

Do Husbands Matter?

Married Women Entering Self-Employment

Donald Bruce

ABSTRACT. This paper investigates the effect of a husband's self-employment experience on the probability that his wife will enter self-employment. Results suggest that having a husband with some exposure to self-employment nearly doubles the probability that a woman will become self-employed, all else equal. Further, the effect is found to be strongest if a woman's husband is actually self-employed at the time she is contemplating a transition. Having a husband with prior self-employment experience also has an important yet quantitatively smaller effect. A series of robustness checks suggest that family businesses and assortative mating only partially explain this large effect. Intrahousehold transfers of human (and, to a much lesser degree, financial) capital might also play a role.

1. Introduction

Self-employed women make up an ever-increasing segment of the American labor force, reflecting both increased labor force participation as well as greater entry to self-employment. Recent research by Devine (1994a and 1994b) shows that the self-employment rate among married women increased from 5.1 percent in 1975 to 9.0 percent in 1990. Devine's results seem to suggest that one of the primary causes of this increase is the presence of a self-employed spouse. In fact, while the self-employment rate for wives of wage-and-salary husbands increased from 4.0 to 6.3 percent over this same time period, that for wives of self-

employed husbands increased from 12.1 to 23.6 percent.

What is it about having a self-employed husband that might cause higher self-employment rates for married women? Of the small number of empirical studies of female self-employment, only a few have considered the effects of the husband's labor force status.¹ One possible explanation is that self-employment potential is a sorting mechanism in the marriage market. That is, those who are likely to eventually become self-employed are likely to marry a similarly-inclined person in the first place. Lin, Yates and Picot (1998) provide a second explanation, arguing that female self-employment patterns merely reflect the tendency for women to join family businesses established by self-employed husbands.

While these first two possibilities are certainly important, I focus on a third in this paper. Specifically, as hypothesized by Caputo and Dolinsky (1998), the presence of a self-employed husband might enable intra-family flows of financial or human capital. The access to her husband's business-related skills, for example, could ease a woman's transition into her own enterprise by increasing the expected return and reducing the risk associated with running a business.

This study provides an empirical examination of the importance of having a self-employed husband in the household, and then attempts to disentangle the importance of the three possibilities noted above. To anticipate the results, I find that a self-employed spouse nearly doubles the probability that a married woman will become self-employed herself. A series of robustness checks suggests that none of the three possibilities completely explain this effect in isolation;

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*Center for Business and Economic Research and
Department of Economics
University of Tennessee
100 Glocker Building
Knoxville, TN 37996-4170
U.S.A.
E-mail: dbruce@utk.edu*



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each one likely plays a role. The remainder is organized as follows. Section 2 presents a simple portfolio choice model which serves as the theoretical background for the empirical work. The data and statistical methodology are described in Section 3, with results and discussion in Section 4. Section 5 contains results from a number of robustness checks and Section 6 concludes.

2. Self-employment entry as a portfolio choice problem

Consider a married woman who has decided to supply some fixed amount of labor in a particular period. Her next task is to decide how to allocate this time (normalized to 1 unit) between wage-and-salary employment and self-employment.² This decision is modeled here as a portfolio choice problem as discussed by Tobin (1958). Specifically, the woman must allocate a portion of the time to wage-and-salary employment, providing a certain return of w . The remaining time is allocated to self-employment, providing an uncertain return of s .

Denoting the portion of time allocated to self-employment as θ , the return on her labor supply portfolio (r_p) is as follows:

$$r_p = \theta s + (1 - \theta)w. \quad (1)$$

Assuming that $E(s) = \mu_s$ and that $E(s - \mu_s)^2 = \sigma_s^2$, the expected return (μ_p) and risk (σ_p) of her labor returns are:

$$\mu_p = \theta \mu_s + (1 - \theta)w, \quad (2)$$

$$\sigma_p^2 = E(r_p - \mu_p)^2 = \theta^2 E(s - \mu_s)^2 = \theta^2 \sigma_s^2, \quad (\sigma_p = \theta \sigma_s). \quad (3)$$

Thus, choosing an optimal θ effectively allows the woman to select the optimum combination of return and risk in her labor supply portfolio. Using the expression for σ_p in (3) to substitute for θ in (2), the set of feasible risk-return combinations is expressed as

$$\mu_p = w + \left[\frac{\mu_s - w}{\sigma_s} \right] \sigma_p, \quad (4)$$

which can be interpreted as the woman's budget constraint.

Assuming well-defined preferences over risk and return, the woman's problem is to choose that

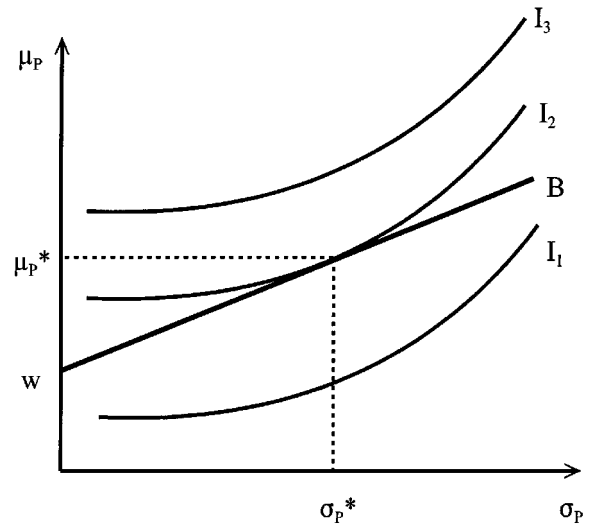


Figure 1. Example of an interior solution to the portfolio choice problem.

combination which provides the highest utility level subject to the budget constraint, B , in (4). Figure 1 shows this process graphically for a risk-averse individual with convex indifference curves (denoted by I_n in the figure). In this example, an interior optimum is obtained where some of the fixed amount of labor supply is allocated to each sector (i.e., $\theta > 0$).

Of course, it should be noted that the individual might also maximize utility at one of the two boundary solutions: 1) where *no* labor is supplied to self-employment (and the return is the riskless w), or 2) where *all* labor is supplied to self-employment (and the risk and expected return are σ_s and μ_s , respectively). The latter option will only obtain (see Tobin (1958)) for risk-lovers (whose indifference curves are downward sloping, leading them to always set $\theta = 1$) or for risk-averse "plungers" (whose indifference curves are upward sloping but concave, leading them to choose one boundary or the other depending upon the slope of the budget constraint).

The pertinent question for the present study is whether having a self-employed husband might provide an incentive for a married woman to become self-employed. To be sure, the effects on expected return and risk from having a self-employed husband are not clear. The answer to this question would be a definitive "no" if the

experiences of the self-employed husband reduce the wife's expected return to self-employment. The married couple might also be concerned about the multiplied risk of relying on two self-employment incomes in the household. Note that a woman who is not initially self-employed will be located at the corner of the budget constraint where $\theta = 0$. In this example, an examination of (4) shows that the wife's budget line would pivot downward, making a movement into self-employment impossible.

On the other hand, exposure to the experiences and skills of a self-employed husband could actually increase the expected return to self-employment, reduce the risk, or some combination of the two. Regardless, the overall effect in this case is to pivot the budget constraint upward, from B to B' , as shown in Figure 2. Given that the slope of the indifference curve must be at least as large as the slope of the budget constraint in the initial equilibrium (where $\theta = 0$), this pivot might be large enough to cause some women to become self-employed (i.e., to diversify their portfolios by relocating to the new optimum at (σ_p', μ_p')).³ The actual effects will be individual-specific, depending on preferences over return and risk.

3. Data and empirical specification

I use data from the 1970 through 1991 waves of the Panel Study of Income Dynamics (PSID) in

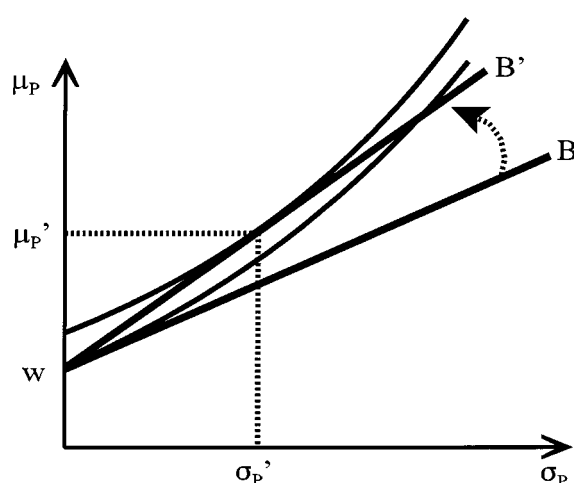


Figure 2. An example of the effect on portfolio choice equilibrium of having a self-employed husband.

the initial sample for this study. Self-employment status can be determined in all years of the panel for husbands but only in 1976 and from 1979 to 1991 for wives, leaving fourteen years of data over which the self-employment status of both husbands and wives can be observed. While all possible years of data are used for descriptive purposes, the multivariate analysis will focus on the continuous time period (1979 to 1991) over which information on both spouses is available.

The PSID distinguishes wage-and-salary work from self-employment by asking respondents who they primarily work for. In order to capture all self-employment experience and to maximize sample sizes for this study, an individual is considered to be self-employed if she reports working for herself or for herself and someone else.⁴ Observations for married women are kept in years when they are between the ages of 25 and 54, not in the Survey of Economic Opportunity oversample of lower-income households, and no longer in school.

This results in a sample of 3,330 married couples with at least one year of labor market experience during the period. Table I presents a first look at their self-employment experiences. Note first that about one-fourth of the wives and one-third of the husbands were self-employed at least once during their time in the panel. Next, of the women with self-employment experience, about half have husbands who were ever self-employed. A closer look at the table reveals the more interesting result: married women were nearly twice as likely to have had some self-employment experience if their husbands were ever self-employed (34 versus 19 percent).

If a husband's self-employment experience increases the probability that his wife will become self-employed, higher self-employment rates should be observed for women whose husbands were self-employed in any *previous* year. The data support this assertion, as Figure 3 shows that women are consistently more likely to be self-employed if their husbands have been self-employed in some prior year.

The longitudinal nature of the PSID data permit a number of estimation strategies to investigate this question in a multivariate context. In order to focus on the dynamics of the self-employment process, I examine transitions into self-employ-

TABLE I
Self-employment experience among married couples

	Husband never self-employed	Husband ever self-employed	Totals
Wife never self-employed			
N	1832	709	2541
Row %	72%	28%	100%
Column %	81%	66%	76%
Table %	55%	21%	
Wife ever self-employed			
N	426	363	789
Row %	54%	46%	100%
Column %	19%	34%	24%
Table %	13%	11%	
Totals			
N	2258	1072	3330
Row %	68%	32%	
Column %	100%	100%	

Notes: Husbands and wives who are never self-employed in this table do, however, exhibit some form of wage-and-salary experience in the panel.

Source: Author's calculations using the Panel Study of Income Dynamics.

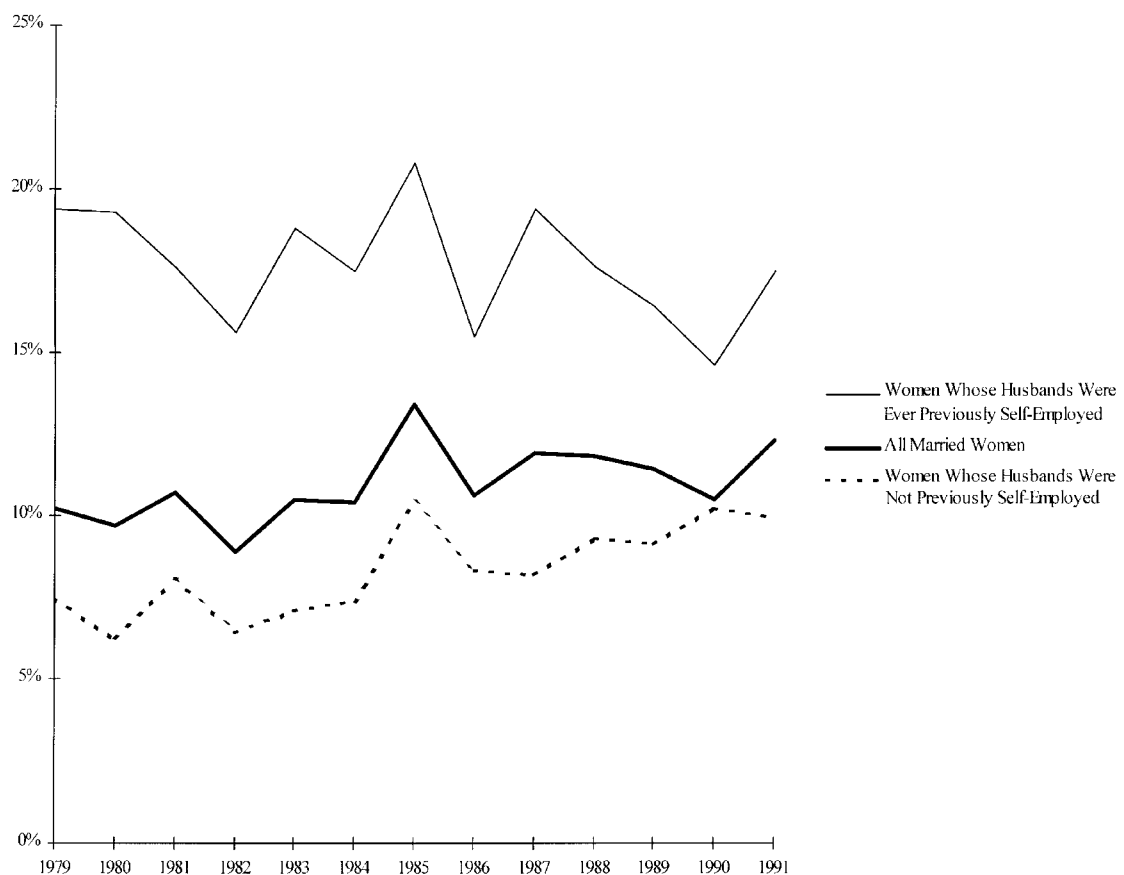


Figure 3. Self-employment rates for working married women in the PSID.

ment in the spirit of Meyer (1990) and Dunn and Holtz-Eakin (forthcoming) rather than simply whether or not women are self-employed at a given point in time.⁵ For each year, I create an indicator for transitions into self-employment, where unity represents a move from not working or working in a wage-and-salary job in year t to self-employment in year $t + 1$. A zero represents transitions from not working or wage-and-salary employment to wage-and-salary employment.⁶

The empirical estimation involves a probit of this transition indicator on a number of time t independent variables. Yearly sample sizes are often quite small, however, so I pool the set of cross-sections together to form a data file in which each individual contributes a separate observation for each year. A woman can, then, contribute as many observations as the number of years she is observed in the panel, minus one.⁷ Data availability and this pooling procedure result in a sample of 11,700 person-years of transition data.

The control variables include age, educational attainment, a part-time work indicator, the husband's race and labor earnings, and the number of children under age 18 in the household.⁸ Earlier research has revealed only inconsistent effects of additional age or education, so they are permitted to affect the probability of entry in a nonlinear fashion. Specifically, I use a quadratic specification for age and a set of indicator variables for years of education. If more age and education signal greater individual-specific human capital, we might expect to see positive effects. Alternatively, the opportunity costs of becoming self-employed – as measured by potential earnings in the next-best wage-and-salary job – might also increase with age and education, making a transition less likely.

Blank (1989), MacPherson (1988), and Silver, Goldscheider, and Raghupathy (1994) have shown in a cross-section framework that part-time workers are more likely to be self-employed. It is expected that this effect will carry over into the transition framework, as part-timers might be more likely to change jobs. Earlier research has also consistently found that nonwhites are less likely to be self-employed, so a negative effect is expected. The husband's labor earnings presumably represent a stable income source in the household, making a transition into self-employment

more feasible for the wife. The number of children in the household is expected, according to MacPherson (1988) and Caputo and Dolinsky (1998), to have a positive effect on the transition probability. Reasons include the increased financial needs associated with having more children, the ability to work at home and to independently determine work hours, and the ability to become a self-employed child-care provider.

Other authors have explained the importance of financial constraints and the access to capital in the self-employment decision.⁹ In addition to including the husband's labor earnings, I consider the effect of financial capital availability by controlling for the family's wealth as measured by household non-business capital income.¹⁰ Finally, the husband's self-employment status is captured in three distinct indicators which are entered separately in the probits: whether he was ever self-employed up to and including the year before the transition, whether he was actually self-employed in the year before, and whether he was ever self-employed at all in the panel. Definitions and means for all independent variables are found in Table II.¹¹

4. Estimation results

Table II also presents the resulting probit and marginal effects coefficients for four specifications that differ in the way the husband's self-employment status is measured. The marginal effects coefficients reflect the change in the mean predicted probability of becoming self-employed given a small change in that particular variable (from 0 to 1 in the case of dummy variables). For all specifications, age is found to affect the probability of entering self-employment in a u-shaped manner. Married women are most likely to become self-employed either early or late in their working lives, with the entry probability reaching a minimum at about age 40.

College graduates (with no further education) are less likely to enter self-employment, presumably because most college programs are designed to prepare students for wage-and-salary employment. Women with black husbands are also less likely to become self-employed which, as shown by Blanchflower, Levine, and Zimmerman (1998), is a result of discrimination in the small business

TABLE II
Pooled transition probit results

Variable	Mean (Std. dev.)	1	2	3	4
Age	35.641 (7.889)	0.068* [-0.007]	-0.078** [-0.008]	-0.083** [-0.009]	-0.083** [-0.009]
Age squared/100	13.325 (5.946)	0.087* [0.009]	0.096* [0.010]	0.102** [0.011]	0.103** [0.011]
Less than high school ^a	0.085 (0.278)	-0.023 [-0.002]	0.005 [0.001]	-0.003 [-0.000]	-0.009 [-0.001]
Some college ^a	0.242 (0.428)	-0.095 [-0.010]	-0.079 [-0.008]	-0.094 [-0.009]	-0.091 [-0.009]
College graduate ^a	0.174 (0.379)	-0.193* [-0.018]	-0.197* [-0.018]	-0.192* [-0.018]	-0.196* [-0.018]
Post-college education ^a	0.136 (0.343)	-0.010 [-0.001]	-0.024 [-0.002]	-0.019 [-0.002]	-0.023 [-0.002]
Husband is black ^a	0.058 (0.233)	-0.428** [-0.033]	-0.522** [-0.035]	-0.403** [-0.031]	-0.386** [-0.030]
Husband's earnings (\$1,000s)	26.480 (21.206)	0.0029** [0.0003]	0.0023* [0.0002]	0.0028** [0.0003]	0.0028** [0.0003]
Capital income (\$1,000s)	1.306 (7.239)	0.0053* [0.0006]	0.0031 [0.0003]	0.0041 [0.0004]	0.0041 [0.0004]
Part-time ^a (52 to 1,820 hours)	0.482 (0.500)	-0.147** [-0.016]	-0.169** [-0.017]	-0.148** [-0.015]	-0.147** [-0.015]
Number of children under 18 in household	1.315 (1.152)	0.099** [0.010]	0.110** [0.011]	0.095** [0.010]	0.097** [0.010]
Husband self-employed in year t^a	0.163 (0.370)		0.493** [0.065]		
Husband self-employed before year $t + 1^a$	0.311 (0.463)			0.299** [0.034]	
Husband self-employed in any panel year ^a	0.382 (0.486)				0.330** [0.036]
N		11,700	11,143	11,700	11,700
Sample transition probability		0.055	0.055	0.055	0.055

Notes: Entries are probit coefficients with marginal effects coefficients in brackets. Marginal effects for dummy variables are calculated as the change in predicted probability when that variable is increased from 0 to 1 with all other variables at their mean values. Regressions also include indicators for the year of the observation and a constant term. ^a = Dummy Variable.

* = Statistically significant at the 5% level; ** = Statistically significant at the 1% level.

credit market.¹² Those working part-time in the previous year are less likely to enter, while having more children in the household increases the probability of entry as expected.¹³

The husband's labor earnings and household income from capital have small yet significant positive effects on the transition probability. This could indicate the importance of the availability of funds for financial capital transfers, or the

presence of other secure income which reduces the opportunity cost of entering the riskier sector.¹⁴

It is interesting to note in Table II, however, that household income from capital plays an insignificant role when the husband's self-employment experience is controlled for, indicating that having a self-employed husband primarily affects a woman's transition probability in non-financial ways. This is substantiated by the small (yet

statistically significant) coefficient on husband's labor earnings. Specifically, if the husband is self-employed at time t , the wife's probability of entry at time $t + 1$ increases by 6.5 percentage points. This effect is especially large in comparison to the transition probability of 5.5 percent in the sample. Indeed, the effect of having a self-employed husband in the household is equivalent to an increase in his annual labor earnings of \$325,000. This finding is similar to that of Dunn and Holtz-Eakin (forthcoming), who find that a self-employed parent has a much larger effect on a child's self-employment transition probability than the parents' financial wealth.

Comparing the results in column 2 to those in columns 3 and 4 shows that the effect of a husband's self-employment is largest if he is actually self-employed when the wife is contemplating the transition. Having a husband who was self-employed at any time *before* $t + 1$ increases a woman's transition probability by about 3.4 percent, while having a husband with any self-employment experience *at all* during the panel increases her probability of entry by about 3.6 percentage points. Further, the introduction of controls for the husband's self-employment has virtually no effect on the other independent variables.

5. Robustness checks

While it is tempting to interpret the insignificance of capital income as evidence that a liquidity constraint does not exist, such a conclusion contradicts much of the previous literature. Perhaps it is the case that household asset income at time t is lower than usual as a woman prepares to enter self-employment. To investigate this possibility, I performed a parallel analysis using a lagged capital income variable. Column 1 of Table III presents partial results from three separate probits using this lagged variable. Capital income (from period $t - 1$) becomes statistically significant, but coefficients on the husband's self-employment variables are essentially unchanged.¹⁵

It should also be noted that the baseline results in Table II allow each woman to contribute multiple transitions into self-employment. However, having a husband with self-employment experience might be of greatest importance in a woman's first observable transition into self-employment. Column 2 of Table III contains results from three probits in which only first transitions into self-employment are included. While the magnitudes of these effects are smaller than the baseline results, they are still large compared to the 3.7 percent transition probability

TABLE III
Robustness checks

Variable	1 Replace capital income in year t with capital income in year $t - 1$	2 Include first transitions into self- employment only	3 Eliminate transitions into self-employment for pairs with identical occupation codes in year $t + 1$	4 Eliminate transitions into self-employment for pairs with identical industry codes in year $t + 1$
Husband self-employed in year t	0.501** [0.066]	0.356** [0.031]	0.404** [0.048]	0.194** [0.019]
Husband self-employed before year $t + 1$	0.298** [0.034]	0.179** [0.014]	0.245** [0.026]	0.108* [0.010]
Husband self-employed in any panel year	0.331** [0.036]	0.230** [0.017]	0.257** [0.026]	0.137** [0.013]
Sample probability	0.055	0.037	0.051	0.045

Notes: Each column in this table contains results from three separate probits. Entries are probit coefficients with marginal effects coefficients in brackets. Marginal effects for dummy variables are calculated as the change in predicted probability when that variable is increased from 0 to 1 with all other variables at their mean values. Regressions also include indicators for the year of the observation and a constant term, as well as the full set of control variables in Table II.

* = Statistically significant at the 5% level; ** = Statistically significant at the 1% level.

in this sample. A woman is still almost two times as likely to become self-employed if her husband is also self-employed.

Recall that a possible explanation for significant coefficients on the husband's self-employment indicators is that husbands and wives who report being self-employed are actually operating a family business together. The definition of self-employment in this study allows this to occur, as a respondent can be working for someone else and herself and still be considered self-employed. In this case, a human capital transfer might or might not be taking place, and would not be independently identifiable. The discussion thus far has not considered this possibility.

While no consistent indicator for family businesses exists in the PSID, the data allow the investigation of this possibility to a limited extent. Specifically, if one believes that a husband and wife who run a family business are likely to report identical occupations or industries in year $t + 1$, these pairs can be identified and eliminated from the analysis. Also, to the extent that identical occupations or industries reflect similar tastes, this exercise indirectly addresses the issue of assortative marriage – that a woman who is likely to enter self-employment is likely to marry a similarly-inclined man. Columns 3 and 4 of Table III report the results from this exercise.¹⁶

These final two columns eliminate observations for married pairs with identical post-transition occupation or industry codes, respectively. While the effects of having a husband with self-employment experience are somewhat smaller, they remain large relative to the sample probabilities. The smaller coefficients indicate the possibility that family businesses are conduits for entry to self-employment, but the continued significance leaves open the possibility that some human capital transfer may be occurring from husband to wife beyond this effect. A woman is still substantially more likely to enter self-employment if her husband has had some self-employment experience in some other occupation or industry.

5. Conclusions

This paper investigates the effect of a husband's self-employment experience on the probability that a married woman will become self-employed.

Pooled transitional probit analysis indicates that husbands play a very large role in this decision process. A non-working or wage-and-salary wife is nearly twice as likely to enter self-employment in any year if her husband was self-employed in the previous year, all else equal. The effect of having a husband with self-employment experience prior to the transition period or at any time during the panel is slightly smaller, but highly significant.

The family business theory of Lin, Yates, and Picot (1998), the financial or human capital theory of Caputo and Dolinsky (1998), and a theory of assortative mating all appear to play a role in explaining this large effect of self-employed husbands. Crude controls for the presence of family businesses or assortative mating reveal that some form of human capital transfer might be taking place, but smaller effects in these cases indicate that the other explanations are also important.

While more research is necessary to determine the relative influences of these or other explanations, an obvious direction for future research would be to investigate the effects of a married *woman's* self-employment experience on the probability that her *husband* will enter self-employment. Preliminary work by this author indicates that self-employed wives have nearly identical effects on the probability that their husbands become self-employed. It would also be worthwhile to eliminate the one-sided structure of the decision making process by estimating some form of a joint model. Allowing for simultaneous transitions presents a new set of empirical issues, but could provide more interesting results. Finally, an equally interesting undertaking would be to examine similar spouse effects on measures of success in self-employment, such as earnings or duration in self-employment.

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Appendix

TABLE A.1
Pooled transition probit results with random effects

Variable		
Age	-0.057*	[0.027]
Age squared/100	0.070	[0.036]
Less than high school ^a	-0.053	[0.098]
Some college ^a	-0.090	[0.066]
College graduate ^a	-0.236**	[0.083]
Post-college education ^a	-0.035	[0.082]
Husband is black ^a	-0.524**	[0.148]
Husband's earnings (\$1,000s)	0.0022*	[0.0009]
Capital income (\$1,000s)	0.0020	[0.0023]
Part-time ^a (52 to 1,820 hours)	-0.153**	[0.038]
Number of children under 18 in household	0.113**	[0.021]
Husband self-employed in year t^a	0.464**	[0.055]
N	11,143	
Sample transition probability	0.055	

Notes: Entries are random effects probit coefficients with standard errors in brackets. This regression also includes indicators for the year of the observation and a constant term. For comparison purposes, the sample for this specification is identical to that used in Column 2 of Table II. ^a = Dummy variable.

* = Statistically significant at the 5% level; ** = Statistically significant at the 1% level.

TABLE A.2
Complete pooled transition probit results for specifications in Column 1 of Table III

Variable	1	2	3
Age	-0.071* [-0.007]	-0.076** [-0.008]	-0.077** [-0.008]
Age squared/100	0.086* [0.009]	0.093* [0.010]	0.093* [0.010]
Less than high school ^a	0.023 [0.002]	0.007 [0.001]	-0.000 [-0.000]
Some college ^a	-0.074 [-0.007]	-0.090 [-0.009]	-0.087 [-0.009]
College graduate ^a	-0.199* [-0.018]	-0.193* [-0.018]	-0.196* [-0.018]
Post-college education ^a	-0.034 [-0.003]	-0.027 [-0.003]	-0.031 [-0.003]
Husband is black ^a	-0.526** [-0.036]	-0.404** [-0.031]	-0.386** [-0.030]
Husband's earnings (\$1,000s)	0.0020 [0.0002]	0.0025* [0.0003]	0.0025* [0.0003]
Lagged capital income (\$1,000s)	0.0060* [0.0006]	0.0071* [0.0007]	0.0071* [0.0007]
Part-time ^a (52 to 1,820 hours)	-0.173** [-0.017]	-0.149** [-0.015]	-0.147** [-0.015]
Number of children under 18 in household	0.113** [0.011]	0.098** [0.010]	0.099** [0.010]
Husband self-employed in year t^a	0.501** [0.066]		
Husband self-employed before year $t + 1^a$		0.298** [0.034]	
Husband self-employed in any panel year ^a			0.331** [0.036]
N	10,830	11,387	11,387
Sample transition probability	0.055	0.055	0.055

Notes: Entries are probit coefficients with marginal effects coefficients in brackets. Marginal effects for dummy variables are calculated as the change in predicted probability when that variable is increased from 0 to 1 with all other variables at their mean values. Regressions also include indicators for the year of the observation and a constant term. ^a = Dummy variable.

* = Statistically significant at the 5% level; ** = Statistically significant at the 1% level.

TABLE A.3
Complete pooled transition probit results for specifications in Column 2 of Table III

Variable	1	2	3
Age	-0.098** [-0.007]	-0.106** [-0.008]	-0.108** [-0.008]
Age squared/100	0.109** [0.008]	0.122** [0.009]	0.124** [0.009]
Less than high school ^a	0.015 [0.001]	0.016 [0.001]	0.013 [0.001]
Some college ^a	-0.035 [-0.002]	-0.056 [-0.004]	-0.054 [-0.004]
College graduate ^a	-0.174* [-0.011]	-0.188** [-0.012]	-0.189** [-0.012]
Post-college education ^a	0.009 [0.001]	0.003 [0.000]	-0.002 [-0.000]
Husband is black ^a	-0.553** [-0.025]	-0.423** [-0.022]	-0.408** [-0.021]
Husband's earnings (\$1,000s)	0.0015 [0.0001]	0.0017 [0.0001]	0.0017 [0.0001]
Capital income (\$1,000s)	0.0013 [0.0001]	0.0015 [0.0001]	0.0014 [0.0001]
Part-time ^a (52 to 1,820 hours)	-0.123* [-0.009]	-0.107* [-0.008]	-0.106* [-0.008]
Number of children under 18 in household	0.125** [0.009]	0.111** [0.008]	0.111** [0.008]
Husband self-employed in year t^a	0.356** [0.031]		
Husband self-employed before year $t + 1^a$		0.179** [0.014]	
Husband self-employed in any panel year ^a			0.230** [0.017]
N	10,928	11,477	11,477
Sample transition probability	0.037	0.037	0.037

Notes: Entries are probit coefficients with marginal effects coefficients in brackets. Marginal effects for dummy variables are calculated as the change in predicted probability when that variable is increased from 0 to 1 with all other variables at their mean values. Regressions also include indicators for the year of the observation and a constant term. ^a = Dummy variable.

* = Statistically significant at the 5% level; ** = Statistically significant at the 1% level.

TABLE A.4
Complete pooled transition probit results for specifications in Column 3 of Table III

Variable	1	2	3
Age	-0.090** [-0.008]	-0.093** [-0.009]	-0.093** [-0.009]
Age squared/100	0.112** [0.010]	0.116** [0.011]	0.117** [0.011]
Less than high school ^a	0.002 [0.000]	0.001 [0.000]	-0.004 [-0.000]
Some college ^a	-0.119 [-0.011]	-0.129* [-0.012]	-0.126* [-0.011]
College graduate ^a	-0.204** [-0.017]	-0.203* [-0.017]	-0.206** [-0.018]
Post-college education ^a	-0.043 [-0.004]	-0.039 [-0.004]	-0.040 [-0.004]
Husband is black ^a	-0.485** [-0.032]	-0.371** [-0.027]	-0.360** [-0.026]
Husband's earnings (\$1,000s)	0.0025* [0.0002]	0.0029** [0.0003]	0.0029** [0.0003]
Capital income (\$1,000s)	0.0032 [0.0003]	0.0042 [0.0004]	0.0043 [0.0004]
Part-time ^a (52 to 1,820 hours)	-0.164** [-0.015]	-0.139** [-0.013]	-0.138** [-0.013]
Number of children under 18 in household	0.127** [0.012]	0.111** [0.011]	0.112** [0.011]
Husband self-employed in year t^a	0.404** [0.048]		
Husband self-employed before year $t + 1^a$		0.245** [0.026]	
Husband self-employed in any panel year ^a			0.257** [0.026]
N	11,088	11,643	11,643
Sample transition probability	0.051	0.051	0.051

Notes: Entries are probit coefficients with marginal effects coefficients in brackets. Marginal effects for dummy variables are calculated as the change in predicted probability when that variable is increased from 0 to 1 with all other variables at their mean values. Regressions also include indicators for the year of the observation and a constant term. ^a = Dummy variable.

* = Statistically significant at the 5% level; ** = Statistically significant at the 1% level.

TABLE A.5
Complete pooled transition probit results for specifications in Column 4 of Table III

Variable	1	2	3
Age	-0.076* [-0.007]	-0.072* [-0.006]	-0.073* [-0.006]
Age squared/100	0.089* [0.008]	0.084* [0.007]	0.085* [0.008]
Less than high school ^a	0.008 [0.001]	0.025 [0.002]	0.023 [0.002]
Some college ^a	-0.035 [-0.003]	-0.048 [-0.004]	-0.047 [-0.004]
College graduate ^a	-0.122 [-0.010]	-0.131 [-0.011]	-0.133 [-0.011]
Post-college education ^a	0.052 [0.005]	0.045 [-0.004]	0.042 [0.004]
Husband is black ^a	-0.474** [-0.029]	-0.359** [-0.024]	-0.352** [-0.024]
Husband's earnings (\$1,000s)	0.0021* [0.0002]	0.0021* [0.0002]	0.0021* [0.0002]
Capital income (\$1,000s)	0.0029 [0.0003]	0.0034 [0.0003]	0.0034 [0.0003]
Part-time ^a (52 to 1,820 hours)	-0.159** [-0.014]	-0.125** [-0.011]	-0.124** [-0.011]
Number of children under 18 in household	0.132** [0.012]	0.114** [0.010]	0.114** [0.010]
Husband self-employed in year t^a	0.194** [0.019]		
Husband self-employed before year $t + 1^a$		0.108** [0.010]	
Husband self-employed in any panel year ^a			0.137** [0.013]
N	11,026	11,578	11,578
Sample transition probability	0.045	0.045	0.045

Notes: Entries are probit coefficients with marginal effects coefficients in brackets. Marginal effects for dummy variables are calculated as the change in predicted probability when that variable is increased from 0 to 1 with all other variables at their mean values. Regressions also include indicators for the year of the observation and a constant term. ^a = Dummy variable.

* = Statistically significant at the 5% level; ** = Statistically significant at the 1% level.

Notes

¹ MacPherson (1988), Blank (1989), and Silver, Goldscheider, and Raghupathy (1994) are among the studies that have examined female self-employment.

² Normalizing labor supply to one unit permits the implications of the model to be generalized to any positive level of labor supply. The key decision is one of division of labor supply at the margin; the level of initial labor supply is irrelevant. Upon entering self-employment, though, the worker may decide to increase or decrease labor hours. At this point, the exercise is repeated.

³ The key assumptions underlying this approach are that a) total labor supply is exogenous, and b) utility is defined over the consumption that is provided via the uncertain return on the portfolio. Expanding utility around the expected return via a second-order Taylor series (and suppressing arguments) gives the following:

$$E[U] \approx E \left[U + U'(r_p - \mu_p) + \frac{1}{2} U''(r_p - \mu_p)^2 \right] \\ \approx U + \frac{1}{2} U'' \sigma_p^2.$$

Differentiation of this yields this expression for the slope of an indifference curve,

$$\frac{\partial \mu_p}{\partial \sigma_p} = \frac{-U'' \sigma_p}{U' + \frac{1}{2} U'' \sigma_p^2},$$

which can be compared to the slope of the budget line in order to predict outcomes. It should be noted that this approach

would not be appropriate in the case of a joint husband-wife portfolio choice problem, due to the presence of two riskless sectors (wage-and-salary work for both individuals). Under standard portfolio theory, the couple would only allocate time to one riskless sector – that which provides the greatest certain return. The remaining time would be allocated to one or more of the risky sectors, making it theoretically impossible to observe married couples where both are wage workers.

⁴ The PSID does not distinguish incorporated from unincorporated self-employment. Concerns have also been raised in previous studies about the appropriateness of screening a self-employed sample on the basis of earnings or hours worked. Such a procedure would supposedly eliminate the “casually” self-employed. Holtz-Eakin, Joulfaian, and Rosen (1994b) note that screening a sample of self-employed individuals on the basis of hours or earnings has virtually no impact on empirical results regarding self-employment entry. They also note that some of the most successful or dedicated entrepreneurs might have very low earnings or reported hours in self-employment. This is especially likely to be true in the first year of operation.

⁵ This approach has the added advantage of allowing information from the previous year to enter the analysis as independent variables, thus minimizing the potential for endogeneity. Specifically, the probability of becoming self-employed *next* year can be estimated as a function of *this* year's characteristics.

⁶ Women who are already self-employed in the initial year are not included in the empirical analysis. Approximately 57 percent of the transitions into self-employment in this study are made by women who are not working in the year prior to

their transition. The empirical results are not affected by including these transitions, however, so they are kept in the interest of increasing sample sizes.

⁷ Since individuals may have more than one observation in each probit, standard errors are corrected using Huber's (1967) formula. Further, it could be argued on the basis of individual heterogeneity (e.g., unobserved entrepreneurial ability) that a more appropriate specification would include random effects. Appendix Table A.1 contains a baseline specification with random effects. These results along with further experimentation show little if any differences in magnitudes and patterns of significance with the random effects. Consequently, they are omitted from all further regressions.

⁸ Caputo and Dolinsky (1998) note that the husband's labor earnings should be separated into earnings from wage-and-salary work and earnings from self-employment. Higher self-employment earnings would signify greater entrepreneurial ability or success, and could be a clearer indicator for the access to human capital. Unfortunately, this separation is not possible using PSID data.

⁹ Research by Evans and Leighton (1989), Evans and Jovanovich (1989), and Meyer (1990) reveals the presence of liquidity constraints in the transition to self-employment. Blanchflower and Oswald (1990) and Holtz-Eakin, Joulfaian, and Rosen (1994a and 1994b) have also shown the importance of the availability of financial capital in the transition to self-employment.

¹⁰ A growing body of research has examined the importance of separating non-labor income into parts, according to which spouse "controls" which amount (see, for example, Lundberg (1988) or Lundberg and Pollak (1996)). This separation, a central theme in household bargaining models, is designed to account for the idea that husbands and wives optimize by comparing utility within the marriage to either a) utility after a divorce or b) utility under a non-cooperative within-marriage outcome. The present analysis, with only partially separated non-labor income (into husband's labor earnings and household capital income), more closely represents a "traditional" labor supply model in which the husband's decisions are taken as exogenous in the wife's utility maximization problem.

¹¹ The capital income variable represents the total taxable income of the head and spouse less their labor income. Income from non-incorporated business assets is excluded from this variable, while other family members' asset income is included. All reported statistics are unweighted. The PSID provides annual individual weights, but it is not clear how they could be used to render this reduced sample of married women more nationally representative.

¹² Blanchflower, Levine, and Zimmerman (1998) focus on existing enterprises, but their findings can certainly be extended to the entry decision. If banks discriminate in lending to *existing* enterprises, it is not unconscionable that they would discriminate in financing *new* enterprises.

¹³ A similar specification which included the number of children by various age brackets yielded more detailed information; the effect for each age group was positive, but the magnitude declined monotonically from the youngest to the oldest age groups. The effect of the husband's self-employment status was unchanged in this specification.

¹⁴ The empirical finding that income from different sources

has different effects on the transition probability could be interpreted as weak evidence in favor of a bargaining approach to this problem.

¹⁵ Marginal effects coefficients for the lagged capital income variable in these probits indicate that a windfall gain of approximately \$15,000 would be necessary in order to increase a woman's transition probability by one percent. Patterns of significance for all other variables are unchanged from baseline results. A full set of results for this and all other robustness checks reported in Table III is available in Appendix Tables A.2–A.5.

¹⁶ Of course, this approach will not be able to identify all family businesses. It is certainly possible that husbands and wives in a family business might report different occupations. It is much less likely, however, that they would be classified into different industries. Of all transitions into self-employment in this study, about 8.8 (18.9) percent involve wives who enter the same occupation (industry) as their husbands. Experimentation with dummy variables for the same occupation or industry (instead of omitting these observations) yielded similar results for the husband's self-employment coefficients.

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