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Evidence on Barriers to the Parallel Advancement of Male and Female Agricultural Economists

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Barriers to parallel advancement of male and female economists and managers (but not agricultural economists) have been studied in some detail (Reagan, Strober, Epstein, Gordon and Strober). Reagan wrote, "On the supply side, barriers to full career development for women are likely to be those common to all professional occupations plus the effect of women's perceptions of the intensity of the demand-side barriers of the particular profession (i.e., any lack of support of male colleagues, professional isolation and lack of access to information network, or employers' lack of perception of the women's career potential). One group of supply-side barriers includes presence of children, husband's unfavorable attitudes, guilt feelings of women related to a high sense of responsibility for monitoring consumption at home, and poor earlier education choices based on limited perception of career possibilities. In addition, the two probably most important barriers are geographic mobility or immobility, related to demands of family, and lack of the on-the-job training caused by either gaps in the women's career patterns or diminished opportunities for investment in human capital for women who are working" (Reagan, p. 100).

Gordon and Strober emphasized "recruitment, hiring and promotion policies" (p. 158) (demand-side barriers common to all professional occupations), and Sutherland found women had lower professional aspirations (supply side) (pp. 774, 794).

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The three highest barriers to career development cited by women with doctorates studied by Astin were "getting adequate domestic help" (supply side), "employer discrimination" (demand side) and "husband's mobility" (supply side) (p. 150).

Epstein lists (a) the American image of the female role and its concomitant attitudes and behavior which are often inappropriate in the professional world (which when internalized is a supply-side barrier); (b) simply enjoying one's work often not being perceived as an adequate justification for a woman working; (c) the lesser parental investment in education for young women in many cases because it has a lower present value; (d) the lack of role models for professional women; (e) societal expectations concerning appropriate occupations for women and pressure on women to think in terms of contingency careers instead of careers as their prime occupational objective; and (f) the tendency of women to choose typically female professions (Epstein, chaps. 1, 2). The listed categories are all supply-side barriers. They are not all mutually exclusive, and the list is not all-inclusive.

Irrespective of the factors involved, the lack of parallel advancement in occupational categories similar to that of agricultural economists has been documented. Reagan found a \$2,400 difference in pay between the "typical" Ph.D. woman economist and her male counterpart seven years after the woman economist received her Ph.D. (p. 101). Johnson and Stafford, studying female academics, found "(1) beginning salaries for females are not substantially less than for male academics; and (2) the rate at which salaries increase with years since the Ph.D. . . . is much greater for male than for female academics" (p. 203). After twelve years of potential experience, women in their sample earned 23% less than the men (p. 203). Salaries of

female academics are averred to decline relative to those of male academics with years since receipt of the Ph.D. up to age 45 (p. 205). The important hypotheses explaining the differentials were both the division of labor/acquired skill hypothesis (women drop out of the labor force, primarily to raise children more often than men and do not acquire as much on-the-job training) and discrimination (pp. 216-17).

Human capital theorists posit time out of the labor market reduces the accrued human capital stock because of a gap in the process of appreciation and because of capital depreciation. Discontinuities were found to be greater for married than for single women (Mincer and Polachek). Huttner found the number of breaks in paid employment rather than time away from paid work to be inversely associated with earning levels, and Jusenius suggested women in high-skill occupations suffered the highest penalties (Kalsare, p. 663).

Reagan, from her analysis of the data from the 1974-75 survey of economists, suggested that the discrepancy between salaries for equivalent male and female economists was due to women accepting lower wages than men if their geographic mobility was restricted because of their husband's employment or if they wanted to work close to home because of children.

In this analysis, the hypotheses to be tested, stated in the null form, were that (a) attitudes, human capital, and mobility did not result in salary differences between female and male agricultural economists holding equivalent positions, and (b) barriers to parallel advancement were not falling and therefore salary differences for male and female agricultural economists holding equivalent positions, controlling for years out of school, should be the same for younger and for older women.

Methodology

Data used was from the Survey of Women in Agricultural Economics conducted in 1981 (Lundeen). First, frequencies were compiled for the occurrences of the barriers studied for a sample of 282 women in the surveyed population for whom there were complete records. One hundred eighty-four, designated as "younger women," had completed the requirements for their highest degree in 1971 or thereafter. Ninety-eight, designated "older

women," were awarded their highest degree prior to 1971. Second, data for 21 pairs of "matched" male and female agricultural economists were used in a multiple regression analysis to explain salary differences. In all, there were 33 "matched" pairs in the data set, i.e., pairs of male and female economists working for the same firm or institution. Women had designated the man in the same department and/or position with equal rank whose name appeared next to their names alphabetically on the department list or employment roster. However, data needed for the analysis was incomplete for 12 of the pairs and, therefore, they were excluded from the regression analysis.

The model estimated was

$$D = f(A_s, A_d, C, M),$$

where D is the difference in salary between a woman who is an agricultural economist and a man in the equivalent position divided by the years since each received her/his highest degree, A_s is attitudes that have their effect on the supply of women who are agricultural economists, A_d is attitudes that have their effect on the demand for women who are agricultural economists, C is differences in human capital, and M is differences in mobility. A_s , in the estimated equation, was a series of eight variables. They were:

- (a) if people tried to dissuade female respondents from pursuing a professional career;
- (b) the need to devote a large amount of time to administer consumption;
- (c) spouse's negative attitude toward the female agricultural economist's working;
- (d) relatives' negative attitudes toward the female agricultural economist's working;
- (e) lack of appropriate role models;
- (f) social or professional isolation on the job;
- (g) the number of times the respondent left a job she liked and moved because her spouse or another family member needed to live in another area; and
- (h) other barriers which included (in their own words) lack of direction in college, lack of support from faculty when a student, inadequate financial support during graduate work, personal reluctance to call self economist and work with them, nonacceptance of women in field, lack of worthwhile work in field, inability to fit into system in place of work, no mentor, no referral/buddy system for women, work in

a chauvinistic company, difficulty about learning about available options, colleagues' sexist attitudes, personal obligations, nationality/cultural obstacles, and "political repression." This is not a complete list.

A_d in the estimated equation was a series of three variables:

- (a) employers' lack of perception of female respondents' professional potentialities;
- (b) employers' expressing a preference for hiring a male rather than a female agricultural economist; and
- (c) questions related to the spouse and/or domestic situation appearing to be a disproportionately important consideration in the minds of potential employers.

Data used for the variable pertaining to less investment in human capital, C , was compiled from the number of six-month gaps in the work history of the women who responded in the survey.

To gather data concerning mobility, M , a question was included in the questionnaire asking if the respondent was willing to move to a better-paying, more responsible position 100 or more miles from her/his present location within the next two years.

These, except for family moves which were correlated with the number of six-month gaps, were the independent variables in the final regressions, which were estimated using ordinary least squares.

There probably are simultaneities and interactions among the independent variables. For younger women there were positive correlation coefficients over .6 for problems with consumption management and the number of six-month gaps in the work history. This was also true for the spouse's negative attitude and the reporting of having encountered other barriers. This could well be due partially to a psychological interaction.

Findings

As indicated in table 1, 53.5% of the 282 women who responded to this question indicated they had been dissuaded from pursuing their professional careers. Of the female agricultural economists responding 53.2% found the need to devote a large amount of time to administer consumption to be a problem. Her spouse's negative attitude toward her working was a problem for 52.8% of the respondents. Relatives' negative attitudes were a problem for 53.2% of the respondents. The lack of role

models was a problem for 53.9%; isolation on the job for 52.8%; family related moves for 8.9%, and other barriers for 14.2%.

As for the demand-side barriers, 54.3% of the women reported the employer's lack of perception of their potentialities to be a problem; 20.9% reported their employers preferred to hire male economists, and 95.7% reported having been asked a disproportionate number of questions related to spouse and/or domestic situations during interviews, and that such questions appeared to be important considerations in the mind of potential employers.

Eleven percent reported there had been gaps in their work history and 32.3% reported they were willing to move more than 100 miles within the next two years to a job with higher pay and greater responsibility.

That over half were dissuaded was perhaps not unexpected. That consumption management was a problem for over half was also not surprising.

The fact that the female economists' domestic situations appeared an important consideration in the mind of potential employers according to over 95% of the women reporting is revealing. The almost one-third of the female economists reporting who are willing to move within the next two years to a job 100 miles or more away from their present job if it had more responsibility and higher pay was a higher proportion than expected.

Among the 130 male economists who responded to this same question, 39.2% reported they were willing to move. There was a statistically significant difference between male and female agricultural economists in this regard. The males were more mobile.

Actually, being married, in itself, constitutes a barrier interrelated with consumption management, gaps in work history, and spouse's negative attitude. Of the 62 women surveyed who reported consumption management to be a problem, 72.6% were married. Of the 55 women who reported they were single (never married) 78% reported consumption management was not a problem, as opposed to 40% of the 75 women reporting being currently married. Married women also had more gaps in their work history. None of the women who were not currently married (separated, divorced, or never married) reported having more than three gaps, but 10% of the 75 married women did. Forty-four percent of the married women had gaps in their work history as opposed to 33% of the single women.

Table 1. Evidence of Barriers to Parallel Advancement of Male and Female Agricultural Economists

	Percentage of Younger Women Reporting (N = 184 ^a)	Percentage of Older Women Reporting (N = 98 ^a)	Percentage of Total Sample Reporting (N = 282 ^a)
Supply-Side Barriers			
Dissuasion	50.5 (3.7) ^b	59.2 (5.0)	53.5 (3.8)
Consumption management	49.5 (23.0)	60.2 (23.5)	53.2 (17.1)
Spouse's attitude	49.5 (26.4)	59.2 (30.1)	52.8 (20.1)
Relatives' attitudes	49.5 (18.6)	60.2 (22.8)	53.2 (14.5)
Lack of role models	50.5 (11.5)	60.2 (21.4)	53.9 (10.7)
Isolation on job	49.5 (11.0)	59.2 (19.7)	52.8 (9.9)
Family-related moves	7.6 (3.1)	11.2 (5.0)	8.9 (2.6)
Other barriers	12.0 (4.0)	18.4 (7.5)	14.2 (3.7)
Demand-side barriers			
Employers' lack of perception	51.1 (12.6)	60.2 (21.1)	54.3 (11.0)
Employers' preferences for male economists	23.9 (3.2)	15.3 (3.7)	20.9 (2.4)
Employers' interest in family affairs	96.7 (1.3)	93.9 (2.4)	95.7 (1.2)
Human capital			
Gaps in work history	7.6 (2.2)	17.3 (5.3)	11.0 (2.4)
Mobility			
Willingness to move to job with more responsibility ^c	32.6 (3.5)	31.6 (4.7)	32.3 (2.8)

^a Percentage of women surveyed reporting this as a problem.

^b Standard errors in parentheses.

^c Only variable compared to males; difference between males and females significantly different above 95% level.

When comparisons were made between the women who had completed work for their highest degree ten years or more before the survey and those who had completed the work for their highest degree within the last ten years, some interesting differences became apparent (table 1). A higher percentage of the older women had encountered all of the listed supply-side barriers. The differences between the younger and older women were all statistically significant.

As to the demand-side barriers a higher proportion of older women reported their employers lacked perception of their potential. A lower percentage of older women reported their employers preferred hiring male economists or had a disproportionate interest in their family affairs. Older women had more gaps in their work histories, as expected. They

had more time to accumulate them. The older women were somewhat less willing to move than the younger women, and that, too, was expected. This was also true of older versus younger men. Every one of the differences in the recorded percentages for the demand-side barriers between the older and younger women was statistically significant.

The mean difference in salary per year since they had acquired their highest degrees between the younger women in the sample and their male counterparts (for the 11 cases in the matched pairs) was \$311.60 per year. The female economists earned less. The mean difference in salary per year since the acquisition of the highest degree for the older women in the matched pairs and their male counterparts was \$59.38. The women earned more. The difference between the younger and older women

was statistically significant at the 95% level. For the 21 matched pairs, the mean difference per year was \$134.94, with the men earning more.

The independent variables that were statistically significant in explaining the salary discrepancy for the 21 women in the matched-pair regression equation were (table 2) the spouse's negative attitude toward the female economist's working (at the 90% level); relatives' negative attitudes (at the 90% level); lack of role models; the employer's lack of perception of the female agricultural economist's potential; the employer's undue interest in family affairs during the female economist's interview; and the number of gaps in the female agricultural economist's work history (the latter four all being significant at the 95% level or above).

Summary and Conclusions

The women questioned, who returned questionnaires in the 1981 survey of agricultural economists, had, for the most part, been dissuaded from becoming agricultural economists, found they had problems with consumption management, had spouses with negative attitudes toward their working, had relatives with negative attitudes toward their working, lacked role models, found they were professionally or socially isolated on the job, felt that they had employers who lacked perception of their potential, and had been questioned excessively about family affairs during interviews. Both the supply-side barriers and the demand-side barriers existed for a majority of these women. For the younger women, they undoubtedly contributed to the salary discrepancy between the women and their male counterparts, even though the younger women had fewer gaps in their work history. In the case of the older women, the discrepancy was positive. Those in the sample of "matched pairs" earned more than their male counterparts. But the sample was very small (there were 11 "younger" and 10 "older" women).

Statistically significantly higher percentages of older women encountered each of the supply-side barriers, leading to the conclusion that these barriers may no longer be as pervasive as they were. Concomitantly, statistically higher percentages of older women reported their employers lacked a proper perception of their potential, implying more employers may

Table 2. Regression Coefficients for Independent Variables for Women in the Matched Sample

	B-Coefficient Total Women Matched Sample ^a (N = 21)
Supply-Side Barriers	
Dissuasion	-1510.8 (.677)
Consumption management	-1131.8 (.895)
Spouse's attitude	4745.5 ^c (2.08)
Relatives' attitudes	-2997.7 ^c (2.07)
Lack of role models	2796.7 ^b (2.78)
Isolation on job	-467.3 (.504)
Other barriers	712.9 (.516)
Demand-side barriers	
Employers' lack of perception	2193.9 ^b (2.1)
Employers' preferences for male economists	-243.5 (.23)
Employers' interest in family affairs	-1948.2 ^b (2.20)
Human capital	
Gap in work history	4878.9 ^b (2.55)
Mobility	
Willingness to move to job with more responsibility ^b	1051.2 (1.12)
$R^2 = .76$	

^a T-test statistic in parentheses; all T-tests not valid for older and younger women subsamples because of the small size of the samples.

^b Significant at 95% level and above.

^c Significant at 90% level.

be perceiving female agricultural economists' potentials for achievement similarly to the economists' own perceptions (recognizing their capabilities). A statistically significantly lower percentage of older women, however, reported their employers preferred hiring male economists, which may indicate their employers' lack of bias when they were first hired or that they have proven women can be capable agricultural economists. The fact that the percentage for this barrier is as low as it is overall, (20.9%) is encouraging. The high percentage of the women surveyed who reported employers having an undue interest in family affairs during interviews (and this was statistically significantly higher for the younger women)

indicates women have yet to be treated equally with men during the interview process.

The statistically significantly higher percentage of older women reporting gaps in their work history probably reflects the milieu during the period of their careers. Many were working during the 1950s when the accepted norm for a woman was to be primarily home-centered, and this norm was then a more formidable supply-side barrier than it has been during the last 20 years (Korbin). That this percentage is as low as it is (17.3%) for older women and considerably lower for younger women (7.6%) indicates female agricultural economists tend to have strong career commitments. The fact that 32.3% of the women surveyed reported they were willing to move to a position paying more, with more responsibility, over 100 miles away from their present location dispels the notion that female agricultural economists are far less mobile than male agricultural economists. There is a statistically significant difference between the two (39.2% of the men were willing to move) but the difference is not that appreciable. Not surprisingly, the younger agricultural economists were more mobile than the older ones. And single women, who had fewer problems with consumption management, fewer gaps in their work history, and no spouses with negative attitudes toward their working, were more mobile.

Of the variables that were significant in the regression, three were supply-side variables: the spouse's negative attitude toward the female agricultural economist's working, relatives' negative attitudes, and the lack of role models. Two were demand-side variables: the employer's lack of perception of the female agricultural economist's potential and the employer's undue interest in family affairs during female economist's interviews (indicative of the employer's thinking). One, the number of gaps in the female agricultural economist's work history, would suggest a lesser acquisition of human capital, which would tend to result in salary levels lower than they might otherwise be.

The two significant variables that were unexpectedly associated with less, rather than more, discrepancy in salaries were relatives' negative attitudes and the employer's asking an undue number of questions about family affairs during the interview. The first may simply not be very important to the women.

The second may be rational on the part of the employer assessing the commitment of younger women, but it is discriminatory and illegal. Its apparently not resulting in a greater salary discrepancy is an interesting finding.

The evidence, although in the case of the regression results it is only suggestive because of the small size of the sample, indicates that attitudes of both the males and the females and the difference in human capital do result in differences in salaries per year since completion of the requirements for the highest degree. The main impact of these factors is on younger female agricultural economists. Married female agricultural economists have more barriers to advancement than single female agricultural economists. But barriers are falling. Fewer younger female agricultural economists report encountering the "barrier indicators" considered in this analysis. Finis Welch's thesis may be correct. Each cohort in a minority group tends to encounter fewer barriers than the one preceding it, but it would seem the older women in the matched sample of female and male agricultural economists advanced faster than the males despite the barriers. The positive discrepancy for the older women could be accounted for by the presumption that Zoloth suggested: the older women had to be outstanding to overcome the higher barriers they faced. Kushman suggested they may have benefited from their scarcity in light of affirmative action pressures and their proven track records. In conclusion, there appear to be different supply and demand curves not only for male and female agricultural economists but for younger and older women among the female agricultural economists.

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