomic composition of the school, day or night shift, and hours of instruction, among other variables, students in private schools did better than students in state secondary schools and SENAI schools, particularly in math.

86. Underlying such averages, however, are distinct segments of the private secondary school market whose very different tuition levels suggest potentially enormous differences in school quality. It is possible that low-tuition private schools are underrepresented in official enrollment/repetition/dropout statistics, because there is more turnover among these schools and it is more difficult for central administrators to collect information from them. As a result, statistics on the average quality of private schools may be biased upwards.

87. In the high-tuition schools, enrollments are almost certainly driven by students' demand for higher quality and these students are unlikely to consider switching to public schools. Average tuition levels for this segment of the market are well above per student expenditures in state school systems, suggesting that real quality differences exist. Private schools in the achievement test sample, which was skewed towards middle and high-tuition schools, on average had slightly better educated teachers and paid slightly higher salaries -- although not nearly as high as the federal technical schools and SENAI. This sample of private schools also offered 1-2 more hours of Portuguese and math instruction per week.

88. On the other hand, private schools in the sample two other important characteristics not usually associated with higher quality. First, average class size in the private schools was sampled significantly larger than in public schools (whether day or night session) and almost double the size of classes in the federal technical schools and SENAI schools (Appendix Table 35). Second, the private schools also held many secondary sessions at night. Nationally, 55% of private secondary school students attend night shifts. Night sessions appear to be the rule in low-tuition schools, but are common even in the more expensive private schools.

89. In contrast to night session students at public schools, night session students at private schools scored as well as their daytime counterparts on the recent achievement test. Unless there are

^{23/} FUVESP, the organization which administers university entrance examinations for the University of Sao Paulo, reports a pass rate (in 1988) of 9.1% for private school graduates versus 4.4% for municipal secondary school graduates, 5.4% for state secondary school graduates, and 15% for graduates of the federal technical schools. FUVESP also reports that taking a preparatory "cursinho" makes almost no difference in the performance of private school graduates but a large difference in the performance of public school graduates. In 1987, for example, only 3.2% of public school graduates not having a "cursinho" passed the university entrance examination compared with an 8.1% pass rate for those having taken a "cursinho."

systematic differences in the populations attending day and night public schools that do not hold for private school students, this result suggests that private schools do a better job of delivering equivalent quality instruction by day and by night, despite the intrinsic difficulties of running schools at night (i.e., harder to recruit good teachers; greater likelihood that students are tired and have more trouble concentrating; higher security costs; more difficulty assuring maintenance, etc.).

90. What makes students choose low-tuition private schools -- especially if, as in many of these, tuition is lower than the average per student cost of a public school? How can private schools which in fact offer a lower cost education be perceived as being of higher quality? One possibility is that public school supply may be constrained in low-income peripheral urban areas, and that private enrollments here reflect the lack of alternatives more than consumer preferences. There is no systematic evidence on the extent to which localized supply constraints affect private school demand, but the existence of programs such as "Compra de Vagas" in the state of Ceara suggests that it can be a factor.^{24/} Data from the 1982 PNAD also support this. Although nationally only 3% of 1981 primary school graduates who did not continue with secondary school gave "lack of spaces or inexistence of secondary-level courses" as the explanation, 10% of students from the bottom income quartile in urban areas gave this reason. (Appendix Table 58.)

91. Even so, lack of supply appears to be a relatively minor issue compared with perceived differences in quality. Among students taking the 1988 achievement test, only 10% said that they attend private schools because public schools either didn't have space or were too distant; 70% said they were studying in private schools in order to increase their chances of getting in to the top public universities. Moreover, secondary school students are of an age where school proximity need not be defined too strictly. More than 40% of all secondary students work full-time and may travel significant distances from their homes to work. Almost all major cities have a problem of underutilized school capacity in some areas (generally the central city), yet none has a program to encourage students to attend these schools. For example, even a limited transport program in which students are responsible for getting to school, but buses are available to take them home after classes late at night might prove to be cost-effective in terms of rationalizing school building utilization.

92. An important reason for attending low-cost private schools given by students interviewed by the mission in late 1988 was the lower frequency of strikes and resulting longer effective school-year than in the public sector, which is one important measure of differential public/private school quality. Facilities are, if anything, more primitive in many low-cost private schools. Teachers in low-tuition schools probably generally have slightly lower formal qualifications than the average in the public sector, and are generally less experienced. But several private school directors interviewed stressed that their ability to fire teachers who miss classes or are consistently tardy is an advantage that more than compensates for lower average formal qualifications.

^{24/} Under the program, from 1984-1987 the State Education Secretariat of Ceara purchased "places" in private schools on behalf of students who demonstrated that there was no public schools within a defined distance of their home. According to state officials, the program was geared towards students in poor neighborhoods. However, no explicit means test was used. The program was discontinued in 1988.

93. An important area for research is student learning in low-tuition private versus public schools. The number of low-tuition schools included in the achievement test sample is too small for extensive comparisons. One potential issue in such comparisons, however, is a type of selection bias in that systematic motivational differences may exist between students at low-tuition private and public schools. Those low-income students who make the financial sacrifice to attend private schools may do so out of greater commitment to their education, which might *ceteris paribus* be expected to translate into higher attainment. This could be analyzed by research tracking the progress of a sample of public and private school students over the three year secondary program, with what is called a "value-added" approach.

D. Overall, the public secondary school system is highly inequitable: the problem is not access per se but low spending on the great majority of students and high subsidies for a fortunate minority. The fortunate minority come from richer households. Females constitute 58% of total secondary enrollments, but tend to be clustered in low prestige study fields.

94. Access to Formal Secondary Schooling. The secondary school population in Brazil is very select, socioeconomically as well as academically. Close to 90% of Brazilian children at some point enroll in first grade, but by the time they reach secondary school, over 60% of these students have dropped out. As shown in Table 2.4, those who make it to secondary school are predominantly

Table 2.4: INCOME AND ACCESS IN BRAZILIAN SCHOOLING, 1982 (Distribution of Students by Family Income Level) ^{a/}				
	GENERAL POPULATION	PRIMARY	SECONDARY	HIGHER EDUCATION ^{b/}
Less than 1 SM	30.8%	14.2%	2.7%	1.0%
1 - 2 SM	27.8%	23.1%	8.9%	3.5%
2 - 5 SM	26.5%	37.4%	33.9%	20.6%
5 -10 SM	9.0%	16.2%	30.3%	31.1%
Over 10 SM	5.8%	7.7%	23.1%	46.8%
<u>Memo Item</u>				
Total Students Enrolled, 1982		23,563,884	2,874,505	659,500
Notes:				
a/ This table shows the distribution by family income of all students enrolled at each level of education in 1982. Family income refers to total income and is expressed in terms of minimum salaries per month. It should also be noted that family size is not standardized and, although the average Brazilian household size is four, poorer families tend to be larger. Therefore, a distribution based upon income per family member would show even greater inequality.				
b/ Universities and professional institutes ("faculdades isoladas") only.				
Source: 1982 PNAD				

from middle- and upper-income families. However, about 12% of students in 1982 were from low-income families (i.e., below two minimum salaries total family income).

95. Given this high degree of selection prior to secondary school, the variation in student achievement at different types of secondary school is striking, as is the fact that 50% of secondary school entrants never graduate. The PNAD data presented in Table 2.4 imply that secondary dropouts are disproportionately from low-income families. By the time students enter university, only 4.5% come from families with income below two minimum salaries.

96. Fundamental inequities in the pattern of public spending contribute to the likelihood that students from low-income families will drop out and that students from high-income families will complete secondary school and gain admission to the elite and highly subsidized public universities. As seen earlier, there is a wide variation in government spending per student in different types of schools within the public sector. As shown in Table 2.5, the highest government subsidies go to those parts of the secondary school system where students from poor families are underrepresented --- the federal technical schools and SENAI secondary schools. As at the university level in Brazil, the current pattern of public spending grants the largest benefits to those students who need it least.

		PERCENT OF STUDENTS FROM	
		LOW INCOME FAMILIES ^{a/}	HIGH INCOME FAMILIES ^{b/}
Federal Technical Schools Industrial	\$1,516	9%	50%
State Secondary School ^{c/}	\$257	15%	41%
SENAI Secondary Schools ^{a/}	\$1,880	6%	57%
<u>Memo Item</u> (for comparison) Private Schools	(\$525)	7%	71%

a/ Defined as having total family income of up to 2 minimum salaries (Cz\$60,800 per month in November 1988).
b/ Defined as having total family income of over 6 minimum salaries (Cz\$200,800 per month in November 1988).
c/ Estimated average private school tuition, not a public subsidy.

Sources: School cost data from MEC, IPEA, and SENAI. Private school tuition estimate and family income data from 1988 Student Achievement Test, student and school questionnaires. See Appendix Table 34.

97. Access to SENAI Secondary Schools. As in the formal school system, within SENAI per student spending also varies widely across different courses (Appendix Table 22). Students from poor families tend to be concentrated in the lower-cost programs and underrepresented in heavily subsidized programs, such as SENAI's secondary schools and post-secondary program. In fact, as

seen in Table 2.5, the student body at the SENAI secondary schools included in the achievement test sample was more skewed towards the rich than at federal technical schools. SENAI's secondary schools and post-secondary program only represent 9% of SENAI's total enrollments, but almost a quarter of SENAI's total budget, because of the sophistication of the facilities, machinery and teachers used and because they are much longer in duration than the average SENAI course.

98. Access of Females. In general, Brazilian women have benefited from the expansion of education in Brazil; their enrollment shares are now comparable to, or higher than, men's at elementary, secondary, and tertiary schools. At the secondary level, women currently constitute 58% of total enrollments. In the general population, women's average educational attainment is virtually the same as men's (3.2 years of schooling versus 3.3 for men in 1980). Of the well-educated population, with twelve or more years of schooling, 45% is female. Women also make up 55% of the college-going population and 50% of college graduates.

99. Beneath these encouraging overall statistics, however, is clear evidence that male and female students tend to follow divergent educational paths within the formal school system. By the time females reach secondary school, they are substantially less likely than men to enter federal technical schools (where 25% of enrollments are female) or SENAI schools (only 7% of enrollments in the SENAI schools sampled in the achievement test were female), or to do well in mathematics or other "hard" science subjects. Indeed, on the standardized achievement tests performed for this report, being female was a predictor of below-average math performance (see Annex I). Moreover, the percentage of females in a particular school was even more strongly correlated with low math performance. The implication: a female student in a school with a majority of male students or an equal gender balance is capable of performing well in math, but in an environment where she is surrounded by other female students, average math learning declines substantially. Female students tend to follow "soft" educational paths, at the secondary level concentrating in teacher training programs (96% female), general education, and commercial courses (secretarial, bookkeeping, health care worker, etc.)

100. While overall female participation in higher education is approximately the same as males, significant differences persist across fields of specialization. Ribeiro and Klein (1982) found a strong positive correlation between performance on the university entrance examinations, prestige of careers, and masculine gender; low prestige careers were dominated by females, whose achievement means were lower than those of the males concentrated in high prestige careers. Women composed 80-100% of candidates selected into education, letters, library science, tourism, social service, nursing, nutrition, and psychology; men composed 80-100% of candidates selected into fields such as engineering, agronomy, geology. However, a few high prestige fields appeared gender-balanced, notably medicine, architecture, and dentistry.

101. Most researchers of this issue in Brazil agree that the Brazilian socialization process assigns different educational paths to males and females. (Saliba, 1989). Consequently, although women are not legally denied access to any type of schooling, they tend to segregate themselves in certain fields. Their academic choices prepare them for a variety of nonspecialized jobs, which do not pay as much as specialized technical jobs.

102. One way of trying to encourage young women to broaden their educational choices would be early interventions to try to develop girls' interest in quantitative fields, by identifying

promising students and establishing incentives such as special awards and programs to encourage these girls before gender socialization processes take hold. In Brazil, this could be linked to special recruitment efforts by the federal technical schools and SENAI schools to attract more female students.

E. Overall, public policy for secondary education in Brazil lacks strategic vision and coherence. At the federal level, planning, evaluation, quality enhancement and technical assistance are neglected. At the state level, systems are overcentralized, and regulation of the private sector has traditionally emphasized price control rather than quality control and consumer information.

103. General Issues. Secondary education in Brazil continues to suffer from a lack of consensus about what the role of this level should be. Although the government in the early 1980s rescinded its earlier policy that secondary-level education should be strictly terminal and vocational, a significant share of total public spending continues to go to technical and vocational school systems. More important, the continued importance of these programs in overall spending reflects funding inertia rather than periodic assessment of national priorities.

104. Issues at the Federal Level. Most of the resources for secondary education at the federal level are channeled to direct administration of the federal technical schools rather than strategic functions of planning, curriculum development, evaluation, and technical assistance and financial intermediation focused on raising the average quality of secondary education nationally. Statistic collection and analysis functions are also weak and appear to have declined significantly in recent years; for example, national enrollment statistics have not been published past 1987. The Ministry of Education does have a research tradition through its agency INEP, but studies are generally limited by the lack of objective output measures, such as standardized achievement tests, and limited cost analysis. Given the low quality of many state and municipal school systems, there is clearly an important role for the federal government to play in providing technical and financial assistance to those areas most in need. At present, however, the Ministry has neither the financial nor human resources to play such a role, particularly with respect to secondary education. (MEC does play a much stronger planning, coordination, and financial redistribution role at the primary level.)

105. The federal technical schools today are among Brazil's best. Their quality can be traced to the level of resources they command, the caliber of students they attract, and their organization and management. However, decisions to expand this network have been taken without evaluation of where, in the overall secondary education system, incremental investments would be most cost-effective. Because they are handled by different levels of government, federal technical school and state school budgets are never perceived as alternative routes to the achievement of broader national goals at the secondary level. A national policy framework could help overcome what is largely bureaucratic inertia.

106. Finally, there are no formal channels for lessons that might be learned from the successful experience of the federal technical schools to be transmitted and adapted by state and municipal school systems. States cannot afford to copy the funding levels of the federal technical schools. But other important characteristics of the federal schools, particularly their decentralized organization and relatively autonomous management, might be adaptable to the state level.

107. Issues at the State Level. State governments, overwhelmed with the problems of basic education, do not spend enough on secondary education -- whether on direct instructional costs, capital investments and maintenance, or administrative functions, such as curriculum design, evaluation, and in-service teacher training. Budgets are low, and what is spent is not spent efficiently. State school systems have cumbersome administrations, overcentralized control systems and an excessive number of trained teaching personnel working in purely administrative functions for which they are over-qualified. Most importantly, there is no systematic capacity for evaluating the performance of individual schools and no incentives for schools to improve their performance.

108. A large source of waste at the state level in recent years has been the immense cost of prolonged strikes due to teacher salary policies and low teacher morale, which may also to an important degree be related to the poor structure of incentives within state systems. In part, the salary problem in teaching is linked to a generalized problem of public sector salaries in Brazil. But there is also an underlying structural problem. Although average teacher salaries sometimes appear low in comparison with pay levels for other white collar jobs requiring equal years of schooling, this is not always the case (see Box 3, Chapter III). Moreover, it should be recalled that the quality of teacher education may be lower than for other types of education. At the university level, Ribeiro (1988) found that entrants into teacher training programs had among the lowest scores on university entrance exams. Thus, although teachers' level of training on paper may equal that of other professional groups generally used in such comparisons, in fact they may not be equivalently skilled.

109. A second important fact is that most private schools pay teachers no more than public schools, yet private schools appear able to recruit adequate quality teachers, judging from the fact that student achievement in private schools -- controlled for student background -- is apparently higher than in public schools. The differences in student achievement cannot be explained by teacher pay or by qualifications, either; there is very little difference in the average qualifications of public and private school teachers. Indeed, it is very common for teachers to hold down 20-hour/week jobs in public and private schools at the same time.

110. Private school principals interviewed by the mission unanimously suggested that the greatest difference between teachers at public and private secondary schools was not pay, but the greater autonomy and accountability of teachers at private schools. On the one hand, with no job protection private school teachers know that they cannot miss classes or arrive late with impunity. On the other hand, according to principals and teachers interviewed (many of which also work in state and municipal schools) private school teachers appear to have a greater voice in how the school is run and in what goes on in the classroom.

111. The lack of autonomy and accountability at the school level is one of the most striking features of state school systems. It finds a corollary in the sluggishness and inefficiency of administrative processes from school maintenance to procurement of textbooks to the granting of promotions.

112. Issues Regarding the Private Sector. Since 1969, regulation of private schools has been the responsibility of state education councils (CEE--Conselho Estadual de Educação). A year prior to opening, a new private school must register with the council, stating its curriculum, faculty qualifications, and tuition rate, which it is initially free to set. State councils are generally composed of about twenty individuals appointed by the governor; their positions are not full-time, and

permanent council staff is generally no more than a few individuals. In principle, the state councils monitor all private schools and ensure that they comply with all educational requirements and regulations. In practice, they only enforce regulations when confronted with consumer complaints, and in many states even the processing of these is backlogged.

113. Although the federal government has at various points in the past superseded the state councils and imposed tuition price controls, since early 1987 the policy has been price surveillance, exercised by the state councils, rather than controls. This is a positive development which appears justified by several different studies which have concluded that private school markets are quite competitive (Braga and Cyrillo, 1985; Paro, 1984) and that even when they existed, government price controls were not always binding.

114. While tuition price controls may not always be constraining, strong arguments can be made for their elimination. At a minimum, the existence of price controls makes it difficult for established schools to follow a strategy of simultaneously raising instructional quality, costs, and tuition charges. By increasing uncertainty regarding future pricing policies, tuition price controls also bring about some reduction in the supply of private secondary education. There is some evidence that the number of private schools declined during the early 1980s as enrollments fell and did not increase again with the upswing in private enrollments after 1986.

115. Aside from tuition charges, private education is not stringently regulated in Brazil, perhaps because it receives so little funding.^{25/} States generally give little or no attention to monitoring school quality or to supplying consumers with information required for better school choices. It is likely that consumers in the high-tuition and low-tuition segments of the private school market have differing needs for government protection, yet states' current policies do not reflect this. For example, high tuition schools are likely to serve relatively well-educated consumers who place a strong emphasis on quality and may be quite willing to pay for it, including the costs of transportation or time required to reach better schools. Students at low-tuition schools may be less flexible as to where they study, because they can ill-afford a longer or more costly commute. For the former set of schools, price controls are likely to be meaningless because schools and consumers will conspire to find non-tuition means of raising school revenues, if a consistent or increased level of quality is desired. Quality indicators, such as published annual achievement test results or other objective information would be helpful to these consumers in finding the best value school.

116. In the low-tuition segments of the market, consumers are likely to have fewer choices and monitoring of school quality by state education authorities is arguably more important. The most important thing which states can do to improve the quality of low-tuition private schools is to improve the quality of public schools, as these are the primary source of competition for the low-cost private schools and in essence define the market. But the establishment of annual reviews and ratings of private schools and inclusion of private schools in standardized achievement tests, with dissemination of results to families, can be expected to improve quality at the low end of the market. Less is known about low-tuition private schools than about higher-tuition schools, but most indications are

^{25/} James (1987) notes the correlation across countries between the amount of public funding received by private schools and the amount of public regulation to which they are effectively subjected.

that the former market is also fairly competitive. This argues for more state regulatory emphasis on evaluation and provision of consumer information, and less emphasis on price controls.

III. IMPROVING SCHOOL QUALITY AT REASONABLE COST

117. As seen in Chapter II, Brazilian secondary schools are heterogeneous in administration, curriculum, costs, and perhaps most of all with respect to quality. Within the public sector, a small minority of schools (federal technical) are of generally high quality, but the large majority of schools run by states and municipalities are characterized by low spending per student and low quality. The private sector is diverse in terms of quality, reflected in the wide range of tuitions charged.

118. The overriding problem of secondary education in Brazil is the low quality of the state and municipal schools which 97% of public secondary students attend. The pool of students who make it to secondary school in Brazil is so select that there are likely efficiency, as well as equity losses, if these students do not receive an education adequate to unlock their potential. The low scores of students at state schools on the recent standardized achievement test; high repetition rates at these schools; and, ultimately, the fact that less than 45% of state secondary students ever graduates indicate that this education today is less than adequate. For students who were in the top 40% of the Brazilian primary school system, test scores this low and failure rates this abysmal must be viewed as an indictment of the schools at which they study.

119. The low quality of state secondary education also affects students in private schools. The evidence indicates that the demand for private schooling at the secondary level is quality driven, not access driven. Consumers are seeking levels of quality not available in the public sector. The public schools thus set a quality "floor" which largely defines the minimum levels of quality that private schools -- even the cheapest private schools -- must meet. More powerfully than regulation, raising public school quality over time would affect the type of education received by the 33% of secondary students who attend private schools, particularly those at the low-tuition end of the spectrum.

A. Quality and Cost-Effectiveness

120. What makes the quality of state schools so low?

121. Spending per Student. As Chapter II showed, state and municipal school spending per student is only one-sixth to one-tenth of what federal technical schools and SENAI secondary schools spend, and only about half of what the average private school spends. Resources do matter; the three key "inputs" which govern the learning process are adequate levels of good quality instructional materials, high quality teachers, and adequate instructional time -- all of which can be endangered by inadequate expenditures per student.

122. But there are reasons to believe that average spending levels per student in state and municipal schools are not the binding constraint. First, as Table 3.1 shows, average spending per secondary student in other countries is not so different from average state spending in Brazil. In both Colombia and Chile, moreover, even though the secondary school population is much less selective, secondary school graduation rates are higher. These data must be interpreted with caution (difficulties in estimating the appropriate exchange rates, differences in international price levels, changes in the private sector share of enrollments over time, and inaccuracies in basic enrollment and expenditure

reporting to UNESCO are major sources of problems with such international comparisons); however, they at least raise the possibility that public secondary schools in other countries are doing a more efficient job of education than state schools in Brazil.

**Table 3.1: ESTIMATED AVERAGE PUBLIC SPENDING PER SECONDARY STUDENT
IN SELECTED MIDDLE-INCOME COUNTRIES, 1985**

COUNTRY	PUBLIC CURRENT EXPENDITURE ON SECONDARY EDUCATION ^{a/}	NO. OF PUBLIC STUDENTS ENROLLED ^{b/}	AVERAGE SPENDING PER STUDENT (US\$) ^{c/}
Chile	120,531,100	514,204	\$234
Colombia	291,107,374	1,199,100	\$243
Brazil ^{d/}	609,000,000	1,987,688	\$306
State and Municipal only	476,000,000	1,912,488	\$249

Notes/Sources:
a/ In local currency. Source: UNESCO Statistical Yearbook, 1988.
b/ Estimated, based upon 1985 total secondary enrollments in each country, adjusted for the private sector share of total enrollments in 1975. Source: UNESCO Yearbook for 1985 enrollments, and World Bank, "Financing Education in Developing Countries" Appendix Table 5, for private sector shares.
c/ Converted to US\$ at the average exchange rate for 1985. Source: IMF, International Financial Statistics, 1987
d/ From Table 2.1. Sources: MEC and IPEA.

123. Second, a large body of international research has shown unequivocally that, beyond a basic level of resources, much more important than the level is the effectiveness with which resources are managed. (World Bank, 1989) School system reforms in countless countries focused on improving the availability and quality of inputs alone have failed to improve school effectiveness, because they fail to achieve change in the way those resources are used in the classroom. On the other hand, there are many examples in every country of schools that do a better job of teaching with fewer resources than other schools.

124. Low Spending Effectiveness. The real problem at the state level appears to be the low effectiveness of spending, due to organizational problems and weak management. State schools are less cost-effective than other schools in Brazil -- one measure of which is how much it costs each system to produce a graduate. Because of higher dropout and repetition rates, for every 1,000 students who enter state secondary schools, only 416 ever graduate. For municipal schools the rate is a little better -- 447 out of every 1,000 -- which is striking, given that unit expenditures in municipal schools are only half as high as in state schools.

125. At private schools the flow of students is more efficient; 638 out of every 1,000 students graduate. And at federal technical schools, graduation rates are highest of all; out of every 1,000 entering students, 775 complete three years (for purposes of comparison with the other schools) and 745 go on to complete the four year program.

126. With the use of a simple model, these differential failure, dropout and graduation rates translate into the average number of student-years required for each system to produce one graduate, which should normally take three years. As shown in Table 3.2, it takes six years of instruction for state schools, on average, to graduate one student, as compared with 4.3 years for private schools and 3.9 years (assuming a hypothetical three-year program) at federal technical schools. Obviously, not all of the reasons that students fail or drop out can be blamed on the school system, and even these students probably gain something from their education. But a large share of the excess resources spent per graduate must be considered a waste, and the larger this waste, the more inefficient the system.

127. Thus, although the unit cost of a student-year at a federal technical school is seven times higher than at a state school, the cost per graduate at the federal technical schools is only four times higher. Although the costs per student at private schools are estimated to be twice as high as at state schools, costs per graduate at private schools are less than 50% higher.

Table 3.2: COST PER GRADUATE AT DIFFERENT BRAZILIAN SECONDARY SCHOOLS (in US\$)			
	ANNUAL COST PER STUDENT	STUDENT-YEARS REQUIRED TO GRADUATE ONE COHORT	AVERAGE COST PER GRADUATE
State	\$257	6.04	\$1,553
Municipal	\$136	5.48	\$745
Federal Technical ^{a/}	\$1,759	3.97	\$6,983
Private	\$535	4.29	\$2,295

^{a/} Calculated on the basis of a three year program for purposes of comparison with the other schools. For the actual four year program, 5.24 student-years are required per graduate.
Sources: Cost estimates, Table 2.1; student flows calculated using Zymelman Education Finance Model from dropout and repeater rates for 1985 in MEC/SEEC 1985 Statistical Synopsis of Secondary Education, pp. 147 and 173 (for details see Appendix Table 54).

128. Inadequate resources can be an important cause of inefficiency; if low budgets result in inadequate spending on key inputs such as books, the effectiveness of other inputs such as teachers can be reduced. Inadequate resources can also result in inefficient stop-and-start funding patterns; maintenance, for example, may be deferred until serious deterioration has occurred and ultimately much larger expenditures are required.

129. These patterns indeed exist in state school systems. However, the apparently higher cost-effectiveness of municipal schools, which spend an even lower amount in absolute terms than state schools, suggests that the low efficiency of state schools may be less related to absolute spending shortages than to inefficiencies in the way state monies are used.

130. In short, more money may be necessary to improve the quality of state level education, but it is not sufficient. Without improvements in efficiency and management, there is a substantial risk that more money will not solve anything.

B. Improving Cost-Effectiveness

131. What are the options for improving the cost-effectiveness of state schools? Although there are no quick or easy solutions, different options exist. Three important ones are discussed below. Some of these have been successful in other countries; some, such as school-based management, are already common in Brazil in private schools and to some extent in the federal technical schools.

132. These options represent directions for change, rather than recipes. This list is not exhaustive. Other possibilities exist and should be evaluated by state education secretariats. Ultimately, success in improving school cost-effectiveness will stem from the capacity of different states to evolve their own models. Central to this process are: i) states' capacity to evaluate options, and ii) their ability to experiment with changes gradually and flexibly. Building flexibility into the system is important, as is careful analysis of what works, and why.

a) decentralization and school-based management

133. International education research increasingly points to a handful of interlinked factors as the fundamental characteristics of effective schools: i) good management, ii) an orderly school environment, iii) strong academic emphasis, and iv) dynamic school directors. Decentralization -- in the sense of deconcentration of authority to lower levels of a bureaucracy -- has been called the "key" that can unlock these qualities at the school level. (World Bank, 1989). The ultimate measure of school effectiveness is what goes on in the classroom -- student learning. A decentralized school system holds those closest to the learning process, teachers and director, responsible for it. Conversely, it assures them the decision-making authority they need to operate as effectively as possible given the level of resources available to the school.

134. Decentralization within a public system offers two powerful advantages: first, it introduces competition among schools for their share of overall system resources; if resources are allocated on the basis of school effectiveness, strong incentives for improved performance can be created in a system where previously there were no performance incentives. Second, autonomy at the school level frees up schools to function as an entity, taking initiatives and responsibility for their own performance; this invariably affects directors' and teachers' morale and attacks directly one of the most serious problems that exists today in Brazilian state school systems -- the low morale and frustration of school personnel.

135. A growing body of research (see Box 2, "Are Private Schools More Cost-Effective?") indicates that this condition of autonomy and accountability at the level of the school is, in a world where consumers can choose which school they wish to attend, the fundamental factor that tends to make private schools more cost-effective than public schools.

136. The importance of school-level autonomy is well known in education circles in Brazil; numerous educators interviewed for this report pointed out that private secondary schools commonly employ teachers who also work part-time in the public school system, generally pay them similar salaries, and generally use the same teaching materials. Yet the private schools achieve better results. The reason? Observers agreed that the higher degree of school-level accountability in private schools was the biggest difference. In private schools, teachers who are absent, consistently tardy or ineffective are dismissed. In the public system, because of contractual job security and because the accountability of individuals in a large, centralized system is so diffuse, dismissal is virtually impossible. In private schools, the effectiveness of school directors is constantly being evaluated by parents and students and strong pressures (such as declining enrollments and revenues) can build rapidly if school performance erodes. In the public schools, the diffuseness of responsibility throughout myriad bureaucratic levels leaves central administrators poorly able to evaluate the performance of individual directors, and leaves the latter easily able to find other excuses for low school effectiveness.

137. The challenge is how to achieve school-based management in a state (or large municipal) system, in which financing is centralized, resources are typically procured and delivered from the top down, and personnel are selected and evaluated from the top down. Three major reforms are implied: i) to increase the authority, accountability and control over budgetary and staff resources that school directors have, ii) to increase the technical competence of directors, teachers, and central administration staff, and iii) to improve the capacity of the central administration (and regional branches) to play a complementary, rather than managerial, role -- providing incentives, new inputs, and training in improved techniques to support school effectiveness.

i) decentralizing authority

138. At a minimum, directors which can be held accountable for school effectiveness need to have control over the basic inputs into the learning process: teacher evaluation and discipline, if not recruitment; the organization of instructional time; student feedback, reward and discipline systems; mobilization and use of community contributions in support of the school; and school maintenance. This represents a significant change from the status quo of Brazilian public schools, which generally control no financial resources directly, have very limited, if any, internal accounting capabilities, and have little responsibility for teacher recruitment, promotion or discipline.

ii) improving the professionalism of directors and teachers

139. The director plays a pivotal role in the functioning of effective schools. Unfortunately, the personal and managerial qualities that make directors successful are difficult to define a priori and often hard to recognize ex ante. In most public school systems, the most pragmatic approach may be to select a pool of promising candidates, but to expect that only experience, in-service training programs, and rigorous weeding-out of those who are not effective, will help establish over time a network of skilled school directors throughout the system. A corollary to this might be that formal

BOX 2: - "ARE PRIVATE SCHOOLS MORE COST-EFFECTIVE?"

A growing body of research in other countries indicates that, dollar for dollar, private schools do a more effective job of educating students than do public schools. One recent study found that students from private secondary schools in Thailand, Colombia, Tanzania and the Philippines generally outperform public schools students on standardized language and math achievement tests (Jimenez, Lockheed and Paqueo, 1988).

In the Philippines, for example, private school students scored about 15% higher than public school students in both English and Filipino, although they scored slightly lower (about 4%) than public schools students in math. Earlier research in the United States (Coleman, Kilgore and Hoffer, 1982) concluded that private (Catholic) schools were more effective than public schools in imparting cognitive achievement. Although most studies have found that the average socioeconomic background of students in private schools was higher than in public schools, the superior achievement of private school students held, even after controlling for student background. The research conducted in the Philippines also controlled for differences in students' innate ability and motivation.

Combined with achievement test results, school expenditure data showed that unit costs for private schools in the developing countries studied are lower than for public schools, sometimes by a significant margin. Private schools in the Philippines, for example, spend on average only half as much per student as public schools. Research shows that among other things private schools make more efficient use of teachers and have better teaching processes (more tests, more homework, more orderly classrooms).

Private schools also have very different organizational structures. School directors have considerable financial and bureaucratic autonomy and strong incentives to encourage better teaching practices -- using staff more effectively and cheaply -- because they must compete for students and remain accountable to parents who pay tuition.

qualifications should be de-emphasized: performance is what counts.

140. Raising the professionalism of public secondary school teachers is likely to be even more difficult than improving the quality of directors. The established structure of teacher management in the public sector limits accountability by statute (teachers are guaranteed job security) and militates against performance incentives (there is no bonus pay; promotions tend to be based upon years-of-service rather than performance; there is no latitude for exceptionally rapid promotion or pay increases for star teachers; and promotion generally implies moving to work in the central administration, rather than taking on increased responsibilities at the school level). Systems present no disincentive to strikes as teachers continue to receive full pay while they are on strike. Building performance incentives into the management of teachers will require significant changes, which may be opposed by teachers' unions.

141. A related problem is that as Brazilian school systems have expanded over the past decades, virtually all have moved to a system of multiple shifts -- sometimes as many as four a day. In the process, teacher contracting became based on a twenty-hour work week, rather than a full-time

association with a single school. As a result, most teachers work two different jobs, which sometimes requires them to travel substantial distances between schools. The twenty-hour base contracts include minimal time for class preparation, and a teacher who works two such contracts is unlikely to be prepared enough to use class time effectively.

142. The level of public school teacher pay is currently a major political issue, and lies behind the lengthy strikes experienced in many states (see Box 3, "Are Brazilian Teachers Overpaid?"). Given the very high share (80-90%) of public school budgets commonly going to personnel expenditures, there is little latitude for increasing teacher pay without finding offsetting savings. In most state (and municipal) systems the most promising place to pursue such savings is within personnel expenditures themselves. Often, a significant share of teaching personnel is assigned to jobs in the central administration or even outside of the education sector. In many cases, the individuals are overqualified for the assignments, but such assignments are regarded by teachers as plums, compared to the difficult conditions in many public schools. Organizational reforms in the direction of decentralization should make it possible for state systems to reduce administrative overhead; savings in this area should be reallocated to salaries and other incentives for classroom teachers and directors.

iii) focusing central and regional administrations on school support

143. Decentralization of operational responsibility to schools enables state and municipal administrators (and federal ministries) to shift their attention from controlling resources to supporting schools in improving the learning process. Some of the major complementary roles for regional delegacias and state (or municipal) administrations are:

- responsibility for evaluation of school performance and the administration of incentives like the "school improvement funds" used in countries such as Colombia and Yemen. Such funds are designed to stimulate schools to improve student achievement by rewarding those schools which develop effective approaches. Typically, all schools are encouraged to develop a school improvement program which allocations from the school improvement fund can help implement. Both the strength and innovativeness of schools' proposals and their progress against these programs are evaluated periodically and bonus allocations from the fund can be made to encourage high performers. Schools which achieve less receive special attention from regional and central administration and remedial assistance, such as the secondment of high quality staff until the sources of the schools' problems can be identified and new approaches developed.
- responsibility for the development, evaluation and dissemination of new textbooks, teaching materials, pedagogical techniques, curriculum ideas or other learning aids on an ongoing basis;
- responsibility for staff development, including the design and administration of in-service training programs for teachers and directors.

Box 3: - ARE BRAZILIAN TEACHERS OVERPAID?

One attempt to answer this question was made by George Psacharopoulos^{1/}, using data from a 3 percent national sample drawn from the Brazilian 1980 census. Psacharopoulos used salespersons, clerks and engineers as comparators for primary, secondary and university teachers respectively, comparing males and females separately. He then statistically controlled for the effects of different years of schooling, experience and hours worked per week in order to compare the pay received by individuals in these occupations who had education and training similar to teachers' with pay received by teachers.

From his analysis, Psacharopoulos concluded that teachers at the primary and university levels earned less than comparably trained individuals in other occupations, and teachers at the secondary level appeared to receive equal or higher pay than their comparators. At the primary level, male teachers earned 31 percent more on average than salesmen, but they earned 28 percent less than salesmen with the same education and experience, and who worked the same number of hours per week. Similarly, female primary school teachers earned on average 18 percent more than saleswomen, but earned 26 percent less than saleswomen with equivalent education.

For secondary school teachers, there was no statistically significant difference in pay received by male teachers and similar male clerks. Female secondary school teachers, however, earned 32 percent more than corresponding clerks. At the university level, male professors earned about 25 percent less than similarly educated male engineers. For university professors, the female sample was too small for statistically valid comparisons.

Psacharopoulos's conclusions, which reflect wage trends in the 1970s, may no longer hold after almost a decade, especially given the macroeconomic instability and uneven public sector wage trends Brazil has experienced in the 1980s. His conclusions also depend upon the validity of the chosen comparators, as well as the quality of the census data used. It is also clear from the large number of individuals who continue to seek teaching jobs, that non-monetary benefits such as part-time working conditions and job security are important in the teaching profession. In the state of Sao Paulo, for example, the Carlos Chagas Foundation reported that over 100,000 prospective teachers took the most recent qualifying exam for entrance into the state education system. The number of openings? Less than 10,000.

At the very least, however, Psacharopoulos's approach demonstrates that simple comparisons of earnings data, without controlling for other factors, can yield very misleading results, and he demonstrates a means of injecting analytical rigor into the decision-making process in an important policy area.

^{1/} "Are Teachers Overpaid? Some Evidence from Brazil," Psacharopoulos, 1987, World Bank EDT 95.

144. Concentrating on these types of responsibilities -- rather than the daily delivery of school food, the micromanagement of teaching staff, the routine stocking of school libraries and laboratories, and school maintenance -- implies changes in the organization of state systems, reductions in personnel, and new skill types and/or significant amounts of retraining. Most of all, it implies a

fundamental change in control systems from "input accounting" to "output accounting." Under the former, regional delegacias and central storehouses are preoccupied with the procurement and management of school inputs (huge stocks of books, desks, equipment, school food) and the distribution of these throughout the system. Under the latter approach, procurement is done at the school level and central administrators evaluate only the end results, i.e., how effective the school is in teaching students, given its budget.

145. Risks of decentralization. Decentralized school systems run one important risk: as schools gain managerial and financial latitude, they tend increasingly to reflect the communities in which they are located. A uniformly low-quality state school system may well evolve into a system of sharp disparities in school performance, with excellent schools in rich neighborhoods and much worse schools in poor neighborhoods. This pattern is certainly found in the United States and in the diverse universe of Brazilian private schools. Parent contributions, for example, typically become a more important source of support for schools in rich neighborhoods.

146. To mitigate this risk, it is important that state administrators play a strong role in equalizing expenditure allocations, and a strong technical assistance role, continuously working with the lower-performing schools to try to improve effectiveness and to reduce performance disparities across schools. Starting from a centralized and relatively homogeneous system is likely to make these tasks somewhat easier, as the mechanisms of centralized financing and, in effect, cross-subsidization already exist, in the sense that taxpayers in richer neighborhoods are already contributing more than they get back from the school system.

b) periodic achievement testing

147. A school system based on incentives for high performance can only function successfully if school performance can be meaningfully and objectively evaluated. There are several basic indicators that can be used to evaluate schools -- repetition and dropout rates and, more important, changes in these over time; a school's ability to run effectively within its budget; a school's success in mobilizing resources from the community; a school's enrollment growth. All of these should be part of any broad-based evaluation system. But none of these directly measures the fundamental indicator of school effectiveness -- how well are students learning?

148. For that reason, systematic student achievement testing to monitor school performance is used in many countries (Korea, Indonesia, Japan, U.S., most European countries) as the basic source of management information about the performance of the school system overall, and the variations across schools within the system. It should be emphasized that such achievement tests are not designed to measure student performance (results never count as part of the students' academic records, for example), but to measure school and school system performance. In this spirit, in the United States results are usually sent to the parents, showing not only how their child performed but also how his school did, on average, compared to other schools in the state and in the country.

149. Ideally, the tests are given at regular intervals to cohorts of students in all schools, so that "value-added" or the increased learning of individual students as they progress through the school can be measured. This, with an implicit control for student ability, is the most objective measure of school effectiveness.

150. Cognitive achievement tests have rarely been used in Brazil. The test administered to 2,600 secondary students in November 1988 in conjunction with this report, was the first such test at the secondary level. Since 1990, the Ministry of Education has been developing standardized tests of primary school quality, the first round of which were administered to a national sample of schools in 1991 and will be repeated every two years. Cognitive achievement tests are not problem-free; they create a well-known tendency for schools to prepare students "for the tests." But this risk is not serious if the tests are well-designed, cover basic areas of curriculum and emphasize the skills and knowledge required to reason logically and solve problems. The benefits, on the other hand, are substantial; particularly on a value-added basis, standardized achievement tests provide an invaluable measure of what students are gaining from the education process. Once MEC gains experience with administration of the primary school national assessment, it would be desirable to extend standardized testing to the secondary level, also.

c) improving the performance of private schools and stimulating stronger competition with the public system

151. Policies to strengthen the performance of private schools are an important part of an overall program to improve secondary education quality. The private sector in Brazilian education, particularly at the secondary level, is large, diverse and competitive; it may also be more cost-effective on average than most Brazilian public education. In the secondary school achievement test sample, students in private schools scored higher in mathematics than students with identical family backgrounds who were studying in public schools. This "private school effect" was strong and statistically significant. Private secondary schools also appear to have lower average costs per graduate (Table 3.2) than state schools. This accords with research results from other countries which suggest that private schools in general may be more cost-effective than public schools.

152. Indeed, it is not surprising that a "private school effect" should exist, for private schools have many of the organizational and managerial characteristics associated with administrative efficiency. They are decentralized to the school level; school directors have complete and direct accountability to parents and students (who must pay school tuition fees each month, and thus have an incentive to evaluate carefully school quality); and they exist in a highly competitive market -- competing not only with other private schools, but with subsidized public schools.

153. For these reasons, some countries adopt incentives and policies to reduce the relative cost of private schools, thereby giving consumers a more equal choice between public and private education, in order to improve the efficiency of public education spending. Typical instruments used are tax deductions and direct subsidies to private schools, which reduce the relative cost of private education, thereby stimulating consumer demand. A common problem with these subsidy and tax incentive programs, however, is that they tend to benefit upper-income groups most, because the families are more likely to have children in private schools.

154. Chile has one of the few subsidy programs which appears to be effectively targeted towards middle- and lower-income students. Chile's "subsidy program," which has been operating for almost a decade, is described in Box 4 ("Chilean Education Subsidies"). Per-student subsidies are paid directly to private and municipal schools on the basis of actual attendance each month. The system in effect gives students a choice among attending: a) public schools at no cost, b) low-cost private schools at no cost, and c) higher-cost private schools, at full cost to the student. The shift in

enrollments from public to low-cost private schools which resulted between 1981 and 1987 is striking.

155. The system has allowed students to "vote with their feet" about where they think they will get the best education and has created incentives for public schools to improve their performance in order to attract students. An important feature of the Chilean system is that it is effectively "targeted" to lower-income students, because it excludes subsidies to the high-tuition private schools which richer students attend.

156. Targeting would be essential for any such incentive program in Brazil. At the secondary level, where 35% of all students already attend private schools, the fiscal cost of introducing any new subsidy that covered all students who attend private schools would be prohibitive. It would also be inefficient, as students currently enrolled in private schools are willing and able to pay tuition -- and public subsidies for these students would to a large extent simply displace private financing. Above all, it would be inequitable, as a large share of private school students are better-off than the average public school student.

157. Chile's experience shows that private school incentive programs can be efficiently targeted to middle and low income students. If the Chilean model were adapted by Brazilian states for secondary schooling, it is estimated that roughly 20-30% of private secondary schools at present would qualify for the subsidy, if set at the level currently used in Chile. At this level, the total cost of the subsidy (in 1992 US dollars) would be on the order of US\$50-60 million per year (roughly 10% or less of total public spending on secondary education). This amount would not necessarily be additional to current spending, if some students from public schools (some of which have average monthly costs higher than \$20 per month) shifted into private schools and public school budgets were correspondingly reduced. The appropriate cut-off point would of course have to be studied carefully in each state.

158. Is the Chilean model feasible for Brazil at the state level? In addition to being a cost-effective way to stimulate the expansion of private schools, this type of program could be a useful tool for states wishing to move in the direction of municipalization. One of the advantages of enrollment-based financial transfers such as used in Chile is that they provide an automatic and transparent mechanism for equalizing resources across municipalities. As discussed later in this chapter, this is a major challenge in municipalizing education systems.

159. On the other hand, there are major issues of administrative capacity which would have to be considered carefully in Brazil. A subsidy program which depends upon private schools' reports of students in attendance requires a strong government capacity for spot-check audits and regular verification in order to prevent abuses. Such capacity does not now exist at the state level in Brazil and experiences with private school support programs (such as "compra de vagas") have sometimes not been satisfactory. Developing strong, professional units for the administration and enforcement of a Chile-type subsidy program would be a major challenge for state education secretariats in Brazil.

160. The experience in Chile also suggests strongly that it is better to undertake major reforms of this nature **after** standardized achievement testing and other systems for measuring school quality, and mechanisms for feeding such information back to parents, are in place.

161. Whatever reforms states contemplate over the medium-term, therefore, it appears clear that the first priority is to improve private school performance insofar as possible by strengthening

Box 4: CHILE'S EDUCATION REFORMS/

Convinced of the possibility of achieving greater efficiency in education, the Chilean government undertook reforms in 1979 and 1980 to decentralize radically the national education system. The government began transferring responsibility for most public schools from the Ministry of Education to the country's 327 municipalities, and at the same time introduced a "subsidy" system, designed to stimulate competition between public and private schools, of monthly per-student payments to both municipal and private schools that comply with Ministry of Education criteria. By 1987, municipalities had taken over most public schools and a large number of private schools were participating in the subsidy system.

Before the reforms, there were two types of private schools in Chile: non-fee-charging schools (often managed by philanthropic or religious groups) which tended to serve lower-income segments of the population, and fee-charging schools, serving the wealthier strata of Chilean society. Non-fee-charging schools received government support, but only equivalent to about 50 percent of average public school costs. In introducing the current system, the government decided to try to place publicly- and privately-administered schools on an equal footing; it offered equal per-student payments to schools regardless of whether they are publicly or privately run. Payments are made every month and are based on actual attendance statistics. Payments vary depending on the type of instruction provided and whether the school is located in an urban or rural area, and they are intended to cover operating costs only. Although payments are not tied to the socio-economic background of the individual student, the voucher system as a whole is targeted in the sense that private fee-charging schools, which tend to serve students from higher income families, are not eligible for government subsidies. The government does not regulate in any way the tuition levels charged by unsubsidized private schools (which have monthly tuition, on average, several times higher than the government voucher).

Under the new system, private schools can compete effectively with municipal schools without charging tuition, as long as they maintain student-teacher ratios which enable them to cover costs -- the most important of which are teacher salary costs. Depending upon teacher salary levels in the school, the break-even student-teacher ratio can range from 8:1 to over 20:1. To protect quality, the maximum number of students per class for which payments will be made (for primary and secondary schools) is 45. In early 1992, the monthly per-student subsidy for secondary schools was about US\$20.

In administering the system, the Ministry of Education plays strong verification and technical assistance roles. All new schools must be accredited and both municipal and subsidized private schools regularly receive visits from Government inspectors and supervisors. Inspectors come roughly monthly to verify enrollments, while supervisors evaluate lesson plans, teacher activities and school facilities. Technical assistance from the Ministry of Education has been particularly important for newly established private schools, whose staff often lack experience in school administration.

The Chilean approach gives parents an equal choice between municipal public schools and subsidized private schools (both free to the student). Although municipal schools tend to be more spacious than subsidized private schools and generally have higher-paid teachers, subsidized private schools tend to have younger and better-trained teachers. Enrollments in private subsidized schools have grown significantly since 1981, as can be seen below. Enrollment gains by these private schools have been almost exclusively at the expense of public schools. High-cost fee-charging private schools have held a relatively constant enrollment share, 7-9%, throughout the decade. (Continued)

(Continuation of Box 4)

SHARE OF PRIMARY SCHOOL ENROLLMENTS		
TYPE OF SCHOOL	1981	1987
Public	78%	61%
Subsidized Private	15%	31%
High-Cost Private	7%	8%

Chile's system is not a panacea. Neither private nor public schools have been able to overcome systemic weaknesses such as outdated text books and low quality teacher training schools. Rural areas have remained largely untouched by the reform, as private entrepreneurs have not been interested in establishing schools in areas of low population density. Of greatest concern is the fact that there has been little improvement in average student achievement under the new system. Critics argue that many parents lack the education and information to make meaningful comparisons of the quality of public and private schools in their neighborhoods, and that, as a result, "competition" between schools has stimulated cosmetic changes and gimmicks more than investments in education quality.

To address some of the above problems, Ministry officials are working on ways to "educate" parents, by giving them direct feedback on school performance, such as average achievement test scores and other evaluations. The Ministry is also launching programs to stimulate educational quality, such as special grants for schools which develop pedagogical innovations. To aid rural and disadvantaged neighborhoods areas underserved by the private sector, special program resources are relatively more available for schools in these areas.

Much remains to be done. But Chile's willingness to experiment with radically new approaches to education has clearly injected dynamism into the system. In poor urban neighborhoods, where the population is growing most rapidly, private schools have proven responsive in providing expanded education services and eased the administrative and financial burdens for municipalities to supply these services. Most observers agree that competition with private schools has given public school directors more incentives to improve school quality.

Perhaps most importantly, the Chilean reforms have permitted a rationalization of the roles of the public and private sectors. The federal government is out of the business of direct school administration and is free to concentrate its resources on evaluation, supervision and incentive to improve education quality. The private sector is doing what it does best -- delivering services cost-effectively -- and is handling a larger share of enrollments. Educators in Chile are optimistic that with time this is a formula for better quality schools and efficient use of public resources.

^{1/} Material in this section draws on World Bank report No. 8550-CH "Social Development Progress in Chile: Achievement and Challenges," 1990.

oversight. States need to develop the capacity for substantive oversight, and should avoid expending effort on counterproductive tuition price controls. A first step is for state education councils to perform private school accreditation reviews which are serious examinations of all aspects of school performance and repeat these at regular intervals. States should also introduce standardized student testing at the secondary level (the Ministry of Education is developing such testing at the primary level nationally) and private schools should be included in all testing, with results sent to parents and communities. Finally, states should publish performance reports on accredited private schools at least every few years.

C. Opportunities for the 1990s

162. The challenge of improving the quality of state-level secondary education is daunting. Yet a number of factors over the next few years will work in favor of states' efforts to improve cost-effectiveness. These are:

(a) low enrollment growth. It is likely that low throughput from the primary school system will continue to constrain the overall growth of secondary enrollments, in a continuation of the trend observed since 1980. With no change in the internal efficiency of the primary system, secondary enrollments are projected to increase by less than 3% per year until at least 2000. With primary school improvements, enrollment growth might increase significantly, but will almost certainly remain well below the pressure of 10-15% per year growth which states faced in the 1960s and 1970s.

Low enrollment growth gives states a significant opportunity to focus their efforts on quality improvements at the secondary level -- a "deepening" of their systems, rather than broadening access. Enrollment growth within the ranges projected can relatively easily be accommodated by most state systems at low marginal cost through a combination of larger class size, rationalization of enrollments with a limited school transport system (perhaps covering only a few schools and targeted to night school students from poor neighborhoods), and additional night shifts. The current evidence suggests that in most states the last of these steps would probably not even be necessary.

(b) incremental tax resources. The 1988 tax reform produced a phased plan for fiscal decentralization that will result in revenue increases of up to 25% in real terms at the state level by 1992 and up to 40% at the municipal level. States and municipalities also have a constitutional mandate to increase their spending on education to 25% of their annual budgets. Many states are still below this level, devoting on average 10-20% of their spending to education. The combined effect of these measures should increase significantly the resources available to state and municipal education secretariats. Offsetting the state and local tax increases will be a reduction in revenues retained by the federal government which can be expected to translate into reduced transfers to state and local governments for education. Nonetheless, the net resource effect at the state and municipal level in most parts of the country (with the possible exception of the Northeast) is expected to be positive.

Gradually increasing real resources offers states a unique opportunity to test out and phase in measures to improve school quality. Reforms can be tried out in pilot schools and extended to the entire system as revenues increase.

(c) diversity of models. The heterogeneity of the Brazilian secondary system is a third positive feature. The array of education models in different parts of the public system and in the private sector offer low-cost ways for administrators to study what works and what doesn't and to adapt lessons

to state schools. For example, the federal technical schools and private schools offer a generally more effective model of school organization and management, many elements of which could be applied at the state level.

There is tremendous opportunity for innovation and experimentation in Brazil which is not being exploited at present. Brazil's states present natural laboratories for testing out new approaches, and consequently lower the potential risks of radical reforms. For example, the reforms which had to be introduced on a national scale in Chile could be tried out in one or two states in Brazil. The problem is not so much states' willingness to experiment. Some states, such as Parana, Sao Paulo, Ceara and Rio Grande do Sul, are already undertaking changes in everything from the curriculum to the degree of budget autonomy at the school level. The main problem is that much of the potential value of this diversity is lost at present, because the Ministry of Education has not developed instruments for the systematic evaluation of such experiences or channels for dissemination of successful approaches to other states.

(d) the size and dynamism of the private sector. The existence of a large and fairly competitive private sector offers an important safeguard. Consumers at the secondary level have alternatives, should public school quality fail to improve; they have demonstrated a readiness to switch from public to private schools and back whenever the costs of their education (whether financial or time) exceed their perception of its effectiveness. Even without incentives, the private sector has demonstrated considerable elasticity of supply in response to shifts in student demand. In addition, evidence suggests that private secondary schools are more cost-effective than public schools. This means that the private sector could be a strong potential ally in public sector efforts to improve the efficiency of education spending.

(e) the trend towards municipalization in education. The 1988 Constitution concentrated major responsibility for primary education at the municipal level. As a result, states in Brazil are beginning to consider devolution of the 30% of primary schools which are state-run to municipal authorities. Although not the same as decentralization to the school level, municipalization can offer some of the same advantages, particularly in small and medium-sized municipalities. First, it reduces the geographic size and, usually, bureaucratic complexity, of the school system. This gives both communities and school directors better access to decisionmakers in the administration, and makes the latter more accountable. It also makes it more likely that school equipment, supplies and maintenance will reach the schools more efficiently. Second, resources for the school system are spent in the same place that they are mobilized. This allows taxpayers and parents to measure better the efficiency of the school system. Third, it increases the likelihood that school personnel will be recruited locally, which tends to make directors and teachers more familiar with and accountable to the community.

163. Given the extent to which primary and secondary education in state and municipal systems are interlinked, municipalization of state primary schools would necessitate changes in management of the secondary school system. If secondary education remained the responsibility of states, it would become more complicated for primary and secondary schools to share buildings, although this pattern already exists in states such as Rio de Janeiro, where all primary schools are municipal and the state administers its secondary school system at night in the same facilities. A possible alternative might be to municipalize secondary education at the same time, at least in certain states. Given the sheer size of the primary school system -- there are 54,000 state primary schools -- concomitant municipalization of 4,500 state secondary schools (most of which exist in primary school buildings) would be a relatively

small step.

164. Municipalization poses some disadvantages, however, which need to be carefully addressed by states and the federal government in order to ensure successful decentralization. First, there is a lot of variation in the revenue bases and administrative capacity of different municipalities in Brazil, and these can result in school systems of very different quality. In a municipalized system, there is an important need for state (and federal) governments to try to equalize these differences via redistributive revenue transfers and technical assistance.

165. Second, municipal school systems may have a higher tendency towards parochialism in their approaches; i.e., teachers and administrators in a small system may have limited opportunities to learn about new pedagogical practices and other innovations. A small school system will tend to underinvest in curriculum development, evaluation, training programs, and other activities for which economies of scale exist. Thus, there is a clear need to complement municipal school systems with more centralized provision of such services by the states and federal governments.

166. Municipal school systems may also be more susceptible to patronage politics or clientelism than state or federally-run systems. One possible way of reducing the scope for abuses is to vest significant responsibility for the school system in local School Boards, made up of specially-elected professionals and community members. In countries such as the United States, local school boards can have important financial and operational authority over the schools; for example, some have the power to propose tax increases (which must be voted on by the community) in order to increase school system financing. In Brazil, where local taxation is a much less important source of education financing, it may be more difficult to give the school system independence from municipal budgets, and, therefore, from municipal political pressures. Nonetheless, local school boards, which have been proposed in the State of Sao Paulo, could be an important complement to municipalization in order to protect the professionalism of school systems.

167. On balance, the advantages of municipalization of education are substantial, and the risks can be mitigated through the development of complementary functions at the state and federal levels and through possible steps such as the introduction of local school boards. It should be noted that municipalization doesn't necessarily create the same strong incentives for good school performance as does decentralization to the school level. However, it is easier for a municipal system to focus its efforts on school level performance than it is for a larger, more centralized state school system. Furthermore, with day-to-day administrative responsibilities concentrated at the local level, state and federal administrators can concentrate on evaluation, supervision and the encouragement of quality, equity and efficiency.

IV. THE FINANCING OF SECONDARY EDUCATION AND TRAINING: EFFICIENCY AND EQUITY ISSUES

168. The current pattern of public expenditure on secondary education and training results in large variations in resources per student available to different types of schools. Two parts of the secondary education system are well-endowed: i) the network of (55) federal technical schools and ii) the SENAI schools. Both of these are funded at the federal level and have reputations for high quality, effective education. However, the cost-effectiveness of these schools has never been evaluated. Moreover, relatively little is known about the equity of access to these systems, particularly SENAI's schools.

169. In the absence of solid analyses of the cost-effectiveness of these well-funded systems, there is a strong temptation in Brazil to believe that the best way to improve secondary education is to expand these segments of the system which appear to function well, rather than to grapple with the seemingly intractable problems of state school systems. But the high unit costs of these schools means that investments in these systems have a high opportunity cost: if overall secondary education spending remains relatively constant, fewer resources will be available for state-level quality improvements or for enrollment expansion at the state and municipal levels. The average expenditure per student in SENAI and federal technical schools is over US\$1,700 per year. If this were to be the standard for the entire secondary system, total public enrollments either would have to be reduced from the current level of about 2.0 million students to less than 350,000, or total public spending on secondary education would have to increase almost six-fold from US\$609 million (in 1985 dollars) to about US\$3.5 billion per year. As discussed in the next chapter, in the current fiscal climate in Brazil, spending increases of this magnitude for secondary education appear totally unrealistic.

170. Chapter III focused on the state schools, which today present the most serious quality issues in Brazilian secondary education. The most serious issues of equity are posed by the federal technical and SENAI secondary schools, which offer a very small number of students a costly and heavily subsidized education; these issues are discussed in section A of this chapter. Efficiency issues posed by the system of publicly-funded vocational training administered by SENAI and SENAC are considered in section B. Due to lack of information, this chapter does not discuss technical education offered at state-level secondary schools, which appear to have major quality and efficiency problems. Enrollments in state-level technical education programs may be roughly twice as high as in the federal technical schools, i.e., in the range of 150,000 - 200,000 students; thus, state level technical education is an important part of the overall secondary system. However, because neither consistent enrollment data nor disaggregated information on the unit costs of these schools and programs is available at the state level, it was impossible for this report to cover these schools.

A. Equity Issues in Brazilian Secondary Technical Education

171. About 20% of total public spending on secondary education goes to support the federal technical schools, which have only 3.4% of public secondary students. An additional 2% of total public spending on secondary education goes to support the SENAI secondary schools, which have less than 0.4% of public secondary students. As seen in Chapter II, the socioeconomic background of the students in these costly secondary education programs is significantly above the average for public secondary

students in state and municipal schools. Thus, on the one hand, a favored set of students -- a large share of which are from upper-income families and could otherwise afford to pay for their studies -- receives a highly subsidized education at federal technical schools and SENAI schools. On the other hand, 97% of public secondary students, many of which are from lower-income families and cannot afford the alternative of a private school, receive poor quality educations at low-cost state and municipal schools.

172. This financing pattern is inequitable. If subsidies for students at the federal technical schools and SENAI secondary schools did not exist, the majority of these students would likely either be willing to pay the full costs of studying at these schools, or would attend good quality private schools. Thus, it appears that the existence of fully subsidized, high cost public technical schools largely displaces private financing with public funds. In an education system with serious overall resource constraints, this approach needs to be questioned.

173. The issue is not that there is overt discrimination in the selection of students: students get accepted to federal technical schools because they excel academically, not because they are rich. This is also largely the case with SENAI. De facto, however, these schools' meritocratic admissions processes combined with policies which assure these schools generous levels of funding irrespective of their enrollment levels have resulted in an inequitable situation -- a very high share of scarce public funding going to a small number of schools and relatively well-off students. The justification for this pattern of public spending is to protect the quality of some segments of the education system against the resource constraints and mediocrity that characterize the bulk of public secondary schools. The evolution of this pattern of expenditures, however, has resulted in high per-student costs, suboptimal efficiency, and substantial de facto inequity.

174. Reducing Costs While Preserving Quality. There are ways in which the quality of federal technical schools can be maintained or even improved at lower per student costs and with improved equity. The Ministry of Education is actively pursuing this challenge at present. For example, the Ministry is rightly placing high priority on rationalizing the federal technical school system, identifying schools which are underutilized, and either closing or consolidating these. The Ministry is also trying to limit the construction of new federal technical schools to areas where demand really justifies expansion. It appears that SENAI is also engaged in similar efforts to rationalize its own network.

175. In all of these schools, it appears that there is scope to **expand enrollments more rapidly than physical plant**. The high unit costs of the federal technical schools and SENAI secondary schools could be driven down to some extent without unduly reducing quality by expanding enrollments (both by increasing student-teacher ratios and adding shifts wherever possible) at existing schools. In addition, there are many instances where usage of SENAI's equipment could be rented out to other (public or private technical) schools, which also would reduce unit costs, by effectively giving more students access to high-cost equipment.

176. An issue for the longer-term is whether the federal technical schools' emphasis on "hands on" industrial and agricultural training is still appropriate for the Brazilian economy of the 21st century. As noted earlier, these types of training involve high costs in money terms. They also have a cost in terms of foregone educational opportunities, including opportunities for stronger emphasis on basic scientific skills and theoretical knowledge.

177. A gradual shift in emphasis from expensive "practical" training to concentration on

academic excellence, particularly in science and math, would not only lower unit costs substantially and increase equity (if the savings were used to expand access), but might also prove more efficient for Brazil, in terms of preparing the country's brightest math and science minds for the high-technology and basic science fields of the future. A high proportion of federal technical school graduates today end up in white collar professions in science and engineering and not as industrial or agricultural technicians. The few available tracer studies suggest that most federal technical school students never actually practice the specific technician skills to which they are exposed in school. Most of these students are university-bound and the critical attraction of the technical schools for them is the high overall quality of the teaching and the strong emphasis on science and math.

178. Similarly, in SENAI secondary schools, particularly on the industrial side, the establishment and maintenance of the state-of-the-art production centers is a massive factor in the schools' overall cost structure. There is no denying that access to shop facilities as sophisticated as those of SENAI's secondary schools adds a valuable dimension to these students' education. The question is, does that extra dimension fully justify its high incremental cost both in terms of budgets and foregone educational opportunities? Given the pace of technological change, specific industrial skills which a student learns today at the secondary level are likely to be obsolete well before his or her career is over. International competitiveness will increasingly require firms to adapt to change, and this adaptation will require workers who have both the knowledge and flexibility to acquire new skills rapidly and the capacity to innovate on the job. Both of these qualities are enhanced by stronger general education.

179. Improving Equity while Preserving Quality. Both the federal technical schools and the SENAI schools need to do more to improve the access of low-income students to their programs. The Ministry of Education is currently committed to attracting more low-income students into the federal technical schools, but wants to avoid using any kind of quota system (i.e., reserving a proportion of student places for low-income students, as SENAI schools already do, to a limited extent).

180. Given the inadequate preparation that most low-income students receive in primary school, remedial programs are necessary in order to accomplish this objective. SENAI already has some modest programs of this type. For example, at least one SENAI secondary school has a pre-entry remedial training program aimed at preparing low income students for a certain number of reserved places. The Ministry of Education is committed to increasing the remedial programs that it offers. In order to achieve a meaningful expansion in the number of low-income students attending federal technical and SENAI schools it may be necessary to go beyond these current efforts, and to make an investment in trying to identify and groom promising students from lower-income families at the primary school level. Special publicity campaigns could be aimed at primary school students in poor neighborhoods, to encourage students' interest. The federal technical schools could also work with states on special science and math "competitions", exchange programs, and other incentives, all targeted to children from low-income families.

181. The most direct way to improve the equity of the federal technical schools and SENAI schools would be, obviously, to introduce "cost-sharing" --- tuition fees to recover a share of operating costs from students who are able to pay. Cost sharing could be implemented either through: a) the gradual introduction of fees for all students, accompanied by a student loan program for those who cannot afford to pay fees, or b) a sliding scale system of fees, in line with different students' ability to pay.

182. Cost sharing arrangements are in theory feasible because students in the federal technical schools and SENAI secondary schools come disproportionately from upper-income families in Brazil (in the achievement test sample, over 50% of the students in these two systems came from families with incomes above six minimum salaries, i.e., in the top twenty percent of the Brazilian income distribution). Any students whose families could not afford to pay would be well-qualified for loans, as graduates of these schools can expect high future incomes. In addition to immediately improving the equity of these systems, cost sharing could generate incremental resources for the maintenance and expansion of the federal technical schools and SENAI schools, and potentially allow increasing numbers of talented students to benefit from these systems' high quality education, without diverting financing from the major challenge of raising the quality of state and municipal secondary education.

183. All of these advantages notwithstanding, there is a major obstacle to the introduction of cost-sharing at the secondary level. It would be difficult on equity grounds, and very likely impossible politically, to introduce cost-sharing at the secondary level as long as students at the university level in Brazil continue to pay no tuition or fees in public institutions. The unit costs of public university education in Brazil are significantly higher than the unit costs in federal technical schools and SENAI schools, and the student population at the university level is even more skewed in favor of upper-income groups. It is difficult to argue that cost-sharing should be introduced at secondary level until the even more serious problems of resource allocation and equity at the university level are addressed.

B. Efficiency Issues: Incentive Problems of Brazilian Vocational Training

184. There are significant incentive problems whenever training that attempts to replicate the work situation takes place outside of the workplace and is subsidized. These problems are exacerbated when the skills imparted by training are both industry specific, i.e. demanded only by firms in a particular industry, and subject to relatively rapid technical change and/or obsolescence.²⁶ This is the situation for SENAI (industrial) and SENAC (commercial) vocational training. For industrial training, which is more equipment-intensive, these problems are even more acute.²⁷

185. The economic efficiency of vocational training programs depends upon whether:

1. Trainees subsequently work at the skills for which they were trained; and

^{26/} All SENAI and SENAC training is "general training" in the sense used by human capital economists: i.e., training that is applicable to more than one firm, as distinguished from "specific training" that is only relevant to a particular firm. Becker (1963) postulated that employers will only bear the costs of specific training, and that all general training will eventually be paid for by the individual trainees, either through direct tuition payments (for example to training schools) or in the form of lower (apprenticeship-type) wages, if the training is obtained on-the-job.

^{27/} SENAI and SENAC offer a broad range of subjects and diverse types of training courses, ranging from very short 20-60 hour courses to SENAI's full-time secondary school program, of 5,000 hours per year over four years. The bulk of SENAI's enrollments are in courses for mechanics, welders, electricians, machine tool repair and repair of electronic instruments. SENAC's enrollments are heaviest in: clerical/secretarial (45%), communications (10%), health care (8%) and hygiene and beauty (8%).

2. Employers make cost-effective decisions
 - a. among alternative supply sources for the skills; and
 - b. in how they deploy trained workers within the firm.

186. The major source of incentive problems and inefficiency in Brazilian vocational training is the way such training is currently financed. SENAI and SENAC are almost entirely funded by a payroll tax of 1% on all commercial and industrial firms.²⁸ Virtually all of their training is "free" both to individual students and to the enterprises which benefit from the trained workers (who pay the tax irrespective of the number of trained workers they employ). This financing system appears to lead to significant inefficiencies for both of the major reasons mentioned above.

187. For their part, potential trainees lack incentives to weigh carefully in their career decisions the costs of obtaining skills that are especially narrow or might rapidly become obsolete. For example, SENAI's secondary and post-secondary programs include general education along with skills training. This education is generally valuable in the labor market and can also make higher education options available to students. The absence of charges for the costly practical skills can encourage some students to attend these schools simply in order to obtain the basic educational benefits. As an example of this, it is estimated that at least 25% of SENAI secondary school graduates go on to universities rather than work at the skills for which they were trained. SENAI and SENAC are understandably proud of their high placement rates of graduates. However, high placement rates, even in well paying jobs, do not necessarily imply high external efficiency. What matters is whether the education or training choices which the student made were efficient routes to those jobs (i.e. the costs were not excessive). If students do not face any cost differentials for different types of schooling or training, they have no incentive to make choices efficiently.

188. When firms do not face the full costs of training for different types of skills, two problems arise: (1) there will tend to be excess demand from firms for trainees with high cost skills; and (2) both firms and students will lack incentives to choose the most economical sources of vocational training. Because aspects of the workplace, including work with sophisticated industrial equipment, must be simulated in an institute-based training situation, this type of training can be extremely costly to provide and to keep up-to-date. For this reason, on-the-job training is often more efficient than institute-based training for high cost practical skills; in an industry setting, the costs of duplicating the work situation, notably equipment, are low and may outweigh the two advantages of training in an institute -- i) the cost-effective sharing of teaching personnel with other firms and ii) the avoidance of the disruption of work flows that can occur with on-the-job training.

189. Even when institute-based training is potentially more efficient than on-the-job training, Brazil's financing system discourages employers from selecting from alternative suppliers of such training

^{28/} As described in Chapter II, SENAI and SENAC (both established in the 1940s) are "quasi-public" institutions in the sense that they were established by government fiat and are wholly financed by public taxes, but they are administered by private associations: in the case of SENAI, by the Confederation of Industry and in the case of SENAC by the Confederation of Commerce. Both agencies have substantial managerial autonomy from government.

based on costs and quality. There is a competitive private industrial and commercial training sector for low-cost vocational training, and there would probably be a vigorous private sector supply response to demand from firms and workers for types of training that are more costly to provide.

190. The potential for efficiency losses is especially high when underpriced and inefficiently supplied skills are demanded in only one industry and are subject to obsolescence. This seems to be particularly true for SENAI, which offers training in many relatively narrow industrial specialties and can have a significant impact on the labor market. SENAI'S training can supply a significantly larger quantity of workers than an industry's firms would demand at the full cost of the training. The availability of workers with subsidized skills can even induce firms to choose or maintain production technologies that utilize such workers more intensively than would otherwise be the case. Some industry observers in Brazil have suggested that in certain industry subsectors the presence of subsidized SENAI training has even contributed to protectionist pressures, by helping to "lock firms in" to outmoded production technologies. In addition to possible direct efficiency losses such as this, there are costs resulting from the diminished incentive firms have to engage in innovative activities aimed at economizing on or raising the productivity of trained workers, which to the firms are an underpriced resource.

191. Improving Efficiency While Preserving Quality. These incentive problems and resulting inefficiencies are serious, although they have not been quantified. There are some ways, however, in which the SENAI/SENAC system probably improves the overall efficiency of Brazilian vocational training, and these are important to recognize as well. Both SENAI and SENAC basically consist of two separate functions: i) planning, coordination, market research and pedagogical development -- i.e., what may be considered "overhead" functions, and ii) training delivery. Both agencies appear to be effective in carrying out the overhead functions, and there is some evidence that "spillover" benefits also accrue to private sector training schools and firms which often adopt teaching materials and copy the pedagogical approaches developed by SENAI and SENAC.

192. SENAI and SENAC's effectiveness in these overhead functions largely stems from the way they are organized, under the auspices of syndicates of Brazilian industrial and commercial firms. These syndicates play an important role in expressing the collective demand of firms in individual industries for training benefits and in exerting political pressure on the national level on behalf of member firms and the training system. Because of these close and well-organized links to employers, it is easy for SENAI and SENAC to obtain information about different industries' demands for trained workers as well as to "place" trained workers in the labor market. By contrast, it would be very difficult for a wholly decentralized system of relatively small private training schools to invest in obtaining such regular and detailed information from industrial and commercial "end-users" of their training services.

193. A second important institutional feature is the fact that SENAI and SENAC enjoy stable federal government financing. This allows them to invest in long-term planning of curriculum, evaluation of teaching methods, and other valuable research which an individual training school would not be able to afford.

194. These aspects of the system are valuable. But there is no inherent reason why they need to be tied institutionally to the actual delivery of training services. Because of the economies of scale noted above, overhead functions are most efficiently provided if centralized. However, in the delivery of training services, competition may be more important for ensuring efficiency. A significant number of private training schools in Brazil supply services which compete directly with many SENAI and

SENAC courses, despite the fact that the latter are completely subsidized. The private sector could be expected to expand further if placed on an equal footing with SENAI and SENAC, i.e., if the latter also had charges for their courses that reflected their marginal costs. The overhead functions of SENAI and SENAC could be supported by a much lower share of the existing payroll tax, and the agencies could provide teaching materials, curriculum guidance, research studies on labor market trends and detailed annual information about employers' skilled labor demands both to private training schools and to enterprises wishing to provide in-house training.

195. Because of their short-term nature (generally only a few months in duration) most types of vocational training courses have much lower financial costs and indirect costs than three years of formal secondary schooling. Finding the money for such training generally presents less of a liquidity problem for students than does formal schooling. Moreover, the private returns to vocational training are generally high and there are fewer externalities or spillover benefits for society as a whole than there are from general education (see Box 1, Chapter 1). For these reasons there is a stronger justification for direct cost recovery from students for vocational training than for general education. There also might be less need for a student loan program to accompany tuition charges for vocational training. However, a loan program would help ensure that a broad range of students have access to training. Such a system would also enhance efficiency because it makes it expensive for trainees to select costly training options and then not work productively in the industry for a long enough time to amortize the training cost. Because workers need to repay their loans, they will not be willing to enroll in training programs if their eventual wages will not provide a competitive return on the costs of the training. This provides desirable incentives for employers not to overutilize high-cost skills and to utilize alternative supply sources such as on-the-job training when these are more cost-effective.

196. The financing of training via direct student payments or student loans has limitations, however, in the case of industry specific skills which run the risk of becoming rapidly obsolete. There are two important asymmetries in the costs faced by employers and trainees which suggest that employers should be responsible for training expenses in these cases. These asymmetries result from the higher costs faced by trainees: (1) to obtain information about the returns to industry specific skills and (2) to diversify investments in them.

197. It is more costly for trainees, especially youths lacking work experience, than for employers to learn about the productivity of costly industry specific skills. Likewise, trainees face higher costs of forecasting likely changes in skills productivity due to competitive and technological forces. Individuals will thus attach higher, and perhaps substantially higher, risk premiums to the same training investments and will be reluctant to undertake these types of training.

198. Risk diversification is a second important problem with education and training investments because students cannot sell "shares" in their human capital. On the other hand, firms can diversify their investments in individual workers' costly specific skills through their investments in other workers, different skill types, and physical capital investments.

199. These asymmetries lead to the likelihood that individual trainees will underinvest in certain types of risky, high cost skills if required to pay their full costs. In these cases, efficiency will be increased if employers assume the payment of students' loans for these types of skills. Employers' payments may be made contingent on the amount of time the worker has been with the firm, creating incentives for employees to work not only in the industry but in a particular firm, thus internalizing the

benefit of the skills training to the firm. Interfirm competition for workers can be ensured by providing the opportunity to all firms in the industry to contract for workers in advance of training. Indeed, such a system is not very different in some respects from SENAI and SENAC's current practice of negotiating carefully with individual industries each year the numbers of trainees to be produced in various skill categories. Brokering these contracts, as well as administering a possible loan system and employees' and employers' share of payments would be additional important overhead functions to be carried out by SENAI and SENAC.

200. These types of far-reaching reforms of the Brazilian national vocational training system may seem radical in a country where the excellent reputation of the national training agencies means that their costs are rarely scrutinized. Even the Ministry of Labor, which has legal oversight responsibility for SENAI and SENAC, cannot easily obtain cost data and other information necessary for assessment of these agencies' cost-effectiveness. Analyses of the comparative cost-effectiveness of the national training agencies and a sample of private training schools are a high priority for research, and would serve as the basis for a program to improve the efficiency of Brazil's large national investments in vocational training. Even before such studies are completed, however, a few immediate actions should be considered. First, SENAI and SENAC could be placed on annual budgets which reflect their current level of spending on actual training operations, given that the payroll tax often generates a significant "excess" over this level. (As noted in Chapter II, SENAI and SENAC in recent years have retained 30% or more of their annual receipts for investments unrelated to training.) Excess funds from the payroll tax could then be reallocated to states and municipalities for high priority education programs, such as primary and general secondary education.

V. SCENARIOS, ISSUES AND OPTIONS FOR THE FUTURE

201. This year, the Brazilian secondary school system will graduate approximately 600,000 students. This number is strikingly low for a country of 140 million people, with a labor force of over 50 million, and a secondary school age population (aged 16-18) of more than 9 million youths. It is a small trickle of individuals equipped with the knowledge, skills and potential for higher education and/or entry into the managerial and professional streams of the world's tenth largest industrial economy.

202. As seen in Chapter I, the share of youths who attend secondary school in Brazil is far below the average for middle-income developing countries. Only 37% of 16-18 year olds are enrolled in secondary school in Brazil, compared with 59%, on average, in other middle-income countries and 95% in countries such as Korea. Brazil's pattern of low average educational attainment may have slowed its economic development in the past; how much is impossible to calculate with precision. But whatever the past price, the future costs of lagging behind the rest of the world in human resource development are likely to be far higher. Without a more sophisticated labor force, in a world of rapid technological change and intense international economic competition Brazil may be increasingly unable to compete.

203. Over the decade of the 1980s Brazil made almost no progress in increasing secondary school participation. Enrollments from 1980-87 grew by only 2.0% per year, little above the rate of population growth. The secondary school participation rate increased only marginally over the decade, from 35% in 1980 to 37% in 1987.

A. Constraints to Increased Secondary Enrollments

204. Were Brazil to set the goal of reaching 50% secondary school participation by the year 2000, in order to approach the current average for countries of its income level, it would face serious constraints. Even in a 15-20 year time frame, such a goal appears virtually unattainable. At the current rate of secondary school enrollment growth (about 2.5% per year) and projected rates of population growth (about 1.9% per year in the next decade),²⁹ Brazil will not reach 50% secondary school participation before the year 2010.

205. The two major constraints to increasing secondary school participation are: i) the low quality of large segments of the secondary school system, and ii) low throughput from the primary school system.

206. The secondary school quality problem is evidenced by the high repetition and dropout rates in state and municipal schools. These are somewhat surprising, given the selectivity of Brazilian secondary students. It is undeniably a tradition in Brazilian education to set high standards for promotion, even at the cost of having large numbers of students in the school system repeating grades. At the primary level, for example, repetition (and dropout) rates are so high that the Brazilian school system pays for 22 student-years for each primary graduate it produces.

^{29/} World Bank population projections. See Appendix Table 61.

207. Repetition rates can be expected to improve under scenarios which assume policy reforms. Ideally, repetition is reduced through improvements in student learning associated with increases in school effectiveness. The options for secondary school reform discussed in Chapter III can be expected to lead in this direction. There is also some evidence that reductions in repetition associated with changes in educational standards can have beneficial effects on student learning, by reducing students' sense of failure and frustration.

208. Students' decisions to drop out may be more difficult for the school system to influence. Drop out rates reflect a combination of factors -- the opportunity cost of schooling and students' perception of the returns to incremental schooling. Drop out rates in Brazilian secondary schools may be high in part because of the low efficiency of the primary system, which results in a large number of overage students in secondary school. The opportunity costs of staying in school are higher for older than for younger students; thus, all other things equal, the former will have a higher probability of dropping out. To the extent that state and municipal schools have older students, on average, than do private and federal technical schools, this may also explain part of the former schools' higher dropout rates.

209. The major reason for the higher dropout rates in state and municipal schools is probably their poor quality (i.e., students perceive low returns to studying in these schools). The achievement test results support this view: there are significant differences in student achievement that are attributable to school type.

210. Changes in secondary school dropout rates or repetition rates would affect total secondary enrollments -- and the overall secondary school participation rate -- in opposite directions. They would also affect total secondary school costs in opposite directions. A reduction in the average repetition rate will lower total costs and costs per graduate; a reduction in the dropout rate will increase total costs (but will also lower costs per graduate). Reductions in repetition rates would not increase the number of graduates, but reductions in dropout rates obviously would.

211. If secondary school dropout rates were to fall and there were no change in repetition rates, the results would be an increase in total secondary enrollments and the secondary participation rate. However, in many respects, this would not represent improvement in the system; although more students would finish, the efficiency of their progress through the secondary system would remain poor. On the other hand, if repetition rates fell and there were no change in dropouts, the secondary school participation rate would decline, although the system would have made significant progress.

212. Although cumulative dropout rates in Brazilian secondary school are high (50% in 1984), the secondary system is swollen with repeaters; at any given moment, more than five years' worth of entering students are still in the system. This explains why the combined effect of eliminating dropouts and repetition completely would be to reduce total secondary enrollments, from about 3.3 million students at present, to an estimated 2.5 million.³⁰ Yet there is no question that this would represent

^{30/} As pointed out in Chapter II, there are significant inconsistencies in Brazilian enrollment data which make it difficult to determine the number of new entrants into secondary school each year, which is critical for estimating repetition, dropout and graduation rates. Specifically, the number of primary school graduates reported by MEC cannot be reconciled with the number of first-year secondary

improvement.

213. The principal constraint to real progress in expanding secondary enrollments is low throughput from the primary school system. Although there are close to 7 million students enrolled in first grade in Brazil (about half of which are repeaters), according to official statistics less than 900,000 students graduate from eighth grade each year. Virtually all Brazilian children at some point enroll in primary school; for almost all parts of the country, access is no longer a significant problem. And appears that a high proportion of primary school graduates (75-80%) continues on to secondary school. The problem is that the number of primary graduates is low, and has not been increasing. Between 1980 and 1985 the number was practically stagnant, averaging 860,000 per year.

214. Increasing the number of primary school graduates will fundamentally depend upon improvements in the internal efficiency of Brazilian primary education, which is characterized by staggeringly high repetition and dropout rates. It takes the average primary student almost four years to complete the first two grades, and over 30% of primary students drop out before they reach the fifth grade. For every 100 students who enter primary school less than 5 graduate without any repetition and only 39 ever graduate (Fletcher and Ribeiro, 1988).

B. Demand Projections and Financial Implications

215. Secondary enrollments, which currently total 3.3 million students, have grown at the rate of 2.5% per year over the last five years, and 2% per year since 1980. Continued growth at 2.5% per year in the 1990s implies roughly 100,000 additional students per year. Compared with enrollment growth rates of 10-20% per year in the 1960s and 1970s, the secondary school system would have little difficulty expanding aggregate supply at this rate. Without increased throughput from the primary school system, which is also growing by less than 3% per year at present, it is impossible for secondary enrollments to increase -- except through increases in the primary-to-secondary school transition rate. A simple projections model with parameters based upon Ribeiro and Fletcher's PROFLUXO model was used to evaluate the impact of possible primary school improvements on the throughput to secondary school.³¹ The hypothetical improvements tested were in primary school repetition rates (across all grades), primary dropout rates between fourth and fifth grade and during eighth grade (the two points at which dropouts are highest), and increases in the transition ratio.

students reported, or with the repetition rate reported for the first year of secondary school. The estimate of 2.5 million assumes that the number of primary graduates reported is broadly correct and that secondary repetition rates are actually higher than currently reported. Elsewhere in this report, however, such as for the student flows modeled in Chapter III (Table 3.2), repetition rates as officially reported were utilized.

^{31/} The PROFLUXO model uses educational participation rates reported in the IBGE annual household survey (PNAD) to estimate the flows of a population cohort through the primary and secondary school system. It is a very useful planning tool, although unfortunately there are numerous inconsistencies between the IBGE data and Ministry of Education statistics. See Ribeiro and Fletcher (1987).

- a) Trend Growth (2.7% per year). This case assumes no changes in primary school efficiency or the primary-to-secondary school transition ratio.
- b) Moderate Growth (3.3% per year). This case assumes modest progress at the primary level. It shows the impact of: i) a 20% reduction in repetition rates in primary school, ii) a 10% reduction in dropouts between fourth and fifth grade, iii) a 10% reduction in dropouts during eighth grade, and iv) a 5% increase in the transition rate between primary and secondary school. The model shows the effect of these improvements over a 20 year period.
- c) High Growth (4.8% per year). This case assumes significant progress at the primary level. It shows the impact of: i) a 75% reduction in primary repetition rates, ii) a 50% reduction in dropouts between fourth and fifth grade, iii) a 50% reduction in dropouts during eighth grade, and iv) a 10% increase in the transition ratio.

Table 5.1: SECONDARY SCHOOL ENROLLMENT PROJECTIONS, 1990-2010, ALTERNATIVE SCENARIOS (in thousands of students)						
YEAR	TOTAL ENROLLMENTS			INCREMENTS OVER TREND SCENARIO		
	TREND GROWTH	MEDIUM GROWTH	HIGH GROWTH	TREND	MEDIUM	HIGH
1990	3477	3492	3507	0	15	30
1995	3848	4232	5331	371	384	1483
2000	4371	4944	6565	894	573	2194
2005	5060	5781	7808	1583	721	2748
2010	5917	6790	9230	2440	873	3313
Average Growth (p.a.)	2.7%	3.3%	4.8%			

Source: World Bank projections. See Annex IV for a description of the model.

216. In reality, there is no reason to believe at present that the medium or high growth scenarios will evolve. Even the trend scenario assumes that a growth rate slightly above the current rate of enrollment growth can be sustained in a period of declining population growth. But even the enrollment increases forecast under the trend growth scenario will have important financial implications at the secondary level. Assumptions about how incremental secondary students would be accommodated -- whether in state, municipal, federal, or private schools -- are critically important for estimating the costs. Table 5.2 shows the range in public costs for secondary education that could result under different

scenarios. The growth rate assumed is the trend case described above. It is also assumed that the private sector share of total enrollments remains constant at 3%. Finally, it is assumed that the current efficiency and unit costs of each type of public school remain unchanged.

217. The base case in Table 5.2 reflects total public costs if the distribution of public secondary enrollments across different types of schools remains the same as it was in 1985: i.e., 3% of enrollments in federal technical schools; 6% in municipal schools; and 90% in state schools. Alternative (A) assumes that in 1990 the distribution of students across schools is the same as in the base case, but from that point on all new enrollments (i.e., roughly 100,000 students per year) are in federal technical schools. Alternative (B) assumes the same but with all new enrollments after 1990 in state schools. Alternative (C) assumes that the new enrollments after 1990 are all in municipal schools.

Table 5.2: ANNUAL PUBLIC SECONDARY EDUCATION COSTS UNDER ALTERNATIVE SCENARIOS, ASSUMING TREND GROWTH (in millions of 1987 US\$)				
	BASE CASE	FEDERAL TECHNICAL	STATE	MUNICIPAL
1990	714	(a)	(b)	(c)
1995	790	1151	778	748
2000	897	1767	868	795
2005	1039	2579	986	858
2010	1215	3589	1134	936
Average Annual Expenditure Growth	3.5%	20%	2.9%	1.6%
Number of Graduates Produced by the Year 2000 (millions)	1.1	1.3	1.01	1.01
<u>Source:</u> Projections from Table 5.1. Estimated 1985 unit costs from Table 2.1.				

218. In reality, it is unlikely that any one of these systems would account for the entire incremental expansion of secondary schooling. But the exercise is instructive because it points up clearly the great differences in public resources required were the high-cost models of the federal technical schools (or SENAI schools) to be adopted as the standard for future expansion. Such a strategy would not only be costly; it would seriously risk pauperizing existing state and municipal secondary systems.

219. Under (A), total public spending on secondary education would be 46% higher in real terms than the base case as early as 1995. By the year 2000, total costs would be doubled in real terms and by 2010 tripled. By contrast, under (B) total public spending required to sustain expansion of the secondary system would be slightly lower than in the base case. Under (C), public costs would fall by over 20% with respect to the base case.

220. The distribution of future enrollments across the different types of secondary school also affects the total number of graduates produced, as can be seen from Table 5.2. For example, if all incremental enrollments after 1990 were in federal technical schools, by the year 2000 annual public costs for secondary education would be about twice as high as in the base case scenario, but 20% more students would graduate from the system.

221. Another way of looking at the alternative financial implications of different enrollment scenarios makes it easier to see the potential contribution of the private sector. Table 5.3 shows how total public costs for secondary education differ for each incremental 100,000 students who enter the system, depending upon the type of school they attend. It also shows how many of these students would graduate in each scenario. Finally, it compares the total public costs per 100,000 entrants and the total costs per 100,000 graduates for each case.

TYPE OF SCHOOL	EXPECTED GRADUATES	COST PER GRADUATE (US\$)	PUBLIC COST (US\$ millions)	
			PER 100,000 ENTRANTS	PER 100,000 GRADUATES
Federal Technical	78,200	6,983	546.1	698.3
State	41,553	1,553	64.6	155.3
Municipal	44,700	745	33.3	74.5
Private	63,800	2,295	0	0

Sources: Table 3.2 and Appendix Table 54.

222. The range in expected graduates per 100,000 new students goes from 42,000 at state schools to 64,000 at private schools to almost 80,000 at federal technical schools. Although close to twice as many students would graduate from federal technical schools as from state schools, the cost per 100,000 new entrants is about eight times higher at the federal schools. Expressed in terms of costs per 100,000 graduates, the differential narrows (to 4.5 times higher) but is still very large.

223. Conversely, the exercise shows the financial savings for the public sector if enrollment growth is faster in the private sector -- as was the case in the 1970s and between 1986 and 1988. It is unlikely that all incremental enrollment growth would occur in the private sector in the absence of government incentives. However, given the higher efficiency of private schools, an incremental dollar spent to stimulate expansion of private enrollments would increase the total number of graduates. The implication is that any subsidy scheme up to the current level of expenditure on state secondary education would increase the overall efficiency of the secondary school system.

224. What do such simulations tell us to guide secondary education policy for the coming years?

There are three clear messages for policymakers that emerge from these exercises: i) the growth of secondary enrollments is likely to be relatively slow over the coming decades; ii) decisions to give priority to expansion of the high cost segments of the public school system (federal technical schools and/or SENAI secondary schools) could increase total public secondary education costs at a rate that would be impossible to sustain, and iii) policies to stimulate the expansion of private schools at the secondary level, either through non-fiscal incentives or targeted subsidies such as used in Chile, are likely to be cost-effective.

C. Issues for The 1990s

225. This report has analyzed the current state of Brazilian secondary education. The analysis points to four priority issues for the decade of the 1990s:

- a) achieving cost-effective improvements in the quality of state secondary schools;
- b) strengthening the performance of private schools and stimulating stronger competition with the public system;
- c) improving incentives for the efficient delivery of vocational training; and
- d) developing an efficiency-enhancing role for government (federal, state and municipal education authorities).

226. **Quality Improvement at the State Level.** Cost-effective programs of quality improvement at the state level for the foreseeable future should center on the challenge of improving the management, incentives and organization of the secondary system. Spending per student in state level secondary schools today is not lower than in many other middle-income developing countries. Moreover, those countries have a less selective student population at the secondary level, yet achieve higher internal efficiency (i.e., higher graduation rates).

227. Several possible directions for reform were discussed in Chapter III. Some of the most important are:

- introduction of standardized student testing as a tool for measuring school (and school system) performance objectively;
- restructuring of state technical schools. States should eliminate equipment-intensive vocational programs and focus their resources on making these schools high quality academic schools with an emphasis on math and science. This approach could have the advantage of creating a high-performance "tier" within the state school systems (possibly with entrance via competitive examinations).
- consolidation of basic curriculum. For a transitional period (say five years) all state schools should focus efforts on strengthening the core

curriculum (Portuguese, math, science, history) in all schools, and reduce the range of different vocational courses offered. During this period, the impact of these changes on student performance should be evaluated.

- development of strong technical assistance roles at the state and federal levels. To ensure the efficiency of a more decentralized system there is a need for state (and federal) administrations to expand the following areas: support to problem schools to help improve performance; design and implementation of in-service teacher training programs; curriculum development and design and testing of new pedagogical materials; school evaluation and research on determinants of school performance; administration of special "innovation funds" to encourage improved school performance;
- introduction of incentives for school performance. School budgets, directors' and teachers' evaluations, and bonus pay for all school personnel could be based to some extent the school's progress in meeting specified performance objectives related to student learning, enrollment trends and budget control. In order for such a system to work, greater management control over school personnel and school financial resources would need to be concentrated at the school level;
- municipalization. Devolution of state primary and secondary schools to the municipal level, as is being considered in a growing number of states, is a potentially effective way of increasing the efficiency and accountability of public schools. To be successful, however, municipalization requires a strong complementary role played by state and federal authorities, to redistribute financial resources across municipalities in order to equalize revenue imbalances and to provide technical assistance (as discussed).

228. Strengthening the Performance of Private Schools. Policies to strengthen the performance of private schools are an important part of an overall program to improve secondary education quality. The private sector in Brazilian education, particularly at the secondary level, is large, diverse and appears to be fairly competitive; as suggested by the achievement test data, private schools (although they range greatly in quality) may be more cost-effective on average than most Brazilian public education. Government policies should concentrate on stronger substantive oversight of private schools, rather than counterproductive tuition price controls. Specific recommendations include:

- inclusion of private schools in the administration of regular student achievement tests;
- strengthening of state education councils, or development of an alternative capacity within state education secretariats to carry out private school accreditation reviews which are serious examinations of all aspects of school performance, at regular intervals;

- provision of technical assistance to low quality private schools that wish to improve quality (perhaps on a fee basis); and
- publication of annual performance reports on all accredited private schools.

229. Aggregate public resources for secondary education, which are likely to remain constrained, will go farther if some share is efficiently used to stimulate private school expansion. For budgetary reasons and equity reasons, however, any incentives should be restricted to schools which serve low-income students. Any program of financial incentives to private schools must also be accompanied by a greatly strengthened audit capacity at the state level to prevent abuses.

230. **Improving Public Vocational Training Efficiency.** In 1987, the combined budgets of SENAI (US\$ 364 million) and SENAC (US\$ 191 million) roughly equalled total state-level spending on secondary education. Whether the current schooling/training balance is providing the appropriate mix of skills for Brazil's future needs is a question that must constantly be reassessed. Steps that could improve the efficiency of public spending on vocational training include:

- limit payroll tax transfers to SENAI and SENAC to the level of their actual expenditures on training;
- gradually reduce federal funding for SENAI and SENAC to a level sufficient for the financing of coordination and overhead functions, and allow training services to be provided on a competitive basis by private sector schools and employers.

231. **Efficiency-Enhancing Role for Government.** Implicit in many of the above options is a new role for public education secretariats at all levels of government. The new role places much stronger emphasis on accreditation, oversight, performance evaluation, research, technical assistance and financial intermediation. It places reduced emphasis on direct school administration. More decentralized public school systems could provide federal and state administrators with opportunities to invest adequately for the first time in curriculum development, in-service teacher training, student testing and evaluation, school performance evaluation, school budget reviews and resource allocation and research. In a decentralized system these critically important functions will tend to be underfunded if not handled centrally. Some of the most important functions have been mentioned elsewhere in this section, but bear repeating:

- design, administration and analysis of achievement tests for public and private students at least every two years;
- curriculum development, in-service teacher training programs, and other central support services for the benefit of all public and private schools;
- private school oversight and accreditation, and possible administration of a targeted incentive program; and

- annual public school performance evaluations and budget reviews, which become the basis for funding allocation decisions for a network of decentralized public schools.

232. **An Agenda for Research.** This report attempted to draw together available studies, official statistics and other information on the Brazilian secondary education and publicly-financed vocational training systems. As noted throughout, however, there are many important questions which cannot be analyzed at present due to the lack of information. The most important of these "knowledge gaps" are recapitulated below, in the hope that they can help to define a priority research agenda for Brazilian scholars and government officials.

- a) systematic data on secondary school student achievement. The cognitive achievement test administered to a sample of students for this report yielded valuable insights, but also raised numerous questions about the relative importance of "school factors" and "student background factors" in explaining the very different average levels of student achievement at different types of schools. Further student testing, on a basis which controls for student ability, is an important next step.
- b) studies of student performance and school quality at low-tuition private schools. Almost nothing is known about the quality of these low-tuition schools, which appear to represent a large share of the private school market. Key questions are: How much do students learn at these schools? What is the "quality" of faculty at these schools compared with public schools (as measured by teachers' performance on standardized cognitive tests and other indicators, such as average levels of education and pay)? What is the ratio of "effective" class hours (classes actually held) to theoretical class hours in these schools?
- c) studies of comparative costs and student performance in low-tuition private schools and public schools. What are expenditures per student in these schools? How does the structure of expenditure (i.e., personnel, materials, maintenance, profits, etc.) compare? How do students of comparable socioeconomic background perform on standardized achievement tests, controlling for student ability? How do repetition and graduation rates for students of comparable socioeconomic background compare?
- d) studies of the comparative cost-effectiveness of SENAI, SENAC and private vocational training schools. What kinds of students go to SENAI or SENAC, rather than private vocational schools (in terms of student socio-economic background and student ability - measured by standardized tests)? How do costs per student hour for the same types of training compare? How does the structure of expenditure compare? How does teacher quality (measured by teacher performance on standardized tests and other indicators) compare? How well do SENAI and SENAC graduates subsequently do in the labor market (in terms of job placement, incremental earnings, and promotions) compared with similar graduates of private vocational schools (i.e., controlling for student innate ability, socio-economic background, job experience, etc.)?

233. Beyond these specific research topics, there is a more general need for expanded work in the economics of education in Brazil. Since the seminal works of Langoni and de Moura Castro in the 1970s, little work has been done on the returns to education in Brazil. At present, the analytical basis for decisions about what types of investments in the education system are most justified is inadequate. The 1990 census will yield a wealth of data that could be used by education researchers. Updated estimates of the private and social returns to different levels and types of education would provide critical measures of the importance of education investments for the growth of the Brazilian economy, and could offer policymakers a valuable tool for grappling with the education challenges of the 1990s.

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Table 1: GROSS OUTPUT PER WORKER IN MANUFACTURING IN SELECTED COUNTRIES, 1970-1985.

Country	Gross Output Per Employee (Index Basis, 1980=100)		
	1970	1980	1985
Brazil	71	100	70
Colombia	84	100	126
Korea	40	100	141

Source: World Development Report, 1989

Table 2: REAL EARNINGS PER WORKER IN MANUFACTURING IN SELECTED COUNTRIES, 1980,1985.

Country	Earnings per Employee (Index Basis, 1980=100)	
	1980	1985
Brazil	100	93
Colombia	100	116
Korea	100	125

Source: World Development Report, 1989

Table 3: RETURNS TO INVESTMENT IN EDUCATION, BY REGION, TYPE AND LEVEL
(percent)

Region	Social			Private			Number of countries reporting
	Primary	Secondary	Higher	Primary	Secondary	Higher	
Africa	28	17	13	45	26	32	16
Asia	27	15	13	31	15	18	10
Latin America	26	18	16	32	23	23	10
Europe, Middle East and North Africa	13	10	8	17	13	13	9
Developing Countries	24	15	13	31	19	22	45
Developed Countries	...	11	9	...	12	12	15

Notes: Private Returns take into account only the cost of education to the individual. In contrast, social returns are based on the full cost of education to society, so they are comparatively lower.

... Data were not available because no control group of illiterates was available.

Source: G. Psacharopoulos, "Returns to Education: A Further International Update and Implications." *Journal of Human Resources*. Vol 20, No.4 (1985), pp. 583-604; Appendix Table A-1

Table 4: GROWTH OF SECONDARY SCHOOL ENROLLMENTS BY TYPE OF SCHOOL
EVOLUCAO DA MATRICULA DE SEGUNDO GRAU POR DEPENDENCIA ADMINISTRATIVA
BRAZIL 1970 - 1987

	MATRICULA INICIAL			MATRICULA FINAL		
	PUBLICO	PARTICULAR	TOTAL	PUBLICO	PARTICULAR	TOTAL
1970	550,619	452,856	1,003,475	525,968	436,454	962,422
1971	632,373	487,048	1,119,421	594,821	466,677	1,061,498
1972	744,766	555,171	1,299,937	657,737	521,859	1,179,596
1973	843,364	634,286	1,477,650	754,639	575,612	1,330,251
1974	944,865	736,863	1,681,728	794,339	655,130	1,449,469
1975	1,058,867	877,036	1,935,903	889,941	771,543	1,661,484
1976	1,202,954	1,009,795	2,212,749	986,783	892,365	1,879,148
1977	1,310,267	1,127,414	2,437,701	1,071,023	996,295	2,067,318
1978	1,364,015	1,174,221	2,538,236	1,110,781	1,076,306	2,187,087
1979	1,419,245	1,238,833	2,658,078	1,164,268	1,014,261	2,178,529
1980	1,508,261	1,310,921	2,819,182	1,236,978	1,086,925	2,323,903
1981	1,601,282	1,219,716	2,820,998	1,292,219	1,064,859	2,357,078
1982	1,696,682	1,177,823	2,874,505	1,421,936	1,012,748	2,434,684
1983	1,814,252	1,129,845	2,944,097	1,401,392	966,389	2,367,781
1984	1,919,063	1,032,561	2,951,624	1,453,473	884,255	2,347,728
1985	2,011,910	1,004,228	3,016,138	1,541,295	874,034	2,415,329
1986	2,113,037	1,051,611	3,164,678	1,602,015	910,494	2,512,509
1987	2,098,648	1,147,770	3,246,418	...	...	...

Fonte: SEEC/MEC

Table 5: INITIAL ENROLLMENTS AND ENROLLMENT RATES IN SECONDARY SCHOOLS
MATRICULA INICIAL NO SEGUNDO GRAU E TAXA DE PARTICIPACAO
BRAZIL 1970 - 1987

ANO	MATRICULAS		POPULACAO 16-18 ANOS	TAXA DE PARTICIPACAO (%)	
	15-19 ANOS	TOTAL		LIQUIDA	BRUTA
1970	591,242	1,009,475	6,151,970	9.6	16.3
1975	1,227,017	1,935,903	7,019,955	17.5	27.6
1980	1,973,108	2,819,182	8,145,583	24.2	34.6
1981	1,966,691	2,820,998	8,352,988	23.5	33.8
1982	1,986,802	2,874,505	8,311,195	23.9	34.6
1983	1,979,531	2,944,087	8,395,051	23.6	35.1
1984	1,987,171	2,951,624	8,477,560	23.4	34.8
1985	1,996,212	3,016,138	8,630,428	23.2	34.9
1986 *	2,136,520	3,164,678	8,652,752	24.7	36.6
1987 *	2,202,419	3,246,419	8,680,606	25.4	37.4

* - Enrollments since 1985 are unofficial estimates prepared on the basis of incomplete MEC data.

Fonte: SEEC/MEC, IBGE

Table 6: GROWTH OF SECONDARY SCHOOL ENROLLMENTS BY TYPE OF SCHOOL AND REGION
EVOLUCAO DA MATRICULAS NO SEGUNDO GRAU POR DEPENDENCIA ADMINISTRATIVA, SEGUNDO AS REGIOES

ANO	MATRICULA INICIAL			MATRICULA FINAL			TAXA DE EVASAO IMEDIATA (%)		
	PUBLICA	PARTICULAR	TOTAL	PUBLICA	PARTICULAR	TOTAL	PUBLICA	PARTICULAR	TOTAL
REG. NORTE									
1970	18,878	10,824	27,402	15,821	9,930	25,551	7.45	9.04	8.75
1975	39,791	18,547	58,338	35,408	18,888	52,274	11.02	9.08	10.39
1980	72,385	33,722	108,087	63,654	22,787	78,941	12.87	32.43	19.08
1981	83,413	27,988	111,379	75,870	24,848	100,518	11.15	11.15	9.75
1982	95,313	29,853	125,166	87,418	21,843	109,301	39.78	28.70	36.64
1983	92,845	28,788	119,741	78,891	21,834	100,525	15.01	18.52	15.80
1984	102,128	23,888	125,991	74,582	19,894	94,198	27.05	18.43	25.08
1985	108,308	22,588	128,874	83,837	19,784	103,721	21.04	12.34	19.52
1986	113,674	24,828	138,603	89,880	21,985	111,875	21.10	11.81	19.43
1987	119,758	30,388	150,122	...	...	...	...	...	...
REG. NORDESTE									
1970	105,291	79,833	185,224	101,087	78,588	177,888	3.98	4.18	4.07
1975	213,008	154,248	367,258	185,870	145,788	331,435	12.83	5.80	9.75
1980	308,984	254,111	661,095	247,088	228,820	475,888	19.52	9.85	15.19
1981	318,882	258,828	578,810	275,288	242,531	517,828	13.54	6.33	11.54
1982	355,148	271,422	626,282	318,384	228,887	548,191	10.89	18.42	12.83
1983	424,857	255,877	680,634	318,288	221,088	539,335	25.52	13.84	21.85
1984	437,474	237,882	675,888	338,758	200,437	539,187	22.57	18.84	20.13
1985	458,297	237,848	696,342	358,688	201,844	560,443	21.75	14.88	19.48
1986	478,875	258,528	729,584	377,282	218,817	596,288	21.23	13.78	18.87
1987	498,221	278,354	774,575	...	...	...	...	...	...
REG. SUDESTE									
1970	290,188	381,383	671,588	284,827	275,883	560,810	1.85	1.92	1.89
1975	527,548	528,884	1,054,358	433,834	448,888	881,823	17.92	14.78	16.35
1980	882,373	798,873	1,681,248	582,835	643,788	1,226,833	14.49	19.21	17.02
1981	748,487	718,883	1,467,488	688,388	611,343	1,211,851	19.88	14.87	17.43
1982	788,883	688,824	1,458,827	788,371	688,888	1,298,878	10.32	11.87	11.88
1983	831,185	638,188	1,470,288	651,888	543,851	1,194,739	21.67	14.84	18.74
1984	888,281	571,882	1,460,253	683,888	498,845	1,184,883	21.87	14.17	18.88
1985	848,182	547,878	1,493,888	738,125	478,448	1,208,874	22.83	12.87	19.18
1986	1,085,887	572,377	1,677,384	757,889	488,188	1,258,887	24.59	12.88	20.37
1987	877,811	628,581	1,506,382	...	...	...	...	...	...
REG. SULA									
1970	107,182	87,382	174,484	85,818	81,882	168,821	11.33	8.17	10.11
1975	213,338	145,341	358,877	178,151	132,348	310,481	16.49	8.88	13.43
1980	231,774	185,287	497,881	241,788	147,389	389,885	27.12	18.88	21.72
1981	318,513	185,838	484,543	242,378	141,818	383,388	24.14	14.55	20.88
1982	322,728	157,823	480,243	235,723	128,818	364,539	26.88	18.22	24.89
1983	328,433	158,328	484,782	248,878	137,885	387,873	23.88	11.78	20.83
1984	338,588	158,858	498,127	248,188	128,888	377,158	26.92	14.33	23.85
1985	342,584	148,833	491,817	252,488	128,851	381,448	26.38	13.47	22.41
1986	353,284	151,883	505,177	257,888	128,838	386,528	27.88	15.31	23.49
1987	348,241	155,888	495,847	...	...	...	...	...	...
REG. CENTRO-OESTE									
1970	31,882	13,784	44,788	28,484	12,188	41,554	5.43	11.34	7.24
1975	78,454	32,888	102,558	57,878	27,883	85,381	18.13	13.75	16.78
1980	104,785	88,828	193,883	93,834	44,211	137,245	11.28	27.44	17.17
1981	128,887	48,788	178,778	98,588	45,127	143,885	24.17	7.51	19.82
1982	133,888	58,371	183,877	101,128	48,557	147,877	24.31	7.57	19.73
1983	137,832	51,838	188,878	105,388	41,843	147,289	23.11	18.87	21.88
1984	151,833	48,854	200,487	108,884	44,188	152,284	28.71	9.55	24.88
1985	158,821	47,784	206,325	118,148	45,888	161,148	28.78	5.88	21.88
1986	162,118	51,884	214,812	119,248	45,875	164,821	28.44	11.88	22.84
1987	163,418	58,182	219,588	...	...	...	...	...	...

Table 7: SECONDARY SCHOOL PARTICIPATION, BY REGION, 1970-1987
MATRICULA INICIAL NO SEGUNDO GRAU E TAXA DE PARTICIPACAO,
SEGUNDO AS REGIOES

	ANO	MATRICULAS		POPULACAO ANOS 18-18	TAXA DE PARTICIPACAO	
		18-19 ANOS	TOTAL		LIQUIDA	BRUTA
REG. NORTE	1970	...	27,402	244,730	...	11.20%
	1975	...	58,338	284,435 *	...	20.51%
	1980	55,001	106,087	394,381	13.95%	26.90%
	1981	58,058	111,379	422,108 *	13.75%	26.39%
	1982	65,277	125,166	443,341 *	14.72%	28.23%
	1983	64,263	119,741	465,607 *	13.80%	25.72%
	1984	66,218	125,691	488,899 *	13.54%	25.71%
	1985	67,225	128,874	513,217 *	13.10%	25.11%
	1986	78,634	138,603	529,420 *	14.85%	26.18%
	1987	84,321	149,823	545,904 *	15.45%	27.44%
REG. NORDESTE	1970	...	185,224	1,848,799	...	10.02%
	1975	...	367,256	2,165,402 *	...	16.96%
	1980	325,215	561,095	2,417,332	13.45%	23.21%
	1981	335,948	578,810	2,482,063	13.54%	23.32%
	1982	357,300	626,592	2,500,772	14.29%	25.08%
	1983	384,112	690,634	2,533,217	15.16%	26.87%
	1984	381,915	675,066	2,593,816	14.73%	26.03%
	1985	388,707	695,342	2,649,071	14.67%	26.25%
	1986	419,178	729,503	2,653,904	15.81%	27.49%
	1987	442,413	774,576	2,622,935	16.87%	28.53%
REG. SUDESTE	1970	...	571,589	2,571,537	...	22.23%
	1975	...	1,054,350	2,968,251 *	...	35.52%
	1980	1,131,185	1,489,246	3,439,640	32.89%	43.30%
	1981	1,112,645	1,467,490	3,527,511	31.54%	41.60%
	1982	1,104,610	1,458,527	3,485,927	31.69%	41.84%
	1983	1,082,492	1,470,290	3,498,028	30.37%	42.03%
	1984	1,062,583	1,460,253	3,485,318	30.49%	41.90%
	1985	1,084,814	1,493,980	3,534,562	30.13%	42.27%
	1986	1,142,226	1,577,384	3,567,609	32.02%	44.21%
	1987	1,168,038	1,906,593	3,528,788	33.10%	45.53%
REG. SUL	1970	...	174,484	1,110,382	...	15.71%
	1975	...	358,877	1,335,920 *	...	26.85%
	1980	359,731	497,061	1,359,350	26.48%	36.57%
	1981	347,981	484,543	1,360,070	25.59%	35.63%
	1982	344,444	480,243	1,326,652	25.96%	36.20%
	1983	346,840	484,762	1,326,128	26.15%	36.55%
	1984	347,599	490,127	1,319,771	26.34%	37.14%
	1985	346,411	491,617	1,319,288	26.26%	37.26%
	1986	357,909	505,177	1,293,076	27.68%	39.07%
	1987	359,390	495,847	1,358,123	26.50%	36.56%
REG. CENTRO-OESTE	1970	...	44,796	333,359	...	13.44%
	1975	...	102,550	432,169 *	...	23.73%
	1980	101,976	165,693	534,779	19.07%	30.98%
	1981	112,081	178,776	591,236	19.97%	31.85%
	1982	115,171	183,977	554,503	20.77%	33.18%
	1983	121,824	188,670	572,071	21.30%	32.96%
	1984	128,858	200,487	589,957	21.84%	33.98%
	1985	131,055	206,325	614,263	21.34%	33.59%
	1986	140,273	214,011	608,743	23.04%	35.16%
	1987	148,257	218,580	626,655	23.65%	35.03%

Fonte: SEEC/MEC
 Obs: * - dados estimados

Table 8: AGE DISTRIBUTION OF SECONDARY SCHOOL STUDENTS, 1985

	YEARS OF AGE							TOTAL
	less than 15	15	16	17	18	19	more than 19	
TOTAL	93,503	286,401	435,705	496,324	434,972	344,810	924,420	3,016,138
1st year	88,304	218,485	217,003	196,345	159,436	122,043	321,348	1,321,964
2nd year	4,104	63,095	160,183	154,482	132,431	106,286	285,864	906,445
3rd year	143	3,539	54,558	135,394	124,221	99,502	257,255	674,606
4th year	4	29	329	5,435	14,357	13,268	47,356	80,772
Other	948	2,265	3,632	4,668	4,527	3,711	12,600	32,351

Source: Sinopse Estatística do Ensino Regular de 2o. Grau, MEC

Table 2: AGE DISTRIBUTION OF SECONDARY SCHOOL STUDENTS AS SHARE OF TOTAL ENROLLMENTS, 1985

	YEARS OF AGE							TOTAL
	less than 15	15	16	17	18	19	more than 19	
TOTAL	3.10	9.50	14.45	16.46	14.42	11.43	30.65	100.00
1st year	6.69	16.59	16.42	14.85	12.06	9.23	24.31	100.00
2nd year	0.45	6.99	17.67	17.04	14.61	11.73	31.54	100.00
3rd year	0.02	0.62	8.09	20.07	18.41	14.75	38.13	100.00
4th year	0.00	0.03	0.41	6.73	17.77	16.43	58.63	100.00
Other	2.99	7.00	11.23	14.49	13.99	11.47	38.95	100.00

Source: Sinopse Estatística do Ensino Regular de 2o. Grau, MEC

Table 10: AVERAGE AGE OF STUDENTS WHO ATTENDED AND DID NOT ATTEND SECONDARY SCHOOL IN 1982

MEDIA DE IDADE DOS ALUNOS QUE NAO INGRESSARAM (DESISTENTES) E DOS QUE INGRESSARAM (INGRESSANTES) NO SEGUNDO GRAU EM 1982
POPULACAO : CONCLUINTES DO PRIMEIRO GRAU EM 1981

	URBANA		RURAL		TOTAL	
	DESISTENTES	INGRESSANTES	DESISTENTES	INGRESSANTES	DESISTENTES	INGRESSANTES
NORTE	21.5	18.0	...	...	21.5	18.0
NSE						
4o. quartil	20.6	17.6	...	...	20.6	17.6
3o. quartil	22.2	18.1	...	...	22.2	18.1
2o. quartil	21.3	18.5	...	...	21.3	18.5
1o. quartil	22.4	19.1	...	...	22.4	19.1
NORDESTE	20.5	17.7	18.7	18.5	20.2	17.8
NSE						
4o. quartil	19.9	16.9	...	17.6	19.9	17.0
3o. quartil	20.2	17.9	23.4	17.3	20.5	17.8
2o. quartil	21.1	18.7	18.4	17.9	20.7	18.6
1o. quartil	19.4	17.7	17.4	19.7	18.5	19.2
SUDESTE	19.3	16.5	17.7	17.0	19.2	16.5
NSE						
4o. quartil	19.2	16.0	17.5	16.7	19.2	16.0
3o. quartil	19.2	17.3	19.1	16.8	19.2	17.3
2o. quartil	19.5	17.2	17.2	16.6	19.0	17.1
1o. quartil	20.0	17.1	19.0	21.0	19.3	18.0
SUL	18.3	16.3	17.8	16.4	18.1	16.3
NSE						
4o. quartil	18.3	15.9	18.2	15.6	18.3	15.9
3o. quartil	18.2	16.5	16.4	16.6	17.7	16.6
2o. quartil	18.3	17.9	19.7	16.3	18.9	17.0
1o. quartil	...	19.1	17.4	18.0	17.4	18.3
CENTRO-OESTE	19.8	16.9	18.0	17.5	19.5	17.0
NSE						
4o. quartil	19.4	16.2	16.0	17.2	19.4	16.2
3o. quartil	19.8	17.3	18.4	16.0	19.6	17.3
2o. quartil	20.1	17.9	17.7	16.8	19.4	17.8
1o. quartil	24.0	17.4	18.3	19.0	19.6	17.9
BRASIL	19.4	16.8	18.0	17.4	19.2	16.9
NSE						
4o. quartil	19.1	16.2	17.8	16.6	19.1	16.2
3o. quartil	19.3	17.4	17.8	16.8	19.2	17.3
2o. quartil	20.0	18.1	18.2	16.9	19.6	17.9
1o. quartil	19.9	17.6	17.8	19.6	18.6	18.7

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

Table 11: PERCENTAGE OF SECONDARY STUDENTS ENROLLED IN NIGHT CLASSES BY FAMILY INCOME QUARTILE AND LOCATION, 1982
PERCENTAGEM DAS MATRICULAS NO PERIODO NOTURNO
NO ENSINO DE SEGUNDO GRAU

	URBANA %	RURAL %	TOTAL %
NORTE	54.87	...	54.87
NSE			
4o. quartil	45.60	...	45.60
3o. quartil	61.20	...	61.20
2o. quartil	63.49	...	63.49
1o. quartil	67.99	...	67.99
NORDESTE	52.33	49.60	52.08
NSE			
4o. quartil	38.12	54.17	38.92
3o. quartil	59.34	52.11	58.94
2o. quartil	65.67	43.62	62.92
1o. quartil	58.53	50.86	54.39
SUDESTE	56.74	70.21	57.22
NSE			
4o. quartil	18.08	62.57	48.29
3o. quartil	72.05	75.46	72.17
2o. quartil	81.48	69.69	79.17
1o. quartil	83.87	77.87	80.95
SUL	57.00	57.72	57.11
NSE			
4o. quartil	49.29	53.94	49.53
3o. quartil	71.11	52.74	66.86
2o. quartil	68.97	67.54	68.36
1o. quartil	100.00	70.71	76.15
CENTRO-OESTE	59.19	72.21	59.78
NSE			
4o. quartil	42.05	37.55	41.95
3o. quartil	69.38	82.75	69.75
2o. quartil	81.74	82.98	81.85
1o. quartil	85.08	78.52	83.01
BRASIL	55.91	59.30	56.13
NSE			
4o. quartil	46.35	56.16	46.61
3o. quartil	67.90	59.03	67.28
2o. quartil	72.01	61.64	70.23
1o. quartil	69.15	59.83	64.46

Fonte: Pesquisa Nacional por Amostra de Domicílios - 1982

Table 12: PERCENTAGE OF SECONDARY SCHOOL STUDENTS ENROLLED IN NIGHT CLASSES BY TYPE OF SCHOOL: PUBLIC OR PRIVATE, 1982
PERCENTAGEM DE MATRICULAS NO PERIODO NOTURNO NAS ESCOLAS PUBLICAS E PARTICULARES DO ENSINO DE SEGUNDO GRAU

	PUBLICA (%)			PARTICULAR (%)		
	URBANA	RURAL	TOTAL	URBANA	RURAL	TOTAL
NORTE	57.61	...	57.61	45.33	...	45.33
NSE						
4o. quartil	50.35	...	50.35	36.19	...	36.19
3o. quartil	59.95	...	59.95	68.49	...	68.49
2o. quartil	65.59	...	65.59	48.42	...	48.42
1o. quartil	67.99	...	67.99	...	...	0.00
NORDESTE	53.81	45.94	53.15	50.10	53.90	50.50
NSE						
4o. quartil	45.22	68.28	45.88	31.33	48.78	32.54
3o. quartil	57.21	49.09	56.83	64.00	56.26	63.43
2o. quartil	59.48	41.49	57.43	77.40	46.68	72.94
1o. quartil	53.70	41.28	47.06	68.11	68.75	68.46
SUDESTE	55.94	65.42	56.38	57.57	80.11	58.10
NSE						
4o. quartil	48.02	53.14	48.12	48.13	75.64	48.45
3o. quartil	66.68	70.47	66.85	79.60	87.47	79.80
2o. quartil	73.59	66.27	71.97	94.62	78.84	92.25
1o. quartil	77.74	76.81	77.31	100.00	79.74	88.72
SUL	61.48	54.13	60.26	49.76	65.54	51.79
NSE						
4o. quartil	55.10	50.14	54.79	41.85	61.54	42.64
3o. quartil	69.81	40.91	64.08	74.43	69.74	73.00
2o. quartil	72.25	70.59	71.48	60.81	53.01	58.36
1o. quartil	100.00	70.71	76.15	...	...	...
CENTRO-OESTE	66.67	78.48	67.30	44.21	48.75	44.34
NSE						
4o. quartil	51.20	56.11	51.31	32.42	19.06	32.12
3o. quartil	71.14	82.75	71.54	62.55	...	62.55
2o. quartil	81.50	85.81	81.91	82.78	67.75	81.58
1o. quartil	87.30	72.74	82.67	77.07	100.00	84.22
BRASIL	57.29	56.67	57.24	54.13	64.01	54.67
NSE						
4o. quartil	49.15	54.42	49.30	43.66	58.02	44.02
3o. quartil	64.55	52.47	63.74	74.33	70.08	74.01
2o. quartil	67.82	62.87	66.93	81.19	58.43	77.66
1o. quartil	66.79	54.22	60.62	75.53	72.60	73.97

Fonte: Pesquisa Nacional por Amostra de Domicílios - 1982

Table 13: DISTRIBUTION OF SECONDARY SCHOOL AND TRAINING ENROLLMENTS, BY TYPE OF SCHOOL, 1985

	Number of Students
<u>Public Secondary Schools</u>	2,011,910
General	
- State a/	1,780,155
- Municipal	132,333
Technical	
- Federal	67,657
- Agricultural	13,568
- Industrial	54,089
- State	...
- Municipal	...
- SENAI (Secondary Schools only)	7,543
- Other Federal	24,222
<u>Private Secondary Schools</u>	1,004,228
General b/	1,004,228
Technical	...
TOTAL SECONDARY ENROLLMENTS	3,016,138
<u>Non-School Vocational Training</u>	
SENAI Courses	328,228
SENAC Courses	799,899
SENAR Courses	240,000
Other Private Courses	...
<u>On The Job Training Programs</u>	
Industry (SENAI) c/	339,181
Commerce (SENAC) d/	56,368
TOTAL PUBLIC TRAINING ENROLLMENTS	1,763,676

Notes: a/ State enrollments include state technical schools, for which disaggregated enrollment data are not available
b/ Private Technical
c/ As reported by SENAI
d/ As reported by SENAC
... data unavailable

Sources: IBGE Anuario Estatístico 1985; MEC/SEEC " Dados Estimativas 1984-86",
SENAI Relatório Anual 1987
SENAC Relatório Anual 1985.

Table 14: ENROLLMENTS IN SENAI, BY PROGRAM, 1984-1987

	1987	1986	1985	1984
TOTAL	975,779	749,374	725,447	723,69
- SENAI Direct Training	509,278	431,789	386,266	443,02
(Secondary - HABIL) a/	8,218	6,674	7,543	7,32
(Post-Secondary - CQP) b/	76,150	60,298	58,038	73,35
(Primary - APPREND) c/	60,434	57,614	56,994	61,35
(Non-degree - SUPRIM) d/	355,790	297,404	250,466	253,84
(Other)	8,686	9,799	13,225	47,13
- Training by Firms	466,501	317,585	339,181	280,67
(In Exchange for Exemption from Payroll Tax)	406,372	274,408	270,727	266,52
(With SENAI Assistance)	60,129	43,177	68,454	54,14

- Notes:**
- a/ Four year program (incl. one yr. apprenticeship in an enterprise) towards 2o grau degree and technician certification.
 - b/ Technical training for students who have already completed 2o grau. Usually a one or two year part time program; includes apprenticeship in an enterprise.
 - c/ Basic education and low-level skill training for youths aged 15-18 who have not completed primary school. However, entrants must have completed four years or primary school.
 - d/ Short, low-level skill training courses for adults.

Source: SENAI Relatorio Anual, 1987

Table 15: STRUCTURE OF SENAI PROGRAMS, 1987

Program	Age of Students	Average Course Length (Hours)	1987 Enrollments (Nationwide)	
<u>Direct SENAI Training</u>				
Curso do Aprendizagem Industrial (CAI)	14-18	1,200-1,600	60,434	(6%)
Treinamento Ocupacional (TO)	over 18	180	364,476	(37%)
Habilitacao Profissional (HP)	over 14	6,000	8,218	(0.8%)
Curso de Qualificacao Profissional (CQP-IV)	over 16	6,000	76,150	(8%)
<u>Training in Enterprises</u>				
Treinamento Industrial (TI)	any	80-100	466,501	(48%)
TOTAL			975,779	(99.8%)

Sources: SENAI National Headquarters for enrollments; SENAI Sao Paulo for course types and average hours

Table 16: ENROLLMENTS IN SENAC, BY PROGRAM, 1985

	Number of Students
Communications	105,632
Public Relations	25,672
Hygiene and Beauty	79,873
Hospitality	39,923
Maintenance	22,052
Stock Control	154
Administration & Management	49,616
Packaging & Shipping	13,519
Office Assistance	447,197
Purchasing & Selling	53,400
Data Processing	27,974
Health	84,150
Tourism	9,053
Artisanal Commerce	14,678
Unspecified	29,612
TOTAL	1,002,505 *

Notes: * - Includes SENAC's estimate of 146,238 "Enrollments" via Educational Television Programs.

Source: SENAC Relatorio Anual, 1985

Table 17: SENAC: DISTRIBUTION OF STUDENTS BY AGE, GENDER AND LEVEL OF EDUCATION COMPLETED, 1986

Category	Number of Students	%
<u>Age</u>		
under 14	4,308	9
14 - 17	11,429	24
18 - 20	12,513	26
21 - 24	8,511	18
25 - 32	6,779	14
33 - 39	2,279	5
40 - 45	849	2
over 45	625	1
<u>Sex</u>		
Male	15,850	37
Female	27,508	63
<u>Level of Education Completed</u>		
not completed		
primary school	11,060	26
primary school	17,600	41
secondary school	13,101	30
higher education	1,343	3

Source: SENAC, "Quem e o Aluno do SENAC", 1987

**Table 18: TOTAL PUBLIC EXPENDITURE ON SECONDARY EDUCATION AND TRAINING,
BY TYPE OF SCHOOL, 1985**

	<u>Expenditure</u>		1985 Enrollments	<u>Cost per Student</u>	
	billions CZ ^{la}	millions of US\$ ^{lb}		CZ	US\$
Federal Technical	4.7	119	67,657	69,328	1,75
<i>Agricultural</i>	1.5	37	13568	107,886	2,72
<i>Industrial</i>	3.2	82	54089	59,655	1,51
Governments	18.7	476	1,912,488	9,778	24
<i>State</i>	18.0	458	1,780,155	10,111	25
<i>Municipal</i>	0.7	18	132,333	5,290	13
SENAI	3.5	90	386,266	9,152	23
<i>HP</i>	0.6	14	7,543	73,864	1,88
SENAC	2.0	51	1,002,505	1,998	51

Notes: \a 1985 level of expenditure, converted to 1987 Cruzados
 \b converted at average exchange rate for 1987, US\$ 1.00 = CZ\$ 39.28

Sources: IPEA, MEC, SENAC, SENAI, World Bank Reports and Annex Table 20.

Table 19: TOTAL EDUCATION EXPENDITURES AND EXPENDITURES PER PUPIL, 1980-1985, in millions of US\$

	1960	1983	1985
<u>Secondary Education</u>			
Federal Government	191	183	232
<i>of which Federal Technical Schools</i>	...	...	119
State Governments	372	303	458
Municipalities	15	18	18
<u>Total Education</u>			
Federal Government	2,195	2,436	3,360
State Governments	3,691	3,638	4,453
Municipalities	965	815	1,107
<u>Expenditure per Student at the Secondary Level</u>			
Federal Technical Schools			
<i>Expenditures</i>	...	...	119
<i>Enrollments</i>	65,543	68,857	67,657
<i>Per Student Spending</i>	...	...	1,759
State Governments			
<i>Expenditures</i>	372	303	458
<i>Enrollments (millions)</i>	1.66	1.58	1.78
<i>Per Student Spending</i>	224	192	257
Municipalities			
<i>Expenditures</i>	15	18	18
<i>Enrollments</i>	98,280	137,716	132,333
<i>Per Student Spending</i>	153	131	136

Sources: IPEA, "Educação e Cultura 1987", and MEC/SEEC, Balancos Gerais da Uniao

Table 20: SENAI, SAO PAULO: EXPENDITURE BY PROGRAM, 1985

	CRUZADOS		US dollars	
CQP-IV - DAY	2,088,702,375		336,887	
CQP-IV - NIGHT	666,307,708	2,755,010,083	107,469	444,356
HP	10,083,190,287		1,626,321	
ADMINISTRATION /CAPITAL INVESTMENT HP	16,839,022,211		2,715,971	
HP - CQP-IV-DAY	7,637,303,268		1,231,823	
CQP-IV-NIGHT	40,710,564		6,566	
MATERIALS	1,267,946,943		204,508	
"PRODUCTION SECTOR"	327,089,888	9,273,050,663	52,756	1,495,653
<u>TOTAL</u>	<u>38,950,273,244</u>		<u>6,282,302</u>	
TREINAMENTO OCUPACIONAL (TO)	16,977,285,546		2,738,272	
TREINAMENTO INDUSTRIAL (TI)	12,448,755,575		2,007,864	
ADMINISTRATION /CAPITAL INVESTMENT - TO	1,399,819,824		225,777	
- TI	6,413,697,994	37,239,558,939	1,034,467	6,006,380
CURSO DE APRENDIZAGEM	119,047,596,597		19,201,225	
GENERAL ADMINISTRATION /CAPITAL INVESTMENT	28,520,355,112		4,600,057	
<u>TOTAL</u>	<u>184,807,510,648</u>		<u>29,807,663</u>	

Note:

Exchange rate = 6,200 CZ/US\$

Source:

Financial Statements - SENAI, Sao Paulo, 1985

Table 21: SENAI, SAO PAULO: ESTIMATED TOTAL EXPENDITURE BY PROGRAM, 1985

	<u>CZ</u>		<u>US\$</u>	
HABIL PROFISSIONAL \a	17,284,415,564		2,787,809	
CQP IV \a	4,826,835,469		778,522	
ADMINISTRATION	16,839,022,211	38,950,273,244	2,715,971	6,282,302
OTHER PROGRAMS				
Treinamento Industrial	18,862,453,569		3,042,331	
Treinamento Ocupacional	18,377,105,370		2,964,049	
CAI	119,047,596,597		19,201,225	
General Administration	28,520,355,112	184,807,510,648	4,600,057	29,807,663

Notes: \a includes pro-rated material and "production sector" costs

Source: Annex Table 20

Table 22: SENAI, SAO PAULO: PROGRAM BUDGETS AND ESTIMATED UNIT COSTS, 1985

Course	Expenditure		no. of students	Cost per Student	
	CRUZADOS (billions)	US\$ (millions)		CRUZADOS	US\$
Curso de Aprendizagem Industrial (CAI)	141	23	21,665	6,495,410	1,04
Treinamento Ocupacional	22	4	38,260	569,774	9
Habilitacao Profissional	31	5	2,889	10,700,882	1,726
Curso de Qualificacao Profissional (CQP-IV)	9	1	1,561	5,465,358	882
Treinamento Industrial	22	4	122,441	182,005	29

Note: To determine program costs, the administrative/capital investment amounts were divided on a pro-rata basis among the different programs.
Exchange rate = 6,200 CZ/US\$

Source: SENAI, Sao Paulo, 1988 and Annex Table 20

1988

AMOSTRA ESTRATIFICADA DE ALUNOS DA 3ª. SERIE DO 2º. GRAU E ESCOLAS EM FORTALEZA, SALVADOR, SAO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO E O TURNO. FUNDAÇÃO CARLOS CHAGAS, 1988.

TIPO DE CURSO	REDE DE ENSINO	TURNO	CIDADES								TOTAL	
			FORTALEZA		SALVADOR		SAO PAULO		CURITIBA		No. de Escolas	No. de Alunos
			No. de Escolas	No. de Alunos								
TECNICO	Publico	Diurno	1	33	1	38	1	22	1	79	4	172
		Noturno 1/	...	21	...	...	...	...	...	...	...	21
	Privado	Diurno	...	...	...	...	1	87	1	31	2	118
		Noturno	...	...	...	...	(Senai)	...	(Senai)	...	...	...
GERAL	Publico	Diurno	1	40	2	119	13	450	2	57	18	666
		Noturno	1	42	2	102	15	617	4	141	22	902
	Privado	Diurno	2	89	2	93	5	114	3	13	12	409
		Noturno	1	43	...	...	3	61	...	...	4	104
MAGISTERIO	Publico	Diurno	1	30	1	38	3	91	1	32	6	191
		Noturno	...	...	...	...	...	...	...	...	...	...
	Privado	Diurno	...	...	...	...	1	25	...	...	1	25
		Noturno	...	...	...	...	...	...	1	40	1	40
TOTAL			7	298	8	390	42	1467	13	493	70	2648

Notes: 1/ A aplicacao foi na mesma escola utilizada pela manha

Table 24: MEAN STUDENT ACHIEVEMENT TEST SCORES, NOVEMBER 1988

	FORTALEZA		SALVADOR		SAO PAULO		CURITIBA		AVERAGE		COMBINED AVERAGE	
	PORT	MATH	PORT	MATH	PORT	MATH	PORT	MATH	PORT	MATH		
Federal Technical Schools												
<i>Day Shift</i>	21.9	25.0	19.6	25.7	22.0	24.4	21.8	20.2	21.4	22.9	22.2	
<i>Night Shift</i>	19.0	20.1	-	-	-	-	-	-	19.0	20.1	19.6	
SENAI	-	-	-	-	17.4	13.1	15.4	11.9	16.9	12.8	14.9	
General Secondary Schools												
Public												
<i>Day Shift</i>	15.1	10.6	16.1	10.9	18.6	13.0	18.0	13.3	17.9	12.5	15.2	
<i>Night Shift</i>	13.5	10.1	12.9	10.3	14.5	10.3	16.0	11.1	14.5	10.4	12.5	
Private												
<i>Day Shift</i>	17.4	15.6	23.8	23.7	16.9	16.0	23.6	28.2	20.3	20.9	20.6	
<i>Night Shift</i>	24.9	32.1	-	-	15.5	12.7	-	-	19.9	21.9	20.9	
Teacher Training (Magisterio)												
Public												
<i>Day Only</i>	14.8	9.9	13.7	9.2	16.2	9.9	18.5	13.9	15.9	10.5	13.2	
Private												
<i>Day Shift</i>	-	-	-	-	19.0	11.8	-	-	19.0	11.8	15.4	
<i>Night Shift</i>	-	-	-	-	15.0	8.5	17.4	11.2	17.2	11.1	14.2	

Note: Number of correct out of 35 Portuguese questions and 35 Mathematics questions

Source: Carlos Chagas Foundation

(ovem)

FREQUENCIAS PERCENTUAIS DA VARIÁVEL SEXO EM UMA AMOSTRA DE ALUNOS DA 3ª. SÉRIE DO 2º. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR, SÃO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO, O TURNO E A CIDADE. FUNDAÇÃO CARLOS CHAGAS, 1988.

Tipo de Curso	Rede de Ensino	Turno	Masculino	Feminino	Não Identificado	Total
<u>TECHNICO</u>	Publico	Diurno	73.3	26.7	...	100.0
		Noturno	81.0	19.0	...	100.0
	SENAI		93.2	6.8	...	100.0
<u>GERAL</u>	Publico	Diurno	23.0	76.9	0.1	100.0
		Noturno	50.4	49.3	0.3	100.0
	Privado	Diurno	47.4	52.6	...	100.0
		Noturno	46.2	49.5	4.3	100.0
<u>MAGISTERIO</u>	Publico	Diurno	1.6	98.4	...	100.0
		Privado	8.0	92.0	...	100.0
		Noturno	2.5	97.5	...	100.0
<u>CIDADES</u>						
		Fortaleza	43.3	56.7	...	100.0
		Salvador	40.8	59.2	...	100.0
		Sao Paulo	39.9	59.7	0.4	100.0
		Curitiba	47.9	51.9	0.2	100.0
TOTAL			41.9	57.9	0.2	100.0

Table 26: DISTRIBUTION OF STUDENT SAMPLE BY AGE, TYPE OF SCHOOL AND SHIFT (DAY OR NIGHT), November 1988
FREQUENCIAS PERCENTUAIS DA VARIÁVEL IDADE EM UMA AMOSTRA DE ALUNOS DA 3ª. SÉRIE DO
2º. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR, SÃO PAULO E CURITIBA, SEGUNDO O TIPO
DE CURSO, A REDE DE ENSINO, O TURNO E A CIDADE. FUNDAÇÃO CARLOS CHAGAS, 1988.

Tipo de Rede de Curso			IDADE										Total
Curso	Ensino	Turno	15	16	17	18	19	20	21	22	23 OU +	Omissões	Total
TECNICO													
	Publico	Diurno	...	1.2	20.3	47.7	16.9	8.7	4.1	0.6	...	0.5	100.0
		Noturno	...	...	4.8	14.3	23.8	33.3	4.8	4.8	14.3	...	100.0
	SENAI		0.8	...	21.2	16.9	24.6	8.5	4.2	1.7	21.2	0.9	100.0
GERAL													
	Publico	Diurno	0.2	1.5	41.4	30.6	13.4	5.9	2.9	1.2	3.0	...	100.0
		Noturno	...	0.2	12.4	24.6	18.7	12.9	10.5	6.9	12.7	1.1	100.0
	Privado	Diurno	...	3.6	52.1	27.3	8.1	4.0	1.9	1.7	0.7	0.6	100.0
		Noturno	...	4.4	65.9	17.6	4.4	1.1	1.1	...	1.1	4.4	100.0
MAGISTERIO													
	Publico	Diurno	...	...	14.1	25.1	19.4	10.5	11.5	5.8	13.1	0.5	100.0
	Privado	Diurno	...	4.0	24.0	36.3	24.0	8.0	4.0	0.0	0.0	...	100.0
		Noturno	...	...	32.5	25.0	17.5	7.5	2.5	5.0	10.0	...	100.0
CIDADES													
	Fortaleza		...	2.3	30.2	20.1	17.8	13.4	4.7	4.4	5.4	1.7	100.0
	Salvador		0.3	3.1	21.3	22.3	14.1	11.5	10.0	5.6	11.0	0.8	100.0
	Sao Paulo		...	0.6	29.3	27.9	16.2	8.5	6.4	3.5	6.9	0.7	100.0
	Curitiba		0.2	1.2	34.9	34.9	13.0	4.3	2.6	1.4	7.3	0.2	100.0
TOTAL			0.1	1.3	29.3	27.5	15.4	8.7	6.0	3.5	7.4	0.8	100.0

Table 27: PERCENTAGE OF STUDENT SAMPLE ATTENDING NIGHT SCHOOL, BY TYPE OF SCHOOL, November 1988

FREQUENCIAS PERCENTUAIS DA VARIÁVEL TURNO QUE CURSA O 2o. GRAU EM UMA AMOSTRA DA ALUNOS DA 3a. SERIE DO 2o. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR, SAO PAULO E CURITIBA SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO, O TURNO E A CIDADE. FUNDAÇÃO CARLOS CHAGAS, 1988

Tipo de Curso	Rede de Ensino	Diurno	Noturno	Omissões	Total
<u>PUBLICO</u>					
	Publico	86.0	14.0	...	100.0
	SENAI	96.6	3.4	...	100.0
<u>GERAL</u>					
	Publico	44.6	54.7	0.7	100.0
	Privado	83.0	14.8	2.2	100.0
<u>MAGISTERIO</u>					
	Publico	100.0	...	...	100.0
	Privado	38.5	61.5	...	100.0
<u>CIDADES</u>					
	Fortaleza	71.1	27.5	1.4	100.0
	Salvador	72.1	27.4	0.5	100.0
	Sao Paulo	55.4	43.6	1.0	100.0
	Curitiba	64.1	35.9	...	100.0
TOTAL		61.3	37.9	0.8	100.0

Table 28: REASONS FOR ATTENDING PRIVATE SCHOOL, November 1988

FREQUENCIAS PERCENTUAIS DA VARIÁVEL RAZÃO PARA FAZER O 2o. GRAU EM ESCOLA PARTICULAR EM UMA AMOSTRA DE ALUNOS DA 3a. SÉRIE DO 2o. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR, SÃO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO E O TURNO. FUNDACAO CARLOS CHAGAS, 1988.

TIPO DE REDE DE CURSO ENSINO TURNO	RAZÃO PARA FAZER O 2o. GRAU EM ESCOLA PARTICULAR									
	NAO CURSA ESCOLA PRIVADA	FALTAM VAGAS NAS ESCOLAS PUBLICAS	INEXISTEM ESCOLAS PU- PUBLICAS PERTO DE CASA	ESCOLAS PUBLICAS LONGE DO TRABALHO	ESCOLAS PUBLICAS EXIGEM EXAME DE SELECAO	NIVEL DE DIFICULDADE E MENOR	FACILIDADE DE INGRESSO NO ENSINO SUPERIOR PUBLICO	OMISSOES	TOTAL	
TECNICO										
SENAI -	35.6	3.4	5.9	...	...	1.7	29.7	23.7	100.0
GERAL										
PRIVADO <i>Diurno</i>	...	1.4	5.9	1.4	1.2	5.9	80.6	3.6	100.0	
<i>Noturno</i>	...	...	3.3	1.1	2.2	2.2	82.4	8.8	100.0
MAGISTERIO										
PRIVADO <i>Diurno</i>	...	...	4.0	...	...	...	96	...	100.0
<i>Noturno</i>	...	10.0	17.5	7.5	...	7.5	40	17.5	100.0	
TOTAL	6.0	2.0	6.2	1.4	1.0	4.6	70.4	8.4	100.0	

Table 29: DISTRIBUTION OF STUDENT SAMPLE, BY TYPE OF PROGRAM, November 1988

FREQUENCIAS PERCENTUAIS DA VARIÁVEL TIPO DE CURSO DE 2o. GRAU QUE ESTA CONCLUINDO EM UMA AMOSTRA DE ALUNOS DA 3a. SERIE DO 2o. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR, SAO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO O TURNO E A CIDADE FUNDACAO CARLOS CHAGAS, 1988.

Tipo de Curso	Rede de Ensino	Turno	TIPO DE CURSO DE 2o. GRAU ESTA CONCLUINDO								TOTAL	
			GERAL	CIENCIAS	HUMANIDADES	CONTABILIDADE	MAGISTERIO	TECNICO INDUSTRIAL	OUTRO	MAIS DE UM CURSO		OMISSOES
TECNICO												
	Publico	Diurno	...	...	...	...	...	86.0	12.8	...	1.2	100.0
		Noturno	...	...	...	...	...	95.2	4.8	...	...	100.0
	SENAI		...	...	...	...	...	90.7	5.9	0.8	2.6	100.0
GERAL												
	Publico	Diurno	55.0	7.2	7.5	4.8	17.1	1.8	6.3	0.3	...	100.0
		Noturno	76.8	2.2	0.8	7.6	5.0	0.2	5.9	0.2	1.3	100.0
	Privado	Diurno	81.8	0.7	1.7	7.8	1.4	...	5.2	0.2	1.2	100.0
		Noturno	81.3	1.1	...	...	1.1	2.2	7.7	2.2	4.4	100.0
MAGISTERIO												
	Publico	Diurno	...	...	...	0.5	97.4	...	...	2.1	...	100.0
	Privado	Diurno	...	...	...	...	100.0	...	...	...	...	100.0
		Noturno	...	...	...	...	100.0	...	...	...	...	100.0
CIDADES												
	Fortaleza		51.3	0.3	0.3	10.1	15.8	18.1	3.0	0.3	0.8	100.0
	Salvador		67.7	1.5	0.5	0.5	9.7	12.3	6.7	1.0	...	100.0
	Sao Paulo		53.0	4.4	4.2	7.0	17.5	6.1	6.3	0.5	1.0	100.0
	Curitiba		58.2	0.4	...	...	15.4	20.3	5.3	...	0.4	100.0
TOTAL			55.9	2.8	2.4	5.1	15.7	11.0	5.8	0.5	0.8	100.0

Table 30: DISTRIBUTION OF STUDENT SAMPLE, BY FATHER'S LEVEL OF EDUCATION, November 1988

FREQUENCIAS PERCENTUAIS DA VARIÁVEL NÍVEL DE INSTRUÇÃO DO PAI
EM UMA AMOSTRA DE ALUNOS DA 3ª. SÉRIE DO 2º. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR,
SAO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO O TURNO E A CIDADE
FUNDAÇÃO CARLOS CHAGAS, 1988.

Tipo de Rede de Curso	Ensino	Turno	NÍVEL DE INSTRUÇÃO DO PAI										TOTAL	
			NENHUM ANO DE ESTUDO	1º. GRAU		2º. GRAU		TECNICO SENAI /SENAC		OUTRAS ESCOLAS TECNICAS	SUPERIOR			
				INCOMPLETO	COMPLETO	INCOMPLETO	COMPLETO	INCOMPLETO	COMPLETO		INCOMPLETO	COMPLETO		
TECNICO														
	Publico	Diurno	5.2	26.7	13.4	9.9	14.5	...	0.6	1.7	1.2	26.7	100.0	
		Noturno	14.3	28.6	23.8	...	14.3	...	...	4.8	9.5	4.8	100.0
	SENAI		6.8	28.8	16.9	5.1	9.3	...	1.7	5.1	5.9	20.3	100.0	
GERAL														
	Publico	Diurno	3.3	36.3	21.2	6.0	11.6	0.9	2.1	3.0	3.2	12.5	100.0	
		Noturno	11.1	46.8	18.4	5.1	8.2	0.3	1.4	1.3	2.2	5.1	100.0	
	Privado	Diurno	2.8	13.7	11.1	3.6	15.2	0.2	0.5	4.7	5.9	42.2	100.0	
		Noturno	6.6	5.5	15.4	8.8	13.2	...	...	2.2	5.5	42.9	100.0
MAGISTERIO														
	Publico	Diurno	6.8	40.8	19.9	6.3	8.4	...	1.6	2.1	3.7	10.5	100.0	
	Privado	Diurno	4.0	4.0	12.0	4.0	28.0	...	...	8.0	4.0	36.0	100.0
		Noturno	12.5	55.0	10.0	5.0	5.0	...	...	...	5.0	7.5	100.0
CIDADES														
	Fortaleza		10.3	33.9	12.1	3.7	14.8	...	0.3	2.3	4.0	18.5	100.0	
	Salvador		9.2	27.9	17.9	6.9	12.6	0.5	1.0	3.1	2.3	18.5	100.0	
	Sao Paulo		6.0	37.6	18.7	5.5	9.9	0.5	1.8	2.7	3.5	13.8	100.0	
	Curitiba		4.9	30.8	16.2	5.7	10.8	0.2	0.8	2.2	4.1	24.3	100.0	
TOTAL			6.6	34.5	17.4	5.6	11.0	0.4	1.3	2.6	3.5	17.0	100.0	

Table 31: DISTRIBUTION OF STUDENT SAMPLE, BY MOTHER'S LEVEL OF EDUCATION, November 1988
FREQUENCIAS PERCENTUAIS DA VARIÁVEL NÍVEL DE INSTRUÇÃO DA MÃE
EM UMA AMOSTRA DE ALUNOS DA 3ª. SÉRIE DO 2º. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR,
SÃO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO O TURNO E A CIDADE
FUNDAÇÃO CARLOS CHAGAS, 1988.

Tipo de Rede de Curso Ensino Turno	NÍVEL DE INSTRUÇÃO DO MÃE											TOTAL
	NENHUM ANO DE ESTUDO	1º. GRAU		2º. GRAU		TECNICO SENAI /SENAC		OUTRAS ESCOLAS TECNICAS	SUPERIOR			
		INCOMPLETO	COMPLETO	INCOMPLETO	COMPLETO	INCOMPLETO	COMPLETO		INCOMPLETO	COMPLETO		
TECNICO												
Publico	Diurno	3.5	32.6	17.4	7.6	22.1	0.6	...	0.6	1.2	14.5	100.0
	Noturno	9.5	33.3	9.5	4.8	28.6	4.8	...	...	4.8	4.8	100.0
	SENAI	6.8	28.0	22.9	5.9	18.6	...	0.8	4.2	2.5	10.2	100.0
GERAL												
Publico	Diurno	5.0	45.6	21.9	5.0	12.6	0.3	0.5	1.1	0.6	7.5	100.0
	Noturno	15.3	45.9	22.2	5.8	7.9	...	...	0.8	0.3	1.9	100.0
Privado	Diurno	2.8	17.3	13.5	6.2	27.5	...	0.2	2.8	5.5	24.2	100.0
	Noturno	6.6	5.5	16.5	9.9	28.6	...	...	1.1	5.5	26.4	100.0
MAGISTERIO												
Publico	Diurno	5.2	46.6	22.0	6.3	12.6	0.5	0.5	0.5	1.6	4.2	100.0
Privado	Diurno	...	12.0	16.0	20.0	16.0	...	...	16.0	4.0	16.0	100.0
	Noturno	10.0	50.0	20.0	2.5	5.0	...	...	2.5	2.5	7.5	100.0
CIDADES												
	Fortaleza	6.4	38.3	12.8	5.0	21.5	0.7	...	0.7	4.0	10.7	100.0
	Salvador	10.0	33.8	15.1	6.4	18.5	0.3	0.3	1.8	1.8	12.1	100.0
	Sao Paulo	9.0	40.0	22.6	6.3	12.1	0.1	0.3	1.5	0.7	2.4	100.0
	Curitiba	5.9	34.7	20.7	5.3	16.2	0.2	0.0	1.6	3.4	12.0	100.0
TOTAL		8.3	37.9	20.1	6.0	14.8	0.2	0.2	1.5	1.7	9.3	100.0

Table 32: PERCENTAGE OF STUDENT SAMPLE WHO WORK AND HOURS WORKED, November 1988
FREQUENCIAS PERCENTUAIS DA VARIÁVEL HORAS DE TRABALHO POR SEMANA ATUALMENTE,
EM UMA AMOSTRA DE ALUNOS DA 3ª. SÉRIE DO 2º. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR,
SÃO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO O TURNO E A CIDADE
FUNDAÇÃO CARLOS CHAGAS, 1988.

Tipo de Curso	Rede de Ensino	Turno	HORAS DE TRABALHO POR SEMANA, ATUALMENTE							
			NAO TRABALHO	1 A 10	11 A 20	21 A 30	31 A 40	41 E MAIS	OMISSOES	TOTAL
<u>TECNICO</u>										
	Publico	Diurno	76.7	3.5	12.8	3.5	2.3	...	1.2	100.0
		Noturno	23.8	...	9.5	33.3	14.3	19.0	0.1	100.0
	SENAI		66.1	5.1	3.4	1.7	12.7	6.8	4.2	100.0
<u>GERAL</u>										
	Publico	Diurno	77.0	5.9	4.1	7.4	2.4	1.5	1.8	100.0
		Noturno	17.3	10.5	1.8	11.6	27.2	31.0	0.6	100.0
	Privado	Diurno	84.4	2.8	1.2	1.2	5.5	3.8	1.2	100.0
		Noturno	30.2	4.4	1.1	1.1	3.3	4.4	5.5	100.0
<u>MAGISTERIO</u>										
	Publico	Diurno	57.1	7.3	18.8	9.4	6.3	0.5	0.6	100.0
	Privado	Diurno	52.0	12.0	8.0	24.0	4.0	...	...	100.0
		Noturno	22.5	7.5	15.0	17.5	20.0	17.5	...	100.0
<u>CIDADES</u>										
	Fortaleza		71.1	3.7	7.4	3.4	4.4	9.4	0.6	100.0
	Salvador		72.3	5.1	2.6	4.1	6.4	8.7	0.8	100.0
	Sao Paulo		45.7	8.5	3.8	10.0	16.0	14.1	1.9	100.0
	Curitiba		56.6	5.3	6.7	6.9	11.6	12.4	0.5	100.0
TOTAL			54.5	6.9	4.6	7.8	12.5	12.5	1.2	100.0

Table 33: DISTRIBUTION OF STUDENT SAMPLE, BY FATHER'S OCCUPATION, November 1988
FREQUENCIAS PERCENTUAIS DA VARIÁVEL OCUPAÇÃO DO PAI EM UMA AMOSTRA
DE ALUNOS DA 3ª. SÉRIE DO 2º. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR,
SÃO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO E
O TURNO E A CIDADE. FUNDAÇÃO CARLOS CHAGAS, 1988

TIPO DE CURSO	REDE DE ENSINO	TURNO	OCUPAÇÃO DO PAI						TOTAL	
			PROFISSOES DE NIVEL SUPERIOR E TECNICAS DE NIVEL MEDIO (1)		EMPRESAS INDUSTRIAIS E OUTRAS (2)		EMPRESAS AGRICOLAS	FORÇAS ARMADAS		ADMINISTRAÇÃO PÚBLICA
TECNICO										
	Publico	<i>Diurno</i>	32.6	51.2	2.9	1.2	9.9	2.2	100.0	
		<i>Noturno</i>	14.3	71.4	4.8	...	9.5	...	100.0	
	SENAI		32.2	48.3	5.9	2.5	7.6	3.5	100.0	
GERAL										
	Publico	<i>Diurno</i>	23.4	55.9	1.5	3.8	9.0	6.4	100.0	
		<i>Noturno</i>	19.1	58.2	5.8	1.3	7.8	7.9	100.0	
	Privado	<i>Diurno</i>	37.7	48.1	2.8	2.8	5.9	2.7	100.0	
		<i>Noturno</i>	35.2	52.7	1.1		4.4	6.6	100.0	
MAGISTERIO										
	Publico	<i>Diurno</i>	23.6	53.4	3.7	1.0	12.6	5.8	100.0	
	Privado	<i>Diurno</i>	8.0	88.0	...	...	...	4.0	100.0
		<i>Noturno</i>	7.5	52.5	5.0	2.5	10.0	22.5	100.0	
CIDADES										
	Fortaleza		24.8	46.3	8.4	3.0	15.8	1.7	100.0	
	Salvador		28.7	49.2	4.4	3.6	8.5	5.6	100.0	
	Sao Paulo		21.1	60.1	2.7	1.5	7.4	7.2	100.0	
	Curitiba		34.7	48.9	3.0	2.4	5.3	5.7	100.0	
TOTAL			25.2	54.9	3.7	2.2	8.1	6.0	100.0	

Table 34: DISTRIBUTION OF STUDENT SAMPLE BY FAMILY INCOME LEVEL (percent), November 1988
FREQUENCIAS PERCENTUAIS DA VARIÁVEL RENDA TOTAL MENSAL DA FAMÍLIA (EM SALÁRIOS MÍNIMOS)
EM UMA AMOSTRA DE ALUNOS DA 3ª. SÉRIE DO 2º. GRAU DE ESCOLAS DE FORTALEZA, SALVADOR,
SÃO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO O TURNO E A CIDADE
FUNDAÇÃO CARLOS CHAGAS, 1988.

Tipo de Curso	Rede de Ensino	Turno	RENDA TOTAL MENSAL DA FAMÍLIA (EM SALÁRIOS MÍNIMOS)										
			ATE 1	1 A 1.0	1.0 A 2	2 A 2.3	2.3 A 2.0	2.0 A 3.3	3.3 A 6.5	6.5 A 13	ACIMA DE 13 OMISSOES	TOTAL	
<u>TECNICO</u>	Publico	Diurno	2.9	3.5	2.3	1.2	1.7	5.2	29.1	36.6	16.9	0.6	100.0
		Noturno	9.5	9.5	9.5	4.8	...	14.3	28.6	23.8	...	...	100.0
	SENAI		2.5	1.7	...	3.4	1.7	9.3	22.9	28.0	28.8	1.7	100.0
<u>GERAL</u>	Publico	Diurno	3.6	5.0	2.3	3.9	5.6	13.7	23.7	24.0	14.1	4.2	100.0
		Noturno	2.4	3.0	2.9	2.3	2.8	10.2	26.5	29.9	15.5	4.4	100.0
	Privado	Diurno	1.4	2.1	1.2	0.7	1.2	6.2	12.3	27.0	46.0	1.9	100.0
		Noturno	...	...	3.3	...	...	2.2	12.1	26.4	49.5	6.6	100.0
<u>MAGISTERIO</u>	Publico	Diurno	5.8	5.2	3.1	3.7	7.3	15.7	25.7	15.2	11.0	7.3	100.0
		Privado	...	...	...	...	...	8.0	24.0	32.0	36.0	...	100.0
		Noturno	...	2.5	...	2.5	2.5	12.5	40.0	15.0	20.0	5.0	100.0
<u>CIDADES</u>	Fortaleza		8.7	12.4	5.0	4.0	3.4	15.4	19.5	17.8	12.4	1.3	100.0
	Salvador		6.4	5.6	4.1	4.1	5.1	11.0	14.9	21.0	18.2	9.5	100.0
	Sao Paulo		1.2	1.4	1.2	1.9	3.0	9.1	24.8	31.2	22.8	3.4	100.0
	Curitiba		1.0	2.0	2.4	1.8	2.6	9.9	27.2	24.3	26.6	2.0	100.0

Table 35: AVERAGE CLASS SIZE BY TYPE OF SCHOOL AND PROGRAM, November 1988
FREQUENCIAS PERCENTUAIS DO NUMERO MEDIO DE ALUNOS POR TURMA EM CADA
SERIE DO 2o. GRAU EM UMA AMOSTRA DE ESCOLAS, SEGUNDO O TIPO-DE CURSO,
REDE DE ENSINO E CIDADE, FUNDAÇÃO CARLOS CHAGAS, 1988.

	NUMERO MEDIO DE ALUNOS POR TURMA EM CADA SERIE DO 2o. GRAU						
	20 OU MENOS	MAIS DE 20 A 30	MAIS DE 30 A 40	MAIS DE 40 A 50	MAIS DE 50	OMISSOES	TOTAL
<u>TIPO DE CURSO</u>							
TECNICO	16.7	...	83.3	...	...	...	100.0
GERAL	...	3.6	58.2	29.1	7.3	1.8	100.0
MAGISTERIO	...	28.6	42.9	14.3	14.3	...	100.0
<u>REDE DE ENSINO</u>							
PUBLICO	...	8.5	66.0	19.1	4.3	2.1	100.0
PRIVADO	...	...	42.1	42.1	15.8	...	100.0
SENAI	100.0	...	...	...	...	...	100.0
<u>CIDADES</u>							
Fortaleza	...	...	28.6	42.9	28.6	...	100.0
Salvador	...	...	33.3	50.0	16.7	...	100.0
Sao Paulo	...	9.3	69.8	16.3	2.3	2.3	100.0
Curitiba	8.3	...	50.0	33.3	8.3	...	100.0
<u>TOTAL</u>	1.5	5.9	58.8	25.0	7.4	1.5	100.0

Table 36: AVERAGE HOURS OF PORTUGUESE INSTRUCTION PER WEEK, BY TYPE OF SCHOOL, November 1988

FREQUENCIAS PERCENTUAIS DO NUMERO MEDIO DE AULAS/HORA DE PORTUGUES POR SEMANA NAS SERIES DO 2o. GRAU EM UMA AMOSTRA DE ESCOLAS, SEGUNDO O TIPO DE CURSO, REDE DE ENSINO E CIDADE, FUNDACAO CARLOS CHAGAS, 1988.

		NUMERO MEDIO DE AULAS/HORA DE PORTUGUES POR SEMANA NAS SERIES DO 2o. GRAU					OMISSOES	TOTAL
		MENOS DE 3 AULAS/HORA	MAIS DE 3 A 4	MAIS DE 4 A 5	MAIS DE 5			
<u>TIPO DE CURSO</u>	TECNICO	16.7	66.7	...	16.7	...	100.	
	GERAL	...	45.5	43.6	7.3	3.6	100.	
	MAGISTERIO	...	57.1	14.3	28.6	...	100.	
<u>REDE DE ENSINO</u>	PUBLICO	2.1	53.2	34.0	8.5	2.1	100.	
	PRIVADO	...	36.8	47.4	10.5	5.3	100.	
	SENAI	...	...	...	100.0	...	100.
<u>CIDADES</u>	Fortaleza	...	14.3	42.9	28.6	14.3	100.	
	Salvador	...	50.0	33.3	16.7	..	100.	
	Sao Paulo	...	58.1	34.9	4.7	2.3	100.	
	Curitiba	8.3	33.3	41.7	16.7	...	100.	
TOTAL		1.5	48.5	36.8	10.3	2.9	100.0	

Table 37: AVERAGE HOURS OF MATH INSTRUCTION PER WEEK, BY TYPE OF SCHOOL, November 1988

DISTRIBUICAO PERCENTUAL DE ESCOLAS DA AMOSTRA POR CLASSE DO NUMERO MEDIO DE HORAS/AULA DE MATEMATICA POR SEMANA NAS SERIES DO 2o. GRAU, SEGUNDO O TIPO DE CURSO, REDE DE ENSINO E CIDADE. FUNDACAO CARLOS CHAGAS, 1988.

		NUMERO MEDIO DE AULAS/HORA DE MATEMATICA POR SEMANA NAS SERIE DO 2o. GRAU					
		MAIS DE 3 AULAS/HORA	MAIS DE 3 A 4	MAIS DE 4 A 5	MAIS DE 5	OMISSOES	TOTAL
TIPO DE CURSO	TECNICO	...	83.3	...	16.7	...	100.0
	GERAL	1.8	67.3	21.8	7.3	1.8	100.0
	MAGISTERIO	...	71.4	14.3	14.3	...	100.0
REDE DE ENSINO	PUBLICO	...	80.9	8.5	8.5	2.1	100.0
	PRIVADO	5.3	42.1	47.4	5.3	...	100.0
	SENAI	...	...	...	100.0	...	100.0
CIDADES	Fortaleza	...	42.9	28.6	28.6	...	100.0
	Salvador	...	100.0	...	...	...	100.0
	Sao Paulo	2.3	69.8	20.9	4.7	2.3	100.0
	Curitiba	...	66.7	16.7	16.7	...	100.0
TOTAL		1.5	69.1	19.1	8.8	1.5	100.0

Table 38: TUITION (IN MINIMUM SALARIES) BY TYPE OF SCHOOL AND PROGRAM, November 1988
FREQUENCIAS PERCENTUAIS DAS MENSALIDADES COBRADAS NA ESCOLA DO 2o. GRAU
EM UMA AMOSTRA DE ESCOLAS, SEGUNDO O TIPO DE CURSO, REDE DE ENSINO E CIDADE
FUNDAÇÃO CARLOS CHAGAS, 1988.

		MENSALIDADE DA EXCOLA DE 2o GRAU (EM SALARIOS MINIMOS)								
		NAO COBRA	MENOS DE 0.16	MAIS DE 0.16-0.32	MAIS DE 0.32-0.65	MAIS DE 0.65-0.97	MAIS DE 0.97-1.62	MAIS DE 1.62	OMISSOES	TOTAL
TIPO DE CURSO	TECNICO	83.3	16.7	...	...	...	...	...	...	100.0
	GERAL	67.3	...	5.5	5.5	14.5	5.5	...	1.8	100.0
	MAGISTERIO	71.4	...	14.3	...	...	14.3	...	...	100.0
REDE DE ENSINO	PUBLICO	91.4	2.1	...	2.1	...	2.1	...	2.1	100.0
	PRIVADO	10.5	...	21.1	10.5	42.1	15.8	...	...	100.0
	SENAI	100.0	...	...	...	...	...	...	...	100.0
CIDADES	Fortaleza	57.1	...	...	14.3	28.6	...	...	...	100.0
	Salvador	66.7	...	...	...	16.7	16.7	...	...	100.0
	Sao Paulo	72.1	...	7.0	4.7	7.0	7.0	...	2.3	100.0
	Curitiba	66.7	8.3	8.3	...	16.7	...	...	...	100.0
TOTAL		69.1	1.5	5.9	4.4	11.8	5.9		1.5	100.0

Table 39: AVERAGE TEACHER SALARY BY TYPE OF SCHOOL AND PROGRAM, November 1988.

FREQUENCIAS PERCENTUAIS DE SALARIO MEDIO MENSAL DOS PROFESSORES DA ESCOLA DE 2o. GRAU EM UMA AMOSTRA DE ESCOLAS, SEGUNDO O TIPO DE CURSO, REDE DE ENSINO E CIDADE. FUNDACAO CARLOS CHAGAS, 1988.

		SALARIO MEDIO MENSAL DOS PROFESSORES DA ESCOLA DE 2o. GRAU (EM SALARIOS MINIMOS)						
		MENOS DE 1	MAIS DE 1 A 2	MAIS DE 2 A 4	MAIS DE 4 A 8	MAIS DE 8	OMISSOES	TOTAL
TIPO DE CURSO	TECNICO	...	...	...	...	100.0	...	100.0
	GERAL	...	10.9	60.0	16.4	5.5	7.3	100.0
	MAGISTERIO	...	28.6	28.6	14.3	14.3	14.3	100.0
REDE DE ENSINO	PUBLICO	...	10.6	66.0	10.6	10.6	2.1	100.0
	PRIVADO	...	15.8	15.8	26.3	21.1	21.1	100.0
	SENAI	...	...	...	...	100.0	100.0	100.0
CIDADE	Fortaleza	...	28.6	14.3	42.9	14.3	...	100.0
	Salvador	...	16.7	33.3	...	33.3	16.7	100.0
	Sao Paulo	...	9.3	62.8	9.3	11.6	7.0	100.0
	Curitiba	...	8.3	41.7	25.0	16.7	8.3	100.0
TOTAL		...	11.8	51.5	14.7	14.7	7.4	100.0

Table 40: PRIVATE SECONDARY SCHOOL PARTICIPATION, BY FAMILY INCOME QUARTILE AND REGION, 1982
PARTICIPACAO DA ESCOLA PARTICULAR NO ENSINO DE SEGUNDO GRAU

	URBANA %	RURAL %	TOTAL %
NORTE	22.28	...	22.28
NSE			
4o. quartil	33.54	...	33.54
3o. quartil	14.71	...	14.71
2o. quartil	12.25	...	12.25
1o. quartil	0.00	...	0.00
NORDESTE	39.90	45.95	40.46
NSE			
4o. quartil	51.15	72.33	52.21
3o. quartil	31.38	42.12	31.98
2o. quartil	34.54	41.11	35.36
1o. quartil	33.48	34.90	34.25
SUDESTE	49.45	32.66	48.86
NSE			
4o. quartil	53.91	41.90	53.73
3o. quartil	41.55	29.38	41.10
2o. quartil	37.53	27.20	35.51
1o. quartil	27.54	36.40	31.86
SUL	38.22	31.41	37.19
NSE			
4o. quartil	43.85	33.31	43.30
3o. quartil	28.15	41.04	31.14
2o. quartil	28.67	17.33	23.79
1o. quartil	0.00	0.00	0.00
CENTRO-OESTE	33.31	21.09	32.76
NSE			
4o. quartil	48.74	50.09	48.77
3o. quartil	20.49	0.00	19.93
2o. quartil	18.41	15.62	18.15
1o. quartil	21.69	21.21	21.54
BRASIL	43.52	35.88	43.02
NSE			
4o. quartil	50.99	48.45	50.92
3o. quartil	34.21	37.23	34.42
2o. quartil	31.30	27.78	30.69
1o. quartil	27.02	30.48	28.76

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

Table 41: AVERAGE MONTHLY PRIVATE SECONDARY SCHOOL TUITION PAID BY FAMILY INCOME QUARTILE AND REGION (in US\$), 1982
MEDIA DA MENSALIDADE NA REDE PARTICULAR DE ENSINO DE SEGUNDO GRAU (em US\$)

	URBANA	RURAL	TOTAL
NORTE	30.98	...	30.98
NSE			
4o. quartil	37.21	...	37.21
3o. quartil	18.41	...	18.41
2o. quartil	14.81	...	14.81
1o. quartil	...	...	...
NORDESTE	24.54	12.35	23.29
NSE			
4o. quartil	36.65	21.75	35.75
3o. quartil	13.16	10.86	12.98
2o. quartil	8.40	7.67	8.30
1o. quartil	4.42	6.94	6.00
SUDESTE	38.45	16.41	37.95
NSE			
4o. quartil	45.16	21.30	44.88
3o. quartil	21.91	17.67	21.81
2o. quartil	16.32	12.12	15.66
1o. quartil	9.35	8.27	8.81
SUL	30.31	16.41	28.55
NSE			
4o. quartil	34.85	21.73	34.32
3o. quartil	17.23	15.11	16.59
2o. quartil	17.65	14.34	16.54
1o. quartil	...	...	...
CENTRO-OESTE	38.69	23.45	38.23
NSE			
4o. quartil	46.88	24.81	46.39
3o. quartil	23.34	...	23.34
2o. quartil	14.47	21.20	15.04
1o. quartil	9.81	23.22	13.99
BRASIL	34.63	15.04	33.58
NSE			
4o. quartil	42.45	21.77	41.96
3o. quartil	19.43	14.61	19.07
2o. quartil	12.36	10.94	12.13
1o. quartil	6.48	8.02	7.36

Fonte: Pesquisa Nacional por Amostra de Domicílios - 1982

Table 42: AVERAGE PRIVATE MONTHLY SECONDARY SCHOOL TUITION RATES IN THREE STATES: SAO PAULO, CEARA AND PARANA, 1987 AND 1988

TYPE OF SCHOOL	in Cruzados			in US dollars		
	Minimum	Maximum	Mean	Minimum	Maximum	Mean
Sao Paulo (September 1987) 1)						
General Education	1	43,041	3,233	0.03	863	65
Ceara (March 1988) 2)						
General Secondary Fortaleza only						
1st and 2nd Years	926	7,630	4,267	9	71	40
3rd Year	926	9,219	5,078	9	86	47
Interior only						
1st and 2nd Years	350	2,807	1,470	3	26	14
3rd Year	708	2,807	1,595	7	26	15
Total State						
1st and 2nd Years	350	7,630	3,347	3	71	31
3rd Year	708	9,219	4,015	7	86	37
Parana (November 1988) 3)						
General Education	871	38,276	13,840	2	73	26

Sources: 1) Data from commissao de Encargos Sociais of the Conselho Estadual da Educacao for September 1987. Exchange rate used US\$1.00 = Cz 49.87
 2) Data from the Conselho Estadual de Educacao of Ceara, March 1988. Exchange rate used US\$1.00 = Cz 107.49
 3) Data from the Conselho Estadual de Educacao of Parana, November 1988. Exchange rate used US\$1.00 = Cz 526.15

Table 43: AVERAGE FAMILY PER CAPITA INCOME OF STUDENTS ATTENDING PRIVATE SECONDARY SCHOOLS (in US\$), 1982
MEDIA DA RENDA FAMILIAR PER CAPITA DOS ALUNOS DA REDE PARTICULAR DO ENSINO DE SEGUNDO GRAU (em US\$)

	URBANA	RURAL	TOTAL
NORTE	189.58	...	189.58
NSE			
4o. quartil	242.30	...	242.30
3o. quartil	80.80	...	80.80
2o. quartil	63.43	...	63.43
1o. quartil	...	...	...
NORDESTE	130.87	69.20	124.66
NSE			
4o. quartil	203.75	121.95	198.69
3o. quartil	61.98	48.80	60.97
2o. quartil	36.14	52.74	38.50
1o. quartil	26.56	33.99	31.09
SUDESTE	216.81	106.19	214.36
NSE			
4o. quartil	268.26	171.00	267.27
3o. quartil	90.62	98.23	90.80
2o. quartil	55.23	71.07	57.74
1o. quartil	22.45	23.98	23.21
SUL	206.06	93.07	191.61
NSE			
4o. quartil	251.10	175.39	248.01
3o. quartil	85.24	77.57	82.93
2o. quartil	44.38	42.41	43.72
1o. quartil	...	...	...
CENTRO-OESTE	239.21	130.33	236.23
NSE			
4o. quartil	305.59	213.51	303.89
3o. quartil	107.78	...	107.78
2o. quartil	53.83	57.09	54.10
1o. quartil	36.41	59.57	43.63
BRASIL	199.63	88.07	193.79
NSE			
4o. quartil	258.03	153.41	255.67
3o. quartil	84.24	74.75	83.52
2o. quartil	45.09	56.72	46.94
1o. quartil	26.97	33.31	30.50

nte: Pesquisa Nacional por Amostra de Domicílios - 1982

Table 44: TUITION AS A PERCENTAGE OF FAMILY PER CAPITA INCOME, BY FAMILY INCOME QUARTILE AND LOCATION, 1982
 PERCENTAGEM DA MENSALIDADE ESCOLAR EM RELACAO A RENDA FAMILIAR MEDIA PER CAPITA

	URBANA (%)	RURAL (%)	TOTAL (%)
NORTE	16.34	...	16.34
NSE			
4o. quartil	15.36	...	15.36
3o. quartil	22.78	...	22.78
2o. quartil	23.35	...	23.35
1o. quartil	0.00	...	...
NORDESTE	18.75	17.85	18.68
NSE			
4o. quartil	17.99	17.84	17.99
3o. quartil	21.23	22.25	21.29
2o. quartil	23.24	14.54	21.56
1o. quartil	16.64	20.42	19.30
SUDESTE	17.73	15.45	17.70
NSE			
4o. quartil	16.83	12.46	16.79
3o. quartil	24.18	17.99	24.02
2o. quartil	29.55	17.05	27.12
1o. quartil	41.65	34.49	37.96
SUL	14.71	17.63	14.90
NSE			
4o. quartil	13.88	12.39	13.84
3o. quartil	20.21	19.48	20.00
2o. quartil	39.77	33.81	37.83
1o. quartil	...	...	...
CENTRO-OESTE	16.17	17.99	16.18
NSE			
4o. quartil	15.34	11.62	15.27
3o. quartil	21.66	...	21.66
2o. quartil	26.88	37.13	27.80
1o. quartil	26.94	38.98	32.07
BRASIL	17.35	17.08	17.33
NSE			
4o. quartil	16.45	14.19	16.41
3o. quartil	23.07	19.55	22.83
2o. quartil	27.41	19.29	25.84
1o. quartil	24.03	24.08	24.13

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

Table 45: CHARACTERISTICS OF A SAMPLE OF TWELVE PRIVATE SECONDARY SCHOOLS FORTALEZA, CEARA, January 1989

	Group 1	Group 2	Mean Group 3	Total
Average number of Students per class	45.2	39.13	37.38	41.68
Number of hours instruction per week	25.5	25.17	22.92	24.53
Teacher salary per hour	2.34	1.75	1.38	1.82
Tuition	44.56	28.52	21.64	31.57

Notes: The twelve schools were broken into three groups of four schools each, based upon tuition levels. Group 1 had tuition of NCZ\$ 35 and above, Group 2 had tuition of NCZ\$ 25-35 and Group 3 had tuition below NCZ\$ 25. The sample represents approximately 15% of the total number of private schools in Fortaleza.

Source: Survey conducted by the Association of Private Schools, Ceara, January 1989

Table 46: SECONDARY SCHOOL PARTICIPATION, BY GENDER AND FAMILY INCOME QUARTILE, 1982
PARTICIPACAO NO ENSINO DE SEGUNDO GRAU SEGUNDO O SEXO
POPULACAO : 25 A 30 ANOS DE IDADE

	URBANA		RURAL		TOTAL	
	MASCULINO %	FEMININO %	MASCULINO %	FEMININO %	MASCULINO %	FEMININO %
NORTE	19.64	22.98	...	...	19.64	22.98
NSE						
4o. quartil	37.18	44.62	...	...	37.18	44.62
3o. quartil	27.34	28.92	...	...	27.34	28.92
2o. quartil	8.40	9.87	...	...	8.40	9.87
1o. quartil	1.02	1.75	...	...	1.02	1.75
NORDESTE	17.24	20.24	1.85	2.58	10.55	13.20
NSE						
4o. quartil	39.87	38.27	39.68	47.73	39.87	38.67
3o. quartil	28.36	34.65	36.92	32.22	29.06	34.46
2o. quartil	8.79	12.44	3.61	7.30	7.81	11.75
1o. quartil	1.28	1.39	0.14	0.51	0.47	0.77
SUDESTE	15.90	16.07	3.68	3.33	14.22	14.53
NSE						
4o. quartil	28.14	27.83	28.57	22.94	28.15	27.76
3o. quartil	14.35	12.61	11.75	10.76	14.21	12.50
2o. quartil	3.76	2.18	1.94	2.22	3.45	2.19
1o. quartil	0.50	1.17	0.00	0.18	0.22	0.60
SUL	17.24	15.90	4.16	3.49	12.80	11.88
NSE						
4o. quartil	32.20	28.49	16.33	9.52	31.08	27.02
3o. quartil	17.22	13.88	9.82	8.84	15.57	12.76
2o. quartil	4.83	3.64	3.06	3.23	4.07	3.48
1o. quartil	0.00	2.96	1.18	0.29	0.80	1.04
CENTRO-OESTE	20.73	20.59	3.29	3.39	16.16	16.50
NSE						
4o. quartil	36.95	36.77	25.86	31.52	36.68	36.66
3o. quartil	29.56	27.78	23.42	19.47	29.16	27.27
2o. quartil	9.67	10.10	5.37	5.85	8.83	9.36
1o. quartil	1.34	0.34	0.48	0.74	0.80	0.58
BRASIL	16.79	17.39	3.02	3.05	13.42	14.12
NSE						
4o. quartil	30.77	30.08	26.00	22.14	30.61	29.86
3o. quartil	17.93	17.35	14.27	12.82	17.61	16.95
2o. quartil	5.61	5.88	2.88	3.62	5.00	5.43
1o. quartil	0.87	1.42	0.28	0.43	0.49	0.77

Note: Participation rates expressed here reflect the share of the 25-30 year old population (i.e., post secondary school age) in Brazil in 1982, which reported some secondary schooling. Thus, they are not comparable with participation rates presented elsewhere in this report.

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

Table 47: FEMALE SHARE OF SECONDARY ENROLLMENTS, 1981-1987

ANO	MALE %	FEMALE %	TOTAL
1981	46	54	3,078,597
1982	46	54	2,867,570
1983	45	55	2,866,099
1984	44	56	2,898,351
1985	44	56	3,062,618
1986	42	58	3,290,908
1987	42	58	3,290,021

Note: These enrollments are estimated by IBGE on the basis of annual household survey data. They do not correspond perfectly with enrollment estimates presented elsewhere in this report (See Annex Table 5), which are from the Ministry of Education based upon reports from schools.

Fonte: Pesquisa Nacional de Amostra por Domicilios 1981, ..., 1987
(Exclui a populacao rural da Regiao Norte)

Table 48: MALE AND FEMALE ENROLLMENTS IN FEDERAL TECHNICAL SCHOOLS, 1979

REGION	MALE %	FEMALE %	TOTAL %
NORTH	4,082 71	1,688 29	5,770
NORTHEAST	13,580 71	5,435 29	19,015
SOUTHEAST	12,439 80	3,046 20	15,485
SOUTH	8,396 77	2,442 23	10,838
CENTER-WEST	2,267 63	1,305 37	3,572
TOTAL	41,064 75	14,016 25	55,080

Source: MEC

Table 49: GROWTH OF SECONDARY SCHOOL ENROLLMENTS, BY GENDER, 1981-1987
EVOLUCAO DA MATRICULA DE 2o. GRAU SEGUNDO O SEXO

ANO	MATRICULA		POPULACAO 16-18 ANOS		TAXA DE PART. BRUTA	
	MASCULINO	FEMININO	MASCULINO	FEMININO	MASCULINO	FEMININO
1981	1,426,968	1,651,629	4,095,238	4,073,029	34.84%	40.55%
			0	0		
1982	1,312,485	1,555,085	4,038,402	4,063,769	32.50%	38.27%
			0	0		
1983	1,295,083	1,571,016	4,100,170	4,080,205	31.59%	38.50%
			0	0		
1984	1,283,978	1,614,373	4,135,268	4,109,074	31.05%	39.29%
			0	0		
1985	1,346,991	1,715,627	4,184,260	4,224,571	32.19%	40.61%
			0	0		
1986	1,387,318	1,903,590	4,181,566	4,228,389	33.18%	45.02%
			0	0		
1987	1,366,732	1,923,289	4,184,440	4,285,926	32.82%	44.87%

Note: These enrollments are estimated by IBGE on the basis of annual household survey data. They do not correspond perfectly with enrollment estimates presented elsewhere in this report (See Annex Table 5), which are from the Ministry of Education based upon reports from schools.

Fonte: Pesquisa Nacional de Amostra por Domicilios 1981, ..., 1987
 (Exclui a populacao rural da Regiao Norte)

Table 50: SECONDARY SCHOOL PARTICIPATION, BY FAMILY INCOME QUARTILE, RACE AND REGION, 1982
PARTICIPACAO NO ENSINO DE SEGUNDO GRAU SEGUNDO A COR
POPULACAO : 25 A 30 ANOS DE IDADE

	URBANA		RURAL		TOTAL	
	BRANCA %	OUTRA %	BRANCA %	OUTRA %	BRANCA %	OUTRA %
NORTE	27.24	19.02	...	...	27.24	19.02
NSE						
4o. quartil	43.83	39.19	...	...	43.83	39.19
3o. quartil	32.58	26.44	...	...	32.58	26.44
2o. quartil	9.83	8.95	...	...	9.83	8.95
1o. quartil	0.55	1.63	...	...	0.55	1.63
NORDESTE	24.74	15.72	3.58	1.68	16.91	9.57
NSE						
4o. quartil	39.56	38.26	49.05	39.62	39.97	38.32
3o. quartil	34.32	30.18	35.94	33.53	34.43	30.47
2o. quartil	14.34	9.24	8.19	3.57	13.20	8.43
1o. quartil	0.67	1.56	0.47	0.27	0.52	0.67
SUDESTE	18.25	10.49	5.17	0.50	16.69	8.97
NSE						
4o. quartil	28.70	24.58	29.43	7.90	28.71	24.29
3o. quartil	14.37	11.31	13.16	4.23	14.29	11.02
2o. quartil	3.12	2.84	2.86	0.00	3.07	2.50
1o. quartil	0.97	0.66	0.16	0.00	0.49	0.30
SUL	18.24	6.80	4.27	1.58	13.67	4.94
NSE						
4o. quartil	30.59	23.48	12.93	7.35	29.31	21.85
3o. quartil	16.50	7.43	9.78	0.00	14.91	6.66
2o. quartil	4.23	4.27	3.04	3.93	3.70	4.17
1o. quartil	1.80	0.80	0.80	0.54	1.05	0.64
CENTRO-OESTE	25.61	14.99	5.54	1.63	21.31	11.17
NSE						
4o. quartil	38.10	33.85	41.98	17.89	38.16	33.19
3o. quartil	31.33	25.00	24.32	10.21	30.73	24.54
2o. quartil	11.72	8.42	5.88	5.27	10.48	7.90
1o. quartil	0.58	0.94	1.26	0.19	1.02	0.50
BRASIL	19.46	12.97	4.49	1.43	16.42	9.85
NSE						
4o. quartil	30.48	30.00	24.44	22.61	30.30	29.79
3o. quartil	17.58	17.74	12.98	15.84	17.10	17.64
2o. quartil	5.58	5.93	3.54	2.47	5.03	5.45
1o. quartil	1.00	1.23	0.53	0.24	0.68	0.60

Note: Participation rates expressed here reflect the share of the 25-30 year old population (i.e. post secondary school age) in Brazil in 1982, which reported some secondary schooling. Thus, they are not comparable with the participation rates presented elsewhere in this report.

Fonte: Pesquisa Nacional por Amostra de Domicílios - 1982

Table 51: PERCENTAGE OF STUDENTS ENTERING SECONDARY SCHOOL IN 1982 BY LEVEL OF EDUCATION ATTAINED BY FATHER AND FAMILY INCOME QUARTILE
PERCENTAGEM DE INGRESSANTES NO SEGUNDO GRAU EM 1982
SEGUNDO O GRAU DE INSTRUCAO DO PAI
POPULACAO : CONCLUINTES DO PRIMEIRO GRAU EM 1981

	TOTAL			
	ANALFABETO	1o. GRAU INCOMPLETO	1o. GRAU COMPLETO	2o. GRAU OU MAIS
	%	%	%	%
NORTE	90.34	71.65	83.98	92.47
NSE				
4o. quartil	100.00	73.64	83.71	93.73
3o. quartil	89.73	74.27	86.99	91.03
2o. quartil	88.85	66.89	75.00	...
1o. quartil	100.00	76.46	...	...
NORDESTE	70.86	80.52	86.91	92.72
NSE				
4o. quartil	75.52	86.38	97.86	94.85
3o. quartil	82.49	86.32	86.37	84.94
2o. quartil	67.79	78.03	62.14	74.88
1o. quartil	65.30	58.93	100.00	...
SUDESTE	64.15	65.65	77.62	85.56
NSE				
4o. quartil	85.94	74.24	80.15	85.66
3o. quartil	65.01	61.30	77.92	84.39
2o. quartil	55.53	52.79	...	87.48
1o. quartil	87.56	72.52	...	...
SUL	58.14	61.29	80.38	82.43
NSE				
4o. quartil	69.09	62.18	75.46	86.29
3o. quartil	66.20	66.33	84.79	66.53
2o. quartil	55.50	43.93	86.15	...
1o. quartil	37.23	47.98	...	...
CENTRO-OESTE	64.95	72.42	92.05	87.55
NSE				
4o. quartil	100.00	66.48	83.03	89.00
3o. quartil	75.24	79.19	96.10	87.69
2o. quartil	61.78	64.43	100.00	56.04
1o. quartil	55.44	73.40	...	...
BRASIL	61.25	68.56	82.24	86.46
NSE				
4o. quartil	81.10	73.23	82.52	87.42
3o. quartil	69.48	68.29	84.06	80.71
2o. quartil	61.62	62.27	72.51	74.39
1o. quartil	64.52	64.12	52.90	...

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

Table 52: LEVEL OF EDUCATION ATTAINED BY FATHER COMPARED WITH THAT OF CHILD
NIVEL DE INSTRUCAO DO PAI COMPARADO COM O NIVEL DE INSTRUCAO DO FILHO
POPULACAO : 25 A 30 ANOS DE IDADE
BRASIL - TOTAL

		NIVEL DE INSTRUCAO DO PAI				GERAL %
		ANALFABETO %	1o. GRAU INCOMPLETO %	1o. GRAU COMPLETO %	2o. GRAU OU MAIS %	
NSE - 4o. QUARTIL						
	ANALFABETO	0.25	0.60	1.41	0.74	0.65
NIVEL DE INSTRUCAO DO FILHO	1o. Gr Inc	21.46	13.61	4.58	3.79	10.95
	1o. Gr Comp	28.52	24.28	21.17	14.31	21.63
	2o. Gr ou +	48.77	61.51	72.85	81.16	66.77
	TOTAL	100.00	100.00	100.00	100.00	100.00
NSE - 3o. QUARTIL						
	ANALFABETO	4.86	2.11	2.79	2.18	2.72
NIVEL DE INSTRUCAO DO FILHO	1o. Gr Inc	46.13	40.11	30.38	29.67	41.05
	1o. Gr Comp	30.07	32.95	20.28	39.84	32.32
	2o. Gr ou +	18.94	24.83	46.55	28.31	23.91
	TOTAL	100.00	100.00	100.00	100.00	100.00
NSE - 2o. QUARTIL						
	ANALFABETO	17.71	7.69	6.17	8.04	12.00
NIVEL DE INSTRUCAO DO FILHO	1o. Gr Inc	62.23	61.87	52.80	53.58	61.94
	1o. Gr Comp	15.36	23.35	32.63	30.13	19.98
	2o. Gr ou +	4.71	7.08	8.39	8.25	6.08
	TOTAL	100.00	100.00	100.00	100.00	100.00
NSE - 1o. QUARTIL						
	ANALFABETO	51.38	29.94	0.00	39.11	43.54
NIVEL DE INSTRUCAO DO FILHO	1o. Gr Inc	44.62	62.00	82.83	52.21	50.97
	1o. Gr Comp	3.51	7.12	17.17	8.68	4.83
	2o. Gr ou +	0.50	0.95	0.00	0.00	0.66
	TOTAL	100.00	100.00	100.00	100.00	100.00

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

Obs.: (1) - Exato Norte Rural

Table 53: PERCENTAGE OF STUDENTS ENTERING SECONDARY SCHOOL IN 1982, BY TYPE OF SCHOOL ATTENDED IN 1981 AND FAMILY INCOME QUARTILE
PERCENTAGEM DE INGRESSANTES NO SEGUNDO GRAU EM 1982 SEGUNDO O TIPO DE ESCOLA FREQUENTADA EM 1981
POPULACAO : CONCLUINTE DO PRIMEIRO GRAU EM 1981

	URBANA (%)		RURAL (%)		TOTAL (%)	
	PUBLICA	PARTICULAR	PUBLICA	PARTICULAR	PUBLICA	PARTICULAR
NORTE	78.61	85.22	...	...	78.61	85.22
NSE						
4o. quartil	85.32	89.67	...	...	85.32	89.67
3o. quartil	78.20	79.20	...	...	78.20	79.20
2o. quartil	70.80	56.96	...	...	70.80	56.96
1o. quartil	78.37	...	...	...	78.37	...
NORDESTE	80.50	85.93	77.84	77.68	80.17	84.67
NSE						
4o. quartil	90.16	89.93	100.00	100.00	90.47	90.56
3o. quartil	84.58	86.38	74.57	100.00	83.87	87.57
2o. quartil	72.50	76.36	76.77	59.12	73.00	73.92
1o. quartil	44.27	60.50	76.95	72.75	63.42	68.91
SUDESTE	70.89	74.26	54.31	63.05	69.97	74.10
NSE						
4o. quartil	79.86	78.96	50.83	0.00	79.09	78.96
3o. quartil	62.06	67.30	75.71	57.91	62.46	67.03
2o. quartil	57.29	48.68	48.17	100.00	54.90	52.63
1o. quartil	100.00	60.25	62.19	0.00	86.25	47.36
SUL	69.83	75.25	60.39	57.71	67.67	72.35
NSE						
4o. quartil	72.30	77.64	62.56	49.10	71.42	76.49
3o. quartil	71.07	79.51	62.30	85.81	68.93	81.23
2o. quartil	49.90	24.05	80.84	37.89	55.20	30.02
1o. quartil	100.00	100.00	47.25	0.00	49.07	33.33
CENTRO-OESTE	77.18	83.86	35.81	66.87	73.51	83.23
NSE						
4o. quartil	76.03	86.38	87.21	100.00	76.28	88.59
3o. quartil	81.96	71.51	21.08	0.00	79.14	71.51
2o. quartil	71.07	66.30	28.15	100.00	65.04	71.16
1o. quartil	80.38	100.00	41.72	0.00	60.99	86.80
BRASIL	73.48	77.95	61.22	70.03	72.26	77.40
NSE						
4o. quartil	79.70	81.72	62.15	86.83	79.04	81.82
3o. quartil	70.17	74.15	65.02	84.55	69.77	74.95
2o. quartil	65.13	62.88	56.63	60.63	63.27	62.44
1o. quartil	67.41	68.51	65.05	54.74	66.11	60.47

Table 54 STUDENT FLOWS AT DIFFERENT TYPES OF BRAZILIAN SECONDARY SCHOOLS (1984 data)

Type of School	Grade 1	Grade 2	Grade 3	Grade 4
<u>Federal Technical</u>				
Dropout	0.1123	0.0629	0.0286	0.0358
Repeat	0.1852	0.1413	0.0565	0.0606
Pass	0.7025	0.7958	0.9149	0.9036
<u>State</u>				
Dropout	0.2916	0.2180	0.0997	...
Repeat	0.2184	0.1511	0.0659	...
Pass	0.4900	0.6309	0.8344	...
<u>Municipal</u>				
Dropout	0.2871	0.2234	0.0884	...
Repeat	0.1325	0.1130	0.0416	...
Pass	0.5504	0.6636	0.8700	...
<u>Private</u>				
Dropout	0.1735	0.1305	0.0684	...
Repeat	0.1265	0.0844	0.0461	...
Pass	0.7000	0.7851	0.8855	...

Source: MEC/SEEC Statistics, 1985

Table 55: NUMBER OF SCHOOLS, TEACHERS, STUDENTS AND STUDENT-TEACHER RATIOS AT DIFFERENT SECONDARY SCHOOLS, 1980,1985.

	<u>State</u>		<u>Municipal</u>		<u>Federal</u>		<u>Private</u>		<u>TOTAL</u>	
	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985
Number of Secondary Schools	2,957	4,421	525	638	117	137	3,844	4,064	7,443	9,260
Number of Teachers	93,773	106,889	8,466	10,318	8,292	7,750	87,556	79,154	198,087	206,111
Number of Students	1,324,687	1,780,155	97,454	132,333	86,125	99,422	1,310,921	1,004,228	2,819,812	3,016,138
Number of Students Per School	448	402	186	207	736	725	341	247	379	326
Number of Students per Teacher	14	16	12	13	10	13	15	13	14	15

Sources: MEC SEEC, Retrato Estatística da Educação and Sinopse Estatística do Ensino Regular do 2o. Grau

Table 56: PERCENTAGE OF DROP-OUTS, FAILURES, REPEATERS AND GRADUATES BY TYPE OF SCHOOL
EVADIDOS, REPROVADOS, REPETENTES E CONCLUINTES POR DEPENDENCIA ADMINISTRATIVA - 2o. GRAU
BRASIL 1970 - 1986

ANO	PUBLICO				PARTICULAR				TOTAL			
	EVASAO IMEDIATA	REPRO- VADOS	REPET- ENTES	CONCLU- INTES	EVASAO IMEDIATA	REPRO- VADOS	REPET- ENTES	CONCLU- INTES	EVASAO IMEDIATA	REPRO- VADOS	REPET- ENTES	CONCLU- INTES
	%	%	%	%	%	%	%	%	%	%	%	%
1970	4.48	19.15	...	20.28	3.62	12.44	0.00	25.23	4.09	16.11	6.03	22.51
1971	4.58	14.39	...	19.70	4.18	8.22	0.00	25.47	4.41	11.68	6.40	22.23
1972	11.69	10.87	...	19.57	6.00	5.60	4.66	27.14	9.26	8.54	5.54	22.81
1973	10.52	11.12	6.26	20.72	9.25	5.30	2.68	24.45	9.98	8.60	4.72	22.32
1974	15.93	11.35	6.17	19.08	11.09	6.16	2.49	23.05	13.81	9.01	4.56	20.82
1975	15.92	13.65	6.28	16.47	12.03	7.89	2.70	22.14	14.16	10.97	4.66	19.04
1976	17.97	13.65	7.24	16.84	11.63	8.55	3.23	23.07	15.08	11.23	5.41	19.68
1977	18.26	18.15	7.08	15.48	11.63	8.73	3.43	23.20	15.19	13.61	5.39	19.05
1978	18.55	16.88	10.34	17.24	8.33	11.38	3.60	24.65	13.82	14.17	7.22	20.67
1979	17.97	18.63	8.96	15.09	18.13	12.00	3.48	24.04	18.04	15.54	6.41	19.26
1980	17.99	20.42	10.03	15.85	17.09	10.41	4.08	23.06	17.57	15.74	7.27	19.20
1981	19.30	21.22	12.48	15.69	12.70	9.78	5.13	25.45	16.45	16.05	9.30	19.91
1982	16.19	25.39	13.72	16.47	14.02	11.01	4.83	25.81	15.30	19.41	10.08	20.29
1983	22.76	21.72	12.23	16.38	14.47	11.68	5.71	25.96	19.58	17.62	9.73	20.06
1984	23.74	21.71	12.50	16.38	14.36	12.22	6.68	26.23	20.46	18.14	10.46	19.83
1985	23.39	19.23	12.82	15.96	12.96	9.93	7.31	26.01	19.92	18.51	10.98	19.31
1986	24.19	19.31	13.05	16.34	13.42	11.17	7.40	24.91	20.61	18.92	11.18	19.19

Fonte:
Obs:

SEEC/MEC
 Os dados de repetencia foram estimados a partir de 1983 inclusive
 EVASAO IMEDIATA = $100 \cdot (\text{MAT. INICIAL} - \text{MAT. FINAL}) / \text{MAT. INICIAL}$
 REPROVACAO = $100 \cdot (\text{MAT. FINAL} - \text{APROVADOS}) / \text{MAT. FINAL}$
 REPETENTES = $100 \cdot \text{REPETENTES} / \text{MAT. INICIAL}$

**Table 57: NUMBER OF DROP-OUTS, FAILURES AND GRADUATES BY TYPE OF SCHOOL
EVADIDOS, REPROVADOS E CONCLUINTES POR DEPENDENCIA
ADMINISTRATIVA - 2o GRAU BRAZIL 1970 - 1987**

DEPENDENCIA ADMINISTRATIVA	ANO	MATRICULA INICIAL	MATRICULA FINAL	EVASAO IMEDIATA	APROVADOS	REPROVADOS	REPETENTES	CONCLUINTES
PUBLICA	1970	550,610	625,038	24,651	425,243	160,720	...	111,851
	1971	623,373	594,821	25,552	509,226	85,595	...	122,835
	1972	744,763	657,737	87,028	550,241	71,409	46,202	145,778
	1973	843,364	754,639	88,725	670,727	83,912	52,803	174,744
	1974	944,255	794,339	150,528	704,179	60,160	53,259	180,313
	1975	1,058,467	889,941	169,529	763,479	121,492	69,431	174,290
	1976	1,202,654	986,783	216,171	852,054	134,729	87,052	202,567
	1977	1,310,287	1,071,023	239,264	978,650	194,373	92,759	202,886
	1978	1,363,803	1,110,781	253,022	923,327	187,454	141,067	235,114
	1979	1,419,245	1,184,293	254,977	947,357	216,881	127,180	214,198
	1980	1,508,261	1,238,978	271,283	984,393	252,545	151,320	239,051
	1981	1,601,282	1,292,219	309,063	1,018,055	274,184	199,876	251,186
	1982	1,696,682	1,421,938	274,748	1,060,943	360,993	232,779	279,359
	1983	1,814,252	1,401,392	412,860	1,098,946	304,448	221,935	297,124
	1984	1,919,063	1,483,473	455,590	1,145,768	317,705	239,897	314,322
	1985	2,011,910	1,541,295	470,615	1,204,917	296,453	257,860	321,070
	1986	2,113,067	1,602,016	511,052	1,253,317	309,351	275,822	345,395
1987	2,098,848	...	...	...	...	...	...
PARTICULAR	1970	482,856	438,454	16,402	382,161	54,293	...	114,282
	1971	487,048	468,677	20,371	428,326	38,351	...	124,048
	1972	558,171	521,859	33,312	462,617	29,242	25,873	150,676
	1973	634,288	575,612	58,674	545,166	30,507	17,007	155,107
	1974	738,863	655,130	81,733	614,744	40,386	18,379	169,864
	1975	877,036	771,543	105,493	710,993	60,850	23,706	184,189
	1976	1,009,795	892,395	117,439	816,040	78,329	32,635	232,922
	1977	1,127,414	995,295	131,119	909,305	86,990	38,701	261,565
	1978	1,174,148	1,078,308	97,840	953,774	122,532	42,241	289,410
	1979	1,238,833	1,014,261	224,572	892,546	121,715	43,076	297,826
	1980	1,310,921	1,068,925	223,998	973,826	113,099	53,525	302,274
	1981	1,219,716	1,084,859	154,857	980,721	104,138	62,574	310,405
	1982	1,177,823	1,012,748	165,075	901,275	111,473	56,838	303,941
	1983	1,129,845	995,399	163,489	853,548	112,843	64,462	293,355
	1984	1,032,561	864,255	148,308	778,197	108,058	69,924	291,671
	1985	1,004,228	874,034	130,194	763,371	88,795	73,367	291,246
	1986	1,051,911	910,484	141,117	783,918	101,660	77,849	291,693
1987	1,147,770	...	...	...	...	...	...
TOTAL	1970	1,033,475	963,492	41,053	807,403	165,019	60,482	225,913
	1971	1,110,421	1,061,498	46,923	937,552	123,945	71,064	246,883
	1972	1,299,937	1,179,596	120,341	1,078,858	100,738	72,075	296,454
	1973	1,477,650	1,330,251	147,399	1,215,832	114,419	69,810	329,851
	1974	1,681,728	1,449,489	232,289	1,318,923	130,546	78,638	350,177
	1975	1,935,593	1,661,484	274,019	1,479,172	182,312	90,137	368,479
	1976	2,212,749	1,879,148	333,601	1,698,094	211,064	119,687	435,489
	1977	2,437,701	2,067,318	370,383	1,785,955	281,363	131,499	464,451
	1978	2,537,948	2,187,987	350,962	1,877,101	309,968	183,398	524,524
	1979	2,668,078	2,178,529	479,549	1,839,933	338,596	170,256	512,024
	1980	2,819,182	2,323,903	495,279	1,968,219	395,934	204,846	541,325
	1981	2,820,986	2,367,078	463,909	1,978,778	378,302	262,450	561,591
	1982	2,874,805	2,434,864	439,921	1,992,218	472,486	299,617	583,300
	1983	2,944,987	2,367,781	578,316	1,980,492	417,289	298,387	590,479
	1984	2,951,924	2,347,728	603,996	1,921,986	425,783	308,822	585,193
	1985	3,013,139	2,415,329	600,809	1,998,298	447,041	331,247	582,316
	1986	3,184,678	2,512,509	662,169	2,037,236	475,273	353,672	607,303
1987	3,246,416	...	...	...	...	...	...

Fonte: SEEC/MEC
Os dados com * foram estimados a partir de 1983 inclusive

Table 58: REASONS FOR DROPPING OUT OF SCHOOL, URBAN STUDENTS, 1982
MOTIVO PORQUE DEIXOU DE FREQUENTAR A ESCOLA
POPULACAO 25 A 30 ANOS COM PRIMEIRO GRAU CONCLUIDO

	URBANA				TOTAL %
	FALTA DE VA- GA OU SERIE SEGUINTE	TRABALHAR	NAO QUERIA CONTINUAR ESTUDOS	OUTRO MOTIVO	
	%	%	%	%	
NORTE	2.90	48.98	15.90	32.22	100.00
NSE					
4o. quartil	1.59	45.33	17.12	35.96	100.00
3o. quartil	3.85	47.54	15.82	32.79	100.00
2o. quartil	2.71	51.81	16.12	29.37	100.00
1o. quartil	5.68	64.95	5.68	23.69	100.00
NORDESTE	4.35	48.67	18.35	28.64	100.00
NSE					
4o. quartil	2.70	40.01	29.68	27.60	100.00
3o. quartil	2.58	48.82	17.11	31.49	100.00
2o. quartil	5.98	53.64	12.67	27.71	100.00
1o. quartil	14.03	49.51	19.07	17.39	100.00
SUDESTE	1.44	55.81	24.45	18.30	100.00
NSE					
4o. quartil	1.47	50.06	27.45	21.03	100.00
3o. quartil	1.12	59.18	24.04	15.67	100.00
2o. quartil	2.47	65.64	14.43	17.47	100.00
1o. quartil	0.00	72.93	21.89	5.18	100.00
SUL	4.54	53.68	24.29	17.49	100.00
NSE					
4o. quartil	6.85	46.51	26.01	20.64	100.00
3o. quartil	3.78	56.40	23.61	16.22	100.00
2o. quartil	0.55	65.02	20.66	13.77	100.00
1o. quartil	0.00	69.28	30.72	0.00	100.00
CENTRO-OESTE	2.15	51.42	25.17	21.26	100.00
NSE					
4o. quartil	2.89	44.97	24.56	27.58	100.00
3o. quartil	1.59	51.44	26.09	20.87	100.00
2o. quartil	1.26	57.99	26.02	14.73	100.00
1o. quartil	7.50	59.23	15.59	17.68	100.00
BRASIL	2.47	53.93	23.32	20.29	100.00
NSE					
4o. quartil	2.58	48.29	27.00	22.13	100.00
3o. quartil	1.86	56.54	22.96	18.63	100.00
2o. quartil	3.16	60.40	15.94	20.50	100.00
1o. quartil	7.60	59.57	19.74	13.09	100.00

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

Table 59: REASONS FOR DROPPING OUT OF SCHOOL, RURAL STUDENTS, 1982

**MOTIVO PORQUE DEIXOU DE FREQUENTAR A ESCOLA
POPULACAO 25 A 30 ANOS COM PRIMEIRO GRAU CONCLUIDO**

	RURAL				TOTAL
	FALTA DE VA- GA OU SERIE SEGUINTE	TRABALHAR	NAO QUERIA CONTINUAR ESTUDOS	OUTRO MOTIVO	
	%	%	%	%	
NORTE	...	...	...	...	...
NSE	...	...	...	...	...
4o. quartil	...	...	...	...	...
3o. quartil	...	...	...	...	...
2o. quartil	...	...	...	...	...
1o. quartil	...	...	...	...	...
NORDESTE	4.68	40.34	15.01	39.97	100.00
NSE	...	...	...	...	...
4o. quartil	0.00	48.50	9.30	42.20	100.00
3o. quartil	0.00	24.28	9.45	66.27	100.00
2o. quartil	0.00	38.72	38.72	22.56	100.00
1o. quartil	11.04	44.25	5.62	39.09	100.00
SUDESTE	14.67	42.95	32.88	9.50	100.00
NSE	...	...	...	...	...
4o. quartil	9.20	58.27	27.95	4.57	100.00
3o. quartil	9.58	39.64	39.24	11.54	100.00
2o. quartil	21.22	24.03	39.82	14.93	100.00
1o. quartil	33.56	66.44	0.00	0.00	100.00
SUL	11.27	50.88	13.81	24.05	100.00
NSE	...	...	...	...	...
4o. quartil	6.14	43.31	8.12	42.43	100.00
3o. quartil	19.47	55.88	5.08	19.56	100.00
2o. quartil	8.98	54.18	18.92	17.92	100.00
1o. quartil	0.00	32.96	67.04	0.00	100.00
CENTRO-OESTE	7.67	48.35	35.41	8.58	100.00
NSE	...	...	...	...	...
4o. quartil	0.00	62.57	0.00	37.43	100.00
3o. quartil	10.13	14.61	75.26	0.00	100.00
2o. quartil	9.24	62.43	23.54	4.80	100.00
1o. quartil	6.72	44.53	40.05	8.71	100.00
BRASIL	10.58	45.81	22.98	20.64	100.00
NSE	...	...	...	...	...
4o. quartil	6.12	51.27	15.88	26.73	100.00
3o. quartil	12.43	42.26	25.10	20.22	100.00
2o. quartil	11.07	44.46	28.80	15.67	100.00
1o. quartil	12.68	46.82	18.22	22.27	100.00

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

Table 60: REASONS FOR DROPPING OUT OF SCHOOL, ALL STUDENTS, 1982
MOTIVO PORQUE DEIXOU DE FREQUENTAR A ESCOLA
POPULACAO 25 A 30 ANOS COM PRIMEIRO GRAU CONCLUIDO

	TOTAL				TOTAL
	FALTA DE VA- OA OU SERIE SEGUINTE	TRABALHAR	NAO QUERIA CONTINUAR ESTUDOS	OUTRO MOTIVO	
	%	%	%	%	%
NORTE	2.90	48.98	15.90	32.22	100.00
NSE					
4o. quartil	1.59	45.33	17.12	35.96	100.00
3o. quartil	3.85	47.54	15.82	32.79	100.00
2o. quartil	2.71	51.81	16.12	29.37	100.00
1o. quartil	5.68	64.95	5.68	23.69	100.00
NORDESTE	4.38	47.77	17.99	29.86	100.00
NSE					
4o. quartil	2.48	40.72	27.97	28.83	100.00
3o. quartil	2.45	47.58	16.72	33.24	100.00
2o. quartil	5.53	52.52	14.63	27.32	100.00
1o. quartil	12.41	46.66	11.78	29.15	100.00
SUDESTE	2.03	55.24	24.83	17.90	100.00
NSE					
4o. quartil	1.69	50.29	27.46	20.56	100.00
3o. quartil	1.44	58.43	24.62	15.51	100.00
2o. quartil	4.31	61.56	16.91	17.22	100.00
1o. quartil	16.01	69.84	11.44	2.71	100.00
SUL	5.54	53.27	22.73	18.47	100.00
NSE					
4o. quartil	6.78	46.19	24.26	22.77	100.00
3o. quartil	5.71	56.33	21.33	16.63	100.00
2o. quartil	3.04	61.82	20.15	14.99	100.00
1o. quartil	0.00	56.04	43.96	0.00	100.00
CENTRO-OESTE	2.94	50.98	26.63	19.44	100.00
NSE					
4o. quartil	2.73	45.95	23.19	28.13	100.00
3o. quartil	2.20	48.83	29.58	19.39	100.00
2o. quartil	3.00	58.96	25.48	12.57	100.00
1o. quartil	7.08	51.29	28.80	12.83	100.00
BRASIL	3.10	53.30	23.29	20.31	100.00
NSE					
4o. quartil	2.75	48.43	26.48	22.34	100.00
3o. quartil	2.46	55.74	23.08	18.72	100.00
2o. quartil	4.21	58.28	17.65	19.86	100.00
1o. quartil	10.07	53.38	19.00	17.55	100.00

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

**Table 61: BRAZIL: OVERALL POPULATION GROWTH AND PROJECTED GROWTH
OF THE SECONDARY SCHOOL-AGE POPULATION
(in thousands)**

	1985	1990	1995	2000	2005	2010	2015
Total Population	135564	150190	165151	179804	193889	207192	219345
Population aged 15-19	13914	14839	16288	17991	18589	19233	19306
Annual Growth rate (of total population)		2.05	1.9	1.7	1.51	1.33	1.14
Annual Growth rate (of secondary-age population)		1.3	1.9	2.0	0.7		

Source: World Bank population projections

BIBLIOGRAPHY

Adams, Arvil V. and Antoine Schwartz, "Vocational Education and Economic Environments: Conflict or Convergence?" World Bank Working Paper Series 70, Washington, D.C. 1988.

Adler, P., "Rethinking the Skill Requirement of New Technologies," Working Paper HBS 84-27, Cambridge, MA: Graduate School of Business Administration, Harvard University, 1983.

Aizenman, J. "Labor Markets and the Choice of Technology in an Open Developing Economy," Report No. DRD 232, Washington, D.C.: World Bank, 1987.

Arriagada, Ana-Maria, "Occupational Training and the Employment and Wages of Peruvian Women," Policy Planning and Research Working Papers No. 241, Washington, D.C.: World Bank, 1989a.

-----, "Occupational Training Among Peruvian Men: Does It Make a Difference?" Policy, Planning and Research Working Papers No. 207, Washington, D.C.: World Bank, 1989b.

Barber, E. "General Education Versus Specific Education for Rural Development," Comparative Education Review, 25 (2), 1981.

Baquero Miguel, Godeardo, "Mais Anos de Estudo, Mais Salario: A Educacao Basica No Mercado de Trabalho," SG/MEC, March 1988.

----- and Liliane Aranha Oliveira, "Ensino Regular de Segundo Grau: Habilitacoes Profissionais," MEC, 1987.

Becker, G. "Human Capital: A Theoretical and Empirical Analysis with Special Relevance to Education," New York: National Bureau of Economic Research, second ed., 1975.

Behrman, J. R. and Nancy Birdsall, "The Quality of Schooling: Quantity Alone is Misleading," American Economic Review, 73, pp. 928-946, 1983.

----- and Nancy Birdsall, "The Quality of Schooling: Reply," American Economic Review, 75, pp. 1202-1205, 1985.

-----, "Schooling in Developing Countries: Which Countries are the Over- and Underachievers and What is the Schooling Impact?" Economics of Education Review, Vol. 6, No. 2, pp. 111-127, 1987.

Benson, Charles, "Taxonomies of Skill Development: A Search for Criteria to Predict the Relative Efficiency of Alternative Programs of Occupational Training," Population and Human Resources Department, Washington, D.C.: World Bank, forthcoming.

Berry, A. and R. Sabot, "Labor Market Performance in Developing Countries: A Survey," World Development, 6 (Nov./Dec.), 1978.

Blaug, M. An Introduction to the Economics of Education. New York: Penguin, 1972.

-----, "Where are We Now in the Economics of Education," Prepared for the OECD Directorate of Social Affairs, Manpower and Education, Paris, mimeo, 1982.

Bloom, E. and Richard B. Freeman, "The Effects of Rapid Growth on Labor Supply and Employment in Developing Countries," Population and Development Review, 12(3), 1986.

Carnoy, Martin, "The New Information Technology -- International Diffusion and Its Impact on Employment and Skills: A Review of the Literature," Education and Employment Division. Washington, D.C.: World Bank, processed, 1989.

Cohen, S.I., "A Cost-Benefit Analysis of Industrial Training," Economics of Education Review, Vol. 4, No. 4, pp. 327-339, 1985.

Costa Ribeiro, Sergio, "Vestibular 1988: Selecao ou Exclusao?" No. 023/88, Laboratorio Nacional de Computacao Cientifica, June 1988.

da Cunha, Celio, "O Ensino de Segundo Grau: Impassos e Perspectivas," MEC Discussion Paper, 1988.

de Moura Castro, Claudio, "The Meaning of Foreign Investment in the Chinese Economy," ILO Training Discussion Paper No. 39, ILO, Geneva, June 1989.

-----, Understanding the Mosaic of Vocational and Technical Education Institutions? Geneva: ILO, 1989.

-----, Is Training Very Expensive? Geneva, ILO, 1989.

-----, "Vocational Education and the Training Industrial Labour in Brazil," International Labour Review, Vol. 118, No. 5, pp. 617-629, 1979.

Denison, Edward F., Sources of Economic Growth in the United States and the Alternatives Before Us, New York: Committee for Economic Development, 1962.

-----, Why Growth Rates Differ: Post-War Experience in Nine Western Countries, Washington, D.C.: Brookings, 1967.

Dougherty, Christopher, The Cost-Effectiveness of National Training Systems in Developing Countries, Policy, Planning and Research Working Paper No. WPS 171, Washington, D.C.: World Bank, 1989.

----- and J. Tan, Financing Training: Issues and Options, Washington, D.C.: World Bank, forthcoming.

Ducci, M.A., Vocational Training: An Open Way, Studies and Monographs No. 62, Montevideo: CINTERFOR, 1983.

----, et. al., Regional Review of Vocational Training in Latin America, Montevideo: CINTERFOR, 1989.

Fletcher, Philip R. and Sergio Costa Ribeiro. "A Educacao Na Estatistica Nacional." IPLAN/IPEA/LNCC/CNPq, Brasilia , 1988.

---- and Sergio Costa Ribeiro, "O Fluxo de Alunos No Ensino Formal de Primeiro Grau No Brasil," IPLAN/IPEA/LNCC/CNPq, Brasilia, 1987.

Foster, P. "The Contribution of Education to Development," in G. Psacharopoulos, ed., Economics of Education: Research and Studies, Oxford: Pergamon Press, 1987.

----, "The Vocational School Fallacy in Development Planning," Education and Economic Development, Chicago: Aldine Publishing Company, 1965.

Franco, Maria Laura P. Barbosa, "Possibilidades e Limites do Trabalho Enquanto Principio Educativo." Cadernos de Pesquisa, (68): 29-38, 1989.

Fuller, W.P. "Evaluating Alternative Combinations of Education and Training for Job Preparation: An Example from Indian Industry," Manpower Journal, No. 3, 1972.

Gomes, Candido, "Early Career and Social Stratification in Brazil," paper presented at VII World Congress of Comparative Education, Montreal, 1989.

Grootaert, Christiaan, Cote d'Ivoire's Vocational and Technical Education, Policy, Planning and Research Working Papers No. WPS 19, Population and Human Resources Department, Washington, D.C.: World Bank, 1988.

----, Returns to Formal and Informal Vocational Education in Cote d'Ivoire: The Role of the Structure of the Labor Market, Washington, D.C.: World Bank, 1989.

Horn, R. and M. Jimenez, Does In-Service Training Affect Self-Employed Earnings? The Colombian Case, Education and Training Department Report No. EDT66, Washington, D.C.: World Bank, 1987.

Gusso, Divonzir Arthur, "Os Planos E As Financas do Ensino de 2o Grau," IPEA/IPLAN/CEC, February 1988.

----, "Receitas e Encargos Financeiros Em Educacao," IPEA/IPLAN/CEC, undated.

----, "Financiamento Externo Para A Educacao: Padroes E Conflitos Na Experiencia Brasileira," IPEA/IPLAN/CEC, undated.

IPEA/IPLAN, Educacao e Cultura 1987: Situacao e Politicas Governamentais. Brasilia, 1988.

James, Estelle, "Public Policies Toward Private Education," World Bank Discussion Paper No. EDT 84, June 1987.

Jamison, D. T. and L.J. Lau. Farmer Education and Farm Efficiency. Baltimore and London: Johns Hopkins University Press, for the World Bank. 1982.

Jimenez, Emmanuel et. al., "School Effects and Costs for Private and Public School in the Dominican Republic," WPS 288, World Bank, October 1989.

---- and Bernardo Kugler, The Earnings Impact of Training Duration in a Developing Country, World Bank Reprint Series, No. 416, 1987.

---- and Bernardo Kugler, Does SENA Matter? Some Preliminary Results on the Impact of Colombia's National Training System on Earnings, Discussion Paper, Education and Training Series Report No. EDT2, Washington, D.C.: World Bank, 1985.

----, Bernardo Kugler and Robin Horn, "An Economic Evaluation of a National Job Training System: Colombia's Servicio Nacional de Aprendizaje (SENA)," World Bank Discussion Paper No. EDT24, April 1986.

----, Marlaine Lockheed and Vincente Paqueo, "The Relative Efficiency of Public Schools in Developing Countries, WPS 72, World Bank, August 1988.

----, Vincente Paqueo and Ma. Lourdes de Vera, "Does Local Financing Make Primary Schools More Efficient? The Philippine Case," WPS 69, World Bank, August 1988.

----, Vincente Paqueo and Ma. Lourdes de Vera, "Student Performance and School Costs in The Philippines' High Schools," WPS 61, World Bank, August 1988.

King, Elizabeth M. and Maignet Shifferraw, Women's Participation in Vocational Education in LDCs: What Explain Cross-Country Differences, Education and Employment Division, Washington, D.C.: World Bank, 1989.

----, Does Education Pay in the Labor Market? The Labor Force Participation, Occupation and Earnings of Peruvian Women, Population and Human Resources Department, Washington, D.C.: World Bank, forthcoming.

Kugler, B. and A. Reyes, Financing of Technical and Vocational Training in Latin America, in Seminar on the Financing of Education in Latin America, Inter-American Development Bank and the Government of Mexico, 1978.

Lockheed, Marlaine E. and Nicholas T. Longford, "A Multi-Level Model of School Effectiveness in a Developing Country," World Bank Staff Working Paper No. 242, Washington, D.C.: World Bank, 1989.

Lofrano Alves dos Santos, Ana Elizabeth, "A Situacao Educacional Brasileira: Problemas Na Fila de Espera," MEC/SG/SAEP, Documento de Trabalho No. 3, Sept. 1987.

Luscher, Ana Suleima de Castro and Leila de Alvarenga Mafra, "O Ensino de Segundo Grau em Minas Gerais: diferenciacao, contencao e privatizacao," Educacao em Revista, Belo Horizonte, June 1986.

Melchior, Jose Carlos de Araujo. "Algunos Aspectos do Financiamento do Ensino de 2o Grau." Seminario Ensino de 2o Grau, Perspectivas. Anais. Sao Paulo, Faculdade de Educacao/USP, 92-108.

Metcalf, David H., The Economics of Vocational Training: Past Evidence and Future Considerations, World Bank Staff Working Papers No. 713, Washington, D.C : World Bank, 1985.

Middleton, J. and T. Demsky, Vocational Education and Training: A Review of World Bank Investment, World Bank Staff Working Paper No. 51, Washington, D.C.: World Bank, 1985.

Mincer, Jacob Schooling, Experience and Earnings. New York: Columbia University Press for the National Bureau of Economic Research, 1974.

Mingat, A., Jee-Peng Tan and Monzurul Hoque, "Recovering the Cost of Public Higher Education in LDCs: To What Extent are Loan Schemes an Efficient Instrument?" World Bank Discussion Paper No. EDT14, December 1985.

Mooch, Peter, Philip Musgrove and Morton Stelcner, "Education and Earnings in Peru's Informal Nonfarm Family Enterprises," PPR Working Paper No. 236, World Bank, July 1989.

----- and Rosemary Bellew, Vocational and Technical Education in Peru, Policy, Planning and Research Working Papers No. WPS 87, Washington, D.C.: World Bank, 1988.

Oliveira, Joao and C. de Moura Castro, Individualized Learning Systems for Vocational Technical Training: The SENAI System, Economic Development Institute, Washington, D.C.: World Bank, 1988.

----- and Dean Jamison, "Evaluation of the Brazilian Telecurso Segundo Grau: Summary and Policy Implications," in Alternative Routes to Formal Education, H. Perraton, (ed.), World Bank, 1982.

Psacharopoulos, George, "Curriculum Diversification, Cognitive Achievement and Economic Performance: Evidence from Tanzania and Colombia," Pergamon Comparative & International Education Series, Vol. 6, pp. 257-278, Oxford: Pergamon Press, 1988.

----- (ed.), Economics of Education: Research and Studies, Pergamon Press, 1987.

-----, "Public vs. Private Schools in Developing Countries: Evidence from Colombia and Tanzania," World Bank Discussion Paper No. EDT33, July 1986.

-----, "Are Teachers Overpaid? Some Evidence From Brazil," World Bank Discussion Paper No. EDT95, June 1987.

----, Earnings and Education in Brazil: Evidence from the 1980 Census, Discussion Paper, Education and Training Series Report No. EDT90, Washington, D.C.: World Bank, 1987.

----, To Vocationalize or Not to Vocationalize? That is the Curriculum Question, Discussion Paper, Education and Training Series Report No. EDT31, Washington, D.C.: World Bank, 1986.

----, "The Contribution of Education to Economic Growth: International Comparisons," In J.W. Kendrick, ed. International Comparisons of Productivity and Causes of the Slowdown. Cambridge: Ballinger Publishing Co., 1984.

----, "Returns to Education: A Further International Update and Implications," Journal of Human Resources, Fall 1985.

---- and Ana-Maria Arriagada, "The Educational Attainment of the Labor Force: An International Comparison," World Bank Discussion Paper No. EDT38, October 1986.

---- and Ana-Maria Arriagada, "School Participation, Grade Attainment and Literacy in Brazil: A 1980 Census Analysis," World Bank Discussion Paper No. EDT86, June 1987.

---- and Nguyen Nguyen, "The Age Efficiency of Education Systems: An International Comparison," World Bank Discussion Paper No. EDT55, January 1987.

---- and William Loxey, Diversified Secondary Education and Development: The Colombia Case Study, A World Bank Publication, pp. 53-137, Baltimore: The Johns Hopkins University Press, 1985.

Puryear, Jeffrey M., "Vocational Training and Earnings in Colombia: Does a SENA Effect Exist?" Comparative Education Review, Vol. 23, No. 2, pp. 283-292.

dos Reis, Jose Guilherme Almeida and Ricardo Paes de Barros, "Income Inequality and the Distribution of Education: A Study of the Evolution of Brazilian Regional Differences in Inequality," IPEA/INPES, February 1989.

Rosemberg, Fulvia, "Segundo Grau no Brasil: Cobertura, Clientela e Recursos." Cadernos de Pesquisa: 39 a 54, 1989.

Salgado, Maria Umbelina Caiafa, "As Funcoes Sociais do Ensino de 2o Grau nas Condições do Brasil Contemporaneo." Cadernos de Pesquisa (68): 9-20, 1989.

----, "Formacao Profissional E Controle Social Da Forca de Trabalho na Crise do Modelo Autoritario," min. o, 1989.

Saliba, Alcyone, "Women In Higher Education in Brazil," Prepared for Women in Development Report, Brazil Department, Washington, D.C.: World Bank, July, 1989.

Saviani, Dermeval, "Perspectivas de Expansao e Qualidade Para o Ensino de 2o Grau: Repensando a Relacao Trabalho-Escola." Seminario Ensino de 2o Grau - Perspectivas. Anais. Sao Paulo, Faculdade de Educacao/USP, 79-91, 1988.

Schultz, T. Paul, "Education and Economic Growth" in Henry, N.B., ed. Social Forces Influencing American Education, Chicago: University of Chicago Press, 1961.

Smith, James P., Income and Growth in Malaysia, The Rand Corporation, R-2941-AID, May 1983.

UNESCO, Statistical Yearbook, Geneva: UNESCO, 1987.

Velez, Eduardo and G. Psacharopoulos, The External Efficiency of Diversified Secondary Schools in Colombia, Discussion Paper, Education and Training Series Report No. EDT59, Washington, D.C.: World Bank, 1987.

Velloso, J. R., "Educational Finance Policies, Dependency and Social Inequalities: The Case of Student Loan Programs in Brazil," (mimeo), paper presented at the Vth World Congress of Comparative Education, Paris, July 1984.

Vianna, Heraldo, "Avilacao do Rendimento Escolar de Alunos da 3a Serie do Segundo Grau: Subsidijs Para Uma Discussao Preliminar," Fundacao Carlos Chagas, Sao Paulo, 1989.

Vieira da Cunha, Paulo et al., "Grupos Homogeneos no Mercado de Trabalho Assalariado: Estudo Sobre a Formacao de Salarios a Nivel de Ocupacoes, A Partir dos Dados da Rais," IA/USP, 1984.

Weber, Silke, "Alternativas de Orientacao Para o Ensino de 2o Grau." Seminario Ensino de 2o Grau - Perspectivas. Anais. Sao Paulo, Faculdade de Educacao/USP, 53-61, 1988.

Welch, F., "The Role of Investments in Human Capital in Agriculture," In T.W. Schultz (ed), Distortions of Agricultural Incentives, Bloomington, Indiana: Indiana University Press, 1978.

Woodhall, Maureen, Student Loans as a Means of Financing Higher Education: Lessons from International Experience, World Bank Staff Working Paper No. 599, 1983.

----, "Establishing Student Loans in Developing Countries: Some Guidelines," World Bank Discussion Paper No. EDT85, June 1987.

World Bank, World Development Report 1989, Washington D.C., 1989.

World Bank, Brazil: Human Resources Special Report (in two volumes), Washington, D.C., 1979.

Ziderman, Adrian, "Training Alternatives for Youth: Results from Longitudinal Data," Comparative Education Review, Vol. 33, No. 2, pp. 243-255, 1989.

-----, Vocational Secondary Schooling In Israel: A Study of Labor Market Outcomes, Policy, Planning and Research Working Papers No. WPS 142, Washington, D.C.: World Bank, 1988a.

-----, Israel's Vocational Training, Policy, Planning and Research Working Papers No. WPS 25, Washington, D.C.: World Bank, 1988b.

-----, "Initial vs Recurrent Training for Skilled Trades in Israel - Results of a 7-year Follow-up Study." Economics of Education Review, Vol. 6, No. 2, pp. 91-98, 1987.

Zymelman, M., The Economic Evaluation of Vocational Training Program, Baltimore: The Johns Hopkins University Press, 1976.