Document of

The World Bank

FOR OFFICIAL USE ONLY

CONFIDENTIAL

Report No. 7723-BR

BRAZIL

ISSUES IN SECONDARY EDUCATION

SECTOR MEMORANDUM

VOLUME I

NOVEMBER 28, 1989

CURRENCY EQUIVALENTS

Currency Unit	=	New Cruzado (since January 1989)
	=	Cruzado (from February 1986 to Janurary 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)

* * * * * * * * * * * * *

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

CONFIDENTIAL
FOR OFFICIAL USE ONLY

Preface

This report is based on the findings of a mission which visited Brazil in November 1988. The mission was led by Barbara Bruns (economist), and included Donald Winkler (public administration specialist) and Steven Hoenack (labor economist) of the World Bank, and consultants 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, Ministry of Planning). In addition, this 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, State Deputy, State of Sao Paulo;
Dra. Teresa Roserley N. da Silva, Carlos Chagas Foundation;
Dr. Arthur Divonzir Gusso, Institute for Economic and Social Planning (IPEA) of the Ministry of Planning;
Dr. Alberto de Mello e Souza, Federal University of Rio de Janeiro;
Dr. Roberto Macedo, University of Sao Paulo;
Dr. Ricardo Paes de Barros, Institute for Social and Economic Research (INPES) of the Ministry of Planning, and Yale University;
Dr. Heraldo Vianna, Carlos Chagas Foundation;
Dr. Ernesto Schiefelbein, UNESCO;
Dr. Mark Blaug, University of London; and
Dr. Richard Sabot, Williams College

BRASIL

DESAFIOS PARA O ENSINO DE SEGUNDO GRAU NOS ANOS NOVENTA

Memorando de Setor

Prefácio

Este relatório está baseado nas concluses da missão que visitou o Brasil em novembro de 1988. Essa missão foi chefiada por Barbara Bruns (economista) e dela participaram Donald Winkler (especialista em administração pública) e Steven Hoenack (economista especializado em mercado do trabalho) do Banco Mundial e consultores 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 do resultado 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), do Ministério do Planejamento. Esse 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, Deputada Estadual, Estado de São Paulo;
Dra. Teresa Roserley N. da Silva, Fundação Carlos Chagas;
Dr. Arthur Divonzir Gusso, IPEA;
Dr. Alberto de Mello e Souza, Universidade Federal do Rio de Janeiro;
Dr. Roberto Macedo, Universidade de São Paulo;
Dr. Ricardo Paes de Barros, Instituto Nacional de Pesquisa (INPES), do Ministério do Planejamento, e Universidade de Yale;
Dr. Heraldo Vianna, Fundação Carlos Chagas;
Dr. Ernesto Schiefelbein, UNESCO;
Dr. Mark Blaug, Universidade de Londres; e
Dr. Richard Sabot, Williams College

SUMÁRIO

i. Este ano, no Brasil, cerca de 600.000 estudantes concluirão o segundo grau. Para um país que possui quase 150 milhões de habitantes, uma força de trabalho de mais de 50 milhões de pessoas, e mais de 9 milhões de habitantes na faixa etária de 16 a 18 anos, 600.000 representam apenas um número insignificante de pessoas munidos de conhecimento, capacidade e potencial para cursar o ensino superior e/ou para assumir cargos de gerência e profissionais em um país cuja economia ocupa o décimo lugar entre as maiores economias industriais do mundo.

ii. Na media, o desempenho educacional da população brasileira é substancialmente inferior ao dos outros países latino-americanos e ao dos outros países de renda média. Em 1980, 60% da força de trabalho do Brasil não havia recebido educação ou não havia concluído o primeiro grau, enquanto que, na Coréia, a percentagem era de 16% e, na Turquia, de 26%. Na América do Sul, apenas na Bolívia a proporção de membros da força do trabalho que não recebeu nenhuma educação é maior do que a do Brasil.

iii. A diferença entre o Brasil e outros países é mais acentuada no segundo grau. Em 1987, a matrícula nesse nível de ensino representou apenas cerca de 37% da população com idade para cursar o ensino médio, percentagem essa que é muito inferior à média dos países de renda média em desenvolvimento (59%). Muito mais adiantados ainda estão países como o Chile, com taxa de matrícula de 70%; e a Coréia, que possui em suas escolas 95% da população em idade de freqüentar o segundo grau.

iv. Este relatório apenas analisa a estrutura e alguns dos problemas mais importantes do ensino de segundo grau do Brasil; ele não esgota todos os aspectos, preferindo concentrar-se em algumas questões de importância estratégica para o país, tais como: que tipo de equilíbrio deve haver, nas próximas décadas, entre o ensino geral e o treinamento para o trabalho/técnico, no segundo grau? Qual deve ser o papel e a responsabilidade dos setores público e privado no ensino de segundo grau? O que pode ser feito para que haja maior igualdade de acesso ao segundo grau e melhorar o papel deste no processo de mobilidade social? E, acima de tudo, numa época em que o Brasil não se pode permitir o luxo de utilizar maiores recursos em nenhum tipo de serviço público, o que se pode fazer para melhorar a qualidade das escolas públicas com os atuais recursos para a educação?

v. Com a adoção dessa perspectiva estratégica, outros aspectos de crucial importância para o ensino de segundo grau são considerados apenas de maneira superficial. Entre eles estão o conteúdo do currículo, as ineficiências no padrão de financiamento e transferências intergovernamentais e, o que é mais importante, os problemas da qualidade dos professores, do treinamento e da remuneraço. A análise pormenorizada do treinamento dos professores e do mercado de trabalho para os professores, tanto no primeiro como segundo grau, é de capital importância para que se possa considerar cabalmente a situação do ensino no Brasil e

planejar políticas destinadas a melhorar a qualidade e a eficiência desse setor. Entretanto, esse tipo de análise está fora do alcance deste relatório.

vi. Mesmo o rápido exame do sistema educacional brasileiro deixa claro que os problemas mais sérios encontram-se no primeiro grau, e esse fato exerce influência decisiva no que pode ser feito no segundo grau. Na realidade, este relatório chega à conclusão de que o principal obstáculo ao aumento da taxa excepcionalmente baixa de participação no segundo grau é a baixa percentagem de alunos que concluem o primeiro grau. Embora no Brasil quase todas as crianças comecem a estudar o primeiro grau, menos de 40% das que são matriculadas na primeira série chegam ao fim do ensino fundamental e a maioria só conclui com alto (e custoso) índice de repetência.

vii. Este relatório, que se concentra no ensino de segundo grau, foi concebido como parte de uma série de relatórios do Banco Mundial sobre o ensino no Brasil. Um dos relatórios do Banco, intitulado Public Spending on Social Programs: Issues and Options, examinou os problemas gerais referentes à distribuição de recursos entre todos os setores sociais e entre os diversos níveis do sistema educacional. Os aspectos da distribuição e da eficiência dos recursos nos sistemas de ensino de primeiro e segundo grau e superior, estão sendo examinados em uma série de relatórios que tratam de cada um desses níveis: um relatório preparado em 1986 examinou o ensino de primeiro grau 1/, e um relatório a ser concluído em 1990 analisará os aspectos do ensino superior. O objetivo desses relatórios, inclusive o deste, é examinar os principais aspectos de cada nível e identificar políticas para melhorar a distribuição e utilização dos recursos públicos em cada nível. Uma das principais hipóteses que servem de orientação para a análise dos quatro relatórios é a da necessidade de que o Brasil atribua prioridade ao ensino de primeiro grau, que produz o maior rendimento econômico para a sociedade em geral e que é de importância fundamental para a evolução de uma sociedade democrática coesa e estável.

viii. Um dos principais motivos para que este relatório fosse preparado agora é o de contribuir para as discussões que estão sendo levadas a efeito no Brasil a respeito da natureza do ensino de segundo grau. Embora o consenso quanto aos objetivos básicos do ensino de primeiro grau seja bastante amplo, existem filosofias muito divergentes acerca do segundo grau, principalmente no que diz respeito a até que ponto esse nível deve proporcionar educação geral em vez de treinamento para o trabalho. Em comparação com a maioria dos outros países, o Brasil investe relativamente pouco no ensino geral de segundo grau, porém investe substancialmente tanto no treinamento não-formal para o trabalho (por meio da rede SENAI/SENAC/SENAR), como no ensino técnico formal (por meio das escolas técnicas federais, das escolas de ensino médio do SENAI, e dos programas técnicos e vocacionais das escolas públicas de segundo grau). Essas alternativas de ensino não somente proporcionam à juventude brasileira diversos graus de conhecimentos e diferentes conjuntos de habilidades, como variam de custo. O treinamento vocacional e o ensino técnico são muito

---

1/ Brazil: The Finance of Primary Education, Banco Mundial (1986).

mais custosos por aluno/hora. Por outro lado, os programas de treinamento vocacional em geral implicam menos horas de ensino e muito menos diversificação da aprendizagem.

ix. Este relatório examina a eficiência dos gastos atuais com o ensino de segundo grau e com o treinamento vocacional, a fim de identificar o alcance das reformas que poderiam melhorar o ensino de segundo grau sem desviar recursos para o primeiro grau, onde existe tanto por fazer. Um dos principais obstáculos a esse tipo de reforma, entretanto, é a falta de política coerente e de coordenação administrativa. Os principais problemas do ensino médio de hoje são encontrados no nível estadual, porém os estados não possuem nem idéias, nem determinação, nem recursos para tratar desses problemas. Por outro lado, substancial volume de recursos e esforços do Governo Federal estão sendo destinados às escolas técnicas federais, uma elite constituída por uma rede de escolas de alta qualidade e muito custosas que, devido ao alto custo por aluno, não constituem um modelo viável de ensino médio para todo o Brasil.

x. O Capítulo I resume o baixo desempenho educacional da população brasileira em geral, em comparação com os padrões internacionais, e traça a evolução dos sistemas de ensino formal e de treinamento vocacional no contexto do desenvolvimento econômico do Brasil nos últimos quarenta anos. Segundo esse capítulo, embora a falta de ênfase no ensino médio formal não tenha prejudicado seriamente o desenvolvimento econômico do Brasil, ela pode vir a ser obstáculo muito mais sério no futuro. Grandes investimentos em treinamento especializado para o trabalho, a curto prazo, talvez tenham compensado as deficiências do sistema educacional formal: o SENAI e o SENAC treinam, respectivamente, mais de 500.000 e 1.000.000 pessoas por ano.

xi. Entretanto, à medida em que a economia brasileira se torna mais sofisticada do ponto de vista tecnológico, mais diversificada e, o que é mais importante, mais exposta à concorrência internacional, as necessidades da mão-de-obra mudam mais rapidamente e tornam-se cada vez mais difíceis de serem previstas. Esse fato tem duas principais conseqüências para a força de trabalho e para o sistema de ensino. Primeiro, ele sugere a necessidade de que sejam mais elevados os níveis mínimos de educação geral para que o trabalhador mantenha sua flexibilidade e capacidade de treinamento durante sua vida profissional. Os cursos de treinamento de 100 horas não podem aumentar a capacidade cognitiva do indivíduo do mesmo modo que o ensino de segundo grau. A capacidade cognitiva é a capacidade geral, que serve também para o desenvolvimento da capacidade técnica mais sofisticada -- enquanto que a maior parte da capacidade vocacional é estreita. A necessidade de mão-de-obra, no Brasil, como em outros países, está se tornando cada vez mais intensa no que diz respeito à capacidade geral e à capacidade mais sofisticada. No entanto, hoje, no Brasil, o trabalhador urbano, em geral, não completa mais de quatro anos de ensino fundamental. Sem pelo menos o primeiro grau completo e -- no que diz respeito a vários tipos de trabalho -- sem educação de segundo grau, os trabalhadores não podem ter os conhecimentos nem a capacidade de adaptação exigidos pela produtividade, em uma economia de rápida evolução.

xii. Segundo, à medida em que aumenta o ritmo da mudança tecnológica, torna-se cada vez mais difícil treinar eficientemente os trabalhadores em certas especialidades, em uma instituição em vez de no trabalho. Os custos para manter atualizadas as instituições de treinamento aumentam de maneira assustadora e podem causar rápida baixa da eficiência do treinamento especializado. A mudança tecnológica também reduz o prazo em que o trabalhador espera poder exercer um determinado ofício e obter rendimento do treinamento especializado. O treinamento em instituições, que foi de grande utilidade para o Brasil nas primeiras fases, relativamente sem sofisticação, do seu processo de industrialização, pode ser muito menos apropriado para a economia brasileira da década de 1990 e do século XXI. A falha em adaptar os sistemas de educação e treinamento às novas realidades econômicas poderia impedir substancialmente a futura evolução econômica do Brasil.

xiii. O Capítulo II descreve cinco características vitais do sistema de ensino de segundo grau, que servem de antecedente para a análise das alternativas de política. Essas características são as seguintes: i) o rápido crescimento da matrícula de segundo grau nas décadas de 1960 e 1970 (em média, de 11% ao ano, em 1960-1980) e a estagnação da matrícula desde 1980; ii) a diversidade do ensino de segundo grau no Brasil (que, na realilidade, tem importantes vantagens), no que diz respeito ao programa dos cursos, aos custos de administração e unitários, e à diferença de qualidade que se reflete nas importantes diferenças de desempenho dos estudantes, comprovadas no exame padronizado ministrado recentemente a estudantes, levando-se em conta os differentes níveis sócio-econômicos dos estudantes e outros fatores; iii) o importante papel do setor privado na oferta geral (com 33% da matrícula) e a grande variedade de taxa de matrícula cobrada, que vai de cerca de US$3, por mês, a mais de US$500, por mês; iv) a a iniqüidade que ocorre nas despesas públicas com o ensino de segundo grau, pois gasta-se menos por estudante nas escolas estaduais e municipais e proporciona-se altos subsídios à escassa minoria de estudantes que estão relativamente em boa situação financeira e que freqüentam as escolas técnicas federais e as escolas de segundo grau do SENAI; e v) a falta de visão estratégica e direção da política do Governo destinada ao ensino de segundo grau, e a administração ineficiente, excessivamente centralizada, dos sistemas das escolas públicas.

xiv. O Capítulo III concentra-se nos problemas de qualidade do ensino de segundo grau. O mais sério desses problemas é a baixa qualidade das escolas administradas pelos Estados, que são freqüentadas por 90% dos estudantes das escolas públicas. Devido às altas taxas de repetência, as escolas públicas em geral, devem financiar mais de seis anos de estudo para cada aluno, a fim de que ele possa concluir um programa de três anos. As taxas de evasão nas escolas públicas são tão altas que, de cada 100 estudantes matriculados, apenas 42 chegam a concluir o ciclo. As escolas públicas possuem muito menos recursos por estudante do que as outras escolas de segundo grau do Brasil: as despesas por estudante, nessas escolas, são, em média, de cerca de US $250 por ano, em comparação com mais de US$ 1.700 nas escolas técnicas federais e mais de US $1.800 por ano nas escolas de segundo grau do SENAI. Porém o relatório indica que as despesas por estudante nas escolas públicas não são muito diferentes das despesas

médias anuais por aluno das escolas públicas de outros países (cerca de US$ 234, no Chile; e US$ 243, na Colômbia). Nesses países, embora haja menos seleção para os alunos de segundo grau, o número de alunos que chegam ao final desse nível é muito maior -- sugerindo a possibilidade de que outros sistemas públicos estejam realizando trabalho mais eficiente no setor da educação do que as escolas públicas do Brasil.

xv. A baixa qualidade das escolas públicas tornou-se também evidente como o resultado do teste de desempenho padronizado de português e matemática, ministrado, em 1988, a 2.600 estudantes da terceira série do segundo grau de quatro Estados e que serviram de amostra. Houve considerável diferença no desempenho dos estudantes -- principalmente em matemática -- que não pode ser atribuída á formação sócio-econômica. Em média, o desempenho mais baixo foi o dos alunos das escolas públicas, principalmente dos que estudam à noite, e o dos programas de treinamento de professores. Os alunos das escolas de segundo grau do SENAI também tiveram baixo desempenho. Em comparação, os alunos das escolas particulares, que serviram de amostra, tiveram continuamente melhor atuação e não houve diferença entre os que estudavam de noite e os que estudavam de dia. Os alunos da elite constituída pelas escolas técnicas federais tiveram muito melhor desempenho do que os outros grupos, refletindo em grande parte a seleção dos estudantes dessas escolas .

xvi. Quais são as causas da baixa efetividade dos gastos nas escolas administradas pelos Estados e o que se pode fazer para melhorá-la? O relatório conclui que o excesso de centralização, a deficiência de administração e a falta de incentivo ao desempenho por parte da escola são os principais problemas dessas escolas. Ele indica uma série de alternativas de política para corrigir esses problemas, que deram bons resultados em outros países. Entre elas estão a introdução de incentivos ao desempenho das escolas e a progressiva descentralização das funçoes administrativas, que deverão concentrar-se no nível das escolas. A utilização regular dos testes de desempenho como base para a avaliação do progresso do sistema escolar; e as políticas para melhorar a atuação das escolas particulares e estimular maior concorrência com o sistema público.

xvii. O mesmo capítulo observa que a heterogeneidade do sistema de ensino de segundo grau no Brasil e o crescente interesse na municipalização do ensino, em muitas partes do país, podem constituir importantes meios de melhorar a qualidade do ensino. Esses fatores proporcionam possibilidade para que sejam experimentados vários tipos de reforma da organização e do sistema escolar, bem como para que os administradores e pesquisadores de todo o país avaliem e divulguem os tipos que tiverem maior êxito. O capítulo conclui que a municipalização do ensino de primeiro e segundo grau, que está sendo considerada atualmente em um número cada vez maior de Estados, pode ser um meio efetivo de melhorar a eficiência e os resultados dos sistemas escolares brasileiros. Para a consecução desses benefícios, entretanto, é imprescindível que as autoridades estaduais e federais coordenem melhor suas funções a fim de ajudar a corrigir as diferenças de renda entre os municípios e a proporcionar assistência técnica. A eleição direta, pela comunidade, de conselhos ou Commissões de Educação ("boards of education") independentes para administrar grupos de escolas poderia

também ajudar a garantir o profissionalismo dos sistemas escolares municipais.

xviii. As políticas para fortalecer a atuação das escolas particulares são parte importante do programa global de melhoramento da qualidade do ensino de segundo grau. O setor privado do sistema de educação brasileiro, principalmente no nível médio, é dinâmico e competitivo e, conforme sugerem os dados obtidos com o teste de desempenho, pode ser em geral mais efetivo do ponto de vista do custo do que a maior parte do ensino público do país. Em vez do controle contraproducente do preço da matrícula, as políticas do Governo deveriam concentrar-se na forte e substantiva supervisão das escolas particulares, o que poderia implicar medidas como a consideração do reconhecimento concedido à escola, que compreenderia o sério exame de todos os aspectos da atuação da escola, feito em intervalos regulares; a inclusão das escolas particulares na administração dos testes de desempenho ministrados regularmente aos estudantes por funcionários públicos e cujos resultados devem ser comunicados aos pais e às comunidades; e a publicação anual de informações sobre o desempenho de todas as escolas particulares reconhecidas.

xix. Além dessas medidas, poderia haver modestos programas de subsídio destinados às escolas particulares que educam alunos de famílias de baixa renda, a fim de proporcionarlhes maior possibilidade de escolha do tipo de educação e criar incentivos para que as escolas públicas possam prestar serviços educacionais mais efetivos. Para fins orçamentários e de eqüidade, entretanto, esses programas devem ser executados somente nas escolas freqüentadas por alunos de famílias de baixa renda. Entre as medidas que poderiam incentivar a eficiência estão as doações em dinheiro para escolas particulares reconhecidas, destinadas a nova construção, expansão e reforma, em bairros selecionados (de baixa renda) e um sistema de comprovante ("voucher system"), como o que tem sido utilizado com êxito pelo Governo do Chile para custear a matrícula dos alunos de escolas particulares de baixo custo, que sejam totalmente reconhecidas.

xx. O Capítulo IV examina a desigualdade da distribuição dos recursos do ensino público entre as escolas. Cerca de 20% de todas as despesas públicas com o ensino de segundo grau servem para apoiar as escolas técnicas federais, que possuem apenas 2% da matrícula total. Cerca de 2% das despesas com o ensino público de segundo grau vão para as escolas do SENAI, que possuem 0,002% dos estudantes desse nível. Além disso, a formação sócio-econômica dos alunos dessas escolas custosas (cujos alunos são admitidos por meio de exame e entrevista) é muito mais alta do que a dos estudantes das escolas estaduais e municipais, em geral.

xxi. O relatório sugere três maneiras de melhorar a eqüidade das despesas públicas destinadas ao ensino técnico altamente custoso: i) participação dos estudantes no custo da formação escolar; ii) políticas para atrair mais alunos de famílias de baixa renda para as escolas técnicas federais e para as escolas de segundo grau do SENAI; e iii) medidas para reduzir o alto custo unitário desses programas, sem prejudicar indevidamente sua qualidade, principalmente com a expansão mais rápida da matrícula do que dos edifícios escolares e com a redução da ênfase

atribuída ao treinamento vocacional altamente prático, em prol de maior ênfase nas ciências básicas e na matemática. A participação no custo (isto é, por meio de empréstimos aos estudantes) é exeqüível porque os alunos que concluem essas escolas têm possibilidade de obter alta renda no futuro. As políticas destinadas a aumentar a matrícula dos alunos de baixa renda nessas escolas é exeqüível com a ajuda de programas destinados a corrigir as deficiências desses estudantes. Finalmente, a redução da custosa ênfase atribuída ao treinamento que utiliza muito equipamento é exeqüível porque grande parte dos alunos que concluem os cursos dessas escolas destina-se às universidades e o que os atrae às mesmas escolas é a alta qualidade do ensino, em geral.

xxii. O Capítulo IV também analisa os problemas de eficiência associados com a maneira de financiar o treinamento vocacional no Brasil. Os sistemas de treinamento vocacional do SENAI e do SENAC -- cujos orçamentos combinados foram, em 1987, quase equivalentes ao total das despesas estaduais e municipais com o ensino de segundo grau -- são financiados quase exclusivamente com um imposto sobre a folha de pagamento, e os serviços de treinamento são "gratuitos" para os trabalhadores e as empresas. Esse sistema pode dar origem a sérios problemas de ineficiência porque: i) não existe incentivo para que as pessoas que recebem treinamento estejam seguras de que exercerão as atividades para as quais foram treinadas; ii) não há incentivo para que os empregadores escolham as fontes mais eficientes de treinamento entre as públicas e as particulares; e iii) os empregadores têm incentivo para utilizar excessivamente certos tipos de trabalhadores especializados, principalmente os que possuem habilidades altamentes custosas. Esses problemas tornam-se mais sérios quando se trata de treinamento em instituições que utilizam muito equipamento, como o SENAI, devido ao alto custo do equipamento industrial e à necessidade de constante investimento para evitar a obsolescência. A substituição de parte do imposto sobre a folha de pagamento por um sistema de cobrança pelo treinamento, de acordo com o qual os custos sejam compartilhados pelos empregadores e pelos empregados, segundo o tempo de serviço destes últimos, aliviaria substancialmente esses problemas de incentivo.

xxiii. O Capítulo V avalia as possibilidades de progresso do ensino de segundo grau do Brasil na próxima década. Longe de alcançar os outros países, o sistema educacional formal do Brasil estagnou-se na década de 1980. De 1980 a 1987, a matrícula de segundo grau aumentou apenas 2% ao ano, quase igual ao crescimento da população em idade de freqüentar esse nível. Se continuar o atual ritmo de crescimento da matrícula, o Brasil não conseguirá, até o ano 2010, ter em suas escolas de segundo grau nem mesmo 50% dos estudantes em idade de freqüentar esse nivel, e estará ainda abaixo da taxa de participação media internacional. O principal obstáculo ao aumento da matrícula de segundo grau é o baixo número de alunos que concluem o ensino de primeiro grau. A menos que se consiga reduzir as altas taxas de repetência e evasão no primeiro grau, provavelmente a matrícula de segundo grau não aumente mais de 2,5% ao ano na próxima década.

xxiv. Mesmo essa taxa relativamente baixa de cescimento da matrícula poderia ter importantes implicações para o financiamento público,

dependendo do tipo de ensino de segundo grau que crescer a ritmo mais acelerado. Se, depois de 1990, as novas matrículas ocorrerem nas escolas técnicas federais, as despesas públicas anuais com o ensino de segundo grau aumentarao 20% ao ano em termos reais, em comparação com o aumento de 3,5% ao ano das despesas reais se a atual distribuição da matrícula permanecer mais ou menos a mesma. Por outro lado, devido à sua maior eficiência interna, se o aumento da matrícula ocorrer nas escolas técnicas federais, haverá quase 20% mais estudantes que concluirão esse nível, por volta do ano 2000. Infelizmente, esse benefício é contrabalançado pelo fato de que o total das despesas públicas com o ensino de segundo grau teria que duplicar em termos reais. Na atual situação financeira do Brasil, aumentos dessa magnitude devem ser considerados insustentáveis.

xxv. As projeções apresentadas no Capítulo V também indicam a possibilidade de contribuição do setor privado. Se o crescimento da matrícula, a partir de 1990, for mais rápido nas escolas particulares do que nas escolas públicas -- como aconteceu na década de 1970 e no período de 1986 a 1988 -- poderia haver substancial poupança para o setor público e se poderia esperar que houvesse maior número de estudantes concluindo esse nível. A implicação é que as políticas para estimular a expansão das escolas particulares de segundo grau, por meio da liberalização do controle das taxas de matrícula, do aperfeiçoamento da supervisão da qualidade dessas escolas e do fornecimento de melhores informações acerca delas para os pais e os alunos, poderiam ser muito mais importantes para o Brasil. Outros incentivos, tais como um programa modesto de subsídio com destinação específica, poderia também vir a ser eficiente do ponto de vista do custo, para melhorar a matrícula do ensino de segundo grau, numa época de recursos públicos limitados.

xxvi. O Capítulo V conclui com quatro sugestões prioritárias para o ensino de segundo grau do Brasil na década de 1990: i) melhora da qualidade das escolas públicas, que seja eficiente do ponto de vista do custo; ii) fortalecimento da atuação das escolas particulares e incentivo para que haja maior concorrência com o sistema de escolas públicas; iii) melhora dos incentivos para o treinamento vocacional eficiente e da eqüidade do ensino técnico altamente custoso; e iv) desenvolvimento do papel para aumentar a eficiência das autoridades federais, estaduais e municipais encarregadas do ensino, para que possam incrementar a eficiência.

xxvii. Implícito em todas essas alternativas está o novo papel das secretarias de educação pública de todos os níveis de governo. O novo papel atribuiria muito maior importância ao reconhecimento, à supervisão e à avaliação da atuação das escolas, à assistência técnica e ao financiamento intermediário, e menos ênfase no fato de as escolas serem administradas diretamente pelas secretarias.

xxviii. Nas discussões realizadas no Brasil, em 1988, para definir a nova Constituição, houve vários debates sobre os aspectos do sistema educacional. Nessas discussões, o sistema de ensino médio continuou a ser em grande parte o filho enjeitado do sistema de educação do Brasil. Embora tenham sido amplamente discutidas e finalmente rejeitadas grandes mudanças na organização e financiamento do SENAI e do SENAC, não foi tratada a

importante questão de se o sistema de ensino médio, técnico e vocacional do Brasil, tal como é atualmente estruturado e financiado, é ou não apropriado para o futuro do país. Também não houve o importante debate sobre as causas dos problemas de qualidade do ensino de segundo grau no nível público, nem sobre as novas maneiras de abordar esses problemas. As associações de escolas particulares demonstraram ser um grupo de pressão efetivo na promoção de certas disposições constitucionais que, pensavam eles, iriam reduzir o papel do Governo na determinação das taxas de matrícula dessas escolas; porém isso também foi conseguido aparentemente sem nenhum consenso nacional sobre a questão mais ampla do papel do setor privado no ensino de segundo grau -- ou de primeiro, ou de terceiro. Este relatório detaca alguns dos principais aspectos do ensino médio brasileiro e reúne dados que poderiam ajudar na análise das principais alternativas de política. A medida em que os legisladores estaduais procuram definir novas constituições estaduais que estejam em harmonia com a Constituição nacional, a atual situação do ensino de segundo grau, no Brasil, pode estimular mais ainda o pensamento e o debate nacional.

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 tenth 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 an estimated 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 is intended to focus 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

---

[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 "ensino media" or "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.

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 present report concludes that the principal constraint to raising Brazil's exceptionally low secondary school participation rate is the low rate of graduates from primary school. Although close to 100% of children begin primary school in Brazil, less than 40% of every entering class ever graduates, 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. Issues of resource allocation and efficiency within Brazil's primary, secondary and higher-level education systems are being pursued in a series of reports focused on each level of the education system: a 1986 report examined primary education,[2/] and a report to be completed in 1990 will analyze issues in higher education. The objective of the reports on specific levels, including the present one, is to examine major issues at that level, and identify policies that could improve the allocation and utilization of public resources at that level. A 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 this report now is 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 most 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)[3/] and formal technical education (through the federal technical schools, SENAI secondary schools, and technical and vocational programs in

---

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

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

state secondary schools). These educational alternatives not only equip Brazilian youths with very 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 and much less diversified learning.

ix. This report examines the efficiency of current spending on secondary education and vocational training with the perspective of identifying the scope for 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, however, 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, substantial federal government money and efforts are going into the federal technical schools -- an elite network of high quality, high cost schools. But 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 significantly greater 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 secondary school. Cognitive skills are general skills, but also inputs into the development of more sophisticated technical skills -- whereas most vocational skills are narrow. The demand for labor in Brazil, as elsewhere, is becoming increasingly intensive in general skills and more sophisticated technical skills. 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 -- 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 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 twenty-first century. Failure to adjust education and training systems to new economic realities could substantially 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 recent standardized test, controlling for students' socioeconomic background and other factors; iii) the important role of the private sector in overall supply (with 33% of total enrollments), and the wide range of tuitions charged, 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 and direction 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, states 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). In these countries, although 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, but this to a large extent reflects student selection into these schools.

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 of improving 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, is dynamic and competitive 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, rather than counterproductive tuition price controls. 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. In addition to these actions, modest subsidy programs targeted to private schools which serve low-income students might be justified in order to give these students more educational choice and to create incentives for public schools to deliver more cost-effective educational services. For budgetary reasons and equity reasons, however, any such programs should be restricted to schools which serve low-income students. Possibilities for efficient incentive programs include capital grants to accredited private schools for new construction, expansion or renovation in targeted (low-income) neighborhoods, and a voucher system, as has been successful in Chile, in which the state pays tuition for students at fully accredited low-cost private schools.

xx. 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 2% of total enrollments. About 2% of total public secondary education spending goes to SENAI secondary schools which have 0.002% of all secondary students. Moreover, 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.

xxi. The report suggests three ways in which the equity of public spending on high cost technical education could be improved: i) cost sharing, ii) policies to attract more low-income students to federal technical and SENAI secondary schools, and iii) actions to reduce the high unit costs of these programs without unduly harming their quality, principally by expanding enrollments more rapidly than physical plant, and reducing the emphasis on "hands-on" practical skills training in favor of stronger emphasis on basic science and math. Cost sharing (e.g., through student loans) is feasible because graduates of these schools can expect high future incomes. Policies to increase low-income students' share of enrollments in these schools are feasible with the help of remedial programs. Finally, reducing the costly emphasis on equipment-intensive training is feasible because a very high share of graduates are university-bound and the attraction of these schools for them is the high overall quality of the teaching and the strong emphasis on science and math.

xxii. 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 would substantially alleviate these incentive problems.

xxiii. Chapter V evaluates the prospects for progress in Brazilian secondary education over the next decade. Far from catching up with other countries, the Brazilian formal education system 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 secondary enrollment growth is the lack of throughput from the primary school system. Unless progress is made in reducing high primary school repetition and dropout rates, secondary school enrollments are unlikely to increase more by than 2.5% per year over the coming decade.

xxiv. 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 to be 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 remains more or less constant. On the other hand, because of their higher internal efficiency, a scenario in which incremental enrollment growth all occurred in federal technical schools would result in almost 20% more graduates by the year 2000. Unfortunately, this 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.

xxv. 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 liberalizing tuition controls, improving oversight of private school quality and providing better information about private schools to parents and students, could be very important for Brazil. Additional incentives, such as a modest targeted subsidy program, might also prove cost-effective in improving secondary education participation in an era of limited public resources.

xxvi. Chapter V concludes with 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.

xxvii. Implicit in all of these options is a new role for public education secretariats at all levels of government. The new 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.

xxviii. The national discussions during 1988 to define a new Constitution for Brazil included numerous debates over aspects of the education system. To a large extent, the secondary system 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 key policy options. As state legislatures work to define new state constitutions consonant with the national Constitution, 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
1. Improve the quality of state-level secondary education.	introduce standardized student testing as a tool for measuring school (and school system) performance objectively	transform state technical schools into science and math magnet schools, reducing need for expensive equipment
	delay payments to school system personnel on strike until strike is over	introduce incentives for school performance gradually link school budgets, and directors' and teachers' evaluations and bonus pay to school progress in meeting specified performance objectives
	strengthen basic curriculum by increasing hours of teaching of four core subjects (Portuguese, math, science, history)	increase school directors' management control over school personnel and school financial resources
	develop strong technical assistance roles at the state and federal levels	devolve state primary and secondary schools to the municipal level
	include private schools in the administration of regular student achievement tests	introduce directly-elected local school boards
2. Strengthen the performance of private schools.	introduce regular private school accreditation reviews	introduce incentive programs targeted to private schools serving low-income students, such as: i) a program of capital grants for new construction, renovation or expansion, or ii) a voucher system for students at
	publish annual performance reports on all private schools	

		accredited low-cost private schools strengthen state capacity to audit and oversee any private school incentive program
3. Improve Public Vocational Training Efficiency.	reduce payroll tax transfers to SENAI and SENAC to level of their actual expenditures on training	introduce student loan program for the financing of most types of vocational training gradually reduce federal funding for SENAI and SENAC to level of their overhead and coordination activities
4. Improve the Equity of Federal Technical Schools.	introduce cost sharing attract more low-income students via special campaigns and offer remedial programs, when necessary, for these students expand enrollments more rapidly than physical plant to reduce unit costs	gradually focus federal technical schools on basic science and math curriculum, with less vocational and applied technical orientation
5. Develop Efficiency-Enhancing Role for Government.	strengthen state education secretariats' capacity for: ● design, administration and analysis of achievement tests for public and private students at least every two years ● 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
- private school oversight and accreditation, and possible administration of a targeted incentive program
- annual public school performance evaluations and budget reviews

ISSUES IN BRAZILIAN SECONDARY EDUCATION

Sector Memorandum

LIST OF TABLES

LIST OF CHARTS

LIST OF BOXES

VOLUME TWO: ANNEXES

A C R O N Y M S

CEE	Conselho Estadual de Educação State Council on Education
CEFAM	Centro de Formação e Aperfeicoamento 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 Agricola
FAE	Fundo de Assistencia Escolar Student Assistance Fund
FINSOCIAL	Fundo de Investimento Social Social Investment Fund
FUNDACENTRO	Fundaçao Jorge Duprat Figueiredo de Seguranca e Medicina do Trabalho National Foundation for Occupational Safety, Hygiene and Medicine
FUVESP	Fundação Vestibular do Estado de Sao 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 Estatistica Brazilian Institute of Geography and Statistics
ICM	Imposto sobre Circulação de Mercadorias State Value-Added Tax
INEP	Instituto Nacional de Estudos e Pesquisas Educaçionais 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 e Cultura

	Ministry of Education and Culture
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 Expansao e Melhoria do Ensino Tecnico Program for the Expansion and Improvement of Technical Education
SEEC	Serviço de Estatistica 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
SEPLAN	Secretaria de Planejamento Secretariat of Planning, Office of the President of the Republic of Brazil
SM	Salario Minimo Minimum Salary
TO	Treinamento Occupacional (SENAI) SENAI Occupational Training
VTE	Vocational and Technical Education
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development

I. CHANGING EDUCATIONAL NEEDS OF THE BRAZILIAN ECONOMY

A. Brazilian Educational Attainment

1. Brazil has one of the lowest 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 also 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%.

Table 1.1 - SECONDARY SCHOOL ENROLLMENT RATES: BRAZIL AND SELECTED COUNTRIES, 1965 AND 1986 a/

	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,[4/] the Brazilian economy clearly achieved impressive growth in the decades 1950-1980. 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.[5/]

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

---

[4/] The international comparisons in Table 1.1, like all commonly used measures of human capital formation, are based on years of formal schooling completed. A limitation of this measure is that it does not capture investments in vocational training, which are more important in Brazil than many other countries. On the other hand, measurements based upon "years of schooling" also fail to take into account the effects of schooling quality, which may be below average in Brazil, implying lower overall rates of return to schooling investments. Recent research (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.

[5/] 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%.

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 in Korea it increased 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).[6/]

6. Education can be an important factor 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 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 Brazilian 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

---

6/ 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.

was achieved.[7/] 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.

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 exacerbated, 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

---

7/ See De Moura Castro (1986), pp. 104-105.

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 and SENAC are 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.

Table 1.2: CHANGING STRUCTURE OF EMPLOYMENT AND GROWTH IN EMPLOYMENT BY SECTOR, 1950-1985

	Agriculture	Industry	Services	TOTAL
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	.7	6.0	4.0	2.70
1970-80	-0.3	7.4	5.9	3.9
1980-85	4.0	2.0	6.0	4.5

Sources: 1950, 1960, 1970, 1980 Censuses; IBGE, Annuario Estatistico 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 terminal and have a vocational orientation that would leave graduating students equipped to join the formal labor force.[8/] 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 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; few students wished 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

---

8/ 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, and was actively promoted in Brazil by external aid agencies such as USAID and the World Bank.

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. 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 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 what share of the technical students in the census sample were from 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 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

****

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 (Boissiere, 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.

****

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.[9] 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. 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.[10]

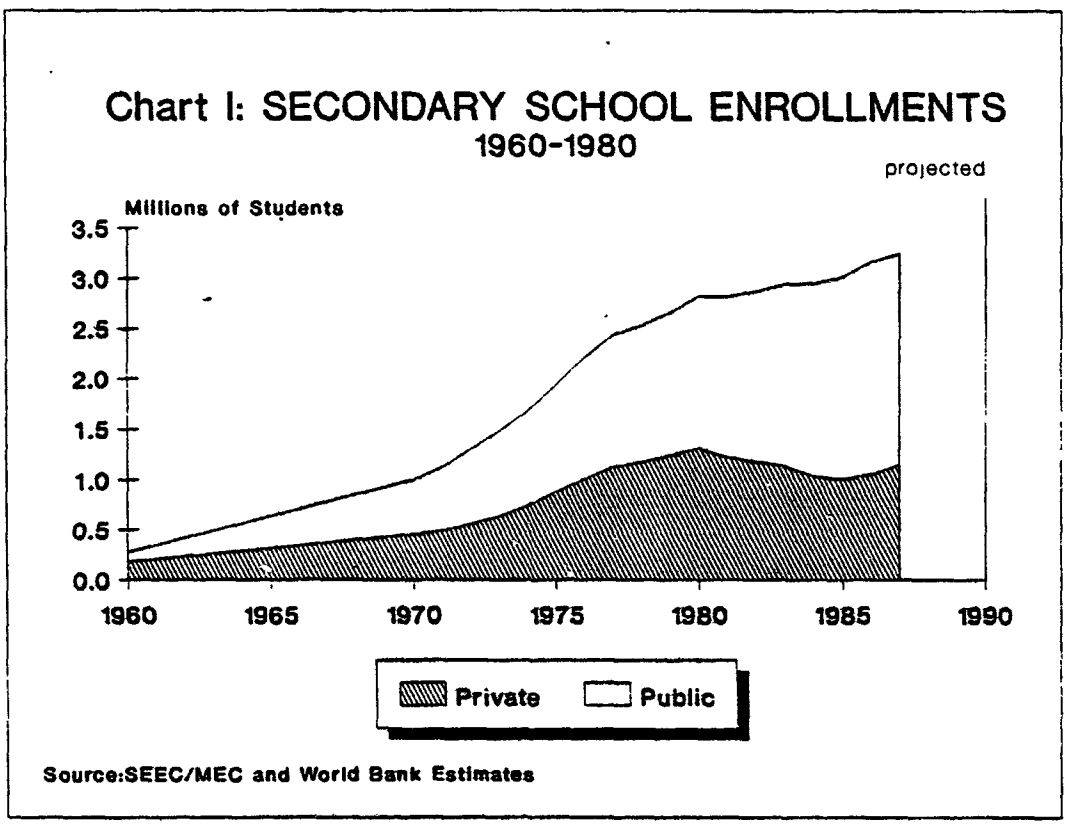
---

[9] 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%.

[10] In the 1970s, however, higher education (and post-graduate) enrollments expanded at faster rates than secondary enrollments.

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, 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

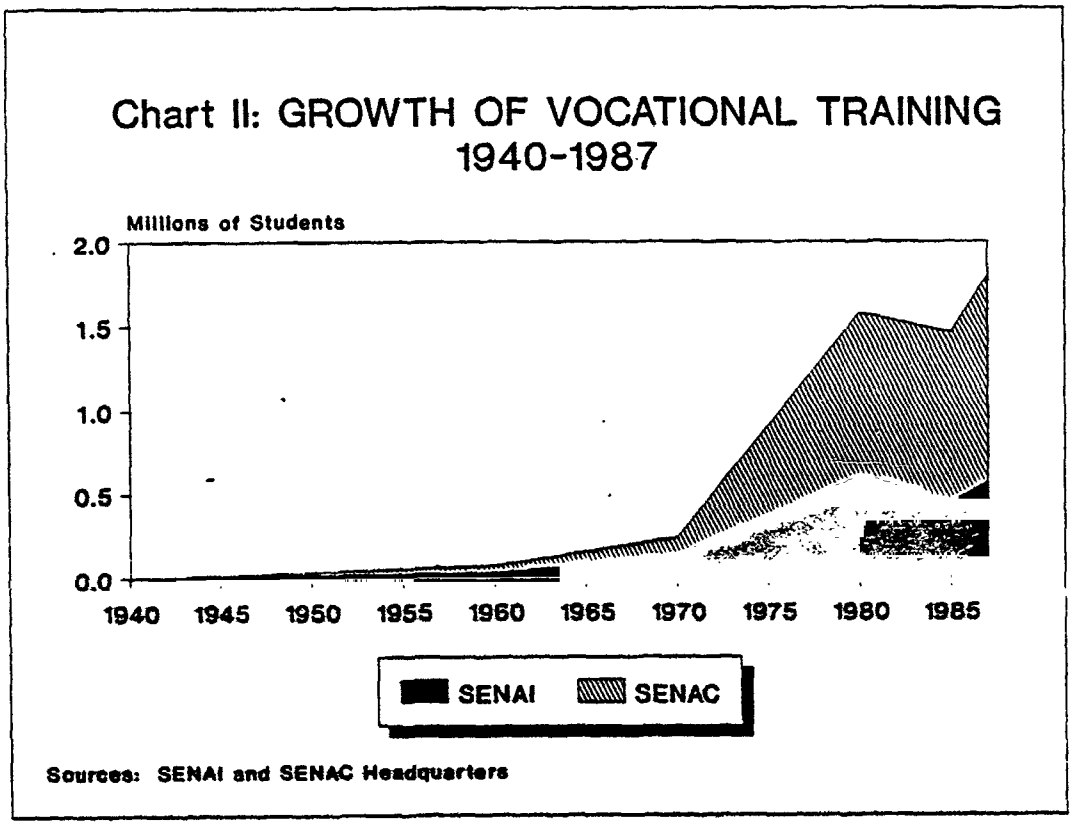
primary school system, which had expanded earlier. In 1960, a relatively small share of primary school graduates went on to secondary school; by 1982, an estimated 75-80% of primary graduates continued on to secondary school. Since 1980, the number of primary school graduates annually has remained about 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.[11/] 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-

---

[11/] 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. Although 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 -- 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.

50% as high as SENAC's.[12/]



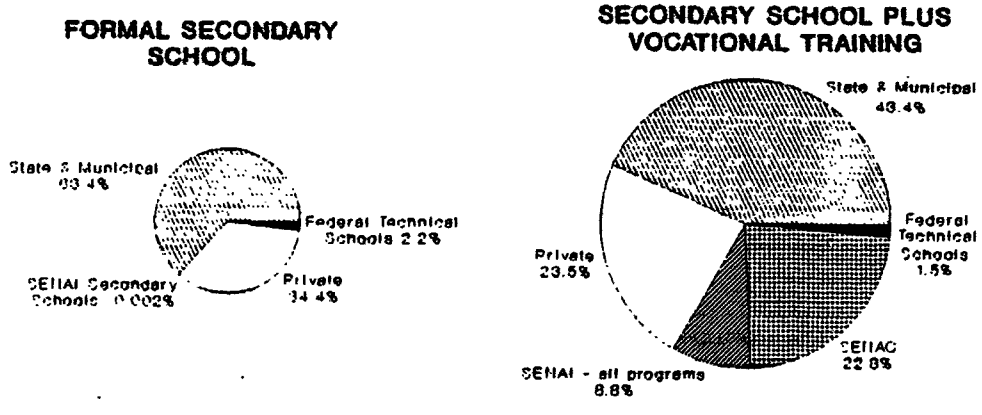
37. As can be seen in Chart II, enrollments in SENAI and SENAC were lower than formal secondary enrollments until 1970. In the 1970s, however, their enrollments exploded, increasing by 21% per year. One factor behind this enrollment growth was the automatic expansion of SENAI and SENAC budgets (based 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.

[12/] 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. Numerous private industrial vocational schools also exist, however.

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,[13/] 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.

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.

Chart III: SECONDARY SCHOOL EDUCATION AND TRAINING ENROLLMENTS BY TYPE OF SCHOOL, 1985



13/ SENAR's budget is not. SENAR receives its funds from the Ministry of Labor.

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.[14/]

Table 2.1: PUBLIC SECONDARY EDUCATION AND TRAINING EXPENDITURE AND ENROLLMENTS BY TYPE OF SCHOOL, 1985

	Expenditure billions CZ \a	Expenditure millions of US$ \b	1985 Enrollments	Cost per Student CZ	Cost per Student 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		

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 Appendix Table 20.

14/ Rojas (1987).

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.[15/]

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% 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 total 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.[16/]

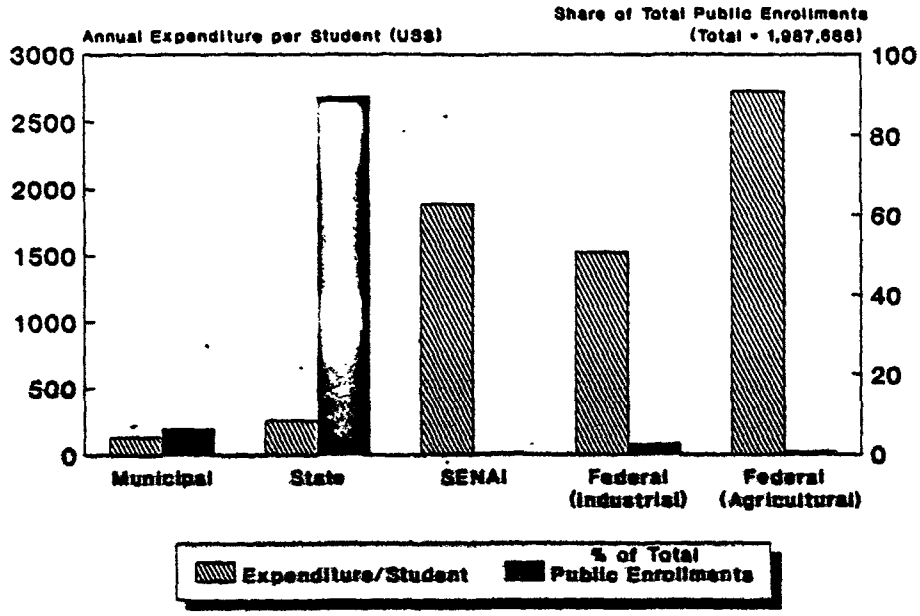
B. Secondary-level education in Brazil is diverse, in terms of course content, administration, and unit costs. Within the public sector, quality is generally poor; the exceptions are the highly select, high cost federal technical schools and SENAI secondary schools.

44. Secondary education is provided by all three levels of government -- federal, state, and municipal. The private sector, with 34% of enrollments, also plays an important role. Chart IV shows enrollments and unit costs by type of school.

15/ 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.

16/ 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).

Chart IV: PUBLIC SECONDARY ENROLLMENTS AND UNIT COSTS, BY TYPE OF SCHOOL, 1985



Source: Table 2.1

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.[17/] 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)

17/ 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.

curricula and may do so to differing degrees: habilitacao basica, habilitacao parcial, or habilitacao plena, in ascending order of intensity.[18/] 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. 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 clear 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.

18/ 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.

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,[19] 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.[20] 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 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 have already been 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

---

19/ 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$ 149. A similar degree of regional variation around the average expenditure per student (US$ 250) at the secondary level is very likely.

20/ 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.

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.[21/] Over time, growing pressures on state budgets resulted in declining average wages for teachers and contributed both to better-qualified teachers gradually leaving state systems and the inability of teacher training schools to attract good students.[22/]

2. Federal Technical Schools

55. The 23 federal industrial and 37 federal agricultural schools together account for only 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 finest 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.

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.[23/] Only an estimated 9% of federal technical students come from families with income below 2 SM. Those technical schools that

---

[21/] 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.

[22/] 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.

[23/] Based upon data from the sample of federal technical students which participated in the 1988 secondary school achievement test. See Appendix Table 34.

operate night shifts, however, appear to reach students from significantly lower-income families.

57. The federal technical schools operate six hour per day, 180-day 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.[24/] 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 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 is in the range of two-three times the minimum salary; 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 school directors out of necessity find ways to take

---

24/ 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.

care of these directly, given their great distance from Brasilia. Student selection is 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 SENAC's enrollments nationally are in this "Habilitacao 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 do Qualificacao 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 Occupacional" 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. Little is known about the full costs or effectiveness of the training they provide, 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 nationally 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 SCORESa/ (% correct) Portuguese	Mathematics
Federal Technical Schools			
o Industrial	$1,516	61	51
o Agricultural	$2,727		
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. 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.

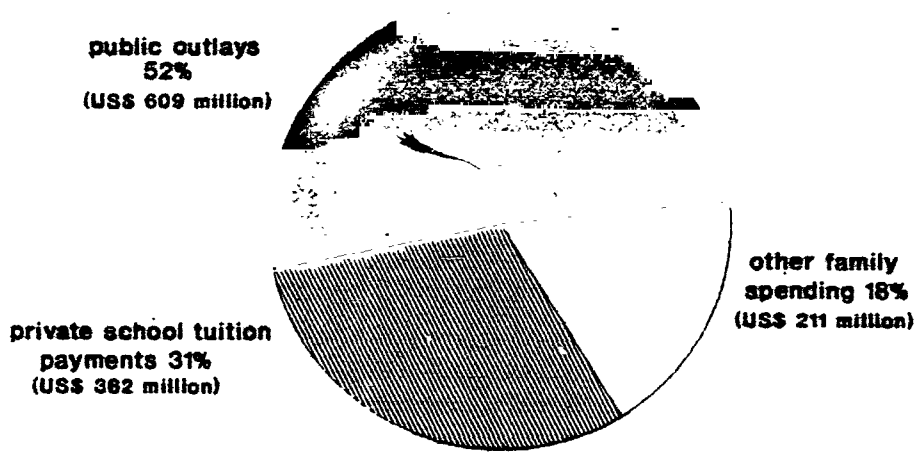
72. Even after student background effects were accounted for, however, there remained significant unexplained differences in student achievement at different types of schools, particularly in mathematics. The test results imply that students of identical socioeconomic background would score at least 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. Average teacher salary levels and school size did not have a measurable effect on student scores, although 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 the middle-class. 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, 33% of secondary school pupils, and 59% of university pupils are enrolled in private institutions. Private secondary schools enrolled almost 1.1 million students in 1986. 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.

Chart V: ESTIMATED TOTAL SPENDING ON SECONDARY EDUCATION, 1985

Total Equals US$ 1,182 million



Note: Other family spending includes spending on school-related items (books, uniforms, transport etc.) for both public and private schools

Source: MEC

74. In addition to formal secondary schools, which are regulated by the government, a dynamic and 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 courses which prepare 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 matriculation fees they pay.[25/]

75. Overall, the private education sector can be accurately described as dynamic, innovative, and heterogeneous in terms of the quality of instructional services. 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 schools. In addition, in several cities an interesting pattern has emerged of "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 "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 demand volatility and the imposition of government price controls, which have dampened profits.

25/ In 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.

Table 2.3 - **PRIVATE SCHOOL ENROLLMENTS, TUITION AND FAMILY INCOME BY INCOME QUARTILE, 1982**

	Income Quartile				
	First	Second	Third	Fourth	Total
Percent of Students Enrolled in Private Secondary Schools	29%	31%	34%	51%	43%
Average Monthly Private Secondary School Tuition Paid in 1982 (US$)	7.36	12.13	19.07	41.96	33.58
Average Per Capita Family Income of Children in Private Secondary Schools in 1982 (in US$)	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 price. 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.

2. Volatility in recent enrollments

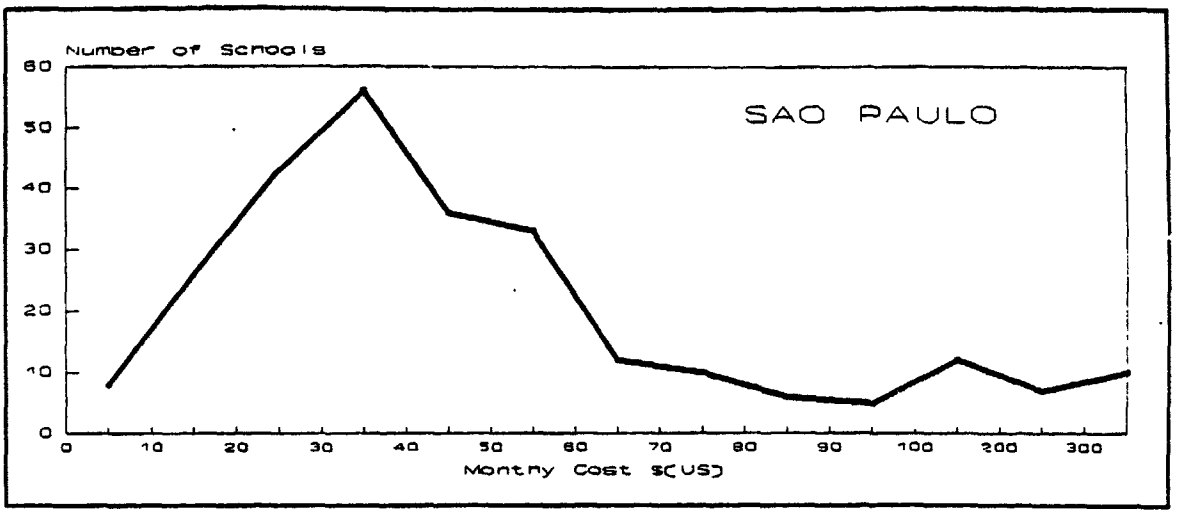
78. In 1960, the secondary school system was largely private, with two-thirds of total enrollments in private, mainly religious, schools. During the 1960s, however, the public sector, particularly at the state level, expanded secondary places more than 19.4% per year, double the rate of enrollment growth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

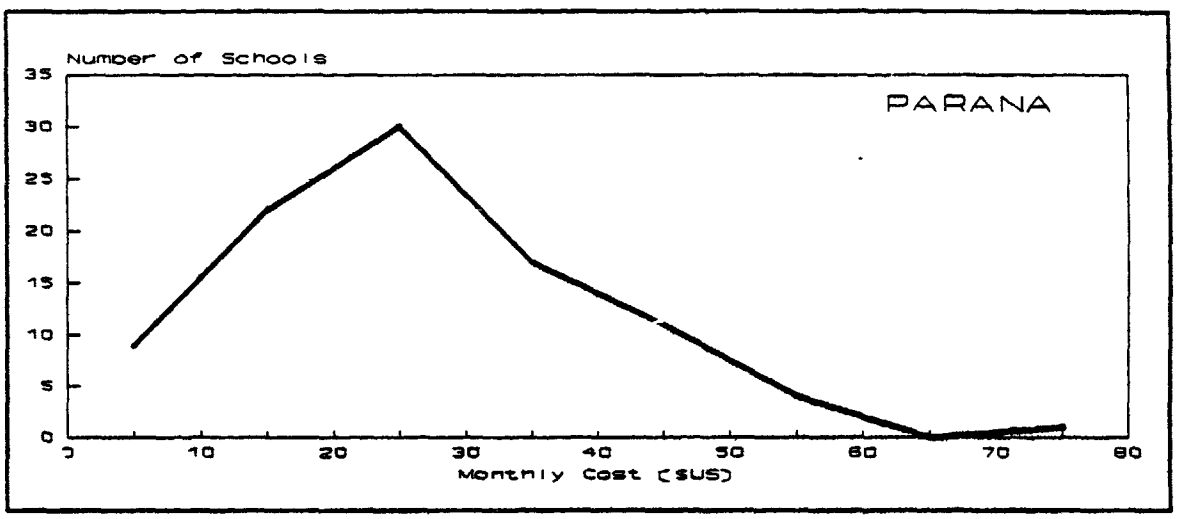
79. Public school expansion slowed during the 1970s, to just over 10% per year, and private school enrollments began increasing slightly more rapidly. This change to a large extent reflected a shift in demand towards private schools associated with students' and parents' rejection of the 1971 national "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.

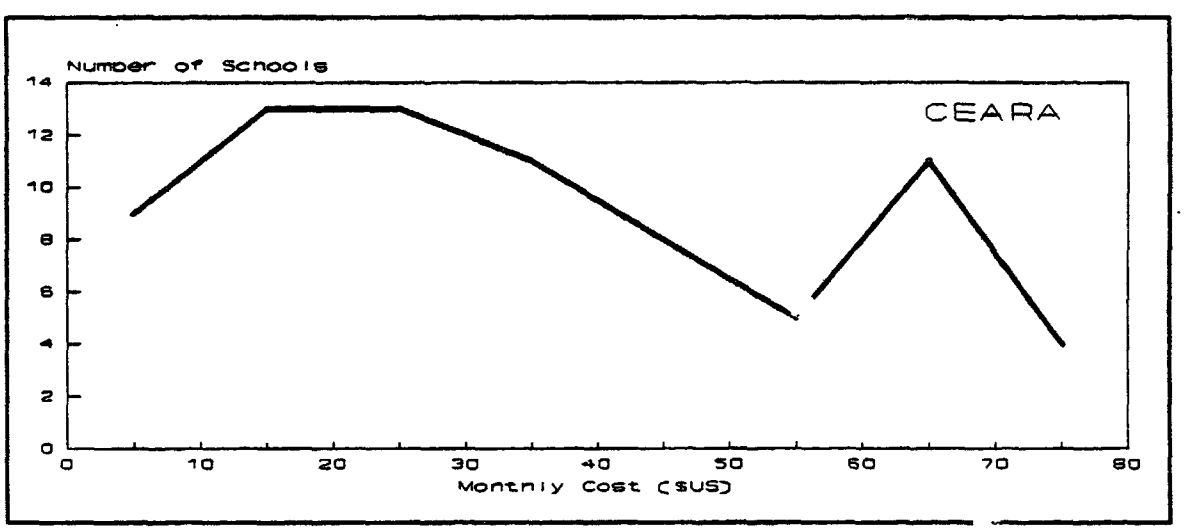
80. A striking trend since 1980 has been a sharp increase in the volatility of demand for public versus private schooling. Between 1980 and 1985, there was a 25% decline in private school enrollments and a 33% increase in public schools enrollments in a context of stagnating overall enrollments. Over 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 crisis 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.

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

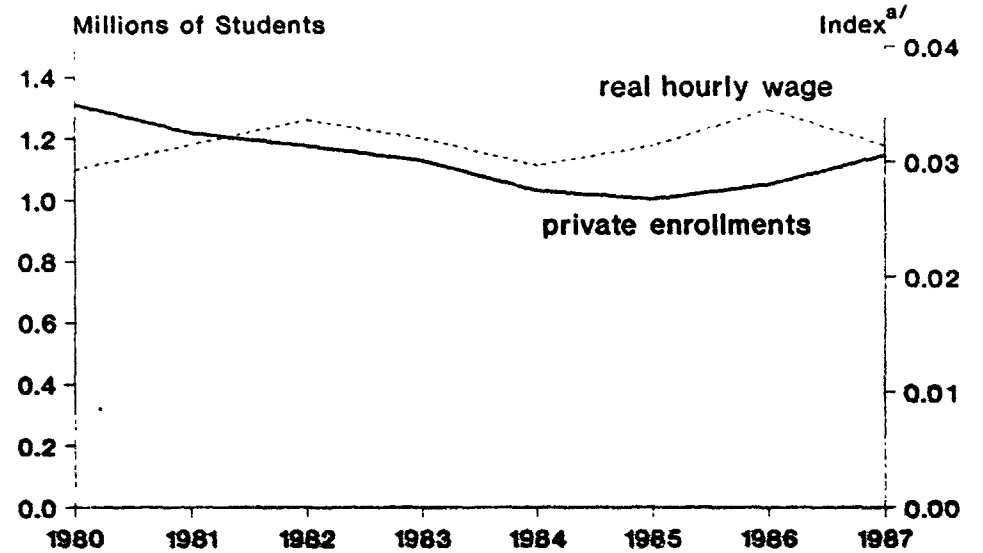






Sources: Sao Paulo State Commission on School Tuition, Sept. 1987; State Education Council - Parana, Nov. 1988; State Education Council - Ceara, Mar. 1988

Chart VII: PRIVATE SECONDARY SCHOOL ENROLLMENTS AND REAL WAGES 1980-87



a/ Deflated average hourly wage in Sao Paulo (1980) prices
Source: Macrometrica, Nov. 1988

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 considerable evidence 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,[26/] 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. Perhaps most significant are the results of the secondary school achievement test presented in Table 2.2: 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 state secondary schools and SENAI schools, particularly in math.

86. Underlying such averages, however, are two 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

---

26/ 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."

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 have two other important characteristics not usually associated with higher quality. First, in the achievement test sample average class size in private schools was 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, private schools also hold 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 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.[27/] 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

---

27/ 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.

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 travel to distant parts of the city daily. 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. The overwhelming reason for attending low-cost private schools given by students interviewed 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.

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 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. As shown in Table 2.4, 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. Those who make it to secondary school are predominantly 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).

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%
Memo Item 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

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 many of these secondary dropouts are 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.

Table 2.5 - ANNUAL PUBLIC SUBSIDY PER STUDENT AT DIFFERENT SCHOOLS, 1985, AND PERCENT OF STUDENTS FROM LOW-INCOME FAMILIES, 1988

	US$	Percent of Students From Low Income Families a/	Percent of Students From High Income Families b/
Federal Technical Schools			
o Industrial	$1,516	9%	50%
o Agricultural	$2,727		
State Secondary Schools	$ 257	15%	41%
SENAI Secondary Schools c/	$1,880	6%	57%
Memo Item (for comparison)			
Private Schools	($ 525) d/	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/ HP (Habilitacao Professional) programs offered at 17 SENAI schools, which include full secondary school curriculum.
d/ 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 Vocational Training. The public vocational training system also poses important equity issues. As in the formal school system, within SENAI and possibly SENAC[28/] per student spending 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-

28/ No published data is available on the cost structure of SENAC courses or the socioeconomic characteristics of SENAC students. SENAC does not offer any secondary level (or higher) courses, and its courses are generally shorter and less expensive than SENAI training. The average course length at SENAC is roughly 60 hours, and, based on 1985 budget data, the average cost per student was US$ 51. According to a recent study (SENAC, 1987), about 26% of SENAC students have not completed primary school, and 33% have already completed secondary school or higher. Thus, about 41% of SENAC's trainees are roughly at the secondary school level. (Some of these may subsequently continue on with formal schooling, of course.) It is unfortunate that more is not publicly known about the structure of SENAC expenditure, the characteristics of its students, and students' post-training earnings.

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 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 the latter 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 will decline 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. Most researchers also agree that, after families, Brazilian schools are the second most important social institution in the sponsorship of bipolar gender models. Brazilian schools, like schools almost everywhere, are believed to socialize men to assume superordinate authority roles and to socialize women to assume subordinate authority roles.

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 direction. 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 emphasizes price control rather than quality control and consumer information.

103. General Issues. Public 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 large share of total public spending continues to go to technical and vocational school systems which were designed decades ago for a very different economy. More important, the continued importance of these programs in overall spending may reflect funding inertia (access to an earmarked payroll tax) 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 roles of planning, curriculum orientation, evaluation, and technical assistance and financial intermediation focused on raising the average quality of secondary education nationally. Statistic collection and analysis functions are weak and appear to have declined significantly in recent years; for example, national enrollment statistics have not been published since 1985. 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 would 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 highly relevant.

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, but a more important problem is that they are not spent efficiently. State school systems have cumbersome administrative overheads, 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 virtually no incentives for schools to improve their performance.

108. The largest source of waste at the state level in recent years has been the immense cost of paralyzing 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 systematically 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 unanimously suggested that the greatest difference between teachers at public and private secondary schools was not pay level, but the greater autonomy and accountability which teachers at private schools have. 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) they 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 the conclusion of several different studies 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. Also, by increasing uncertainty regarding future pricing policies, tuition price controls 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.[29/] 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 current state policy does 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 segment 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. Little is known about low-tuition private schools, but most indications are that these are also very competitive. This argues for more state regulatory emphasis on evaluation and provision of consumer information, and less emphasis on ineffective price controls.

29/ 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.

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. Against the challenge which state schools present, the needs of the federal technical schools and SENAI/SENAC systems -- both of which are well-endowed and have attracted substantial external support -- pale in comparison. 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 all of 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 is much 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 are 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 appears to be even lower than average state spending in Brazil. In both Colombia and Chile, moreover, the secondary school population is much less selective and yet 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/	Number 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 - COSTS PER GRADUATE AT DIFFERENT BRAZILIAN SECONDARY SCHOOLS
(in US dollars)

	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 themselves 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 considerably 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 is 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. Success in improving school cost-effectiveness will likely stem from the capacity of different states to evolve their own models. Central to this process are: i) states' capacity to evaluate a wide range of 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 are created in a system where previously there were almost 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 state school systems -- the low morale and frustration of school personnel.

135. Thus, a decentralized public system can mimic the organizational model of an independent private school or a public school managed by an independent local school board. 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

****

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.

****

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) rapidly build 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 qualifications should be de-emphasized: performance is what counts. Many school systems have found it valuable to give communities, or at least parent-teacher associations, a voice in the

selection process.

140. Raising the professionalism of public secondary school teachers is likely to be 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). Even worse, the system presents absolutely no disincentive to strikes; 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 shifts. 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 could be reallocated to salaries and other incentives for classroom 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 allow comparison of individuals in these occupations with education and training similar to the 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 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 apprcach 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.

****

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:

- o 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.

- o responsibility for the development, evaluation and dissemination of new textbooks, teaching materials, pedagogical techniques, curriculum ideas or other learning aids on an ongoing basis;

- o responsibility for staff development, including the design and administration of in-service training programs for teachers and directors.

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, 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. Community contributions, for example, generally 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 equalizing role in expenditure allocations, and a strong technical assistance role, continuously working with the lower-performing schools to try to improve effectiveness and reduce 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 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, 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 annually to cohorts of students in all schools, so that "value-added" or the increased learning of individual students as they progress though 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 1987, the state of Parana and several cities elsewhere in the country have begun experimenting with standardized achievement tests at the primary level. The results have been interesting -- in general confirming widespread impressions of the poor quality of public primary schooling, particularly in mathematics teaching -- but, as the secretariats have realized, somewhat limited, given the lack of controls for student background and ability. In general, such tests are more informative if administered regularly to cohorts of students, so that increases in learning ("value added") can be measured and attributed directly to the school's performance.

151. 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 rarely 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.

152. In most countries, standardized achievement tests are designed and administered on a national basis. This is a logical and important role for the MEC to play in Brazil. However, the value to individual states from standardized testing -- even if only in a sample of schools -- is sufficient for states and municipalities to proceed independently.

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

153. 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 dynamic and competitive, and may 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 schools also appear to be relatively cost-effective, according to the estimated average cost per graduate in Table 3.2. This accords with research results from other countries which suggest that private schools in general may be more cost-effective than public schools.

154. 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.

155. For these reasons, many 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 (which are more likely to have children in private schools) most.

156. Chile has one of the few subsidy programs which appears to be effectively targeted towards middle- and lower-income students. Chile's voucher program, which has been operating for almost a decade, is described in Box 4 ("The Chilean Voucher System"). The vouchers (or 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 between 1981 and 1987 is striking and strongly suggests higher consumer satisfaction with the latter schools.

157. Observers agree that the system has not only allowed students to "vote with their feet" about where they think they will get the best education; it has also created powerful incentives for public schools to improve their performance and thus to attract students. An important feature of the Chilean voucher system is that it is effectively "targeted" to middle and lower-income students, because it excludes subsidies to the high-quality schools which richer students attend. At present, at the secondary level, Chilean private schools must have costs below US$ 15 per month in order to qualify for the voucher program.

158. Targeting is essential for any such incentive program in Brazil. At the secondary level, where 33% 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 simply displace private financing. Finally, it would be inequitable, as a significant share of private school students are better-off than the average public school student.

****

Box 4: The Chilean Voucher System1/

Convinced of the possibility of achieving greater efficiency in providing education, the Chilean government undertook reforms in 1979 and 1980 to decentralize decision-making and increase accountability at the school level in the country's highly centralized system of public education. 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 "voucher" system, providing monthly per-student allotments based on actual student daily attendance to 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 voucher system.

Before the reforms introduced in 1980, 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 voucher 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).

With the introduction of the voucher system, private schools could compete effectively with municipal schools without charging tuition, as long as they maintained student-teacher ratios which enabled them to cover costs -- the most important of which were teacher salary costs. Depending upon teacher salary levels in the school, the break-even student-teacher ratio can range from of 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. At present, the monthly per-student subsidy for secondary schools is about US$ 15.

In administering the voucher 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 Ministry of Education 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 has been particularly important for newly established private schools, whose staff often lack experience in school administration.

****

****

The Chilean reforms gave 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 from the Table 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.

	Share of Total Enrollments	
Type of School	1981	1987
Public	78%	61%
Subsidized Private	15%	31%
High-Cost Private	7%	8%

In an effort to give schools greater flexibility and to encourage them to supplement public funding with direct cost recovery from students, recent legislation relaxed the prohibition on tuition charges in the subsidized private schools, and these schools may now charge tuition up to 2.5 times the value of the monthly per student subsidy. These tuition charges are intended to provide subsidized private schools with additional funds in order to make the competition between subsidized private and public schools more equal, as municipalities have access to local tax resources and other government funding for capital expansion.

Chile's voucher system is not a panacea, of course. Education quality in all types of schools has remained poor because of outdated and inadequate text books and teacher training schools that Chilean observers consider of low quality. Neither private nor public schools have been able to overcome such systemic weaknesses and some observers believe that the competition between schools tends to stimulate cosmetic changes and gimmicks more than investments in education quality. Finally, there is a danger that the new policy of allowing subsidized private schools to charge tuition -- although attractive from the standpoint of permitting improvements in school quality without increasing fiscal costs -- will lead to increased stratification of the private system, and eventually leave the poorest families once again with no option but the local public schools.

On balance, however, the Chilean reforms have injected needed dynamism into a previously sluggish education system. In poor urban neighborhoods, where the population is growing most rapidly, private schools have proven responsive in providing education services. In urban areas throughout the country, competition with private schools has given public school directors strong incentives to improve school quality; dissatisfied parents can now withdraw their children from unsatisfactory public or private schools and enroll them in an alternative school that performs better. And special programs abound in neighborhoods where there are several public and private schools vying for enrollments.

1/ Material in this section draws on a draft chapter of a forthcoming World Bank report "Social Development Progress in Chile: Achievement and Challenges."

****

159. Private school incentive programs can be efficiently targeted to middle and low income students, however. Perhaps the best options are:

- a program of capital grants for the construction, renovation or expansion of private schools in target low-income neighborhoods. For most low-income private schools (excluding those affiliated with religious or other philanthropic organizations), it is more difficult to raise capital for school construction or expansion than it is to attract fee-paying students. A capital grant program is relatively easy to target. In Brazil, socioeconomic groups tend to be fairly clearly segregated by neighborhood, so a program restricted to schools in low-income neighborhoods would not be very difficult to implement. A precedent exists with nutrition programs in Brazil, which have been geographically targeted, offering heavily subsidized foods through stores in poor neighborhoods only. This type of program tends to have relatively low administrative costs. A further advantage is that the size may be kept small or changed over time, in conjunction with government revenue trends, without damaging the incentive. (In contrast, instability in the funding of a voucher subsidy program has very negative effects on the schools and can disrupt students' educations.) A capital grant program could be implemented with or without a voucher subsidy system.

- a voucher system along the Chilean model, in which subsidies are limited to private schools below a certain tuition level. Based upon the sketchy available data for Brazil, perhaps 15% of private secondary schools at present would qualify for this subsidy were it set at the US$ 15 per month level currently used in Chile and the total cost of the subsidy (in 1987 dollars) would be on the order of $25-30 million per year (less than 5% of total public spending on secondary education at present). It should be noted that this amount would not necessarily be additional to current spending, if students from public schools (many of which have average monthly costs higher than $15 per month) shifted into private schools and public school budgets were correspondingly reduced. The appropriate cut-off point for Brazil would of course have to be studied carefully in each state.

160. The major issue in Brazil with a voucher program would likely be administrative capacity. A voucher 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 and experiences with private school support programs (such as "compra de vagas") have generally not been satisfactory. Developing strong,

professional units for the administration and enforcement of a voucher program would be a major challenge in Brazil.

161. It should be noted that a voucher program could be a useful tool for states wishing to municipalize their systems. Vouchers (which are simply enrollment-based financial transfers) would 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.

162. The introduction of any private school incentive program presents administrative challenges, including identification of the target population (with a capital grants program, what would be the cutoff point between a poor neighborhood and a lower-middle class one?), or verification of schools' attendance reports under a voucher system. It also presents the classic political danger of any type of subsidy program -- no matter how restrictive the target group is initially, pressures to expand the program develop from other groups. For these reasons, states should ensure that any incentive programs developed are carefully developed, well-targeted and administratively sound before their introduction. Nonetheless, as Chile's experience has shown, the development of a strong, competitive and well-regulated private sector in education is one of the most effective ways of stimulating better school quality in the public sector.

163. Independent of the possible adoption of targeted incentive programs, there is much that the public sector can do to improve private school performance simply by strengthening oversight. Government policies should concentrate or substantive oversight, rather than counterproductive tuition price controls. This could involve such actions 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.

C. Opportunities for the Next Decade

164. 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 probably 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. Most states are well below this level at present, devoting on average between 8-15% 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. Surprisingly, neither state nor federal education administrators currently do much to exploit this. 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.

Diversity exists across states, as well. The state of Parana in recent years has quietly implemented innovative administrative reforms, from decentralizing some types of expenditures to the school and school district level, to promoting the organization of strong community school boards with real authority over the selection of school personnel and responsibilities for school maintenance. Channels for the evaluation of such experiences and exchanges with other states, however, are lacking.

d) the size and dynamism of the private sector. The existence of a dynamic and 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 new Constitution concentrates the main responsibility for primary education at the municipal level. As a result, many 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 offers several 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.

165. 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 many share facilities with state-administered secondary schools. 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.

166. 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.

167. 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.

168. Municipal school systems may also be more susceptible to patronage politics or clientelism than state or federally-run systems. One important 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 as being proposed currently in the State of Sao Paulo could be an important complement to municipalization in order to protect the professionalism of school systems.

169. 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 vastly easier for a municipal system to focus its efforts on school level performance than it is for a larger, more centralized school system.

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

170. 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 and training system are well-endowed: i) the network of (55) federal technical schools and ii) the SENAI and SENAC system of vocational training. Both of these are funded at the federal level and have reputations for high quality, effective education and training. However, the cost-effectiveness of these schools has never been evaluated. Moreover, little is known about the equity of access to these systems.

171. 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. Indeed, the federal government is currently embarked on a World Bank-assisted program to expand significantly the federal technical school network, and SENAI and SENAC -- again with World Bank assistance -- are also expanding. 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 be increased 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.

172. 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. The most serious issues of efficiency are posed by the very large Brazilian system of publicly-funded vocational training administered by SENAI and SENAC; these 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 pose a combination of quality, equity and efficiency issues. 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

173. Close to 20% of total public spending on secondary education goes to support the federal technical schools, which have only 3% of public secondary students. An additional 2% of total public spending on secondary education goes to support the SENAI secondary schools, which have 0.002% of 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.

174. 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. This is especially true if adequate loan facilities existed. Thus, 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.

175. 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 and on entrance exams, not because they are rich. This is also largely the case with SENAI. The issue is simply that de facto 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, possibly low efficiency, and a large sacrifice in terms of equity.

176. Excessive expenditures and subsidies are not intrinsic to the production of well-educated graduates. The challenge is finding ways to maintain quality where it exists while expanding access and improving equity. There are many ways in which this could be done.

177. Improving Equity while Preserving Quality. There are three basic ways by which the equity of public spending on high cost technical education training programs could be improved.

i) **experiment with "cost-sharing"** - cost sharing could gradually be introduced at the federal technical schools and in the SENAI secondary schools so as 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.

178. Cost sharing arrangements could provide the wherewithal to offer expanded remedial programs or expansion of school places to accommodate more students from the lowest income groups. Such arrangements involving loans are feasible because students in the federal technical schools and SENAI secondary schools can expect high future incomes. A sliding scale of fees appears justified and feasible because, as seen in the achievement test sample, over 50% of the students in these two systems come from families with incomes above six minimum salaries, i.e., from families in the top twenty percent of the Brazilian income distribution. Cost sharing at the federal technical schools could generate incremental resources for the maintenance and expansion of the federal technical school network, thus extending the benefits of their high quality education to increasing numbers of talented students, without diverting financing from the major challenge of raising the quality of state and municipal secondary education.

ii) **attract more low-income students** - Policies to increase the share of poor students at federal technical schools and SENAI secondary schools would also help improve equity. This can be done by reserving a proportion of student places for low-income students (as SENAI schools already do, to a limited extent); outreach and special publicity campaigns aimed at primary school students in poor neighborhoods; and development of remedial programs for low-income students.

179. Given the inadequate preparation that most low-income students receive in primary school, it would probably be necessary to establish remedial programs 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. This suggests that some schools have given serious thought to the problem, and may be receptive to more ambitious programs of this type if given the right incentives.

180. This approach could allow for a gradual shift in the composition of the student population, if the "set-aside" proportion for students from the poorest income groups increases gradually over time. Remedial programs are a way to augment the numbers of these students without lowering academic standards. As will be recalled, the achievement test results show a lack of correlation between students' performance and their individual socioeconomic level, after controlling for the school attended. This suggests that it may be feasible to use high quality remedial training to make an increased number of poor students as qualified as other students in the federal technical schools and SENAI schools.

iii) **expand enrollments more rapidly than physical plant** - The high unit costs of the federal technical schools and SENAI secondary schools could be driven down without unduly reducing quality by expanding enrollments (both by increasing student-teacher ratios and adding shifts wherever possible) at existing schools. This could be done in the federal technical schools by gradually shifting emphasis from expensive "technical" training to "centers of excellence in the sciences and math". In the SENAI secondary schools this can be accomplished by adding shifts and doubling students up where the most expensive equipment is involved in training. In addition, there are many instances where usage of SENAI's equipment could be rented out to other (public or private technical) schools, providing income that could be used for enrollment expansion.

181. It is possible to reduce significantly the cost differentials between the federal technical schools and SENAI's secondary schools and other public schools without threatening quality. First, consideration should be given to reducing the degree to which the federal technical schools supply practical skills and SENAI secondary schools involve "hands on" industrial training. As noted earlier, these types of training involve high costs in money terms. They also have a cost in terms of foregone educational opportunities. These include opportunities for stronger emphasis on basic scientific skills and theoretical knowledge, and, especially in the SENAI secondary schools, more of the general training in principles that would speed workers' acquisition of practical skills on the job as needed throughout their careers.

182. Moving in this direction in the federal technical schools 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 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.

183. 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.

B. Efficiency: 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.[30/] 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.[31/]**

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

30/ All SENAI and SENAC training is "general training" in the sense used by human capital economists: ie., 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.

31/ 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%).

1. Trainees subsequently work at the skills for which they were trained; and
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.[32/] 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

---

32/ 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.

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 based on costs and quality. There is a highly 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 is more important for ensuring efficiency. A large 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 can be expected to expand dramatically 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. The issues raised in this chapter are of major importance for improving the overall equity and efficiency of government spending on education in Brazil. It should be noted, however, that there are other instances of serious "mistargeting" of education spending in Brazil, most notably in higher education: government subsidies to public university students are even larger than for federal technical school students, and

enrollments in higher education are even more skewed to students from higher-income families. The proposals in this chapter for cost-sharing by federal technical school students and changes in the financing of vocational training should be viewed in this context. These are important areas for reform; however, they would ideally be implemented in a context in which steps were also being taken to introduce cost sharing in public universities.

201. This chapter also suggests some far-reaching actions for reform of the Brazilian national vocational training system, proposals which 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 currently generates a significant "excess" over this level. (As noted in Chapter II, SENAI and SENAC generally retain 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

202. 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.

203. 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.

204. 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

205. 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),[33/] Brazil will not reach 50% secondary school participation before the year 2010.

206. 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.

207. 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.

33/ World Bank population projections. See Appendix Table 61.

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.

208. 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.

209. 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.

210. 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.

211. 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.

212. 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.

213. 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.[34/] Yet there is no question that this would represent improvement.

214. 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 it 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.

215. 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

216. 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

---

34/ 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 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.

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.[35] 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.

i. Trend Growth (2.7% per year). This case assumes no changes in primary school efficiency or the primary-to-secondary school transition ratio.

ii. 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.

iii. 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.

35/ 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).

Table 5.1 - SECONDARY SCHOOL ENROLLMENT PROJECTIONS, 1990-2010: ALTERNATIVE SCENARIOS
(in thousands of students)

	---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.

217. 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 33%. Finally, it is assumed that the current efficiency and unit costs of each type of public school remain unchanged.

218. 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
		(A)	(B)	(C)
1990	714			
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

Source: Projections from Table 5.1. Estimated 1985 unit costs from Table 2.1.

219. 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.

220. 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.

221. 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.

222. 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.

Table 5.3 - ALTERNATIVE PUBLIC COSTS OF 100,000 ADDITIONAL SECONDARY SCHOOL ENTRANTS

Type of School	Expected Graduates	Cost Per Graduate (US$)	--------PUBLIC COST-------- Per 100,000 Entrants (US$ Millions)	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.

223. 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.

224. 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.

225. 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 the 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 modest targeted subsidy programs, are likely to be cost-effective.

C. Issues for the Next Decade.

226. 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).

227. **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).

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

- o introduction of incentives for school performance. School budgets, directors' and teachers' evaluations, and bonus pay for all school personnel could be based upon 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;

- o 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 below).

- o introduction of standardized student testing as a tool for measuring school (and school system) performance objectively;

- o 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 "school support funds" to encourage improved school performance;

- o consolidation of basic curriculum. For a transitional period (say five years) state schools should focus efforts on strengthening the core curriculum (Portuguese, math, science, history) in all schools. Over this period corresponding efforts might be made to transform state technical schools into magnet schools for superior math and science students, rather than equipment-intensive vocationally oriented schools. This approach would have the twin advantages of creating a high-performance "tier" within the state school systems that would select the best students through competitive examination; it would also lower the costs of state technical education and could improve its quality.

- o removal of incentives for school disruption -- Brazilian law currently allows teachers to continue to receive full pay on a regular basis while they are on strike. Teachers thus face no disincentive to calling strikes during the school year, which creates enormous costs for public school systems and for students. In some countries public sector workers do not receive pay while on strike. But even countries which do legally protect public sector workers' pay during periods of strike usually do so in a way which creates incentives for striking workers to return to the job. Most commonly, this is done by not actually paying workers their accrued salaries until the strike is over.

229. **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 dynamic and competitive 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, rather than counterproductive tuition price controls. Specific recommendations include:

- o inclusion of private schools in the administration of regular student achievement tests;

- o 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;

- o provision of technical assistance to private schools (perhaps with cost sharing); and

- o publication of annual performance reports on all accredited private schools.

230. 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. Possibilities for an efficient private school incentive program include:

- o a program of capital grants to accredited private schools for new construction, expansion or renovation in targeted (low-income) neighborhoods. Such a program could be used with or without a voucher system.

- o a voucher system, as has been successful in Chile, in which the state pays tuition for students at fully accredited low-cost private schools. Such a system gives low-income students more educational choices and creates incentives for public schools to deliver more cost-effective educational services.

231. If a program of financial incentives (such as a voucher or capital grants program) is adopted, a greatly strengthened audit capacity at the state level will be required to prevent abuses; consideration should be given to placing audit responsibility outside of the education secretariat, perhaps attached to the finance secretariat or as an independent agency.

232. **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:

- o limit payroll tax transfers to SENAI and SENAC to the level of their actual expenditures on training;

- o introduce a student loan program for the financing of most types of vocational training under a system whereby costs for certain risky types of skills training may be shared by employers and employees depending upon the employee's tenure with the firm;

- o 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.

233. **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:

- o design, administration and analysis of achievement tests for public and private students at least every two years;
- o curriculum development, in-service teacher training programs, and other central support services for the benefit of all public and private schools;
- o private school oversight and accreditation, and possible administration of a targeted incentive program; and
- o annual public school performance evaluations and budget reviews, which become the basis for funding allocation decisions for a network of decentralized public schools.

234. **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.)?

235. 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.

Chapter I: CHANGING EDUCATIONAL NEEDS OF THE BRAZILIAN ECONOMY

Chapter II: SECONDARY AND VOCATIONAL EDUCATION IN BRAZIL: CRITICAL CHARACTERISTICS

ENROLLMENTS

PRIVATE SECTOR

EDUCATIONAL ACCESS

Chapter III: IMPROVING SCHOOL QUALITY AT REASONABLE COST

Chapter V: ISSUES FOR THE FUTURE

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	1,310,287	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	1,463,473	884,255	2,347,728
1985	2,011,910	1,004,228	3,016,138	1,541,295	874,034	2,415,329
1986	2,113,067	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	TAXA DE PARTICIPACAO (%)	
	15-19 ANOS	TOTAL	ANOS	LIQUIDA	BRUTA
1970	591,242	1,003,475	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	2,374,505	8,311,135	23.9	34.6
1983	1,979,531	2,944,097	8,395,051	23.6	35.1
1984	1,987,171	2,951,624	8,477,560	23.4	34.8
1985	1,998,212	3,016,138	8,630,428	23.2	34.9
1986 *	2,138,520	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: (... ?! ... A

EVOLUCAO DA MAT RICULAS | EGU DO (AU PO ... STRATIVA, SEGUNDO AS REGIOES

	ANO	MAT CULA IN CAL			A CULA NAL			TAXA DE EVASAO IMEDIATA (%)		
		PUBLICA	PARTICULAR	TOTAL	PUBLICA	PARTICULAR	TOTAL	PUBLICA	PARTICULAR	TOTAL
REG. NORTE	1970	16,878	10,524	27,402	15,621	9,930	25 551	7.45	5.64	6.75
	1975	39,791	18,547	58,338	35,408	16,866	52,274	11.02	9.06	10.39
	1980	72,385	33,722	106,087	63,054	22,787	85,841	12.87	32.43	19.08
	1981	83,413	27,966	111,379	75,670	24,848	100,518	9.28	11.15	9.75
	1982	95,313	29,853	125,166	57,418	21,883	79,301	39.76	26.70	36.64
	1983	92,945	26,796	119,741	78,991	21,834	100,825	15.01	18.52	15.80
	1984	102,128	23,565	125,691	74,502	19,694	94,196	27.05	16.43	25.06
	1985	106,306	22,568	128,874	83,937	19,784	103,721	21.04	12.34	19.52
	1986	113,674	24,929	138,603	89,690	21,985	111,675	21.10	11.81	19.43
	1987	119,756	30,366	150,122	...	...	...	...	...	...
REG. NORDESTE	1970	105,291	79,933	185,224	101,097	76,589	177,686	3.98	4.18	4.07
	1975	213,008	154,248	367,256	185,670	145,765	331,435	12.83	5.50	9.75
	1980	306,984	254,111	561,095	247,069	228,820	475,889	19.52	9.95	15.19
	1981	319,882	258,928	578,810	276,295	242,531	517,826	13.94	6.33	10.54
	1982	355,140	271,452	626,592	319,304	226,887	546,191	10.09	16.42	12.83
	1983	424,657	256,977	680,634	318,269	221,066	537,335	25.52	13.64	21.05
	1984	437,474	237,592	675,066	338,750	200,437	539,187	22.57	15.64	20.13
	1985	458,297	237,045	695,342	358,599	201,844	560,443	21.75	14.85	19.40
	1986	478,975	250,529	729,504	377,282	216,017	593,299	21.23	13.78	18.67
	1987	498,221	276,354	774,575	...	...	...	...	...	...
REG. SUDESTE	1970	290,196	281,393	571,589	284,827	275,983	560,810	1.85	1.92	1.89
	1975	527,546	526,804	1,054,350	433,034	448,889	881,923	17.92	14.79	16.35
	1980	692,373	796,873	1,489,246	592,035	643,798	1,235,833	14.49	19.21	17.02
	1981	748,467	719,003	1,467,490	600,306	611,343	1,211,651	19.80	14.97	17.43
	1982	789,903	668,624	1,458,527	708,371	588,605	1,296,976	10.32	11.97	11.08
	1983	831,185	639,106	1,470,290	651,688	543,651	1,194,739	21.67	14.94	18.74
	1984	888,261	571,992	1,460,253	693,958	490,945	1,184,903	21.87	14.17	18.86
	1985	946,102	547,878	1,493,980	730,126	478,449	1,208,574	22.83	12.67	19.10
	1986	1,005,007	572,377	1,577,384	757,899	498,188	1,256,087	24.59	12.96	20.37
	1987	977,011	629,581	1,606,592	...	...	...	...	...	...
REG. SUL	1970	107,162	67,302	174,464	95,019	61,802	156,821	11.33	8.17	10.11
	1975	213,336	145,341	358,677	178,151	132,340	310,491	16.49	8.95	13.43
	1980	331,774	165,287	497,061	241,786	147,309	389,095	27.12	10.88	21.72
	1981	319,513	165,030	484,543	242,378	141,010	383,388	24.14	14.55	20.88
	1982	322,720	157,523	480,243	235,723	128,816	364,539	26.96	18.22	24.09
	1983	328,433	156,329	484,762	249,678	137,995	387,673	23.98	11.73	20.03
	1984	339,569	150,558	490,127	248,169	128,989	377,158	26.92	14.33	23.05
	1985	342,584	149,033	491,617	252,495	128,951	381,446	26.30	13.47	22.41
	1986	353,294	151,883	505,177	257,898	128,630	386,528	27.00	15.31	23.49
	1987	340,241	155,606	495,847	...	...	...	...	...	...
REG. CENTRO-OEST	1970	31,092	13,704	44,796	29,404	12,150	41,554	5.43	11.34	7.24
	1975	70,454	32,096	102,550	57,678	27,683	85,361	18.13	13.75	16.76
	1980	104,765	60,928	165,693	93,034	44,211	137,245	11.20	27.44	17.17
	1981	129,887	48,789	178,776	98,568	45,127	143,695	24.17	7.51	19.62
	1982	133,606	50,371	183,977	101,120	46,557	147,677	24.31	7.57	19.73
	1983	137,032	51,638	188,670	105,366	41,843	147,209	23.11	18.97	21.98
	1984	151,633	48,854	200,487	108,094	44,190	152,284	28.71	9.55	24.04
	1985	158,621	47,704	206,325	116,140	45,006	161,146	26.78	5.66	21.90
	1986	162,118	51,894	214,012	119,248	45,675	164,921	26.44	11.98	22.94
	1987	163,418	56,162	219,580	...	...	...	...	...	...

Fonte: SEEC/MEC

Table 7: SECONDARY SCHOOL PARTICIPATION, BY REGION, 1970–1987

MATRICULA INICIAL NO SEGUNDO GRAU E TAXA DE PARTICIPACAO, SEGUNDO AS REGIOES

	ANO	MATRICULAS		POPULACAO	TAXA DE PARTICIPACAO	
		15–19 ANOS	TOTAL	ANOS 16–18	LIQUIDA	BRUTA
REG. NORTE	1970	...	27,402	244,730	...	11.20%
	1975	...	58,338	284,435 *	...	20.51%
	1980	55,001	106,087	394,361	13.95%	26.90%
	1981	58,056	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	66,216	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%	25.06%
	1983	384,112	680,634	2,533,217	15.16%	26.87%
	1984	381,915	675,066	2,593,616	14.73%	26.03%
	1985	388,707	695,342	2,649,071	14.67%	26.25%
	1986	419,478	729,503	2,653,904	15.81%	27.49%
	1987	442,413	774,576	2,622,935	16.87%	29.53%
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	1,104,619	1,458,527	3,485,927	31.69%	41.84%
	1983	1,062,482	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	1,064,814	1,493,980	3,534,582	30.13%	42.27%
	1986	1,142,226	1,577,384	3,567,609	32.02%	44.21%
	1987	1,168,038	1,606,593	3,528,788	33.10%	45.53%
REG. SUL	1970	...	174,464	1,110,382	...	15.71%
	1975	...	358,677	1,335,920 *	...	26.85%
	1980	359,731	497,061	1,359,350	26.46%	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	1,356,123	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	112,061	178,776	561,236	19.97%	31.85%
	1982	115,171	183,977	554,503	20.77%	33.18%
	1983	121,824	188,670	572,071	21.30%	32.98%
	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	219,580	626,855	23.65%	35.03%

Fonte: SEEC/MEC

Obs.: * – dados estimados

Table 8: AGE DISTRIBUTION OF SECONDARY SCHOOL STUDENTS, 1985

	YEARS OF AGE							
	less than 15	15	16	17	18	19	more than 19	TOTAL
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	3,533	54,558	135,394	124,221	99,502	257,255	674,606
4th year	4	23	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 Estatistica do Ensino Regular de 2o. Grau, MEC

Table 9: AGE DISTRIBUTION OF SECONDARY SCHOOL STUDENTS AS SHARE OF TOTAL ENROLLMENTS, 1985

	YEARS OF AGE							
	less than 15	15	16	17	18	19	more than 19	TOTAL
TOTAL	3.10	9.50	14.45	16.46	14.42	11.43	30.65	100.00
1st year	6.68	16.53	16.42	14.85	12.06	9.23	24.31	100.00
2nd year	0.45	6.96	17.67	17.04	14.61	11.73	31.54	100.00
3rd year	0.02	0.52	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	2.93	7.00	1[illegible].23	14.43	13.99	11.47	38.95	100.00

Source: Sinopse Estatistica 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 I OCATION, 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	48.08	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 Domicilios - 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	45.86	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	64.56	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 Domicilios - 1982

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

	Number of Students
Public Secondary Schools	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
Private Secondary Schools	1,004,228
General b/	1,004,228
Technical	...
TOTAL SECONDARY ENROLLMENTS	3,016,138
Non-School Vocational Training	
SENAI Courses	328,228
SENAC Courses	799,899
SENAR Courses	240,000
Other Private Courses	...
On The Job Training Programs	
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 Estatistico 1985; MEC/SEEC " Dados Estimativas 1984-86",
SENAI Relatorio Anual 1987
SENAC Relatorio Anual 1985.

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

	1987	1986	1985	1984
TOTAL	975,779	749,374	725,447	723,692
– SENAI Direct Training	509,278	431,789	386,266	443,020
(Secondary – HABIL) a/	8,218	6,674	7,543	7,325
(Post–Secondary – CQP) b/	76,150	60,298	58,038	73,356
(Primary – APPREND) c/	60,434	57,614	56,994	61,357
(Non–degree – SUPRIM) d/	355,790	297,404	250,466	253,844
(Other)	8,686	9,799	13,225	47,138
– Training by Firms	466,501	317,585	339,181	280,672
(In Exchange for Exemption from Payroll Tax)	406,372	274,408	270,727	266,526
(With SENAI Assistance)	60,129	43,177	68,454	54,146

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, antrants 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)	
Direct SENAI Training				
Curso do Apprendizagem Industrial (CAI)	14–18	1,200–1,600	60,434	(6%)
Treinamento Occupacional (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%)
Training in Enterprises				
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	%
Age		
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
Sex		
Male	15,850	37
Female	27,508	63
Level of Education Completed		
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

	Expenditure			Cost per Student	
	billions CZ \a	millions of US$ \b	1985 Enrollments	CZ	US$
Federal Technical	4.7	119	67,657	69,328	1,759
Agricultural	1.5	37	13568	107,886	2,727
Industrial	3.2	82	54089	59,655	1,516
Governments	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
SENAI	3.5	90	386,266	9,152	233
HP	0.6	14	7,543	73,864	1,880
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$

	1980	1983	1985
Secondary Education			
Federal Government	191	183	232
of which Federal Technical Schools	...	...	119
State Governments	372	303	458
Municipalities	15	18	18
Total Education			
Federal Government	**2,195**	**2,436**	**3,360**
State Governments	**3,691**	**3,638**	**4,453**
Municipalities	**965**	**815**	**1,107**
Expenditure per Student at the Secondary Level			
Federal Technical Schools			
Expenditures	...	...	119
Enrollments	65,543	68,857	67,657
Per Student Spending	...	...	1,759
State Governments			
Expenditures	372	303	458
Enrollments (millions)	1.66	1.58	1.78
Per Student Spending	224	192	257
Municipalities			
Expenditures	15	18	18
Enrollments	98,280	137,716	132,333
Per Student Spending	153	131	136

Sources: IPEA, "Educacao 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
TOTAL		38,950,273,244		6,282,302
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
TOTAL		184,807,510,648		29,807,663

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

	CZ		US$	
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 Occupacional	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 CRUZADOS (billions)	Expenditure US$ (millions)	no. of students	Cost per Student CRUZADOS	Cost per Student US$
Curso do Apprendizagem Industrial (CAI)	141	23	21,665	6,495,410	1,048
Treinamento Occupacional	22	4	38,260	569,774	92
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

Table 23: STUDENT / TES 3, NOV

AMOSTRA ESTRATIFICADA DE ALUNOS DA 3a. SERIE DO 2o. 3 ESCOLAS EM FORTALEZA, SALVADOR, SAO PAULO E CURITIBA, SEGUNDO O TIPO DE CURSO, A REDE DE INSINO E O TURNO. FUNDACAO CARLOS CHAGA^ 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	No. de Escolas	No. de Alunos	No. de Escolas	No. de Alunos	No. de Escolas	No. de Alunos
TECHNICO	Publico	*Diurno*	1	33	1	38	1	22	1	79	4	172
		Noturno 1/	...	21	...	...	...	...	...	...	...	21
	Privado	*Diurno*	...	...	...	...	1 (Senai)	87	1 (Senai)	31	2	118
		Noturno	...	...	...	...	...	...	...	...	...	...
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 ulilizada pela manha

Table 24: MEAN STUDENT ACHIEVEMENT TEST SCORES, NOVEMBER 1988

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

Table 25: DIS[illegible] AND SHIFT
(DA[illegible]ovember 1988
FRE[illegible] A VARIAVEL SEXO [illegible] E ALUNOS DA 3a. SERIE DO
2o. GRAU DE ESCOLAS [illegible]TALEZA, SALVADOR, SAO PAULO E CURITIBA,SEGUNDO O TIPO
DE CURSO, A REDE DE [illegible]O, O TURNO E A CIDADE. FUNDACAO CARLOS CHAGAS, 1988.

Tipo de Curso	Rede de Ensino	Turno	Masculino	Feminino	Nao Identificado	Total
TECHNICO	Publico	*Diurno*	73.3	26.7	...	100.0
		Noturno	81.0	19.0	...	100.0
	SENAI		93.2	6.8	...	100.0
GERAL	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
MAGISTERIO	Publico	*Diurno*	1.6	98.4	...	100.0
	Privado	*Diurno*	8.0	92.0	...	100.0
		Noturno	2.5	97.5	...	100.0
CIDADES						
	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 VARIAVEL IDADE 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	IDADE										
			15	16	17	18	19	20	21	22	23 OU +	Omissoes	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	36.0	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 VARIAVEL 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 CURTIBA SEGUNDO O TIPO DE CURSO, A REDE DE ENSINO, O TURNO E A CIDADE. FUNDACAO CARLOS CHAGAS, 1988

Tipo de Curso	Rede de Ensino	Diurno	Noturno	Omissoes	Total
PUBLICO					
	Publico	86.0	14.0	...	100.0
	SENAI	96.6	3.4	...	100.0
GERAL					
	Publico	44.6	54.7	0.7	100.0
	Privado	83.0	14.8	2.2	100.0
MAGISTERIO					
	Publico	100.0	...	...	100.0
	Privado	38.5	61.5	...	100.0
CIDADES					
	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 VARIAVEL RAZAO PARA FAZER O 2o. GRAU EM ESCOLA PARTICULAR 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 E O TURNO. FUNDACAO CARLOS CHAGAS, 1988.

TIPO DE CURSO	REDE DE ENSINO	TURNO	RAZAO PARA FAZER O 2o. GRAU EM ESCOLA PARTICULAR: NAO CURSA ESCOLA PRIVADA	FALTAM VAGAS NAS ESCOLAS PUBLICAS	INEXISTEM ESCOLAS 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	*Diurno*	...	1.4	5.9	1.4	1.2	5.9	80.6	3.6	100.0
		Noturno	...	...	3.3	1.1	2.2	2.2	82.4	8.8	100.0
MAGISTERIO											
	PRIVADO	*Diurno*	...	...	4.0	...	...	...	96	...	100.0
		Noturno	...	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 VARIAVEL 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									
			GERAL	CIENCIAS	HUMANI-DADES	CONTABI-LIDADE	MAGIS-TERIO	TECNICO INDUSTRIAL	OUTRO	MAIS DE UM CURSO	OMISSOES	TOTAL
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 FA CATION, November 1988
FREQUENCIAS PERCENTUAIS DA VARIAVEL NIVEL I STI O PAI
EM UMA AMOSTRA DE ALUNOS DA 3a. SERIE DO 2o. U I AS DE FORTALEZA, SALVADOR,
SAO PAULO E CURITIBA, SEGUNDO O TIPO DE CURS RE ENSINO O TURNO E A CIDADE
FUNDACAO CARLOS CHAGAS, 1988.

Tipo de Curso	Rede de Ensino	Turno	NIVEL D ISTRUCAO DO PAI									TOTAL
			NENHUM ANO DE ESTUDO	1o. GRAU		2o. GRAU		TECHNICO 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		10.4	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			6.8	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 ATION, November 1988
FREQUENCIAS PERCENTUAIS DA VARIAVEL NIVE E
EM UMA AMOSTRA DE ALUNOS DA 3a. SERIE DO E FORTALEZA, SALVADOR,
SAO PAULO E CURITIBA, SEGUNDO O TIPO DE CU DE ENSINO O TURNO E A CIDADE
FUNDACAO CARLOS CHAGAS, 1988.

Tipo de Curso	Rede de Ensino	Turno	NIVEL DE INSTRUCAO DO MAE									TOTAL
			NENHUM ANO DE ESTUDO	1o. GRAU INCOMPLETO	1o. GRAU COMPLETO	2o. GRAU INCOMPLETO	2o. GRAU COMPLETO	TECHNICO SENAI /SENAC INCOMPLETO	TECHNICO SENAI /SENAC COMPLETO	OUTRAS ESCOLAS TECNICAS	SUPERIOR INCOMPLETO	SUPERIOR 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 VARIAVEL HORAS DE TRABALHO POR SEMANA ATUALMENTE, 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	HORAS DE TRABALHO POR SEMANA, ATULMENTE							
			NAO TRABALHO	1 A 10	11 A 20	21 A 30	31 A 40	41 E MAIS	OMISSOES	TOTAL
TECNICO										
	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
GERAL										
	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	80.2	4.4	1.1	1.1	3.3	4.4	5.5	100.0
MAGISTERIO										
	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
CIDADES										
	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 VARIAVEL OCUPACAO DO PAI 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	OCUPACAO DO PAI: PROFISSOES DE NIVEL SUPERIOR E TECNICAS DE NIVEL MEDIO (1)	EMPRESAS INDUSTRIAIS E OUTRAS (2)	EMPRESAS AGRICOLAS	FORCAS ARMADAS	ADMINIS-TRACAO PUBLICA	OMISSOES	TOTAL
TECNICO									
	Publico	*Diurno*	32.6	51.2	2.9	1.2	9.9	2.2	100.0
		Noturno	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	*Diurno*	23.4	55.9	1.5	3.8	9.0	6.4	100.0
		Noturno	19.1	58.2	5.8	1.3	7.8	7.9	100.0
	Privado	*Diurno*	37.7	48.1	2.8	2.8	5.9	2.7	100.0
		Noturno	35.2	52.7	1.1		4.4	6.6	100.0
MAGISTERIO									
	Publico	*Diurno*	23.6	53.4	3.7	1.0	12.6	5.8	100.0
	Privado	*Diurno*	8.0	88.0	...	...	...	4.0	100.0
		Noturno	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 VARIAVEL RENDA TOTAL MENSAL DA FAMILIA (EM SALARIOS MINIMOS) 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	RENDA TOTAL MENSAL DA FAMILIA (EM SALARIOS MINIMOS) ATE 1	1 A 1.6	1.6 A 2	2 A 2.3	2.3 A 2.8	2.8 A 3.3	3.3 A 6.5	6.5 A 13	ACIMA DE 13	OMISSOES	TOTAL
TECNICO													
	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
GERAL													
	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
MAGISTERIO													
	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	*Diurno*	...	...	...	...	...	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
CIDADES													
	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
TOTAL			2.8	3.4	2.3	2.5	3.3	10.2	23.2	26.9	21.7	3.8	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, FUNDACAO 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
TIPO DE CURSO							
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
REDE DE ENSINO							
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
CIDADES							
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
TOTAL	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					
		MENOS DE 3 AULAS/ HORA	MAIS DE 3 A 4	MAIS DE 4 A 5	MAIS DE 5	OMISSOES	TOTAL
TIPO DE CURSO	TECNICO	16.7	66.7	...	16.7	...	100.0
	GERAL	...	45.5	43.6	7.3	3.6	100.0
	MAGISTERIO	...	57.1	14.3	28.6	...	100.0
REDE DE ENSINO	PUBLICO	2.1	53.2	34.0	8.5	2.1	100.0
	PRIVADO	...	36.8	47.4	10.5	5.3	100.0
	SENAI	...	...	...	100.0	...	100.0
CIDADES	Fortaleza	...	14.3	42.9	28.6	14.3	100.0
	Salvador	...	50.0	33.3	16.7	...	100.0
	Sao Paulo	...	58.1	34.9	4.7	2.3	100.0
	Curitiba	8.3	33.3	41.7	16.7	...	100.0
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
FUNDACAO 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 Domicilios - 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

Fonte: Pesquisa Nacional por Amostra de Domicilios - 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

	Mean			
	Group 1	Group 2	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
(Excl.. 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%
1982	1,312,485	1,555,085	4,038,402	4,063,769	32.50%	38.27%
1983	1,295,083	1,571,016	4,100,170	4,080,205	31.59%	38.50%
1984	1,283,978	1,614,373	4,135,268	4,109,074	31.05%	39.29%
1985	1,346,991	1,715,627	4,184,260	4,224,571	32.19%	40.61%
1986	1,387,318	1,903,590	4,181,566	4,228,389	33.18%	45.02%
1987	1,366,732	1,923,289	4,164,440	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	8.40
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	24.56	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	9.76	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	9.65
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 Domicilios - 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	76.03	62.14	74.88
1o. quartil	65.30	58.90	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	93.10	87.69
2o. quartil	61.78	64.43	100.00	56.04
1o. quartil	55.44	73.40	...	...
BRASIL	66.25	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				
		ANALFABETO %	1o. GRAU INCOMPLETO %	1o. GRAU COMPLETO %	2o. GRAU OU MAIS %	GERAL %
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 +	49.77	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	7.09	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) - Exceto 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 : CONCLUINTES 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	78.36	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	46.17	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	60.64	37.29	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	88.38	87.21	100.00	76.28	88.59
3o. quartil	81.96	71.51	21.09	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	66.80
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	55.63	60.63	63.27	62.44
1o. quartil	67.41	68.51	65.05	54.74	66.11	60.47

Fonte: Pesquisa Nacional por Amostra de Domicilios - 1982

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

Type of School	Grade 1	Grade 2	Grade 3	Grade 4
Federal Technical				
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
State				
Dropout	0.2916	0.2180	0.0997	...
Repeat	0.2184	0.1511	0.0659	...
Pass	0.4900	0.6309	0.8344	...
Municipal				
Dropout	0.2871	0.2234	0.0884	...
Repeat	0.1625	0.1130	0.0416	...
Pass	0.5504	0.6636	0.8700	...
Private				
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.

	State		Municipal		Federal		Private		TOTAL	
	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	108,889	8,466	10,318	8,292	7,750	87,556	79,154	198,087	206,111
Number of Students	1,324,682	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	1[illegible]	13	10	13	15	13	14	15

Sources: MEC SEEC, Retrato Estatistica da Educacao and Sinopse Estatistica 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: SEEC/MEC

Obs.: Os dados de repetencia foram estimados a partir de 1983 inclusive
EVASAO IMEDIATA = 100 * (MAT. INICIAL - MAT. FINAL) / MAT. INICIAL
REPROVACAO = 100 * (MAT. FINAL - APROVADOS) / MAT. FINAL
REPETENTES = 100 * REPETENTES / 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	550,619	525,968	24,651	425,242	100,726	...	111,651
	1971	623,373	594,821	28,552	509,226	85,595	...	122,835
	1972	744,766	657,737	87,029	586,241	71,496	46,202	145,778
	1973	843,364	754,639	88,725	670,727	83,912	52,803	174,744
	1974	944,865	794,339	150,526	704,179	90,160	58,259	180,313
	1975	1,058,467	889,941	168,526	768,479	121,462	66,431	174,290
	1976	1,202,954	986,783	216,171	852,054	134,729	87,052	202,567
	1977	1,310,287	1,071,023	239,264	876,650	194,373	92,789	202,886
	1978	1,363,803	1,110,781	253,022	923,327	187,454	141,067	235,114
	1979	1,419,245	1,164,268	254,977	947,387	216,881	127,180	214,198
	1980	1,508,261	1,236,978	271,283	984,393	252,585	151,320	239,051
	1981	1,601,282	1,292,219	309,063	1,018,055	274,164	199,876	251,186
	1982	1,696,682	1,421,936	274,746	1,050,943	360,993	232,779	279,359
	1983	1,814,252	1,401,392	412,860	1,096,946	304,446	221,935	297,124 *
	1984	1,919,063	1,463,473	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	1,602,015	511,052	1,253,317	309,351	275,832	345,305 *
	1987	2,098,648	...	...	...	...	...	...
PARTICULAR	1970	452,856	436,454	16,402	382,161	54,293	...	114,262
	1971	467,048	466,677	20,371	428,326	38,351	...	124,048
	1972	555,171	521,859	33,312	492,617	29,242	25,873	150,676
	1973	634,286	575,612	58,674	545,105	30,507	17,007	155,107
	1974	736,863	655,130	81,733	614,744	40,386	18,379	169,864
	1975	877,036	771,543	105,493	710,693	60,850	23,706	194,189
	1976	1,009,795	892,365	117,430	816,040	76,325	32,635	232,922
	1977	1,127,414	996,295	131,119	909,305	86,990	38,701	261,565
	1978	1,174,146	1,076,306	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	1,310,821	1,086,825	223,996	973,826	113,099	53,525	302,274
	1981	1,219,716	1,064,859	154,857	960,721	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	966,389	163,456	859,546	112,843	64,462	293,355 *
	1984	1,032,561	884,255	148,306	776,197	108,058	68,924	270,871 *
	1985	1,004,228	874,034	130,194	763,371	86,795	73,387	261,246 *
	1986	1,051,611	910,494	141,117	783,919	101,690	77,849	261,998 *
	1987	1,147,770	...	...	...	...	...	...
TOTAL	1970	1,003,475	962,422	41,053	807,403	155,019	60,482	225,913
	1971	1,110,421	1,061,498	48,923	937,552	123,946	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	1,449,469	232,259	1,318,923	130,546	76,638	350,177
	1975	1,935,503	1,661,484	274,019	1,479,172	182,312	90,137	368,479
	1976	2,212,749	1,879,148	333,601	1,668,094	211,054	119,687	435,489
	1977	2,437,701	2,067,318	370,383	1,785,955	281,363	131,490	464,451
	1978	2,537,949	2,187,087	350,862	1,877,101	309,986	183,308	524,524
	1979	2,658,078	2,178,529	479,549	1,839,933	338,596	170,256	512,024
	1980	2,819,182	2,323,903	495,279	1,958,219	365,684	204,845	541,325
	1981	2,820,998	2,357,078	463,920	1,978,776	378,302	262,450	561,591
	1982	2,874,505	2,434,684	439,821	1,962,218	472,466	289,617	583,300
	1983	2,944,097	2,367,781	576,316	1,950,492	417,289	286,397	590,479 *
	1984	2,951,624	2,347,728	603,896	1,921,965	425,763	308,822	585,193 *
	1985	3,016,138	2,415,329	600,809	1,968,288	447,041	331,247	582,316 *
	1986	3,164,678	2,512,509	652,169	2,037,236	475,273	353,672	607,303 *
	1987	3,246,418	...	...	...	...	...	...

Fonte: SEEC/MEC

Obs.: 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				
	FALTA DE VAGA OU SERIE SEGUINTE	TRABALHAR	NAO QUERIA CONTINUAR ESTUDOS	OUTRO MOTIVO	TOTAL
	%	%	%	%	%
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				
	FALTA DE VAGA OU SERIE SEGUINTE	TRABALHAR	NAO QUERIA CONTINUAR ESTUDOS	OUTRO MOTIVO	TOTAL
	%	%	%	%	%
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				
	FALTA DE VAGA OU SERIE SEGUINTE	TRABALHAR	NAO QUERIA CONTINUAR ESTUDOS	OUTRO MOTIVO	TOTAL
	%	%	%	%	%
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, 198[illegible].

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: Impasses 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 Brasilieira," 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 268, 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 Maigenet 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.

Moock, 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 Difrerences 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 Condicoes do Brasil Contemporaneo." Cadernos de Pesquisa (68): 9-20, 1989.

_____, "Formacao Profissional E Controle Soc.al Da Forca de Trabalho na Crise do Modelo Autoritario," mimeo, 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 20 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: Subsidios 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 Occupacoes, 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.