Participation in Retirement Plans: A Comparison of the Self-employed and Wage and Salary Workers

What factors influence worker participation in retirement plans? Recent data suggest that this decision is made differently by the self-employed and wage earners.

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he decision to participate in a retirement plan is likely to be jointly determined1 when workers select between self-employment and a wage-earning occupation. Bivariate probit regression with data from the 1995 Survey of Consumer Finances was used to model two dichotomous decisions: Employment status and retirement plan participation. Some of the determinants of retirement plan participation were similar for the self-employed and wage earners. Those factors were: Income, a graduate education, race, and the belief that past income had increased more than prices had. In addition, being older, having some college or a bachelor's degree, working full time, and being employed with a larger firm were determinants of plan participation for wage earners. The negative sign of the selection factor for self-employment means that unobserved factors influencing the decision to be self-employed are likely to decrease participation in retirement plans for the self-employed. Hence, more information is needed to understand how the self-employed plan for retirement.

Recent data show that 79 percent of full-time employees in medium and

large companies participated in one or more employment-based retirement plans in 1997.² This figure is almost unchanged since its level of 78 percent in 1991. One-half (50 percent) of all fulltime employees were enrolled in defined benefit plans in 1997 (down from 59 percent in 1991) and 57 percent were enrolled in defined contribution plans (up from 48 percent in 1991). (Some employees were enrolled in both types of plans.) In contrast, retirement plan participation was lower among employees of small employers. In 1996, data from the Bureau of Labor Statistics (BLS) Employee Benefits Survey showed that only 46 percent of full-time workers in small private establishments were covered by a retirement plan. Of these, 15 percent participated in a defined benefit plan, and 38 percent participated in a defined contribution plan.

Although there is much research on retirement planning and also on selfemployment, there is a lack of research linking self-employment and retirement planning. One expert suggests that the decision to participate in a retirement plan is likely to be jointly determined when workers, aware that they are more likely to be eligible for benefits when they work for someone else, select between wage-earning occupations and self-employment.³ Another concern is that some research on retirement planning excludes the self-employed, either because there is a lack of information about self-employment, or because of the lack of comparability of the information.⁴

This study examines the link between retirement plan participation and employment status because, among other reasons, there are few studies linking these two variables. Workers need to prepare financially for retirement, and most make informed decisions about retirement plan participation when they choose a wage-earning occupation or self-employment.

Self-employment

At least 8 percent of the work force is self-employed, although this statistic reflects a narrow measure of self-employment.⁵ Self-employed workers are defined as those who rely on their businesses for their primary source of income. Secondary job holders, who work for wages in one job and have their own unincorporated business, as well as owners of incorporated businesses, whose primary compensation is a wage or salary, are not included in the official count of the self-employed.

Several theories for choosing selfemployment exist. These include the "engineer of creative destruction,"6 the "achievement motivation,"7 the "internal versus external locus of control,"8 "risk,"9 and "self-esteem"10 theories. In a recent study, "the utility derived from earnings, independence or unemployment"11 was considered the most likely determinant of self-employment. In a study that permitted open-ended responses to a question about choosing self-employment or wage work, "economic opportunity, authority, autonomy, challenge, self-realization, and participation in the whole process" were identified by participants as the most important determinants of selfemployment.12 In other studies, "marital status, family responsibilities, and flexible working hours" were also related to choosing self-employment.¹³

Although several theories for choosing self-employment have been advanced, demographic and human capital factors are primarily used as predictors of self-employment, and the statistical method employed for prediction of self-employment tends to be either logit or probit regression.¹⁴ Based on previous work, the model for selecting self-employment or wage earning in this study consists of demographic and human capital factors. The statistical technique selected was bivariate probit regression, which will be described in the methods section.

Keogh plans and Individual Retirement Accounts

To meet the needs of self-employed workers and those who are not covered by employer-sponsored retirement plans, Keogh plans and Individual Retirement Accounts (IRAs) provide an alternative.¹⁵ Contributions made by self-employed individuals to Keogh plans are not currently taxable. The contributions and any earnings therefrom accumulate tax free until distribution, at which time they are subject to normal income taxes.

IRAs were originally developed as a tax-deferred savings plan for workers without employer pensions. Although the amount of the annual contribution per eligible worker has remained at \$2,000 since 1974, IRAs offer advantages to workers, especially those who are highly mobile. In the early- to mid-1980s, growth in IRAs was attributed to tax deferral on IRA contributions.¹⁶ More recently, stock market gains, not tax deferrals, have been the primary source of growth in IRAs.¹⁷

Employer-sponsored retirement plans

Employer-sponsored retirement plans are categorized as two types: Defined benefit or defined contribution. Defined benefit plans specify a formula for determining future benefits, while defined contribution plans specify employer and employee contributions, but do not guarantee future benefits.¹⁸ Defined contribution plans are also known as 401(k) plans, although the 401(k) is only one of many types of defined contribution plans.

According to a recent study by a large investment firm of the retirement plans it services, the average 401(k) plan worker participation rate is 75 percent.¹⁹ Even though smaller firms are less likely than larger firms to sponsor a plan, smaller firms tend to experience higher participation rates when they offer 401(k) plans. The average participation rate was 84 percent for plans with less than 50 participants, and 64 percent for plans with 10,000 or more participants. Participation rates tend to increase with employee age and earnings. Nonparticipants are more likely to have lower incomes, less education, to be male, younger, unmarried, and blue-collar workers.

Method

Empirical model. Because the study investigated two dichotomous decisions that are likely to be jointly determined, bivariate probit regression with the statistical package LIMDEP was used.²⁰ The justification for using the bivariate probit model was to examine whether there were any unobserved factors that influenced both the decision about employment status and the decision about whether to participate in a retirement plan. If the correlation of disturbances, or rho, between the two models was positive and significant, it meant that there was positive self-selection-that is, the unobserved factors that influence the decision to be either self-employed or a wageearner were also likely to increase participation in retirement plans. If the correlation was negative and significant, it meant that there was negative self-selection-that is, the unobserved factors that influence the decision to be either self-employed or a wageearner were also likely to decrease participation in retirement plans.

The study hypothesized that demographic and human capital factors were important determinants in selecting self-employment; but additional factors, such as employment variables, attitudes about risk in making savings and investment decisions, and expectations about future income, were included in the model of retirement plan participation.

The equations for the self-employment model were:

Self-employment = f (Demographics, Human Capital)

Retirement Plan Participation = f (Demographics, Human Capital, Employment, Expectations)

The equations for the wage-earner model were:

Wage-earner =

f (Demographics, Human Capital)

Retirement Plan Participation =

f (Demographics, Human Capital, Employment, Expectations)

Based on human capital theory and previous studies, older workers, maleheaded households, professionals, and those with more education and work experience were hypothesized to be more likely than other groups to choose self-employment.²¹ It was hypothesized that younger workers with less education and work experience would be more likely than other workers to choose wage-earning occupations.

Participation in retirement plans was hypothesized to be positively related to age and income. Also, males, professionals, and white people were believed to be more likely than females, nonprofessionals and nonwhites to participate in retirement plans. Those who work full time and for larger firms were expected to be more likely to participate in retirement plans than were part-time workers and those in smaller firms.

The expectation factors included in the study were the relationship between prices and past and future income; having an idea about next year's income; and risk tolerance. At least one study has shown that self-employed workers were risk-seeking,²² while another study showed low reliability for the risk tolerance variable.²³ Hence, self-employed workers might prefer to invest in their business instead of putting money into retirement plans, a decision suggesting that they were risk tolerant, while those who were risk averse might be more likely to participate in retirement plans.

Holding the belief that past income had increased more than prices had could mean that workers would be more willing to participate in retirement plans, because they now have more income than expected. Also, they may be more willing to participate in retirement plans if future income was expected to go up more than prices would, because this would create a surplus. However, wage earners must decide the amount of their contribution to defined contribution plans before the contributions are withdrawn, and they would not have information in advance about future prices. Those who have a good idea about next year's income may be more likely to plan for retirement. However, selfemployed workers may choose to invest more in their business if they expect income to go up.

Data and sample. Data were drawn from the 1995 Survey of Consumer Finances (SCF), which is sponsored by the Federal Reserve Board, with the cooperation of the Department of the Treasury.²⁴ The purpose of the survey is to provide comprehensive information on the financial characteristics of U.S. households. A multiple imputation technique was used to handle missing data. The 1995 SCF contains five implicates, meaning that five values were known or imputed for each variable. To simplify the analysis, only the first implicate was used in this study. Descriptive statistics were weighted to represent the full population of the United States. Among the 4,299 households in the 1995 SCF, 1,046 household heads identified themselves as being self-employed, and 2,317 household heads said that they worked for someone else-that is, they were wage earners.

Dependent variables. The first probit regression modeled the choice of employment status. The dependent vari-

able was dichotomous, with 1 equal to self-employment and 0 equal to "other," or, for the wage-earner equation, 1 equal to wage earner and 0 to "other." For the second probit regression, the dependent variable was assigned a 1 for those who had at least one retirement plan (such as an IRA or Keogh plan, defined benefit plan or defined contribution plan, or both defined benefit and defined contribution plans) and 0 for those who had no retirement plan. This definition of participation was based on the descriptive statistics that showed both that a few self-employed workers had employer plans in addition to IRAs and Keoghs, and that some wage earners had IRA accounts and Keogh plans in addition to employer plans.

Independent variables. The independent variables included: Age, gender of the household head, professional or managerial status, education, work experience, race, income, size of firm, fulltime status, hours worked per week, risk tolerance, and expectation factors. The last variables, in turn, included belief about past income in relationship to prices; expectation about future income in relationship to prices; and having a good idea about what next year's income would be. Because bivariate probit regression is sensitive to variables of highly different magnitudes, the natural log of income was used. Coding of the independent variables and the characteristics of wage earners and the self-employed are shown in table 1.

Results

Characteristics of workers. The characteristics of self-employed workers and wage earners were examined using t-tests and chi-square analysis. For the chi-square analysis, all of the p-values were less than 0.001. For the t-tests, all of the p-values were less than 0.001 except for household size, which was 0.7494, indicating no statistical difference between the size of households. The following differences were revealed: The self-employed were more

TABLE 1. Coding of independent variables and characteristics of wage earners and the self-employed in the 1995 Survey of Consumer Finances

Variable	Coding	Self-employed (n = 1,046)		Wage earners $(n = 2,317)$	
	C C	Mean	Percentage	Mean	Percentage
Age of household head	Continuous 1 = yes, 0 = no 1 = yes, 0 = no Continuous Continuous 1 = yes, 0 = no Continuous 1 = yes, 0 = no Continuous 1 = yes, 0 = no 1 = yes, 0 = no	48 		41 - - 17.26 \$47,138 - 2.82 3.89 - 43.25 - -	

TABLE 2. Results of bivariate probit regression for determinants of self-employed or wage-earner status

	Self-employe	d (n = 4,256)	Wage earner (n = 4,256)		
Variable	Parameter estimate	P-value	Parameter estimate	P-value	
Age of household head	0.0080 .6787 .6134 .2096 .3418 .0238	(*) (*) (*) (*) (*)	-0.0518 2344 .0003 0240 1252 .0291	(1) (1) 0.9959 .6466 .0642 (1)	

¹ P-value is less than or equal to 0.001.

likely than wage earners to be white, older, and have higher incomes; households of self-employed workers were more likely than wage-earner households to be headed by a man, a person with a graduate degree, or a person who has a professional or managerial occupation. The self-employed spent more years in full-time work since age 18, worked more hours per week, and were more likely both to expect future income to go up more than prices would, and to say that they would take a substantial amount of risk when making saving and investing decisions. Wage earners were more likely than self-employed workers to work in a larger firm, to work full time, and to have a good idea about next year's income. (See table 1.)

Determinants of occupational status.

The parameter estimates of the probit models for predicting either self-employment or wage-earner status are presented in table 2. Older workers, workers in male-headed households, those with a college education (compared with those with 12 years or less of education), and those with more work experience were more likely to select selfemployment. Workers who selected wage-earner status were younger and more likely to be female and, the more years worked, the more likely they were to be a wage earner.

Determinants of participation in re*tirement plans.* Table 3 presents the results of the second probit model to predict participation in plans. Five factors were significant in the self-employment model, while nine factors were significant in the wage-earner model. The significance of rho was considered to evaluate the presence of self-selection. In the self-employment model, rho was significant and negative, meaning that unobserved factors influencing the decision to be self-employed were likely to decrease participation in retirement plans. In the wage-earner model, rho was negative, but not significant. This suggests that the factors that predict being a wage earner were not related to participation in retirement plans.

For the self-employed, those who were white, received higher incomes, and had a graduate degree were more

TABLE 3. R	esults of	bivariate	probit	regression for	determinants	of participation	in retirement	plans by wag	е
earners a	nd the se	If-employ	ed						

	Self-employe	ed (n = 1,026)	Wage earner (n = $2,128$)		
Variable	Parameter estimate	P-value	Parameter estimate	P-value	
Age of household head	-0.0057 2037 1795 .0072 .3432 .1226 .2652 0164 .1063E04 1226 .0009 1749	0.1369 .2322 .0623 .9397 (²) (¹) (³) .5520 .9997 .3764 .6617	0.0164 1002 1407 2875 3257 3007 1849 0184 2565 6664 0035 1793	(1) 0.2649 .0880 (1) (2) (1) (3) .4598 (1) (1) (1) .2844 .2844	
Expect future income to increase more than prices and	1743	(°) (3)	1408	.0990	
Have a good idea what next year's income will be High risk tolerance Rho	.1358 .0987 8157 2404 35	.0661 .2116 (¹)	.1934 .1271 1882 2225.02	(²) .1266 .3651	
	-2404.33		-3223.02		

¹ P-value is less than or equal to 0.001.

² P-value is less than or equal to 0.01.

³ P-value is less than or equal to 0.05.

likely to participate in retirement plans than were nonwhites or those who had a high school education or less. Those who thought that past income had gone up more than prices had were more likely to be plan participants. Compared with those who expected that future income would increase less than prices would, those who expected income increases to be greater than price increases were less likely to participate in a retirement plan. This suggests that the self-employed are not willing to commit to retirement plan participation until income is known.

For wage earners, whites and those with higher incomes were more likely to be plan participants. Compared with those with less education, those with some college or a degree were more likely to be plan participants. Full-time workers and those who were employed by larger firms were more likely to be retirement plan participants. When wage earners believed that past income had gone up more than prices had, plan participation for them was more likely to occur. Contributions to IRAs can be made until April 15 of the year following the year in which income was earned. This may be the retirement savings method that both types of workers were using to take advantage of an increase in past income in relationship to prices. Wage earners who had a good idea about next year's income were more likely to be plan participants.

Conclusions

This study attempted to link retirement plan participation and employment status. Some of the determinants of plan participation were comparable for wage earners and the self-employed. Those determinants were higher income, a graduate education, being white, and the belief that past income had increased more than prices had. The only additional factor predicting plan participation for the self-employed was their expectation that future income would increase more than prices would. However, for wage earners, being older, having some college education or a baccalaureate degree, working full time and for a larger firm, and having a good idea of next year's income predicted participation in a retirement plan.

Although these results were consistent with the hypotheses, the study raised a question. Because rho was negative for the self-employed, this was an indication that unobserved factors that influence the decision to be self-employed are likely to decrease participation in plans. It is possible that the study did not include all of the factors that explain the future plans of the self-employed. For example, selfemployed workers may be planning for retirement through investments in their business. Another possibility is that retirement is viewed differently by the self-employed. They may intend to work indefinitely and consequently may have delayed participation in retirement plans. These ideas could be explored in future studies. Also, the definition used for retirement plan participation was designed to be as inclusive as possible, but it could be more appropriate to ask, "If you are preparing financially for retirement, what methods are you using?"

Small employers who do not offer retirement plans explain that they have lower revenues and/or employees who are younger, earning lower salaries, with less formal education, and who have the tendency to work short-term.²⁵ Perhaps small employers would benefit from learning more about ways to reduce turnover, increase profitability, and reduce taxes.

The results of the study support the

hypotheses about which wage earners are not participating in retirement plans. They include younger workers, nonwhites, those with lower incomes and less education, part-time workers, and those who work in smaller firms. These wage earners may not be eligible for retirement plans because they haven't worked long enough, or they may be eligible but not participating. They may be employed at a firm that does not provide a retirement plan of any type. Perhaps, if the nonparticipating workers were able to increase their education and skills, they could acquire a job that included pension coverage. Also, employers may need to increase their efforts to improve participation rates.

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¹ "Jointly determined" means that when a person chooses to be self-employed, that person is making an implicit decision about the importance of employee benefits.

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