“The Impact of the Educational Gender Gap on Economic Development in Cross Section of Countries”

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Abstract

The importance of women's education for the social and economic development of Third World countries has been enphasized especially in recent years by international, national organizations and researchers Recent research suggests that "the economic and social returns to education for women are substantial and on the whole probably greater than those for men " (The World Bank,1991) However, the cross-national statistical analysis of this research showed contravercial result that the educational gender gap had a significantly positive impact on economic growth from 1970 to 1985.

Ⅰ. Introduction

The importance of women's education for the social and economic development of Third World countries has been enphasized especially in recent years by international, national organizations and researchers in the field of education and development. Recent research suggests that "the economic and social returns to education for women are substantial and on the whole probably greater than those for men " (The World Bank, 1991) However, women's educational levels are lower than men's in most societies all over the world.

Most educational decision makers share the belief on ethical grounds the educational gender gap should be eliminated. The strength of this equity argument to one side, this research will intend to find empirical evidence of the effect of the gender gap on social and economic factors. More specifically, it will focus on the impact of the gender gap on economic growth.

Ⅱ. Literature Review

The World Bank and its staff made significant contributions to research on the role of women's education in economic development. In 1991, it published "Letting Girls Learn - Promising Approaches in Primary and Secondary Education", in which women's education is discussed from the two sides of cost and benefit. According to this report,

one of the most significant reasons for this gender gap is that women's education does not figure as strongly as men's into parents' decision making. For parents in developing countries, the education of their sons who usually must support them is more valuable than the education of the their daughters, who are going to marry and leave their family. At the same time, the opportunity cost of sending their daughters to school may be higher than that of their sons because girls usually do more housework than boys. This report also argued that women's education is socially more worthwhile than men's education. For example, it suggested that women's (mothers') education has a far more positive impact on children's health than does men's (fathers') education. This report also suggested that women's education slows population growth In terms of the contribution for economic development, it concluded that "economic returns to schooling are similar for women and men" based on the analysis of rates of returns to education in several countries.

Psacharopoulos of the World Bank has kept updating his report on rates of returns to education. Table 1 is from his most recent report (1993). It shows that, while women's secondary education has a higher rate of return than men's secondary education, women's primary and higher education has lower rates of return than men's primary and higher education.

Table 1 Returns to Education by Gender

Educational Level	Men	Women
Primary	20.1	12.8
Secondary	13.9	18.4
Higher	13.4	12.7
Overall	11.1	12.4

Source-Psacharopoulos(1993)

In a recent publication of the World Bank, titled "Women's Education in Developing Countries" (1993), Schultz, analyzing private and social rates of return to women's education, concluded that "high returns to investing in the education of women are indisputable." He argued that in spite of this fact, the reason why returns to education differ by gender is "related in part to the structure of aggregate demand for labor and in part to economic constraints." He also argues that girls get less education than boys partially because parents' decision making and preference for their children's education are perpetuated by "regulations and incentives in public (and private) education systems." He pointed out a problem of estimating returns to women's education, too. Since the rates of return analysis deals with earnings

(usually only salary), it cannot capture women's housework which is still the women's work in many traditional societies.

In the same book, King and Hill suggested that the gender gap in education is an important determinant of economic growth based on the regression analysis of cross national data from 152 developing countries. However, the dependent variable they used was GNP, which represents economic levels but does not represent economic growth Prior to their regression analysis, in order to compare the two groups of countries with greater and smaller gender gaps, they showed scatter plots between primary enrollment rate and GNP per capita, which again represents only economic levels of the countries not economic growth. They "found" that the GNP per capita of those countries with a smaller gender gap is higher than that of those countries with a greater gender gap. To me, these findings - from both the regression analysis and scatter plots - are too obvious to state. The fact that more developed countries have narrower gender gaps and less developed countries have wider gender gaps in education is different from the hypothesis that smaller gender gaps result in more economic growth, which they were originally trying to prove. In my analysis, I will use economic growth as the dependent variable and try to examine the effect of gender gaps on economic growth.

Ⅲ. Method

This research intends to explore the relationship between educational gender differences and economic growth. Correlation analysis and multiple regression analysis are used to examine the relationship in this paper.

In most of the previous literature, school-enrollment rates were used as possible proxies for human capital. In this paper, with the "Data Set for a Panel of 138 Countries" prepared by Barro and Lee (1994), I was able to use not only school enrollment rates but also years of schooling and percentage of "school complete" in the population. Although the correlation among these different educational indicators are high, it is expected that they represent human capital from different aspects. Years of schooling and percentage of "school complete" are assumed to represent the stock of human capital in a country, while enrollment rate is assumed to represent the flow of human capital. I also used data from "World Tables 1993" published by the World Bank for some control variables.

A. Correlation analysis

At first we assess the correlation between educational gender gap and two economic

indicators of the growth rate of GDP per capita from 1970 to 1985 and GDP per capita in 1970.

The following variables are used

*LGGDP345 = Growth rate of GDP per capita from 1970 to 1985 = Log (GDP per capita in 1985 / GDP per capita in 1970)

*GDPSH570 = GDP per capita in 1970

*Gender gap variables in different measurements and different levels of education in 1970

I used three kinds of educational variables, years of schooling, percentage of "school complete" and school enrollment rates in the three levels of education, primary, secondary and higher. The gender gap variables are obtained as men's number minus women's number. The gap variables are expected to negatively correlated with economic growth rate and GDP per capita.

(1) HUMANGAP = Average schooling years in the male population over age 25 in 1970 - Average schooling years in the female population over age 25 in 1970

(2) PYRGAP = Average years of primary schooling in the male population over age 25 in 1970 - Average years of primary schooling in the female population over age 25 in 1970

(3) SYRGAP = Average years of secondary schooling in the male population over age 25 in 1970 - Average years of secondary schooling in the female population over age 25 in 1970

(4) HYRGAP = Average years of higher schooling in the male population over age 25 in 1970 - Average years of higher schooling in the female population over age 25 in 1970

(5) PRICGAP = Percentage of "primary school complete" in the male population in 1970 - Percentage of "primary school complete" in the female population in 1970

(6) SECCGAP = Percentage of "secondary school complete" in the male population in 1970 - Percentage of "secondary school complete" in the female population in 1970

(7) HIGHGAP = Percentage of "higher school complete" in the male population in 1970 - Percentage of "higher school complete" in the female population in 1970

(8) PGAP = Male gross enrollment ratio for primary education in 1970 - female gross enrollment ratio in primary education in 1970

(9) SGAP = Male gross enrollment ratio for secondary education in 1970 - female gross enrollment ratio in secondary education in 1970

(10) HGAP = Male gross enrollment ratio for higher education in 1970 - female gross

enrollment ratio in higher education in 1970

B. Multiple regression analysis with gender gap

This multiple regression is designed to examine the impact of the educational gender gap on economic growth. I expected that a smaller gender gap would have a positive effect on economic growth.

Regression model

Yt = b0+ b1*X1 + b2*X2 + b3*X3(a) + b4*X3(b) + b5*X3(c) + b6*X3(d) + b7*X3(e) + b8*X3(f) + e

Yt = Growth rate of GDP per capita from 1970 to 1985 = Log (GDP per capita in 1985 / GDP per capita in 1970)

X1= Gender gap variables in different measurements and different levels of education in 1970

The same educational gender gap variables are used in the correlation analysis They are expected to have negative impact on economic growth.

X2 = Educational variables in different measurement and different levels of education in 1970

Educational variables are also presented as three kinds of educational variables and three levels of education. These variables are expected to have a positive impact on economic growth.

(1) HUMAN70 = Average schooling years in the total population over age 25 in 1970

(2) PYR70 = Average years of primary schooling in the total population over age 25 in 1970

(3) SYR70 = Average years of secondary schooling in the total population over age 25 in 1970

(4) HYR70 = Average years of higher schooling in the total population over age 25 in 1970

(5) PRIC70 = Percentage of "primary school complete" in the total population in 1970

(6) SECC70 = Percentage of "secondary school complete" in the total population in 1970

(7) HIGHC70 = Percentage of "higher school complete" in the total population in 1970

(8) P70 = Total gross enrollment ratio for primary education in 1970

(9) S70 = Total gross enrollment ratio for secondary education in 1970

(10) H70 = Total gross enrollment ratio for higher education in 1970

X3 = Control variables

(a)INVSH345 = Average ratio of real domestic investment (private plus public) to real GDP from 1970 to 1985

In much previous literature, investment rates are found to be one of the most significant determinants of economic growth. This variable is expected to a have positive impact.

(b)GDPSH570 = Real GDP per capita (1985 international prices) in 1970. In the neoclassical model, less developed countries are believed to develop faster than more developed countries. Therefore, GNP per capita is expected to have a negative impact on economic growth in this model.

(c)FUELEI = {(fuel export in 1985 adjusted by the consumer price of 1970 - fuel import in 1985 adjusted by the consumer price of 1970) - (fuel export in 1970 - fuel import in 1970)} /GDP in 1970

The situation of oil (and other kinds of fuel) exporting countries changed dramatically in the 1970's. This indicator is expected to represent the contribution of fuel export to economic growth. The control variable is necessary, especially in this regression analysis with gender gap because many oil producing countries are Islamic countries, in which gender gap tends to be greater. This variable is expected to positively affect economic growth.

(d)PINST345 = (Average number of assassinations per million population per year from 1970 to 1985 + average number of coups per year from 1970 to 1985 + average number of revolutions per year from 1970 to 1985)/3

This variable represents political instability, which is an obvious reason for less development in some countries. This variable is expected to have a negative impact on economic growth.

(e)FREEOP = Measure of "Free trade openness" There is a controversy among economists about the effect of free trade on economic development. From a neoclassical point of view, free trade is a key for economic development. This variable is expected to have a positive impact on economic growth.

C. Multiple regression analysis with men's and women's educational indicators

This multiple regression is designed to compare the effect of men's education and women's education on economic growth. I expected that men's education and women's education have the same impacts on economic growth.

Regression model

$$Yt = b0 + b1*X1 + b2*X2 + b3*X3(a) + b4*X3(b) + b5*X3(c) + b6*X3(d) + b7*X3(e) + b8*X3(f) + e$$

Yt = Growth rate of GDP per capita from 1970 to 1985 = Log (GDP per capita in 1985 / GDP per capita in 1970)

X1= Men's educational variables in different measurement and different levels of education in 1970

(1) HUMANM70 = Average schooling years in the male population over age 25 in 1970

(2) PYRM70 = Average years of primary schooling in the male population over age 25 in 1970

(3) SYRM70 = Average years of secondary schooling in the male population over age 25 in 1970

(4) HYRM70 = Average years of higher schooling in the male population over age 25 in 1970

(5) PRICM70 = Percentage of "primary school complete" in the male population in 1970

(6) SECCM70 = Percentage of "secondary school complete" in the male population in 1970

(7) HIGHCM70 = Percentage of "higher school complete" in the male population in 1970

(8) PM70 = Male gross enrollment ratio for primary education in 1970

(9) SM70 = Male gross enrollment ratio for secondary education in 1970

(10) HM70 = Male gross enrollment ratio for higher education in 1970

X2 = Women's educational variables in different measurement and different levels of education in 1970

(1) UMANF70 = Average schooling years in the female population over age 25 in 1970

(2) PYRF70 = Average years of primary schooling in the female population over age 25 in 1970

(3) SYRF70 = Average years of secondary schooling in the female population over age 25 in 1970

(4) HYRF70 = Average years of higher schooling in the female population over age 25 in 1970

(5) PRICF70 = Percentage of "primary school complete" in the female population in 1970

(6) SECCF70 = Percentage of "secondary school complete" in the female population in 1970

(7) HIGHCF70 = Percentage of "higher school complete" in the female population in 1970

(8) PF70 = Female gross enrollment ratio for primary education in 1970

(9) SF70 = Female gross enrollment ratio for secondary education in 1970

(10) HF70 = Female gross enrollment ratio for higher education in 1970

X3 = Control Variables

Same as previous multiple regressions

These educational variables are expected to have a positive impact on economic growth. However, because of great colinearlity between these variables, the results may be distorted. Also because of this colinearlity problem, it is not safe to compare the significance between these variables to conclude the effect on the dependent variable. Therefore, I form F tests for these models with the null hypothesis that the effect of men's education is equal to that of women's education.

Table 2 Means and Standard Deviations

	N	Mean	St. Deviations
LGGDP345	122	0.22167	0.34248
HUMANGAP	99	0.96607	0.73123
HUMAN70	102	3.81467	2.63464
PGAP	106	0.09764	0.15554
P70	127	0.75992	0.28181
SGAP	107	0.07009	0.1158
S70	125	0.31901	0.26382
HGAP	107	0.03816	0.04291
H70	123	0.06144	0.07661
PRICGAP	99	3.6102	5.7267
PRIC70	102	16.74069	13.94541
SECCGAP	106	0.95566	3.56371
SECC70	109	5.41651	5.92426
HIGHGAP	107	1.56523	1.90347
HIGHC70	110	1.81573	2.1605
PYRGAP	99	0.62354	0.5407
PYR70	102	2.93997	1.96113
SYRGAP	106	0.25804	0.30595
SYR70	109	0.73468	0.77294
HYRGAP	107	0.07381	0.09234
HYR70	110	0.09505	0.11945
INVSH345	123	0.1885	0.09174
GDPSH570	122	3090	3108
FUELEI	85	6.95186	52.66015
PINST345	117	0.08044	0.10519
FREEOP	92	0.22681	0.07292

Table3

Correlations with Economic Growth Rate(1970-85)
and GDP per capita in 1970

	Growth	GDP per capita
HUMANGAP	0.21051	−0.21965
PGAP	−0.31608	−0.39084
SGAP	0.20685	−0.19695
HGAP	0.29169	0.65217
PRICGAP	−0.14348	−0.37731
SECCGAP	0.28254	−0.17255
HIGHGAP	0.25104	0.5821
PYRGAP	0.02263	−0.43539
SYRGAP	0.3741	0.09201
HYRGAP	0.23791	0.56196
HUMAN70	0.28095	0.79476
P70	0.33098	0.51855
S70	0.33204	0.80448
H70	0.2193	0.75772
PRIC70	0.25916	0.56584
SECC70	0.22929	0.78366
HIGHC70	0.16224	0.6106
PYR70	0.27392	0.73887
SYR70	0.22428	0.73571
HYR70	0.15919	0.65563
INVSH345	0.48799	0.5968
GDPSH570	0.12513	1
FUELEI	0.0602	−0.02253
PRINST345	−0.31831	−0.33837
FREEOP	0.31911	0.40541

IV. Results

A. Correlation analysis

Table 3 is the result of the correlation analysis between educational gender gap and two economic indicators, growth rate of GDP per capita and GDP per capita. While the associations between primary education indicators and economic growth rate are negative or very small, those between secondary and higher education indicators and economic growth rate are all positive at a fairly high level. As for the associations between gender gap and GDP per capita, the associations of primary and secondary education are negative as I expected, while those of higher education are positive and high.

Table 4 Regressions for Per Capita Growth(1970-1985)

Effect of Gender Gap

	[1]	[2]	[3]	[4]	[5]
Intercept	−0.396875 [−2.561]	−0.395399 [−1.468]	−0.216217 [−1.552]	−0.278022 [−1.926]	−0.212929 [−1.385]
Gender Gap	HUMANGAP 0.068615 [1.290]	PGAP 0.414725 [1.162]	SGAP0.664306 [1.831] *	HGAP 1.764954 [1.641]	PRICGAP −0.008262 [−1.407]
Education	HUMAN70 0.030917 [1.353]	P70 0.176352 [0.637]	S70 0.253046 [1.023]	H70 0.851129 [1.206]	PRIC70 −0.001447 [−0.435]
NVSH345	2.203141 [4.156] ***	2.079306 [3.872] ***	1.865663 [3.493] ***	1.98398 [4.078] ***	2.572813 [4.726] ***
GDPSH570	−4.1323E-05 [−2.260] **	−2.9687E-05 [−2.226] **	−3.6837E-05 [−2.195] **	−6.6745E-05 [−3.389] ***	−3.6126E-05 [−2.538] **
FUELEI	0.000779 [0.821]	0.000992 [1.337]	0.001188 [1.632] *	0.001245 [1.736] *	0.00026 [0.280]
PINST345	−0.311738 [−0.965]	−0.725351 [−1.124]	−0.33335 [−1.021]	−0.491588 [−1.526]	−0.296487 [−0.907]
FREEOP	0.684366 [1.415]	0.725351 [1.437]	0.407069 [0.803]	1.109451 [2.030] **	0.54521 [1.118]
Rspuare	0.4055	0.3307	0.3594	0.3812	0.399

	[6]	[7]	[8]	[9]	[10]
Intercept	−0.266937 [−1.942]	−0.270192 [−1.957]	−0.302507 [−1.756]	−0.292667 [−2.148]	−0.301007 [−2.160]
Gender Gap	SECCGAP 0.010728 [1.327]	HIGHGAP 0.077469 [2.225] **	PYRGAP 0.010634 [0.131]	SYRGAP 0.135917 [1.365]	HYRGAP 1.46036 [2.139] **
Education	SECC70 0.01614 [2.178] **	HIGHC70 0.005123 [0.219]	PYR70 0.005392 [0.175]	SYR70 0.100713 [1.932] *	HYR70 0.4084 [1.021]
INVSH345	2.168187 [4.329] ***	1.821442 [3.716] ***	2.467446 [4.556] ***	2.273074 [4.566] ***	1.827053 [3.725] ***
GDPSH570	−5.2388E-05 [−3.192] ***	−5.3038E-05 [−3.577] ***	−3.2521E-05 [−1.792] *	−4.7504E-05 [−3.146] ***	0.00005948 [−3.744] ***
FUELEI	0.001389 [2.011] **	0.001213 [1.744] *	0.000415 [0.431]	0.001375 [2.004] **	0.001235 [1.781] *
PINST345	−0.371006 [−1.187]	−0.448054 [−1.408]	−0.278531 [−0.836]	−0.331671 [−1.066]	−0.502824 [−1.587]
FREEOP	0.755964 [1.609]	1.079327 [2.139] **	0.602551 [1.206]	0.602964 [1.294]	1.26504 [2.429] **
Rspuare	0.4231	0.4003	0.3469	0.4277	0.4026

***P<0.01
**P<0.05
*P<0.1
T-value of coefficient estimates appear in parentheses

B. Multiple regression with gender gap

Table 4 is the result of the regression analysis. The directions of control variables are all as expected. The investment rate and GDP per capita had especially significant impacts in this model. The surprising result was the effect of educational gender gap on economic growth. Almost all the effects of educational gender gaps, except for the percentage of primary education "complete," had positive impacts on economic growth. Some of them obtained even statistical significance. Gender gaps at higher levels of education tend to have a larger impact on economic growth, while the gender gaps at lower levels of education tend to have no impact on economic growth.

C.Multiple regression analysis with men's and women's education

Table5 is the result of the regression. All the models, except for the percentage of primary education "complete," had positive coefficients for men's education and negative coefficients for women's education. While many coefficients of men's education obtained statistical significance, women's education did not except for the percentage of higher school "complete" in the female population, which had a significantly negative impact on economic growth. Although these result may be distorted because of the multicolinearlity problem of the two variables, men's education had larger impacts on economic growth than women's education. The F-test for the null hypothesis, that the effect of men's education is equal to women's, obtained statistical significance with several educational indicators. Men's education tends to have larger positive impacts on economic growth than women's education in higher level of education. In other words, there are no significantly different impacts on economic growth across gender in primary education, while there are significantly different impacts in higher education.

Table 5 Regressions for Per Capita Growth(1970-1985)-continued

Men's Education vs. Women's Education

	[1]	[2]	[3]	[4]	[5]
Intercept	−0.397013 [−2.551]	−0.460735 [−1.646]	−0.21199 [− 1.515]	−0.277862 [1.936]	−0.213387 [1.388]
Men's Ed.	HUMANM70 0.083101 [1.476]	PM70 0.608594 [1.305]	SM70 0.748825 [1.880] *	HM70 2.174667 [2.137] *	PRICM70 −0.008975 [−1.523]
Women's Ed.	HUMANF70 −0.052825 [−1.008]	PF70 −0.344112 [−1.114]	SF70 −0.542606 [−1.474]	HF70 −1.27315 [−1.021]	PHICE70 0.007472 [1.183]
INVSH345	2.206459 [4.159] ***	2.00423 [3.656] ***	1.898549 [3.520] ***	1.993714 [4.103] ***	2.576173 [4.735] ***

GDPSH570	−4.1029E-05 [−2.238] **	−3.0985E-05 [−2.311] **	−3.4722E-05 [−2.072] **	−6.7553E-05 [−3.423] ***	−3.6023E-05 [−2.530] **
FUELEI	0.000769 [0.810]	0.000909 [1.210]	0.001161 [1.590]	0.001247 [1.742] *	0.00026 [0.280]
PINST345	−0.31119 [−0.963]	−0.370803 [−1.118]	−0.337197 [−1.030]	−0.494046 [−1.535]	−0.295775 [−0.905]
FREEOP	0.68166 [1.408]	0.753261 [1.493]	0.4075 [0.795]	1.114247 [2.052] **	0.546187 [1.120]
Rspuare	0.4047	0.3351	0.3553	0.3827	0.3992
F for test	[1.6332]	[1.6937]	[3.1692] *	[2.5458]	[1.9572]

	[6]	[7]	[8]	[9]	[10]
Intercept	−0.266359 [−1.934]	−0.269815 [−1.956]	−0.301272 [−1.749]	−0.291187 [2.136]	−0.300385 [2.157]
Men's Ed.	SECCM70 0.018187 [2.082] **	HIGHM70 0.080038 [2.664] **	PYRM70 0.012337 [0.143]	SYRM70 0.182536 [1.893] *	HYRM70 1.658274 [2.594] **
Women's Ed.	SECCF70 −0.002111 [−0.231]	HIGHCF70 −0.075185 [−1.760] *	PYRF70 −0.007799 [−0.098]	SYRF70 −0.082943 [−0.764]	HYRF70 −1.252623 [−1.603]
INVSH345	2.166714 [4.320] ***	1.820891 [3.715] ***	2.471653 [4.565] ***	2.272286 [4.559] ***	1.826995 [3.724] ***
GDPSH570	−5.2503E-05 [−3.160] ***	−5.2984E-05 [−3.568] ***	−3.2252E-05 [−1.777] *	−4.7397E-05 [−3.125] ***	0.00005947 [−3.737] ***
FUELEI	0.001379 [1.995] *	0.001212 [1.743] *	0.00041 [0.426]	0.00137 [1.994] *	0.001235 [1.781] *
PINST345	−0.373368 [−1.192]	−0.447472 [−1.406]	−0.277574 [−0.833]	−0.332206 [−1.066]	−0.502524 [−1.586]
FREEOP	0.762689 [1.6919]	1.077836 [2.137] **	0.601344 [1.203]	0.601277 [1.289]	1.262916 [2.426] **
Rspuare	0.4212	0.4003	0.3726	0.4266	0.4024
F for test	[1.5653]	[4.9111] **	[0.0153]	[1.7872]	[4.5108] **

***P<0.01
**P<0.05
*P<0.1
T-value of coefficient estimates appear in parentheses

V. Discussion and Conclusion

Frankly, it is very difficult to interpret the unexpected statistical result, which shows a positive impact of the educational gender gap on economic growth. This obviously contradicts Hill and King's (1993) findings of "negative effects of gender disparities in schooling on economic and social development." However, one explanation may be possible: the existence of a structural gender gap behind the educational gender gap. In other words, there is another significant societal gender discrimination that makes the educational gender gap meaningless. For example, the

World Bank (1983) reported that the average female labor force participation rate of all the developing countries was 26.2% in 1980. Given this situation, investing in women's education becomes less effective for enhancing economic development. Becker (1964) also pointed out that lower rates of returns to women's education is a result of the lower labor participation of women.

This finding should not discourage the effort to diminish the educational gender gap because of the following two reasons. One is that the agenda of diminishing gender gap is an ethically valid enterprise. Equal opportunity distribution is a response not only for the economic need to make efficient use of potential human resources, but also the political need of modern democracy to provide perfect equal human rights across gender. Another reason is just because the contribution of women's education to economic growth is less effective does not mean that it is unimportant for social development. On the contrary, much of previous research found that increasing women's education discouraged fertility and infant mortality and encouraged children's education. Women's education is possibly as effective as men's if we count not only economic aspects but also social aspects.

Women's education itself is very important by all means. However, we have to challenge the easy conclusions of some previous research which indicated that women's education is more important than men's for economic development. There is a clear recent trend that women's education is being treated with greater significance in the international development community. I think this is the right direction. However, research should be objective so that one can find the real situation of women in society. If the result of this study is reality, our next step is to think how women can participate in economic development without hiding the fact that the educational gender gap did not result in less economic development or without trying to find another way to prove our "politically correct" hypothesis that women's education is always most effective.

Further research is necessary to investigate the impact of the gender gap on social development with cross national analysis. The difficulty of this research is related to the difficulty of defining "social development." Especially given the necessity to investigate the progress of social development as economic growth instead of economic level in this research, the definition problem becomes even more difficult. From the economic point of view, the research on women's participation in the labor force appears to be even more important after the results of this research. It is worthwhile to investigate how education affects women's labor participation cross-nationally. In that research, it is important to consider not only economic

factors but also cultural and religious ones.

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