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An Analysis of the Female Labor Force Participation Rate in the U.S. 1980-2004

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Abstract:

This research uses census data from the Bureau of Labor Statistics to examine the female labor force participation from 1980 to 2004. These statistics are used to find the determinants of women's decisions to enter the job market. The purpose of studying the female involvement in the labor force is to illustrate if females are still having trouble in the market. This article also reviews historical labor force statistics to determine how the labor force has changed and which factors have affected its changes between 1980 and 2004. The model, estimated with U.S. data, has provided empirical support for the underlying theoretical predictions and variables. Analysis of twenty-five years of data suggests that having children, an education, a husband, and a contribution to family income determine women's labor force participation in the United States.

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1.0 INTRODUCTION

One of the most striking issues of recent times has been the extent to which women have increased their share of the labor force; the increasing participation of women in paid work has been driving employment trends and the gender gaps in labor force participation rates have been shrinking. The increase in women's participation in the U.S. labor force is one of the most important social, economic, and cultural trends of the past century. The growing proportion of women doing paid work has transformed gender relations, changed patterns of marriage and childbearing, and is often viewed as a key indicator of women's progress toward gender equality in the labor force.

This study tries to explain why the women's labor force participation rates have increased over time, yet leveled off since 1990. The reasons for this are not well understood. It may be that unprecedented economic growth during the 1990s raised men's incomes to the point that some married women opted out of the labor force. Another possibility is that women's ability to balance work responsibilities inside and outside of the home may finally have reached a limit. As women's labor force participation rates have increased, the time available for raising children and doing household chores has been compressed, creating stress for families and particularly for working mothers. Some people believe that an increasing proportion of women are now choosing to stay at home to avoid this work-family conflict.

This paper was guided by two research objectives that differ from other studies: First, it investigates the possibility of male unemployment as a factor in female participation rates. Second, it investigates children as a factor.

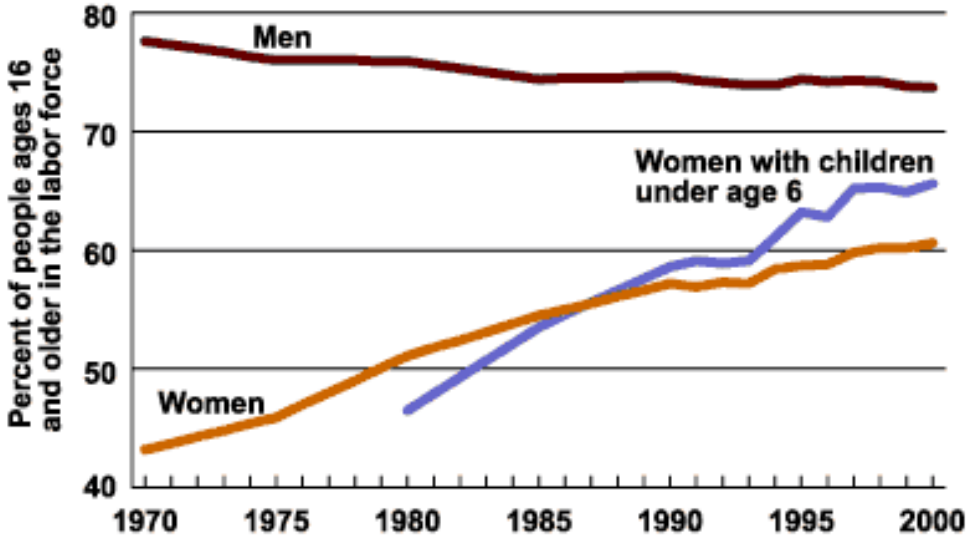
The rest of the paper is organized as follows: Section 2 illustrates the trends in labor force participation. Section 3 gives a brief literature review and section 4 examines the data and estimation methodology. Finally, section 5 discusses the empirical results, which is followed by a conclusion in section 6.

2.0 TRENDS

Women's labor force participation rate in the United States grew from 33 percent in 1948 to 59 percent in 1995. Over the same period, the rate for men fell gradually from 87 percent to 75 percent. As a result, the gap between women's and men's participation shrank from 54 percentage points in 1948 to 16 points in 1995. The most rapid growth in women's participation occurred from 1975-85. Subsequently, growth slowed and, since 1990, the labor force participation rate for women has been at a virtual standstill. Factors underlying this leveling-off included declines in participation among young women under age 25, the long-term slowing of participation rate growth among women 25 to 44 years old, and an unusually slow employment rebound from the 1990-91 recession.

In 1970, about 43 percent of women ages 16 and older were in the labor force. By 2000, 61 percent of adult women were in the labor force. Over the same period, men's labor force participation rates declined from 78 percent to 74 percent. These trends are part of the rapid increase in women's labor force participation, combined with the simultaneous decline in men's participation. This has closed much of the gender gap in the labor force. In 2000, about 47 percent of people in the labor force were women. If current trends continue, women will soon make up the majority of the U.S. work force.

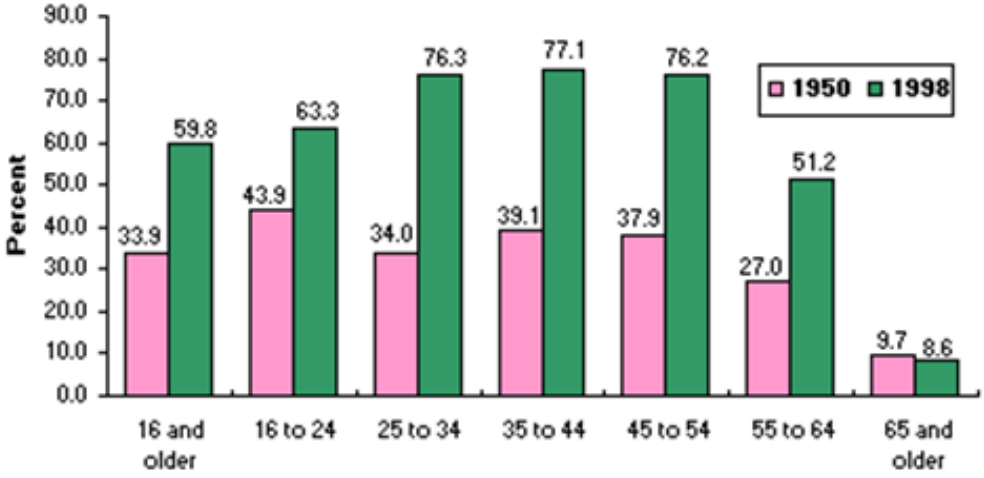
Figure 1: Labor Force Participation Rates for Men, Women, and Women with Children Under 6, 1970-2000



Source: U.S. Census Bureau

In 1950, about one out of three women participated in the labor force. By 1998, nearly three out of every five women of working age were in the labor force. Among women age 16 and over, the labor force participation rate was 33.9 percent in 1950, compared to 59.8 percent in 1998.

Figure 2: Labor Force Participation Rates Of Women by Age, 1950 and 1998

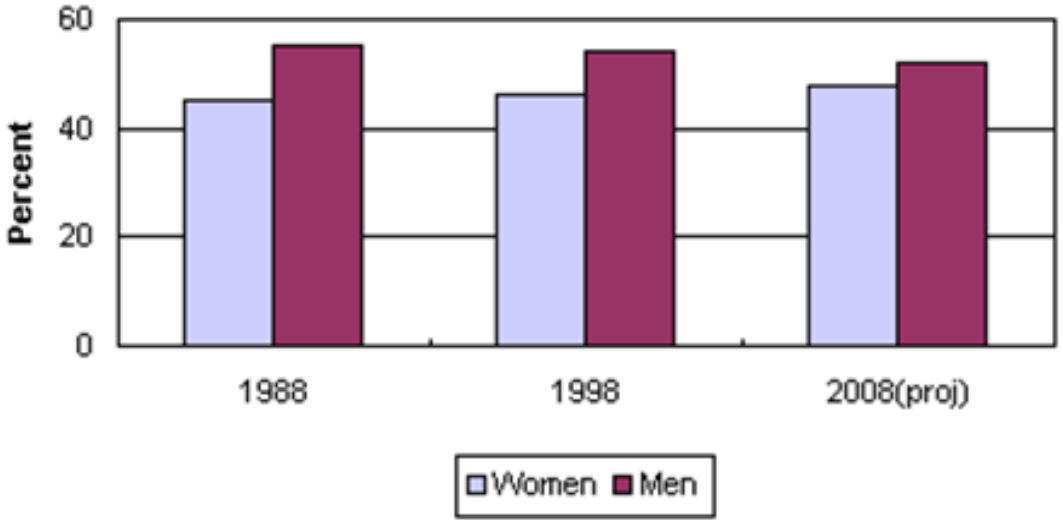


Source: Bureau of Labor Statistics

Changes in labor force participation varied by age group. The biggest increase in labor force participation was among those ages 25 to 34: their rate more than doubled, from a level of 34.0 percent in 1950 to 76.3 percent in 1998. Also, in 1950, women age 16 to 24 had the highest labor force participation rate (43.9 percent); in 1998 women age 35 to 44 had the highest rate (77.1 percent), followed closely by those age 25 to 34 (76.3 percent) and those age 45 to 54 (76.1 percent). The only age group to experience a decline in labor force participation between 1950 and 1998 was those age 65 and over. The rate for women in this age group dropped from 9.7 percent to 8.6 percent.

As more women are added to the labor force, their share will approach that of men. In 2008, women will make up about 48 percent of the labor force and men 52 percent. In 1988, the respective shares were 45 and 55 percent. In the near future, for the first time in United States history, the female participation rate will equal, and possibly surpass, the male participation rate.

Figure 3: Shares of the Labor Force by Sex, 1988-2008



Source: Bureau of Labor Statistics

3.0 LITERATURE REVIEW

Semyonov (1980) focused on women's labor force participation as a characteristic of the social structure. He utilizes data from sixty-one societies. First, the analysis demonstrates that participation is positively related to economic development and divorce rate and negatively related to fertility and income inequality. It illustrates that the most significant effect on female labor force participation is that of income inequality. In societies where inequality is high, women are less likely to join the labor force. The analysis goes on to demonstrate that female labor force participation has consequences for job discrimination. The odds that women can achieve high status and well-paid occupations decrease with the proportion of women in the labor force. The findings reported here suggest that the integration of females into the labor force is determined by the shape of the stratification system. Such integration, however, results in job discrimination.

Fullerton (1999) illustrates how women's labor force participation rates have increased significantly over the past 50 years, narrowing the gap between rates for women and men. Between 1950 and 1998, most of the increase in the labor force participation rate occurred between 1970 and 1990. During this 20 year period, the participation rate jumped from 60.4 percent to 66.4 percent. This labor force increase occurred because of the baby boom generation. There was also a 14.2 percent increase in the aggregate labor force participation rate for women. This article reviews historical labor force statistics to determine how the labor force has changed and which factors have affected its changes between 1950 and 1998. It focuses on labor force trends of men and women and also discusses the projected changes in the labor force from 2015 to 2025.

Lingle (1978) examines the unemployment rates of females. One of the conclusions was that female rates have tended to exceed male rates since World War II. In this paper, the author

uses cross-section data from the Censuses of Population of 1960 and 1970. He tries to examine whether the relationship between female and male unemployment rates shifted during the decade. He presents a model for examining the structure of female unemployment rates using cross-section data and then tests for a parameter shift between 1960 and 1970 in the relationship between male and female unemployment.

Hill (1984) observes the female labor force participation in Japan, using aggregate cross-sectional data. The empirical results reinforce her previously observed similarities between the behavioral responses of women in the U.S. regarding the decision to enter the labor force and those of Japanese women regarding that same decision. However, there are a few shortcomings in this analysis. For example, the wage rate reported by those women who are working may not appropriately measure the wage that a woman out of the labor force would receive if working. In the U.S., labor force participation usually means that a woman leaves home to work for someone else. However, in Japan and in other countries characterized by labor markets, this may not be the case.

Nam (1991) investigates the determinants of labor force participation of women living in male-headed households in Seoul, South Korea. Analysis of data from the 1970 and 1980 Korean Population Censuses suggests that both women's educational level and the family economic status determine their labor force participation in Seoul. Women with middle school education or above are more economically active than those with no education. Women from lower economic backgrounds are almost two to three times more likely to be employed than those in high-status families, controlling for age, number of children under the age of 6, and marital status.

Cotter, Hermsen, and Vanneman (2001) investigate how the demand for female labor is a central explanatory component of economic theories of gender stratification. The study analyzes how the structural demand for female labor affects gender differences in labor force participation. They develop a measure of the gendered demand for labor by indexing the degree to which the occupational structure is skewed toward female occupations. Using census data from 1910 through 1990 and National Longitudinal Sample of Youth (NUY) data from 261 contemporary U.S. labor markets, the authors shows the importance of the topic of gender differences in labor force participation.

4.0 DATA AND EMPIRICAL METHODOLOGY

4.1 Definition of Variables

The basic model follows the regressions of Moshe Semyonov and Christopher Lingle. In the early 1980's, they both carried out regressions relating to the female job market. After using some of their variables, the model chosen for this analysis became:

$$FPLF = \beta_0 + \beta_1 CHILD + \beta_2 COLLEGE + \beta_3 MARRIED + \beta_4 CONTRIB + \beta_5 MULTI + \beta_6 MALEUN + \beta_7 SIXFIVE + \varepsilon$$

FPLF is the female participation rate in the labor force in the United States. It is characterized as the total employment status of the noninstitutional population of 16 years or older, represented in thousands.

Independent variables consist of seven variables obtained from various sources. Appendix A and B provide data source, acronyms, descriptions, expected signs, and justifications for using the variables. First, CHILD represents the total number, in thousands, of employed females with

children under the age of 18. Second, COLLEGE illustrates the percent distribution of civilian labor force 25-64 years old with 4 or more years of college. Third, MARRIED corresponds to the total employment status, in millions, of women that are married. Fourth, CONTRIB signifies the total percentage contribution of wives' earnings to family income. Fifth, MULTI stands for the total number of women, in thousands, who hold multiple jobs. Sixth, MALEUN is the total male unemployment represented in thousands. And finally, SIXFIVE was the female labor participation rate with 65 or more years of age.

4.2 Data

The study uses annual data from 1980 to 2004. Data was obtained from the Bureau of Labor Statistics (BLS) website as well as the U.S. Census Bureau website. Summary statistics for the data are provided in Table 1.

Table 1: Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
EMP	25	57953.52	7206.25	45487.00	68421
CHILD	25	21276.96	2921.75	16526.00	25030
COLLEGE	25	25.57	4.22	18.60	32.6
MARRIED	25	30.34	3.70	23.60	34.8
CONTRIB	25	31228.00	2.53	26.70	35.6
MULTI	25	3009.72	710.30	1549.00	3800
MALEUN	25	4339.00	850.79	2975.00	6260
SIXFIVE	25	11984.00	1.75	9.60	15.5

5.0 EMPIRICAL RESULTS

The primary objective of this study was to find the determinants of female participation in the United States job market. In total, out of 7 variables, 4 were significant.

Table 2: Regression Results

Variable	Coefficient	t-Statistic	Expected Sign
Child	0.602127***	3.0086	+
College	533.0086***	4.8764	+
Married	561.3638***	3.4293	+
Contrib	599.5685**	2.1933	+
Multi	-0.635705	-1.4187	+
Maleun	-0.178778	-0.8299	-
Sixfive	60.40417	1.1166	+
C	-2273.326	-0.7824	+

Note: ***, **, and * denotes significance at the 1%, 5%, and 10% respectively.

For women with children, there is a positive influence on their labor force participation rate. However, the positive effect is not a great number. It may be explained by mothers wanting to stay home and take care of their kids, while some mothers want to work so they can provide for their children. This differs from the results produced in Semyonov's (1980) regression. Semyonov's regression generated a negative fertility variable. He explained that when fertility is high, women are more likely to be occupied with household responsibilities and therefore less likely to be able to join the labor force.

When women get an education and receive a college degree, there is also a positive influence on their participation rate. Education gives people a positive incentive to seek employment, since education is an investment that is positively correlated with earning potential. Consequently, it raises the opportunity cost of economic inactivity. Also, more-educated women have higher income aspirations over their less-educated counterparts and tend to be more active in the labor market. The more education females get, the better chance they have at obtaining a job. Employers look for a highly educated individual to fulfill the company's demands, whether it be a male or female. This variable agrees with Lingle's (1978) female unemployment variable. He presented data that showed the level of female unemployment falls with increasing levels of education.

After females decide to get married, their labor force participation rate is significantly increased. Perhaps, this occurs because of the need for a higher family income. The economy forces families to earn more money due to the high standard of living. There is also pressure from the husband to increase family earnings, if possible.

For the contribution of wives' earnings to family income, there is a positive effect. When a wife can play a role in family salaries, they decide to partake in those roles. The more money they have, the better life the family can live. When the opportunity cost to be a housewife is too high, they will become an active worker in society. This can happen for numerous reasons, all depending on the situation at hand.

When women participate in multiple jobs, it should increase their labor force participation rate. It was not significant, however, probably because of the multicollinearity with the dependent

variable. It is assumed that when women partake in numerous jobs, their participation rate in the labor force has increased.

The male unemployment variable has a negative impact on the female participation rate in the labor force. The fluctuations of unemployment with the business cycle are not useful as an explanation of the long-term growth in women's labor force participation. Moreover, the unemployment rate does not adequately capture the concept of employment opportunities as it affects labor supply and labor demand factors.

The female labor force participation rate with 65+ years of age was not significant. This is possibly due to a high correlation with the dependent variable. This variable already contained the labor force participation rates, except it was for the elderly and not for the entire female population.

6.0 CONCLUSION

In summary, the empirical results suggest that certain variables do affect female labor force participation rates in the United States. Having a child, does affect a women's decision to enter the labor market; primarily, because it costs the mother an incredible amount of money to nurture the child. Going to college also significantly increases their participation rate. The more educated women become, the smaller the gap becomes between the male labor force participation rate and the rate of females. When women are married, it has an important positive influence on their decision to enter the job market. Being married involves more expenses that need to be paid for. Their contribution to the family income is a big factor because it is difficult for just the husband to support the entire family.

All of these factors influence women in deciding on whether or not it is beneficial to enter the labor force. With this regression, it is evident that having children, going to college, being married, and contributing to family income all affect that decision. It will be interesting to see where the United States will be in the near future, with women surpassing males in labor force participation rates.

Appendix A: Variable Description and Data Source

Acronym	Description	Data source
FPLF	employment status of the female noninstitutional population 16 years and over (thousands)	US Bureau of Labor Statistics
CHILD	total number of females employed with children under 18 (thousands)	US Bureau of Labor Statistics
COLLEGE	distribution of female labor force 25-64yrs with 4+years of college (percentage)	US Bureau of Labor Statistics
MARRIED	total employment status of women that are married (millions)	US Bureau of Labor Statistics
CONTRIB	contribution of wives' earnings to family income (percentage)	US Bureau of Labor Statistics
MULTI	total number of women who hold multiple jobs (thousands)	US Bureau of Labor Statistics
MALEUN	total male unemployment (thousands)	US Bureau of Labor Statistics
SIXFIVE	female labor force participation rate with 65+ years of age (percentage)	US Census Bureau

BIBLIOGRAPHY

Bureau of Labor Statistics. 5 Mar. 2008 <www.bls.gov>.

Cotter, David, Joan Hermsen, and Reeve Vanneman. "Women's Work and Working Women: the Demand for Female Labor." Gender and Society 15 (2001): 429-452. 5 Mar. 2008.

Fullerton, Howard. "Labor Force Participation: 75 Years of Change, 1950-98 and 1998-2025." Bureau of Labor Statistics Monthly Labor Review (1999). 5 Mar. 2008.

Hill, Anne. "Female Labor Force Participation in Japan: an Aggregate Model." The Journal of Human Resources 19 (1984): 280-287. 5 Mar. 2008.

Lingle, Christopher, and Ethel Jones. "Women's Increasing Unemployment: a Cross-Sectional Analysis." The American Economic Review 68 (1978): 84-89. 5 Mar. 2008.

Nam, Sunghee. "Determinants of Female Labor Force Participation: a Study of Seoul, South Korea, 1970-1980." Sociological Forum 6 (1991): 641-659. 5 Mar. 2008.

Semyonov, Moshe. "The Social Context of Women's Labor Force Participation: a Comparative Analysis." The American Journal of Sociology 86 (1980): 534-550. 5 Mar. 2008.

U.S. Census Bureau. 5 Mar. 2008 <www.census.gov>.