

THE EVOLUTION OF STRUCTURAL FEMALE EMPLOYMENT AND HIGHER EDUCATION IN VENEZUELA, 1975-2000.

Lamelas, N.

Abstract

The purpose of this paper is to analyse the evolution of the total female employment and for sectors, in Venezuela in the period 1975-2000; as well as the evolution of the selected educational indicators, which illustrate the characteristics of the educational transition in this country. We present an econometric model that shows the incidence that the higher education has in the increase of total female employment. The relationship between these indicators is examined using quinquennial data from 1975 to 2000.

1. Introduction

The rapid increase in women's labor force participation rates in two past decades is one of the most significant characteristics of Latin America socioeconomic scenery. Many factors have been considered in this process. ECLAC (1999) highlights the impact of change in household income levels, education, and family composition, among other factors, on female labor participation.

In fact, the mean size of the households diminished in all countries of the region in the 1990s in comparison with the 1980s, due to the reduction of the number of born children and to the biggest spacing among them; to the decrease of homes with families of several generations and the increase of the unipersonal ones, and to the migrations, motivated by socioeconomic problems. ECLAC (2001). Thus, an increment can be observed of the number of households in which revenues depend fundamentally on the female work.

All these factors suggest important topics of discussion. Our interest is centered in education, by the important role that plays in this process. The educational capital is considered the more

determinant factor both the occupational successful and the income labor level achieved. Leon (2000, p.24).

Several studies considering the interrelationship between education and other factors, analyse that higher quality education will make workers more productive, increase the rate of return to education, and provide an incentive for further private investments in education. Guisan, Aguayo and Exposito (2001, p.27) explained that *a negative relationship has been found between education and fertility, so families with higher levels of education usually have, on average lower fertility rates. On a dynamic perspective lower fertility contributes to more income per capita and that usually increases the level of education and then contributes to low fertility rates in future periods.* Women with fewer children are much likely to be in the labor force.

Many authors as Becerril (1996), Saavedra (2001), referred the incidence of educational attainment in both, the employment opportunities for women and their different wage levels. Carlson (2002, p.132) observed that, in despite of imbalances even exists among the biggest qualification for the work and the capacity of the market to generate employments according to it, the wage employees receive an additional pay with the increase of the educational level. In Venezuela, -expressed Winter (1994, p.7)- the probability that a woman with primary education will work for pay was 29%, and 50% for women with secondary education.

However, in Latin America the income differences persist between men and women with the same instruction level. *It is a surprising fact that even when women with high levels of education earn wages far below those of men, female participation in the labour force still remains almost the same as that of men for the highest educational level (over 13 years)* Arriagada (1998, p.15-16). In Venezuela -this author exposes- the income differences by sex (average female income as a percentage of average male income) urban population, aged 15 and over, increased of a 56.3 in 1980 at a 63.0 in 1994 for 0-3 years of schooling, although they diminished of a 71.1 in 1980 at a 66.0 in 1994 for 13 and over years of schooling.

During the period 1975-2000, Venezuela reached important achievements in social indicators. Data compiled from the Center for International Health Information (CIHI) shows that the total fertility rate per woman experienced a reduction from 4,4 (average number of children a woman would bear) in 1975 to 2,5 in 2000; whereas female and male life expectancy experienced an increase in approximately 6 years. The average years of schooling in the total population aged 15 and over, increase from 3,63 years in 1975 to 6,64 years in 2000.

The purpose of this paper is to investigate the effects of higher education (proxied by percentage of higher school attained in female population) on female employment in Venezuela. The relationship between these indicators is examined here using quinquennial data from the period 1975 to 2000.

With this objective, the second section presents a summary of the evolution of female and male employment, 1975-2000. Section 3 discusses the characteristics of educational transition and selected educational indicators, and section 4 presents an econometric analysis of female employment and higher female education. Finally, the conclusions.

2. Evolution of female and male employment, 1975-2000

The employment trends in Latin America until the 1970s showed a strong expansion of the labor supply due to high demographic growth. In the second half of the decade of 1970 this growth was smaller and decreased in the decade of 1980. During the 1990s, the characteristics of the labor supply did not differ from previous tendencies. *The increase in its demographic components continued to tail off and the participation rate continued to rise. Thus, the total labor supply continued to grow by more than its demographic component.* Weller (2000, p.34-40). As for the qualitative aspects, formal education developed positively: enrolment in secondary and tertiary education increased, and young people with more years of formal education entered the labor market. From his point of view,

in this period *the demand for labour was oriented towards skilled workers and not towards unskilled ones.*

The total employment in Venezuela during the period 1975-2000 showed an increase from 3504.3 to 8821.8 thousand of persons. The female employment represented only the 27,3 % of total in 1975, and represented the 32,27 % in 2000. The figures of male employees was duplicated in this years, while the figures of female employees was triplicated.

Table 1. Female and Male Employment (all economic activities), 1975 and 2000. Thousand of persons (aged 15 and above).

	Female Population		Male Population	
	1975	2000	1975	2000
MD1- Agriculture, Hunting, Forestry and Fishing	48.55	47.90	650.02	851.60
MD2- Mining and Quarrying	2.76	6.80	44.16	47.80
MD3- Manufacturing	168.17	344.10	370.29	802.90
MD4- Electricity, Gas and Water	4.82	9.70	38.46	49.80
MD5- Construction	5.59	28.10	243.5	679.30
MD6- Wholesale and Retail Trade and Restaurants and Hotels	195.48	1072.90	460.17	1219.70
MD7- Transport, Storage and Communication	15.46	51.90	183.57	560.20
MD8- Financing, Insurance, Real Estate and Business Services	37.59	175.90	85.60	279.70
MD9- Community, Social and Personal Services	477.67	1458.60	467.80	1125.00
Total*	957.8	3200.3	2546.7	5621.5

Source: ILO, (1983 and 2003).

* Total includes MD10- Activities not adequately defined.

The rise in female participation occurred in sectors with a traditionally high level of female involvement (services, trade and manufacturing) but also in sectors where this involvement is generally low (construction). In fact, with the only exception of agriculture, hunting, forestry and fishing sector, in which decrease slightly, it can be affirmed that the female employment increased in all the sectors.

Next we present the evolution of both female and male employment structure in Venezuela, by Industrial Standard International Classification (ISIC) of all economic activities in the following table.

According to ISIC of all economic activities, the three sectors that have experienced bigger increments in the female employment among the years 1975 and 2000 has been for that order MD6 Wholesale and Retail Trade and Restaurants and Hotels, MD5 Construction and MD8 Financing, Insurance, Real Estate and Business Services. In the first of them, the MD6, the female employment represented 29,81 % of total in 1975, and reached 46,79 % in 2000. The sector of the Construction, where the male employment prevails, occupied the second position for the increment of female employment, which passed of 2,24 % of total the in 1975 to 3,97 % of total in 2000. In sector MD8, the female employment passed of occupying 30,51 % of the total in 1975 to 38,6 % in the 2000.

3. Educational transition and selected educational indicators in Venezuela, 1975-2000.

The process of skill upgrading through the formal school system is identified as "educational transition" and refers changes in both the mean and the distribution of educational attainment. The development of this process doesn't occur in a homogeneous way in all the Latin American countries, although similarities can be appreciated among them, if we consider that in general they possess the same socioeconomic characteristics.

In one first phase, when the mean years of schooling is low, the fraction corresponding to adults without schooling or with some primary schooling only is wide, and the fraction with some secondary schooling is less than primary, but fatter than the last fraction, corresponding to adults with post-secondary education. The most of Latin American countries were in this first step in the 1960s.

The transition from the first stage to the nexts generally is characterized by decreasing the number who had no schooling, and by gradually increasing the number who had secondary schooling; but in fact, we observe that this process adopts different forms. Venezuela and others latinamerican countries, *appear to have been following "unbalanced" educational transition --increasing the coverage of university without ensuring a large pool of secondary school graduates*, as highlight De Ferranti et al, (2003, p.76). The resulting distribution of educational attainment in these countries, is that proporcionally, more individuals obtain terciary education than secondary education only.

Table 2 and 3 shows the evolution of the selected educational indicators in Venezuela, in both, female and male population, in 1975 and 2000, which illustrate the characteristics of the educational transition.

Table 2 Percentage of educational levels in Female and Male Population (aged 15 and above).

	Female Population		Male Population	
	1975	2000	1975	2000
No Schooling (NSP)	31.0	10.5	47.4	9.2
Primary School Attained (PSP)	51.8	41.2	29.1	46.8
Secondary School Attained (SSP)	12.7	34.6	17.3	30.3
Higher School Attained (HSP)	4.5	13.7	6.1	13.8

Source: Barro and Lee (2001)

Between 1975 and 2000 the reduction of no schooling population was very important. The NSP indicator fell by an additional 38 percentage points in male population and by 20 points in female population; this last indicator, with better initial level than the first one. However, the HSP indicator presents the more successful results. The percentage of men with tertiary education in 2000 duplicated or more to percentage in 1975, and the percentage of women with tertiary education (HSPF) in 1975, was triplicated or more in 2000.

Table 3 Average schooling years in Female and Male Population (aged 15 and above).

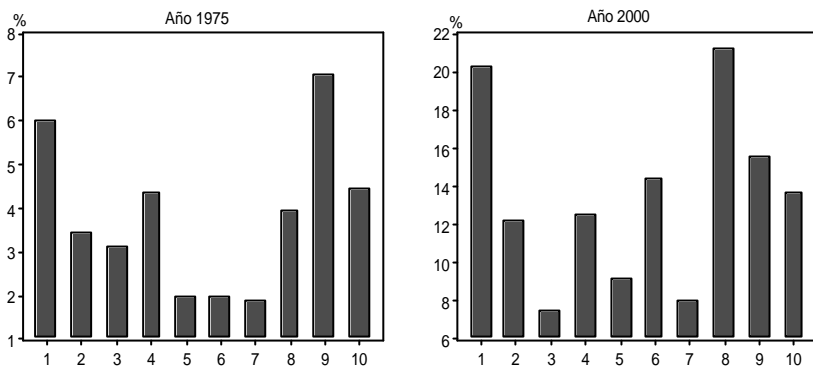
	Female Population		Male Population	
	1975	2000	1975	2000
Primary Schooling (PYR)	2.91	4.38	2.51	4.39
Secondary schooling (SYR)	0.66	2.0	0.90	1.74
Higher schooling (HYR)	0.12	0.39	0.16	0.37
Average schooling years (TYR)	3.69	6.78	3.57	6.49

Source: Barro and Lee (2001)

All these indicators experienced increases in this 25 years. In 2000 the values of these variables were a little lower in male population than in female population, with only the exception of the average years of primary schooling, which presented similar values in both cases. During the period, the highest rate of growth corresponds to higher schooling (HYR), in both, female (HYRF) and male (HYRM) population. In this sense, according to the transitional educational analysis mentioned above, Venezuela focused on tertiary education.

In the next graphs we represent the variable percentage of higher school attained in the female population (HSPF) for 10 South American countries, for the years 1975 and 2000.

Graphs 1-1^a. Percentage of higher school attained in the female population, 1975 y 2000.(aged 15 and above)



1-Argentina 2-Bolivia 3-Brazil 4-Chile 5-Colombia 6-Ecuador 7-Paraguay 8-Peru 9-Uruguay 10- Venezuela

Source: Barro and Lee (2001)

There are important differences among countries, with Uruguay and Argentina in better positions than the rest, in 1975; and Ecuador, Colombia y Paraguay respectively, in the worst positions. In 2000, Peru obtains the first place, followed by Argentina and Uruguay. To Brazil belongs the last position. Venezuela maintains the same position, the 5th place, each year.

4. An econometric analysis of female employment and higher female education

The following model, estimated by least square, shows the incidence that the higher female education has in the increase of total female employment (LFE), the explained variable, in Venezuela, by quinquennium, 1975-2000.

The explanatory variables are percentage of higher school attained in the female population aged 15 and over, (HSPF) expressed in percentage, and the lagged endogenous variable, total female employment in previous period LFE (-5), expressed in thousand of

persons. The data is taken from Yearbook of Labor Statistic (1983 and 2003), ILO, and Barro and Lee (2001).

Model for Total Female Employment

Dependent Variable: LFE				
Method: Least Squares				
Sample(adjusted): 1980 1980 1985 1985 1990 1990 1995 1995 2000 2000				
Included observations: 5 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-296.0274	131.7911	-2.246187	0.1538
LFE(-5)	0.964597	0.149798	6.439313	0.0233
HSPF	82.09427	29.54883	2.778258	0.1088
R-squared	0.995119	Mean dependent var		2054.742
Adjusted R-squared	0.990238	S.D. dependent var		816.5022
S.E. of regression	80.67477	Akaike info criterion		9.064561
Sum squared resid	13016.84	Schwarz criterion		8.830224
Log likelihood	-26.75609	F-statistic		203.8657
Prob(F-statistic)	0.004881			

The model presents a high goodness of fit and shows the incidence that the educational variable has in the increase of total female employment. Besides, we test the incidence that the higher education has in the increase of female employment (LFE) for each division in ISIC of all economic activities. The results are showed in following regressions, where t-statistic appears in parentheses.

In this classification the explanatory variable HSPF, was significative in four major divisions:

Regression MD1- Agriculture, Hunting, Forestry and Fishing

$$FE = 0.31 \text{ LFE}(-5) + 2.77 \text{ HS}$$

(2.72) (6.06)

$$R^2 = 0.86$$

Regression MD3- Manufacturing

$$FE = 0.86 \text{ LFE}(-5) + 6.77 \text{ HSPF}$$

(6.09) (2.07)

$$R^2 = 0.98$$

Regression MD8- Financing, Insurance, Real Estate and Business Services

$$FE = 0.39 \text{ LFE}(-5) + 9.35 \text{ HSPF}$$

(1.23) (2.55)

$$R^2 = 0.88$$

Regression MD9- Community, Social and Personal Services

$$FE = 0.86 \text{ LFE}(-5) + 32.3 \text{ HSPF}$$

(7.28) (3.26)

$$R^2 = 0.99$$

Conclusions

The increase in percentage of higher school attained in the female population is a main factor in the growing women's labor force participation rates in Latin America, in two past decades.

The employment trends in Venezuela, in last decades, have been characterized from the side of the labor supply by a bigger increment of the participation rate that the increment of their demographic component, and from the side of the labor demand, for their orientation toward skiller workers.

In Venezuela, the total female employment increased more than male employment from 1975 to 2000. The most rise in female participation occurred in sectors with a traditionally high level of female involment but also in sectors where this involment is generally low. These sectors were Trade and Restaurants and Hotels, Construction, and Financing, Insurance, Real Estate and Business Services by ISIC of all economic activities; and Sales Workers, Administrative and Managerial workers; and Professional, Technical and related workers by ISC of occupations.

The process of educational transition in Venezuela focused on tertiary education. During the period 1975-2000, the highest rate of growth in all educational indicators corresponds to higher schooling

in both, female and male population aged 15 and over. In 2000, this female indicator was superior than male indicator.

Our econometric analysis shows the incidence that the higher female education has in the increase of total female employment and in some sectors of female employment.

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