RESEARCH NOTE: How Did Economic Development and Trade Affect Women's Share of the Labor Force in the 1980s?

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ABSTRACT

Changes in women's share of the labor force are examined by analyzing data from 40 Less Developed Countries and 20 more advanced industrialized countries. Results show that women did not gain any control of the labor force in the 1980s. Although Less Developed Countries (LDCs) moved toward convergence with advanced industrialized countries on measures of fertility and trade dependence, major economic and social differences remained.

INTRODUCTION

Women's contributions to the global economy have received increased attention in the last twenty years. It is common knowledge that women workers from all over the world produce the clothes on our backs and many of the conveniences in our homes. Yet, as the awareness of women's contributions to the global economy increased, no one has tested empirically whether women's share of the labor force changed during the 1980's. We are left with a number of questions: Did women's share of the labor force change in the world economy? If it did, were those changes different for LDCs than they were for more advanced industrialized countries? Also, what other economic and social changes occurred in the 1980s, and did those changes have an effect on women's share of the labor force? By analyzing data from 1980 and 1990 on 40 Less Developed Countries (LDCs) and 20 more advanced industrialized countries, for which data were available, I shed some light on how changes in the global economy did (or did not) affect women's lives.

REVIEW

Previous research on how women's share of the labor force was affected by the world-economy focused on the effects of economic development and trade dependency (Ward 1984; Pampel and Tanaka 1986; Semyonov and Shenhav 1986; Clarke et al. 1991). Economic development was hypothesized to increase women's share of the labor force. As a country's GNP per capita increased, it was hypothesized that the wage rates available to all would increase as would job opportunities. Educational opportunities and health care would improve with development as well. Through such advancements, women would be better suited for employment because of education and training and because, through better health care information and facilities, they would be able to better control their fertility. Earlier researchers therefore tested the effects of a country's GNP per capita, education of women, and fertility rates on women's share of the labor force.

As presented in Table 1, the findings were mixed (Ward 1984; Pampel and Tanaka 1986; Semyonov and Shenhav 1986; Clarke et al. 1991).

The findings on the effects of trade dependency were mixed as well (see Table 1). Kathryn Ward (1984) hypothesized that trade dependency had specific and deleterious effects on women's employment. She argued that upon inclusion in the world-system, women experienced a disruption of their traditional sources of economic livelihood, because they were only offered limited access to paid labor. Men, on the other hand, were given access to the new crops, credit and technology. She found support for this hypothesis in her tests for the effects of foreign direct investment and commodity concentration on women's share of the labor force. Both indicators were found to have a negative effect on women's share of the labor force. As presented in Table 1, Clarke et al. (1991) found similar results, but others did not (Pampel and Tanaka 1986; Semyonov and Shenhav 1986).

All previous research on the effects of the world-economy on women's labor force participation were conducted using data from 1965-1980. Time has passed, and many changes in the global economy have occurred; therefore, a reexamination of these hypotheses is warranted.

DATA AND METHODS

Statistical Models. Early cross-national research on female labor force participation used panel data in which the independent variables were lagged five to ten years behind the dependent variables, in order to allow for the effects of development or dependence to affect women's share of the labor force. Lagged dependent variables were not included as regressors (Ward 1984; Pampel and Tanaka 1986; Semyonov and Shenhav 1988). These are called lagged regressor models.

$$y_{t2} = a + bx_{t1} \text{ (lagged regressor model)}$$

Later, models that attempted to control for base levels of the dependent variable at *t1* by including it as a regressor became more accepted in the dependency literature (Wimberley 1990). These are called lagged *y*-regressor models.

$$y_{t2} = a + b\, y_{t1} + b\, x_{t1} \text{ (lagged } y\text{-regressor model)}$$

Of the cross-national research on women's share of the labor force discussed above, only Clark et al. (1991) employed this statistical model. However, these models received some important criticism. Firebaugh and Beck (1994) claimed that the specific panel analyses used by most of the dependency researchers, the lagged *y*-regressor model described above, does not control for the effects of unmeasured and unchanging characteristics of countries. They recommended the use of a "first-difference model" for cross-national

studies. This model uses change scores for both the independent and dependent variables. For example, $(y_{t2} - y_{t1})$ is regressed upon a series of independent variables, each in difference form $(x_{t2} - x_{t1})$.

Since I wanted to find the effects of economic growth and changes in dependence on exports, I have taken the recommendation of Firebaugh and Beck and included the first-difference model in my analyses.

$$(y_{t2} - y_{t1}) = a + b(x_{t2} - x_{t1}) \text{ (first-difference model)}$$

However, one drawback of the first-difference model is that it removes the effects of differences in levels of development or dependency. In order to test for the effects of differences in levels *and* changes on women's share of the labor force, I conducted analyses using all three statistical models. This also allows for a comparison of my results with those from previous research. In this study, *t1*= 1980 and *t2*=1990; a ten year lag is allowed for effects to manifest themselves.

In another attempt to test for the effects of levels of development on women's share of the labor force, analyses of variance were conducted. Countries were either coded as more advanced industrialized or less developed, based on their status as OECD[1] countries and their 1980 real GDP/capita. If a country was a member of the OECD or it had a 1980 real GDP/capita of $6,000 or more it was coded as "more advanced industrialized". The means of the two samples on all indicators were compared to see if there were significant differences between the more advanced industrialized countries and less developed countries.

Sample. Analyses included all 60 countries, 40 Less Developed Countries and 20 advanced industrialized countries for which data were available. The sample includes many, but not all, of the same countries included in previous studies (see Appendix Table 1).

Table 1.Previous Cross-National Studies of Female Share of the Labor Force (FSLF).

Author(s)	Countries in Sample	Years	Statistical Model Used	Variables In Study[*] Significant Predictors of FSLF	Included Non-signif. Predictors of FSLF
Ward (1984)	126 advanced & less developed	1965-1975	Lagged Regressor	trade dep. -	3° educ.
		1970-1975		inv. dep. -	LF

				imp/exp +	inv. dep.
Pampel and Tanaka (1986)	70 advanced & less developed	1965-1970	Lagged Regressor	development +	imp/exp
				development"U"	trade dep. LF divorce
				chd/woman -	gov. revs.
				Sub-sah. Afr.	2° educ
				and Asian dummy +	
Semyonov and Shenhav (1988)	53 less developed	1965-1970	Lagged Regressor	Development +	inv. dep.
				1° educ. +	urbaniz
Clark, et. al. (1991)	135 advanced & less developed	1965-1980 1970-1980	Lagged y-Regressor	trade dep. -	3° educ.
				development +	inv. dep.
				Latin dummy -	imp./exp.
				Afr. dummy -	Asian dummy
				Islam.dummy -	
				Marx. dummy +	

*Key to Abbreviations: + positive relationship; -: negative relationship; "U": curvilinear relationship; trade dep.: trade dependence; inv. dep.: investment dependence; imp/exp: import/export balance of trade; LF: change in labor force; inv. dep.: change in investment dependence; imp/exp: change in import/export balance of trade; chd/woman: number of children age 0-9 divided by the number of women 25-44; 3° educ.: percent of females enrolled in colleges/universities; 2° educ.: percent of females enrolled in secondary education; 1° educ.: percent of females enrolled in primary education.; divorce: crude divorce rate; gov. revs.: government revenues as a percent of GDP; Cultural/Regional dummy variables: Sub-saharan Africa, Asian, Latin, African, Islamic, Marxist.

MEASURES

Dependent variable. Female Share of the labor force is measured as the total number of adult females (fifteen years old and older) in the labor force divided by the total adult labor force. These are International Labor Organization data (from *Social Indicators of Development* 1991-92 and *The World Tables* 1984) which have the limitation that the number of economically active women is often underestimated due to the exclusion of unpaid agricultural and family workers (Dixon-Mueller and Anker 1985; World Band 1990). However, Female Share of the labor force is the most consistently reported indicator of women's employment, and it is highly correlated with the percent of age-appropriate women in the labor force[2] (Ward 1984).

Economic Growth and Modernization Measures: <u>Logged real GDP per capita</u> was used as an independent variable to test the effects of changes in the relative wealth of nations[3]. Because modernization does not necessarily occur just through economic growth, but also through changes in policies and attitudes, other measures that specifically affect women's employment were included. Measures of changes in fertility were included, because it is hypothesized that as the number of children women bear increases, women's employment is impeded. The total <u>Fertility Rate</u> for each country was included in analyses. This is the number of children a woman would bear if she were to live from the beginning to the end of the childbearing years, bearing children at each age according to the age-specific fertility rates of the year to which the total fertility rate applies (World Bank 1988). This is a useful measure because it can be interpreted as the average completed family size for women implicit in the current age-specific raw fertility rates. The variable <u>Secondary Education</u> was measured as percent of females at the appropriate age enrolled at the secondary level of education. This measure was included, because as women's educational achievements increased, it would be expected that they would be viewed as more employable. Of course, the ability to improve the education and health of women is dependent on a county's economic growth, but other foreign aid and political changes could be responsible, too. Data on fertility (1980) were found in *The World Tables* (1984). Other data on fertility (1990) and education were found in *The World Development Report* (1992-1995). Real GDP/capita data were obtained from the *Penn World Tables* (Heston and Summers 1999).

Trade Dependence: I included the classical dependency measure <u>Commodity Concentration</u>. Commodity Concentration was measured as the percentage of all of a country's exports done in a single commodity. The main justification for use of this measure is that it is the most commonly used measure of dependence on exports. Therefore, it allows me to compare my results with previous research. <u>Commodity Concentration</u> is a measure of trade diversification. If 75% of a country's exports are in one commodity, cocoa for example, that country is very vulnerable to fluctuations in the world-economy (Chase-Dunn 1975).

RESULTS

Did women gain any control of the labor force in the 1980s?

Table 2 presents the results of the paired-samples *t*-test conducted on the means of <u>Female Share</u> of the labor force in three different samples, all sixty countries, 20 advanced industrialized countries, and 40 LDCs. Women did not make any significant gains nor losses of the labor force in any of the three samples of countries.

Table 2. Results of Paired Samples *t*-Tests of Female Share of Labor Force in 1980 and 1990 for 60 Countries.

	1980	1990	Δ (1990-1980)	*t*
Means for all countries (N=60)	31.60	31.53	-.07	.713

	(10.35)	(9.58)	(1.50)	
Means for advanced industrialized countries (N=16)	36.16	36.31	.15	-.645
	(6.03)	(6.09)	(1.01)	
Means for Less Developed Countries (N=44)	29.32	29.14	-.18	.672
	(11.32	(10.16)	(1.70)	
*** p < .005				

What caused changes in women's share of the labor force?

Results of the OLS regression of Female Share of the labor force on measures of development and trade are presented in Table 3. Logged real GDP and Commodity Concentration were the only independent variables displaying significant effects on women's share of the labor force when they were included in the lagged regressors model. Assuming that the lagged regressors model is valid, for each one unit increase in Logged real GDP, women's share of the labor force would be expected to decrease by 7-8% (depending on the sample). For each percent increase in dependence on trade in one commodity, women's share of the labor force would decrease by approximately one-tenth of a percent. However, neither variable showed up as a significant indicator in the lagged *y*-regressors model nor the first-difference model. None of the other independent variables were significant in any of the models[4].

Table 3. Results of OLS Regression of Female Share of the Labor Force on Measures of Development and Trade Dependency.

	Unstandardized Coefficients (s.d)					
	Lagged-Regressor Model		**Lagged-*y* Model**		**First-Difference Model**	
Constant	-213.36***	-253.38***	-14.48	-8.73	-.198	-.87
	(62.77)	(78.59)	(10.08)	(13.54)	(.36)	(.57)
Female Share of the labor force 1990			.90***	.90***		
			(.02)	(.02)		
Female population	6.11***	7.26***	.26	.18	.51	-.004
	(1.17)	(1.45)	(.21)	(.29)	(.83)	(1.04)
Logged GDP/capita	-6.89**	-8.82***	.59	.48	-.09	.57
	(2.5)	(2.91)	(.41)	(.50)	(1.11)	(1.69)

%females enrolled in Secondary Education	.089	.0607	.0032	.0004	-.002	.008
	(.075)	(.10)	(.01)	(.02)	(.02)	(.024)
Fertility Rate	-1.83	-2.22	-.06	-.25	-.21	-.84
	(1.2)	(1.27)	(.19)	(.23)	(.46)	(.69)
Commodity Concentration	-.11*	-.13*	.007	.0067	-.019	-.026
	(.06)	(.06)	(.008)	(.01)	(.01)	(.02)
N	55	36	55	36	47	28
R^2	.469	.557	.989	.990	.071	.208

***$p < .005$ **$p < .01$ *$p < .05$

Do levels of development matter?

An analysis of variance (ANOVA) was conducted in order to test whether changes in women's share of the labor force and measures of development and trade differed depending on a country's status as less-developed or industrialized. Results shown in Table 4 reveal that changes in women's share of the labor force were negative for LDCs and positive for industrialized countries, but the differences in changes were not significant. The lack of significant difference is partly due to the surprisingly small changes in women's share of the labor force over the entire decade. As discussed above, women did not gain (or lose) much control over the labor force in the second-to-last decade of this millennium.

Table 4. Means and Standard Deviations for LDCs and Advanced Industrialized Countries by Measures of Female Share of the Labor Force and Other Measures of Development and Dependency (1980 and 1990).

Variable	Means (Standard Deviations)		F
	Less Developed Countries (LDCs)	Advanced Industrialized Countries	
Female Share of the Labor Force 1980	29.32	36.16	6.36*
	(11.32)	(6.03)	
	N=40	N=20	
Female Share of the Labor Force 1990	29.14	36.31	8.40***
	(10.16)	(6.09)	

	N=40	N=20	
Change in FSLF 1980-1990	-.180	.145	.433
	(1.69)	(1.01)	
	N=40	N=20	
GDP/capita 1980	2277.95	9829.30	158.56***
	(1505.42)	(3160.92)	
	N=40	N=20	
GDP/capita 1990	2428.79	12414.45	259.86***
	(1504.4)	(3245.2)	
	N=38	N=20	
Changes in GDP/capita 1980-1990	62.89	2585.15	154.06***
	(637.01)	(896.15)	
	N=38	N=20	
%Females Enrolled in 2° Education 1980	31.0	83.8	86.27***
	(21.99)	(16.01)	
	N=38	N=19	
%Females Enrolled in 2° Education 1990	39.56	93.45	75.75***
	(24.94)	(15.53)	
	N=34	N=20	
Changes in %Females in 2° Ed. 1980-90	10.84	9.78	.756
	(13.75)	(6.71)	
	N=32	N=19	
Fertility Rates 1980	5.28	1.97	91.22***
	(1.50)	(.53)	
	N=39	N=20	
Fertility Rates 1990	4.63	1.81	57.59***
	(1.64)	(.329)	
	N=40	N=20	
Changes in Fertility 1980-1990	-.623	-.165	10.97***

	(.559)	(.365)	
	N=39	N=20	
Commmodity Concentration 1980	38.34	9.18	30.23***
	(23.29)	(5.58)	
	N=40	N=20	
Commodity Concentration 1990	30.22	12.06	14.58***
	(20.20)	(9.07)	
	N=40	N=20	
Changes in Commodity Concentration 1980-90	-8.12	2.89	4.89*
	(20.96)	(10.35)	
	N=44	N=16	

*** p < .005 ** p < .01 * p < .05

Other levels and changes of development and trade do reveal significant differences between LDCs and more advanced industrialized countries. Less Developed Countries had a slower rate of economic growth, a 3% increase compared to the 26% increase for the more advanced industrialized countries. LDCs did have larger declines in the number of births per women than more advanced industrialized countries, and both LDCs and more developed countries experienced increases in the percent of females enrolled in secondary education. Changes in enrollment were not significantly different dependent on a country's status.

In terms of trade dependence, LDCs and more advanced industrialized countries became more alike. LDCs became *less dependent* upon exports of primary commodities, while advanced industrialized countries *increased* their commodity concentration. Those changes in commodity concentration were significantly different.

DISCUSSION

Women did not gain much control over the labor force in the 1980s. In fact, the gains were small, mostly in advanced industrialized countries, and insignificant. Women in advanced industrialized countries gained less than one-fifth of one percent of the labor force. This suggests that the increased awareness of women's economic contributions, especially in Less Developed Countries, reflects more of a cultural shift than an economic one. Scholars and the media heightened our awareness that women were making our tennis shoes and microchips, but women did not gain more control over the work force

during the 1980s. However, other economic and social changes that affec t women did occur.

These results suggest that, for this time period, a country's level of development in 1980, as measured by <u>Logged real GDP</u> per capita, actually had a negative affect on women's share of the labor force. This contradicts a modernization hypothesis that higher levels of economic development offer environments in which more women are accepted, prepared for and needed in the labor force. However, this finding was not supported in the results from the analyses employing the statistical models more widely accepted in comparative research today.

Negative affects of trade dependence were also found in results using the lagged regressors statistical model. Women's share of the labor force was lower in countries that were more dependent on trade in a primary commodity. This supports the classical dependency hypothesis that women are marginalized in trade dependent economies. However, the results were not robust in other analyses using the different statistical models.

A country's developmental status was important in determining the direction, and amount or rate of changes experienced during the eighties. Levels and changes in economic development and trade indicators affecting the World's women (and men) were found to be significantly different for LDCs and more advanced industrialized countries. First, LDCs did not experience as rapid economic growth as the advanced industrialized countries. This supports previous comparative research on economic developm ent (Firebaugh 1992, Dixon and Boswell 1996). LDCs experienced economic growth, but it was "not as good as" the growth experienced by advanced industrialized countries. Second, although the 1980s were not a great decade in terms of gains in the labor force for women anywhere, LDCs converged with advanced industrialized countries in other ways. Fertility rates in the LDCs declined even more than they did in advanced industrialized countries, but the larger decline seen in LDCs just might have been due to the fact that there was more room for improvement than in more advanced developed countries. The average fertility rate for the 20 advanced countries was already below replacement level in 1980. Female enrollment in secondary education increased and dependence on exports of a primary commodity decreased in LDCs. Female enrollment in secondary education increased in advanced industrialized countries, also, but commodity concentration actually increased for this small sample of countries. In other words, although women did not gain much more control over the labor force in the eighties, their lives improved in other ways. Their chances of getting an education, avoiding continuous pregnancies, and living in a less economically vulnerable economy improved, especially in Less Developed Countries.

It is important to continue to monitor changes in women's labor force participation and other development and dependency indicators. Hopefully, in the nineties, women's participation in and share of the labor force has changed enough for us to develop an

understanding of what causes improvements in women's economic power. Hopefully any gains women made in the labor force in the nineties were more than just symbolic.

NOTES

1. Analyses were conducted using membership in the OECD (Organization for Economic and Cultural Development) *only* as a dummy independent variable, but there were few differences in the results.

2. Attempts to test hypotheses using a measure of the % of age appropriate women in the labor force (female labor force participation rates) were made, but data was not reliable enough to conduct analyses.

3. Previous research used GNP/capita as the measure of development, but there is now general agreement that real GDP/capita is a more appropriate measure of economic development for comparative research because it is a better indicator of purchasing power parity.

4. These models are comparable to models tested in previous research. To test other hypotheses, a measure of the % of Exports in Manufactured Commodities %Exports/GDP and a measure of Debt Servicing were also included in regression analyses, but none were found to be significant.

Appendix Table 1. Countries Included in Analyses.

Less Developed Countries		Industrialized Countries
Algeria	Mauritius	Australia
Argentina	Mexico	Belgium
Bangladesh	Morocco	Canada
Brazil	Nepal	Denmark
Burundi	Nigeria	Finland
Cameroon	Pakistan	France
Chile	Panama	Greece
Columbia	Paraguay	Ireland

Ecuador	Peru	Israel
El Salvador	Philippines	Italy
Egypt	Poland	Japan
Ethiopia	Senegal	Korea
Honduras	Sierra Leone	Netherlands
India	Sri Lanka	Norway
Indonesia	Syria	Portugal
Jamaica	Thailand	Singapore
Kenya	Togo	Spain
Madagascar	Tunisia	Sweden
Malawi	Turkey	United Kingdom
Malaysia	Zimbabwe	United States

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