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**Female Educational Attainment in Latin America:  
A Survey**

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## FOREWORD

This paper is one of a series of papers that review the factors influencing women's education in developing countries. The papers were commissioned for a project in the Population and Human Resources Department on the determinants and consequences of improving women's education. The review papers examine the importance of family, school and community factors and of education policy in increasing the participation of girls and women in school and improving their achievement levels. They draw on the findings of a large number of published and unpublished studies of individual researchers, on Bank policy analysis and research, and on published reports of other organizations and of governments.

It is widely recognized that education is a critical factor in improving opportunities for women and in achieving development goals. Yet many girls and women in Third World countries face serious obstacles with respect to obtaining education. These barriers must be understood in order to fashion effective policies and programs to raise their education levels. It is hoped the review papers will contribute to improving that understanding.

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## Abstract

This paper reviews the literature on the determinants of educational attainment of Latin American girls and women. It draws on the general findings to identify and assess policies designed or proposed to improve education for females.

The first major finding is that the educational attainment of females reflects a country's level of income and the characteristics of its educational expansion. The main issues in educational attainment of women relate to income and to a country's degree of economic development, although gender-related differences in attainment exist, particularly in higher education.

Another major finding is that both school inputs and family characteristics play a strong role in the achievement and attainment of girls at the primary level. Simple changes in quality-enhancing inputs, such as the provision of textbooks, can raise achievement and retention. The impact of these changes is particularly strong among children from lower income and rural backgrounds. Parents' income and years of schooling also have a significantly positive effect on a child's education. Some evidence indicates a lower opportunity cost of girls' schooling relative to boys'.

Finally, the largest differences between male and female enrollment rates are observed at the higher education levels. Even in those countries with insignificant gender differences in enrollment rates, women require higher levels of education than do men for the same jobs.

## Table of Contents

	<u>Page</u>
Executive Summary .....	1
I. Introduction .....	1
II. Education and Gender in Latin America .....	2
The Expansion of Education since 1960 .....	2
Female Illiteracy and Educational Attainment .....	5
III. Primary Education .....	9
Trends and the Current Situation .....	9
Supply and Demand .....	11
School-related Factors .....	12
Family-related Factors .....	21
Policy Evaluation .....	26
School-related Policies .....	26
Demand-related Policies .....	27
IV. Secondary and Tertiary Education .....	29
Trends and the Current Situation .....	29
Supply and Demand .....	30
School-related Factors .....	30
Factors Affecting the Demand for Education .....	31
Family Socioeconomic Characteristics .....	31
Students' Preferences for Fields of Study and Career .....	32
Education and Labor Market Linkages .....	34
Policy Evaluation .....	36
V. Summary and Conclusions .....	38
References .....	41
Appendix A .....	48
Appendix B .....	55

## List of Tables

	<u>Page</u>
Table 1: Differences Between Male and Female Illiteracy Rates, Around 1980	6
Table 2: Distribution of Adult Population by Highest Educational Attainment, Around 1980 (%)	8
Table 3: Differences Between Male and Female Gross Primary School Enrollment Rates, Around 1984	10
Table 4: Determinants of Educational Achievement and Attainment -- Summary of Studies	13
Table 5: Distribution of Countries According to the Percentage of Females in Total Enrollment at the Tertiary Level, 1984	30
Table 6: Distribution of Countries by Percentage of Females in Total Enrollment by Broad Field of Study, 1975 and 1982	33

## EXECUTIVE SUMMARY

In recent decades, Latin America has experienced a substantial expansion of its educational systems in terms of both the supply of schools and greater demand for educational services. As a result, the educational attainment of girls and women improved throughout the region, albeit with differences in gains across and within countries.

The educational profile of the Latin American population and that of women in particular is closely related to a country's level of income and the characteristics of educational expansion. Countries where modernization of their economies and educational systems took place earlier have lower illiteracy rates, higher levels of educational attainment and greater equality in the education of men and women. Countries with more recent economic and educational growth show a considerable increase in the number of people enrolled at the higher levels of education, while illiteracy rates among younger people in rural areas remain relatively high. In these countries, the attainment of women is still below that of men, especially at the post-secondary level of education. Finally, countries with lower levels of income have higher illiteracy rates, lower levels of educational attainment and a wider gender gap at the upper level of education. Although the main issues in the educational attainment of women relate to income and economic development, the evidence is that gender-related differences in attainment exist, particularly in higher education.

In most countries, while the gender gap has narrowed over time, a large gap remains between urban and rural residents, and in countries with large rural and indigenous populations, vast groups of women are illiterate. Full primary education for rural children has not yet been achieved. Moreover, the advantages of secondary and post-secondary education generally accrue to urban women from middle and upper socioeconomic levels.

The review of the empirical literature on the determinants of educational attainment and achievement of girls and women and the assessment of the policies designed to improve their schooling indicate the following findings and guidelines for action:

- o Both school-related factors and family characteristics have a strong impact on the educational achievement and attainment of children. The impact of changes in school factors is greater among children from lower income and rural backgrounds.
  
- o The school inputs that have a positive impact on achievement and attainment of girls are textbooks and instructional materials, teachers' characteristics and other factors such as adding grades to a school. Consequently, among the school-related policies suggested to raise schooling levels are a greater provision and use of textbooks, suppression of traditional gender stereotypes in reading materials, revision in school curricula to make them more relevant to the lifestyles of rural children, implementation of teaching techniques to foster girls' achievement, adaptation of the school calendar to accommodate housework and income-earning activities, and pre-school and early intervention programs targeted to the needs of rural students.
  
- o Parents' income and own years of schooling have a strong and positive impact on children's education, with the mother's educational level seeming to have a greater impact. The mother's influence also seems to be stronger in the case of daughters than sons, a fact that counterbalances the weaker demand for girls' education linked to the father's education level.
  
- o The relationships between work constraints and enrollment, attendance and attainment are uncertain. However, there is some evidence that the lower opportunity cost of girls' schooling explains why they receive more education than boys. To the extent that work constraints affect school participation, adaptation of the school calendar to



agricultural tasks and the provision of day-care facilities for pre-school-aged siblings would reduce the need for children to work, and reduce the opportunity costs of education.

- o At the secondary and post-secondary levels, selection processes within the educational systems discriminate against students from lower socioeconomic levels. Women with access to higher education are concentrated in fields of study associated with women's traditional roles in society. Policies suggested to address these two issues are the provision of scholarships to lower income groups and the establishment of fellowship programs for women in diverse fields of study.
  
- o Where equality in the education of men and women seems to have been achieved, women are at a disadvantage in entering the labor market from school. Educational attainment is found to be more important for women than for men when entering similar occupations.
  
- o Finally, any future successes in improving the educational levels of less-advantaged girls and women in Latin America will depend not only on the design of educational policies and strategies that target the specific needs of females, but also on a firm commitment on the part of educators, authorities, governments and international organizations to achieve more in education.

## I. INTRODUCTION

This study analyzes the determinants of educational attainment and achievement of girls and women in Latin America and assesses policies designed to improve their situation. The report addresses three issues:

- o What are the effects of the general expansion of education in Latin America on schooling for females?
- o What are the effects of supply factors such as school characteristics and of demand factors such as the family's socioeconomic characteristics on the educational achievement and attainment of females?
- o Which policies will be most effective in addressing the educational needs of girls and women in Latin America?

There are barriers to any comprehensive study of educational policy and status in Latin America. First, the data for some countries are limited. Consequently, much of this analysis applies to the region as a whole, although, cross-country comparisons are made whenever the data permit.

A second barrier is that most of the research has focused on primary education. Finally, most of the educational studies have considered either all individuals or men. As a result, the conclusions and policy recommendations have been general and not directed toward the educational attainment and achievement of females.

This report is organized as follows. The next section reviews the current educational situation of Latin American girls and women. Section III describes girls' participation in primary schools, reviews the literature on the determinants of achievement and attainment and assesses the policies designed to improve girls' education. A similar analysis is presented in Section IV for females at the secondary and tertiary levels. Section V offers conclusions and recommendations.

## II. EDUCATION AND GENDER IN LATIN AMERICA

### The Expansion of Education since 1960

Since 1960, Latin America has experienced a substantial expansion of its educational systems. The supply of schools and the number of individuals demanding educational services have both increased. This expansion was part of the broader process of economic growth and social change in Latin America, characterized by increased urbanization, industrialization and internal migration, to name but a few trends. During this period of growth, education was a priority, and as a result the ratio of public expenditures on education to GNP in many Latin American countries rose.

The overall impact of this new emphasis on education in Latin America has been substantial. Between 1960 and 1980, the average rate of increase in enrollments in primary education per year was 4.03%, for secondary enrollments 8.7% and for higher education 11.04%. Although the expansion of enrollments at all levels was impressive, secondary and tertiary education clearly benefited more than primary schooling.<sup>1/</sup>

At the same time, there were differences across the countries regarding the timing and characteristics of educational expansion. These differences can be illustrated by grouping some of the countries by the similarities in their educational achievements.

The first group, composed of Argentina, Costa Rica, Chile and Uruguay, has illiteracy rates close to or below 10% (Appendix A, Table A.1) and relatively high per capita income (Appendix A, Table A.2). Modernization of their economies and educational systems took place early. As an example, by 1960 illiteracy rates in Argentina and Uruguay were already below 10%. Today, most children in these four countries attend primary schools, and many complete the secondary and tertiary levels. Overall, women in this group have

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<sup>1/</sup>For an analysis of education and development in Latin America see Jallade (1978).

relatively high levels of educational attainment and relatively low rates of illiteracy.

The second group includes Colombia, Mexico, Peru, Ecuador and Venezuela. They are characterized by illiteracy rates between 10-20%. Although expansion of their educational systems occurred after that in the first group of countries, it proceeded swiftly as part of a growth process which emphasized rapid industrialization. It has been suggested that the educational structure of these countries experienced a "mutation," whereby, although the number of people enrolled at the tertiary level has expanded considerably, many others have not completed primary school (ECLAC 1988, p. 38). This mutation appropriately describes the experience of many women in these countries.

The third group, which includes Bolivia, Haiti and the Central American countries of El Salvador, Honduras and Guatemala, is characterized by an illiteracy rate exceeding 20% and per capita incomes that are among the lowest in the region. Haiti is the extreme case -- it has the lowest income per capita in the region, and more than half its population is illiterate. Education levels in this third group reflect the low or uneven degrees of economic development.

Finally, the fourth group, into which fall Cuba and Nicaragua, has strongly emphasized pre-school and basic education for both girls and boys, as well as national literacy campaigns, despite their underdeveloped economies.

In general, a close relationship exists between a country's economic development and the educational profile of its population. Countries with earlier industrialization and relatively higher per capita income have lower illiteracy rates and higher educational attainment. In turn, lower levels of economic development are associated with lower levels of educational attainment. Finally, countries that have experienced rapid and uneven development show substantial accomplishments at the higher levels of

education, while still suffering relatively high illiteracy among the younger population.

As a whole, Latin American countries have improved the general level of education of the adult population considerably and provided schooling for a high proportion of their school-age population. The educational gains of females, their improved access to formal schooling and their increased educational attainment are outgrowths of this general expansion in Latin American educational systems. That is, their advances have been more the result of global socioeconomic changes than of gender-specific educational policies.<sup>2/</sup> This conclusion does not mean there has been no awareness of the issues related to integrating women into development. At the national level, governments have assigned priority to women's issues in plans and programs of a global nature. However, they have often failed to define specific strategies and policies for implementation.

At the regional level, interest in the advancement of women has been expressed in many forums, for example, the four regional conferences on the integration of women into the economic and social development of Latin America (Macuto, Venezuela in 1979, Mexico City in 1983, Havana in 1984 and Guatemala City in 1988). In the area of education generally, the 1980s opened with the Project on Education for Latin America and the Caribbean, followed by other meetings, conferences and workshops that analyzed and proposed recommendations to address the specific situation of girls and women. The resolutions and recommendations made to governments in the area of education have included co-education, revision of textbooks and educational curricula, and adult education programs, with an emphasis on women in rural areas. In many cases,

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<sup>2/</sup>For a review of women as a subject of public policy in Latin America, see ECLAC (1988).

however, implementation of these recommendations has encountered institutional and financial difficulties.<sup>2/</sup>

Further, education projects undertaken by international development agencies "were found to consider surprisingly little that could be considered provision or strategies designed to benefit women" (Stromquist 1986, p. 2). Indeed, the scope of most formal education projects has been general rather than gender-specific.

Despite the progress, not all women have benefited equally from the growth in educational opportunities in the region. Although the main issues of female educational attainment in Latin America relate to income and/or economic development, gender related differences in attainment, particularly in higher education, are observed. To alleviate these differences, gender-focused educational policies and provisions addressing the specific needs of women are required.

#### Female Illiteracy and Educational Attainment

Marked disparities are found in the literacy and educational attainment rates across and within the countries of the region. An analysis of illiteracy rates by gender on Table 1 shows that in all countries for which data are available except Uruguay and the Dominican Republic, illiteracy rates for women around 1980 were higher than for males. The countries with the lowest illiteracy rates -- Argentina, Costa Rica, Chile and Uruguay -- also had the smallest differences in illiteracy rates of men and women. Two of the

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<sup>2/</sup>See, for example, the resolutions from the Second and Third Regional Conferences on the Integration of Women into the Economic and Social Development of Latin America in Macuto, Venezuela, November 1979, and Mexico City, 1983 (ECLAC 1988, pp. 188, 194).

countries with the largest differences in rates -- Guatemala and Bolivia -- were also among those with the highest overall illiteracy rates.<sup>4/</sup>

No clear pattern emerges, however, between the level of literacy of a country and differences in male-female rates. For example, Nicaragua and the Dominican Republic, countries with high illiteracy rates, exhibit a slight difference between males and females, similar to the situation in Haiti and Honduras. Although the gap between men and women is wider in countries with large indigenous populations and low levels of income, women are not at a disadvantage in all of them. Finally, while the gender differences have been narrowing for all countries, they have widened in Bolivia and Guatemala.<sup>2/</sup>

**Table 1: DIFFERENCES BETWEEN MALE AND FEMALE ILLITERACY RATES, AROUND 1980<sup>a/</sup>**

Less than 1%	2-9%	10-20%	Over 20%
Argentina	Brazil	Guatemala	Bolivia
Colombia	Ecuador	Peru	
Costa Rica	Haiti		
Chile	Honduras		
Dominican Republic	Mexico		
Panama	Paraguay		
Nicaragua	Venezuela		
Uruguay			

<sup>a/</sup> In favor of women except in the Dominican Republic and Uruguay.

Source: CELADE (1987); UNESCO (Statistical Yearbook, 1986).

<sup>4/</sup>The illiteracy rates are listed in Appendix A, Table A.1. These rates reflect the cumulative changes in educational policy that began prior to the 1960s.

<sup>2/</sup> For an analysis of the trends in literacy rates, see ECLAC (1982).

More important than the gender differences in illiteracy rates are the differences based on place of residence for both sexes. In the case of women, rates among rural females in the 10-19-year-old age-group are still considerably higher than those of their urban counterparts. Illiteracy rates among rural females 10-19 in Guatemala, Brazil and Peru are approximately 45%, 36% and 22%; in Guatemala, the illiteracy rate for this group is 30 percentage points higher than that for urban girls, while in Brazil and Peru the difference is around 20 percentage points (GELADE 1987). These differences are especially evident in areas with large indigenous and peasant populations. For linguistic, cultural and economic reasons, widespread education for these women remains a challenge. There are also differences in illiteracy rates across women in different age groups: in both urban and rural areas, the rates were higher for women 50 years and over.

The pattern is that of a narrower urban-rural differential for females among the countries to industrialize early (Argentina, Uruguay and Chile) and a substantial disadvantage for rural women in countries with rapid but more recent expansion (Peru, Bolivia, and Brazil).

In addition to the differences in illiteracy rates for women and girls, there are also differences, albeit small, in the degree of educational attainment of women and girls relative to men (Table 2).



**Table 2: DISTRIBUTION OF ADULT POPULATION BY HIGHEST EDUCATIONAL ATTAINMENT, AROUND 1980 (%)**

	None	Primary	Secondary	Tertiary	Total
<u>MALES</u>	20.2	46.5	28.0	5.4	100
<u>FEMALES</u>	24.3	43.5	27.9	4.2	100

Source: Kaneko (1987, p. 24).

The gap in the educational attainment of men and women in the region is, however, less severe than that between women in different countries. For example, although in most countries a relatively high percentage of women have completed at least primary school, less than 25% of women in Haiti have done so. Countries with earlier educational development (Group 1) have the highest percentages of females who have completed primary schooling.

On the other hand, the percentage of Latin American females who have finished higher education is lower than 5%. Uruguay, Cuba and Panama, with nearly 7% of women having completed this level, lead the other countries (CELADE 1987; Kaneko 1987; and ECLAC 1983).

As with literacy rates, there are significant differences in educational attainment for both genders based on an individual's place of residence. Countries for which data are available show significant disparities between urban and rural women. Rural women in Bolivia, Guatemala and Haiti are particularly disadvantaged relative to urban women. In Haiti, for example, nearly 25% of women in urban areas have attained secondary education, compared with less than 2% in rural areas.

### III. PRIMARY EDUCATION

#### Trends and the Current Situation

Most Latin American countries have experienced a general increase in enrollment rates (Appendix A, Table A.3). Moreover, enrollment figures at the primary level indicate few disparities between the access and attainment of boys and girls. In fact, while overall girls have a somewhat smaller probability than boys of enrolling in primary education, in five countries they represent at least half of total primary school enrollments (Appendix A, Table A.4).

Countries with high total enrollments exhibit small differentials between boys and girls, whereas countries such as Bolivia, Guatemala and Haiti with lower levels of development and lower total enrollment figures have larger differences (Table 3). This pattern parallels that described earlier for illiteracy rates. An exception is Honduras, which also has a low per capita income.

These national enrollment figures mask inequities within the countries. In all of them, the levels of schooling of rural children are lower than those of urban residents. In addition, serious problems of inefficiency and low quality plague the educational systems. Repetition, attrition and over-age students characterize both boys and girls and are worse among rural children and lower socioeconomic groups.

**Table 3: DIFFERENCES BETWEEN MALE AND FEMALE GROSS PRIMARY SCHOOL ENROLLMENT RATES, AROUND 1984<sup>a</sup>**

1% or less	2-4%	5-9%	Over 10%
Argentina	Chile	Brazil	Bolivia
Colombia	Costa Rica	Cuba	Guatemala
Dominican Republic	Mexico	Haiti	
El Salvador	Uruguay	Panama	
Honduras		Peru	
Nicaragua			
Venezuela			

<sup>a/</sup> In favor of men except in the Dominican Republic, El Salvador and Nicaragua (Statistical Yearbook, 1986).

Moreover, the favorable national enrollment averages hide the fact that the chances of completing primary education are limited. According to UNESCO (1980) estimates, the average survival rate up to the fourth grade is 73% or below for the region as a whole, and in some cases, 25% of the children are lost between the first and second year of school, a figure that runs as high as 50% in rural areas. Recent data (1984) (Appendix A, Table A.5) reveal that, in six countries, less than 40% of girls in a cohort reached the fifth grade, while, among all countries, the percentages ranged from a high of 99% in Cuba to a low of 23% in Nicaragua. The differences among the countries are striking. Aside from Cuba, the highest survival rates are found in Group 1 countries. Group 3 countries -- those with low levels of economic development -- exhibit the lowest percentages of a cohort reaching the fifth grade. In a majority of the countries, the survival rate of girls is higher than that of boys, a situation that could indicate the lower opportunity cost of female schooling relative to males.

In addition to the low "survival rate" of students, repetition is high, further evidence of weaknesses in the educational systems in Latin America (Appendix A, Tables A.6 and A.7). Several researchers consider repetition to be the major problem in primary schooling (Schiefelbein 1978;

and ECLAC 1983). Repetition in the first grade is much higher than in other grades, exceeding 25% in many countries. Although comparisons between girls and boys are difficult to make because of limited data, evidence from some countries suggests that girls tend to repeat less than boys do.

In poor and rural areas, children starting school are older, their school attendance is lower, and their repetition and dropout rates are higher than for children in urban sectors. Indeed, urban retention rates are more than double those in rural areas. In Paraguay, for example, while 48% of first graders in urban areas complete grade 6, only 15% of first grade pupils in rural areas do so.<sup>6</sup> Although there has been a downward trend in repetition and dropout rates, the numbers have remained high.

### Supply and Demand

Most studies of the determinants of achievement and attainment in education can be grouped into two categories: those focusing on the availability and quality of schools; and those that consider the "demand" for schools and education services by the student and his/her family. For example, teacher quality, availability of textbooks, content of education and other school-related factors affect the "supply" of schools and education. Family characteristics such as income and education of parents, as well as the cost (price) of schooling to parents, affect the demand.<sup>7</sup>

While previous research on the determinants of school participation emphasized factors such as availability, distance to school and costs of education, more recent analyses have focused on characteristics of the decision-making unit. Few of these studies, however, use this framework to identify, for Latin America, school-related factors that affect girls achievement and attainment relative to that of boys and/or systematically

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<sup>6</sup>/See Winkler (1980). He also reported that the reading achievement of urban pupils was double that of rural ones.

<sup>7</sup>/For a description of this approach to schooling choice, see Birdsall (1985).

analyze the differences in returns on investment in the education of girls as compared to boys. Consequently, the remainder of this study focuses on the supply and demand factors that influence achievement and attainment in Latin American schools, concentrating on those factors that are expected to have a differential impact on female achievement and attainment. Several of the analytical studies are summarized in Table 4.<sup>8</sup>

### School-related Factors

A question that has received considerable attention is how the school itself influences achievement and attainment of students, after accounting for family characteristics. One review of the research done in the late 1970s by Simmons and Alexander (1978) suggested that school-related factors -- independent of family characteristics -- had a small effect on achievement in developing countries. A later study by Heyneman and Loxley (1983) contradicted these findings. They examined the impact of school factors and family characteristics on students achievement in science in 29 countries and found that, for the 9 Latin American countries in this study, school factors explained significant portions of the variance in achievement. For example, more than 80% of the variance in achievement in Brazil and Colombia could be attributed to school quality.

In a recent comprehensive review of the literature on school factors and achievement, Fuller (1987) concluded that "much of the empirical work 'suggests' that the school institution exerts a greater influence on achievement within developing countries compared to industrialized nations,

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<sup>8</sup>/For a comprehensive review of the effect of school inputs' on achievement in the Third World, see Fuller (1987). For Latin America, see Schiefelbein, et al. (1978), Schiefelbein (1987) and Muelle-Lopez (1984).

**TABLE 4: DETERMINANTS OF EDUCATIONAL ACHIEVEMENT AND ATTAINMENT--SUMMARY OF STUDIES**

Author	Countries	Outcome Measured	Major Conclusions
Armitage, et al. (1986)	Brazil	Comprehensive exam	Provision of simple quality-enhancing inputs such as textbooks, other instructional materials and teacher upgrading can increase student achievement.
Birdsall (1985)	Brazil	Years of schooling	In both urban and rural areas, the elasticities of demand with respect to public inputs are high. In urban areas, the positive effect of school inputs is greater for children from poorer and less-educated families. In rural areas the effect is greater, if anything, for children from relatively better off families.
Bowman and Goldblatt (1984)	Mexico	School attainment	Work constraints on children are associated with lower schooling attainment and over-age students. The negative effect of low income is greater on the schooling of girls than boys.
Clark (1981)	Guatemala	School attendance	Income-earning and housekeeping activities of children reduce school attendance for some children.
Filp and Schiefelbein (1982)	Bolivia, Colombia, Chile, Argentina	Language and mathematics tests	Pre-school education helps to narrow the gap in the achievement of children from different socioeconomic backgrounds. Rural children benefit the most from pre-school education.
Heyneman and Loxley (1983)	Bolivia, Paraguay, El Salvador, Colombia, Brazil, Peru, Mexico, Argentina	Science achievement Reading and mathematics	School and teacher quality are the predominant influences on student learning.
Irwin, et al. (1978)	Guatemala	School attendance	Parents appear to make schooling decisions based on accurate perceptions of their children's intellectual development. In the case of girls, early intellectual ability predicts length of attendance.
Jamison, et, al. (1981)	Nicaragua	Mathematics achievement	Textbooks and radio-based instructional programs have significant effects on achievement.
King and Bellew (1988)	Peru	School attainment	The influence of family characteristics on the educational attainment of children has lessened over time. The relative impact of parents' education differs for sons' and daughters' schooling. Place of residence is important to females' years of schooling. Simple school inputs such as textbooks and desks are effective in raising schooling levels.
Klees (1979)	Mexico	Language and mathematics	The use of television in secondary schools had a significant positive effect in mathematics and Spanish achievement.

(continued)

**Table 4: DETERMINANTS OF EDUCATION ACHIEVEMENT AND ATTAINMENT--SUMMARY OF STUDIES (continued)**

<b>Sanguinetti (1983)</b>	<b>Bolivia, Brazil, Colombia, Mexico, Paraguay, Peru</b>	<b>Reading and natural sciences</b>	<b>While family factors were found to influence academic achievement, school-related coefficients showed statistically insignificant effects.</b>
<b>Schiefelbein and Farrell (1980)</b>	<b>Chile</b>	<b>Achievement and attainment</b>	<b>There is no evidence of systematic discrimination against women within the educational system. However, because of anticipatory socialization, women score significantly lower than men on the university admission tests. Educational attainment is more important for women than men; for the same type of job, female applicants tend to need higher levels of education than males.</b>
<b>Tienda (1979)</b>	<b>Peru</b>	<b>Labor force participation</b>	<b>Children are more than twice as likely to be economically active if they live in rural areas as urban areas. While social background has the strongest influence on the labor force activity of younger children, individual characteristics such as age and school enrollment are more important for teenagers.</b>
<b>Wolfe and Behrman (1984)</b>	<b>Nicaragua</b>	<b>School attainment</b>	<b>Rural boys receive less schooling than rural girls, possibly because of higher opportunity costs for boys in agricultural work. Family characteristics such as income and parental schooling, particularly maternal schooling, have a significant impact on child schooling.</b>

after accounting for the effect of pupil background" (pp. 255-56). Although the evidence indicates that the more developed a society is, the greater the influence of family characteristics is on attainment and achievement and the smaller the effect of school factors is, even in the relatively advanced developing country of Chile, Schiefelbein, et al. (1983) found school factors to be more important than family characteristics.

There is also evidence suggesting that disadvantaged children are more likely to respond favorably to an increase in the quality and availability of schools. Birdsall (1985) found that rural children and children from low-income and less-educated urban households in Brazil could benefit substantially from improvements in school-related inputs. Using household data from the 1970 census, she estimated high elasticities of demand with respect to the availability and quality of schools in both urban and rural areas.<sup>9</sup>

The percentage change in years of schooling associated with the percentage change in the availability and quality of schools is virtually the same for rural and urban 8- to 11-year-old (1.09 and 1.08, respectively). Rural children in the 12-15-year-old-age-group are more responsive (0.95) to a change in supply than are those from corresponding urban households (0.18). Within urban areas, the results indicate that as the income and education of parents rise, differences in the availability and quality of schools diminishes. The implication, according to the author, is that improvements in school supply would have a greater benefit on children from poor households; opportunity costs seem to be unimportant for most rural children with low levels of schooling.

Beyond the issues of the school's overall influence on achievement and attainment versus that of family characteristics, researchers have attempted to identify the particular school inputs most effective in raising

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<sup>9</sup>As a measure of the availability of schooling, the author used the sum of the income of all school teachers in an area, divided by the number of children aged 7 to 13 in that area. The mean education of all teachers in the area was used as a measure of the quality of the schools.



achievement. The evidence for Latin America suggests that simple changes related to school inputs could be quite effective in reducing repetition and dropout rates and, subsequently, in raising children's performance. The school inputs most relevant to raising schooling attainment are textbooks and instructional materials, teachers' characteristics, the content of education and other supply factors.

Textbooks and Instructional Materials. Even accounting for differences in robustness, most studies suggest that textbooks have a significant positive effect on children's achievement.<sup>10</sup> There is some indication that textbooks could have a larger impact on children from lower income families, rural students and females. For example, Brazilian children with parents who lacked schooling were almost three times as likely to pass primary school if they had used two or more textbooks, compared with those children in the same situation who had no textbooks. In the case of students with parents who had completed primary school, 73% of all children with at least two books passed primary school, compared with 61% of those with no books.<sup>11</sup>

More recent research for Brazil by Armitage, et al. (1986) lends support to the overall importance of textbooks in the education of children. They found that the use of textbooks in rural Brazil in 1983 had a positive and significant effect on achievement scores of 7-8 points. Overall, they reported that simple quality-enhancing inputs such as textbooks, instructional materials, and teacher upgrading could increase achievement. Results of their cost-effectiveness analysis showed that writing materials, textbooks, drinking water and the level of the teacher's own pre-secondary school education and training seemed to be the most cost-effective means of raising achievement

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<sup>10</sup>/The studies are not strictly comparable because they often measured achievement using different outcome variables. One study did not find a strong positive relationship between the availability of textbooks and education in Ecuador (see Muelle-Lopez 1984).

<sup>11</sup>/See Fuller (1987) for a review of these studies.

levels. Other investments such as furniture and buildings were found to be much less effective on a per-dollar basis.

Research on Nicaraguan children suggests that textbooks can be relatively more effective in rural than urban education. Jamison, et al. (1981) examined whether the availability of textbooks and radio instruction improved the mathematics achievement of a sample of urban and rural Nicaraguan first graders. They found that textbooks had significant positive effects on achievement.<sup>12</sup> Their availability increased student post-test scores by about 3.5 correct items.

Reported differences in the effectiveness of textbooks between rural and urban schools suggest that the availability of mathematics textbooks could compensate for the disadvantage of being in a rural school. For example, on an exam administered before and after the textbooks were made available, the urban control group averaged 4.54 additional correct items while the rural group averaged an additional 6.08 items. The authors concluded that textbooks not only improved school quality but also reduced the gap in achievement across urban and rural schools. As in the case of Birdsall's study, the evidence suggests that improvements in school-related inputs could benefit more needy children substantially.

King and Bellew (1988) found positive and statistically significant coefficients for the presence of books on the education attainment of girls in Peru. For all birth cohorts combined, reading and/or math books raised schooling levels by nearly one-half year for both boys and girls. Results for each of the six individual cohorts showed statistically significant coefficient estimates for the impact of textbooks on attainment: the estimates increased for both sexes in the younger cohorts up to cohort 1955-59. For example, the effect of having reading and/or math books for every student increased the years of schooling by 0.69 for the 1940-44 female cohort, while the introduction of these books added 1.14 years for the 1955-59

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<sup>12</sup>The impact of radio instructional programs is discussed below.

cohort, while the introduction of these books added 1.14 years for the 1955-59 cohort. On the other hand, the cohort regressions indicated that having a textbook had a larger effect on females than males. For example, the impact of textbooks on the 1955-59 male cohort was 0.92 years of schooling.

The results suggest that as the supply of schools increases, the availability of textbooks exerts a greater impact on school attainment. The larger effect of textbooks on females could mean that "because there was less of a push within the family to educate girls, the quality of the learning process was more important in determining how many years of schooling girls had" (King and Bellew 1988, p. 41).

Teachers' Characteristics. Evidence pertaining to the quality of teacher and its impact on achievement is not as conclusive as that for textbooks and instructional materials. In Schiefelbein's (1987) review of 19 studies assessing the impact of teacher characteristics, he noted that only 8 reported positive effects from teacher's education on achievement. He found that the greatest differences were obtained when comparing teachers with some educational training and those with none. Increments in the length of training seemed to have decreasingly marginal returns in terms of student achievement.

In addition, only 4 out of 12 studies reported by Schiefelbein noted the experience of teachers as statistically significant. Although teacher upgrading had an insignificant effect on achievement, Schiefelbein suggested that upgrading through stages in good schools or in discussion groups (as opposed to traditional classes in selected topics) may have a positive effect on achievement.

The Armitage, et al. (1986) study of rural Brazil used four indicators of teacher quality -- teachers' basic cognitive skills (years of schooling), teachers' years of experience, motivation to teach (salary as a percentage of the regional minimum wage) and in-service training. Of the four, the years of schooling of the teacher had the most consistently positive

and significant impact on student achievement, albeit not a large one: one additional year of schooling by the teacher raised achievement only 1.5 points. Although the effect was not large, the authors suggested that this finding was important, given that teachers in rural areas generally had low levels of educational attainment. For example, 30% of the teachers in the sample from northeast Brazil had four or less years of formal education. Teacher upgrading through in-service teacher training programs seemed promising, and preliminary estimates indicated a large positive impact -- a 6 point achievement gain -- in the sample of 1983 second graders.

Although teachers' salaries are positively related to students' achievement, the effect is small, and the authors cautioned against relying only on increasing the salaries of current teachers to improve student achievement. Finally, the coefficient on years of teaching experience was insignificant.

The Brazilian cost-effectiveness results indicate that the achievement pay-off for each dollar for teacher education appears to be higher for completing primary education than for secondary schooling. Four complete years of primary education or upgrading through in-service training is cost-effective compared to raising the level of teachers' formal education to three years of completed secondary education.

Content of Education. Several Latin American studies indicate that textbooks are an agent for the transmission of gender stereotypes (for example, see Braslavsky 1984). Textbooks portray women as housewives and mothers, in which roles they are seen as passive and incapable of making decisions. When women are portrayed in the marketplace, they are placed in jobs traditionally associated with the female nurturing stereotype (e.g., teaching, nursing and domestic service).

Although there is ample evidence that textbooks, by devaluing the roles and status of women, strengthen the negative stereotype of females in society, there is little research on the impact of those stereotypes on girls' achievement and attainment. However, if information absorbed at a young age

shapes attitudes and aspirations, it is likely that future performance at the secondary and post-secondary level could be affected.

An issue of equal concern in research is the overall relevance of the educational content -- textbooks and curricula together -- to children from rural areas and indigenous cultures. The relevance of the education these girls receive through formal schooling to future employment opportunities and lives is a question.

Other Supply Factors. Other school-related factors that affect education are furniture, number of teachers, school calendar, radio instruction and the presence of additional grades in the primary school, to name but a few. For example, Jamison, et al. (1981) determined that radio-based instructional programs had significant positive effects on achievement. In a Nicaraguan experiment, instruction by radio increased student exam scores by 14.9 correct items compared to an increase of 3.5 items from the introduction of textbooks. The authors attributed the greater effect of radio instruction on achievement to the uniformly administered radio lessons compared to "the more inconsistent application of the textbook treatment (in the hands of teachers with relatively low levels of education)" (p. 565). More importantly, either textbooks and radio can reduce the urban-rural differences in school quality.

The King and Bellew (1988) study for Peru assessed the effect of the availability of furniture, the number of grades offered and the number of teachers on schooling attainment. The results pertaining to all birth cohorts combined indicated that the provision of a desk and chair for each student raised the attainment of males about 0.4 year and 0.2 year for females (the latter is not statistically significant). Each additional grade offered in a school increased the educational attainment of Peruvian boys by about 0.8 year, while it affected girls by 0.5 year. The authors interpreted the difference between boys and girls as a reflection of the relatively weaker demand for female schooling. Finally, with respect to increasing the number of teachers in a school, the largest effect was obtained going from 1 to 3.

The impact of the number of grades offered in a primary school was positive and increased across the cohorts. For example, for females born between 1950-54, adding one more grade to the number of grades offered would have increased attainment by about one-half year, while for those born in the 1960s the effect would have been 1.1 years. King and Bellew concluded that improvements in the availability of schools had a positive effect on both satisfying existing demand as well as increasing the attainment of younger cohorts.

### Family-related Factors

Most of the studies that have focused on factors affecting the demand for education have examined the impact of family influences, such as parents' education and income and the work constraints placed on children, on students' achievement and attainment. The evidence suggests that parents' education and their ability to pay have strong, positive effects on schooling attainment. The work constraints placed on children are likely to have gender-specific effects. There is some indication of a lower opportunity cost of girls schooling relative to boys.

Parents' Education. Studies done for Nicaragua by Wolfe and Behrman (1984), Peru by King and Bellew (1988) and Brazil by Birdsall (1985) suggested a strong relationship between parents' education and children's participation in schools. Wolfe and Behrman's estimates for Nicaragua indicated that parental education had a significant effect on children's schooling with diminishing returns at the higher levels of parents' education. The maximum impact occurred after 8 or 9 grades. The mother's level of education had a greater impact than did the male's in the household: their results showed that, relative to a household with the mean characteristics, every additional year of a mother's schooling increased the child's schooling by 0.12 grades.

An additional year of education for the male in the household had about one-third this impact.<sup>13</sup>

King and Bellew (1988) determined that the schooling levels of both parents had a positive and statistically significant effect on the educational attainment of Peruvian children, both boys and girls. However, they concluded that the impact of each parent's education differed for boys and girls. On the one hand, the father's education had twice as large an impact on a son's schooling as did the mother's education. On the other hand, the effects of a parent's education on a daughter's schooling were equivalent (strong and positive). They calculated that the elasticity of the males' education with respect to their father's education level, evaluated at the sample means (0.19), is more than twice that of the elasticity of the mother's education (0.09). These two elasticity measures are approximately equal (0.19 and 0.21) with respect to the educational levels of females. The authors explained these results by noting that mothers partly counterbalanced the father's preference to send sons rather than daughters to school.

When King and Bellew analyzed the effect of parent's schooling in each of the six cohort regressions, they once again found positive and statistically significant effects, although these effects diminished over time. The impact of parents' schooling was larger for the older cohorts than it was for the younger people of both genders. For example, for females born between 1950-54, the elasticities with respect to mother's and father's education, evaluated at their mean values, were 0.19 and 0.22. These same elasticities were just 0.11 and 0.13 for the cohort born between 1960-66. According to the authors, these findings can be attributed to the effects of increased availability and quality of schools or to a change in tastes because of the higher returns associated with education.

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<sup>13</sup>The authors explained that the extent to which the larger coefficients for women's schooling reflected tastes, genetics or household productivity effects remained unclear.

Birdsall also estimated a significant relationship between parents' education levels and their children's years of schooling in Brazil. Using her reported results, elasticities, calculated at the mean values, indicated that, in general, the mothers' years of school had a stronger impact on the completed years of their children's schooling relative to the fathers' years. This relationship was particularly true in the urban areas of Brazil: for urban children aged 8-11, the elasticity measures were 1.123 for mothers' education and 0.107 for fathers', while in rural areas they were 0.139 and 0.112, respectively.

Ability to Pay. The parents' ability to pay for education is positively related to their children's schooling attainment. Wolfe and Behrman (1984) reported that higher predicted earnings for the woman and other household income (generally representing the earnings of the male in the household) were both significantly associated with greater education attainment by their children in Nicaragua. For the national sample, the calculated elasticity measure with respect to household income, evaluated at the mean, was 0.832. With respect to other household income, the authors calculated a large responsiveness to schooling in the central metropolis as compared to the less urban and rural areas of the country.

Evidence from Peru also indicates the importance of family income in the attainment of higher schooling levels. King and Bellew (1988) used parents' occupation as a proxy for income to examine this relationship. Children of farmers had fewer years of schooling than did children of parents with white-collar jobs. For example, they found that if the mother had a white-collar job, their sons were in school 0.6 years longer, while daughters attended 1.1 years longer. Sons and daughters were in school 1.1 and 1.4 years longer if the father had a white-collar job. Children of mothers who were not in the labor force tended to have more years of schooling than did children from mothers in farm-related occupations. The authors explained this result by noting that, relative to farmers, mothers who were not employed were likely to have higher family incomes. Furthermore, Farrell and Schiefelbein (1985) reported that of the children of upper-class fathers in Chile, 100% had



completed primary school, of middle-class fathers 70%, of urban laborers 48% and of rural laborers only 18%.

Finally, in a study done for Mexico, Bowman and Goldblatt (1984) indicated that the consequences of low income were stronger for the schooling of girls relative to those for boys. It follows from this result that there could be a weaker demand for girls' education as compared to boys' among lower income households.

Value of Children's Time. In many regions of Latin America, children are required to work to maintain the family's income level, and these work constraints can affect their educational attainment. The nature of these work constraints seems to vary between boys and girls. Moreover, the demand for children's labor is generally higher in rural areas and among low-income households. In Tienda's (1979) study of economic activity of children in Peru, she estimated that rural children who were enrolled in school were nearly six times more likely to work than urban children were. One conclusion that can be drawn is that rural children could more easily combine school and work activities because of the seasonal nature of many agricultural tasks. However, it is also likely that daily absences from school facilitated this combination. While children's employment was found to be negatively associated with school enrollment, the net effect was more important for teenagers than for 6-13-year-olds.

The relationship between low attendance and work constraints on Guatemalan children was explored by Clark (1981). She found a relatively high percentage of primary school children were not attending school. The author reported that, for some children, especially older boys, income-earning and housekeeping activities explained the low school attendance. Work constraints did not explain all the cases, however. For some children, Clark noted that

parents assigned a low value to the expected return from investing in schooling.<sup>14</sup>

With respect to the impact of work constraints on the school attainment of girls relative to boys, a lower opportunity cost for girls' schooling could explain why in some cases girls receive more schooling than boys. Wolfe and Behrman (1984) found this situation in rural Nicaragua. However, they found no difference for children in Managua. They attributed this result to the higher opportunity costs of male schooling, since rural tasks required a boy's physical strength.

In addition, the Wolfe and Behrman study explored the effect on the schooling of boys of mothers who had expressed a desire for male children.<sup>15</sup> The national results showed that these boys did not have significantly less schooling than girls. In Managua, boys with mothers that had a male preference attained considerably more schooling than did other children. The authors concluded that this male preference compensated "for a systematic tendency for boys to otherwise be slightly less schooled than girls" and may have reflected that the expected returns on male schooling were greater than those for girls (Wolfe and Behrman 1984, p. 238). Schiefelbein and Farrell (1980) found similar gender differences in Chile. They attributed them to the fact that foregone earnings for older boys were higher relative to those for girls. Consequently, lower income families were more likely to withdraw the boys from school.

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<sup>14</sup>/Bowman and Goldblatt (1984) provided evidence that children's work also explained over-age students in Mexican schools. In their study, over-age referred to students in the first grade who were 10 years or more old.

<sup>15</sup>/This preference was indicated by a positive response to the question: "If you had four daughters and no son would you have another baby in hopes of having a son?"

## Policy Evaluation

Many strategies to improve attainment and achievement of children have been suggested, and several implemented. Among the implemented strategies are early stimulation, radio programs, changes in school calendars and promotion procedures, provision of textbooks, school lunches and transportation, to name a few.<sup>16</sup> This report identifies those that seem to be relatively more important to girls' attainment and achievement.<sup>17</sup>

School-related Policies. As discussed above, the school-related factors relevant to attainment are, among others, textbooks, teachers' qualifications and addition of grades. Pre-school intervention programs for girls are also considered important in the transition to formal schooling.

Aside from increasing the provision and use of textbooks, a change in the stereotypes of women in textbooks and other instructional materials could create stronger role models to motivate girls' desires to achieve higher performance. Mexico, for one, has removed the traditional gender stereotypes from textbooks. School curricula in rural areas could be designed to be more relevant to the lifestyle of peasant and indigenous children so as to increase the returns from schooling. In addition, textbooks could be combined with the radio instruction that proved effective for the education of rural Nicaraguan students.<sup>18</sup>

Aside from improved teacher qualifications, especially in rural areas, attention could be directed toward the way teachers relate to students and, in particular, toward their attitudes to girls. For example, as in other parts of the world, several studies have shown that boys perform better than

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<sup>16</sup>/For a description of these experiments see, for example, Schiefelbein, et al. (1978), Braslavsky (1984) and Schiefelbein (1987).

<sup>17</sup>/Although interesting experiments have been conducted in the area of non-formal education, they are outside the scope of this report.

<sup>18</sup>/Television programs such as Plaza Sesamo have proved to be quite effective, too.

girls in mathematics. It was pointed out by Armitage, et al. (1986) that, in the case of Brazil, teachers (predominantly female) believed that girls were less capable in mathematics and consequently used teaching techniques that did not foster their achievement in this area.

In Uruguay, Argentina, Cuba, Costa Rica, Bolivia and Guatemala the school calendar has been adapted to allow children to help with agricultural work and has taken into account extreme weather conditions. Schiefelbein (1987) found the school calendar changes to have been effective. It still remains to be researched if there are specific times for school that would benefit girls who mainly engage in housework.

Pre-school education and early intervention targeted toward poor children could also be explored. Filp and Schiefelbein (1982) reported results from Argentina, Bolivia, Colombia and Chile indicating that the greatest benefits from pre-school education were obtained by children with a lower socioeconomic status in rural areas. Their participation in pre-school appears to have had a positive effect on the age of enrollment and grade promotion.

For peasant and indigenous children, whose transition to primary education may be difficult, early childhood intervention seems promising. In a review of early childhood intervention programs in Latin America, Halpern (1986) concluded that "...it is the early childhood teacher's tendency to recognize and respond to individual children's learning needs that, if adopted in primary schools in Latin America, might have the most far-reaching consequences for children's primary school careers" (p. 215).

Demand-related Policies. Although many of the family characteristics that determine the demand for education are difficult to modify in the short run, two areas could be explored further: parents' involvement in children's education; and the impact of girls' time spent on housework.

Parent training programs and encouragement of parents' participation in the school system have been found most effective. In Chile, for example, parents' involvement in the actual construction and management of schools increased their interest in their children's education (Schiefelbein, et al. 1978). This participation also increased their awareness of their children's intellectual ability and led to greater achievement. In rural Guatemala, Irwin, et al. (1978) found that parents' perceptions of the intellectual ability of their children led to earlier enrollment for both boys and girls.

Finally, Clark (1981) and Chamie (1983) recommended the provision of community day-care facilities for pre-school-aged siblings so that girls with prohibitive work constraints could attend school.

To summarize the review of primary education, both school-related and family influences have been found to have a strong impact on the achievement and attainment of children. Although most of the studies have been done for countries in Groups 2 and 3 (as classified in the previous section), even in the case of Chile and Argentina (Group 1), which have higher income levels and more balanced educational systems, school factors seem to have been the predominant influence on students' education. In addition, evidence from some countries suggests that improvements in school factors can have a greater impact among lower income and rural children. Simple changes in school inputs such as the provision of textbooks and changes in school calendar have, for example, proven effective in raising student performance.

Expansion and improvements in the quality of schools alone are not, however, enough to close the gap between the attainment levels of rural residents and those of more advantaged urban groups. These measures would have to be complemented with policies that change parents' attitudes toward their children's education as well as with efforts to ease work constraints.

#### IV. SECONDARY AND TERTIARY EDUCATION

##### Trends and the Current Situation

The percentage of women of the appropriate school age enrolled in secondary education varied between 6% and 38% throughout Latin America in 1960 (Appendix B, Table B.1). By 1984, these percentages had risen to 16-79%. In 11 out of the 16 countries for which information is available, the rate of enrollment exceeded 45%, while only in 1 did it fall below 20%. As in the case of primary education, enrollment rates are tied to the country's level of income and type of educational expansion: with some exceptions, enrollment is higher for countries in Group 1. In 14 Latin American countries, women represent 50% or more of total secondary school enrollment. The percentage of total enrollment of women does not fall below 45% in any of the Latin American countries (Appendix B, Table B.2).

Although comparisons are restricted by the availability of data, in most countries the distribution of women by type of secondary education is heavily weighted toward general education as opposed to vocational and technical schools (Appendix B, Table B.3).

Female enrollments in higher education also increased substantially for most Latin American countries. The data show that by the 1980s, more than 20% of the female population of the appropriate age were enrolled at the university level in five Latin American countries. This figure represents a significant improvement relative to 20 years earlier (Appendix B, Table B.4). Nevertheless, female enrollment rates in higher education were lower than those for males in a majority of countries.

Men and women's access to higher education varies across the Latin American countries. As expected, greater gender equality exists among countries in Groups 1 and 4. The largest gaps are found in countries with relatively low levels of development. On the other hand, in Ecuador, while women benefited from the expansion of tertiary education, the gap with respect

to men was relatively wide. Table 5 presents the percentage of females in total enrollment at the tertiary level in 1984 by country (see also Appendix B, Table B4). It clearly reveals the large gap in some countries between men and women at the tertiary level.

**TABLE 5: DISTRIBUTION OF COUNTRIES ACCORDING TO THE PERCENTAGE OF FEMALES IN TOTAL ENROLLMENT AT THE TERTIARY LEVEL, 1984**

Less than 30%	30-39%	40-49%	50% or more
Bolivia	Honduras	Brazil	Panama
Guatemala	Peru	Colombia	Cuba
	Mexico	Nicaragua	Uruguay
	El Salvador	Dominican	Argentina
	Ecuador	Republic	
	Haiti	Chile	
		Costa Rica	
		Paraguay	
		Venezuela	

Source: Komenan (1987).

### Supply and Demand

School-related Factors. The number of secondary and tertiary institutions has grown dramatically in past decades throughout most of Latin America. For example, in 1958 Venezuela had six universities and one pedagogic institute; by 1984, it had 19 universities, 7 pedagogic institutes and 46 other institutions of higher education (Psacharopoulos and Steier 1988). Along with this growth in supply, the data indicate considerable growth in the private sector and an increase in the share of students attending private institutions. In 1955, only 14% of total enrollments were in the private sector, whereas by 1965, enrollments reached 20% and by 1975

34%. The growth in public education was also extraordinary, with enrollments jumping from 350,000 in 1955 to over 2 million in 1975.<sup>19</sup>

This growth of institutions and enrollments was concentrated in urban areas. In many countries, rural secondary schools are scarce, and in some countries universities exist only in the capital city. As a result, the greater availability of secondary schools and universities in urban areas has benefited mainly the demand of urban women for education. Various studies have addressed the advantage that urban residents have over rural counterparts in the region as a whole.<sup>20</sup> For example, in the case of Peru, King and Bellew (1988) showed that being an urban resident at age 13 added about 1 year to schooling levels.

#### Factors Affecting the Demand for Education

There are two major factors influencing women's demand for education in Latin America: the socioeconomic characteristics of women's families and women's preferences regarding fields of study and career objectives.

Family Socioeconomic Characteristics. With respect to individual demand for education, socioeconomic status is, as with primary education, a good predictor of secondary and post-secondary schooling access and attainment. Schiefelbein (1987) reported that, on average, graduates from high school belonged to the upper 25% of the socioeconomic distribution of each cohort. Indeed, evidence from several countries has pointed to the social status-related selectivity of the educational system. For example, Farrell and Schiefelbein (1985) estimated that the proportions of students from each status group finishing secondary school were 77% for the upper class, 49% for the middle class, 21% for urban workers and 4% for agricultural workers.

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<sup>19</sup>/Levy (1985) noted the exceptions of Cuba and Uruguay, where private universities have not opened.

<sup>20</sup>/See, for example, Klees (1979), Fernandez (1986) and Velasquez (1987).



Selection processes within the educational systems have tended to discriminate against students from lower socioeconomic levels. In Brazil and Colombia, university entrance examinations have caused many families to invest in good, fee-paid private high schools as a way to gain access to good, free public universities (Schiefelbein 1987). In the end, students from upper-income levels have been the ones to attend good public schools, rather than the very students that the free education would benefit the most.

The discrimination in the educational system along socioeconomic characteristics also affects women. A 1982 study of the five metropolitan areas of Bogota, San Jose, Panama City, Lima-Callao and Caracas showed that the proportion of women with 13 years or more of schooling was substantially larger among higher per capita income groups. In Caracas, for example, 47.7% of women in the 25-34-age-group in the highest income category had 13 or more years of education as compared to 1.7% for women in the lowest income category (Braslavsky 1984). In addition, UNESCO (1981) reported that among the women who enrolled in higher education in Venezuela in the last few decades, the highest proportion attended fee-paid private institutions.

Students' Preferences for Fields of Study and Career. Although the proportion of women in most all fields of study has tended to increase, they remain highly concentrated in traditionally women's fields such as education and health sciences. Table 6 provides an overall picture of women's participation in the arts and sciences between 1975 and 1982.<sup>21</sup> With respect to the arts, most countries fell into the two intermediate categories of 35-50% and 50-65%. On the other hand, most countries fell into the lower category of under 35 % women in the sciences. A more detailed breakdown by field shows that education science, a predominantly female field in the 1970s, saw an increase in the concentration of women in the 1980s.

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<sup>21</sup>/Arts includes education and social sciences, while sciences is made up of natural and medical sciences as well as agriculture.

**Table 6: DISTRIBUTION OF COUNTRIES BY PERCENTAGE OF FEMALES IN TOTAL ENROLLMENT  
BY BROAD FIELD OF STUDY, 1975 AND 1982 <sup>a/</sup>**

	<u>Less than 35%</u>		<u>35-50%</u>		<u>More than 51%</u>	
	1975	1982	1975	1982	1975	1982
<b><u>Arts</u></b>	Peru Guatemala Honduras Haiti	Guatemala Haiti	Uruguay Dominican Republic <sup>b/</sup> Ecuador Paraguay Colombia Honduras Mexico	Paraguay Ecuador Mexico Honduras El Salvador Peru	Brazil <sup>b/</sup> Panama Argentina Chile	Uruguay Panama Nicaragua Chile Colombia Argentina
<b><u>Sciences</u></b>	Dominican Republic <sup>b/</sup> El Salvador Brazil <sup>b/</sup> Chile Peru Colombia Honduras Mexico Ecuador Haiti Guatemala	Colombia Honduras Chile Haiti Peru El Salvador Mexico Ecuador Guatemala	Paraguay Uruguay Argentina Panama	Uruguay Panama Paraguay Argentina Nicaragua <sup>b/</sup>		

(a) 1975 and 1982 or nearest available years.

(b) Countries for which data are available for only one of the two periods.

Note: The countries are classified within each broad field of study by descending order of percentage of females.

Source: UNESCO (1985).

In five of the countries, women accounted for more than two-thirds of enrollments.

Women did make considerable progress in the social sciences. In 3 out of the 12 countries for which data were available -- Uruguay, Panama and Colombia -- women constituted more than half of enrollments. The medical sciences, too, attracted a large number of female enrollments: by 1982, female participation in this field exceeded 50% in 10 Latin American countries (UNESCO 1985). Finally, the natural sciences and agriculture attracted fewer women, although in many countries there has been a trend toward higher participation.

Even though the proportion of women participating in tertiary programs is increasing, the numbers reported in Table 6 do not reveal their concentration at more disaggregated levels. For example, in the medical sciences, women were concentrated in the nursing fields rather than in medical schools. In the educational sciences, women were primarily being trained for positions in primary school systems rather than in the more prestigious and higher paid secondary and tertiary systems. The concentration of women in certain fields and categories within them is true for all countries in the region.

#### Education and Labor Market Linkages

The educational attainment of women relative to men varies widely across countries. While in several the gap between the genders remains large at the post-secondary level, in others it is almost non-existent. However, even where gender equality seems to prevail, women find themselves at a disadvantage in entering the labor market, as suggested in the cases of Chile and Uruguay.

The educational systems of these two countries are among the best developed and most efficient in the region. The expansion of educational opportunities for women took place early as compared with most other

countries, and today women have acceptable access to semi-professional and higher level occupations.<sup>22</sup> However, it is at this stage that women are at a disadvantage relative to men. In particular, differences arise in the linkage between the formal schooling system and the labor market.

Schiefelbein and Farrell's (1980) longitudinal study of a cohort of young Chilean adults found that the first noticeable difference between men and women occurred in their performance on the university admissions test, with women scoring significantly lower than men. The authors explained this result as a consequence of "anticipatory socialization" among women. Since women enrolled in traditionally female fields of study requiring lower university admission test scores, there was a lower level of pressure to perform well on the exam.

The study also showed that the length of time spent in school was more important for women than for men in entering a job. In other words, higher educational attainment was required from women than for men for the same type of job. Schiefelbein and Farrell (1984) reinforced this claim by noting that the labor market for women seems to have been more socially predetermined than that for men, a situation that explained the larger importance of educational attainment for women as well as the smaller importance of occupational aspirations.<sup>23</sup>

The evidence from Uruguay is similar. On the one hand, although there is equality of access to the university and even a bias in favor of women, the percentage of men who graduate is greater than that of women.

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<sup>22</sup>/In Chile, by 1930 49.4% of primary and 43% of secondary students were female (Schiefelbein and Farrell 1980). In Uruguay, women already represented half of secondary students around 1920 (Piotti 1988).

<sup>23</sup>/The authors also found that, for females, educational attainment was more important than educational achievement as far as the level of the first job was concerned.

An interesting finding of the study was that, for both gender, although more so in the case of males, educational quality had a strong direct effect on occupational attainment.

Piotti (1988) explained the lower survival rate of women by the fact that when some got married and/or had a baby, they dropped out of school or took more years to complete their degrees. On the other hand, women also found themselves at a disadvantage in the linkage between formal schooling and the labor market, where, as in the case of Chile, educational attainment proved to be more important for women than for men for similar occupations.

### Policy Evaluation

As in the case of primary education, the expansion of women's opportunities at the secondary and tertiary levels was a consequence of the general expansion of educational systems and economies in many countries. Moreover in almost all countries, despite the advances, the gap between men and women's educational attainment has been wider at the tertiary level than at the other educational levels and has been wider in those countries where industrialization and urbanization started late.

Various strategies have been proposed to improve the access, achievement and attainment of disadvantaged groups within Latin America. However, few of the studies have focussed on strategies targeted toward women. The Organization of American States (OAS) (1985) made two general recommendations for the region that addressed the needs of rural women and encouraged women to enter diverse, and typically male-dominated, fields of study. For rural areas, the OAS recommended increasing the availability of secondary schools. Beyond more schools, other researchers have proposed ways such as tele-education to improve students' performance in areas with little access to schools. <sup>24</sup>

Greater availability of schools would lower the cost of education to women. Nevertheless, even free education is not sufficient to ensure access by lower income groups. An important limiting factor is that of foregone

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<sup>24</sup>/Mexico's use of television at the secondary level, Telesecundaria, has had a positive effect on student achievement. For an evaluation of Mexico's experience, see Klees (1979).

family income, a factor that calls for measures such as scholarships, subsidized student loans or funds to cover the foregone income. Whatever the financing scheme, it is important to target it to the secondary level of education, where social selectivity is most crucial.<sup>25</sup>

In addition, strategies that modify attitudes toward the education of women are required. Mainly in the case of the lower socioeconomic, rural and indigenous groups in Latin America, women are restricted to marriage, procreation and housework. Consequently, neither parents nor daughters see the benefits of additional years of formal schooling.

The OAS (1985) suggested establishment of public and private fellowship programs for women in new fields of study with some promise of future employment to encourage women's interests in diverse fields of study. In addition, it suggested employment agencies specifically for women to increase their access to job markets under equal conditions, along with strengthening organizations of women workers and professional women.

Finally, given the precarious financial situation and many urgent problems facing Latin America in the 1980s, for these and other strategies and to work, a concerted commitment and effort of the population, governments, and national and international organizations is required.

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<sup>25</sup>The financing of education in Latin America and its efficiency and equity implications have been a subject of much debate. For a comprehensive review of the main issues, see IDB (1978), Schiefelbein (1987) and Woodhall (1983). Financing schemes could be a source of discrimination against women. For example, see Jimenez and Tan (1987).

## V. SUMMARY AND CONCLUSIONS

In recent decades, Latin America has experienced a substantial expansion of its educational systems in terms of both the supply of schools and greater demand for educational services. As a result, the educational attainment of girls and women improved throughout the region, albeit with differences in gains across and within countries.

The educational profile of the Latin American population and that of women in particular is closely related to a country's level of income and the characteristics of educational expansion. Countries where modernization of their economies and educational systems took place earlier have lower illiteracy rates, higher levels of educational attainment and greater equality in the education of men and women. Countries with more recent economic and educational growth show a considerable increase in the number of people enrolled at the higher levels of education, while illiteracy rates among younger people in rural areas remain relatively high. In these countries, the attainment of women is still below that of men, especially at the post-secondary level of education. Finally, countries with lower levels of income have higher illiteracy rates, lower levels of educational attainment and a wider gender gap at the upper level of education. Although the main issues in the educational attainment of women relate to income and economic development, the evidence is that gender-related differences in attainment exist, particularly in higher education.

In most countries, while the gender gap has narrowed over time, a large gap remains between urban and rural residents, and in countries with large rural and indigenous populations, vast groups of women are illiterate. Full primary education for rural children has not yet been achieved. Moreover, the advantages of secondary and post-secondary education generally accrue to urban women from middle and upper socioeconomic levels.

The review of the empirical literature on the determinants of educational attainment and achievement of girls and women and the assessment

of the policies designed to improve their schooling indicate the following findings and guidelines for action:

- o Both school-related factors and family characteristics have a strong impact on the educational achievement and attainment of children. The impact of changes in school factors is greater among children from lower income and rural backgrounds.
- o The school inputs that have a positive impact on achievement and attainment of girls are textbooks and instructional materials, teachers' characteristics and other factors such as adding grades to a school. Consequently, among the school-related policies suggested to raise schooling levels are a greater provision and use of textbooks, suppression of traditional gender stereotypes in reading materials, revision in school curricula to make them more relevant to the lifestyles of rural children, implementation of teaching techniques to foster girls' achievement, adaptation of the school calendar to accommodate housework and income-earning activities, and pre-school and early intervention programs targeted to the needs of rural students.
- o Parents' income and own years of schooling have a strong and positive impact on children's education, with the mother's educational level seeming to have a greater impact. The mother's influence also seems to be stronger in the case of daughters than sons, a fact that counterbalances the weaker demand for girls' education linked to the father's education level.
- o The relationships between work constraints and enrollment, attendance and attainment are uncertain. However, there is some evidence that the lower opportunity cost of girls' schooling explains why they receive more education than boys.



To the extent that work constraints affect school participation, adaptation of the school calendar to agricultural tasks and the provision of day-care facilities for pre-school-aged siblings would reduce the need for children to work, and reduce the opportunity costs of education.

- o At the secondary and post-secondary levels, selection processes within the educational systems discriminate against students from lower socioeconomic levels. Women with access to higher education are concentrated in fields of study associated with women's traditional roles in society. Policies suggested to address these two issues are the provision of scholarships to lower income groups and the establishment of fellowship programs for women in diverse fields of study.
- o Where equality in the education of men and women seems to have been achieved, women are at a disadvantage in entering the labor market from school. Educational attainment is found to be more important for women than for men when entering similar occupations.
- o Finally, any future successes in improving the educational levels of less-advantaged girls and women in Latin America will depend not only on the design of educational policies and strategies that target the specific needs of females, but also on a firm commitment on the part of educators, authorities, governments and international organizations to achieve more in education.

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Table A.1: Illiteracy Rates, Percentages around 1980 <sup>a/</sup>

	Male	Female
Argentina	5.5	6.03
Bolivia	21.08	43.20
Brazil	24.40	26.50
Chile	8.08	8.50
Colombia	11.91	12.10
Costa Rica <sup>b/</sup>	11.4	11.8
Dominican Republic <sup>b/</sup>	31.8	30.9
Ecuador <sup>b/</sup>	15.8	23.8
Guatemala	34.25	48.20
Haiti	61.68	64.43
Honduras <sup>b/</sup>	41.1	44.9
Mexico <sup>b/</sup>	13.8	20.1
Nicaragua <sup>b/</sup>	42.0	42.9
Panama	12.7	13.7
Paraguay	9.24	13.53
Peru	9.16	23.12
Uruguay	6.16	5.23
Venezuela	12.8	15.28

<sup>a/</sup> The data for Cuba and El Salvador are not disaggregated by gender, and they are not included.

<sup>b/</sup> The percentages are for the population over 15-years old, versus 10-years old for the rest of the countries.

Source: CELADE (1987); and UNESCO (Statistical Yearbook 1986).

**Table A.2: Gross Domestic Product, Per Capita  
(1986 dollars)**

	1960	1980
Argentina	2,241	3,161
Bolivia	632	978
Brazil	941	2,348
Chile	1,712	2,272
Colombia	836	1,480
Costa Rica	1,332	2,222
Cuba	--	--
Dominican Republic	764	1,390
Ecuador	715	1,467
El Salvador	772	1,044
Guatemala	1,020	1,732
Haiti	307	359
Honduras	575	886
Mexico	1,323	2,665
Nicaragua	979	1,065
Panama	1,173	2,433
Paraguay	723	1,496
Peru	1,145	1,593
Uruguay	2,182	2,990
Venezuela	3,600	4,849

Note: -- Non-existent

Source: Inter-American Development Bank (1988).

APPENDIX A  
Page 3 of 7

Table A.3: Rates of Enrollment in Primary Education,  
around 1960 and 1984 a/

	<u>1960</u>		<u>1984</u>		
	Total	Women	Total	Women	Men
Argentina	98	99	107	107	107
Bolivia	64	50	91	85	96
Brazil	95	93	103	99	108
Chile	109	107	107	106	108
Colombia	77	77	119	119	119
Costa Rica	96	95	101	100	102
Cuba	109	--	106	102	110
Dominican Republic	98	98	112	117	107
Ecuador	83	79	117	117	117
El Salvador	80	77	70	70	69
Guatemala	45	42	75	69	80
Haiti	46	42	76	72	81
Honduras	67	67	102	101	102
Mexico	80	--	116	115	118
Nicaragua	66	66	103	106	100
Panama	96	94	105	102	107
Paraguay	98	90	103	99	107
Peru	86	74	122	120	125
Uruguay	112	105	109	107	110
Venezuela	100	100	109	108	109

a/ Total enrollment as a percentage of total population of the corresponding age-group. The definitions vary according to the ages and years of primary schooling established by legislation in each country.

Note: -- Non-existent

Source: UNESCO, Statistical Yearbook (1975, 1986)

Table A.4: Females as a Percentage of Total Primary Enrollment, 1984

---

Argentina	49
Bolivia	47
Brazil	49 a/
Chile	49
Colombia	50
Costa Rica	49
Cuba	47
Dominican Republic	50 b/
Ecuador	49 a/
El Salvador	50
Guatemala	45 a/
Haiti	46 a/
Honduras	50
Mexico	49
Nicaragua	51
Panama	48
Paraguay	47 b/
Peru	48 a/
Uruguay	49 a/
Venezuela	49 a/

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a/ 1980 data.

b/ 1970 data.

Source: Komenan (1987).

APPENDIX A  
Page 5 of 7

Table A.5: Percentage of Cohort Reaching Fifth Grade  
of the Primary Level, 1984

	Total	Females
Argentina	71	--
Bolivia	47	45
Brazil	38	--
Chile	84	84
Colombia	41	43
Costa Rica	79	82
Cuba	99	100
Dominican Republic	32	--
Ecuador	59	59
El Salvador	36	36
Guatemala	31	28
Haiti	34	35
Honduras	34	37
Mexico	60	61
Nicaragua	23	26
Panama	69	71
Paraguay	52	--
Peru	66	--
Uruguay	96	--
Venezuela	67	--

Note: -- Non-existent

Source: Komenan (1987).

APPENDIX A  
Page 6 of 7

Table A.6: Repeaters as a Percentage of Total Enrollment,  
Primary Level, Around 1984

	Total	Females
Argentina	--	--
Bolivia	--	--
Brazil	21	--
Chile	7	6
Colombia	12	--
Costa Rica	11	--
Cuba	4	--
Dominican Republic	14	--
Ecuador	9	--
El Salvador	8	8
Guatemala	15	--
Haiti	13	13
Honduras	15	15
Mexico	10	10
Nicaragua	18	17
Panama	12	10
Paraguay	11	--
Peru	14	--
Uruguay	15	13
Venezuela	10	--

Note: -- Non-existent

Source: Komenan (1987).

Table A.7: Percentage Repeaters by Grade, Primary Level

	Year	Sex	Total	I	II	III	IV	V	VI	VII	VIII	IX	
Argentina	1976	MF	8	15	10	9	7	5	3	1			
		F	7	14	9	8	6	4	3	1			
Bolivia													
Brazil	1982	MF	21	28	20	16	13	21	19	16		12	
Chile	1983	MF	7	12	9	7	7	8	5	5		3	
		F	6	11	7	6	6	6	5	4		3	
Colombia	1985	MF	17	25	18	14	11	7					
		F	17	24	18	15	11	7					
Costa Rica	1984	MF	11	17	13	12	9	6	2				
Cuba	1984	MF	4	0	14	3	4	2	1				
Dominican Republic													
	1982	MF	14	23	10	9	6	13	13				
Ecuador	1984	MF	9	13	11	8	7	5	3				
El Salvador	1984	MF	8	18	9	6	5	4	3	2		1	1
		F	8	18	9	6	5	4	3	2		1	1
Guatemala	1983	MF	15	26	14	11	7	5	2				
Haiti	1982	MF	13	13	14	14	14	13	8				
		F	13	12	14	15	15	13	8				
Honduras	1984	MF	15	26	15	11	8	6	2				
		F	15	26	14	11	8	5	2				
Mexico	1984	MF	10	20	11	9	7	5	1				
Nicaragua	1983	MF	18	32	13	8	8	6	4				
		F	17	31	13	8	7	5	4				
Panama	1984	MF	12	20	16	13	10	7	3				
		F	10	18	13	11	8	6	3				
Paraguay	1984	MF	11	15	15	12	9	5	2				
Peru	1985	MF	14	21	13	12	13	11	8				
Uruguay	1980	MF	15	27	16	13	13	10	7				
		F	13	24	14	11	11	8	7				
Venezuela	1983	MF	14	23	10	9	6	13	13				

Source: UNESCO (Statistical Yearbook 1986)

**Table B.1: Rates of Enrollment in Secondary Education,  
Around 1960 and 1984 <sup>a/</sup>**

	1960		1984	
	Total	Women	Total	Women
Argentina	32	33	70	75
Bolivia	11	10	37	34
Brazil	11	10	35	--
Chile	24	24	66	69
Colombia	12	11	49	49
Costa Rica	21	21	42	45
Cuba	14	--	75	79
Dominican Republic	13	14	45	--
Ecuador	12	10	52	53
El Salvador	11	10	24	26
Guatemala	7	6	17	--
Haiti	4	--	16	16
Honduras	8	7	33	36
Mexico	11	8	55	53
Nicaragua	7	6	44	48
Panama	29	32	59	63
Paraguay	11	11	30	29
Peru	18	13	61	57
Uruguay	37	38	67	--
Venezuela	21	21	45	49

a/ Total enrollment as a percentage of total population in the corresponding age-group.

Note: -- Non-existent

Source: UNESCO (Statistical Yearbook 1975, 1986).



**Table B.2: Females as a Percentage of Total Enrollment  
by Educational Level, 1984**

	Secondary	Tertiary
Argentina	52	53
Bolivia	46	22 <sup>c/</sup>
Brazil	50 <sup>b/</sup>	48 <sup>a/</sup>
Chile	51	43
Colombia	50	48
Costa Rica	52	43 <sup>b/</sup>
Cuba	52	54
Dominican Republic	54 <sup>c/</sup>	44 <sup>a/</sup>
Ecuador	46 <sup>b/</sup>	30 <sup>b/</sup>
El Salvador	53	31 <sup>a/</sup>
Guatemala	45 <sup>a/</sup>	19 <sup>a/</sup>
Haiti	*	30 <sup>a/</sup>
Honduras	54	38 <sup>a/</sup>
Mexico	47 <sup>a/</sup>	33 <sup>a/</sup>
Nicaragua	58	48
Panama	52	56
Paraguay	50 <sup>b/</sup>	42 <sup>b/</sup>
Peru	45 <sup>a/</sup>	35 <sup>b/</sup>
Uruguay	53 <sup>a/</sup>	53 <sup>a/</sup>
Venezuela	54	41 <sup>b/</sup>

<sup>a/</sup> 1980 data.

<sup>b/</sup> 1970 data.

<sup>c/</sup> 1960 data.

Source: Komenan (1987).

Table B.3: Percent of Females Secondary Enrollment  
by Type of Education

	General Education		Teacher Training		Vocational/ Technical	
	1970	1984	1970	1984	1970	1984
Argentina	48	48	0.1	0.0	51.7	52.2
Bolivia	--	--	--	--	--	--
Brazil	74	--	14.0	--	12.4	--
Chile	71	83	0.0	0.0	28.5	16.9
Colombia	62	72	12.6	3.5	25.4	20.7
Costa Rica	93	78	0.0	0.0	6.8	21.7
Cuba	--	77	--	4.4	--	18.3
Dominican Republic	--	--	--	--	--	--
Ecuador	80	--	6.5	--	13.3	--
El Salvador	64	29	0.0	1.9	36.0	69.2
Guatemala	71	--	14.7	--	14.2	--
Haiti	--	--	--	--	--	--
Honduras	75	--	8.6	--	16.4	--
Mexico	--	--	5.7	--	--	--
Nicaragua	87	80	5.5	3.6	7.2	16.2
Panama	62	72	4.2	0.6	33.6	27.4
Paraguay	83	--	11.4	--	5.3	--
Peru	82	--	0.0	--	17.5	--
Uruguay	--	--	--	--	--	--
Venezuela	66	94	3.8	0.0	30.7	6.0

Note: -- Non-existent

Source: Komenan (1987).

Table B.4: Rates of Enrollment in Tertiary Education, Around 1960 and 1984

	1960		1984	
	Total	Women	Total	Women
Argentina	10.9	7.2	36.4	38.8
Bolivia	3.6	1.6	--	--
Brazil	1.6	0.9	11.3	11.4
Chile	4.2	3.09	15.3	13.2
Colombia	1.7	0.6	12.8	12.4
Costa Rica	4.8	4.3	22.1	--
Cuba	--	--	20.1	22.2
Dominican Republic	1.3	0.7	--	--
Ecuador	2.6	0.9	32.5	25.5
El Salvador	1.1	0.4	11.9	10.3
Guatemala	1.6	0.3	--	--
Haiti	0.4	0.1	1.1	0.8
Honduras	1.1	0.4	9.7	8.3
Mexico	2.6	0.9	15.2	11.1
Nicaragua	1.2	0.4	11.0	10.5
Panama	4.6	4.1	25.1	28.5
Paraguay	2.4	1.5	9.3	--
Peru	4.1	2.8	21.5	15.6
Uruguay	8.0	6.5	20.8	23.8
Venezuela	4.3	2.8	23.4	--

Note: -- Non-existent

Source: UNESCO (Statistical Yearbook 1975, 1986).