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Modernization of Technical Post-Secundary Education: Opportunities and Challenges for Latin America and The Caribbean

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INTER-AMERICAN DEVELOPMENT BANK • REGIONAL POLICY DIALOGUE

Education Network

Modernization of Technical Post-Secundary Education: Opportunities and Challenges for Latin America and The Caribbean

Viola Espínola *Norma García*

Editors

Integration and Regional Programs Department
Sustainable Development Department

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Inter-American Development Bank
Regional Policy Dialogue

The **Regional Policy Dialogue** was established in December 1999 by the initiative of the Board of Executive Directors. The objective was to create a forum of communication within the Bank to expand and enhance dialogue among the countries in the region by sharing experiences, preparing them to face the great challenges of globalization, and generating processes for regional cooperation. The Bank identified seven areas to be included on the Dialogue and created seven specialized networks in which government officials at the Vice-Minister level from Latin America and the Caribbean, who are responsible for decision making and public policy design, participate.

1) Trade and Integration;
2) Poverty and Social Protection Networks;
3) Education and Human Resources Training;
4) Macroeconomic and Financial Policy;
5) Public Policy and Transparency;
6) Natural Disasters Management; and
7) Environment.

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Abbreviations

AA	Associate of Arts
ACCC	Association of Canadian Community Colleges
ACCP	Association of Caribbean Commissioners of Police
BA	Bachelor of Arts
BBCC	Bahamas Baptist Community College
BCC	Barbados Community College
BTVI	Bahamas Vocational Technical Institute
BVTB	Barbados Vocational Training Board
CARICOM	Caribbean Community and Common Market
CASE	College of Agriculture, Science and Education
CDB	Caribbean Development Bank
CELADE	Latin American and Caribbean Demographic Centre
CEPAL	Economic Commission for Latin America and the Caribbean
CIDA	Canadian International Development Agency
COB	College of Bahamas
CODESSER	Corporacion de Desarrollo Social del Sector Rural
COSHOD	Caribbean Community's Council for Human and Social Development
COSTAATT	College of Science, Technology and Applied Arts of Trinidad &Tobago
CSEC	Caribbean Secondary Education Certificate
CXC	Caribbean Examination Council
EU	European Union
GDP	Gross Domestic Product
GUYSUCO	Guyana Sugar Corporation Inc.
HEART	Human Employment and Resource Training
HEART Trust/NTA	HEART Trust, the National Training Agency
ISCED	International Standard Classification of Education
IDB	Inter-American Development Bank
IIC	Inter-American Investment Corporation
IMP	Institute of Management and Production
IT	Information Technology
IUT	L'Institut Universitaire de Technologie
JIM	Jamaica Institute of Management
MIF	Multilateral Investment Fund
MOE	Ministry of Education
MOEYC	Ministry of Education, Youth and Culture
NCVET	National Council on Technical and Vocational Education and Training
NTA	National Training Agency
OECD	Organization for Economic Co-operation and Development
PPP	Purchasing Power Parity
ROYTEC	Royal Bank Institute of Business and Technology
SENA	Servicio Nacional de Aprendizaje - SENA Colombia
SENAI	Serviço Nacional de Aprendizagem Industrial – Brasil
SJPP	Samuel Jackman Prescod Polytechnic
STC	Success Training College
TTIT	Trinidad &Tobago Institute of Technology
TVET	Technical Vocational Education Training
UG	University of Guyana
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
USA	United States of America
UTECH	Jamaica University of Technology, Jamaica
UWI	University of the West Indies
UWI	Mona University of the West Indies, Mona
WDI	World Development Indicators

Foreword

The subject chosen by the members of the education network to examine during the VI meeting of the Regional Policy Dialogue (held in February 2004 at IDB Headquarters in Washington, DC) was Post-Secondary Technical and Vocational Education. As it is related to the transition between education and work, the subject is multifaceted in that it must take into account not only the education sector but also social conditions, economic development and the job market. Recently, the new knowledge-based economy, advances in communications, and globalization of markets have also become crucial elements in this discussion.

This subject could hardly be more relevant for our countries at this moment. The transition from school to work cannot help but be a priority concern for all those involved in key issues of education policy and it is particularly relevant to education reform. How can we think of secondary education reform, for example, without facing the question of what types of skills are graduates going to need in order to participate as productive agents in today's economy? The Bank's interest in and support for this subject was included in the 2004 Economic and Social Progress Report, which specifically focused on an analysis of labor markets. Among other issues, it addresses the need for better training related to the fact that unskilled workers have seen their wages decline relative to the wages of skilled workers.

On the other hand, the Bank has been giving growing importance to analyzing the availability of post-secondary non-academic training, and one of the main issues in the 2000 Strategy on Vocational and Technical Training was an analysis of the characteristics of efficient technical education in harmony with economic development and technological advances. The strategy's recommendations were based on the assumption that an adequately trained labor force is key to increasing the region's competitiveness.

Education systems cannot be expected to provide the complete solution to these problems, but relevant training, conditions of equality, and quality of technical education undoubtedly play an essential role in the solution. Curriculum content, teaching methods, the organization of vocational education, and the efficiency and flexibility of national training systems are all elements that must be better tuned every day in order to mount an effective response to today's challenges.

The studies presented at the VI Meeting of the Education Network include internationally tested alternatives for technical and vocational education that allow conclusions to be made for our countries. We are confident that this publication will contribute to improving the dialogue among countries and to their ability to solve problems and design successful reform policies for non-academic post-secondary education in the region.

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Introduction[1]

One of the most challenging tasks that Latin American and Caribbean (LAC) education systems face is developing a post-secondary education option that, on the one hand, supports the growing number of high school graduates and, on the other, aligns itself with the demands of a dynamic economy that is highly technologized and firmly based in knowledge. The most critical situation is that of the non-academic post-secondary segment of the education system, responsible for the training of mid-level technicians, specialized laborers, administrators and, in general, the workforce for both traditional and emerging sectors.

The pursuit of greater integration and competitiveness in the region has resulted in important advances on political, economic and commercial fronts. In particular, the free flow of trade capital and people presents challenges to workers who must find employment in constantly changing, globalized markets. Permanent upgrading will be necessary for all levels of occupations. The low cost of communication will increase demand for information technology and interpersonal and communication skills. It will require workers to possess analytical skills, adaptability, autonomy, and the ability to work with a team and perform non-routine activities. Workers will change occupations several times throughout their career, compelling them to either face the challenge of constantly learning new tasks or risk losing their jobs.

In short, the region's competitiveness increasingly depends on the quality of human resources and less on the low cost of labor. The demand for a new type of worker exposes the weaknesses of Post-Secondary Education (PSE), representing an obstacle for economic development and integration into international markets. As currently organized, PSE options are insufficient, inadequate, and incompatible with the demands of a "new economy" and the markets the region is attempting to join. The bulk of training focuses on the manufacturing and service sectors, and pigeonholes students into the occupation for which they receive training, which denies them any real possibility of adjusting to the occupational mobility required or to return to the education system to refresh and update their training.

Evidence analyzed in this document suggests that non-academic PSE in the region will increase significantly during this decade. Labor-market behavior shows a growing need for specialized workers with higher order skills that already exceeds the demand for professionals and academics. During the imminent process of expansion and reform, the region will have to confront and resolve problems of financing, permeability to market demands, and interchange with the private sector, and must look for new institutional solutions that ensure a fluid transition between education and employment and lay the foundation for lifelong learning.

The articles presented in this document served as a basis for conversations held during the VI Meeting of Regional Policy Dialogue on Education, which took place at Bank headquarters in Washington in February 2004. They were selected for their contribution to promoting the discussion of key aspects to consider for PSE improvement in the region.

In the first article of the document, Alejandra Cox analyzes the relationship between economic development, the labor market and education. She presents evidence of the trend observed in LAC during the nineties showing high unemployment levels, especially among young people, salary discrepancies that increasingly favored post-secondary education, and relative growth in the demand for specialized labor that emphasized analytical and interactive skills. The article compares the situation in the re-

[1] We thank Norma García for her collaboration in preparing this document, from her support of consultants during the completion of these studies to her compilation and revision of the texts presented here.

gion and in the industrialized world, where, as in Latin America, vocational and technical training systems have been slow to adjust to changes imposed by a more technologically developed economy. Nevertheless, the industrialized world has made important progress, allowing the region to take a significant step forward. The author describes some of the policies adopted in the United States and Europe to align technical education options with economic development—such as allowing the possibility to study and work simultaneously, loans for post-secondary studies, and granting the private sector a more predominant role in providing technical education—and analyzes their relevance with regard to the reality of LAC's economy.

David Raffe complements the preceding viewpoint in examining the PSE modernization process in Europe from the institutional perspective. He analyzes the tendency toward the integration and unification of technical and academic tracks, the main objective of which is to provide solid instruction in basic skills more attuned to the lifelong learning and the versatility required of workers. All of the strategies analyzed in this article indicate the need for more permeable boundaries and the dismantling of obstacles between academic realms and technical tracks, between education and employment, between technical education and higher education. The author offers interesting ideas for change in Latin America by establishing a relationship between the strategies followed in European countries, specifying social, economic and political situations in each country. In this way, the analyzed categories allow the reader to draw conclusions for other countries that share economic, social or political characteristics. One of the outcomes of such integration is an increase in prestige of technical PSE relative to the university, expressed by the younger population's increased interest in short-term technical degrees. Integrated systems' internal and external flexibility has allowed students significant mobility, unlike the rigidity of traditional institutions that prematurely pigeonhole them into a virtually permanent position.

In his article, Jacques L'Ecuyer describes the process by which institutions in Québec offering technical and vocational training have organized to be in constant dialogue with socioeconomic sectors and the labor market. He analyzes competency-based approaches as key to aligning technical education with the labor market. The article points out that reforms in Québec have been directed at pursuing training that teaches individuals to function within a broad range of competencies, and prepares students for the need to perform well in positions whose requirements change several times throughout their employment period.

Claudio de Moura Castro and Andrés Bernasconi examine the experience in community colleges in the United States, taking into consideration the needs observed in LAC, and explore lessons that may be drawn in reforming education systems in the region. The study highlights the need to address the demands of a social group currently graduating from the system that is more disadvantaged in economic and cultural resources than past graduates. The authors draw a parallel between Latin America and the United States, where community colleges were created primarily to balance out economic and cultural diversity during the postwar period, a time characterized by high levels of social mobility. They show evidence that both Europe and the United States are producing significantly higher numbers of community college graduates than university graduates, a fact that Latin America should take into account since, the authors maintain, there is not much difference in the behavior of the economies. They predict that technical PSE in all its forms will be the most rapidly growing segment in LAC in the coming years, creating an expanding market for the private sector.

Lastly, Larry Wolff's article consists of an exhaustive analysis of the education systems in five Caribbean countries and of their relationship to the social and economic environment. He emphasizes the current state of PSE institutions and the measures taken to make them more effective and sensitive to the demands of economic sectors. He subsequently examines aspects that any sub-regional reform agenda must consider, focusing the discussion on expansion, financing and institutional strengthening of the system. With this focal point, the author analyzes five reform and improvement strategies implemented in the selected countries, which offer numerous lessons that can be replicated throughout the region.

We hope that the experiences analyzed in this document will contribute to identifying successful non-academic PSE reform policies for the region, thereby helping to improve the training level of human resources and place the region in a more competitive position in the world.

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Changes in the labor market in LAC: What do they mean for education?

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February 2004[2]

INTRODUCTION

There are four generalized trends observed in Latin American labor markets in the 1990s: (1) slow growth in GDP per capita; (2) high rates of unemployment; (3) rising wage differentials associated to tertiary education; and (4) declining wage differentials associated to gender and increased female labor force participation.

The decade of the 1990's in Latin America is characterized by moderate GDP growth and stagnant per capita GDP. Table 1 summarizes per capita GDP growth trends for the 1980's and 1990's. With an average increase in GDP per capita of 1.7% per year, the 1990s was a good decade in terms of economic growth. However, this performance followed significant output losses in the 1980s, leading to an average growth in per capita GDP for the 1980–2002 period of just 1/3 of a point per year.

Average unemployment rates reached the two digits mark in 2001 lead by Argentina, Panama and Colombia with 17%. More importantly, youth unemployment rates have been above 15% in most countries with the exceptions of Brazil, Costa Rica and Mexico where overall unemployment rates have been systematically lower.[3] (see Tables 3 and 4)

The most recent Economic and Social Progress Report of the IDB examines micro data for 17 countries in the region to document changes in wage differentials associated with schooling. The report concludes that "[D]uring the 1990s, the wages of workers with college degrees increased in relation to the wages of workers with lower levels of education.

Perhaps surprisingly, a sustained rise in female labor force participation rates was observed throughout the 90s. Duryea, Cox Edwards and Ureta (2001) report that female labor force participation increased in 8 of the 13 countries examined. They analyze the role of wages, as a partial explanation for the pattern of changes in labor force participation rates, and show that in the 1990's the adjusted female wage penalty was closing at a rate of nearly 1 percentage point per year, such that over the decade women's wages rose from lagging men's by 25 percent to lagging by 17 percent. While the year trend for the 1990's is significant at the 10 percent level, if they expand the sample to include the 1980's they find similar parameters, much more precisely estimated. These results suggest that women's earning opportunities in the labor force relative to men's were steadily gaining over two decades and may have played a role in attracting women to the labor force.

Interpreting these Changes in the International Context

At the center of Latin America's modest performance in economic growth are two factors: (1) macroeco-

[1] The author is Professor of Economics at California State University, Long Beach.

[2] I am thankful to Viola Espínola for helpful comments and suggestions. I take full responsibility for any remaining errors

[3] The youth to overall unemployment ratio is on average, 2.0 for European countries and 2.6 for the U.S. The corresponding ratio in Latin America is closer to 3 suggesting relative larger barriers to entry to the jobs market for LAC youth.

TABLE 1

AVERAGE GDP PC GREW BY A THIRD OF A POINT PER YEAR BETWEEN 1980 AND 2002

Country	1980–2002	1990–2002
ARG	0.00%	0.00%
BLZ	2.57%	1.28%
BRA	0.00%	0.00%
BRB	1.83%	
CHL	3.19%	3.97%
COL	0.00%	0.00%
CRI	3.69%	4.05%
DOM	0.00%	0.00%**
ECU	–1.86%	0.00%
GTM	0.00%	3.96%
GUY	0.00%*	
HND	–2.40%	2.39%
HTI	0.00%	0.00%
JAM	2.30%	4.07%
MEX	1.85%	3.31%
NIC		0.00%
PAN	0.00%	1.71%
PER	0.00%	0.00%
PRY	–3.18%	–3.28%
SLV	2.52%	6.02%
SUR	0.00%	
TTO	–3.00%	2.85%
URY	2.41%	0.00%
VEN	–2.24%	4.69%
AVERAGE	0.33%	1.67%

** data up to 1997*

*** growth between 1900 and 2002 is estimated at 6% per year. However the fall in the currency relative to the US dollar during 2003 drops the growth rte to zero.*

Note: Estimates are based on GDPpc figures from IMF data, in dollars, and deflated by the US GDP deflator (Chain Index). Growth rates were estimated by fitting a regression to the log of real GDP per capita. If coefficients were non significantly different from zero, we report a best estimate of zero.

nomic instability and (2) an overall low rate of productivity growth. As Table 2 shows, total factor productivity, which measures the increase in output over and above the expansion in employment and capital, has been very low during the last two decades. (Edwards, 2001).

Economists would argue that these two factors are primarily the result of policy failures; that fiscal discipline, and delegation of authority to the central bank to conduct monetary policy aimed at price stability leads to macroeconomic stability, and that market-oriented reforms lead economies to a better use of resources—and productivity increases.

On the other hand, the changes observed in Latin America regarding unemployment, wage differentials and female labor force participation are consistent with worldwide evidence on the effects of an increase in the relative demand for *skilled* labor, a force that would have been present irrespective of economic policy choices.

In 1994, the OECD published the "Jobs Study" which gained worldwide attention by its depth and policy relevance. The report addressed the concern

TABLE 2

TOTAL FACTOR PRODUCTIVITY GROWTH IN SELECTED LATIN AMERICA COUNTRIES DURING THE 1980S AND 1990S

Country	Estimated TFP Growth (%) 1980–1990	Estimated TFP Growth (%) 1990–2000
ARG	–2.4	1.1
BRA	–1.5	0.7
CHL	1.0	2.0
COL	0	–1.6
ECU	–1.3	–0.6
MEX	–2.4	–1.5
PAN	–2.9	–1.1
PERU	–3.3	3.9
REGION'S		
MEAN	–1.6	0.4
MEDIAN	–2.0	0.1

Source: Goldman-Sachs for the period 1980-1997; Edwards, 2001 for 1998–2000.

TABLE 3

LATIN AMERICA – RATE OF UNEMPLOYMENT IN URBAN AREAS 1990 - 2002

Country		1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
Argentina	a	6.1	7.5	6.5	7	9.6	11.5	17.5	17.3	14.9	12.9	14.3	15.1	17.4	21.5	m
Bolivia	a	5.7	7.2	5.9	5.5	5.9	3.1	3.6	4	4.3	4.1	7.2	7.5	8.5	—	
Brasil	b	5.3	4.3	4.8	4.9	5.4	5.1	4.6	5.4	5.7	7.6	7.6	7.1	6.2	7.3	n
Chile	c	17	7.4	7.1	6.2	6.4	7.8	6.6	5.4	5.3	6.4	9.8	9.2	9.1	9.3	n
Colombia	d	13.8	10.5	10.2	10.2	8.6	8.9	8.8	11.2	12.4	15.2	19.4	20.2	16.9	16.8	n
Costa Rica	a	7.2	5.4	6.0	4.3	4.0	4.3	5.2	6.2	5.7	5.6	6.0	5.2	6.1	6.8	n
Ecuador	a	10.4	6.1	8.5	8.9	8.9	7.8	7.7	10.4	9.3	7.0	10.9	9.7	7.9	6.3	n
El Salvador	a	—	10	7.5	6.8	—	7.0	7.0	5.8	7.5	7.6	6.9	6.5	7.0	6.2	n
Honduras	a	11.7	6.9	7.1	5.1	5.6	4.0	6.6	6.6	5.2	5.8	5.2	—	6.3	—	
México	e	4.4	2.8	2.7	2.8	3.4	3.7	6.2	5.5	3.7	3.2	2.5	2.2	2.4	2.8	n
Nicaragua	a	3.2	7.6	—	14.4	17.8	17.1	16.9	16.0	14.3	13.2	10.7	9.8	11.3	—	
Panamá	f	15.7	20.0	20.0	18.2	15.6	15.8	16.4	16.9	15.4	15.6	13.6	15.3	17.0	16.1	n
Paraguay	g	5.1	6.6	5.1	5.3	5.1	4.4	5.3	8.2	7.1	6.6	9.4	10.0	7.6	—	
Perú	h	10.1	8.3	5.9	9.4	9.9	8.8	7.9	7.9	8.4	8.2	8.3	7.0	9.2	9.7	n
Rep Dom	i	—	—	19.6	20.3	19.9	16.0	15.8	16.5	15.9	14.3	13.8	13.9	16.4	—	
Uruguay		13.1	9.2	8.9	9.0	8.4	9.2	10.8	12.3	11.6	10.2	11.8	13.6	15.3	16.5	n
Venezuela	a	14.3	11.0	10.1	8.1	6.8	8.9	10.3	11.8	11.4	11.3	14.9	13.9	13.5	15.8	o
Latin America	j	9.5	8.1	8.5	8.6	8.8	8.5	9.2	9.8	9.3	9.1	10.1	10.4	10.5	11.3	
	k	8.3	5.7	5.6	5.7	6.3	6.6	7.4	7.9	7.5	8.1	8.9	8.5	8.3	9.2	
Caribean Region	i															
Barbados		18.7	15	17.3	23	24.3	21.9	19.7	15.6	14.5	12.3	10.4	9.2	9.9	—	
Jamaica		25.0	15.3	15.7	15.4	16.3	15.4	16.2	16.0	16.5	15.5	15.7	15.5	15.0	—	p
Trinidad		15.7	20.0	18.5	19.6	19.8	18.4	17.2	16.2	15.0	14.2	13.1	12.1	10.8	—	n

Source: ILO Panorama Laboral 2002

[a] Urban [b] Six metropolitan areas [c] National [d] Seven metropolitan areas (1995–99) and 13 from 2000. [e] National until 1998, 3 metropolitan regions from 1999. [f] 39 urban areas [g] Asuncion [h] Lima until 1995. National afterwards [i] Includes hidden unemployment [j] Simple average [k] Weighted average [l] Not included in the average because of difference in methodology [m] average first quarter [n] average first three quarters [o] average jan-aug.

TABLE 4

LATIN AMERICA: RATE OF YOUTH UNEMPLOYMENT – URBAN AREAS 1990 - 2002 (ANNUAL AVERAGE)

Country		Age Group	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
Latin America																
Argentina	a	15–19	21.7	16.3	16.4	26.8	32.3	46.6	44.3	39.7	35	35.9	39.5	37.6	46.1	n
		15–24	15.2	12.3	13	—	21.2	30.1	31.1	27.2	24.4	26.4	—	—	—	
Bolivia	b	15–19	13.3	13.1	8.3	8.6	4.9	5	7	—	—	—	—	—	—	
		20–29	9.5	7.3	7	8.2	4.5	5.4	—	—	—	—	—	—	—	
Brazil	c	15–17	—	11.6	14.4	12.2	11.9	11	13	14.3	18.8	17.8	17.8	14.8	17.0	n
		18–24	—	9.1	11.2	10.3	9.6	9.3	10.5	11.4	14	14.5	14.7	12.5	14.7	n
Chile	d	15–19	15.9	13.7	12.6	13	16.8	15.8	15	19.9	20.8	27.6	26.1	29.0	28.1	o
		20–24	12	12.4	10.3	10.2	11.9	10.1	12.2	13.6	15.1	19.8	20.1	18.9	20.7	o
Colombia	e	12–17	—	23.8	20.7	18.4	19.1	21.0	31.8	29.1	33.3	42.2	44.7	35.6	31.8	p
		18–24	—	18.4	18.0	15.7	14.5	16.6	22.0	23.7	29.2	36.3	34.8	33.1	33.4	p
Costa Rica	f	12–24	10.4	14.1	9.3	10.2	9.8	13.5	13.9	13.1	12.8	14.9	10.9	14.0	13.8	o
Eduador	f	15–24	13.5	18.5	17.3	15.7	14.9	15.3	20	19.4	22.6	—	17.4	14.8	—	
El Salvador	f	15–24	18.6	14.6	14.3	14.4	13.5	13.3	13.1	14.6	15	13.9	14.3	13.2	—	
Honduras	f	10–24	10.7	12.3	6.6	9.7	6.7	10.2	9.7	8.7	10	0	10	—	—	
Mexico	g	12–19	7	5	6.9	7.3	8.3	13.1	11.5	8.4	7	5.7	5.4	5.6	6.7	o
		20–24	—	—	4.4	5.7	6	9.9	8.8	6.5	5.9	4.5	4.1	4.6	5.2	o
Panama	h	15–24	—	38.8	37	31.6	31.1	31.9	34.8	31.5	31.7	29.5	32.6	35.9	—	
Paraguay	l	15–19	18.4	9	14.1	9.8	12.3	10.8	29.1	13.7	—	21.2	—	15.3	—	
		20–24	14.1	9.5	7.3	8.8	5.5	7.8	12.6	12.7	—	13.4	—	12.3	—	
Peru	j	14–24	15.4	11.2	15.8	16.1	13.7	11.2	14.9	14.5	14.1	15.7	17.1	14.6	15.1	o
Uruguay	k	14–24	26.6	25	24.4	23.3	25.5	25.5	28	26.8	26.1	27.1	31.7	36.2	38.4	o
Venezuela	l	15–24	18	15.8	13.4	13	15.9	19.9	25.4	23.1	21.9	26.6	25.3	23.2	26.4	q
Caribbean Region	m															
Barbados		15–24	—	33.8	36.4	43.2	41.7	37.8	27.5	28.9	27.4	21.8	18.5	23.6	—	
Jamaica		15–24	30.7	29.2	28.3	29.5	28.9	34.1	34.4	34.2	33.3	34	32.1	33.0	—	
Trinidad		15–24	36.4	34.2	34.8	38.9	39.9	31	28.5	35.3	25.8	23.7	23.2	22.6	—	

Source ILO. Panorama Laboral 2002

a/ Metropolitan Buenos Aires b/ Urban National 1996 (15 – 25) c/ Six metropolitan areas. 2001 First semester only d/ National e/ Seven metro areas September of each year f/ Urban National g / 41 urban areas h/ Metro Region i/ Asuncion j Lima. Since 1996 urban areas k/ Montevideo l/ National Urban m/ Not included in the average because of difference in methodology n/ Average first semester o/ Average first three trimesters p/ Average first trimesters q/ Average Jan-May

of policy makers and observers regarding the increased unemployment in Europe and the rising disparities in income distribution in the United States. The report argues quite effectively that the 1980s wave of financial-market liberalization and product market deregulation improved efficiency in most economies and also accelerated the pace of change. These developments challenged the capacity of economies and societies to adapt. In addition, the need to adapt was heightened by the new information technologies and by the trend towards globalization.

Yet, in the midst of this tumultuous period when so many forces were testing the flexibility of economies, policies to achieve social objectives were extended, with the unintended side-effect of making markets, including importantly labor markets, more rigid. This erosion of the ability to adapt to change was probably most pronounced in continental Europe and Oceania. In the United States, by contrast, there was a different response to new technology and globalization. Protective labor market and social policies were less extensive; labor markets remained highly flexible; and entrepreneurship was dynamic. The state did not become such an important employer. The number of new jobs grew very fast—almost five times the rate in Europe, for example—with the great majority of them in the private sector. Many of the new jobs were highly productive, paying high wages. But many others were low-productivity jobs. Workers in these jobs often had no option but to accept low wages, precarious conditions and few health or other benefits, because they lacked the skills needed for higher-paid jobs, and did not have the alternative of European-style social support. On the other hand, the social problems faced by many of these workers might well have been worse if inflexible labor markets had deprived them of even these jobs.

> *"The appearance of widespread unemployment in Europe, Canada, and Australia on the one hand, and of many poor quality jobs as well as unemployment in the United States on the other, have thus both stemmed from the same root cause: the failure to adapt satisfactorily to change. Management skills, education and training attainments have failed to keep pace with the requirements of a more technologically advanced economy. Companies have not sufficiently improved the productivity of their operations; and workers have not become sufficiently trained. In the United States, where the economy is highly flexible, many of those with few skills could find only jobs with poor wages and conditions. In Europe, Canada and Oceania, by contrast, such low-wage jobs were, by and large, disallowed by society, whether through state-imposed or union-negotiated wage/income floors and employment protection. So the problem which appeared as a combination of low-wage jobs and unskilled unemployment in the United States took the form in Europe mainly of unemployment of the low-skilled." (OECD, 1994)*

In the United States, during the last 30 years, the wages received by workers have become more unequal. To be noted, wages have become less unequal by race and gender and more unequal by *skill*. The word *skill* is used to encompass individual characteristics that explain wage variations. While this definition of *skill* is highly correlated with schooling and experience, there are large observed variations in *skill* within age and schooling categories. Most of the increase in wage dispersion occurred in the 70s and 80s, with little increase in this dispersion in the 90s. Most of the increase in wage dispersion occurred in the upper half of the wage distribution, especially among those working full time.

There is a high degree of consensus over the argument that *skill*-biased technological change explains most of the increase in wage inequality in the United States. The central support for this argument is the overwhelming evidence on rising wage premiums associated to schooling and experience. Autor, Levy and Murnane (2001) recognize that the substitution of machinery for repetitive human labor has of course been a central thrust of technological change dating at least from the industrial revolution. Computers, they argue, uniquely contribute to this process with the capability to calculate, store, retrieve, sort, and act upon information. The question they ask is; how precisely do computers affect the use of labor? Which precise *skills* become more valued in the presence of computers? Which ones become less so?

> *"In the economy of the 1970s, long haul truck driving and double entry bookkeeping were both tasks routinely performed by workers with modest education, typically high school graduates. In the present economy, computers perform a vast share of the routine bookkeeping via database and accounting software but do little of the truck driving. Similarly, playing a strong game of chess and writing a persuasive legal brief are both*

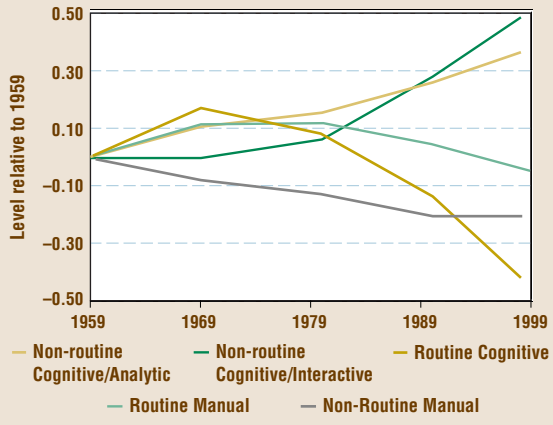
skilled tasks. Current computer technology can readily perform the first task but not the second." (Autor, Levy and Murnane, 2001)

They argue that present computer technology has quite specific applications and limitations that make it an incomplete substitute for both well-educated and less educated human labor. They use US data and create representative observational metrics of job tasks from the Dictionary of Occupational Titles (DOT), to analyze the degree to which technological change has altered the cognitive and manual content of jobs between 1960 and 1998. They show in their Figure 1 (reproduced here as Figure 1 also) that the proportion of the labor force employed in occupations that made intensive use of non-routine cognitive tasks—both interactive and analytic—increased substantially. In contrast, the percentage of the labor force employed in occupations intensive in routine cognitive, routine manual and non-routine manual activities declined over the period.[4]

They quantify the extent to which changes in the structure of work induced by computerization have contributed to recent observed increases in the relative demand for educated labor. More precisely, they find that a decline in the price of computer capital leads to an increase in the use of computers and substitution of computer capital for human labor in routine tasks. The effect is a reduction in the level of employment and wages of workers carrying out routine tasks. The impact of computerization is not confined to widely observed educational upgrading. In fact, within-education group changes in task structure appear at least equally important. In other words, *within nominally similar education categories, technologically intensive industries have differentially shifted the task content of employment against routine, repetitive tasks and towards tasks demanding cognitive flexibility.*

FIGURE 1

ECONOMY-WIDE MEASURES OF ROUTINE AND NON-ROUTINE TASK INPUT: 1959–1998 (1959 = 0)



Implications for the Latin America Region

The changes observed in labor use in the US reflect a worldwide phenomenon. Arguably, the extent to which this technological change leads to a substitution away from routine tasks in a given country depends on the local price of labor in routine tasks relative to computer capital, the local availability of complementary factors such as labor in non-routine cognitive tasks, and the relative importance of technologically intensive industries. What is more important however is that, given the extent of markets globalization, the adoption of computer technology in some areas/countries leads to rapidly evolving sources of comparative advantage, with effects in all countries. In practice, enterprises experience changes in demand for their goods or services, requests to lower prices in response to lower price competitors, and the need to adapt. This challenge is not new, but its importance has been highlighted first, by increasing globalization, lead by lower cost of communications and transportation, the process of trade reform that many countries have followed, and third, by technological improvements. This is addressed in section 3.

These changes present great opportunities in terms of productivity increases and at the same time

[4] To measure non-routine cognitive tasks, they employ two variables, one to capture interactive and managerial skills and the other to capture analytic reasoning skills. The variable DCP codes the extent to which occupations involve Direction, Control, and Planning of activities. This variable takes on consistently high values in occupations involving substantial non-routine managerial and interpersonal tasks. The variable GED-MATH, their second measure of non-routine cognitive tasks, codes the quantitative skills ranging from arithmetic to advanced mathematics that are required in occupations. They employ this variable as a measure of occupations' analytic and technical reasoning requirements. They identified STS, the acronym for adaptability to work requiring Set limits, Tolerances, or Standards, as an indicator of routine cognitive tasks and selected the variable FINGDEX (an abbreviation of Finger Dexterity) as an indicator of routine manual activity Finally, they selected EYEHAND, short for Eye-Hand-Foot coordination, as a measure of non-routine motor tasks. This variable takes on high values in occupations requiring physical agility, such as firemen.

challenge individuals and organizations to adapt. Policy makers must lead the population to be less resistant to change and seize any opportunities to learn new tasks. Education can play a key role to the extent that it makes individuals more adaptable; more capable of being reallocated to different jobs; more prone to be retrained; and or to be lifelong learners. But the education systems also are challenged to develop individuals' analytical and communication skills in favor of memorization and repetition. The evidence indicates that the availability of computer technology at declining prices has changed the composition of demand for labor in favor of non-routine cognitive, analytic and interactive tasks. This is addressed in section 4.

Recent calculations suggest that the average Latin American and Caribbean generation born in 1970 received 8.8 years of schooling (see Berhman, Duryea, and Székely, 1999). This average masks large cross country variations (see Table 5), within country differences between rural and urban areas and significant deficiencies among the indigenous population. On average, there was an increase of 4.6 grades of schooling in the 18 LAC countries between the cohort born in 1930 and their counterparts born in 1970. The largest increases were in Mexico, Dominican Republic, Chile, Ecuador, Bolivia and Venezuela, for all of which there was a gain of more than five grades during the period. The smallest changes were in Jamaica, Paraguay, Brazil and Nicaragua, all with less than four grades. Behrman, Duryea and Szekely (1999) compare the advances in the LAC region with those observed in Korea and Taiwan where the average grades of education in the 1930s compared to those of Chile and Panama and increased by 6.8 and 6.5 respectively, placing the 1970 generation above all LAC countries. In fact, recent generations in Taiwan and Korea are approaching schooling levels in the United States.

Data from the US suggests that advancements in average schooling beyond 12—the average for the generation born in 1930—are more difficult to obtain. The US generation born in 1970 gained 1.1 years of schooling on average relative to their 1930 counterparts. Perhaps for similar reasons, schooling progress in LAC was considerably greater for the generations born between 1930 and 1950—a gain of 2.7 grades—than for those born between 1950 and 1970 —a gain of 1.9. However, the slowdown appears to be steeper in Honduras, Dominican Republic, Venezuela, three countries with low averages for the 1950 generation; and Panama with only 8.8 years for the average individual born in 1950. Berhman, Duryea and Szekely (1999) use cross-country variation to identify country characteristics associated with school attainment. They report that agricultural land per capita reduces attainment and urbanization increases it among males. These two variables can be considered more structural and are associated to the relatively higher costs of schooling in rural areas. They also report that school attainment increases with trade openness and falls with volatility in GDP per capita. These are two policy variables that Latin American countries have recognized as important for economic growth and policy changes in this direction will likely contribute to increase school attainment.

Given that a number of countries in the region are currently approaching average school attainment close to the United States, it is of interest to compare the school to work transition for individuals age 16 to 24. I use survey data for 17 countries in the region. Because schooling levels are lower in rural areas and the relative size of the rural population varies considerably across countries, I focus on urban areas. The surveys used are all from the period 1995 to 1998.

SCHOOL-TO-WORK TRANSITIONS FOR LATIN AMERICAN YOUTH

Latin America is doing relatively well in terms of the education "coverage" of young adolescents (12–13). In a recent study, Menezes-Filho (2003) uses household surveys for 17 Latin American countries collected in the late 1990s, and establishes that more than 75 percent of individuals observed in this age group were in school. In fact, a large fraction of students starts secondary education, but school dropout rates are very high between the ages of 16 and 18. Several studies have noted that the key variable that explains which individuals are in school in each country is parental education. Parental schooling as a proxy for household permanent income, therefore the link between parental schooling and survival in the school system is indicative of borrowing constraints among poor households.

Figure 1 uses the cross-section data from each survey to show the percentage of each age group that attends school (at the time of the survey). Figure 2 uses the same data to show the percentage of age group that works. I added the equivalent percentages for US data to Figures 1 and 2 in an attempt to have a benchmark. The first important observation to be

TABLE 5

SCHOOLING IN LATIN AMERICA AND THE CARIBBEAN

Country	Year of Birth 1930	1940	1950	1960	1970	Change 1930–1950	Change 1950–1970	Change 1930–1970
Honduras	1.4	3.2	4.6	5.6	6.1	3.2	1.4	4.7
Nicaragua	2.0	3.2	4.3	5.8	5.8	2.2	1.6	3.8
El Salvador	2.1	3.2	4.1	5.7	7.0	2.0	2.9	4.9
Brazil	2.8	3.6	5.2	6.2	6.7	2.4	1.5	3.9
Mexico	2.9	4.2	6.7	8.2	9.3	3.8	2.6	6.4
Rep Dom	3.2	4.2	7.0	8.6	9.1	3.9	2.1	5.9
Venezuela	3.2	5.1	6.9	7.9	8.3	3.7	1.4	5.1
Bolivia	3.3	4.5	6.3	7.0	8.6	2.9	2.3	5.2
Paraguay	3.8	5.1	6.1	7.4	7.3	2.3	1.2	3.5
Ecuador	3.9	4.5	6.5	8.5	9.5	2.6	3.0	5.6
Colombia	3.9	4.4	6.2	7.7	8.4	2.3	2.2	4.4
Costa Rica	4.3	5.7	7.1	8.8	8.4	2.8	1.3	4.1
Chile	5.2	7.1	8.9	10.1	11.1	3.7	2.1	5.8
Panama	5.8	6.9	8.8	10.3	10.1	3.1	1.3	4.4
Peru	6.0	6.3	7.4	9.4	10.0	1.4	2.6	4.0
Uruguay*	6.3	7.4	8.8	10.0	10.7	2.5	1.9	4.4
Jamaica	6.9	7.9	8.3	9.6	10.6	1.4	2.3	3.7
Argentina*	7.5	8.3	10.0	11.0	11.3	2.5	1.3	3.8
Average LAC	4.1	5.3	6.9	8.2	8.8	2.7	1.9	4.6
Korea	5.3	7.7	9.5	11.0	12.0	4.3	2.5	6.8
Taiwan	5.8	5.8	8.9	11.0	12.3	3.2	3.3	6.5
USA	12.3	12.9	13.6	13.3	13.4	1.3	–0.2	1.1

Source: Berhman, J. S. Durvyea and M. Szekely (1999)

drawn from Figure 1 is that in the US, more than 90% of individuals stay in school to age 17, which typically indicates high school graduation. In the LAC region, between 60 and 88% of 16 year olds are in school. In fact, the largest differences in school attendance by age between LAC countries and the US are observed at age 16, which roughly corresponds to the first year of high school. In essence, LAC countries present high dropout rates at the start of the secondary cycle, but the observed decline in school attendance at older ages relative to age 16 are comparable across countries.

The cross section data suggests that the region is currently facing the challenge to broaden up coverage at the secondary level, and at the same time, to avoid an increase in dropout rates among those in the secondary system. One may suspect that 16 year olds in the LAC region dropout to school to join the labor market. However, if we turn to Figure 2 we make the surprising observation that the fraction of 16 to 19 year olds that works is typically lower in LAC countries relative to the United States.

To get a better idea of what is different between the LAC region and the US with respect to school retention and labor market participation, the data is organized by country in Figure 3. Each graph shows the fraction of individuals within a given age group in one of five mutually exclusive categories: (1) Attends school and does not work; (2) Attends school and works part time; (3) Attends school and works full-time; (4) Does not attend school and works; (5) Does not attend school and does not work. In every case, the definition of work excludes work in the household but it includes unpaid family work, which corresponds to the ILO definition.

FIGURE 2

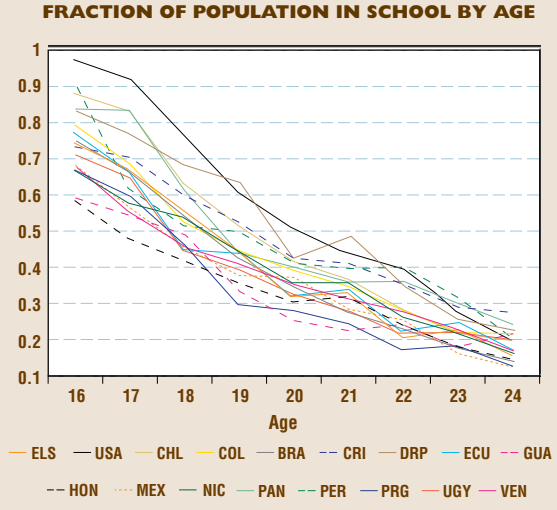
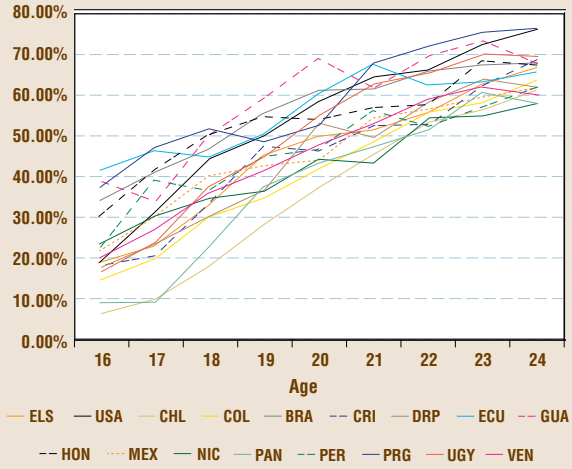


FIGURE 3



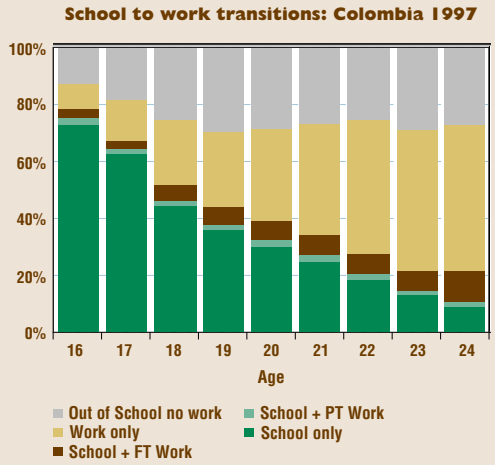
The green section in each graph (at the bottom) represents the fraction in school; the yellow section (second from the bottom) represents those in school and working part time; the gray section (third from the bottom) represents those in school and working full time; the black section represents workers; and the white section those that do not work or study. Except for the height of the green bar, at first sight, the graphs show similar shapes across countries. However, the USA figure is significantly different in that the yellow section represents about 20% of each bar from age 16 to 21. In fact, if one focuses on the fraction of teenagers working, it is not unusual for a country in Latin America to have 45% of 19 year olds in the labor force. Interestingly enough a similar fraction of 19 year olds works in the United States. However, while teenagers in the US continue in the school system and work part-time, in Latin America those that work typically are out of the school system and work full time.

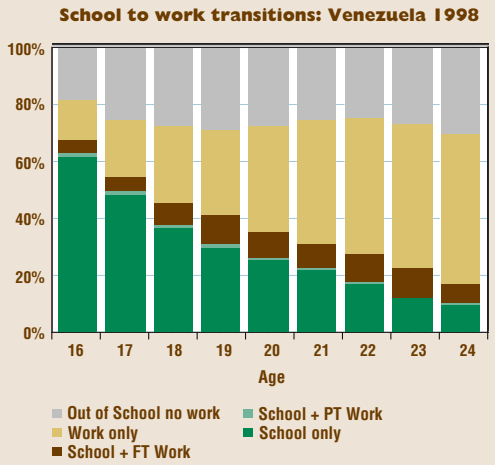
There are a few countries among those examined in Figure 3 that have a significant fraction of the young population in school and working par time. These countries include Peru and to a lesser extent Uruguay.[5] This evidence raises several questions: (1) Is the difference in work patterns of students a cultural phenomenon? or (2) Are there

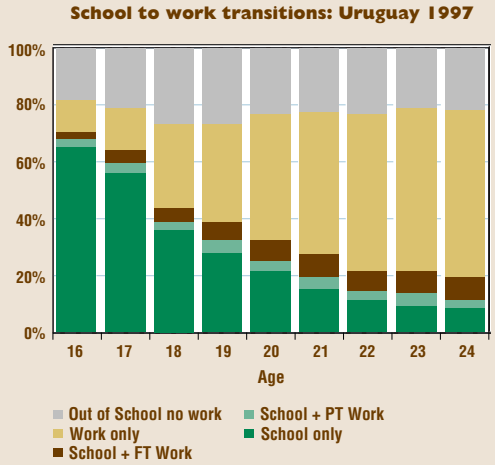
[5] We are unable to measure the extent of partime employment in Brazil.

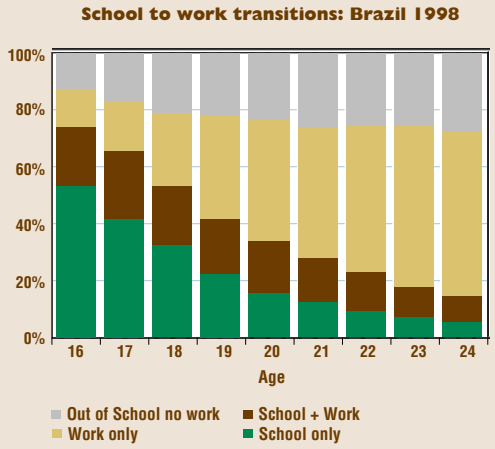
FIGURE 4

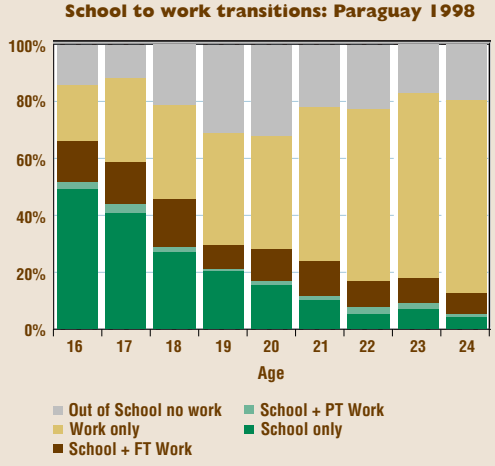
SCHOOL TO WORK TRANSITIONS IN LAC AND THE US











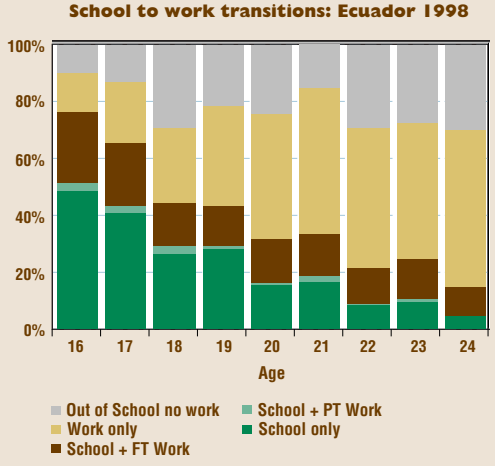


FIGURE 4

SCHOOL TO WORK TRANSITIONS IN LAC AND THE US

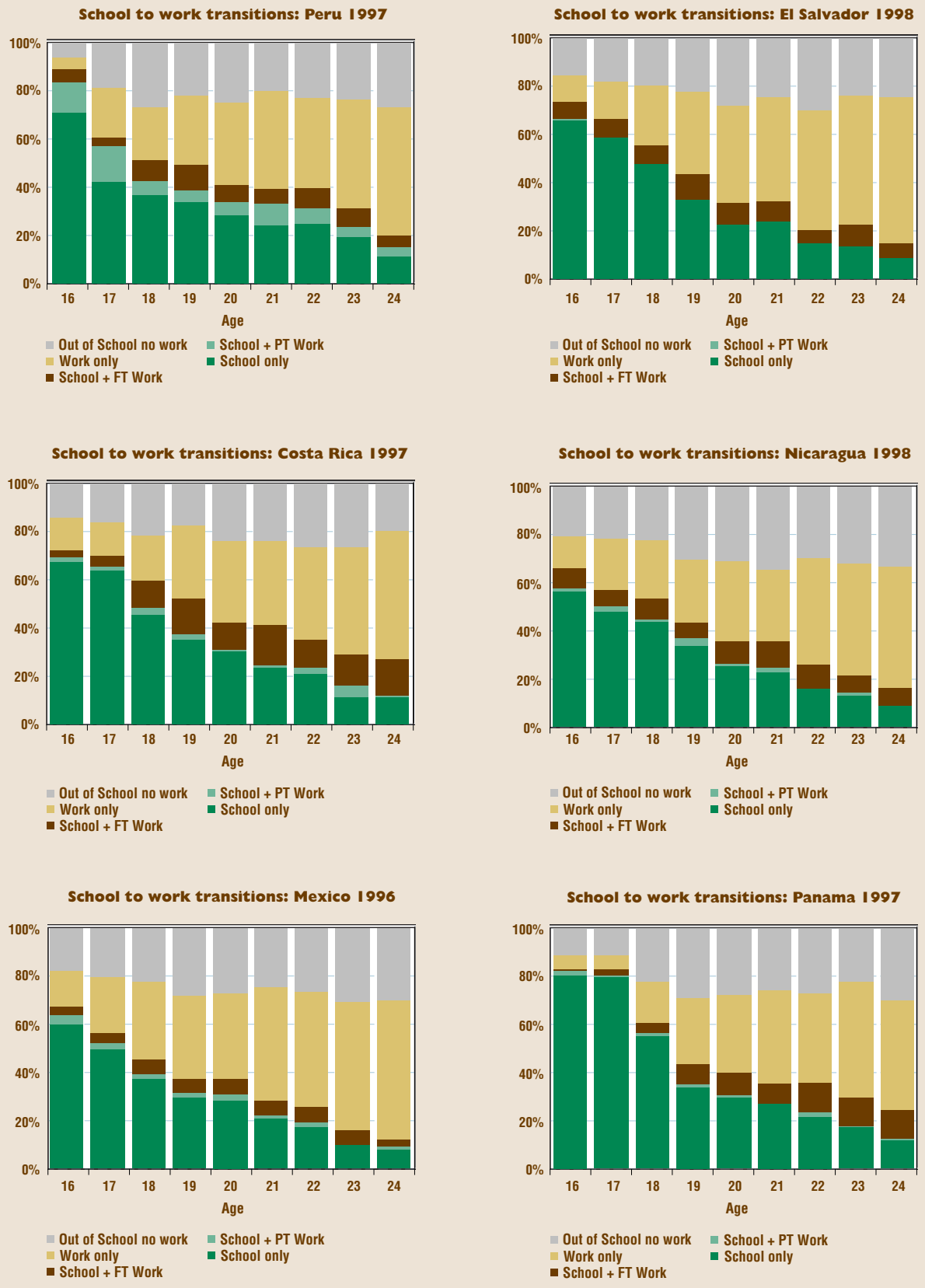
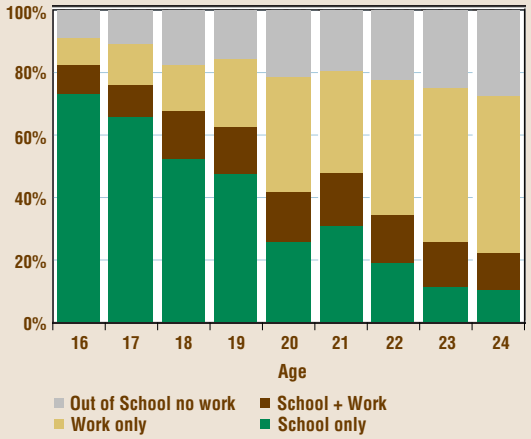


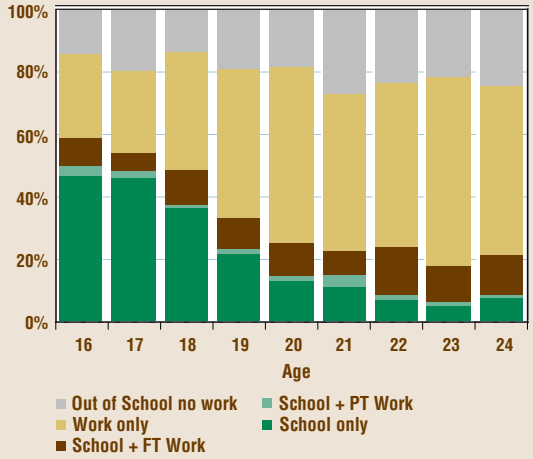
FIGURE 4

SCHOOL TO WORK TRANSITIONS IN LAC AND THE US

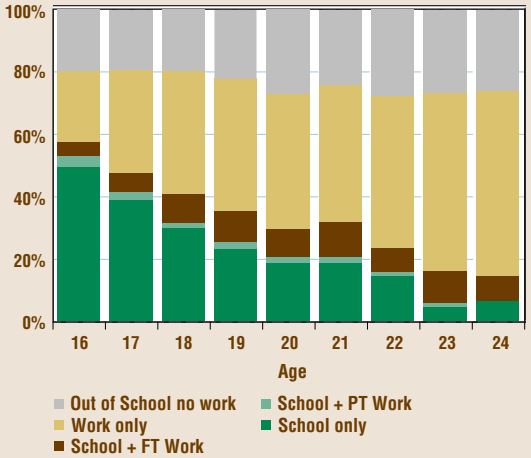
School to work transitions: Domenican Rep. 1996



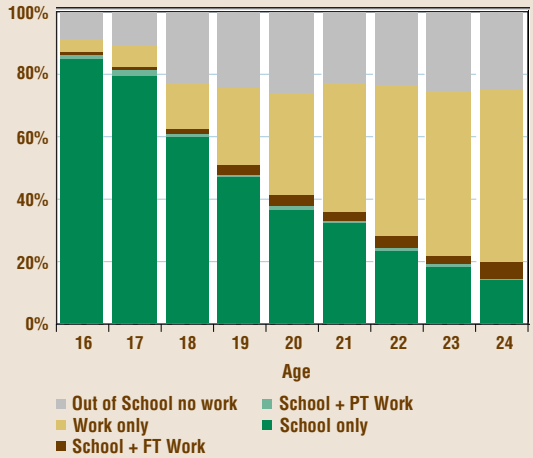
School to work transitions: Guatemala 1998



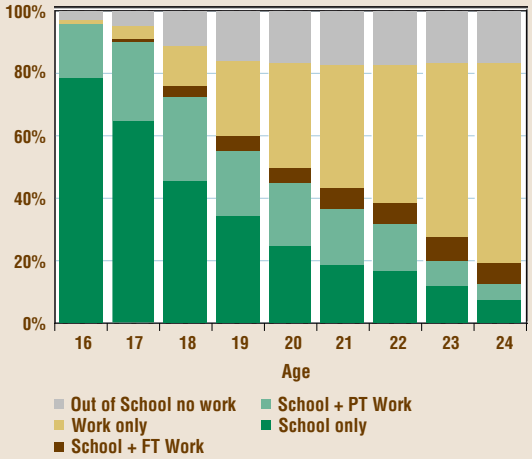
School to work transitions: Honduras 1998



School to work transitions: Chile 1996



School to work transitions: USA 2002



specific characteristics of the education systems or labor market opportunities that explain it?

If access to high school education is currently restricted by poverty, arguably an expansion in part-time job opportunities would allow more young workers to complete secondary education.

LABOR POLICY ISSUES

Information technology in general, and the internet in particular, are about freedom, creativity and dynamism. As pointed out above, there is abundant microeconomic empirical evidence suggesting that the effects of the computer technology are greater when labor relations are flexible and dynamic. Labor legislation in Latin America, however, is generally rigid and does not facilitate the rapid redeployment of workers across companies and sectors. Moreover, in many countries collective bargaining still takes place at the industry-level. These centralized labor negotiation practices tend to ignore the peculiarities of specific firms that in the midst of technological change may face very particular circumstances. (Edwards, 2001)

Textbooks usually mention minimum wages as the predominant labor market distortion to be removed in market-oriented reforms. At the present time, however, this is not the most pressing issue in Latin America. In fact, with a few exceptions, minimum wages have declined throughout the region in the last few years and have largely become a non-binding restriction. This, of course, does not mean that (potential) hikes in minimum wages will not have negative employment effects in the future.

The most serious labor market distortions in Latin America can be classified in three categories: (a) high costs of dismissal that reduce flexibility and make a firm's restructuring difficult and slow; (b) high payroll taxes that reduce the incentives to expand employment, and negatively affect the degree of international competitiveness of local firms; and (c) regulations that reduce the scope of collective bargaining at the firm level.

Job Security

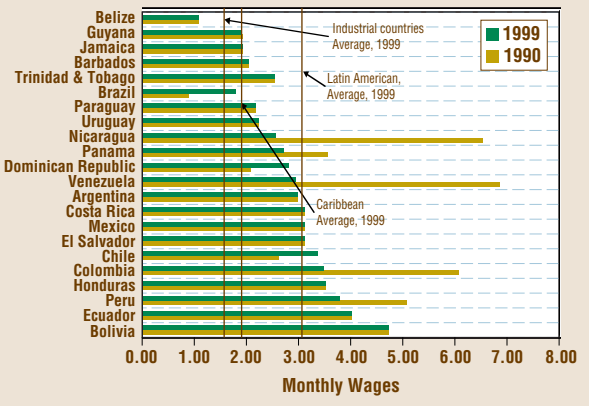
In a recent paper, Nobel Laureate James Heckman and Carmen Pages, from the Interamerican Development Bank, analyzed labor legislation in Latin America and concluded that it restricts labor mobility significantly. Moreover, these authors compared employment protection under labor legislation in Latin America, several European countries and the U.S. They found that, contrary to popular belief, employment protection in Latin America is, in general, significantly higher than in the European nations and higher than in the U.S., which is the most unregulated of all. The authors also find evidence that more restrictive labor legislation has resulted in slower job creation and a larger "informal" labor market. Efforts to reform labor legislation, and introduce greater flexibility while enhancing workers' rights, have been largely unsuccessful.

Figure 5 reproduces Graph 1 from Heckman and Pages (2000) which summarizes the costs of advance notice and compulsory severance pay in Latin American, and the Caribbean for 1990 and 1999. This graph reveals that even after many countries have reduced dismissal costs during the nineties, the average cost of dismissing a worker is still higher in Latin America than in our sample of industrial countries. In comparison, the countries of the Caribbean basin exhibit much lower dismissal costs.

Pagés and Montenegro (1999) develop a model in which job security related to tenure, biases employment against young workers and in favor of older ones. As severance pay increases with tenure, and tenure tends to increase with age, older workers become more costly to dismiss than younger ones. If wages do not adjust appropriately, negative shocks result in a disproportionate share of layoffs among young workers. Therefore, job security based on tenure results in lower employment rates for the young,

FIGURE 5

JOB SECURITY INDEX
(EXPECTED DISCOUNTED COST OF DISMISSING A WORKER, IN MULTIPLES OF MONTHLY WAGES)



relative to older workers, because it reduces hiring and *increases* firings for young workers. Thus, one can argue that higher job security provisions reduce turnover rates and bias the composition of employment against formal and young workers.

Heckman and Pages (2000) examine data for OECD and Latin America spanning from the 1980s to the 1990s to extract the link between job security and employment. They control for the state of the business cycle in a given year using GDP growth, and different types of variables to control for country specific factors that may be correlated with job security. The results suggest a negative and large effect of job security on employment rates. The magnitudes of the elasticities are quite large: an increase in expected dismissal costs equivalent to one month of pay is associated with a 1.8 percentage points decline in employment rates. Given that in Latin America the average dismissal cost in 1999 was 3.04 months (See Figure 5), the estimated loss in employment –as a percent of total working population— due to JS provisions is about 5.5 percentage points. Estimates suggest that job security does not affect the employment rates of all workers in the same fashion. In particular, job security reduces LAC youth employment rates by almost 10 percentage points.[6]

Payroll Taxes

A payroll tax tends to reduce net wages and increase labor costs. Thus, one would expect that the higher the payroll tax, other things equal, the lower will be labor force participation and employment. Using time series data for Chile spanning over the period 1960 to 2002, Edwards (2003) estimates that a 10 points reduction in the payroll tax would lead to a 2% increase in employment, and that 10 points reduction in the payroll tax would lead to a 0.7 points expansion in labor force participation. Current payroll taxes in the LAC region (calculated as a percent of gross wages) range from 36 percent in Argentina to 17 percent in Nicaragua.

Collective Bargaining

A number of authors have argued that the degree of rigidities embedded in labor legislation will affect the equilibrium level of unemployment. This has been, for example, the view of many authors that have attempted to explain the high degree of unemployment in Europe during the last decade and a half, and has been expressed in particularly strong terms by the OECD Jobs Study (OECD, 1994).

Most attempts at testing this general proposition have been based on comparisons across countries with different regulatory environments, and in particular on comparisons between the countries of Europe and the United States. Nickell (1997), however, concludes that the received wisdom is only partially right, and that some (but not all) labor market regulations in Europe cause higher unemployment. Blanchard and Katz (1997) take a similar view, and argue that restrictions to firing workers increase unemployment duration and workers' flows, but do not "necessarily led to a higher rate of unemployment (p. 59)."

In analyzing the effects of labor market regulations, some authors have focused on their effects on the *dynamics of unemployment*, and in particular on its degree of persistence. For example, in their analysis of European and U.S. unemployment patterns, Blanchard and Summers (1986) argue that due to greater rigidities, and in particular because of the more active role of unions, unemployment has been more persistent in Europe than in the United States. They argue further that the extent of unemployment persistence is affected by the state of the economy, with unemployment being more persistent in "bad times" than in "good times."

Because of the major reforms of the last thirty years, Chile provides a unique opportunity for analyzing the effects of changing labor regulations on unemployment and other labor market outcomes within a particular country. If the "regulations hypothesis" is correct, one would expect that Chile's labor market would exhibit a greater degree of flexibility and fluidity in the post reforms period. Edwards and Edwards (2000) quantify the extent of Chile's reform in collective bargaining and follow Blanchard and Summers (1986) to link the degree of unemployment *persistence* and the characteristics of the collective bargaining system in Chile. Their results indicate that in the post reforms period, Chile's labor market experienced, both a reduction in persistence and in the natural rate of unemployment, and their analysis indicates that the collective bargaining reform contributed greatly to these two changes.

To sum, economic growth and particularly, total factor productivity growth in LAC countries will greatly benefit from labor market reforms in three key areas. First, a reduction in costs of dismissal will

[6] These magnitudes are consistent with the ones obtained in Pagés and Montenegro (1999) for Chile.

contribute to employment creation, particularly among the youth, and will also facilitate the reallocation of employment to increase overall productivity. Second, a reduction of payroll taxes will contribute to higher labor force participation, and an increase in employment. Third, reforms to labor legislation that collective bargaining which increase the scope of collective bargaining at the firm level tend to contribute to higher flexibility and reduce the persistence of unemployment.

THE IMPLICATIONS FOR EDUCATION POLICY

To the already well know challenges of continue to expand coverage, particularly in Central America, the rural areas, and amongst the indigenous population, there is a challenge of modify what schools currently offer.

Recent data—both from surveys as well as from formal standardized tests—indicate that education deficiencies in Latin America are substantial. Indeed, studies that have focused on the quality of education—as opposed to its coverage—show that the Latin American region is seriously lagging behind other nations. For instance, recent survey results on the quality of math and science education place every Latin nation, with the exception of Costa Rica, in the bottom third of a sample of 59 countries (U. Michigan, 2000).

Results from these standarized tests, which were taken by more than 150 thousand students in 38 industrial and emerging countries, are strictly comparable across nations. The only Latin American country that participated in the *Third TIMSS* project on mathematics and science for eighth graders was Chile. In mathematics, Chile placed 35th out of 38 countries, with a score 20% below the average for all nations. In science it also placed 35th; this time, however, Chile's score was *only* 14% below the average for all countries.[7]

A possible objection to these results is that they refer to *unconditional* test scores. However, econometric analyses suggest that even after conditioning by a number of factors—including GDP per capita, education coverage, class size and expenditure in education—Chile's test scores are among the lowest in the sample (see Edwards. 2001) When these findings are projected to the rest of Latin America, the picture that emerges is one of a region where children are not being adequately trained for a technologically oriented future.

> *"Education systems throughout the region are more successful in putting and keeping youth in school than in truly teaching requisite skills. Indeed, learning goals often are compromised by factors and conditions—e.g., inadequate teaching, too little time on task, lack of teaching materials, and inadequate management and incentives" (de Moura Castro and Verdisco, 2002)*

Under the current circumstances, it is worth spending resources on education research. The same technology that is challenging us to modify how children are taught can be used to figure out what leads children to learn analytical and communication skills. In the past, educators have been reluctant to rely on the use of tests to make school management decisions. Their basic complaint is that tests scores are only partially a measure of teaching, and mostly a measure of the child's socio-economic environment. But, good research on education does take into account the effect of a particular program or method, controlling for the characteristics of the parties involved.

Dynamic Relationship between Formal Education System, Job Training, and Employment

It helps to classify a country's skills development system as having three parts: (i) general education system with its primary, secondary and post-secondary levels, (ii) in-school training (provided at the secondary or post-secondary level), and (iii) in-house training provided on the job. While on-the job training is in the realm of private agreements between employers and employees, in-school training is an alternative to general education, and can be part of the public as well as the private education systems. Parents and/or young adults choose to invest or not to invest in training or education according to the perceived costs and benefits. However, these investments are often constrained by access to credit. This justifies policy intervention via subsidized education or subsidized credit to access education. In all LAC countries there is subsidized education and in many students can apply to subsidized credit towards postsecondary education. These funds are generally channeled through the Ministry of Education. Latin American

[7] The complete TIMSS results can be found in: http://timss.bc.edu

countries have searched for innovative ways to expand primary and secondary school coverage on the basis of limited resources. In some cases (notably Colombia, El Salvador and Chile) public financing methods are successfully attracting complementary funds from parents and/or private organizations. The experience of Chile in leveraging funds provided by the Ministry of Education towards technical-vocational education with private sector resources is quite valuable. (see Box 1)

BOX 1

VOCATIONAL EDUCATION FOR CHILEAN FARMING: THE CODESSER MODEL

Since 1982, the Corporation for Rural Development (CODESSER—Corporacion de Desarrollo Social del Sector Rural), a non profit organization has taken on the administration of a number of vocational schools. The management style of CODESSER's schools is based on six elements and merits special attention because it has turned out graduates with marketable skills.

1. Private sector participation in Management

Schools report to a Regional Directory, made up of seven recognized farmers or industrial entrepreneurs. The involvement of the private sector also offers a direct connection to the job market, and an effective medium to bring about organizational and productive innovations in the schools. The school management combines the expertise of professional managers and educators.

2. Teachers hired as Private Sector Employees

The agreement through which the vocational schools were transferred to CODESSER in the early 1980s, terminated all contracts (teachers and other personnel). In 1994, between 60 and 70% of the personnel in some schools was comprised of people that were teaching under the old system. However, new contracts were offered under the general labor code, and teachers are private sector employees. CODESSER has established a clear personnel policy, including selection and promotion criteria, teachers' salaries are about 50% above municipal schools, and there has been a consistent effort to update teachers' training.

3. New Educational Programs.

CODESSER's educational programs aim at delivering a solid general knowledge in humanities and sciences, prepare students to perform in a family of occupations, to be problem solvers, and to continue learning. The schools also emphasize personal growth and the development of responsibility, leadership, and personnel management. The effectiveness of the programs depends on the connection between the curriculum and the work opportunities available. In the case of agricultural schools, CODESSER conducted a thorough field study, surveying more than 1,200 farms from the IV to the XII Regions (more than 2/3 of the national territory). This study was used to determine the needs of technicians by region, and the technical profile required. This data, along with follow up studies to graduates, were the base for new Plans and Programs, which were subsequently presented for the approval of the Ministry of Education. Similar studies directed to industries and agro-industries, were conducted in 1987, to design the curriculum of the industrial schools.

4. Curriculum Revisions

After the first and major revision of each school's curriculum, CODESSER conducts periodic surveys of the job profile requirements in the surrounding area of each school. These surveys allow CODESSER to keep track of employment opportunities for graduates, and adjust the vocation-specific component of the curriculum accordingly. CODESSER provides teachers with the training required to implement these curriculum revisions.

5. Students' Selection

To be considered for admission, students must have obtained a minimum of grade 5 in each course in levels 7th and 8th. (grades go from 1 to 7, where 7 represents excellence). Students must also present a recommendation letter from their teachers.

6. Funding

Schools receive public subsidies buy also develop independent means. In 1982, the public subsidy represented the bulk of the school's budget. By 1991, the public sector support represented about 50% of the combined budget of all schools. (One of the sources of funding is found in traning provided under SENCE programs—See Box 2).

BOX 2

THE MECHANICS OF A VOUCHER SYSTEM: THE CASE OF CHILE

The National Training authority (SENCE) manages a targeted training program in a decentralized way using vouchers. The first step in the process is to identify the population in need. This is very much a demand-driven process where qualified individuals apply for specific training programs. In response to this demand, SENCE calls for bids to select trainers for specific courses. Training institutions (public or private) compete for the opportunity to offer the courses and SENCE selects on the basis of merit.

The selected institutions establish a contract with SENCE and promise to deliver a specific training activity. Each institution invests a fraction of the total cost of the program with SENCE, and this amount would be lost if the activity failed to take place. SENCE has specific requirements in terms records keeping, and compliance with these requirements is key to obtain full reimbursement of the program's cost. One of the key goals of SENCE is that trainees complete the programs and that they find employment. They have to mechanisms to induce training institutions to adapt the same goals. First, training institutions that let trainees drop out before completion are unable to recover the full cost of training. Second, training institutions with a weak placement record of their trainees, are unlikely to obtain new contracts.

Training institutions have the opportunity to define the population of trainees they want to attend and they are encouraged to develop an understanding of this population. They can design the course content that will maximize the chances of success and that would help retain students, and finally, they have the responsibility to distribute the meal and transportation subsidies, which give them another opportunity to affect incentives.

At the post-secondary level, an interesting formula to channel funds to help the most needy students is for the state to fund jobs for student-workers within post-secondary institutions. In the United States, for example, the Federal Work Study Program provides funds earmarked to pay for employment of undergraduate and graduate students with financial need attending eligible postsecondary schools. In most cases, these funds are complemented with state and school funds. Work-study programs help students fulfill the American tradition of working one's way through school. Pay is based on federal minimum wage standards, but varies with job requirements, skill, and experience levels.

Although there is very little data or literature on firm provided training in developing economies, the available evidence does suggest that firms in Latin America do train their workers. Data from the 1999 World Business Environment Survey, a joint WB-IADB survey that assess the enabling environment for private enterprise in 20 Latin American countries, contains information on training practices of private firms. The survey is based in interviews of a random sample of 100 modern sector firms in the manufacturing (40%) and service sectors (60%). In the first place, the percentage of firms in the region than train their workers is not too different than the one in the US and Canada. Three out of four firms in the region do train their workers, and firms that have recently introduced some innovation (be it in products or processes) are almost 30% likelier to train than firms that have not innovated. Firms in the services sector are 5% more likely to train, and small firms are fully 25% less likely to have some kind of training program. Foreign firms are slightly more likely to have training programs, while family owned firms are less likely to do so. Though older, more established firms are more likely to train, this effect is minor relative to the other effects studied in the survey. This pattern of incidence of training according to firm characteristics is very similar to the one described in the literature for developed countries. In addition, when looking at workers, the pattern of training by schooling level looks very similar to that revealed in the literature on developed countries: the more educated workers are the ones chosen by firms to be trained and for longer periods (Marquez, 2001)

Given the high rates of unemployment among the youth in the region, and the unbalance between the demand for and the supply of skills, it becomes more important to build policies to strengthen the alignment between the education, training and the labor market. Throughout the world, the private sector is playing a growing role in education and training production. It is generally better for the private sector to produce training because industry's demand is rapidly changing, and trainees have needs that vary according to their interests, preferences, and expectations. The private sector can adapt to these changes more easily than the public sector. If the public sec-

tor is the dominant producer of training services, the linkage with the labor market is likely to be weak.

Countries do not need a government institution running training programs, which can be run by specialized professionals. However, in the absence of a training authority that channels funding, low-income individuals have limited access to training. In the case of Chile, the training authority—SENCE—manages two policy instruments: (1) a government tax credit available to all private enterprises, (2) a program of training scholarships financed with government funds and targeted to specific groups of individuals. Training can be implemented in service, or can be obtained externally. Training organizations must have a previous SENCE approval if enterprises want to obtain the requested tax credit. In essence, SENCE role regarding the tax credit is one of a clearinghouse. However, the system in place allows SENCE to maintain an up-to-date register of training organizations, reserving the right to inspect both training institutions and enterprises that qualify for tax credit towards in-house training, and facilitates the ongoing *evaluation* of these organizations' work.

The scholarships program has many arms, including Chile Joven. SENCE captures the demand for these scholarships at the local level, when individuals apply for these vouchers or training grants (see Box 2). There are minimum qualifications for applicants, and if their request is approved, they typically receive free training, a subsidy towards meals and transportation and accidents insurance Previously registered training institutions can bid on specific courses/programs, and SENCE selects among applicants according to merit. The current setting of the Chilean system can lead to the accumulation of data that permits adequate evaluation of specific program design. The evaluation of training programs has received significant attention in the United States in the last 20 years and lead to the use of sophisticated econometric techniques that can lead to appropriate evaluation and help policy making in the LAC region (See Box 3).

Conclusions

There are four generalized trends observed in Latin American labor markets in the 1990s: (1) slow growth in GDP per capita; (2) high rates of unemployment; (3) rising wage differentials associated to tertiary education; and (4) declining wage differentials associated to gender and increased female labor force participation. The changes observed in Latin America are consistent with worldwide evidence on the effects of an increase in the relative demand for skilled labor. The appearance of widespread unemployment in Europe, Canada, and Australia on the one hand, and of many poor quality jobs as well as unemployment in the United States on the other, have thus both stemmed from the same root cause: the failure to adapt satisfactorily to change. Management skills, education and training attainments have failed to keep pace with the requirements of a more technologically advanced economy.

If one takes the view that the changes observed in labor use in the US in the 1980s and 1990s are manifestations of a worldwide phenomenon, given the extent of markets globalization, the adoption of computer technology in some areas/countries leads to rapidly evolving sources of comparative advantage, with effects in all countries. These changes present great opportunities in terms of productivity increases and at the same time challenge individuals and organizations to adapt. Policy makers must lead the population to be less resistant to change and seize any opportunities to learn new tasks. Education can play a key role to the extent that it makes individuals more adaptable; more capable of being reallocated to different jobs; more prone to be retrained; and or to be lifelong learners. But the education systems also are challenged to develop individuals' analytical and communication skills in favor of memorization and repetition.

Perhaps is important to keep in mind that education and training are investments that generate clear benefits for those that receive them. Yet, there are large portions of the LAC youth that do not have the means to finance their schooling, and targeting of public sector resources towards this population can lead to broader coverage of the education system as a whole. The task ahead is of great magnitude and the policy response has to keep sight of the limited resources. Formulas the leverage public sector funds with private sector efforts in education are particularly appropriate, and formulas that use public sector funds to provide training for low-income workers to make them gain employment are of the essence.

Throughout the world, the private sector is playing a growing role in education and training production. It is generally better for the private sector to produce training because industry's demand is rapidly changing, and trainees have needs that vary according to their interests, preferences, and expectations. The private sector can adapt to these changes more easily than the public sector. If the public sector is the dominant producer of training services, the linkage with the labor market is likely to be weak.

BOX 3

EFFECTIVENESS OF GOVERNMENT TRAINING PROGRAMS: THE IMPORTANCE OF EVALUATION

The Employment and Training Administration (ETA) is the agency of the US Department of Labor responsible for government initiatives dealing with training of the workforce and the placement of workers in jobs through employment services. In 2000, ETA was allocated $ 5.5 billion towards funding of training programs. This represents 16% of the Labor Department's budget, is equivalent to 15% of the Department of Education's budget, and is equal to 1.5 times the budget of the National Science Foundation. Given the significance of the resources involved, there have been a number of evaluations of these programs since the late 1970s. The program evaluations have raised a number of conceptual issues revealing the complexity of the evaluation question. The jury is still out on the implications of these evaluations for the key policy question, namely "What is the most effective way of improving the labor market opportunities of the unemployed poor?" However, the main lesson that this process has taught is that there is a lot to be learned from the experimental approach, and those lessons cannot be learned in the absence of evaluation efforts.

a. Comparing Earnings of Trainees Before and After the Program

A number of studies estimated program's impact on earnings by comparing earnings of trainees before and after training.11 Estimates from these studies suggest that, typically, women benefit more than men from training. Women's estimated increase in postprogram annual earnings are in the range of +$20 to + $2,200, and men's are in the range –$1,875 to +$1,170. Estimates for disadvantaged youth are typically lower than men's and often negative. However these calculations suffer from self-selection bias. The problem is that the measure obtained reflects the impact of the program on workers that choose to be trained, but cannot be extended to a different population.

b. Randomized Experiments. Differences in Differences

In an effort to reduce or eliminate the self-selection bias, there have been some randomized experiments. In these, potential trainees are assigned randomly to participate in a training program. Lalonde (1986) estimated the impact of the National Supported Work Demonstration (NSW) program. He found that the typical worker who was treated by the program earned $1,512 annually in the pre-training period and $7,888 after the training. The $6,376 gain of the typical trainee has to be compared to the gain experienced by those that received no training. It turns out that the control group experienced a $4,969 increase in annual earnings. Thus, the estimated impact of the program is the difference in differences or $1,407 per year. Lalonde's work caused a revolution in program evaluation work, because he used the experimental data to demonstrate the size of biases that can arise using the before and after comparisons. Experimental evaluations have allowed researchers to narrow down some of the results and be more confident with respect to their interpretation. In particular, the evidence points at modest but significant positive impacts of low-cost search assistance on adult women's earnings. Results for disadvantaged youths and adult males are less encouraging. However, this methodology still suffers from selection problems. In particular, (1) only those interested in training are part of the treated or control group cases, (2) the random selection may not work out if some of the chosen candidates fail to show up for training, and (3) some of the individuals in the control group may receive training from other sources.

c. Matching Samples

The latest methodology developed to estimate the impact of programs (such as training) is non experimental. It consists in a two-stage evaluation methodology that (a) estimates the probability that a person will participate in a program, and (b) uses the estimated probability in extensions of the classical method of matching (see Heckman, Ichimura, and Todd, 1994). The critical condition to obtain good estimates in the absence of random controls is to have a very rich data set to allow construction of non-experimental comparison groups. The proponents of this method argue that "placing non-participants in the same (narrowly defined local) labor market as participants, administering both the same questionnaire, and weighting their observed characteristics in the same way as that of participants, produces estimates of program impacts that are fairly close to those produced from an experimental evaluation." (pp 646)

(continued)

BOX 3 *(continued)*

EFFECTIVENESS OF GOVERNMENT TRAINING PROGRAMS: THE IMPORTANCE OF EVALUATION

Application: The Case of Gain in California

As a result of recent reforms of the welfare programs, many states have refocused their Welfare-to-Work programs from an emphasis on human capital acquisition to an emphasis on "work-first," moving welfare recipients into unsubsidized employment as quickly as possible. The willingness of policy makers to make this policy change was highly influenced by results from the experimental evaluation of California's Greater Avenues to Independence (GAIN) programs conducted by the Manpower Demonstration Research Corporation. The evaluation found that, compared to programs in other counties that emphasized skill accumulation, the work-first program in Riverside County had larger effects on employment, earnings, and welfare receipt. In addition, the Riverside program was cheaper per recipient than the other programs (see for example, Friedlander, Greenberg, and Robins, 1997).

There are interesting experiences throughout the region that offer lessons on both the benefits and shortcomings of delegating the delivery of training and or schooling to privately run institutions. Delegation of authority naturally leads to data collection (on attendance, retention in grade, etc). Data analysis becomes a significant component of research on education, something that is urgently needed under the current circumstances. Another advantage of the delegation model is that the Ministry of Education can become a more objective evaluator of programs and methods, and can disseminate good practices.

Evidence presented in this paper suggests that the student-worker in the post-secondary system is rare in the LAC region. In contrast, in the United States, the fraction of students above 16 that work part-time rises with from about 20% at age 16 to close to 50% between ages 20 and 22. The opportunity to work for US students contributes to a higher school attainment overall. We know that labor regulations that grant job security have the unintended effect of restricting access to jobs (or part-time jobs) among youth. This is a challenge that education authorities must take up to the labor authorities in every country.

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'Unifying' Vocational and General Education: European Approaches

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INTRODUCTION

A key question for policy-makers responsible for vocational education is how it should relate to general or academic education in a national education system. In this paper I discuss attempts in many European countries to improve the quality and raise the status of vocational education by bringing it closer to general education. These are examples of a cross-national trend which I describe as the 'unification' of vocational and general education. The term 'unification' reflects the language of current policy in the United Kingdom and some other countries, although it embraces measures which fall short of the full integration of vocational and general education. It describes three distinct but related trends:

- the trend to link or integrate vocational and general *curricula*, either by encouraging greater mixing of components or by developing new kinds of curricula which do not easily fit conventional labels of 'vocational', 'general' or 'academic';
- changes to the *organisation* of upper-secondary education to link its vocational and general tracks and reduces the differences between them;
- the development of flexible, seamless opportunities for access and progression through *lifelong learning*, without arbitrary barriers associated with academic/vocational divisions.

I discuss these three trends below.[1] I focus on education at the upper-secondary or immediate post-secondary level, below higher education. I shall treat 'general' and 'academic' education as broadly synonymous, reflecting current usage in most, but not all, European systems. First, I set the scene by describing the variety of vocational education systems in Europe.

THE CONTEXT: THE DIVERSITY OF VOCATIONAL EDUCATION IN EUROPE

There is no single European vocational education system.[2] Vocational education varies across European countries with respect to:

- how it is delivered: whether through full-time schooling or through alternance, apprenticeship or less formal types of work-based learning;
- its content: whether it is organised around detailed occupational categories or a small number of broad areas, and how far programmes are nationally standardised;
- its curriculum structure: for example, the extent of 'modularity' and the use of competence-based approaches;

[1] This paper draws on Raffe (2003a), also available as IUS Working Paper 5 on www.ed.ac.uk/ces/ius/IUS_papers.html.
[2] Details of European education systems are provided by the Eurybase database (www.eurydice.org/Eurybase) and the 'electronic training village' of CEDEFOP (www.trainingvillage.gr).

- its arrangements for assessment and certification;
- its governance: the respective roles of education and labour ministries, the degree of central or local control, the role of 'social partners' and industry bodies, and so on.

These variations are connected with differences in the wider policy, social and economic context of each country. In a recent study of transitions from education to work in Europe[3] we suggested that countries of the European Union fell into three or four main groups:

- Countries such as Germany, Austria, Denmark and the Netherlands with strong occupational labour markets, mainly selective secondary education systems and strong vocational sectors. Vocational education tends to be standardised, occupationally specific and delivered in vocational or technical tracks that are organisationally very distinct from general education. It is often (but not always) provided through apprenticeship. A high proportion of young people enter the labour market with vocational qualifications, and few have only compulsory-school qualifications. Compared with other European countries young people have smoother transitions to work, lower unemployment and less instability; the unemployment risks, job mobility and occupational levels of new entrants to the labour market are more similar to those of experienced workers.
- Southern European countries, where levels of educational attainment have been historically low but have recently risen very rapidly. These countries have little vocational specialisation and low levels of apprenticeship and in-company training, sometimes reflecting the dominance of small enterprises in the private sector economy. Their labour markets are more highly regulated and family support plays an important role in young people's transitions to work. As a result there are very high levels of unemployment among new entrants, especially the well-qualified, many of whom may wait a long time for a job. When they find employment they typically enjoy higher occupational levels and more job stability than in other countries.
- A third, rather more heterogeneous group of (mainly northern European) countries. These tend to have stronger internal labour markets than occupational labour markets. The proportions of school leavers with vocational qualifications is intermediate between the other two groups of countries; much but not all vocational education is school-based. Levels of apprenticeship are higher than in southern Europe but lower than in the first group of countries, but there are relatively high levels of in-company training other than apprenticeship. New entrants to the labour market converge on the occupational levels, mobility rates and unemployment rates of experienced workers more quickly than in southern Europe but more slowly than in the first group of countries.
- Our study was based on current European Union countries and did not include the countries of eastern Europe. Some writers have suggested that these countries are developing a southern European model, although many of them have historical and institutional links with the other two groups of countries. In contrast to southern Europe, many eastern European countries have more flexible labour markets and a relatively buoyant private sector of vocational education, which provides newly-demanded skills such as computing and languages. Young people are less disadvantaged in the labour market, and they have coped better than many adults with the demands of political and economic reconstruction.

These four groups do not fully capture the diversity of European systems. Comparative studies repeatedly draw attention to the unique features of each country, and countries vary within each of these groups. For example, in some of our analyses Spain is categorised with the third group rather than with southern European countries: this may partly reflect its higher mobility among workers, possibly due to the different way in which temporary contracts for young people have been used in Spain compared with, say, Italy. Nor are countries necessarily trapped by their current institutional position: Ireland is an example of a country whose education system has significantly transformed over the past decade, with the successful development of a vocational sector.

The important message from this review is that countries' education systems vary, and that this variation is related to other contextual factors such as

- the stage of economic development and the distribution of employment across sectors;

[3] The CATEWE project (Comparative Analysis of Transitions from Education to Work in Europe). See Smyth et al. (2001), Raffe & Müller (2002) and Müller & Gangl (2003).

- the structure of the labour market: its organisation along occupational or internal (company) lines; its 'flexibility' and the extent of regulation;
- the institutional infrastructure: for example, the nature of employer organisations;
- social policy and family structures and roles;
- the size and homogeneity of an education system and the way in which it is regulated and governed.

These differences have implications for cross-national policy learning. Policies are more likely to be transferable between countries that are similar in these respects. If we want to find policies or ideas which might be adapted for our own countries, then we should look at 'similar' countries. On the other hand, if we want to look for contrasting experiences, and to find ideas to challenge and clarify our own assumptions, we might find it more useful to look at countries that are very different from our own. In general, cross-national comparisons are a better source of policy learning than of policy borrowing. The OECD's Thematic Review of the transition from initial education to working life illustrates a possible approach. Instead of looking for policies which worked in all countries, it identified conditions which all successful 'transition systems' should meet, even if different countries meet these conditions through different institutional arrangements.[4]

PRESSURES FOR CHANGE

Despite the diversity of European systems the trend towards the 'unification' of general and vocational education is found in nearly all European countries, even if it takes different forms.[5] This trend reflects common pressures which affect all European countries (it also affects countries elsewhere):

- *global economic pressures*: these pressures arise from intensified economic competition, the growth of the service sector, changes in the work process, technological change, more flexible forms of employment and increased occupational mobility. These trends, it is claimed, create a need not only for higher levels of qualification but also for new kinds of skills and knowledge which do not fit the traditional labels of 'academic' and'vocational'. They require a shift from specific to generic skills, from skills for immediate application to those which provide a foundation for lifelong learning, and from specialised skills to the capacity to connect, and integrate, different areas of learning.
- *social pressures*: education, and especially vocational education, are called upon to help the casualties of the global economy, such as people at risk of unemployment or social exclusion, and the socially disadvantaged who are less well provided for by mainstream education. There are pressures for education to become more inclusive, to extend access, to make learning opportunities more flexible, to unblock dead-ends and to reduce the risks associated with participation and progression in education. Young people—and many adults as well—have higher aspirations, they increasingly want to keep their options open, and they expect greater control as citizens and as 'consumers' over the education and training system and over their pathways through it. They are less willing to accept the early selection and narrowing of choices which a rigid separation of vocational and academic tracks may involve.
- *weaknesses of vocational education*: even countries with strong and well-respected vocational systems, such as Germany, recognise the need to modernise them, to make them more flexible and responsive to changing social and economic demands, and to improve their quality. They also face a problem of 'academic drift', the growing tendency for young people (and especially the well-qualified) to prefer high-status academic programmes to vocational programmes. In many European countries vocational education is still under-developed, and this is often reflected in a lack of well-structured pathways from education to the labour market.
- *expansion of education*: more broadly, as education expands and pathways through learning

[4] See OECD (2000). The conditions are: a healthy economy; well organised pathways that connect initial education with work and further study; widespread opportunities to combine workplace experience with initial education; tightly knit safety nets for those at risk; good information and guidance; and effective institutions and processes.

[5] Some of the evidence drawn on in this and the following sections is summarised by Lasonen & Manning (2001), Lasonen and Young (1998), Manning (2000), Stenstrom & Lasonen (2000) and the FINNBASE database of national reforms together with other resources at www.b.shuttle.de/wifo. For more detailed references see Raffe (2003a).

become longer and more complex, the coherence and coordination of education systems becomes more important. When academic and vocational tracks were small and specialised it did not matter that they were separate and uncoordinated; in a large and complex education system it matters much more.

Governments respond to these pressures in the light of their own political priorities. For example, in countries such as Sweden unifying measures have been associated with a democratic tradition and a concept of common citizenship. Governments' political agendas may be particularly important when European models are exported. In South Africa the National Qualifications Framework, which drew on the experience of Scotland and England (as well as New Zealand and Australia) was strongly influenced by the aspiration to provide equal opportunities and equal recognition for learning in the post-apartheid era.

UNIFICATION OF CURRICULA

The first type of unifying measure aims to unify general and vocational curricula. There are different ways of doing this. An *additive* approach to curricular unification encourages greater mixing of general and vocational components, but does not try to blur the differences between them. An additive approach may involve increasing the number of general courses within vocational programmes, as in Norway, Sweden, Hungary and several other countries. Or it may involve offering students a menu of options drawn from both general and vocational programmes, and encouraging them to select mixed programmes. This approach has been followed in England and in Finland, where general and vocational schools collaborate to offer a curriculum in which general students can take modules in vocational schools and vocational students can take modules in general schools. An *integrative* approach aims to create a new kind of curriculum, rather than simply mix general and vocational elements. Examples include projects in the German and Austrian dual systems which aim to exploit the potential of vocational training for general learning. Another example of an integrative approach is the introduction of key qualifications or transferable skills as elements in both vocational and general programmes. The distinction between additive and integrative approaches is often a matter of emphasis. Most additive measures aim at a degree of curricular integration: for example, the Finnish reforms aim for the 'mutual enrichment' of general and vocational curricula.

Integrative approaches tend to be followed in countries with occupational labour markets, with large dual systems or well institutionalised vocational tracks, and with a tradition of general education through vocational training; additive approaches are more typical of countries with weaker occupational labour markets. In most countries, curricular unification affects vocational tracks more than general tracks, and when it does affect general tracks this is often in the form of additional options rather than a change in the mandatory curriculum.

Do these measures have an impact on student outcomes and transitions to employment? There are some instances of apparently successful reform - the German Black Pump project, based on reforms to an apprenticeship programme, is an example. But these tend to be based on intensive and well-researched experimental projects. It is harder to know what happens when such measures are rolled out system-wide. Many 'additive' reforms are merely permissive—they allow students to choose mixed or integrated programmes but do not require them to do so—and these often have little impact on students' actual choices. The Finnish and English reforms are examples.

Despite two decades of attempts to introduce 'core skills' or 'key skills' into curricula, Scottish and English employers complain as much as they have ever done about young people's lack of these competencies.[6] Indeed, the effective development of generic skills is one of the main challenges facing European vocational education. The wide range of terms by which they are known (key skills, key competencies, key qualifications, core skills, generic skills, etc) reflects the variety of definitions, concepts and ways to deliver and assess them. They are generally agreed to be important, but exactly what they are, how (if at all) they may be taught, how stable and transferable they are and how they can be measured are all matters of continuing uncertainty.

[6] In Scotland the core skills are: Communication, Numeracy, Information Technology, Problem-Solving and Working with Others. The English key skills are similar, with the addition of Improving Learning and Performance, but the first three tend to take priority. Other European countries have different, but sometimes overlapping, lists.

ORGANISATIONAL UNIFICATION

Most upper-secondary education systems are organised around tracks or pathways with labels such as vocational, technical, general or academic. The second type of unifying measure aims to link or unify these tracks and to reduce the differences between them. For example, Sweden, Scotland and Norway have all rationalised their post-16 curricula to bring vocational and general programmes into a single framework. In 1994 Sweden replaced its upper-secondary curriculum with 2 general and 14 vocational programmes: all programmes are three years' duration and have a common core of general education and follow common principles of curriculum and assessment. (Sweden is now planning a further reform which will reduce the 16 programmes—since increased to 17—to eight areas.) The Scottish reforms of 1999 replaced academic and vocational post-16 provision with a flexible modular structure of units and courses at seven levels, with common design rules for assessment, certification and some aspects of the curriculum. The Norwegian Reform-94 also rationalised the post-16 curriculum and introduced stronger links between institution-based learning and apprenticeship. In England, a government-appointed Working Group is developing proposals for a unified qualifications framework to replace existing qualifications for 14-19 year olds. Other countries have maintained the formal distinctions between general and vocational study but have brought them into clearer alignment, for example by using common levels to describe them. Examples include the General, Technical and Vocational Baccalaureates in France, or the Vocational and Applied versions of the Irish Leaving Certificate. In these two cases the vocational route was strengthened or lengthened within a framework defined by the general or academic route.

Several reforms link vocational and general tracks by making it easier to move between them. This may be achieved through modularisation, through credit transfer arrangements and courses which bridge between programmes, or through developing national qualifications frameworks which support mobility and transfer. Italy, whose education system was relatively inflexible and required long-term commitments to particular pathways, is introducing a more flexible structure of upper-secondary provision intended to make it easier for students to move between academic and vocational pathways. Several European countries have developed dual-qualifying pathways which enable vocational trainees to qualify for higher education as well as for the occupation in which they have trained. Dual-qualifying pathways do not necessarily enable young people to move between vocational and general tracks within upper-secondary education, but they enable these tracks to lead to the same or equivalent destinations in higher education. Examples include the French Vocational Baccalaureate and the Swiss Berufsmatura, which provides a bridge from an apprenticeship to higher education.

Some countries have linked tracks by bringing them into integrated upper-secondary schools, either on a system-wide basis such as in Norway and Sweden, or alongside existing track-based institutions as in Greece. Norway has also developed integrated arrangements for the training, socialisation and registration of academic and vocational teachers. Finally, some countries have brought academic and vocational study under a single ministry, or created common arrangements for funding, administration, regulation and quality assurance.

As these examples illustrate, what I have termed 'organisational' unification covers a wide range of measures. When colleagues and I studied some of these measures in the late 1990s we distinguished three broad strategies:

- a *tracking* strategy, which maintains distinct and separate general and vocational tracks and aims to strengthen vocational education by emphasising its distinctive identity;
- a *linkages* strategy, which introducing features to link the tracks, to increase their similarity or underline their equivalence; and
- a *unified system* strategy, which aims to accommodate a diversity of provision within a unified set of arrangements.

In practice these strategies form a continuum, according to how far countries wish to strengthen or to reduce the distinctions between vocational and general (or academic) learning. Countries which already have strong vocational systems, especially if these are based on apprenticeship and/or serve strong occupational labour markets, are most likely to pursue a tracking strategy. Conversely, countries with weak occupational labour markets, with comprehensive schools and large higher education sectors, as well as countries with relatively small, homogeneous and centralised education systems, are most likely to pursue a unified system strategy. In practice, most countries fall somewhere between these extremes: even countries with strong vocational traditions such

as Switzerland and Austria are creating links with general education, notably by developing dual-qualifying pathways. And countries which pursue unified system strategies often end up less than fully unified—for example Scotland, where the unified system with its strict design rules has achieved incomplete coverage of vocational education.

Moreover, there are different ways in which countries may pursue unification. We identified several dimensions of unification, and Figure 1 summarises possible measures which may be pursued under each. Different national strategies emphasise different dimensions. For example, in the United Kingdom certification (qualifications) and funding (governance and regulation) have been main instruments of reform; other European countries have put more emphasis on institutions or curricular change.

Does organisational unification have an impact? Once again, the evidence is not conclusive, partly because the organisational changes tend to be system-wide and part of a wider reform process, so it is hard to identify their separate effect. There is good evidence from comparative studies that 'dual-qualifying' pathways (which lead to higher education as well as employment) can encourage participation in vocational education. One study found that the young people who followed these routes had higher employment chances if they entered the labour market, but this may simply reflect the characteristics of young people who enter such programmes. The general evidence on the effects of organisational unification on either learning or employment outcomes is mixed or inconclusive.

UNIFIED PATHWAYS FOR LIFELONG LEARNING

The third type of unifying measure aims to reduce the distance between vocational and general learning in longitudinal terms, in order to provide flexible, seamless opportunities for access and progression in lifelong learning. It may involve measures to make learning available in more flexible forms and in a variety of modes and contexts, which transcend the barriers often associated with the distinction between vocational and general study. It may involve flexible multi-purpose institutions, such as the Dutch ROC or the British Further Education college, which offers both general and vocational learning over the life course. It may involve qualifications frameworks, designed to make it easier to carry credit from one learning episode to another and to move between general and vocational programmes. Scotland, Wales and Ireland are developing national credit and qualifications frameworks, which record all qualifications in terms of common measures of volume (credits), levels and (in the Irish case) areas of study. The WEB reform in the Netherlands provides a single qualifications system for vocational education and adult learning, delivered in an integrated community college.

These measures overlap with the measures of 'organisational unification' discussed above, but they have a different rationale for linking general and vocational learning. They conceive of general and vocational learning, not as discrete pathways between which people must choose, but as episodes in a sequence of lifelong learning. Learners combine general and vocational motives for learning and their motives change over time. For example some adults return to learning for a vocational purpose, then continue because they find that learning enhances their confidence and personal growth, and based on this confidence return again to pursue new vocational goals. They move between general and vocational motives and between general and vocational programmes, and they build on their initial education whether this has been general or vocational in content. The kinds of unifying measures described above aim to make this type of integration of academic and vocational learning possible and fruitful.

This aspect of unification tends to be emphasised in countries with flexible labour markets and liberal educational traditions and where the boundary between initial and continuing education is weak. As a result it is less embedded in European systems than the other two types of unification, although the northern Europe countries have well-developed adult education systems and Ireland and the countries of the United Kingdom are developing qualifications frameworks. The European Commission is strongly committed to lifelong learning and is planning a European vocational qualifications framework as part of its strategy.

It is probably too early to assess the impact of measures of this kind. Most of the available studies focus more on their design and implementation, than on their impact in practice.[7] One theme to emerge

[7] See the contributions to Young (2003) on qualifications frameworks, including Raffe (2003b) on the Scottish Credit and Qualifications Framework.

FIGURE 1

A MATRIX OF UNIFICATION: TYPES OF SYSTEM AND THEIR DIMENSIONS

	Tracked system	Linked system	Unified system
CONTENT AND PROCESS			
Purpose and ethos	Distinctive purposes and ethos associated with each track	Purposes and ethos overlap across tracks	Multiple purposes and pluralist ethos
Curriculum	Different content (subjects, areas of study)	Some common elements across tracks	Curriculum reflects student needs and integrates academic and vocational learning
Teaching/learning processes	Different learning processes in different tracks	Different learning processes but some common features	Variation based on student needs and not tied to specific programmes
Assessment	Different assessment methodologies and grading systems	Different methodologies but with level and grade equivalences	Common framework of methodologies including a common grading system
SYSTEM ARCHITECTURE			
Certification	Different certification for each track	Certification frameworks link tracks, eg overarching diplomas, equivalences	A single system of certification
Course structure & pathways	Different course structures and insulated progression pathways	Course structures allow transfer and combinations	Flexible entry points, credit accumulation, and single progression ladder
Progression to higher education	Not possible from most vocational programmes	Some programmes lead to 'dual qualifications' for HE and employment	All programmes may lead to HE
DELIVERY			
Local institutions	Different institutions for different tracks	Variable/overlapping relation of track to institution	One type of institution, or choice of institution not constrained by type of programme
Modes of participation	Tracks based on separate modes (general= full-time, vocational=work-based)	Tracks partly based on mode	Single system covers different modes
Staff	Different staff for each track, with non-transferable qualifications	Variable/some overlap of staff	Socialisation, qualifications and conditions are consistent for all staff
GOVERNMENT AND REGULATION	Different ministries and different arrangements for funding, regulation, quality assurance	Mixed/variable organisational structure	Single administrative and regulatory system

Source: adapted from Raffe et al (1998)

from the current research is that, even if learning pathways themselves are made 'flexible', people's capacity to move among and between them will be influenced by other economic, social and institutional factors that may be beyond the reach of educational planners to influence.

CONCLUDING COMMENTS

For many countries, the immediate problem is not be how to connect well-established general and vocational tracks, but how to develop vocational education where little existed before. However the same issues arise: what should be the relation of vocational to general or academic education. Many of the reforms discussed above have had as their main goal the establishment or development of a strong vocational sector.

I conclude by identifying three issues which the trend towards unification raises in Europe, and probably in other countries as well.

Difficulties in reforming the 'general' or 'academic' route. The unifying measures described above assume that the *relationship* between general and vocational education is key to an effective education system. In other words, reforms need to embrace general as well as vocational programmes, even if the symptoms to which they respond mainly affect vocational programmes. In many countries general or academic tracks appear to be successful, primarily because they attract the most advantaged students and lead to high-status destinations. It can therefore be difficult to win political support for a reform which embraces academic as well as vocational tracks, especially as 'academic' interests tend to be politically powerful. In many countries legal and administrative constraints, as well as political constraints, also make it hard to reform academic programmes. One consequence is that many unifying reforms are one-sided, and have more impact on vocational than on academic education.

Incorporating work-based provision. Another key question for European policy-makers concerns the role which apprenticeship and alternance arrangements – sometimes seen as distinctively–'European"– should play in education systems. Several European countries have attempted (with mixed success) to enhance, revive or create an apprenticeship system. However apprenticeship may be harder to fit in to a more unified system, especially one based on what I have called organisational unification rather than curricular unification. Countries with strong apprenticeship systems tend to be less unified, although some recent reforms (notably Reform-94 in Norway and the Dutch WEB reforms) have tried to–'unify' work-based and school-based learning routes.

Maintaining the identity of vocational education. A unified system is not a uniform system and it may contain a variety of different types of programmes. Many unifying measures attempt to increase the status of vocational education and make it more attractive to young people. However there is a risk that if vocational learning is brought into a unified system where 'academic' values are dominant, it will lose its distinct identity. For example, successive reforms of full-time vocational courses (GNVQs) in England have brought them closer to the academic 'A' level model, and some commentators have questioned whether they still have a distinct purpose and rationale. This may be a challenge for vocational learning in many countries: how to become part of a more unified education system without losing its distinct purpose and identity.

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Overview of Technical Education in Quebec

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INTRODUCTION

From many points of view, Quebec is a special province within the Canadian Confederation. Its roots, its culture, its language give it a unique character. Quebequers are proud of their heritage and traditions which they want to preserve while staying open to new ideas and new comers. Their educational system, which is different from that of other provinces, reflects their situation as well as their preoccupation for the future.

French is the official language of Quebec, with eighty-three per cent of the population speaking French at home, 11 per cent English and 6 per cent, another language. Half of the labour force speak both French and English and 16 per cent are fluent in a third language, usually Italian, Spanish or Greek. Most of the 11 Native nations speak their own language, and French or English as a second language.

Quebec enjoys a modern and open economy, whose growth is based on leading sectors such as aerospace, biotechnology and information technologies. Because of its wealth of waterways, forests and other natural resources, its economy relies heavily on the hydroelectric, forestry and mining sectors.

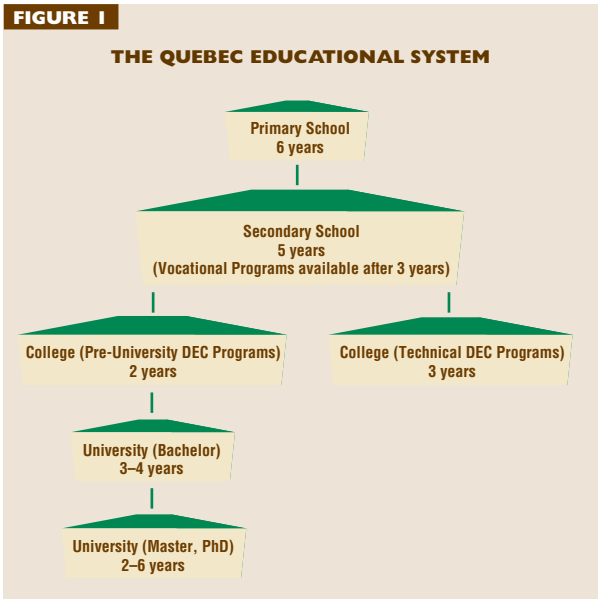
The structure of the labour market in Quebec demonstrates the importance of technical education. Some 54 per cent of jobs require vocational or technical skills, 24 per cent are semiskilled, requiring limited qualifications, 13 per cent require a university education and 8 per cent are management positions.

THE QUEBEC EDUCATION SYSTEM

There are four levels of education in Quebec: elementary, secondary, college and university. Elementary and secondary school are mandatory, while college- and university-level studies (higher education) are optional. Vocational and technical education is an integral part of the education system and it serves both young people and adults. Figure 1 illustrates the Quebec education system.

- **Elementary education** is offered in public schools governed by school boards, and in private schools. It includes one year of preschool education, which

FIGURE 1



is mandatory for five-year-olds, and a further six years divided into three two-year cycles.

- **Secondary education** is also provided by school boards and a number of private schools. It is divided into two cycles : the first includes the first three years and focuses exclusively on basic general education. The second cycle allows students to pursue their general education for a further two years before entering college, while providing the opportunity to explore a range of possibilities through optional courses, or to obtain a vocational diploma leading to the practice of a trade.
- **College education** is provided by public colleges, the CEGEPs (a French acronym that stands for general and vocational colleges), private colleges and a few schools under government jurisdiction. Colleges are one of the areas in which the Quebec system differs from other systems. Two options, both of which lead to the Diploma of College Studies (DEC), are available. One of them, preuniversity education, consists of two-year programs which prepare students to enter university. The other, technical education, consists of three-year programs that lead, like secondary-level vocational education, to the labour market. Under certain conditions, technical education also render students eligible for university studies. All CEGEPs offer preuniversity education and some technical education programs. Private colleges can choose to offer only preuniversity education, only technical education, or a combination of both. In Quebec, there are 48 CEGEPs, 4 schools under government jurisdiction and around 20 private colleges offering technical programs leading to the Diploma of College Studies (DEC).
- **University education** is divided into three cycles : undergraduate studies leading to a bachelor's degree, graduate studies leading to a master's degree and postgraduate studies leading to a doctorate. There are 22 universities in Quebec, 12 of which are part of the Université du Québec network.

TECHNICAL EDUCATION IN QUEBEC

Technical education programs prepare students to practice a technical trade. They lead them to master practical scientific applications in production and work organization, in a wide variety of fields including health, agriculture, physical technologies, social sciences, business administration, computer technologies, arts and crafts.

The Diploma of College Studies (DEC) is issued by the government and certifies a three-year technical program. All technical education programs include an extensive general education component, with courses in first and second language, humanities and physical education. This component is equivalent to about one year of studies. It is common to all college students whether in technical or preuniversity programs.

Colleges can also develop their own programs, which may vary in duration, in order to meet specific training needs. These programs are certified by a diploma issued by the college, which is called, an Attestation of College Studies (AEC).

The Aims and Orientations of Technical Education in Quebec

Technical education is a learning process designed to train young people and adults who want to practice a trade or occupation. Its aims are related to the personal and professional development of the individual, as well as to the improvement of society as a whole. The Ministry of Education has stated these aims as follows :

- to prepare students to assume their responsibilities in a given area of occupational activity;
- to ensure that students will develop the competencies required to meet current and future labour market needs;
- to contribute to social, economic and cultural development;
- to contribute to the personal and professional development of the individual.

The Ministry of Education also indicated that technical education must be accessible, must foster versatility and must be consistent with lifelong learning.

Access

In pedagogical terms, access implies a variety of paths leading to programs and diplomas. It includes the recognition of prior learning and competencies to facilitate admission to programs, for which only the essential prerequisites are considered. It also implies a constant concern for academic success, so that the program lead to a diploma obtained following a rigorous but realistic evaluation of the competencies to be acquired.

In geographic terms, everyone in Quebec has access to technical education, usually in his or her own region, thanks to a fair distribution of study at the college levels.

Finally, in financial terms, technical education is free, and student aid in the form of loans and bursaries is available to those who would otherwise not have the means to pursue their education.

Versatility

Technical education fosters the acquisition of a sufficiently wide range of competencies to allow individuals to practise their trade or occupation in different areas of the same field of activity. The programs of study also promote the development of individuals' ability to adapt to changes in their work environment and adopt attitudes favouring permanent learning, two essential elements in a socio-economic context characterized by technological change, rapidly evolving job descriptions and competencies, and job mobility.

Lifelong learning

By definition, lifelong learning is not limited to a specific period and may take place regardless of the age of the individual; it is not necessarily acquired in school, and it can involve learning acquired through a variety of means and paths, in different places and from different sources. To be consistent with lifelong learning, program offerings in technical education must therefore be flexible and adaptable to different groups, work situations and socio-economic needs. Thus, a variety of practices and approaches to learning and organization are used. Programs of study based on the acquisition of competencies favour lifelong learning because they lead educational institutions to focus their pedagogical and educational organization on the student rather than on teaching, which means promoting a variety of ways of accessing education, recognizing prior scholastic and experiential learning, harmonizing programs of study, individualizing teaching, and offering full-time or part-time education—in short, a range of paths in the perspective of lifelong learning.

The General Goals of Quebec Technical Education

The general goals of technical education are consistent with the above aims and orientations and hinge on the competence of the individuals, their integration into the work force, their personal and professional development and their professional mobility. They are as follows :

- to develop effectiveness in the practice of a trade or occupation
- to ensure integration into the work force
- to foster personal and professional development
- to ensure professional mobility.

Effectiveness in the practice

Technical education is expected to prepare students to take on the roles and duties and perform the tasks and activities inherent in a trade or occupation at an acceptable level of competence for entry into the labour market. They should also be able progress satisfactorily in their professional activities thanks to their knowledge and skills in the following areas : technique, communications, problem solving, decision making, ethics, occupational health and safety, and environmental protection.

Integration into the work force

Technical programs should familiarize students to the labour market in general and the specific context of the trade or occupation they have selected. They should also be informed of their rights and responsibilities as workers.

Personal and professional development

Technical education should help students to develop their autonomy and their ability to learn and acquire work methods. It should bring them to understand the principles underlying the techniques and technologies they use. It should also help them to develop their ability to express themselves, as well as their creativity, initiative and entrepreneurship, and to acquire the attitudes necessary for a successful working life, such as a sense of responsibility and a concern for excellence.

Professional mobility

Students should be taught to develop a positive attitude toward change and encourage to learn career management techniques and, in particular, develop an awareness of entrepreneurial possibilities and dynamic job search techniques.

THE TECHNICAL EDUCATION SYSTEM

The responsibility for developing and offering technical education programs leading to the DEC is shared by the MEQ and the educational institutions. An evaluation Commission was created to ensure that educational programs are of high quality.

Responsibilities of the Ministry of Education

The MEQ is the architect of technical education in Quebec. It ensures the integrated management of programs of study, as well as the organization and funding of services. Its responsibilities include :

- defining orientations;
- assessing training needs and developing the general framework of programs of study, in particular determining the competencies to be mastered by the students and translating them into objectives and standards;
- ensuring the geographical distribution of programs of study and setting quotas if necessary;
- establishing budgetary and financial rules;
- awarding diplomas;
- measuring the internal and external effectiveness of the system.

The MEQ is assisted in this task by various partners, the most important being the Comité national des programmes d'études professionnelles et techniques (CNPEPT—provincial vocational and technical education program committee).

The Comité national des programmes d'études professionnelles et techniques

The CNPEPT is an advisory body that plays an important role in the joint management of the vocational and technical education system. Chaired by the Assistant Deputy Minister for Vocational and Technical Education, the CNPEPT's mandate is to advise the Minister, in particular on :

- the relevance of the objectives of programs of study in the planning stage;
- plans for the development or revision of programs of study;
- the geographical distribution of programs.

It is made up of representatives of employers, unions, public and private educational institutions, universities, Emploi-Québec (an agency whose mandate is to contribute to the Development of employment and manpower) and the Quebec interprofessional council (an agency representing the professional orders that accept graduates from technical education programs).

Responsibilities of educational institutions

Once programs have been developed by the MEQ and their objectives and standards defined, it is the responsibility of educational institutions to ensure their implementation. This implies :

- the development of learning activities, courses, laboratories, etc.;
- the organization of these activities into a logical instructional plan;
- the recruitment and in-service training of personnel;
- the registration and admission of applicants;
- the recognition of prior scholastic and experiential learning;
- the evaluation of learning;
- the purchase of equipment, materials and other resources necessary to offer the programs;
- the development of continuing education and training programs, in particular through services to business and industry.

The role of the Commission d'évaluation de l'enseignement collégial (CEEC)

Given the greater autonomy of postsecondary institutions in Quebec, the CEEC was created in 1993 to examine the quality of college programs, particularly technical education programs. Its mandate consists in evaluating the quality of programs offered in Quebec colleges, as well as the quality of the colleges' educational policy and management. The CEEC has the power to recommend that the Minister of Education authorize a college to award the Diploma of College Studies, a recommendation which must be supported by an institutional evaluation process. The CEEC's evaluation reports, which are public documents, are forwarded to the institutions in question and to the Minister of Education.

PROGRAM DEVELOPMENT IN THE COMPETENCY-BASED APPROACH

Technical education programs, and the vocational programs at the secondary level, are divided into 21 sectors based on the similarity of their competencies. The following table lists these sectors.

At the moment, there are more than 110 technical education programs leading to a Diploma of College Studies (DEC). These programs have been designed according to the competency-based approach, which is one of the aspects that characterizes technical education in Quebec.

TABLE 1

VOCATIONAL AND TECHNICAL EDUCATION SECTORS

	Sector
01	Administration, Commerce and Computer Technology
02	Agriculture and Fisheries
03	Food Services and Tourism
04	Arts
05	Woodworking and Furniture Making
06	Chemistry and Biology
07	Buildings and Public Works
08	Land Use Planning and the Environment
09	Electrotechnology
10	Motorized Equipment Maintenance
11	Mechanical Manufacturing
12	Forestry and Pulp and Paper
13	Communications and Documentation
14	Maintenance Mechanics
15	Mining and Site Operations
16	Metallurgical Technology
17	Transportation
18	Fashion, Leather and Textiles
19	Health Services
20	Social, Educational and Legal Services
21	Beauty Care

The Competency-Based Approach

In terms of program development, the approach based on the acquisition of competencies, commonly referred to as the competency-based approach, was adopted in Quebec at the beginning of the 1980s with a view to improving the system and meeting new requirements, including those of lifelong learning and the recognition of prior learning. Inspired by various schools of thought and studies of methods in use in North America and Europe, the competency-based approach to program development as it now exists is the result of several years of research and experimentation conducted by the MEQ.

This method is based on a certain number of principles, which are briefly described below :

- programs are broken down into competencies formulated as objectives;
- programs are offered according to demand;
- the evaluation of learning is based on a "criterion-referenced" approach.

Programs are broken down into competencies formulated as objectives

In program development, the competency-based approach essentially consists in defining the competencies inherent in the practice of a trade or occupation and formulating them as objectives and performance criteria.

While the concept of competency has evolved over time, it still incorporates the basic principles that define it as an integrated body of knowledge, skills and attitudes expressed as an observable and measurable behaviour in the performance of a work-related task or activity, in accordance with a preestablished minimum performance requirement.

Competencies are based on the information provided by the planning and job analyses. Other elements such as the aims, orientations and general goals of technical education are major determining factors in the definition of competencies. Each competency in a program is described according to its elements, its achievement context and precise and unequivocal performance criteria that meet the requirements for entry into the labour market. These descriptors of the competency ensure that teaching is comparable from one establishment to the next.

Programs are offered according to demand

At the beginning of the program development process, planning studies are conducted for each sector. These systematic studies identify qualitative and quantitative training needs in order to help meet labour market requirements. These studies are followed by job analyses for each trade or occupation that justifies the development of a program of study. This information obtained directly from representatives of the labour market is translated into competencies using the process described below. This is what makes program offerings "demand-driven". The data gathered on employment and the labour market also serve to establish a three to five year program development plan for all sectors.

The evaluation of learning is based on a "criterion-referenced" approach

The competency-based approach requires that the learning context be as close as possible to the situation in which the trade or occupation is practiced since, at the end of the program, the learner will have to demonstrate his or her ability to carry out a task in its entirety. Tests related to the practice of the trade are therefore used to evaluate learning. The evaluation criteria focus on the essential aspects of the competency to be acquired. Evaluation is multidimensional, that is, the indicators measure knowledge, skills, attitudes and perceptions, as the case may be. "Formative" evaluation, which occurs throughout the program, is used to verify the progression of learning, while the "summative" examination, which is given at the end of the program, makes it possible to determine whether the level of acquisition of the competency is consistent with requirements for entry into the labour market.

Programs of study developed using the competency-based approach are different from traditional programs, particularly in their "criterion-referenced" approach to evaluation. By determining performance criteria and an achievement context representative of the trade or occupation from the outset, each student can be evaluated against a pre established standard and not by comparison with a group as in the norm-referenced approach.

The program development process

Program development tasks are performed by a team made up of partners from the socio-economic sector in question and the field of education. Their task is to provide information, give opinions or validate results. The program development process comprises three phases. They are as follows :

- analysis of qualitative training needs;
- development of the proposed training plan;
- development of the program of study.

Analysis of Qualitative Training needs

The first step of the program development process is a qualitative training needs analysis. This involves planning studies leading to sector profiles. The results of the studies are submitted for validation to a work group made up of representatives of the main partners from the labour market and the network of educational institutions in question. Two other steps provide the remaining qualitative information required to develop the proposed training plan and the program of study. They are the job analysis and the classification of the trade or occupation at the appropriate level of education (secondary or college).

Sector profile

The sector profile is used mainly to determine qualitative and quantitative training needs for a given sector. It is the result of extensive data collection from surveys or interviews with socio-economic partners and from literature reviews. It is the main reference material used to plan program offerings for the sector, since it identifies the differences between work force needs and program offerings by program or by trade or occupation. It also helps set development priorities for the sector in question.

In the sector profile, particular attention is paid to the following elements :

- the socio-economic profile, in particular the main sectors of economic activity represented, the types of businesses, the context in which they are evolving, their numbers, size and geographical distribution;
- the description of the work force and working conditions by trade or occupation;
- the description of the tasks and activities associated with the trades or occupations listed;
- the actual or ideal training required for entry into the labour market;
- the programs of study offered (locations, enrolments and placement rate of graduates);
- the foreseeable development of the sector as well as that of the work force.

The sector profiles are a prime source of information for long-term planning (three to five year plans) in technical education. Designed at first as tools to analyze training needs, they soon became important management tools.

Job analysis

The qualitative training needs assessment is followed by a job analysis workshop for the trade or occupation in question. This is a consultation of a group of 10 to 15 people selected for their expertise or in-depth knowledge of the trade or occupation. The participants must be from businesses representative of the sector because of their size, type of production, location, etc.

The objectives of the exercise are to analyze every facet of the practice of the trade or occupation, to paint as detailed a portrait as possible of it, to determine its foreseeable development and to specify the expected performance of graduates upon entry into the labour market. This information is indispensable in determining the competencies required. It usually includes :

- a general description of the trade or occupation and its limitations;
- the tasks, subtasks and operations associated with the trade or occupation;
- the conditions for the performance of tasks and performance criteria;
- the necessary knowledge and skills;
- the necessary attitudes and behaviours;
- suggestions concerning training and the program of studies to be developed or revised.

Occupational classification

The results of the job analysis also make it possible to classify the trade or occupation and the related program of study. Will it be a secondary-level vocational education program or a college-level technical program? Although the answer to this question is simple in most cases, it may be more difficult in others. For this reason the MEQ has created an instrument for the analysis and classification of programs based on the complexity of the trade or occupation and the degree of responsibility of the practitioner.

Development of the Proposed Training Plan

This step involves the definition of program goals and the competencies to be acquired. It is based on the data gathered during the training needs analysis on the MEQ's orientation documents and on all other relevant studies or research, as the case may be.

The proposed training plan is usually designed by a team made up of a teaching specialist and a specialist in program development using the competency-based approach. A third person, a specialist in the trade or occupation, may also be part of the team. The proposed training plan includes:

- the statement of the competencies required to practise the trade or occupation that will be included in the program of study;
- a grid of learning focuses establishing relationships among the different competencies and ensuring the transfer of learning while avoiding overlap;
- a table of correspondence establishing a formal relationship between the proposed competencies and determining factors identified in the analysis of training needs or coming from the ministry orientations of technical education. This instrument also provides an overview of the elements of each competency and indicates the duration of training deemed necessary for its acquisition;
- a brief impact analysis to help in determining the financial feasibility of the proposed training plan.

The proposed training plan is validated at a joint meeting of representatives of the labour market and the field of education. The relevance, cohesiveness, applicability and harmonization of the plan are analyzed. The task of the representatives of businesses, sectoral committees and various associations is to study the relevance of the proposed training plan with respect to the trade or occupation in question. Representatives of the field of education—teachers, education consultants and administrators—are called upon to judge the cohesiveness, instructional and material applicability, and harmonization of the plan.

Development of the Program of Study

Once the qualitative training needs analysis and the proposed training plan have been completed, program development can begin. At this stage of the process, the competencies in the proposed training plan are translated into objectives and performance criteria. This is done by a team made up of teaching specialists and a specialist in program development using the competency-based approach.

The resulting program of study will be prescribed by the Minister once it has been approved; which means that the program must be offered according to the objectives and performance criteria approved by the Minister.

Colleges are responsible for developing the learning activities necessary to help students master the targeted competencies, on the basis of the objectives and standards set by the MEQ. They set the number and duration of learning activities and select the most appropriate training approach (theory or practical courses, practicums in the work-place, project work, etc.).

This design and planning exercise leads to the production of a variety of support documents, including:

- an instructional logic diagram and a course planning grid for each term, revealing the sequence in which the competencies are developed;
- a master plan for each course associated with the program's competencies;
- a comprehensive assessment to evaluate the integration of learning with a view to issuing a diploma;
- a physical and material organization guide.

The physical and material organization guide is based on the implementation cost estimate provided by the MEQ with the program of study, taking into account the existing infrastructure of the educational institution. It indicates the main material and physical resources required for the implementation of the program in particular with regard to the set-up of facilities, furniture, equipment, tools and the other material resources required to carry out the instructional activities.

It should be noted to conclude that the establishment of partnerships is important at every stage of the competency-based approach. When a new program is being implemented, the educational institution establishes or renews partnerships with the labour market. A number of educational institutions have shown considerable initiative: some establish a business network, create college business committees or reach services agreements with employers.

Because of the increase in training needs and costs, it is important to optimize the diversity of resources. More frequent practicums, the work-study approach and visits to business require a greater commitment from representatives of the labour market.

Business derive a number of benefits from their collaboration with educational institutions: information about techniques and processes, a chance to influence the content of programs of study, consulting services and the recruitment of competent workers.

Finally, a number of educational institutions play an active role in their region's economy by participating in issue tables, for example.

The following table is a synoptic look at technical education programs. The boxes in the top half of the table contain the different determining factors that go into the development of programs of study using the competency-based approach, while those in the bottom half contain the results of the process and the main characteristics of the programs.

ACKNOWLEDGEMENT

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TABLE 2

THE COMPETENCY-BASEDAPPROACH TO PROGRAMDEVELOPMENT

	Rationale	Work Force Needs	Job Situation	Characteristics of Applicants
Determining Factors	• Aims • Orientations - Access - Versatility - Lifelong learning • General goals - To develop effectiveness in the practice of a trade - To ensure integration into the work force - To foster personal and professional development - To ensure job mobility	• Socio-economic profile of the sector • Description of the work force • Job description • Training required • Training offered • Foreseeable developments	• General description of the trade or occupation • Tasks and operations • Conditions for practising the trade or occupation • Performance criteria • Necessary knowledge, skills and attitudes • Suggestions for training	• Age • Gender • Education • Experience
	Program components	**Characteristics**	**Qualities**	**Support Documents**
Programs	• Prerequisites • Introduction • Goals • List of competencies • Objectives for each competency • Objectives for each competency • Performance criteria	• Managed by sector • Adapted to needs • Designed according to the competency -based approach • Formulated as objectives • Can be divided into modules • Evaluated using a criterion-referenced approach • Conducive to the optimization of learning	• Relevant • Cohesive • Conducive to harmonization • Applicable	• Grid of learning focuses • Instructional logic diagram • Analysis and planning tables • Instructional and material organization guide • Implementation cost estimate • Evaluation guide

Community Colleges and Latin America: Clone, inspire or reject?

Cláudio de Moura Castro[1]
Andrés Bernasconi[2]

This essay discusses the lessons that Latin Americans can derive from the American Community Colleges. It argues that cloning is impossible and pointless. Rejection is a waste of good ideas and fruitful experiences. Like in other such cases, they should be conceived as a source of inspiration for the region.

The paper is divided into two parts. The first describes the American experience with community colleges, from their early origins to the most recent developments. The second explores the lessons that can be derived by Latin America.

Community colleges are educational institutions that provide postsecondary training through shorter programs than are offered at four-year universities. More formally, a community college is an institution of higher education in which the associate degree is the highest degree conferred.[3] This paper describes the U.S. experience with community colleges and then discusses them from the standpoint of Latin America, which is preparing to institute similar types of education. Argentina, Chile, and Venezuela, already offer it.[4]

The trend towards such programs is already a global one. In Europe[5] and the United States,[6] community colleges account for at least one half of all graduates of postsecondary education. Should Latin America be any different? Are there any unique local circumstances that would keep us from following along the path being pursued everywhere else?

Probably not. The risk we run, however, is that of mixing and matching models that do not reflect our specific situation and needs. The prudent strategy would be to examine the best experiences and learn from the lessons they hold out to us.

In this regard, a recent article by Daniel Levy on isomorphism in education is especially enlightening.[7] The author observes that there is a tendency among

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[3] In the US the associate degree is granted upon completion of a two-year program. Canadian community colleges offer also three-year certificate programs, an option not available in US community colleges.

[4] Curiously, these schools are referred to simply as *colegios* (colleges) in some Latin American countries. While on the surface this might appear an innocent enough simplification, it could lead to misunderstanding on two counts. First, to the extent that *college* in the United States refers to traditional four-year schools rather than the two-year curriculum that is typical of community colleges. Second, insofar as *colegio* is elsewhere in Latin America the name of private schools offering both primary and secondary education.

[5] Jean-Pierre Jallade, *L'enseignement supérieur en Europe: Vers une évaluation comparée des premiers cycles*, Notes et études documentaires, N° 4929, (Paris, 1991).

[6] The Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Learning* (Princeton, 1994).

[7] Daniel Levy, "When private education does not bring organizational diversity: case material from Argentina, China and Hungary", in *Private Prometheus: Private higher education and development in the 21st Century*, P. Altbach, editor (Boston: Center for International Higher Education, Boston College, 1999).

institutions of higher learning to imitate each other (both in the same country and elsewhere), either because they are required to do so by law, because the seek vicariously the legitimacy enjoyed by older institutions, or because they lack imagination and initiative. Although the article's comments are not directed specifically at Latin America, they apply perfectly to our situation. Schools in the less affluent suburbs imitate center-city schools; and private colleges slavishly and mindlessly copy public ones, with few exceptions. They might imitate because the government has instructed them to, but at the same time, they do not protest nor do they seek new formulas that might be better suited to their structure and means or to the labor market. When complaints *are* lodged, they are rarely accompanied by proposals for alternatives and, even then, there is no commitment to fight for them.

So, if the winds of change are indeed blowing in the direction of shorter curricula, we would do well to devise our own system correctly from the beginning. Otherwise, we run the risk of copying what is not appropriate for our end of the world.

Clark Kerr—one of the mavens of U.S. higher education—views community colleges as the century's most innovative experience in the educational field. It would therefore behoove us to draw the right lessons from this rich and valuable experience. However, it is not possible or desirable to copy all the details of the American model. The private sector will not be able to replicate the system outright, given the likely absence of public subsidies for many of the activities involved. At the same time, it appears it won't be possible for the public sector to do so either, given the lack of flexibility and entrepreneurial spirit among most public institutions stifled by ill-advised, Byzantine legislation. Still, we have much to learn from community colleges even though we would not want to imitate many of their features.

In order to fully understand the community college system, we need to bear in mind that, even in the United States, it represents a category of institutions that has been the subject of very limited study.[8] The elite universities have focused their research on elite universities—not on community colleges, which remain almost invisible. In the heated debate on four-year programs, community colleges are neither criticized nor praised. The magazine *U.S. News and World Report*, which ranks institutions of higher education, doesn't even include community colleges in its rankings. This situation is reflected in students' views as well: "I couldn't go to a 'real' college, so I went to NOVA [a community college]," were the words of a student from Northern Virginia Community College.[9] Community colleges are in fact snubbed by the elite universities and suffer from a chronic status problem. The left views them as performing a *cooling out* function, as if they were some sort of consolation prize or bone thrown to the poor[10]. They are accused of being envious of four-year universities and of trying to imitate them, which might be true in some cases. There is no denying that some of them suffer from the so-called "academic drift", or a desire to copy and act like prestigious universities. While this may all be true, it does not distort the general picture, bearing in mind that there are also trends in the opposite direction, i.e., community colleges that deliver much appreciated practical education to a clientele that best benefits from it.

In Latin America, the picture is even bleaker. Shorter programs are viewed with outright disdain, when they are not simply ignored by legislation focusing solely in university degrees, as the case is in some Central American countries. In Chile, Latin America's most advanced country in terms of structure of higher education, the Presidents or Rectors of these programs are not allowed to sit on the board of Presidents, thus creating a situation in which higher education is discussed and decided upon without them even being present. A similar situation exists in Venezuela: they do not sit on the board of Presidents and are not invited to meetings with the Minister at which higher education is discussed.

AN OVERVIEW OF COMMUNITY COLLEGES

Origins: Junior Colleges

At the beginning of the twentieth century the Joliet Township school board authorized the local high

[8] Thomas Kane and Cecilia Elena Rouse, "The Community College: Educating Students at the Margin between College and Work," *Journal of Economic Perspectives*, col. 13, no. 1, Winter 1999, pp. 63–84. Many of the statistics and other data used herein were drawn from this article.

[9] Jim Naughton, "Super NOVA" (*Washington Post Magazine*, November 14, 1999).

[10] See Michael W. Apple, "Ideology, Reproduction, and Educational Reform," *Comparative Education Review* 22 (1978): 367–87. Also, Jerome Karabel, "Community Colleges and Social Stratification," *Harvard Educational Review* 42 (1972): 521–62.

school to offer the first two years of postsecondary education. The example of Joliet was soon followed by the state of California, which first authorized high schools to offer the first two years of college, and then in 1917 recognized the right of school districts to establish separate public "junior" colleges. Several other states followed suit during the twenties, and thus the junior college was born—later called "community" college to avoid the negative connotations of "junior" and to stress its community-based mission.[11] One of the reasons for the emergence of junior colleges was the effort to facilitate access to higher learning without overburdening the four-year programs. This, of course, was possible in the U.S. system, where most four year college graduates are not offered a program preparing them to the specifics of the workplace. The first two years of postsecondary education are virtually identical for all four-year programs, regardless of the specialty (or *major*) selected for the last two years. It should be noted that—contrary to what happens in Latin America—a *major* refers solely to an area of concentration and not to a true preparation for the labor market, which is actually what U.S. master's programs do.

For the most part, junior colleges were small schools with a viable scale of operations, precisely because the first two years of almost all majors were the same. Small cities, for instance, might have a junior college but no four-year program because they lacked the infrastructure or the number of students to justify offering the various disciplines required for the second two years.

With the return of soldiers and the creation of the G.I. bill[12] after the World War II, demand for such schools mushroomed since most of the demobilized soldiers did not display the typical profile of college students. Millions of vouchers were distributed, and enrollment in these schools doubled between 1944 and 1947.

In the period since then, enrollment at community colleges has been increasing at a much faster rate than at four-year schools. At the same time, community colleges have undergone a fundamental change in their structure and functions, as will be discussed below. Today, the US 1,132 community colleges have a combined enrollment of 5.4 million (10.4 million if not-for-credit students are included), representing 44% of all undergraduates, 38% of all postsecondary enrollment and 45% of enrollment at state-affiliated education. With their shorter programs, these schools account for one half of all postsecondary diplomas.

Worth noting is the fact that 95% of postsecondary enrollments of short duration are in public institutions.[13] Only 12% of community colleges in the US are private, which in large part is due to the various roles played by these colleges, which rely heavily on government funding.

TEXT FROM AN ADVERTISEMENT IN THE WASHINGTON POST, NOVEMBER 14, 1999:

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The profile of students and teachers at community colleges is quite different from the four-year schools. There is a high percentage of part-time students (64%) and, more importantly, 84% of the students have jobs. The average age of students is 29, and 33% are 30 years of age or older. Over one half the students attend courses for periods of one year or less (there are many degrees that can be earned in just one year).

The percentage of teachers working part-time is also high (two thirds). Many courses are offered in the evening or on weekends. Great effort is made to offer courses close to where students live or work, by means of branch campuses. For instance, Strayer

[11] Vaughan, George, *The Community College Story*, the Community College Press, Washington, DC, Second Edition, 2000, p. 23.

[12] A system of public subsidies whereby the federal government made monthly payments to demobilized soldiers who wanted to pursue postsecondary studies.

[13] Even so, there are an extraordinary number of similar courses that are offered by private educational institutions and companies, although they do not offer equivalent certificates.

University, which offers mainly one- and two-year programs, has 13 campuses in the Washington, D.C., area. Lastly, community colleges offer more distance-learning courses than do four-year programs, which confirms that they cater to older students who are already part of the labor market.

The inner workings of community colleges will be discussed further on. Here, it is enough to appreciate that the system is very extensive (over 1,000 institutions) and the target clientele is definitely of more modest means that in the "normal" educational system, to the extent that—for these students—education is an activity that is concurrent with working. Students are older and study part-time. Teachers are less academically oriented and also work part-time. Interesting, too, is the fact that some of the less prestigious universities now offer short programs conferring associate degrees; for all intents and purposes, they are running the equivalent of a community college within their walls.

Financing

Unlike the situation with conventional public higher education, community colleges have a differentiated financing model. With some variations, the classic formula is 40% funding from the state, 10% federal funds, 20% local funds, and 30% from students' tuition and contract services.[14]

Payment of tuition is a universal principle in U.S. higher education (in both the public and private sectors), so in this respect, community colleges do not add anything new. State-government support also is a standard feature. The component that is most different is the local government's participation, and this is where the *community* comes from in the expression *community colleges*.

Given the strong role of community participation in the preparation of local government budgets, this is one of the sources of legitimacy and responsiveness of these colleges to local needs. Community colleges are answerable to the community. And the community is a tough customer, one that demands results. At a dinner attended by one of the authors offered by Amarillo Community College (Texas, U.S.A.) in honor of local community leaders, the school administrators were visibly worried about making a good impression. At the dinner, the school's results and plans would be presented and there was concern that the community would be sufficiently impressed which was required to approve the school's new budget. Indeed, local government officials have to be convinced that the college is doing a good job.

The overall cost of education at a community college is roughly US$4,000 per student per year, which is equivalent to one half the average annual tuition at public four-year institutions. Community-college students pay on average US$1,500 per year. As with four-year programs, there is an abundant supply of financial aid visibly in the form of student loans, provided mainly by the federal government. There are also ample opportunities for scholarships and tuition discounts. The system is admittedly geared towards a lower-income clientele, and its accessibility in terms of price is one of its most appealing features.

One factor that helps keep costs down is the use of part-time teaching staff. Many teachers have other jobs as well, often better paid and more prestigious.

Community colleges take a clear and deliberate position not to promote research systematically. In the words of the president of Northern Virginia Community College, "I think there is a place for researchers and thinkers … and a place for the worker bees and the folks who want to get down and dirty with it." Only 4% of community-college teachers are engaged in research. Community-college instructors are also less qualified than their counterparts at four-year institutions: most hold a master's degree but not a doctorate. In fact, community colleges as a rule openly avoid hiring Ph.D.'s. Even when such candidates are available (which, actually, is often the case), they are felt to lack the experience and motivation required for a course load as heavy as 5 courses per term.[15] According to some administrators, after spending so much time preparing a dissertation, Ph.D.'s would become frustrated by the student profile and the non-academic atmosphere.

Notwithstanding, the eschewal of Ph.D.'s is not universal. In fact; many community colleges tap them for manning their faculties of arts and sciences, where students who want to transfer to four year colleges enroll for a liberal arts education.

The "academics" of a community college are therefore catering to the transfer program of those who want to transfer to a four year institution. Remedial education is done by adult educators, technical programs are taught by professionals in the field who, in addition, may have a master's degree in education administration or similar, and the vocational trades

[14] In Canada the typical funding breakdown is 60% provincial sources, 20% local support and 20% tuition and services.
[15] Union rules limit teaching in Canada to a maximum of 15 hours out of a total of 37 per week.

are the province of practitioners who have undergone practical instructional training.

Economic benefits for students

Sufficiently reliable data are available that allow for a comparison to be drawn between the performance of community-college graduates and other students who either have not completed postsecondary education or have graduated from four-year programs.

Without a doubt, more education makes a difference. Students who have completed part of the higher education coursework but did not finish their degree program earn 10% more on average than workers with only a high-school education.

Each additional year of coursework completed brings an additional 5%–10% in wages. Compared with four-year programs, the results are almost proportionate, to the extent that they are equivalent to the sum of the increases accruing from each year of study at a four-year-college.

Courses offered at community colleges have also correlated with a 15% increase in performance by employed adults. More importantly, the initial gains do not dissipate over time.

In sum, the economic results are very respectable and equivalent per unit of time to those of four-year-colleges. In addition, they begin to be felt after only a few months of attendance. It is precisely such rapid returns that make these courses attractive to students who are not able to devote much time and money to higher education.

The controversial role in social mobility

Community colleges may be a consolation prize but they are, just as well, a powerful vehicle for social mobility, serving a clientele that is unable to attend four-year programs. Typically they attract students who are not able to support themselves over a four-year period, especially for a degree that does not actually prepare them for the workplace. They also respond to a clientele that is not interested in or is uncomfortable with theoretical, abstract studies, which are often a component of the longer programs. Community colleges, furthermore, have a higher percentage of students who are the first ones in their family to attend an institution of higher learning.

Community colleges very deliberately tailor their mission and *modus operandi* to this clientele. Studies have shown that they offer more personalized attention and that their teachers are more dedicated to their students. Survey courses are avoided and the number of students per class is generally kept low. They understand that there are serious problems of motivation among a clientele that has an uncertain and ambivalent attitude towards education; after all, these are emerging groups in the area of higher education.

Moreover, these students are academically less gifted and only graduated from high school because most U.S. states do not have minimum performance requirements for graduation. This is an astonishing and not very complimentary feature of the U.S. secondary education system. Students who have problems in a given subject area are channeled towards other, easier subjects that are more practical and less demanding, where it is almost impossible for them to fail.

The statistics speak for themselves: 41% of community-college students have to take remedial courses, some of which are actually at the level of functional literacy and basic arithmetic. Many students have not achieved an eighth-grade reading level and thus have to take additional remedial courses. English grammar, for instance, can be taught at a level as low as the seventh-grade.[16]

Be that as it may, this is the clientele served by community colleges. There is a clear policy of open enrollment for all: A high school diploma is sufficient to ensure acceptance and, for some programs, not even that is necessary. In fact, high school equivalency programs for school drop-outs constitute a main line of activity for many community colleges.

The strong point of these schools is that they work realistically with their clientele, rather than design their courses on the basis of some dreamed standard. Given the current state of the U.S. secondary education system, the role of community colleges is to offer education to all comers in an attempt to make up for that system's shortcomings. And therein lies their worth; it is also what makes this experience instructive for Latin America, which shares these low performance levels in a significant share of its secondary education students.

In order to cater to this clientele, there is considerably more concern with teaching methods and innovations to properly serve this clientele. As Clark Kerr pointed out, these are virtually the only institutions of higher learning that produce solid advances in teaching methods, e.g., in the relevance of subjects taught, use of computers, applied academics,[17] etc.).

[16] Dante Chinni, "City College", *Washington Post Magazine*, ibid.

[17] See Dan Hull, *Abre tu mente e abrirás las puertas del futuro* (Waco, Texas: Cord, 1999).

There is, however, a price attached to this. Students who enter a four-year program are more likely to complete their program than are students having the same profile who transfer from a community college after their second year. Community colleges have a different ethos—students are less driven towards completing a program—and this gradually erodes their motivation to continue. On the other hand, there is evidence suggesting that students that do obtain their associate's degree in a community college and then transfer to a four-year college (some 35% of all community college graduates) do better in their junior year than their peers who initiated their studies in the four-year college.

Community colleges are institutions of contrast. If, on one hand, they admit high school drop-outs looking for a second chance and high school graduates unable to make the cut for a university, on the other hand, they also recruit fast-track high school students wishing to enroll while they are still in their junior or senior year of school, in what is called "dual enrollment." Certainly, the customers using this option, as well as the growing numbers of graduates of four year programs and people with graduate degrees who seek applied technological training not available to them in traditional academic programs are not the "academically challenged" clientele commonly associated with community colleges.

Many researchers and members of universities that are more academically oriented have leveled serious attacks against community colleges, accusing them of undermining students' ambitions and funneling them directly into the job market (i.e., *cooling out* poor students by channeling them away from conventional forms of higher education). Many of these same people forget, however, that most of these students wouldn't even be in higher education if it weren't for community colleges. So, while community colleges may indeed stunt the academic careers of a few students who might otherwise have completed a full program at a four-year institution, the truth is that most community college students would not be studying at all if it weren't for the practical and immediate nature of the education offered by community colleges.

THE CHANGING FUNCTIONS OF COMMUNITY COLLEGES

The discussion thus far has focused on describing community colleges from an outside vantage point, without delving into their course offerings. Actually, the appeal of community colleges lies in their evolution and new roles that they have taken on over time. It can safely be said that their original function of offering the first two years of postsecondary education is but one of the benefits they offer nowadays, especially from a Latin American viewpoint.

From junior colleges to multi-purpose institutions

As indicated before, the original purpose of these schools was to allow students from smaller cities (or those with less preparation) to complete the first two years of postsecondary education in their home town. Since course content at this level was basically the same for all majors, there was sufficient economic justification to operate with the smaller enrollments than would be required for the multiplicity of careers of a four year college. Gradually, though, the notion and practice of the "comprehensive college" has emerged, a college in which the transfer function coexists, often not as the primary function, with technical and vocational training, remedial education, contract training for firms, continuing education, and recreational learning. While the associate degree in liberal or general studies and humanities still constitutes by far the most awarded associate degree with 167,000 degrees conferred in 1996–97—against 77,000 in health professions; 72,000 in business management and administration services; 20,000 in engineering-related technologies and 17,000 in protective services[18]—community colleges train today 2/3 of all registered nurses in the US.

Community colleges, it is true, offer a diluted level of academic preparation; they cannot compare with the rigor and demands of four-year programs. But for many students, a more demanding program is beyond their time availability and academic capabilities.

However, the more personalized attention and interest that community colleges can offer such students should not be underestimated. Many go to these colleges precisely because the setting is unpretentious and better tuned to their needs.

But this is not what is most impressive about community colleges. Kerr would not consider them the greatest innovation in higher education if all they did

[18] American Association of Community Colleges, *Pocket Profile of Community Colleges: Trends and Statistics*, AACC, Washington, DC, third edition, n/d, p. 8

was offer two years of watered-down, general studies to economically underprivileged students. In fact, academically speaking, they offer nothing special at all. For someone who wouldn't be able to study in some other kind of school, it could be a major step forward. Overall, however, it is nothing extraordinary.

The new path to vocational education

Nowadays, the core function of community colleges is vocational education. It is the sphere in which they have grown the most in recent years and which has given them their strongest identity. At the beginning of the twentieth century, the United States took a drastic step, opting for the so-called comprehensive high schools. The voices of those who wanted to see vocational schools established alongside academically-oriented schools—which continues to be the status quo in Europe—fell on deaf ears. The decision was taken to create high schools offering various options under a single roof, depending on the skills and interests of the students. Students who are more academically inclined take more science and math courses and usually choose more difficult courses. For less ambitious students, less demanding courses are available. More significant, however, was the country's decision to entrust vocational training to its high schools, in effect having a single institution look after all the various aspects of education and vocational training that are offered at this level.

Such a system is not without its attractions, especially with regard to vocational education. For a country in which manual labor has always enjoyed high social esteem, the commingling of manual and intellectual activities is less problematic than in most other societies, where differences of class and social category are much more distinct (including in Europe). Under the United States' sphere of influence, this model was exported—but turned out to be a major disappointment almost without exception, despite its relative success in its country of origin. (The World Bank tried to promote the model in Latin America, but was unsuccessful).

The success at home was not unqualified, though. The fact that some academic subjects enjoyed greater status, coupled with the tendency to push students who did poorly in the sciences and humanities towards vocational training, undermined this role of the high schools. With the increasing complexity and theoretical development of many technical professions, the amateur-level training provided at high schools has lost its relevance and ability to respond to the economy's needs.

Gradually, community colleges have been moving into this niche. Vocational training through two-year programs at the postsecondary level is steadily taking over from the vocational courses at secondary schools. Vocational training has migrated to a higher education and community colleges have been at the receiving end of that migration. This is the valuable niche that community colleges occupy today, and this is where Latin America needs to look for useful lessons.

"What in the world could we be doing that is more important than getting people ready to make a living? It's got to be greater than studying culture and the arts. It has got to be linked to how the person makes a living and feeds their family."[19]

Also noteworthy is the fact that most major pedagogical innovations are hatched at community colleges. Granted, not all of them are *foci* of innovation or creative initiative, but if there is one place where innovation does exist, it is the community college. Conventional four-year programs tend to repeat conventional teaching methodologies. And the higher the status of the institution, the more conventional the methodology; there's no use in looking for pedagogical innovation at elite universities. Harvard and Yale, for instance, work almost exclusively on the basis of blackboard and chalk. The Media Center at MIT is the world's most advanced laboratory in terms of state-of-the-art teaching technologies. In the classrooms next door, however, the professor holds forth on the latest theories by consulting notes scribbled on pieces of paper and copying words or formulas onto the blackboard.

Community colleges, on the other hand, are a paradise of new teaching technologies—and of innovations as well. Some, in fact, do not have a single traditional classroom. On the first day of classes, students are assigned to a workstation equipped with a computer, a videocassette player, and a course outline showing the order in which their classwork is to be done. The teacher walks around among the students and discusses individual problems with each one. Those who advance more quickly finish the course sooner.

Today, some 400,000 students are taking courses via distance learning, making ever greater use of the Internet. Business incubators are being set up, schools are organizing practicums or internships at local companies, there are even businesses that are run by schools. The schools track the market closely,

[19] G. Baker in Jim Naughton, op.cit.

following developments and adjusting their course offerings accordingly. Decisions on what courses to offer hinge on input from business committees (each committee representing a specific branch of industry), and businessmen are often at the helm of the schools.

Some schools require that teachers keep track of where their former students are working. If they do not find a job, it is viewed as the teacher's fault. And if the placement rate does not reach a preset minimum level (e.g., 75%), the problem is investigated.

Courses can be quite sophisticated, such as a pilot plant for manufacturing semiconductors; the same school, however, could offer courses in shoemaking or leatherworking. If there is a market, there is a course for it. The corollary is even truer: if there is no market, then there are no courses. Since students always have to make some sort of payment (usually one third the total cost), enrollment is a good market indicator. It is no secret that students are more interested in the market when they have to pay, even if only part of the cost of their education.

In summary, anybody who wants to see innovation in pedagogical methodologies should not waste time going to the prestigious universities: community colleges are the place to go.

Contract training

In conjunction with the vocational training courses offered directly to students, community colleges increasingly are entering into agreements with companies to train their future (and present) employees. Ninety-five percent of community colleges have such arrangements with companies or the government. A full one fifth of all community-college students are studying under contract with an external organization.

"We are affordable. We can design programs quickly. We can do it faster for less money and we still have quality."[20] In a way, they've become huge capitalist enterprises that sell courses (in this sense, they are not much different from the best Latin American technical schools and universities). Obviously these contracts help to bring them closer to the companies and place them in a privileged position for understanding their needs. On a recent visit to a community college, it was possible to see, from the doorway of the auto mechanics class, a building that had been put up by Nissan, another by Ford, another by Toyota, and another by General Motors. Each building houses a school that trains technical and management staff for that company's dealerships. In the Ford building, students take apart Ford cars, study Ford manuals, use tools selected by Ford and follow syllabuses prepared by Ford. The same happens in each of the other buildings. The company decides on the course content, class times, and materials. Some even have paper shredders in the classroom, for instructors to destroy the manuals after class and thus ensure confidentiality.

The trend among major U.S. companies today is to close their training centers and outsource everything to community colleges. Joining the automobile manufacturers, Caterpillar and Boeing are already moving in this direction.

Adult education

On a recent visit to an avionics maintenance shop, visitors saw that the room next door was occupied by elderly men and women upholstering chairs. Others were weaving baskets, and still others were learning embroidery.

Given the community-based nature of financing and decision-making, community colleges play a very important role in offering courses to students of all ages. This is clearly a social function and is of inestimable value. It is not vocational training for a profession, but rather a hobby, occupying the time of retirees through veiled or open methods of occupational therapy. Considerable time and resources are devoted to this activity.

It is not uncommon for a community college to have 20% of the local population registered for courses in any given year. Course catalogues are prepared each semester, covering a wide variety of interests and duration and are mailed out to the entire community.

GOOD FOR THE UNITED STATES, ALSO GOOD FOR LATIN AMERICA?

A famous American businessman once said that what was good for his firm was also good for America. Can we say the same in the case of community colleges for Latin America? The safest answer to this oft-asked question is that, in principle, no. There is no single

[20] David Pierce, President of the American Association of Community Colleges, in Jim Naughton, op.cit.

model that applies everywhere. The best short statement on the subject is that they seem to be an excellent source of inspiration but not a blueprint. That is to be understood rather than regretted. There are no good reasons to imagine that one can or should transplant an institution from one culture to another, even though we can learn much by studying them, as is the case with community colleges.

The first tenet of this paper is that community colleges offer interesting ideas for education in Latin America and should thus be the subject of careful study on our part. The second point is that we are only able to tap into some of the features offered by community colleges, basically because it would be impossible to replicate them exactly in our countries. Our public sectors lack the necessary flexibility and dynamism to operate such a comprehensive and flexible institution. And without public subsidies, our private sectors would be unable to do everything that community colleges normally do (nearly all of which are run by the public sector).

In what follows we explore the different dimensions of community colleges, inquiring about its applicability in Latin America.

Secondary education for the poor: similarities with Latin America

In Europe, most countries have rigorous examinations at the end of the secondary-education cycle. Students who do not pass or are discouraged by the difficulties of academic secondary programs are channeled towards vocational training, technical courses, or apprenticeships, none of which allow for subsequent easy access to university-level education.

The United States—being the only wealthy country in the world whose high-school graduates are in some proportion functional illiterates—was forced to create a subsystem of higher education to compensate for the poor quality of education offered at the secondary level. Considering that many secondary-school graduates in Latin America as well have not truly mastered the official curriculum (and the reasons for this are varied), it would seem that some program around the lines of community colleges are a better suited option for Latin America than Germany's *Fachhochschule* or France's *Instituts Universitaires de Technologie (IUT)*, especially since these schools are much more elitist than community colleges and have rigorous entry conditions.

As mentioned, the jump in secondary-school enrollment in several Latin American countries has created a growing supply of graduates at this level, with the resulting pressure on higher-education enrollment. The only possible outcome in such a situation would be a drop in the quality of education received by this emerging clientele. Even if the quality of the schools remained constant, the schools themselves will be receiving an ever larger number of students from lower socioeconomic strata who are less well equipped to perform well at conventional schools.

To think that we can continue to offer the same type of course to students who are progressively more differentiated is to show extreme insensitivity to the world that surrounds us. If we are to meet the needs of this emerging clientele, it won't be through the same traditional courses for economics, law, and management. Moreover, we would be swimming against the tide by doing so, considering what is happening in countries that are educationally more advanced than ours. We must provide an education that is more practical, more concrete, and closer to the labor market. We do not need to reinvent new solutions; the models are here for all to see, and the model of the community college seems to contain some promising solutions.

More people take small steps in social mobility

Natura non facit saltum. Newton claimed that changes are progressive in nature, not abrupt. The statement seems apt for social mobility. Even though spectacular jumps in social mobility strike the public imagination ("rags to riches"), they are the exception, not the rule. Most social mobility is by small jumps between one generation and the next. In that sense, the community colleges offer a stepping stone for mobility, a smaller but more feasible advance.

Community colleges are the ideal vehicle of social mobility for an emerging clientele of students who are able to finish high schools. Many of the students are the first ones in their family to be attending an institution of higher learning. Courses can be offered at times that are convenient for students and allow them to work full-time while studying. Monthly tuition payments can be made more affordable. And lastly, the courses can be offered close to the market and provide rapid preparation for immediate access to that market.

Frustration with the lack of responsiveness of universities to the development needs of societies is mounting in Latin America. Despite the surge in university enrollments in the past 20 years, with the

due exceptions, higher education continues to be accessible only to the privileged segments of society. Moreover, Latin American universities have rarely seen their missions encompassing anything other than academic education, and when they have ventured in the field of short technical programs they have generally "academicized" it to a point that has turned it irrelevant for the immediate requirements of the workplace. By and large, universities have not done a good job of fostering partnerships with local communities or industry and businesses either.

On the other hand, as secondary education coverage increases in Latin America, the quality of schooling remains high for the few and rather poor for the many. The diversity in talent and preparation for post-secondary studies among high school graduates will only increase over time, as wider shares of the corresponding cohorts reach this level. A few will be willing and able to undertake traditional university programs. But the majority will be unable to do so without further support or will prefer to enter the labor force a soon as possible with something more than a secondary school diploma.

The alternative of technical schools at the secondary level has been particularly disappointing in Latin America. And the attempts to imitate the American comprehensive high schools has been outright disastrous—as recognized by the World Bank that had advocated them before.

It is interesting to notice that the job preparation traditionally offered by American high schools has been steadily migrating to the post-secondary level, via community colleges. The same trend to get training away from secondary technical schools can be observed in Latin America, even though this remains a controversial issue. Be that as it may, the trend to post-pone job preparation is undeniable, creating the need to design the institutions that will receive the students at the post-secondary level. This is where the model of the community college comes to the forefront.

This, then, is higher education's new clientele. It is the profile of the new social groups who are nearing the end of their secondary education and are looking towards higher education. The least that Latin American societies can do is to offer these students a kind of postsecondary education that is truly useful to them. To continue offering more of the same would not only be extremely shortsighted, it would be wrong on equity grounds.

Latin America's conventional post-secondary institutions have only partially dealt with these needs. Links with industry and business for curriculum development and technical assistance provision are weak or absent, there is little flexibility in program design and delivery, no effort is made in providing a general education alongside technical skills.

Latin American higher education is woefully ill equipped to deal with students of diverse backgrounds and interests. What it offers, at best, is traditional good quality university education for those who can afford it—both economically and intellectually—and bad quality university education for those that can't.

Community colleges bring some intriguing innovations to the task of providing post-secondary education for a diverse population. Not only do the programs contribute to a better match between study opportunities and student needs and capacities, but also the flexible approach to pedagogy, its modest tuition levels, and its proximity to labor markets and partnerships with industry contribute to ensure pertinence.

To be sure, postulating the need for community colleges in Latin America is a very delicate issue. Consider a typical accusation: The wealthy offspring of the privileged classes will be able to pursue a university education in traditional majors that will prepare them to take over the reins of economic, political, and intellectual power. Since the poor are only now coming to the doors of higher education, let's give them something simple and unpretentious to keep them content so they won't bring down the level of our elite, public universities. This is the same cooling-out argument, that can be read in the United States.

While the argument above is cast in a very negative tone, it essentially sums up the situation of all the countries that are out ahead of us in terms of education—and there are quite a few of them. Without belaboring the point, there would appear to be only two options from a practical standpoint: either provide differentiated education, with nuances that allow for varying student profiles (with the poorest students being directed towards education targeted specifically at students from poor backgrounds), or provide equal schooling for all, which would lead ultimately to a more hostile, dysfunctional system for students having less-than-optimal educational backgrounds. No other options have been found in the real world, even though the utopias abound.

As stated by the dean of students at a U.S. community college, "most of us are cognizant that people are looking for a way to make a living, not necessar-

ily becoming cultured. They want to get through their business and computer science courses and get out there and get a job. At least some of them think that studying liberal arts is a waste of time. There is some impatience with things like freshman composition. They don't think they are going to have to write anything."[21]

Many if not all industrialized countries are grappling with serious equity issues, and their educational policies reflect these options. Even so, they do not offer identical higher education for all. They have realized that a family's socio-cultural setting determines characteristics that even the most expensive of schools cannot counterbalance. By the time students reach postsecondary education, they already have different interests, priorities, and—most importantly—scholastic aptitudes. The best that can be done in an imperfect world is to design schools that are better able to further develop each student's potential (here the meaning is not *genetic potential*, since the impact of the environment is already enormous by the time children reach school age and schools do little to offset these initial handicaps).

In Latin America, debate on this topic has been monopolized by those who prefer the comfort of utopias to the discomfort of the real world. It is sheer hypocrisy or wishful thinking to imagine that Latin America could create a fairer system than the ones already created by nations with considerably more resources allocated to education and with a commitment to equity that is infinitely stronger than ours. If those countries found it necessary to create a divided, differentiated system of higher education, how can we expect to do otherwise in our hemisphere?

For this dual-level solution to be acceptable ethically, every effort needs to be made to ensure that all screening is based on scholastic aptitude rather than socioeconomic background. The rich should not have an entitlement to the more elite programs; the poor need to have the same rights of access, and must be admitted, when their academic profile so justifies. Elitism should be intellectual, not social. But above all, the quality of primary and secondary education need drastic improvements.

In order to stress the dilemma, the authors have chosen not to express it in diplomatic or politically correct, terms. The bottom line, however, is that it is better to have short courses of studies for poor students and longer courses for rich students, than to have long course of studies for the rich and nothing at all that will suit the poor. Those who disagree should present real life examples of alternative solutions. One more recycled utopia is not enough.

The financial equation must accommodate the less affluent

As will become clearer in the arguments presented in subsequent sections, the coffers of most governments cannot bear the costs of expanding public education at the post-secondary level. Whether we like or not the ethical implication of this financial and political reality, there seem to be no escape from it in the time horizon that we are dealing with.

Therefore, we have to seriously consider the practicalities of opening post-secondary education for the new generation of poorer students that increasingly are finishing their high school degrees.

The recent Brazilian scene illustrates the situation. It was hoped that the explosive increase in high school graduations and the equally dramatic expansion in vacancies in private colleges would open the doors to a significant change in the social composition of higher education. Until a few years ago, qualified observers of the educational scene were betting on this fresh influx of working class students. Yet, the numbers that are being collated in the last three years have cooled down such expectations.

Private colleges cannot charge less than the equivalent of 1.5 times the minimum wage per month. Mean tuition values lie around two times the minimum wage. This is more than the new generation of less affluent students can afford. To everybody's disappointment, the new wave of expansion has hardly changed the social composition of students and the expansion in enrollment seems to be coming to a halt. Hundreds of thousands of poorer students enroll exhaust their family savings and have to quit in the middle.

Two-year programs, if nothing else, last half the time, and therefore, they cost, at most, half the costs. In fact, they can cost less than conventional colleges. In an imperfect world, they are the best available alternative to those students.

Pedagogical innovation: Different students need different classrooms

Technological advances hold out vast potential for the education field in such areas as recent developments in cognitive psychology as well as computers, television, and other tools. In wealthy countries, these are just one more of the available luxuries, something that is adopted if, for no other reason, because the

[21] Cyrilla Vessey, ibid.

technology exists. We, however, can and need to make more rational use of available technology. We need to harness technology precisely because we lack the high-quality human resources that would allow us to provide a good education for all. Technology broadens the scope of influence of excellent instructors and materials, much more so than would be possible through conventional formats. A class taught by an excellent teacher and recorded on video can be reproduced for thousands of students at negligible cost. And the ultimate bottleneck to growth with quality is excellent teachers.

So, we must think of ways to use these new technologies in education, not as a luxury or as the culmination of a process of pedagogical enhancement, but rather as an expedient manner to quickly replicate the best experience around.

This is where the model of the community colleges can teach us some lessons. While four-year schools tend to be very conservative in their teaching methods, even in the United States, some community colleges can be a major source of inspiration since the education they provide is low cost, innovative, and tuned to a broad-base of students. They are not a pedagogical laboratory for the rich, with constructivist professors who are meticulously reinventing all the world's knowledge, albeit for a few. They provide education for the masses.

As a side comment, eminent Latin American educators often visit the United States. Their hosts are almost always at the elite universities that can afford to be casual—of not outright careless—with pedagogy and classroom management. This is because they receive the very best students who are able to proceed on their own and can overcome poor classroom practices. Therefore, such visitors miss the most exciting developments in the art of teaching, because it takes place in the community colleges that they hardly ever visit. Equally unfortunate, administrators and teachers of poorer institutions and short post-secondary education hardly ever travel. Therefore, our educators miss one of the most powerful lessons of community colleges: their religious devotion to adjusting classrooms to the mass of the poorly prepared students that they receive.

Perhaps the most admirable trait of American community colleges is their devotion to the clienteles they have. While few would admit or choose to express it this way, most schools would like to have the best possible students, from the highest possible social extraction. And many succumb to the temptation of trying to move up the academic ladder, what has been called the "academic drift". Latin American schools catering to modest clienteles cannot wait for the time when they upgrade their clienteles and programs. A most dramatic example is the Brazilian federal technical and technological programs that effectively became schools for the elites, completely distorting their original roles.

While academic drift can be found here and there in the community colleges, what predominates is a clarity of purposes and a deliberate devotion to offering what is perceived as the best for the modest clienteles that approach them. Their pride is to be able to work with students who are among the weakest to reach the post-secondary level. Their goal is not to become Harvard but to be better than Harvard in dealing with the students they have.

The market imperative in two-year programs: no demand, no training

Four-year colleges educate people to adjust to change quickly. Most programs are ill-focused on specific jobs. At their best, they impart broad and generic skills and prepare their graduates to catch up with the learning required to perform the jobs that correspond to the diplomas. However, with a growth in enrollment that is several times faster than traditional occupation expand, such colleges throw into the market a very large proportion of graduates who will never find a job that corresponds to what is written on the diploma. Ultimately, what was meant to be professional education in Latin America, turns out to be just four more years of education, preparing the graduate to go to a diffuse market and use their "learning-to-learn" skills to adjust to whatever jobs they can find.

There is nothing intrinsically wrong with this solution for a major fraction of the college-bound population. In a modern economy, there are more positions requiring four years of education than those requiring the same length of schooling teaching something closely related to them. In other words, there are few positions where graduates of schools of economics can deploy the theories learned. Yet, those graduates that cannot find those few jobs are employed in jobs where their ability to read, write, articulate ideas and solve problems is required.

Be that as it may, this solution is not appropriate to a large share of the cohort that today attends higher education and, in particular, to those that are now being able to complete secondary education. And is so for several reasons.

- Their ability to deal with abstraction – in the form of theories that do not exactly match the real

world – is much more limited. To develop their minds they need far more concrete subjects. It is not that they cannot learn but their learning needs more contextualization and more concrete subject matters.

- Their ability and willingness to wait four years in order to graduate is much less. They need results quicker. They are poorer.
- The initial wages of those taking four years of humanities or social sciences are rather low and their progress slow. These clienteles need good wages right away.

Therefore, what suits them best are the technical or vocational courses offering a thorough preparation for concrete jobs. As a matter of fact, in modern economies, the growth in middle-level technical jobs is much greater than the growth in demand for the skills displayed by graduates of four-year colleges.

In the United States, two-year programs are leading to well-paid jobs in their respective fields. The top five programs by starting salary in 1997 in the US were dental hygiene ($31,750), manufacturing processes technology ($30,675), telecommunications/interactive information specialist ($29,268). Physical therapy assistant and registered nursing follow closely behind.[22] Such wages can be significantly higher than those earned by four-year-college graduates in their initial working years.

This is because a much higher degree of specialization is called for in these jobs. The graduates need to learn a heavy load of job-specific skills in order to be productive from day one. If the program does not prepare students for their respective jobs, it is of little use. Since graduates of such technical programs come to the jobs with a clear-cut and almost complete preparation, they produce more from the start and, therefore, earn higher wages.

The flipside of the coin is that this specialized preparation leaves less time for the acquisition of general knowledge—that is the hallmark of a four-year college. The immediate payoffs are greater because of the quick transfer of skills to the performance of the jobs. However, there is less flexibility and less margin for error.

If the two-year course of studies does not land them in a job where the skills can be used, they are hurt by their smaller ability to learn quickly and adjust to whatever job they get. In other words, when they hit the target, the prizes are higher. If they miss it, the losses are also larger.

Therefore, in order to be a good investment in human capital, courses lasting less time have to be much more concerned with the market for their graduates. An overarching concern with the job market is one of the core features of these shorter vocational programs. In this particular, community colleges offer many lessons and experiences in the fine-tuning of course offerings to local job markets. Latin Americans are well advised to watch carefully what graduates do, regardless of the particular model of short-duration programs they choose to adopt.

Titles and status do matter

When talk turns to human capital and investments, there is a tendency to focus on the aspects of education that can have an impact on productivity and overlook what the sociologists tell us. Actually, the individual decision to continue one's studies is influenced very deeply by the symbolic value of a degree. A degree brings status, which is a perception of self-worth or a feeling of belonging to a higher stratum. It is not a question of agreeing or disagreeing, but rather acknowledging that higher education is much more than just rates of return on investment.

That said, the name given to the degree is an important issue, maybe not for the right reasons but it *is* important and it affects individuals' behavior. Courses that are viewed as leading to less prestigious degrees fail to attract potential candidates. The British got it right when, with one fell swoop of the pen, they changed all their *polytechnics* into *university colleges*. Cost-free, simple, and painless. Schools everywhere soon followed suit, adding that magic word to their name: university.

So, the name to be given to these courses is an important matter and not one without consequences. There is no intrinsic value in any specific name: the distinction between *postsecondary, higher education and university* is all in people's minds. There is nothing inherent in any of these terms. No amount of tweaking will create meaning where there is none.As K. Popper would say, use alone will define them.

What name should they be given? Technical schools? Technological institutes? Associate degrees (to use the term adopted in the United States)? Unfortunately, this is an issue of not negligible importance.

But it is not, as many people in Latin America believe, the definitive factor upon which hinges the failure or success of the community college model.

[22] American Association of Community Colleges, *Pocket Profile of Community Colleges* cit., p. 8

In countries, as in Chile and Argentina, where there is a large sector of institutions devoted solely to two-year programs, enrollments on such institutions are a significant proportion (up to 40%) of the overall higher education enrollment. These students must have had to overcome the prestige issue, at least in the measure necessary to tolerate the "ignominy" for a greater good.

Secondly, nothing attracts students as good quality. It is quite possible that this reticence to enroll in short programs is due to the entirely accurate perception that existing programs have little to offer by way of marketable skills. In this scenario students are not evading vocational and technical schools for considerations of status, but because they are rational consumers. The chances opened by a university degree are as much a function of having the degree than of what one has learned in the process of getting it. Yet, this is not the case with technical diplomas that traditionally do not carry much in terms of status or privilege. Therefore an investment on a degree without skills, as justifiable it might be in the case of a university degree, is an entirely useless outcome of a technical program.

The problem of the feasibility of community colleges in Latin America seems to be an issue of supply, not demand. There are not enough places being offered. Persuasion needs to be leveled towards potential suppliers, rather than potential customers.

Having said that, there are good reasons for being concerned with the symbolic meanings of the diplomas. It nothing else, it is cheap.

Argentina presents an interesting example of using the law to boost the prestige of diplomas. A relatively recent development in Argentina worth following is the *colegio universitario*. Argentina has 1,800 non-university postsecondary institutions, called *terciarios*, the majority of which are public. They were allowed in 1995 to partner with a university to offer transfer programs to their students. A *terciario* with a transfer agreement with a university—which entails a supervisory relationship, called accreditation—can call itself university college. To date some 300 terciarios have transformed into university colleges.[23]

Certification and accreditation: the intricacies of Latin America

In the United States, most professions lack anything comparable to the European tradition of certifying virtually all occupations. In fact, very few higher education occupations in the United States are governed by legislation or even less by federal norms. Accreditation of graduates is also more the exception than the norm. The exceptions are those fields that pose risks or security issues for service users. These are usually governed by federal systems for individual certification, e.g., the health professions, airplane pilots and mechanics, truck drivers. Some voluntary certification systems also exist, e.g., for automobile mechanics. Fields in which labor unions have a strong presence (e.g., the construction industry) also have such systems, which are often linked up to apprenticeship schemes. But overall, there is little government accreditation and certification.

In contrast, Latin America has profuse legislation on accreditation of institutions and licensing for professional practice. This is not the place to discuss this feature of Latin American education but merely to notice that it introduces great rigidities and make responses to the market slower and more imperfect.

However, the situation is somewhat different for the occupations in which two year programs provide training. The regulated professions are mainly those with four or five years of university preparation. The so-called technical professions have not yet been taken over by entry restrictions based on diploma. The construction industry is perhaps the one most fraught with professional certifications and regulations. The newer fields are still relatively unregulated.

In fact, for such programs, there is less control in the form of certification or accreditation of the institutions. The main constraints are the legal imposition of official curricula. This is an obvious problem, especially in new fields where technology is changing so quickly. Furthermore, it complicates experimentation and incremental changes in curricula, programs, and content.

Anyone who is interested in offering such courses essentially has one important decision to make: follow the official curriculum and accreditations, or leave all that aside and risk the test of the market? The good choice depends on how rigid are existing curricula and norms and how removed from the market realities. In different countries, the situation might be different.

On the side of officialdom is the comfort, peace of mind and market benefit of being able to say that the course follows official guidelines. The other side

[23] See Alberto C. Taquini (hijo), *La Transformación de la Educación Superior Argentina: de las nuevas universidades a los colegios universitarios*, Academia Nacional de Educación, Buenos Aires, 2000.

of the coin is that these curricula are always outdated and, when all is said and done, one still has to pass the market test.

Bridges to four-year programs: are they possible?

In the United States, two-year programs were designed as a bridge that provided a link to traditional four-year programs. Although this preparatory function has gradually fallen by the wayside, the bridges continues to exist, i.e., the possibilities of transferring to a four-year program upon completion of the two years of study at a community college. Furthermore, some public universities have established branch campuses within the campus of a community college, making it possible for a transfer student to continue with his college junior and senior year in the same location where he obtained his associates' degree.

The first operational engineering courses offered in Brazil were created according to the philosophy that they should provide some sort of bridge to regular engineering. To be sure, reason that they failed is due precisely to the distorted logic that was applied, whereby the curriculum was tailored to the requirements of the bridge or transfer function.[24] In order for these technicians' curriculum to be equivalent to the first two years of engineering education, the program was bogged down with theory courses, leaving no time for practical training. Graduates would lack any meaningful practical training. They would not have the necessary practical background that would enable them to find a job. Furthermore, they would also be lacking in math and physics compared to regular engineering schools. It ended up being a mini-course in engineering, one in which both theory and practical training were sacrificed. If applied and technical training is shortchanged in an attempt to make the student "university-ready," a serious mistake is made, because what gets lost is the courses' practical-training component. Such courses need to remain geared towards the labor market.

The possibility of transfer did not materialize in the US or Canada overnight. It had to be, and to some extent continues to be fought for every program and with every university, which often entails negotiation of curricula. Removing obstacles to transfer is the job description of transfer offices in community colleges throughout the US and Canada. There is, however, significant progress in this matter in some US states, where four and two year colleges share the same code for transferable courses. Transfer in North America is not restricted to those who obtained an associate degree in general education or humanities. Technical alumni can transfer as well, but because of the applied nature of their instruction, they cannot accomplish it right away and need to take extra classes, called "bridges" in Canada, through which they acquire the academics of the next level of education. This is why vocational and technical programs are not "terminal."

The traditional lack of general education in university programs in Latin America and the early professionalization of curricula, pose a major obstacle to transfer. The first two years of an engineering school is crowded with theory courses (physics, calculus etc) which are required in order to take the courses offered in the last two years. Very rarely are there optional courses. Just about all of them will have to be taken by all students. That being the case, a two-year course that aspires to have its student transfer to a bachelors program will be forced to offer just about the same courses. In other words, it will be a clone of the first two years of the bachelors program. The obvious implication is that it can hardly offer anything applied or different. In such rigid careers as engineering, the chances of creating bridges are close to zero. Two years of liberal arts or vocational courses will simply not coincide with the first two years of law, psychology, engineering or veterinary medicine.

Summing up, the Canadian bridges notion could be deployed in Latin America to allow for the possibility of transfer from a technical program to a university one, thus avoiding the blunting of the technical edge of the program in the attempt of making it transferable. Although conciliation efforts were made to articulate a liberal arts two years' general education curriculum into a traditional professional Latin American university program, the fact remains that transfer is the most elusive aspect of the model when we think of its chances of taking root in Latin America.

Ultimately the problem lies with the highly structured and vocational nature of university programs. And given the asymmetry of power, four year programs are unlikely to change in order to accommodate the needs of the students for short programs. Any progress in this area is not within the power of those who operate or regulate short programs.

[24] See Cláudio M. Castro and Fernando Spagnolo, "Carreiras superiores curtas na área tecnológica: erros e acertos da experiência brasileira" (mimeograph).

The exceptions that can be observed in Latin America are all in institutions that operate both the short and the bachelors' courses. They have the interest in attracting their short-program students into two additional years of study. Therefore, they adjust the curricula of the bachelors' courses in order to accommodate the transfers.

What should we expect from the public sectors?

Public higher education in Latin America is in the midst of a serious crisis brought on by increased demand, tight budgets and a legislation that has created both distortions and limitations. One of the lessons from American community colleges is that rules need to be flexible and able to adapt in a way that public-sector constraints do not allow. Costs may be too high for what is actually achieved in many courses. In other cases, while per student costs are modest, results are very disappointing. The public sector lacks funds and hesitates to spur innovation, change paradigms and upset the status quo. If that were not enough, public universities in some countries are voicing strong opposition to shorter courses on ideological grounds.

Given the default of the public sector, the full-fledged community-college model cannot be implemented by the private sector. The comprehensive nature of this model would require public funding in order to offer the broad menu of programs that serve its core clientele which comes from disadvantaged socioeconomic backgrounds.

Consequently, in most countries, the private sector has taken the lead in reshaping higher education. Yet, the private sector will only be able to implement those parts of this model that can be funded by the students themselves. In particular, what is thriving in recent years are the two or three year course in business, health professions, computers and electronics.

In conclusion, this is an area in which the public sector has an undeniable calling, but under current conditions it is highly unlikely that the public institutions will take a significantly more proactive approach. This leaves a vast market open for the private sector, which conceivably will be the fastest growing segment in the coming years.

It would be unrealistic, however, to expect the private sector to tackle this task equipped only with its own financing, especially since short-duration courses are normally offered by small-scale operators. As is the case with small businesses in general, public subsidies will be necessary in order to defray the start-up costs involved in creating quality courses with good materials and properly prepared instructors.

Indeed, even if the public sector cannot or is not willing to become a major player in the operation of such programs, it still has a major role to play. A critical point for public-sector responsibility in this area is that, in order to set up serious two-year programs, a sizeable investment needs to be made in developing curricula, preparing teaching materials, writing textbooks, and training instructors. Without such investments, which were made by the public sector in the case of Europe and the United States, the effort becomes an exercise in improvisation, as occurred in Argentina and Chile.

In these two countries, the bulk of responsibility for postsecondary education was left to the private sector. The schools that took an interest in the area were mostly small and relatively poor. They had neither the resources not the intellectual capabilities to invest in developing high quality programs. The outcome was that most courses are improvised and are lacking in any kind of creativity or quality. This has hurt them and risks marring the reputation of an area that has not yet had a chance to consolidate and has yet to affirm itself and establish its status.[25]

COMMUNITY COLLEGES SHOULD INSPIRE LATIN AMERICA

As should have become clear from what was presented above, arguments to clone community colleges in Latin America are pointless. In principle, institutions are not transferable to other cultures. They always need significant adaptations and transformations to be able to thrive elsewhere. Many of the functions of community colleges need public funding, due to the modest economic status of its typical clienteles. And at present, except in a few countries, it does not seem that such subsidies are forthcoming.

That leaves the private sector with the task of developing two to three year programs at the post-secondary level. And funding its activities out of tuition from students alone, what can be done is much more limited than the broad menu of services offered

[25] See Cláudio de Moura Castro and Juan Carlos Navarro, "Will the invisible hand fix Latin American private education?" in *Private Prometheus*, op. cit.

in the community colleges. One would hope that governments would at least support the development of materials, teacher training, curricula etc. Convincing the government that such tasks are beyond the means of small colleges and schools is one key element in the relevant policies in this area.

But even within this narrower menu, the long experience in the United States with associate degrees and post-secondary technical programs yields many important lessons that can greatly benefit Latin America:

- It makes much sense to offer post secondary courses that are much shorter than a bachelor's and much more focused on the specific occupations. This statement should be understood as a plea for massive growth in such programs. North America and Europe graduate more students in such shorter courses than in the regular four-year programs. The economies of Latin America are not that different.
- Short programs require much more attention to markets. The rule is simple, no demand, no training. When well targeted, they are splendid investments. When they miss the market, the loss is much greater than in the case of longer courses where the "learning to learn" component is often more important than the specific content of the program.
- Such courses tend to be a privileged path to social mobility. They are far more appropriate to less affluent students who, in their majority, cannot afford long courses, do not want to wait much longer for results and have difficulties in coping with abstract content. But the ideological barriers are still serious.
- Like other levels of higher education, the symbolic content of the diplomas and certificates is powerful. Rates of return are only a part of the equation. Therefore, programs can benefit from words that convey status and importance
- Contrary to the American scene, official curricula, rigidities in accreditation and excess bureaucracy can be serious hurdles that cannot be underestimated.
- Given the rigidities in the curricula of bachelor's programs, the much touted transfer function of community colleges is not at all applicable in Latin America. Courses, in principle, do not permit such transfers, unless they are disfigured beyond the point where they retain some market functionality.
- Attention to teaching and classroom technology is one of the distinguishing features of community colleges that Latin Americans are well advised to consider
- Community colleges are devoted to their students and take as pride in their ability to bring them to their fullest potential. This is stark contrast to other institutions that disdain such students. This may be one of the most powerful messages that community colleges can convey.

Post- Secondary Education in the Caribbean: Challenges and Opportunities

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INTRODUCTION: PURPOSE OF THIS PAPER

The English-speaking Caribbean needs to keep pace with challenges of worldwide change in the development process. At the macro level, the need is to identify or create conditions for success in the economic niches appropriate for the region. One fundamental requirement in this process is to build the area's human resources. A well-educated and trained populace will enable countries in the Caribbean to grow, even under the conditions of uncertainty and change that now prevail. While certainly basic literacy and numeracy skills must be emphasized, human resource development must proceed at all levels. All countries need to build the quality of their skilled workers, technicians, managers, and professionals through a wide variety of expanded and higher-quality post-secondary institutions.

A basic assumption of this paper is that the region especially needs to strengthen the institutions that provide post-secondary non-academic education and training. The need for "middle-level manpower" —skilled workers and technicians in industry, commerce, and services, especially those with communications, information technology and interpersonal skills – is increasing throughout the world, as much or more than the need for professionals and managers with BA or higher degrees. The changing world economic context, increasing global demand for higher-order skills, and the nature of the Caribbean's options for economic growth will require a larger and more effective set of these post-secondary institutions.

This paper synthesizes the issues and possible policies and approaches needed to strengthen post-secondary non-academic institutions in five Caribbean countries—Bahamas, Barbados, Guyana, Jamaica, and Trinidad & Tobago. It is based mainly on country case studies examining the institutional framework for provision of post-secondary education. The paper examines the justification for expanding post-secondary education, and then assesses the current status of these institutions and outlines an agenda for reform, growth, financing, and institutional strengthening. The paper identifies needs for new structures, relationships, and models among these institutions, and concludes with a discussion of ways that the IDB could support the strengthening of delivery of education and training in the region.

The paper does not seek to identify the size or extent of demand for middle-level manpower in the Caribbean, as detailed information on labor market expectations is not available. In any event, projections of needs for explicit occupations and skills are inherently uncertain because of the region's chang-

[1] This report was prepared for the Inter-American Development Bank by Laurence Wolff (Consultant), with the assistance of Ms. Lucrecia Palacios, and edited by Ms. Joanne Omang. Ms. Michelle Fryer, of the Social Programs Division (RE3/SO3), coordinated the study with the assistance of Ms. Sabine Aubourg-Rieble (COF/CTT), Ms. Everett Allen (COF/CJA), and Mr. Jorge Torres (COF/CBH). The study is based upon diagnostic research and stakeholder consultancies conducted by the Association of Canadian Community Colleges in The Bahamas, Barbados, Jamaica, and Trinidad & Tobago; and by Laurence Wolff in Guyana.. The consultants' views and opinions expressed in this study do not necessarily represent those of the Bank's Management or its member countries.

ing economic outlook, as well as the impossibility of foreseeing technological change.

GLOBAL TRENDS IN TRAINING MIDDLE-LEVEL MANPOWER

The new world economy is characterized by the increased knowledge that production and services require, the near-zero cost of communications, and rapid changes in knowledge. Work now moves quickly towards wherever human resources and other factors of production are of higher quality and lower cost. Services are also increasingly important components of the world economy. Competition is increasingly based on the quality of human resources, as lower-level skills become less needed.

These developments create increasing importance in education and training for higher-order skills: mathematics, communications, information technology literacy, and the capacity to learn and adjust and to work in groups. Learning will increasingly become life-long as technology continues to change job content. In developed countries, a complete secondary education will soon be the minimum for all new entrants to the job market. The need for workers with post-secondary or "tertiary" education[2] will also increase rapidly.[3]

A basic assumption of this paper is that post-secondary education will increase rapidly in the world, but that much of this growth ought to be below the university level in institutions that provide a variety of diplomas, certificates and qualifications after one to three years of education and training. A higher education system based solely on a single undifferentiated academic model should be avoided as inappropriate to a highly differentiated labor market.

The importance of differentiated higher education has been emphasized by many policy leaders and analysts. It was first articulated some 40 years ago by Clark Kerr, then chancellor of the California higher education system . After some delay, most European nations have embraced the concept (as seen in OECD policies). Most recently, IDB and World Bank policy papers have emphasized its importance in developing countries (World Bank3, Salmi, de Moura Castro). In fact, short-term modularized post-secondary skill-training programs, often provided by the private sector, have burgeoned worldwide.

Unlike institutions of primary and secondary education, and unlike academic bodies, education and training programs below the BA level are usually attuned to skills needed in the labor market. They deliver a combination of specific and generic skills and knowledge related to jobs. They provide Associates of Arts (AA) degrees, diplomas, and certificates of all sorts, which in some cases are recognized nationally or internationally and in other cases are simply given by the institutions themselves. These institutions have a wide variety of school-to-work transitions—e.g., "sandwich" courses, internships, "dual" training, in-plant training, etc. At their best they combine theory and practice, with curricula based on competencies expected on the job and with instructors who have both practical and academic credentials. Institutions like these need to be agile enough to change quickly as the labor market changes. They also need articulation with lower and upper levels of training and with accreditation systems so that students get recognition for the skills they gain.

There are many different post-secondary non-university models. The most well-known example is North American "community colleges," which currently enroll 40 percent of all post-secondary education students in the United States (USA) and similar ratios in Canada. These colleges usually have three concurrent missions—to prepare students for the labor market, provide remedial training for those whose secondary education experience was inadequate, and allow some students to continue their studies at the BA level. More and more, they are reaching adults with a wide variety of programs designed to upgrade skills or provide life-long learning of all types.

[2] The term "post-secondary" in this report means all education and training programs of any length directed at those who have completed secondary education. "Tertiary" education can have the same meaning, but is usually restricted to officially recognized formal programs.

[3] The United Nations Educational, Scientific and Cultural Organization (UNESCO), defines three levels of "tertiary" education. "The International Standard Classification of Education (ISCED) level 4 education" refers to programs leading to less than a BA degree and usually lasting one, two or three years beyond the secondary level. These institutions and others providing post-secondary training are the subject of this paper. "ISCED level 5" refers to BA degrees, and "level 6" to advanced or professional degrees.

Different models exist in Europe. France has developed "technological institutes" (IUTs), which offer technical studies below the BA level. Increasingly aware of the need for this kind of education and training, countries such as Portugal and Spain have developed a wide range of technical post secondary programs. The United Kingdom recently began developing post-secondary institutions to provide "foundation skills" other than a BA. Not far from the English-speaking Caribbean, Venezuela has many public and private institutions offering two-year post-secondary programs in business and technical subjects.

A number of labor market studies have documented the growth of need for this level of education and training. A recent U.S. Department of Labor Monthly Labor Review reported that jobs requiring an "associate degree" will be the fastest-growing job group from 2000 to 2010, rising 32 percent. Post-secondary education of all types will be required in 29 percent of all U.S. jobs until 2010, but it will be needed in 42 percent of new jobs during that period. Another 27.5 percent of jobs will require moderate- to long-term job training, which could be delivered in part by post-secondary institutions.

A study of labor market needs in the province of New Brunswick, Canada, estimated that 80 percent of new jobs there will require post-secondary education, about half from community colleges and half from BA-granting institutions (according to the ACCC). A British government higher-education white paper proposes that post-secondary education in the United Kingdom should progressively enroll 50 percent of the 18-to-30-year-old population, mainly through two-year "foundation" degrees.

The growth of institutions of this type is part of a continuing tendency to raise the workforce's level of basic academic skills to at least the full secondary level, and at the same time to delay specific job-related training to post-secondary years. The separation between vocational/technical education and "academic" education is narrowing as workers come to need more mathematics and communications skills, especially in information technology. This change is occurring in a variety of ways: combining curricula by adding more academic courses to voc/tech, or more voc/tech to academic; or by integrating both in one kind of course, reducing the institutional distance between the two tracks so students can move from one to the other; and by arranging longitudinal relationships so that over time adults and workers can move into or out of these modalities (Raffe). This means that training programs run by Ministries of Labor, autonomous agencies, or the private sector are increasingly post-secondary in nature.

It is logical that post-secondary programs would be more important than academic and professional programs in developing countries, where labor market demands are lower for scientific, research and professional cadres. Such programs can also play an important remedial role as they do in the USA, taking in secondary school graduates who still lack basic skills and are therefore likely to be unemployed, and upgrading their "employability." Finally, these institutions can provide "life-long learning" opportunities that adults increasingly need as technological change accelerates.

The private sector is increasingly important worldwide as a user, provider and financier of educational services. The old model of an education system fully financed and provided by the public sector is disappearing. It is being replaced by a wide variety of financing schemes, governance, and incentives to encourage more effective, equitable, and higher-quality educational services. The result is a wide variation in provision of educational services by public and private institutions. In this new setting, the critical policy issue is to set the rules to let public institutions become increasingly market- and client-oriented and to encourage the private sector to meet public-policy goals.

THE ECONOMIC CONTEXT

Economic Challenges and Opportunities

The five countries that are the subject of this study are all small in size and population. Jamaica has the most people at 2.6 million; Trinidad & Tobago has 1.3 million; Guyana 760,000, Bahamas 305,000; and Barbados 270,000 (Table 1). This reality makes these countries highly subject to external shocks.

All have low population growth, 1 percent per annum or less, and a "demographic window of opportunity"—a decline in birth rates that creates a population with a lower percentage of dependents, i.e., those either too young or too old for the labor market. For the population group that is the usual target of post-secondary education, young people aged 20–24, a decline of over 20 percent is projected in Barbados, Guyana, and Trinidad & Tobago, with only slight increases in Jamaica and Bahamas. Most of these countries have emigrating populations.

TABLE 1

POPULATION AND EXPECTED POPULATION IN 2015

Countries	Percentage of Total Population Age 20–24		Total Population Age 20–24		Total Population		Annual population growth rate (percent)
	2000	2015	2000	2015	2000	2015	2000–2015
Bahamas	0.09	0.09	26,189	30,874	304,233	358,613	1.0
Barbados	0.08	0.06	20,834	17,799	267,498	280,583	0.3
Guyana	0.10	0.08	79,493	61,924	760,513	748,505	0.1
Jamaica	0.10	0.09	246,030	263,138	2,576,085	2,957,313	1.0
Trinidad & Tobago	0.09	0.07	122,322	100,866	1,294,368	1,392,271	0.3

Source: CEPAL/CELADE

These countries vary in terms of their GDP per capita and in expectations for economic growth (Table 2).

Bahamas and Barbados are nearly high-income countries; Trinidad & Tobago is an upper middle-income country; and Guyana and Jamaica are lower-middle-income countries. Overall, they face an uncertain mid-term economic situation. They must strengthen their service orientation, tourism, and financial services. According to World Bank estimates of per capita economic growth (World Bank 3), Barbados, Guyana, and Trinidad & Tobago will grow modestly over the next ten to 15 years, at 3 to 3.9 percent per annum. Bahamas is not expected to grow

TABLE 2

BASIC ECONOMIC INFORMATION

Countries	GDP per capita, PPP (Current International $)		Expected Annual rate of GDP growth (percent)	Sectoral distribution As percent of GDP				Remittances as percent of GDP
				Agriculture	Industry	Manufacturing	Services	
	2000	2015	1998–2015	2001	2001	2001	2001	2001
Bahamas	16,554	15,825	0.70	n.a.	n.a.	n.a.	n.a.	n.a.
Barbados	15,745	24,530	3.30	5.5	20.3	8.5	74.2	2.4
Guyana	4,002	6,419	3.30	31.3	28.3	8.2	40.4	n.a.
Jamaica	3,606	4,004	1.70	6.4	30.8	13	62.8	10.1
Trinidad & Tobago	8,848	15,040	3.90	1.6	42.3	7.6	56.1	0.4

Sources: CEPAL/CELADE, World Bank3, UN Human Development Reports 2003

Notes: Guyana's Annual Growth Rate (percent) is based on data of 1975-2001 (latest available)

Remittances as a percent of GDP are based on latest data available. For Trinidad & Tobago 1998

significantly, although it is already a high-income country, and Jamaica is expected to grow at only 1.7 percent per annum. Of course, these are only estimates based mainly on past trends. The migration of trained people away from the region, as well as from poorer to richer countries within the region, is significant, but it is not entirely a disadvantage because of the high value of remittances, which in Jamaica's case account for 10 percent of GDP.

The region is moving toward more flexible labor markets and free movement of goods and human resources. This is important because the economic and institutional structures of the countries are too small to permit isolated labor markets. A recent CARICOM meeting emphasized this (Caribbean Community Secretariat). At the same time, structural unemployment, especially of youths, characterizes these countries, as seen in Table 3: Unemployment of out-of-school youth aged 15–24 ranges from 16 percent (Bahamas) to 34 percent (Jamaica).

The comparative advantages of these five countries include: their physical beauty that encourages tourism; their English-speaking culture; their location near the U.S. market; and the oil and gas in Trinidad & Tobago and minerals and timber in Guyana. Except for Guyana and Trinidad & Tobago, they are service economies focusing on tourism; Bahamas and Trinidad & Tobago also focus on banking. Bahamas and Barbados are tourism success stories, while Jamaica is struggling to regain its previous leadership in tourism. Services account for over 55 percent of GDP in all except Guyana, where they are 40 percent. Only Trinidad & Tobago and Guyana have significant industry sectors (oil and gas, diamonds, bauxite) and only Guyana has a strong agriculture sector.

They all have limited manufacturing capabilities. Trinidad & Tobago has oil and related industries and is a commercial center. Agriculture, including sugar, is no longer competitive, except in Guyana (EU preferences are ending), but there are a variety of niche opportunities. The possibilities for information technology are significant, especially because English is the common language, but telecommunications rules and regulations need further reform. Barbados and Jamaica are hoping for software development, and lower-tech elements such as call centers may be expected in Guyana. Economic growth possibilities in Guyana also include niche agriculture and port development to serve the Brazilian interior. Trinidad & Tobago is expected to continue with growth in its oil and gas sector, but can also increase tourism on Tobago, business and commercial services in Port of Spain, and light manufacturing to serve the Caribbean.

Human Resource Development Needs

All the above economic opportunities will require action to develop qualified human resources. Cer-

TABLE 3

UNEMPLOYMENT RATES FOR LABOR MARKETS AND FOR YOUTH POPULATION (1999 OR LATEST YEAR AVAILABLE)

Countries	Unemployment, total (percent of labor force)	Unemployment of youths age 15–24 seeking employment
Bahamas	8	16
Barbados	9	22
Guyana	12	27
Jamaica	16	34
Trinidad & Tobago	13	25

Source: World Bank - World Development Indicators 2003

Notes: Guyana's data is the latest available (1992)

Unemployment, total (percent of total labor force): Refers to share of the labor force that is without work but available for and seeking employment. Definitions of labor force and unemployment differ by country.

Unemployment of out-of-school youth aged 15-24 ranges from 16 percent (Bahamas) to 34 percent (Jamaica).

tainly the most fundamental education priority in the region is to improve the quality of primary and secondary schooling, with a particular emphasis on boys' education, which has been lagging, in order to establish a broad base of competencies for the labor market. But education policy and investment cannot be "sequential"—that is, improved post-secondary education cannot wait for better quality at lower levels. In addition, in line with worldwide trends, secondary education should provide broad-based mathematics, communications, and technology skills, with specific skill training moved to the post-secondary level or out of the formal system. Post-secondary education will be needed to provide the specific skills and competencies necessary to develop economic niches in each of the five countries, through a wide range of programs—from short-term modularized training to degree and graduate programs.[4] At the same time, the countries must resist any tendency to expand academic programs at the expense of more job-oriented post-secondary education.

No studies yet project the expected skill mix of the labor market in these countries, but such efforts are unreliable beyond a few years. Nonetheless, a recent study of Jamaica's options for development noted that productivity had fallen over the last decade, with continued shortages in some skill areas and high youth unemployment (Katz). The study concludes that:

> As far as the educational sector is concerned, it will have to improve on its role of provider of basic skills, but it will also have to act as the provider of the new skills and cognitive capabilities [that] a different pattern of insertion into the world's market place would demand in the years to come. In other words, it will simultaneously have to see that the quality and pertinence of current educational efforts be improved and made accessible to Jamaican citizens but it will also have to see that a whole new set of disciplines and educational fields receive attention in the future. A better training in biotechnological disciplines, in environmental protection technologies, in computer literacy, in engineering activities related to production planning and organization, in international marketing, in the running of technology parks and 'incubators' for technology intensive start-ups, in legal disciplines related to the protection of intellectual property rights, in technological 'extension' and engineering services for SMEs, etc. seems to be presently needed if new forms of comparative advantages, based on knowledge and learning capabilities, are to be developed in the economy. (Katz)

Faced with a public sector that has been fairly unresponsive to these needs, some larger firms (e.g., in banking and sugar) have established their own in-house training programs.

Similarly, the government of Trinidad & Tobago has been engaged in establishing a "2020 Vision." Its economic objectives are to ensure that Trinidad & Tobago can be considered a developed country by 2020, through expanding the energy sector, light manufacturing, information technologies, and tourism. To meet this challenge the government estimates that 60 percent of the school-age population should benefit from post-secondary education, compared to the ratio in 2000 of only 6 percent. Educational aims include creating a technologically literate population and expanding participation of nationals in the energy sector.

It must be understood that education and training, no matter how closely tied to perceived or potential labor market needs, cannot solve structural unemployment by themselves. If large numbers of adults and youths are unemployed, then it is difficult for education and training institutions to respond to market signals and demands from industry. Employment-generating macro-economic policies are necessary to create a "virtuous cycle" of economic and job growth accompanied by better-quality and higher-output education and training institutions, which together can lead to increased productivity in the long run.

In-country and inter-country coordination, cooperation, and articulation are especially important in the Caribbean because of its low economic diversification, low economies of scale, and high inter- and extra-regional migration. The countries' small size means overlapping institutional missions can make programs non-viable in cost and clients. Regional coordination is needed to foster development of joint courses and programs where necessary and to facilitate labor market mobility within the region as a means of broadening the economic base.

[4] These programs will also need to continue to extend and deepen fundamental communication and mathematics skills, as well as to provide remedial training learning for secondary school graduates with poor basic skills.

EDUCATION AND TRAINING

Primary and Secondary Education

The five countries have made progress in educating and training their children and young people (Table 4). Gross enrollment ratios in primary education are 100 percent and in secondary education range from 73 percent to 100 percent. Enrollments are rising in post-secondary education. Barbados and Jamaica each spend over 7 percent of GDP on education, a significant effort compared to other countries of similar income. Bahamas, Guyana and Trinidad & Tobago spend around 3 percent of GDP, below the average of countries with similar GDP. Private institutions are important only in primary and secondary education in Bahamas and in post-secondary education in Jamaica.

Within the region, nearly all children complete the full six-year *primary* education program with minimum repetition. Yet problems of quality persist in basic literacy and numeracy. The quality of teachers has declined in Guyana and Jamaica, but these countries are working to upgrade their teaching force by developing assessment instruments and better equipping their schools.

Over the last two decades, secondary education has expanded, and enrollment ratios now range from 73 percent (Guyana) to 102 percent (Barbados) of the target-age population. These numbers mask issues related to repetition, dropout, curriculum and learning. Traditionally, secondary education has been a multi-track system, with the 11+ exam segregating students into academic and vocational tracks, while much of lower secondary education is provided in "extended" primary schools. After much debate, all the countries are moving away from this approach. A wave of secondary education reforms is focused on delivering a core curriculum to all students, usually up to the fifth year of secondary education. Several countries are designing minimum standards to be met at earlier stages, rather than waiting for examinations at the end of the secondary cycle. All countries, especially Barbados, are moving to teach information technology to all secondary school students.

Nonetheless, the generally low quality of secondary education results in many graduates who lack basic skills. Anti-social behavior and attitudes, including violence in and out of school, makes learning difficult. Teachers often do not have high expectations for students (e.g., no one fails). In spite of the reform movement, secondary education is still two-tiered. Many youths follow a non-academic "general" curriculum, but they do not get the fundamentals needed to supply today's labor market. Boys continue to do much more poorly than girls in all measures of academic achievement.

Of particular importance for secondary education is the regional Caribbean Secondary Education Certificate (CSEC) examination given at the end of the secondary cycle by the Caribbean Examinations Council (CXC). The test ensures a uniform assessment of quality for the entire region. The CSEC assesses proficiency in academic as well as technical subjects. To continue their studies, students must score 3 or above out of a possible 5 in three subjects in the "general and technical" proficiencies. Scores of 3 or above in "basic proficiency" are considered adequate to qualify for entry-level employment. The Caribbean Advanced Proficiency Exam (CAPE) is given to post-secondary students and is the successor to the "sixth form" exam.

Post-Secondary Education and Training

Until recently, Caribbean enrollment ratios at the post-secondary level, as reported to UNESCO, were below the norm for other countries at similar levels of development. In response to these issues some years ago, the CARICOM countries committed themselves to a goal of 15 percent post-secondary enrollment, and three of the five countries have succeeded here (Table 5). Enrollment ratios for 2000 were: Bahamas 25 percent; Barbados 38 percent; Guyana 12 percent; Jamaica 16 percent; Trinidad & Tobago 6 percent. This compares with USA 72 percent; Portugal 50 percent; Argentina 48 percent; and Japan 47 percent.

These figures do not include the significant number of students who study abroad, usually in the USA, Canada, and the UK. These were recently estimated at 16,000, or 25 percent of in-country enrollment. Enrollment at the three universities in the region are: University of Guyana (UG), 7,496; University of West Indies (UWI) in Mona, Jamaica, 13,889; UWI's other campuses (Barbados and Trinidad & Tobago), 12,819; and University of Technology (UTECH), Jamaica, 1,222. Therefore, institutions that define themselves as universities enroll 52 percent of post-secondary students. In addition, the College of the Bahamas offers BAs to many of its 4,000 students, and Barbados Community College also offers BAs. In all, it is likely that 60 to 70 percent of the region's students are enrolled in programs leading to a BA or advanced degree.

TABLE 4

BASIC EDUCATION DATA

	Gross Enrollment Ratio by Level of Education (percent)				Number of Students by level of Education				Private Enrollment Ratio by Level of Education (percent)				Public Educational Expenditure in Education, as percent of GDP
	Pre-Primary 2000	Primary 2000	Secondary 2000	Post-Secondary 2000	Pre-Primary 2000	Primary 2000	Secondary 2000	Post-Secondary 2000	Pre-Primary 1996 or latest available	Primary 2000 or latest available	Secondary 2000 or latest available	Post-Secondary 1994 or latest available	2000
BH	15	91	84	25	2,073	33,145	29,184	6,547	n.a.	25	23	n.a.	3.2
BA	80	110	102	38	6,282	24,225	25,367	8,078	n.a.	10	6	n.a.	7.1
GY	117	120	73	12	41,845	108,909	68,764	9,539	n.a.	n.a.	n.a.	n.a.	3.1
JA	88	100	83	16	106,448	328,496	272,395	35,995	84	5	3	34	8.7
TT	63	100	81	6	27,111	155,360	133,679	7,737	n.a.	5	14	n.a.	2.9

Source: World Bank

NOTES: Gross Enrollment Ratio Pre-Primary Level - Data latest available for Bahamas, Guyana, Jamaica is from1999

Gross Enrollment Ratio Primary Level - Data latest available for Bahamas, Guyana is from 1999

Gross Enrollment Ratio Secondary Level - Data is latest available: Bahamas (1999) and Guyana (1996)

Gross Enrollment Ratio Post-Secondary Level - Data latest available for Guyana is from 1997

Private Enrollment Ratio Primary and Secondary Level - Data is latest available for Bahamas from 1995

TABLE 5

ENROLLMENT AND GROSS ENROLLMENT RATIO FOR POST-SECONDARY EDUCATION IN 2000

Countries	Gross Enrollment Ratio (percent)	Number of Students
Bahamas	25	6,547
Barbados	38	8,078
Guyana	12	9,539
Jamaica	16	35,995
Trinidad & Tobago	6	7,737

Source: World Bank - World Development Indicators 2003

Annex 1 lists all the post-secondary education institutions in the five countries studied for which data were available. This section summarizes the overall status of these institutions. (More detailed information is available from case studies by the ACCC.) They vary in many ways: public or private, ages of students, student employment status, level and duration of training, type of certificate or qualification provided, and location of training. Some are formal "tertiary" level institutions, offering associate degrees and certificates to students who have at least three "passes" in the CSEC, providing some kind of formal accreditation either nationally or internationally, and offering training at the "skilled" and "technician" levels[5] in both blue-collar and white-collar occupations. Others, especially private institutions, offer short-term modularized courses with or without formal certification and without any educational prerequisites. In most cases, the clients are young people who have completed secondary education, but they include youths and adults already in the labor market.

Post-secondary non-academic institutions and programs can be divided roughly into eight types: *community colleges, voc/tech training institutions, universities or colleges also granting associate degrees and certificates, sectoral training institutions, private training institutions, teacher training colleges, distance education institutions, and institutions outside the region attended by Caribbean youths*. In addition, skill-training agencies not normally thought of as post-secondary are increasingly offering post-secondary modularized training.

Public community colleges, e.g., institutions based on the North American model, exist only in Jamaica and Barbados. Jamaica has eight community colleges, all linked in the Council of Community Colleges of Jamaica. They enroll more than 8,000 students and offer programs at the certificate and associate level in business, nursing, information technology, hospitality, technology, teacher education, and agriculture. In some cases they prepare students for BA-granting institutions, and in a few cases they offer BA degrees themselves. According to ACCC case studies, the colleges articulate well with each other and with BA-granting institutions, but do not have adequate links with industry. Curricula are usually based on academic models rather than on competencies defined through the workplace. Remedial programs are limited. Because of lack of funds, many are very poorly equipped, with a relatively small number of vocational technical programs.

In contrast to Jamaica's colleges, the Barbados Community College offers training on three campuses to more than 4,000 students in agriculture, commerce, health, hotel management and technology, and also offers some BA degrees. It has benefited from consistent strong leadership and a good physical plant. In some but not all of its programs, it has good industry relations and is able to place many of its students in jobs. Barbados Community College is considering moving up to become a "university college."

In Bahamas, the only formal community college is the private Bahamas Baptist Community College, which serves 100 full-time and 700 part-time students, offering associate degrees in 23 disciplines. In Trinidad & Tobago the community college concept is not well understood, although the Trinidad & Tobago Institute of Technology (TTIT) could be considered a technical community college. Community colleges do not yet exist in Guyana.

Public technical/vocational schools (TVET) tend to focus on "blue collar professions" such as plumbing, electricity, and auto mechanics, and most of their enrollment is male. They also offer training in traditionally female skills such as secretarial work, sewing, and hairdressing, but they are now offering computer and IT training to both girls and boys. They usually offer "official" certificates that are recognized nation-

[5] The formal definition of levels of training accepted in the Caribbean is: level 1; directly supervised worker; level 2: supervised skilled worker; level 3: independent/autonomous skilled worker; level 4: supervisory specialist worker; level 5: managerial, professional worker.

ally, and in some cases internationally (e.g., London City and Guilds). For advanced courses, these schools may require three CSEC passes; lower-level courses require that students have completed secondary school, but do not require passing any exams.

Public TVET institutions in the region vary enormously in the quality of management and teaching, appropriateness of curriculum, relationships with industry, student services and equipment. Most are only partly through modernization and development of best practices. Even the best have inadequate connections with industry in terms of curriculum, training, placements, contractual services, and support. The weakest are training for yesterday's occupations, have little idea where their graduates go, and are very poorly equipped. Many institutions focus on excessively narrow skills training, rather than on core curriculum and broader occupational categories.

In Trinidad & Tobago, for example, San Fernando Polytechnic is well equipped, closely integrated to industry, and has a strategic planning process. But Donaldson Polytechnic has inadequate equipment, outdated curriculum and (until recently) poor management, and has been losing students.[6] The Bahamas Technical Vocational Institute (BTVI) enrolls 1,800 students in one-year certificate and three-year diploma programs in a variety of trades and technical areas, with good facilities. Most BTVI students are adults, not recent secondary school graduates. Unlike the College of the Bahamas, BTVI reports directly to the island government and does not have an independent board. This structure restricts its agility in responding to demand, and its image is second to that of area universities. Guyana has five public TVET institutes, all based on outdated models of training and most with inadequate curriculum, teaching, and equipment, and poor or non-existent collaboration with industry.

Private training institutions are growing rapidly, especially in IT, since industry and commerce now expect new job entrants to be computer literate. Private unregulated institutions also provide training in basic accounting and bookkeeping, cosmetology, etc. Only anecdotal information is available on the quantity and quality of private institutions in the region. Some require a full secondary education with CSEC passes, while others require no particular level of general education but assume a secondary level of achievement in language and mathematics.

Typical are Global Technologies in Guyana and Delta-Soft computer training in Trinidad & Tobago., Both offer modularized training in IT with certificates recognized by overseas firms such as Microsoft and Cisco. GUYSUCO training center, a private school that serves the sugar industry in Guyana, has strong industry interaction and places nearly all its graduates in the sugar industry. It is one of the few private institutions in the region that train for blue-collar professions. Success Training College in Bahamas is an excellent small private institution offering courses in electronics and technology. Only in Jamaica so some private institutions (e.g., B&B Institute of Business and Jamaica Institute of Management) offer officially recognized certificates and AA degrees.

Universities or BA-granting colleges often provide certificates, diplomas, and associate degrees similar to those offered in freestanding community colleges. The College of the Bahamas (COB) is a multipurpose institution offering a wide variety of associate degrees, certificates, and diplomas, as well as BAs, to 4,000 students, half of them part-time. The banking, IT, and education programs have good relationships with employers. COB is considering moving to "university" status.

Trinidad & Tobago has established an umbrella organization—the College of Science, Technology and Applied Arts of Trinidad & Tobago (COSTAATT)—to encompass all its institutions that offer BAs, AAs, and certificates. But COSTAATT has not yet defined its role vis-a-vis the institutions included under its purview. Trinidad & Tobago recently began also to consider establishing its own university.

The University of the West Indies (UWI), with campuses in Jamaica, Barbados, and Trinidad & Tobago, offers a significant number of diplomas and certificates that are less than BA degrees, often through its "continuing studies" department but sometimes as part of regular academic programs. It also provides "A-level" pre-university preparation courses. There is little information on the size or effectiveness of the continuing education programs, which were conceived when the community college model did not exist in the Caribbean. The UG offers similar certificate programs.

Freestanding *"sectoral" training institutions* provide training to nurses, agriculturalists, police and others expected to work for the public sector. The schools have traditionally been linked with their respective

[6] The government of Trinidad & Tobago recently began a program to upgrade this institution.

ministries. In Jamaica and Barbados, they have been incorporated into a community college system. In Bahamas, the School of Nursing is now part of the College of the Bahamas, but in Guyana and Trinidad & Tobago the schools are still freestanding. Many graduates of nurse-training schools emigrate to the USA and Canada. Police training bodies exist in most countries and are seeking to upgrade and coordinate their programs. Several hotel training or "hospitality" schools, including the Bahamas Hotel Training College, are of high quality but have recently been absorbed into umbrella institutions. Some are well managed, staffed and equipped, but all need increased cooperation and modernization of their curriculum. The model of sectoral training linked with specific ministries is out of date; these institutions need to be part of a community college consortium or association or even one institution in order to share a common core and enjoy better articulation.

A few mainly private institutions offer *in-service training to commerce, industry, and government*. The most successful and interesting of these institutions is ROYTEC, which began as an in-house training center for banks in Trinidad & Tobago and has now expanded to offer middle management training to other industries there. The UWI Institute of Business, also in Trinidad & Tobago, provides technical and administrative skills to middle-level and senior management. The National Training Agency (NTA) in Guyana, supported in its start-up phase by the EU, also has as one of its mandates in-service training of industry and commerce staff. Public community colleges and TVET institutions are slowly increasing contract-based in-service training to industry along these lines.

Teacher-training colleges have traditionally offered less than a BA degree, but the tendency now is to move them to BA level. Cyril Potter Teacher Training School in Guyana offers a diploma and is seeking to improve its articulation with the University of Guyana. Because of a decline in demand for teachers, Erdiston College in Barbados is focusing more on in-service training. The physical facilities of these two institutions may be used to establish community colleges.

Foreign-based virtual and distance training institutions are increasing their reach in the region, although little information is available. These include Phoenix and de Vrys Universities in the USA, and the British Open University. They offer certificates and degrees that may be recognized in their home countries. Meanwhile, official statistics say 16,000 Caribbean students attend bricks-and-mortar schools overseas. Information is not available on the levels and types of post-secondary education and training these students are seeking.

Skill-training opportunities are provided alike to those who have finished secondary school and to dropouts. The training institutions are usually not considered post-secondary, yet more and more of their students have completed secondary education. The schools are often associated with the ministry of youth or labor. Human Employment and Resource Training (HEART) in Jamaica reaches 31,000 young people per year, focusing on industry and services, mainly at semi-skilled and skilled levels (levels 1 and 2). Students usually do not work at higher levels. HEART has a "social" goal: getting high-school dropouts off the streets, inculcating positive social values, providing remedial learning, and offering skill training.

HEART is financed by a 3 percent payroll tax, but only a few of its programs respond directly to industry requests. In contrast, some Latin American training institutions that are financed by an earmarked tax of around 1 percent (e.g., Servicio Nacional de Aprendizaje (SENA) in Colombia and Serviço Nacional de Aprendizagem Industrial (SENAI) in Brazil) do undertake programs at the specific request of industry, and they are increasingly offering training at the post-secondary level. After long discussions, Guyana decided not to use an earmarked tax, apparently because industry leaders were not convinced the training programs would meet their specific needs. The Barbados Vocational Training Board (BTVI) enrolls 1,500 students under a mandate similar to HEART's. Several small "labor colleges," such as Critchford Labor College in Guyana, provide similar programs linked with the Ministry of Labor.

Efforts are increasing throughout the region to strengthen *in-country coordination, cooperation, and articulation*. Jamaica has set up coordination mechanisms to link community colleges through planning, sharing experiences and developing curriculum, as well as articulating with BA-granting institutions—a consortium with power and funds. The Barbados Community College, which has four campuses and many programs, is a good small-country approach to coordination: a single community college encompassing all the areas of post-secondary education. COSTAATT in Trinidad & Tobago is a start at linking several institutions in that country.

In the voc/tech area. the National Training Agency (NTA) in Trinidad & Tobago, the National Council on Technical and Vocational Education and Training (NCVET) in Jamaica, the BTVI in Barbados, and a National Council just created in Guyana are designed to link industry with schools and to establish a clear analytical and policy basis for voc/tech education. These agencies are only slowly starting to get power, funds, a strong private sector role, and a say in decision-making. They are just beginning to develop labor-market observatories and to do the analytical work needed to identify needs and coordinate curriculum and course development. A Ministry of Science, Technology, and Tertiary Education has been established in Trinidad & Tobago, and a "tertiary" unit operates in the Jamaican Ministry of Education.

Country and regional cooperation and articulation is also underway. Since 1999, CARICOM has been looking into common accreditation mechanisms for TVET and other programs, but this work has not yet reached fruition. The region has been moving to develop a free flow of labor within the Caribbean, and common worker certification; CXC is seeking a common certification for voc/tech skills. Some groups have sought to develop Caribbean-level training programs. The Association of Caribbean Commissioners of Police (ACCP) recently revised its constitution and now redefines its mission to focus on three critical elements, including "the professional and technical skills development of police officers." A regional Association of Higher Education Institutions meets from time to time.

A POLICY AGENDA FOR POST-SECONDARY EDUCATION AND TRAINING

The five countries under study provide post-secondary non-academic education with multiple institutions, missions, governance methods, structures, financing techniques and quality levels of staff and curricula. The five governments recognize the importance of making these institutions more effective in training needed middle-level manpower, and have initiated programs and approaches to strengthen and to expand them. This section summarizes five key policy challenges:

- Build institutional capacity for improved management, closer links to the labor market, better student services, higher quality and more effective teaching;
- Link the public and private sectors more effectively;
- Encourage more vigorous coordination, certification, and articulation mechanisms;
- Rethink the role of academic institutions; and
- Design a system for sustainable and cost-effective financing of an expanded post-secondary system.

Strengthen Institutional Capacity

Determine and Use Best Practices

In Canada, the Association of Canadian Community Colleges (ACCC) has defined 13 elements that define "best practice" in post-secondary non-academic institutions such as community colleges:

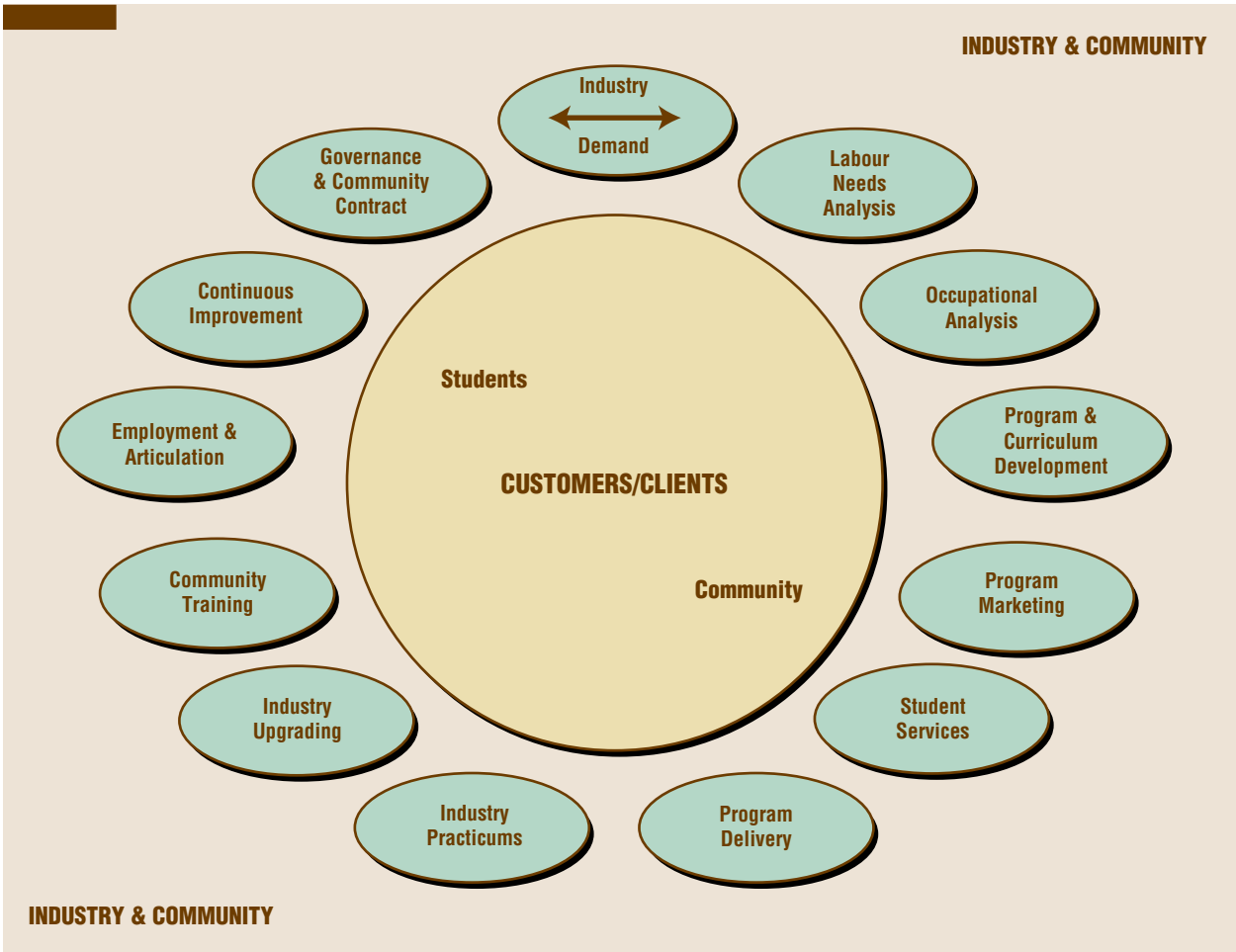
Industry Demand—The college is responsive to labor force requirements and creates opportunities for citizens to enter the labor market or improve their skills through empowered training.

Labor Needs Analysis—It ties many of its programs directly to labor market analyses and other internal and external reviews, and increases, reduces, or adjusts these programs as necessary to supply the market with the right number of graduates each year.

Occupational Analysis—It designs its curricula on the basis of competencies. Successful completion of a program should mean something like this: "After completing this course, all students will be able to accomplish 80 percent of the tasks in [a particular entry-level job.]"

Program & Curriculum Development—The college's programs differentiate themselves from those of other post-secondary schools through skillful integration of theory (classroom) and practice (shops and labs, on-site at the college and off-site at employers).

Program Marketing—The college identifies and interacts with all its key stakeholders—business, the community and government. In this way it brings both theory and practice into the classroom and makes decisions on matters such as tuition charges (pricing, promotion vehicles and product), course offerings, and physical location of courses. It also links its programs with secondary schools



and universities in order to assure continuity in curricula and to assist students in life/career planning.

Student Services—The college provides a variety of student services, which could include: career and personal guidance, student government opportunities, recognition for prior learning, peer tutoring opportunities, assistance with learning and/or emotional problems, and guidance for students and staff around sensitive subjects. Whenever necessary it provides remedial learning services.

Staffing—The college hires faculty members who have both academic credentials and industrial, business or community experience. The college develops and maintains a dynamic professional development program for all its staff (support, faculty and management). The college gives its staff access to Internet, electronic documentation and learning tools that are available in-country and internationally.

Industry Practicum—All programs require that students have a minimum number of weeks of practical exposure at an employer's worksite prior to graduation. Many "clinical," "co-op" and "on-the-job" programs may have extensive on-the-job training

Industry Upgrading—The college provides physical access to local employers and employees. It accommodates their upgrading needs through continuing education (night school and distance education access) and specialized training contracted through government and employers. This is a significant portion of the college business and provides financial resources to augment the base budget provided by central government.

Community Training—College management, faculty and students are actively involved in their local communities and engage in outreach to "read" the needs of the community and respond accordingly.

Employment—Through its own graduate employment service, co-op employment officers, and with the help of faculty and staff, the college helps graduates to prepare for job interviews, receive postings from interested employers, and gain and hold employment. The college undertakes surveys to identify the work experience of its graduates and adjusts its programs accordingly.

Articulation—The college helps ensure that its programs are nationally accredited, providing outside review of the programs and assuring that programs meet national and international standards.

Continuous Improvement—A Quality Management (QM) system monitors and provides continuous process improvement to all college operations. As part of its QM system, the college or group of colleges contacts graduates to determine their success in the marketplace. It publicly distributes these reports. Key performance indicators include: percentage of graduates employed, average salary earned, percentage working in a job directly related to their training program, and degree of satisfaction from program content, facilities, equipment, instruction and job preparation. National and regional associations provide forums for colleges to meet, share best practices, and collaborate on issues and outcomes of common need. Strategic planning for national issues flows from the associations and allows colleges to collaborate to benefit their communities.

Governance & Planning—The planning cycle is year-round and begins at the start of the school year with a projection of expected changes. This is followed by a budget forecast and government feedback on recommendations, and ends with an annual report. The college's orientation and strategic planning are discussed by a board consisting of representatives from faculty, students and graduates of the college; organizations and community services; the business and industry sectors of the local community(ies); and community members-at-large.

Pride. Finally, the college is proud of its students and what it provides to them. There is no sense of being second-rate or second-class compared to academic institutions.

Foster Institutional Reform

Many institutions in the region under study have some of the above characteristics, but none have all of them. While financial and human resources are obviously not as plentiful in the Caribbean as they are in Canada, the challenge is to move continually closer to this model. The Caribbean institutions that do best are those that are (a) well financed, (b) autonomous, and (c) held accountable for their results. Another and probably the most important determining factor is the quality and continuity of institutional leadership. Farsighted and creative leaders who are also good managers are key to successful institutions Governments must set conditions to encourage leadership and good management.

Labor market responsiveness is of critical importance. Most Caribbean institutions are not adequately responsive to labor requirements, and most do not tie their programs of study to labor market needs. Only a very few institutions actively trace their graduates to rate the success of their training. It should be understood that structural unemployment, especially of young people, would complicate these assessments, but a school principal has no excuse for ignorance about what his graduates are doing.

In most cases curriculum is still based on academic criteria poorly linked to jobs. All future curriculum efforts should be "competency based," starting with occupational analysis. A number of institutions say they are doing this, but their rigor is inadequate. Their goal should be a statement something like this: "After completing this course, all students will be able to accomplish 80 percent of the tasks in [a particular entry-level job]." At the same time, all students must have the basic mathematics and communications skills needed for continuous learning. One of the biggest challenges will be to link the teaching of general "transversal" skills with specific job—and skills training.

Some TVET institutions focus excessively on narrow skills that may already be obsolete, or on skills that fulfill certification requirements inappropriate for the Caribbean. Meanwhile, many academic and technical institutions lack programs in areas such as business and management. Curriculum reform requires training curriculum developers as well as teachers, an understanding of labor market developments as well as of changing international standards, and up-to-date equipment. Equipment is a critical issue in several countries, especially Jamaica and Guyana, which have inadequate public funds. Upgraded equipment must be part of a package of curriculum reform, leadership training, and better institutional structures.

Work-oriented post-secondary education differs from BA programs through its skillful integration of theory and practice. Institutions must therefore en-

sure that instructors have both practical and academic credentials, paying them salaries that are competitive with the private sector. This is the case in only a few Caribbean institutions.

Student practical experience can include a wide variety of on-site and off-site training through internships, site-based work, "sandwich" courses, etc. There is no single model; whatever works in the local context should be used. Some institutions have been successful at this, but the majority provide an inadequate practicum over too short a time period. Most institutions do not work actively to place students. Sending a list of student names and grades to firms is not enough; success requires meeting directly with firms to discuss their needs and the performance record of recent graduates.

Very few Caribbean institutions adequately market their programs. Problems range from outdated and inaccurate pamphlets to lack of interaction with the community and with business. A good post-secondary institution should provide timely information to—and interact regularly with—key stakeholders in business, the community and government. A simple improvement would be for every institution to have an up-to-date pamphlet on its programs and, if possible, a Web site. School directors should be out regularly in the community and industry describing their services. Information should be readily available on enrollments, applicants, and placements by course of study.

Many institutions provide some remedial programs in English and in basic math, but much more intensive work with clear learning outcomes is needed. This is of particular importance in the Caribbean because of the low quality of primary and secondary education. Equally as important is the explicit teaching of cooperation skills and good work habits, as well as rigorous codes of conduct, especially for boys. The GUYSUCO training center in Guyana is an example of an institution with a strong and well-enforced code of conduct; other institutions may tolerate anti-social behavior to some extent, sometimes for fear of lawsuits by parents.

Use of quality management systems is rare among the institutions studied, although the Barbados Community College is exemplary. All institutions ought to engage regularly (e.g., every five years) in a strategic planning exercise. All institutions ought to be able to provide basic statistics on costs, students, teachers, programs, and student placement in order to allow clear budgeting and fiscal planning.

Most post-secondary non-academic institutions in the Caribbean are considered second-class or second-rate compared to universities and BA-granting institutions. A major task is to incorporate the model of North American community colleges that take pride in their students, no matter what their level of preparation, and in the added value they offer. In this line, institutions need to incorporate the concept of the "learning college" (O'Banyon), which focuses on learners' needs, engages students as full partners in the learning process, offers as many options for learning as possible, brings students into collaborative learning activities, defines instructors' roles by the needs of the learners, and documents achievements. Given the current rate of technological and demographic change, post-secondary institutions in the Caribbean also need to include in their mission statements a philosophy promoting lifelong learning. Regional leaders are aware of these needs and new paradigms, but much remains to be done.

Finally, civil service status ensures Caribbean principals and schools of stability but gives them inadequate incentives and rewards for performance. In this region as anywhere, the school principal is key to a dynamic institution. Too few principals offer farsighted leadership and high-quality management. The task is to identify, train, and upgrade principals who have these qualities, and to design and implement incentive and support systems to encourage and reward leadership traits in education managers, including dismissal for principals whose performance is inadequate. All principals identified as future leaders should receive formal education and training toward master's degrees in business or institutional management. It would be appropriate to establish relationships with North American institutions capable of providing such training.

Link the Public and Private Sectors

The public education establishment in the five countries has been slow to recognize the role the private sector should play in a modern education and training system. There are two fundamental policy requirements. The first is to ensure that public institutions and agencies are responsive to private sector and labor market needs—i.e., that they become "demand driven," as discussed above at the institutional level. The second requirement is to encourage the growth of private education and training institutions. Private education and training should be seen not as a competitor but rather as a strategic partner to the mission of public institutions. Private education can encourage diversity in offerings as well reduce the burden on public finances.

Encourage a Demand-Driven System

As noted above, individual institutions must increasingly link their programs and courses to the needs and demands of the private sector. In addition to the recommended institutional changes, governments need to take explicit policy actions to encourage more demand-driven approaches. Most individual institutions do not have formal links with the private sector, and governing councils for colleges have little or inadequate private representation. The private sector should have a strong voice on all training and post-secondary education boards. Around the region, TVET coordinating councils already include the National Training Agency (NTA) in Trinidad & Tobago, the National Council on Technical and Vocational Education and Training (NCVET) in Jamaica, the National Vocational Training Board in Barbados, and a National Council recently created in Guyana, all of which have a private-sector voice. These committees need more power, funds, and a say in decision-making, and the private sector needs a stronger if not predominant voice. Without power, the private sector will not be interested in serious participation. A major task of these councils should be to examine labor market trends and needs and to link the findings with new course and curriculum development. Given the increasing mobility of workers, many labor market studies should be regional in scope.

A variety of other policies could encourage a demand-driven approach. For example, if post-secondary institutions are independent of the Ministry of Education, they can be more agile in responding to changing labor market needs. They can offer market-level salaries, end or open courses as needed, and more freely hire and fire staff as needs change. While universities and colleges usually have this autonomy, TVET institutions like BTVI in Bahamas and all the public TVET schools in Guyana now have little or no independence.

A variety of incentives could encourage public institutions to provide, for a contract-based fee, in-service training to meet industry, commerce, agriculture, and service-sector needs. Incentives could include providing matching grants, allowing institutions to keep payments (with proper oversight) to use for improving their own services, or funding for equipment to meet the needs of new demand-driven programs. Since the region's current demographic transition will soon lower the numbers of school-age young people, existing workers can be expected to be a major source of demand for training. Evaluations of school principals could include the extent to which they interact with the private sector and the labor market.

Much more local and regional research is needed on labor market trends and needs, and these studies should be linked with new course and curriculum development. The agenda could include the following: tracer studies of recent graduates and their experiences; surveys of employers' perceived shortages in staffing and skills; projections of skills needs in growing markets; studies of migration patterns of all levels of workers, within and outside the Caribbean; trends in productivity; occupational analyses (e.g., definitions of skills required in individual occupations and relations to curriculum); and analyses of rates of return. Most important is a labor market "observatory" to identify emerging trends quickly. Several countries have begun to develop such programs. At the same it should be understood that all projections for a future labor market are problematic beyond a five-year horizon.

Encourage the Growth of Private Institutions

Only Jamaica reports that a significant percentage (37 percent) of post-secondary level institutions are officially private, but "unofficial" private institutions are growing rapidly. More and more students in Trinidad & Tobago are enrolled in private institutions, but exact numbers are unknown. Guyana has no officially recognized private post-secondary education institutions, and Barbados and Bahamas only a few. Current government policy in the five countries, except for Jamaica, tends to be one of benign neglect, or even active suspicion that private institutions are exploiting students and providing little in return.

Many options exist for strengthening private provision of education and training. Certification and accreditation procedures, both national and regional,are important because of the growing number of distance education programs. But rules should not be so onerous as to discourage private sector growth and participation. A training levy, as developed in Jamaica and common in Latin America, is one possibility. But the Jamaican levy is too high (3 percent of payroll) and industry does not directly benefit, as most trainees are out-of-school young people with few employment opportunities. For a training levy to be acceptable to industry in the rest of the Caribbean, it should be no more than 1 percent. Industry should have a majority vote on the council, and most training should meet specific and agreed-upon industry needs. Firms could receive a

rebate when they train their own staff in recognized courses and programs.

Direct or indirect financial support for private institutions is also possible. One approach could be "vouchers," scholarships and/or subsidized loans to needy students, letting these students choose where to study. Subsidies could be regional if partnerships could be established between governments and private banks. Trinidad & Tobago is experimenting with "dollar for dollar" grant support to students attending private post-secondary institutions. Another approach is to simply "buy" places in private institutions that provide educational services not available in a public institution.

All these are good ideas in principle, but care must be taken in establishing rules so that goals of equity, quality, and relevance are met, with particular emphasis on needy students. Subsidies should not replace the private funds of relatively well-off students if waste is to be avoided. Public oversight is required, and funding should serve some public good, be it equity, meeting labor market needs, or improving institutional quality. It is also in the public interest to ensure fair business practices and truth in advertising in private education. Abuses must be punished and enforcement actions should be published, along with each institution's record.

Studies on the current and potential role of the private sector in education should cover all institutions—from elite well-financed institutions like GUYSUCO and Bahamas Baptist Institute to private IT providers, distance learning institutions, and "mom and pop" outfits that provide training in secretarial, accounting, business and computer services. These studies should examine how the public sector relates to the private institutions, including oversight and certification, as well as noting trends around the world on best practices in public-private relationship.

Build Coordination, Articulation, and Cooperation

In-country and inter-country coordination, cooperation, and articulation are especially important in the Caribbean because of the region's low economic diversification, low economies of scale, and high migration rate. Overlapping institutional missions can make programs non-viable in cost and clients. Post-secondary education works best when programs are articulated to permit students to transfer from one to another and to continue their education at higher levels. Coordination at a regional level can foster area-wide courses and programs where no one country can muster enough students. Regional cooperation can also create labor market mobility to broaden the Caribbean economic base. Programs of student and institutional testing and accreditation would be prohibitively costly if each country developed them separately.

As noted above, Jamaica links its eight community colleges through planning, sharing experiences and developing curricula, as well as articulating with BA-granting institutions. This is a consortium with power and responsibility. The Barbados Community College, with four campuses and many programs, is an example of a small-country approach to coordination—i.e., it is a single centrally managed community college that delegates powers to each campus. COSTAATT in Trinidad & Tobago needs to define its role, for it is regarded with some uncertainty as an extra layer of bureaucracy. A possible University College system that might supersede COSTAATT is now under discussion.

The five countries have made progress on skills certification over the last decade. A recent study (Dussel) examines efforts in Jamaica and Trinidad & Tobago. Jamaica's system is more developed, with consistent financing, alliances with the industry and service sectors, and a focus on "level 1" (semi-skilled) training. Trinidad & Tobago's system, more recently and less firmly established, needs to expand beyond level 1, while its National Training Agencies (NTAs) need more funding and greater prestige.

Regional cooperation and articulation is underway, but much remains to be done. CARICOM has been working since 1999 on common accreditation mechanism for TVET and other programs, and has been criticized for its slow pace. Recent proposals by the Caribbean Examinations Council (CXC) to certify TVET programs should be examined in relation to changing markets; existing international standards can be accepted or adapted to Caribbean needs. A new Caribbean Association of National Training Agencies (CANTA) could be a source for regional skill standards; they should be competency-based rather than academic.

Movement should continue toward a free flow of labor within the Caribbean, as well as common worker certification, and proposals of the 2003 COSHOD meeting of Ministers of Labor should be implemented rapidly. Regional cooperation in training teachers for post-secondary education is an important goal. Distance education could be helpful, but the small number of potential students in the region could make it not cost-effective unless existing programs or networks are adapted to the

Caribbean. The Commonwealth of Learning could offer technical expertise; distance technologies could also be useful for information-sharing and virtual conferences.

A variety of regional associations should be established and/or strengthened. Groups for community college principals and leaders and associations in sectors such as health, agriculture, accounting, police science, IT training, etc. should be priorities. The Association of Caribbean Commissioners of Police (ACCP) is one association focusing on upgrading and coordinating training. It recently re-defined its mission to include "the professional and technical skills development of police officers." With new technologies, groups no longer have to meet in person; support should be sought to finance virtual meetings using closed-circuit satellite television.

Rethink the Role of Institutions Granting Academic Degrees

Institutions granting BAs and other higher degrees impinge on all other post-secondary institutions, since any reform of post-secondary education below the BA must coordinate with these institutions. UWI, UTECH Jamaica and UG had until recently a near-monopoly on BA degrees. The College of the Bahamas and Barbados Community College also award BA degrees. Private post-secondary institutions such as Temple University, De Vrys and Phoenix are moving into the region, especially in Jamaica, which offers the largest economies of scale. This growth of private institutions offering degrees, and of private distance-education courses, confirms that the regional market for BAs is growing.

The University of West Indies (UWI) has prepared a strategic plan for 2002–2007. As the consensus "apex" or highest-quality institution in the region, UWI seeks to emphasize graduate education and research and proposes only modest undergraduate enrollment increases (3.8 percent per year) at its three campuses. UWI seeks cost recovery equivalent to 20 percent of expenditures per student while becoming more student-centered and cost-effective. The plan projects a continued emphasis on research and graduate education and sessment of quality for the entire region. The CSEC assesses proficiency in academic as well as technical subjects. To continue their studith little demand, and is also seeking ways to respond to national rather than just to regional priorities.

Two elements of UWI's plan impinge on schooling below the Bachelor of Arts level. UWI seeks to expand its Distance Education program by 5,000 students, which could draw students from non-BA schools. Most distance education programs offer certificates rather than BA degrees, but have not so far been cost-effective. UWI also seeks to expand the School of Continuing Studies, its part-time and evening courses unit, mainly at a level below the BA degree. The University of Guyana has similar plans to improve its continuing studies programs. While competition is usually a good thing, the UWI and UG programs might not be economically viable because the potential student pool is so small. Furthermore, neither UWI or UG appear agile enough in responding to employer or potential student demands.

Both UWI and UG ought to look critically at the viability of their efforts to get into this new market. The small potential clienteles and lack of economies of scale can hurt competing programs. This suggests that an institution like UWI should focus on what it does best—deliver high-quality undergraduate and graduate studies and research, without trying to expand into AAs, certificates, and non-degree programs. UWI's outreach to industry should focus on middle- and higher-level management training. Furthermore, UWI's feeler into distance education conflicts with efforts in Barbados, Trinidad & Tobago and Bahamas to establish university colleges.

Consensus is growing in Trinidad & Tobago, Barbados, and Bahamas on moves to establish "university colleges" independent of UWI to meet national needs. The Barbados Community College would become a "university college" and Bahamas College would become a university. But plans should explicitly safeguard the importance and quality of programs below the BA level. At all costs, they should avoid "academic creep"—in which AAs, certificates, and diplomas are considered second-rate and all incentives for students push them toward the BA level. Experience in the USA and Canada suggests that "community college" institutions should be independent of BA-granting institutions.

Design Sustainable and Cost-Effective Financing for an Expanded Post-Secondary System

Evaluate the Financial Feasibility of Enrollment Increases

Upper-income countries with per-capita GDP similar to that of Bahamas and Barbados are already enrolling 50 percent of the post-secondary age group, and middle-income countries are enrolling 30 per-

cent. While it is impossible to set a specific target for post-secondary growth, both social and labor-market demand are likely to lead to major increases. Gross enrollment ratios could reach or exceed 40 percent by 2015 in most of the five countries. Barbados is already at this level, and the government of Trinidad & Tobago, where enrollment is less than 10 percent, has already set a 60 percent ratio as a target for 2020. Post-secondary gross enrollment ratios will increase in part because these institutions will serve not only 20- to 24-year-olds but also adults in the labor force who seek to upgrade their skills. Agencies not normally considered post-secondary, such as labor colleges and youth training programs, ought to be included in these numbers as growing numbers of their clients have a secondary education.

More important than increasing enrollment is the need to encourage the growth of community college-type institutions. By 2015 these should account for 60–70 percent of all post-secondary enrollments, but a combination of inertia and ingrained social attitudes could lead to enrollments larger than needed and possibly unsustainable at universities and other BA-granting institutions. Finally, as discussed later in this report, private post-secondary education should be encouraged to help promote diversity and alleviate financial burdens on government.

In order to assess the financial feasibility of increasing post-secondary enrollment, enrollments and expected public expenditures were projected to 2015 for the entire education system in four of the five countries studied (financial data was lacking for Bahamas). The assumptions in Table 6 were that gross post-secondary enrollment would be 40 percent of the school-age cohort. Enrollments in primary and secondary education would be 100 percent of the school-age population and 80 percent in pre-primary.

Because of the current demographic transition, in which families are having fewer children, primary and secondary enrollments in the five countries are expected to increase only marginally or decline by 2015. On the other hand, enrolling 40 percent of the

TABLE 6

ENROLLMENT FOR 2000 AND PROJECTIONS FOR 2015

Countries	Number of Students by level of Education							
	Pre-Primary	Pre-Primary (Projected at 80 percent enrollment)	Primary	Primary (Projected at 100 percent enrollment)	Secondary	Secondary (Projected at 100 percent enrollment)	Post-Secondary	Post-Secondary (Projected at 40 percent enrollment)
	2000	2015	2000	2015	2000	2015	2000	2015
Bahamas	2,073	10,421	33,145	35,064	29,184	36,077	6,547	12,350
Barbados	6,282	5,545	24,225	19,004	25,367	19,663	8,078	7,120
Guyana	41,845	22,437	108,909	77,901	68,764	80,837	9,539	24,770
Jamaica	106,448	80,181	328,496	301,338	272,395	304,657	35,995	105,255
Trinidad & Tobago	27,111	33,423	155,360	107,250	133,679	102,265	7,737	40,346

Source: CEPAL/CELADE, Author Calculations

Notes: Projected enrollment for 2015 is based on population projections from CELADE and enrollment goals defined for each level. Pre-primary projected enrollment is 80 percent by 2015, as the current ratio in Caribbean countries is expected to be maintained. Primary education is projected to reach the Millennium Development Goal of 100 percent by 2015; secondary education is projected to increase enrollment to 100 percent by 2015, as most Caribbean countries have already met the 75 percent goal for 2005 defined in the Summit of the Americas; post-secondary education is projected to increase enrollment to 40 percent by 2015, as upper-middle-income countries currently have a 30 percent average.

eligible population in post-secondary education would raise Trinidad & Tobago enrollment from 8,000 to 40,000 students; enrollments in Guyana and Jamaica would triple and in Bahamas would double. Barbados is already enrolling 36 percent and so would require little to reach 40 percent.

Unit costs in post-secondary education (Table 7, based on data reported to UNESCO) vary greatly from country to country. Trinidad & Tobago spends US$12,239 (PPP) per student on post-secondary education, compared to $9,178 in Barbados, $6,039 in Jamaica, and only $840 in Guyana. Jamaica's unit costs are high compared with its per capita income. It is interesting that Trinidad & Tobago spends only $846 per primary student and $965 per secondary student—less than Jamaica, which is a much poorer country, and less than 20 percent of what Barbados spends. (Bahamas figures were not available.)

Public expenditures on education to 2015 are projected on the following assumptions: (a) per-student expenditures increase in Jamaica and Barbados at the same rate as growth of GDP per capita; (b) expenditures per primary and secondary student increase in Trinidad & Tobago and Guyana to 16 percent and 20 percent of GDP per capita, to cover what appears to be a "quality" shortfall in per-student costs; (c) Guyana's per-student expenditures in post-secondary education double to cover what appears to be a "quality" shortfall compared to its neighbors; (d) the percentages of enrollments in private education do not increase and cost recovery in higher education is zero; (e) per capita GDP rises in accord with estimates by the World Bank (Table 2).

On this basis, public expenditures on education as a percentage of GDP are projected to 2015 (in Table 8).

Results vary greatly. With a relatively high per capita income, high enrollment ratios and a declining population, Barbados appears well able to finance its public education system, as spending would decline from the current 7.1 percent to 5.5 percent of GDP by 2015. This suggests that Barbados could afford to increase enrollment ratios in post-secondary education to 50 percent or even 60 percent of the school-age population.

In contrast, Jamaica would need to increase public expenditure on education from the current 8.7 percent to over 10 percent of GDP. This is unlikely, and Jamaica will have to reduce its per-student expenditures in post-secondary education and/or increase private-sector participation. Trinidad & Tobago would need to increase education spending from 2.9 percent of GDP (low compared to its neighbors and competitors) to 7.2 percent. This would mean quadrupling enrollments in post-secondary education, increasing expenditures per student at the primary and secondary levels to amounts consistent with competitors, and continuing to spend a high amount per post-secondary education student. To increase quality and enrollments at all levels of edu-

TABLE 7

UNIT COST BY LEVEL OF EDUCATION

Countries	Pre-Primary		Primary		Secondary		Post-Secondary	
	2000	2015	2000	2015	2000	2015	2000	2015
Bahamas	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Barbados	n.a.	—	4,632	7,217	5,168	8,052	9,178	14,299
Guyana	361	579	303	1220	552	1669	863	2,786
Jamaica	386	429	902	1,001	1,409	1,564	6,039	6,705
Trinidad & Tobago	n.a.	n.a.	846	1,438	965	1,640	12,239	20,804

Source: UNESCO, except for Guyana; authors' estimates based on data provided by Ministry of education of Guyana

Notes: In Guyana and Trinidad & Tobago's public expenditure for primary and secondary education, the unit cost ($1,220 and $1,669 respectively for Guyana and $2,858 and $3,910 respectively for Trinidad & Tobago), is significantly below average. A coming? Recent? quality boost is projected to increase spending to 19 percent of GDP per capita for primary education and 26 percent for secondary education, assuming the increase will achieve OECD countries' average education expenditures. Guyana's expenditures in post-secondary education are projected to increase at twice the rate of other countries.

TABLE 8

PUBLIC EXPENDITURE IN EDUCATION AS PERCENT OF GDP. (YEAR 2000 AND 2015 PROJECTIONS)

Countries	Public Expenditure in Education as Percent of GDP									
	Pre-Primary		Primary		Secondary		Post-Secondary		Total	
	2000	2015	2000	2015	2000	2015	2000	2015	2000	2015
Bahamas	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.2	n.a.
Barbados	n.a.	n.a.	2.4	1.8	2.9	2.2	1.8	1.5	7.1	5.5
Guyana	0.5	0.3	1.1	1.9	1.2	2.7	0.3	1.4	3.1	6.3
Jamaica	0.1	n.a.	3.0	2.4	4.0	3.9	1.5	3.9	8.7	10.2
Trinidad & Tobago	n.a.	n.a.	1.1	1.4	1.0	1.7	0.8	4.1	2.9	7.2

Source: Author's calculations based on World Bank data and on data provided by Ministry of Education of Guyana

Notes: Trinidad & Tobago's public expenditure for primary and secondary education, as a percentage of GDP (0.7 percent in both cases), is significantly below OECD countries' average, unlike other Caribbean countries such as Jamaica and Barbados. A possible quality boost is projected to increase spending to 19 percent of GDP per capita for primary education and 26 percent for secondary education, assuming the boost achieves OECD countries' average on education expenditures. Guyana data are estimates based on data provided by the MOE, Guyana.

cation, Guyana would need to raise its education spending from 3.1 percent to 6.3 percent of GDP. This might be especially difficult because of the low percentage of GDP currently going to government services.

Seek Cost-Effectiveness in Post-Secondary Education Financing

No matter what the apparent feasibility of future public financing, all five Caribbean countries under study will need to seek creative ways of reducing the burden on public funds of expanding their post-secondary education. Any savings could be plowed back into the education and training system through increased outreach or higher quality. The five countries ought to consider three options—increasing cost recovery, encouraging the growth of private education, and increasing the number of short courses.

Cost recovery, common in the USA, is no longer a taboo subject even in Europe. Recent legislation in the United Kingdom introduces cost recovery into all UK post-secondary institutions. Cost recovery not only increases revenue to government; it also encourages students to complete their studies in the requisite time period. Several Caribbean institutions (e.g., UWI, UG) already recover about 20 percent of their costs. Barbados is beginning to discuss cost recovery in its public institutions. University-level institutions should charge more than post-secondary non-university institutions do, since their clientele is usually of higher socio-economic status.

Encouraging the growth of private institutions is an option that all five countries should consider. At present only Jamaica officially reports a significant number (37 percent) of private post-secondary institutions, but "unofficial" private institutions are growing rapidly. Trinidad & Tobago has a policy of publicly subsidizing private institutions through its "dollar-for-dollar" program, but enrollment in private institutions is reportedly still low. Guyana has no recognized private post-secondary institutions, and Barbados and Bahamas only a few.

Loan and scholarship funds for the needy will also need to be developed. Given the small size of the Caribbean countries, a regional effort with a commercial bank might be considered.

To reduce the burden for government of increased post-secondary enrollments, the growth of full-fledged universities could be restricted and the growth of shorter certificate and associate-degree programs encouraged. The savings would be significant. For instance, spending in Jamaica per student per year at

UWI is more than four times the cost at community colleges. As students attend community colleges for two rather than four years, government savings would be eightfold for every student enrolled in community colleges rather than university. This could work especially well if articulation toward the university level were better, so that deserving students could transfer in with a minimum of difficulty.

A final but almost unstudied option for reducing costs per graduate would be to reduce repetition and dropouts in post-secondary education.

Adequate financing of post-secondary education does not mean providing money to continue the status quo. It means using public funds to achieve policy goals such as quality, equity, and relevance. Financial accountability is fundamental. Ministries of education ought to require simple, clear reports by institutions on costs per student and per graduate, student-teacher ratios, placement of graduates, and the extent to which articulated goals of cost, graduate numbers and student placement have been met.

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ANNEX 1

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Bahamas	College of Bahamas (COB)	Nassau, Freeport	n.a.	n.a.	4,000	Public	Universities/ Colleges	Half of enrollment is part-time. Offers Bachelors Degree. Also, 75 percent of college funds come from govt.	BAs in Nursing, Education, Information Technology and Business. AAs in Education and Arts, Communications and Creative Arts, English, Social Sciences, Business Hospitality & Tourism, Entrepreneurship, Natural Sciences and Environment, Nursing, Allied Health, Technology and Pure and Applied Sciences.
Bahamas	Bahamas Technical and Vocational Institute (BTVI)	New Providence, Grand Bahamas, Freeport	n.a.	n.a.	1,500	Public	Vocational/ Technical	Govt. subsidized—students only pay $100; one-month placement with employers	One-year certificates in: automotive, beauty, decorative trades, business, construction, electronics & fashion; Licenses and Certificates in A+ certification, Basic Welding, Journeymen Plumbing, National Fly Fishing, Refrigeration Recovery, Single-Phase Theory & Electrical Drafting' and two- year Diplomas in Office Systems and Administration II, Evening Wear Design & Production, Women's Design Production.
Bahamas	Bahamas Baptist Community College (BBCC)	Nassau	n.a.	n.a.	800	Private	Community College	100 full-time students and 700 part-time students	Two- year AA's in 23 disciplines, from Accounting and Computer Science to Psychology and Sociology

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Bahamas	Success Training College (STC)	Freeport, Nassau	n.a.	n.a.	n.a.	Private	Vocational/ Technical		AAs and diploma programs in Business, Computer Science, Professional Development, Technology and Arts & Sciences. Certificate programs in Electronics and in industry-specific computer applications
Jamaica	Brown's Town Community College	St. Ann	708	959	1,667	Public	Community College	Offers Bachelors Degree	Bachelor of Science at Excelsior, Knox, Montego Bay and Brown's Town; Bachelor of Education at Knox. Associate degrees at all eight colleges. Courses in Business Studies, Cosmetology, Nursing, Computer Information Technology, Hospitality, Technology, Vocational & Entrepreneurial Training, Teacher Education, Agriculture & Environment, Continuing Education, and General Studies Modular (short term). UWI Certificates in Public Administration, Business Administration, Management Studies and Social Studies.
Jamaica	Excelsior Community College	Kingston & St. Andrew	692	937	1,629	Public	Community College	Offers Bachelors Degree. Also operates Outreach centers	

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Jamaica	Knox Community College	Manchester	871	1,179	2,050	Public	Community College	Offers Bachelors Degree. Also operates Outreach centers	
Jamaica	Moneague College	St. Ann	340	460	800	Public	Community College	Offers Bachelors Degree	
Jamaica	Montego Bay Community College (UTECH)	St. James	481	651	1,132	Public	Community College	Offers Bachelors Degree. Also operates Outreach centers	
Jamaica	Bethlehem Morovian College		570	772	1,342	Public	Community College	Multidisciplinary College - Offers Bachelors Degree. Includes teachers Colleges, but has been expanded to include other subjects without granting Associate-level degrees. Also operates out-reach centers	
Jamaica	Portmore Community College	St. Catherine & Manchester	618	836	1,454	Public	Community College	Offers Bachelors Degree. Also operates Outreach centers	

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Jamaica	College OF Agriculture, Science and Education (CASE)	Portland	n.a.	n.a.	n.a.	Public	Specialized Sectoral Training		
Jamaica	G.C. Foster College of Physical Education and Sports		n.a.	n.a.	n.a.	Public	Vocational/ Technical	Offers Associate and Bachelors Degrees	
Jamaica	Edna Manley College of the Visual and Performing Arts		n.a.	n.a.	n.a.	Public	Vocational/ Technical	Offers Associate and Bachelors Degrees	
Jamaica	University of The West Indies (UWI)	Mona	n.a.	n.a.	13,889	Public	University/ College		Bachelors degree in humanities and education courses, social sciences, law, medical sciences, pure and applied sciences
Jamaica	University of Technology	Portland	519	703	1,222	Public	University/ College		
Jamaica	HEART/NTA		n.a.	n.a.	31,000	Public	Youth Training Program	Financed through 3 percent of the wage cost of enterprises	

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Jamaica	B&B institute of Business		n.a.	n.a.	n.a.	Private	Vocational/ Technical		
Jamaica	Institute of Manage-ment and Production (IMP)		n.a.	n.a.	n.a.	Private	Vocational/ Technical		
Jamaica	Jamaica Institute of Manage-ment (JIM)		n.a.	n.a.	n.a.	Private	Vocational/ Technical		
Jamaica	Institute of Computer Technology		n.a.	n.a.	n.a.	Private	Vocational/ Technical - Community College		
Jamaica	Toolmakers Institute		n.a.	n.a.	n.a.	Private	Vocational/ Technical		
Jamaica	Software Training Centre Ltd.		n.a.	n.a.	n.a.	Private	Vocational/ Technical		
Trinidad & Tobago	Trinidad & Tobago Institute of Technology (TTIT)		n.a.	n.a.	n.a.	Public	Community College		

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Trinidad & Tobago	Royal Bank Institute of Business and Technology (ROYTEC)		n.a.	n.a.	n.a.	Private	In-sService Training		
Trinidad & Tobago	College of Science, Technology and Applied Arts of Trinidad & Tobago (COSTAATT)		n.a.	n.a.	2,100	Public	Vocational/ Technical	Consists of: • San Fernando Technical Institute • John S. Donaldson Technical Institute • Government Vocational Centre • Eastern Caribbean Institute of Agriculture and Forestry • Joint Services Staff College • Metal Industries Company Ltd.	

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
								The NIHERST Colleges: • Information Technology College • Business Management Division • College of Nursing • College of Health Sciences • School of Languages • General Education Division	
Trinidad & Tobago	University of West Indies (UWI)	St. Augustine	n.a.	n.a.	8,837	Public	University / College		
Barbados	Barbados Community College (BCC)		1,403	2,795	4,198	Public	Community College		BAs, AAs, Diplomas and Certificates in Agriculture, Commerce, Fine Arts, Liberal Arts, Science and Technology.

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Barbados	Erdiston Teachers College		22	72	94	Public	Community College	Offers mainly diplomas and certificates in education	Diplomas and certificates inEnglish, Education, Mathematics, Social Studies, Religious knowledge, Health, Physical Education, Music, Home Economics,Woodwork, Gardening, Visual Aids, Continuing Education, Business, Industrial Arts, Educational Management and Administration, amongst others
Barbados	Samuel Jackman Prescod Polytechnic (SJPP)		1,679	1,294	2,973	Public	Vocational/ Technical		AA's and certificates in agriculture, auto body repairs, architectural drafting, auto mechanics, boat-building, business studies, cabinetmaking, carpentry and joinery, clothing crafts, consumer electronics, electrical installation, home appliance servicing, micro-electronics, network technologies, refrigeration and air-conditioning, home economics, mechanical maintenance, mechanical engineering, plumbing, welding, printing, building construction, cosmetology, electronics, catering, carpentry and joinery, fishing vessel operations, landscaping and horticulture, block laying and concreting, and others

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Barbados	University of the West Indies (UWI)	Cave Hill	1,310	2,672	3,982	Public	University/ College		Undergraduate and postgraduate programs in Humanities and Education, Law, Pure and Applied Sciences and Social Sciences. Clinical and postgraduate programs in Medicine. Academic programs in departments covering one or more subject areas, e.g. Language, Literature and Linguistics; Biological and Chemical Sciences; Government, Sociology and Social Work. Subjects may be combined in a degree option and may cut across disciplines, departments and faculties
Guyana	Industrial Training Centre		249	4	253		Vocational/ Technical Institution	Offers Technician Certificates, Technician Diplomas or a Certificate of Proficiency	Agricultural Mechanics, Carpentry, Electricity, Fitting and Machining, Masonry, Plumbing, Welding
Guyana	Carnegie School of Home Economics, Craft Production and Design Division		24	1,487	1,511	Public	Vocational/ Technical Institution	Offers Technician Certificates, Technician Diplomas or a Certificate of Proficiency	Catering, Home Management, Short Courses

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Guyana	Government Technical Institute		1,679	410	2,089	Public	Vocational/ Technical Institution		Various
Guyana	New Amsterdam Technical Institute		443	125	568	Public	Vocational/ Technical Institution		Various
Guyana	Linden Technical Institute		190	51	241	Public	Vocational/ Technical Institution		Carpentry and Joinery, Electrical Installation, Internal Combustion Engine, Metal Machining and Fitting, Welding and Fabrication, Radio and Electronics
Guyana	Cyril Potter College of Education	Turkeyen, New Amsterdam, Linden, Rose Hall, Anna Regina, Vreed-en-Hoop, Georgetown	246	1,358	1,604	Public	Vocational/ Technical Institution		Nursery Teacher Training, Primary Teacher Training, Secondary (Academic and Prevocational) Teacher Training
Guyana	National Centre for Educational Resource Development		n.a.	n.a.	n.a.	Public	Vocational/ Technical		

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ANNEX 1 *(continued)*

LIST OF POST-SECONDARY INSTITUTIONS

Country	Name	Location	Total Enrollment (2001–2002) Male	Female	TOTAL	Public/ Private	Type	Comments	Courses Offered
Guyana	University of Guyana		2,455	5,041	7,496	Public	University / College		Agriculture, arts, natural science, social science, health science, education and technology. Certificates in Public Administration, Education, Social Work, Medical Technology, Accountancy, Pharmacy, Personnel Management, and Public Communication, amongst others.
Guyana	Guysuco Training Institute		n.a.	n.a.	n.a.	Private	Sectoral Training	Part of the Guyana Sugar Corporation	
Guyana	Global Technology		n.a.	n.a.	n.a.	Private			

Source: Study of Bottlenecks in Technical Training Programs, Digest of Education Statistics of Guyana 1999-2000, Community Colleges Models in the Caribbean (ACCC), MOEYC.

NOTES on Definitions:

Community College	Offers predominantly Associate Degrees, Diplomas or Certificates
Vocational/Technical Institution	Offers mainly Certificates and Qualifications
University/College	Offers Bachelors Degrees and Master Degrees as well as Associate Degrees
Specialized Sectoral Training Institution	Offers Associate Degrees and Certificates, mainly in Health, Agriculture and Hotel Management sectors
Youth Training Program	
Short-Course Training without Formal Certification Definition	Offers mainly computer training
In-Service Training Program	