
Labor-Force Participation Patterns of Older Self-Employed Workers

by Joseph F. Quinn*

Self-employed persons work in a less constrained environment than do most wage-and-salary employees. Generally they are not subject to compulsory retirement nor are they affected by institutional rules concerning labor supply. Data from the 1969 and 1971 interviews of the Retirement History Study show that the labor supply and retirement patterns of the self-employed are distinct from those of other workers. The self-employed (especially "career" self-employed) nearing retirement age are less likely to be out of the labor force, and those who continue in the labor force have a wider variation in the number of hours worked per year. Downward flexibility in hours (the option for gradual retirement) may be an extremely valuable aspect of self-employed status, and one wonders whether other older workers would also choose this pattern if more flexible opportunities were available. Despite these differences, labor-supply decisions of the self-employed are found to be influenced by many of the same factors that affect the rest of the workforce—health, eligibility for social security and pension benefits, the wage rate, and the flow of asset

According to estimates from the Bureau of the Census the proportion of the nonagricultural labor force that is self-employed has been decreasing steadily over a period of time. The percentage of self-employed men, for example, fell from 15 percent in 1940 to 8 percent in 1970, and the proportion of self-employed women in the same period decreased from 7 percent to 3 percent.¹ A disproportionate share of the self-employed, however, are older workers. In his study, David Smallwood reports that 28 percent of covered workers aged 65 and older were self-employed in 1976, compared with 6 percent of those under age 30.² The progression with age is monotonic and shows a marked jump near age 60. Among the respond-

ents in the dataset used for this research (men and nonmarried women aged 58-63), 12 percent of the employed men and 6 percent of the employed women described themselves as self-employed. This age trend probably results from both cohort and longitudinal effects. The cohort effect refers to the fact that since the relative size of the self-employed sector is shrinking, a larger proportion of the older cohorts might be expected to be self-employed at any given time. When they grew up and entered the labor force, self-employment was more common than it is today. Compounding this effect, however, may be tendencies for the self-employed to remain in the labor force longer than other workers and for some of the wage-and-salary workers in any given cohort to shift to self-employment in their later years.

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¹Bureau of the Census, *Census of the Population, 1970 Characteristics of the Population, Part I, U.S. Summary, Section I*, table 80, 1973. The percentages are proportions of the nonagricultural sector. Before 1966, the population included workers aged 14 and older; since then, it has included only workers aged 16 and older.

²David Smallwood, "A Preliminary Investigation into the Nature and Causes of Retirement by the Self-Employed," Department of Economics, North Carolina State University, 1977 (unpublished paper).

The self-employed work in an institutional environment that is substantially different from that of wage-and-salary workers. They generally are not affected by compulsory retirement rules, are much less likely to be covered by pension plans, and are less constrained by institutional rules concerning vacation time and the length of the work week. Therefore, they should more easily be able to vary the amount and kind of labor supplied.

The lack of compulsory retirement provisions and the relative flexibility of hours worked suggest that the self-employed may be able to withdraw gradually from the labor force more easily than their wage-and-salary counterparts. Given the psychological and financial traumas that often accompany sudden total retirement, this option to remain on the job but for a reduced number of hours may be an important advantage of self-employed status. These advantages may induce career self-employed individuals to remain in the labor force longer than persons in wage-and-salary jobs and may induce some of the latter to shift to the self-employed sector in later years.

In most previous studies of retirement issues, the self-employed are either excluded completely from the analysis or included with the much larger number of wage-and-salary workers. In the former case, nothing is learned about the retirement decisions of the self-employed. In the latter, any unique relationships are swamped by the rest of the sample. This research concentrates specifically on the retirement patterns of the nonagricultural self-employed and how they differ from the wage-and-salary population.

Data Source and Sample

The sample for this research is drawn from the Retirement History Study (RHS) of the Social Security Administration. It consists of 836 white married men aged 58-63 in 1969. Each man was either self-employed in 1969 or out of the labor force but self-employed on his last job. The wage-and-salary sample, used for comparison purposes, includes 4,845 white married men. In both subsets, agricultural workers, the bedridden, and the housebound are excluded. In all the cross tabulations the observations are weighted so that the numbers and proportions represent population estimates.

At times during the analysis, career and recent self-employed persons are described separately. The former are respondents who have spent a major portion of their worklives as self-employed individuals. The latter are workers who only recently became self-employed and who may be using their new employment to move into partial retirement. Although it is difficult to separate these two groups clearly, under the operational definition used here an individual is "career" self-employed if he

- (1) is currently self-employed and
 - (a) has worked at that job for more than 10 years or
 - (b) was also self-employed on his last job or
- (2) is currently out of the labor force and was self-employed on his last job for more than 10 years or
- (3) was self-employed on the longest job of his career.

Anyone who does not fit one of these categories and who is self-employed on the current job, or out of the labor

force but self-employed on the last job, is classified as "recent" self-employed. Under this definition, 88 percent of the white married men in this sample are "career" self-employed; the remaining 12 percent are "recent." The latter percentage offers some support for the jobswitching (or second career) explanation of the cross-sectional age trend mentioned above.

Cross-Sectional Retirement Patterns, 1969

The nonagricultural self-employed are found in all industries and occupations. More than 60 percent of this group are managers or professionals (mostly managers)—a much higher proportion than the 25 percent for wage-and-salary workers (table 1). The self-employed are less likely than others to be craftsmen and much less likely to be operatives. The recent self-employed have an occupational distribution closer to that of the wage-and-salary personnel than do the career self-employed. They are less likely than the long-term self-employed to be professionals or managers and more likely to be in sales, crafts, or laborer occupations.

Industrial breakdowns also show considerable con-

Table 1.—Occupation¹ and industry of white married men aged 58-63, by type of worker, 1969

Industry and occupation	Self-employed			Wage-and-salary workers
	All	Career	Recent	
Total number (in thousands).....	493.5	432.2	61.3	2,878.6
Occupation				
Total percent	100.0	100.0	100.0	100.0
Professional	13.1	14.2	5.9	10.0
Managerial	47.8	49.4	35.9	15.0
Sales	7.7	7.1	12.4	5.1
Crafts	17.6	16.2	27.6	28.2
Operatives	5.2	5.0	6.9	20.7
Service	4.4	4.7	1.9	8.0
Laborers	2.4	1.5	8.5	6.2
Others ²	1.7	1.9	.9	6.9
Industry				
Total percent	100.0	100.0	100.0	100.0
Agriculture, forestry, mining ..	3.3	2.8	6.6	2.3
Construction	14.4	13.4	21.9	10.6
Manufacturing	5.8	5.5	7.6	36.7
Transportation, communications, public utilities	3.4	3.2	4.8	10.5
Trade	36.0	36.7	31.1	13.0
Finance, insurance, real estate ..	6.1	6.3	4.8	4.8
Service (except professional)	19.5	19.8	17.2	4.8
Professional service	10.9	12.0	2.9	9.5
Public administration	0	0	0	7.6
Unknown .....	.7	.4	3.0	.2

¹ Excludes those who reported farmer, farm manager, or farm laborer or foreman as their occupation.

² Clerical, private household, and unknown.

trast. The self-employed are found less frequently in manufacturing, almost never in public administration, and most often in the trade and service sectors. The largest percentage differences between the career and recent self-employed are found in professional services (nearly all career) and construction (disproportionately recent) industries.

In this self-employed population, about 10 percent were out of the labor force in 1969, less than the 13 percent of wage-and-salary workers who had left the labor force by that time (table 2). The contrast is stronger when the career self-employed subsample is examined. Less than 9 percent of that group were out of the labor force. This proportion is substantially less than the 15 percent figure for the recent self-employed, which may reflect the high failure rate of new business.

The age patterns are interesting. In the wage-and-salary sector, a much larger difference is seen between those aged 60-61 and those aged 62-63 than between the groups aged 58-59 and 60-61. This difference is not found among the self-employed, where the age progression is

Table 2.—Labor-force status of white married men, by age and type of worker, 1969

[Numbers in thousands]

Labor-force status	Total	Aged		
		58-59	60-61	62-63
Self-employed				
All				
Total number	493.5	178.7	156.7	158.1
Total percent	100.0	100.0	100.0	100.0
In the labor force	90.3	92.5	90.2	87.9
Out of the labor force	9.7	7.5	9.8	12.1
Career				
Total number	432.2	156.7	134.9	140.6
Total percent	100.0	100.0	100.0	100.0
In the labor force	91.1	93.3	91.2	88.4
Out of the labor force	8.9	6.7	8.8	11.6
Recent				
Total number	61.3	22.0	21.8	17.5
Total percent	100.0	100.0	100.0	100.0
In the labor force	84.9	86.8	84.1	83.5
Out of the labor force	15.1	13.2	15.9	16.5
Wage-and-salary workers				
Total number	2,878.6	1,061.3	955.2	862.0
Total percent	100.0	100.0	100.0	100.0
In the labor force	87.1	93.1	88.0	78.8
Out of the labor force	12.9	6.9	12.0	21.2

¹ Based on 25 50 observations.

smoother. A further disaggregation by health status is revealing and illustrates the tremendous importance of health.³ Of the total self-employed group with a health condition that limits the type or amount of work they can perform, 21 percent have withdrawn from the labor force (table 3). Among those with no health limitation, fewer than 4 percent have withdrawn. As in the aggregate, no dramatic jump in labor-force withdrawal is evident among those aged 62-63.

The latter finding suggests that eligibility for retired-worker benefits may be less important as a labor-force status determinant for the self-employed than it is for wage-and-salary workers. A more direct approach is to look at current social security benefit eligibility status. Anyone who either receives social security benefits, or expects to receive them in the future and is currently at least aged 62, is defined as "currently eligible."⁴ Overall, a much higher percentage of the self-employed who are currently eligible for social security benefits are out of the labor force (20 percent) than of those who are not eligible (5 percent). The same pattern applies in each health status subgroup (table 3). Among those with some health limitation, 36 percent of the eligible individuals are out of the labor force, while only 11 percent of those currently ineligible have withdrawn. Of those in good health, the analogous figures are 7 percent and 2 percent. Though these are noticeable differences, they are smaller than the differences observed for wage-and-salary personnel. Here the proportion out of the labor force varies from 2 percent to 12 percent (for those with no health limitation) and from 15 percent to 57 percent (for the others), depending on the social security benefit eligibility status. These tables suggest that an interaction may be at work because eligibility seems to have greater impact on those in relatively poor health.

Conclusions concerning pension eligibility are difficult to draw, since fewer than 6 percent of the self-employed (4 percent of the career and 15 percent of the recent) are currently eligible. Although more of those eligible for benefits are out of the labor force (and this is true for the career and recent subsets), the differences are small and much less than the differences in the wage-and-salary sector (table 4).

Cross-tabulations of a sample can be enlightening and suggestive, but they suffer from the fact that explanatory variables are usually correlated, and very few are held constant in any given table. Below some multivariate regressions and logit estimates are discussed in an attempt to identify determinants of labor-force status for the self-employed in 1969. These labor-supply equations are

³ This dichotomous health status variable was based on the answer to the survey question: Does your health limit the kind or amount of work or housework you can do?

⁴ It is important to emphasize that social security benefit (or pension) eligibility refers to current eligibility, not mere coverage or participation in a program. A respondent who is currently eligible would immediately be eligible for benefits if he were to withdraw from the labor force.

based on a simple economic model of family behavior, in which the husband and wife supply the hours of work that maximize a family utility function, subject to an income constraint.⁵ From this model, labor-supply equations are derived for each household member, in which hours supplied are a function of the wage rates facing both, the potential flow of unearned income (the amount that would accrue if neither person worked), and other arguments that reflect differences in utility functions (such as health status and number of dependents). Finally, since this is a national sample, geographic variables, including SMSA and regional dummies, have been experimented with, as well as measures of general business conditions.

In the initial equations, labor-supply has been col-

⁵For a more detailed description of the model, see Joseph F. Quinn, "Microeconomic Determinants of Early Retirement: A Cross-Sectional View of White Married Men," *Journal of Human Resources*, summer 1977.

lapsed into a dichotomous variable reflecting labor-force status (1 denotes in the labor force). From regressions on such variables, the predicted value for an individual is best interpreted as the probability of a particular state and the coefficients as changes in the probability associated with unit changes in the explanatory variables. Because probabilities are logically bounded by 0 and 1, certain problems arise when dichotomous variables are analyzed in a regression framework. These problems can be alleviated by the use of nonlinear logit techniques, as discussed below.

Specific problems arise with two of the explanatory variables. Potential family unearned income is a measure of the income flow that the family would enjoy if neither member worked, and it should include potential retirement benefits. Unfortunately, these amounts were not available in the data. Therefore, the social security benefit and pension components have been reduced to dichotomous eligibility variables, an interaction between

Table 3.—Health and labor-force status of white married men aged 58–63, by age, social security benefit eligibility, and type of worker, 1969

[Numbers in thousands]

Health and labor-force status	Aged				Benefit eligibility		
	Total	58-59	60-61	62-63	Currently		
					Ineligible	Eligible	Perhaps eligible ¹
All self-employed							
Without health limitation							
Total number	317.7	188.0	106.4	93.3	228.1	79.8	² 9.7
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
In the labor force	96.6	98.5	96.2	94.6	97.7	92.9	.....
Out of the labor force	3.4	1.5	3.8	5.4	2.3	7.1	.....
With some health limitation							
Total number	175.9	60.7	50.3	64.8	102.1	69.8	² 3.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
In the labor force	78.9	80.7	77.6	78.2	89.0	63.7	.....
Out of the labor force	21.1	19.3	22.4	21.8	11.0	36.3	.....
Wage-and-salary workers							
Without health limitation							
Total number	2,059.6	791.1	676.1	592.4	1,487.2	539.9	32.5
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
In the labor force	95.2	98.5	96.9	88.8	97.8	88.3	.....
Out of the labor force	4.8	1.5	3.1	11.2	2.2	11.7	.....
With some health limitation							
Total number	819.0	270.2	279.1	269.7	467.0	346.4	² 5.6
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
In the labor force	66.9	77.3	66.5	56.8	84.7	42.5	.....
Out of the labor force	33.1	22.7	33.5	43.2	15.3	57.5	.....

¹ Men currently aged 62-63 who do not know whether they expect to receive a social security benefit in the future.

² Percentages not shown for fewer than 25 observations.

Table 4.—Labor-force status of white married men aged 58–63, by pension eligibility and type of worker, 1969

[Numbers in thousands]

Labor-force status	Current pension eligibility	
	Ineligible	Eligible
All self-employed		
Total number	465.6	¹ 27.8
Total percent	100.0	100.0
In the labor force	90.4	87.7
Out of the labor force	9.6	12.3
Wage-and-salary workers		
Total number	2,054.9	823.7
Total percent	100.0	100.0
In the labor force	90.5	78.6
Out of the labor force	9.5	21.4

¹ Based on 25 50 observations.

the two has been added, and the income variable has been redefined to include only asset income (rent, interest, dividends, and an imputed rent on owner-occupied housing).

The second problem concerns the wage term. If self-employed persons do not face an infinitely elastic demand curve for their labor, then their marginal wage rate (and average wage rate, which is all we can measure here) depends on the amount of labor supplied, and is therefore endogenous. Its use will then result in biased coefficients. A standard econometric response is an instrumental variables technique in which the actual wage is replaced by a predicted wage imputed on the basis of exogenous characteristics. This approach also solves the problem that some of the sample are out of the labor force and therefore their wage rate cannot be derived from data on a current job.⁶

Cross-sectional labor-force-status equations appear in table 5.⁷ These equations indicate that it is more difficult to predict labor-force status for the self-employed than for the wage-and-salary population. In the aggregate equation (column 1), five variables are significant (at the 5-percent one-sided level). As in nearly all the retirement

⁶ The wage equation is similar in specification to the one described in Joseph F. Quinn, "Wage Differentials Among Older Workers in the Public and Private Sectors," *Journal of Human Resources*, winter 1979. The explanatory variables are education and years on the current job (both in interval dummy format), health status, residence in an SMSA, residence in the South, industry, and occupation.

⁷ Two changes are made from the functional form discussed above. First, the spouse's wage was not significant and was dropped from the equations. Similarly, the labor-market (or business conditions) indicators (the unemployment rate and recent annual percentage change in employment) were consistently insignificant, suggesting that local business conditions, at least in 1969, were not an important factor. (This result should be interpreted with caution, since 1969 was a year of extremely high business activity.)

research, health status plays a prominent role. The coefficient estimate here suggests that the probability of labor-force participation drops nearly 14 points for those with a health limitation. In addition, current eligibility for social security benefits is significant and the estimate indicates that the probability is 12 points lower if one is currently eligible.⁸ This eligibility variable is obviously highly correlated with being aged 62 or over, so the effects detected include both a benefit eligibility and an age effect.

Although the coefficients on pension eligibility and the interaction term are insignificant (probably because of the small number of self-employed persons eligible for a pension, and the even smaller number eligible for both), the point estimates indicate that the effects of social security benefit and pension eligibility are more than additive, and that an individual eligible for both has a participation probability 20 points lower than if he were eligible for neither. The direction of the interaction is similar to that found in previous research on the non-self-employed population. The dependents term is insignificant, although the sign is as expected: Dependents tend to increase the probability of labor-force participation. (The dependents variable was entered both as a dummy and as the number of dependents. In neither form was it significant.) As seen below, this tendency is confirmed in the hours equation. Finally, participation probabilities

⁸ The sample contains a small number (16) of respondents who are receiving social security benefits before age 62. Presumably, these men are eligible via the disability provisions, although, oddly, 5 are in the labor force, and 7 do not consider themselves completely retired. When these men are deleted from the aggregate equation, the health and social security benefit terms drop slightly in magnitude but they remain highly significant. The other coefficients change little, although the wage term does slip under the 5-percent significance level.

Table 5.—Labor-force status equations for self-employed white married men aged 58–63, by health status, 1969

[t statistics shown in parentheses]

Explanatory variable	Health status		
	All	Without health limitation	With some health limitation
Health limitation (0,1)	-0.138 (6.43)	.....	.....
Eligible for—			
Social security benefit (0,1) ..	-.124 (5.65)	-0.036 (1.90)	-0.252 (5.27)
Pension (0,1) .....	.050 (0.87)	.029 (0.41)	.094 (0.63)
Both social security benefit and pension (0,1)	-.127 (1.48)	-.192 (2.49)	-.087 (0.46)
Dependents (0,1) .....	.013 (0.55)	.016 (0.71)	.008 (0.13)
Imputed wage (dollars per hour) .....	.010 (1.86)	.005 (1.23)	.034 (2.02)
Asset income (thousands of dollars per year)	-.008 (2.86)	-.005 (2.10)	-.014 (2.42)
South (0,1)	-.042 (1.79)	-.022 (1.07)	-.060 (1.18)
Constant .....	.975 .....	.963 .....	.840
R ² .....	.14	.04	.12
N	836	534	302

are lower in the South. This coefficient (-0.042) undoubtedly overstates the causal influence since this variable will often pick up the joint decision to retire and move to the South.

The wage-and-asset income variables are both significant and have the expected sign.⁹ Labor-force probabilities rise with the wage rate and fall as the flow of asset income rises. Because the wage rate reported by a self-employed individual may contain a return to capital, an adjusted rate also was used: An imputed return to capital (5 percent) was subtracted from the annual earnings before converting to an hourly rate. The results when an imputed adjusted rate was used were almost identical, although the *t*-statistic of the coefficient and the *R*² of the equation were slightly lower in the adjusted case.

Table 5 also illustrates the importance of health as an interactive term. When the self-employed sample is disaggregated by health status, two very different subgroups appear. In general, those with a health limitation are more responsive to the explanatory factors. The clearest example concerns social security benefit eligibility: The coefficient (-0.124) in the aggregate equation is an average of a small (but significant) effect among the healthy (-0.036) and a very large effect among the others (-0.252). Similarly, the health impaired have larger coefficients for both wage and asset income, suggesting more response to these factors. The one interesting exception is the social security benefit-pension interaction term, which is large and significant for the healthy and neither for the others. This finding implies that, for those in good health, neither social security benefit eligibility nor pension eligibility alone has much impact, but eligibility for both does reduce the labor-force probability by almost 20 points. The qualitative nature of these disaggregated results is similar to those found among wage-and-salary workers.¹⁰

Well-known problems arise when regression analysis is used for equations with dichotomous dependent variables. The most important is that, although probabilities are logically bounded by 0 and 1, predictions from such regressions are not. Another way of stating this is that the marginal effect of given increases (or decreases) in an explanatory variable must logically taper off as the probability approaches 0 or 1, since these are theoretical limits. In a simple regression framework, the marginal effects are assumed constant, resulting in the possibility of predictions outside the limits (0,1) for certain combinations of explanatory variables.

One transformation frequently employed to eliminate these problems is the logit transformation. In the dichotomous case, instead of considering *P* (the probability

that a person is in the labor force), the variable *L* is considered where

$$L = \ln \frac{P}{1 - P}$$

As *P* goes from 0 to 1, *L* goes from $-\infty$ to ∞ , and is therefore unbounded. If it is then assumed that

$$L = \ln \frac{P}{1 - P} = \Sigma \beta X$$

we can derive

$$P = \frac{1}{1 + e^{-\Sigma \beta X}}$$

For given estimates of the β 's (denoted *b*), a predicted probability for each person can be calculated as follows:

$$P = \frac{1}{1 + e^{-\Sigma b X}}$$

which is automatically bounded by 0 and 1. The coefficient estimates are chosen by iterative maximum likelihood techniques. Unfortunately, the logit coefficients have no interpretation on their own, but are used to predict probabilities or partial derivatives for any given set of explanatory characteristics, *X*. Note that the implicit assumption in the logit specification, in contrast to regression, is that all of the explanatory variables interact since the marginal effect of a change in *X*_{*i*} depends on the probability from which one is starting, which in turn depends on the values of all the other *X*'s.

Logit equations were run for the dichotomous labor-force status variable and comparisons of predicted probabilities from these estimates and the regressions were made.¹¹ The samples with which the logit coefficients were estimated are not the same as the regression samples, since the logit program has no mechanism for handling missing data. All those respondents with missing data on asset income, therefore, were excluded from the logit runs, leaving a sample of 699 persons—16 percent fewer than the sample used in the regression. Despite the differences in samples and techniques, the qualitative results are similar. The logit coefficients all have the same signs as the regression coefficients, and there are only two significant differences. In the logit run, the dependents coefficient is positive and significant (using the asymptotic *t*-ratio as the criterion), while it is insignificant in the regression. In contrast, the South dummy, barely signifi-

⁹ For 133 respondents (16 percent of the sample), the asset income data are missing. These data gaps were handled by pairwise deletion, in which each of the components of the *X*'*X* (or correlation) matrix is estimated with only those observations with complete data on the two variables in question.

¹⁰ See Joseph F. Quinn, "Microeconomic Determinants of Early Retirement," *op. cit.*

¹¹ Since the logit specification implicitly assumes interaction between all the explanatory variables, the explicit interaction term denoting social security benefit eligibility and pension eligibility is unnecessary and is therefore excluded. Also, since the logit coefficients have no obvious interpretation on their own, they are not reported here.

cant (5 percent one-sided test) in the regression, is insignificant in the logit.

Although labor-force status is a useful dependent variable, it ignores an important dimension of labor supply—the number of hours worked. As table 6 shows, the annual labor-supply distributions are very different for the self-employed and for wage-and-salary workers. For the latter group, the distribution is dominated by the tremendous mode of full-time workers at 2,000 hours. The self-employed, on the other hand, have a larger proportion in the very high range (41 percent with 2,500 or more hours), reflecting the long hours of the full-time self-employed, as well as higher proportions in the intermediate (or part-time) ranges. The latter may reflect the ability of the self-employed to control hours in their later years. The recent self-employed look more like the wage-and-salary population than do those in the career subset, but the differences are still distinct.

Because of the derivation of the annual hours estimates, these distributions may exaggerate the annual labor supply of some of the self-employed. All respondents were asked how many hours per week they usually worked at their jobs. The response has been combined with an estimate of weeks per year to arrive at the annual hours figure.

When asked about earnings, respondents could answer in any time unit from per hour to per year. Those who answered per year (that is, reported an annual salary) were then asked how many weeks per year they usually worked. For these individuals, nearly 58 percent of the self-employed sample, the annual hours estimate is simply the product of hours per week and weeks per year. Those who reported a monthly salary (7 percent of the sample) were asked how many months per year they worked, and their annual hours are estimated as 4.33 (weeks/month) times (months/year) times (hours/week).

Table 6.—Annual hours of work of white married men aged 58-63, by type of worker, 1969

[Median hours shown in parentheses]

Annual hours	Self-employed			Wage-and-salary workers
	All	Career	Recent	
Number:				
Total (in thousands)	493.0	431.7	61.3	2,877.3
Reporting annual hours	446.6	388.7	57.8	2,736.1
Total percent	100.0	100.0	100.0	100.0
0	11.3	10.5	16.0	14.5
1-499	1.4	1.5	1.1	.4
500-999	3.5	3.5	3.9	1.0
1,000-1,499	5.2	5.0	7.0	2.0
1,500-1,999	10.9	11.1	10.1	6.4
2,000-2,499	(26.5)	(25.7)	(31.8)	(61.7)
2,500-2,999	16.4	17.1	11.0	8.4
3,000 or more	24.8	25.6	19.2	5.0

The remaining 35 percent of the self-employed sample, however, was asked neither about weeks nor months per year. In the absence of these data, a full year of work was assumed and the hours per week figure was multiplied by 52. For those whose labor-supply reduction consists of reducing weeks per year rather than hours per week, this calculation will result in an overestimation of annual labor supply.

An indication of the reasonableness of the full-year assumption can be obtained by looking at the distribution of weeks per year and months per year of the “annual” and “monthly” self-employed respondents, the only ones asked these questions. Overall, 83 percent of the “annual” respondents reported that they worked 50-52 weeks, and 84 percent of the “monthly” respondents claimed they worked 12 months per year. If these percentages are applied to those other than the “annual” and “monthly” individuals, the full-year assumption does have some merit, but nonetheless results in an overestimation of annual labor supply for some of the respondents.

The regressions in table 7 attempt to explain the differences in annual labor supply. The equations include only those respondents with positive hours of work. The R^2 levels for all three equations (aggregate and by health status) are very low, indicating that a larger part of the interpersonal variation remains unexplained. Some significant coefficients are evident, however. In the aggregate equation, the health term is highly significant, suggesting that self-employed men with health limitations work nearly 300 fewer hours per year. The individual social security benefit and pension effects are not significant, but the interaction term is. The point estimate for

Table 7.—Annual hours of work equations for self-employed white married men aged 58-63 with positive hours of work, by health status, 1969

[t statistics shown in parentheses]

Explanatory variable	Health status		
	All	Without health limitation	With some health limitation
Health limitation (0,1)	-294 (3.67)	.....	.....
Eligible for—			
Social security benefit (0,1)	-57 (0.69)	-42 (0.45)	-81 (0.49)
Pension (0,1)	162 (0.79)	74 (0.34)	397 (0.83)
Both social security benefit and pension. (0,1)	-597 (1.82)	37 (0.09)	-1,198 (1.94)
Dependents (0,1)	177 (2.05)	238 (2.50)	50 (0.27)
Imputed wage (dollars per hour)	-46 (2.32)	-41 (2.02)	-114 (2.06)
Asset income (thousands of dollars per year)	-3 (0.31)	-0 (0.00)	2 (0.12)
South (0,1)	-80 (0.92)	-137 (1.34)	-57 (0.34)
SMSA	-106 (1.36)	-3 (0.04)	-270 (1.73)
Constant	2,797	2,702	2,777
Mean hours	2,498	2,574	2,320
R^2 . . . . .	.05	.03	.09
N	666	458	208

the effect of eligibility for both is nearly -500 hours, or about 10 hours per week. This decrease may represent the voluntary partial retirement of those who can afford to work less. The dependents term is significant and positive, suggesting that financial need is important. Evidence of a negative wage effect is apparent but no evidence of a significant income effect is found.

When the sample is disaggregated by health, the social security benefit and pension terms remain insignificant and the interaction effect seems to fall predominantly on those in relatively poor health. This finding is the opposite of what was noted in the labor-force status equations (table 5), where joint eligibility induced labor-force withdrawal among those in good health. Among those with good health who decide to continue, it appears that the interaction has little effect. The dependents term is significant only for those in good health, and the backward bending wage effect is found for both groups.

The hours equations were also estimated with industrial and occupational dummies. Together, they raised the R^2 in the aggregate equation to .21 and suggested a wide diversity in annual labor supply. Annual supply is 205 hours greater for managers and another 120 hours greater for professionals when compared with the reference category of operatives. Sales workers, on the other hand, work nearly 300 hours less than the reference group. Among industries, the trade coefficient is very large and significant, suggesting nearly 600 extra hours more than the reference industry (manufacturing). Construction workers worked nearly 300 hours less (perhaps reflecting the effects of variable weather), while those in finance, insurance and real estate, and other service industries worked about 200 hours more.

The cross-sectional analysis thus far has indicated that differences do exist in the labor-supply patterns of self-employed and wage-and-salary workers. In the group aged 58-63, the self-employed (especially the career self-employed) are more likely to be in the labor market than their wage-and-salary counterparts. Among those in the labor force, the self-employed are both more likely to be working very long hours (2,500 or more per year) and more likely to be working part-time or part-year hours (1-1,500 hours). This finding may reflect their ability to scale down the number of hours they work while remaining on the same job—an option open to fewer wage-and-salary workers. Labor supply (measured by labor-force participation status and annual hours of work) was found to depend, in expected ways, on variables such as health status, eligibility for retirement benefits, dependents, the wage rate, and the flow of asset income.

Longitudinal Analysis, 1969-71

Use of the 1969 and 1971 interviews of the RHS permits one to define a number of potential labor-market transitions and to analyze the correlates and determi-

nants of each. A subset of the sample for the cross-sectional work is used here—those white married men defined as self-employed in 1969 who reappear in the 1971 survey. The sample is reduced from 836 to 737. The cross-tabulations in the remaining tables are all based on this reduced sample, which again has been weighted to yield approximate population estimates.

The transition matrix found in table 8 is obtained by using labor-force participation status as the measure of labor supply. Of those self-employed who were in the labor market in 1969, 14 percent withdrew by 1971, while the remaining 86 percent continued. Of the small number out of the labor force in 1969, 88 percent remained out, and 12 percent reentered. The purpose of this section is to analyze these transitions through tabular analyses, multivariate regression, and logit.

Among those in the labor force in 1971 were individuals who (1) remained in the same job since 1969, (2) changed jobs, and (3) reentered the labor force. Surprisingly, those base year self-employed persons who changed jobs or reentered after a period out of the labor force were more likely to take a private wage-and-salary job than to remain in the self-employed sector (table 9). The total sample of such job changers and reentrants is small (fewer than 60), so the phenomenon may be relatively unimportant. Such movements from self-employed to wage-and-salary status may be the result of the failure of a business or the sale of a business to someone else in the later years.

The tremendous importance of current health status is reemphasized in table 10. Respondents with a health limitation were much more likely to be out of the labor force than others. The effect is particularly strong in 1971, when 40 percent of those with a health limitation had withdrawn, compared with less than 10 percent of those in good health. The tables also indicate that the extent of health limitations rose slightly over the 2-year interval, from 35 percent to 40 percent.

Table 11 represents another rough attempt to gauge the impact of social security benefit eligibility on labor-force status. Respondents were defined as either cur-

Table 8.—Labor-force status of self-employed white, married men aged 58-63, 1969 and 1971

[Numbers in thousands]

Labor-force status, 1969	Labor-force status, 1971					
	Total		Out of the labor force		In the labor force	
	Number	Percent	Number	Percent	Number	Percent
Total	438.6	100.0	96.3	22.0	342.3	78.0
Out of the labor force	44.6	10.2	39.2	88.1	5.3	11.9
In the labor force	394.1	89.8	57.1	14.5	337.0	85.5

¹ Fewer than 25 observations.

Table 9.—Labor-force transition, 1969-71, of self-employed white married men aged 58-63, 1969, by class of worker, 1971

[Numbers in thousands]

Labor-force transition, 1969-71	Class of worker, 1971									
	Total		Self-employed		Government		Private		Nonpaid	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	342.4	100.0	295.7	86.4	4.7	1.4	40.7	11.9	1.2	0.4
Remained on same job ...	303.4	88.6	288.2	95.0	.....	.....	14.7	4.8	1.6	.2
Changed jobs	28.5	8.3	14.6	16.3	1 2.9	10.3	20.3	71.3	1.6	2.1
Reentered the labor force ..	1 10.4	3.0	1 2.8	27.4	1 1.7	16.7	1 5.8	55.9	.....	.....

1 Fewer than 25 observations.

rently eligible (that is, they would be eligible to receive benefits immediately if they were to stop working), not eligible, or perhaps eligible. (The latter are respondents aged 62 or over, who answered "don't know" when questioned about whether they expected to receive such benefits in the future.)¹² As noted above, because of the correlation with age, the eligibility coefficient probably includes an age effect.

These combined effects of age and eligibility appear large. By 1971, nearly 35 percent of the self-employed eligible to receive social security benefits were out of the labor force,

¹² For some reason, the number of respondents labeled "perhaps eligible" increased dramatically from 1969 to 1971, from 3 percent to 11 percent. One reason is that more persons were aged 62 and over in 1971—a precondition for this status. Another factor is the wording of the expectation question. In 1969, individuals were asked whether they expected benefits "later on." In 1971, the time dimension was described as "when you stop working" or "5-years from now." Although the latter question may be better, since it is more specific, the result may have been a higher percentage of "don't know" responses.

Table 10.—Labor-force status of self-employed white married men aged 58-63, by health status, 1969 and 1971

[Numbers in thousands]

Labor-force status	Health status					
	Total		Without health limitation		With some health limitation	
	Number	Percent	Number	Percent	Number	Percent
1969						
Total	438.6	100.0	282.9	64.5	155.7	35.5
Out of the labor force	44.6	10.2	1 10.3	3.6	34.3	22.0
In the labor force ..	394.1	89.8	272.7	96.4	121.4	78.0
1971						
Total	438.6	100.0	262.6	59.9	176.0	40.1
Out of the labor force	96.3	22.0	26.0	9.9	70.4	40.0
In the labor force ..	342.3	78.0	236.6	90.1	105.7	60.0

1 Fewer than 25 observations.

compared with fewer than 11 percent of those who were ineligible. These results are consistent with, but certainly do not prove, the hypothesis that the incentives embodied in the social security system may induce workers to leave the labor force.

As before, the suggestions drawn from these tables are tested in a multivariate framework. If the possibilities described in table 8 are considered, four possible labor-force status transitions can be defined:

Labor-Force Status
1971

		out	in
1969	out	L00	L01
	in	L10	L11

The entries on the main diagonal (L00, L11) denote no change in status.

Potentially, four regressions can be reported. In each of the rows, however, one equation is redundant, since the coefficients of a particular explanatory variable across a row will always sum to 0. Since the dependent variable in each regression is dichotomous, the predicted values for individuals are again interpreted as probabilities and the coefficients as the changes in probability associated with a one-unit change in the explanatory variable. This interpretation provides a heuristic rationale for the summing constraint just mentioned. Since a person who was in the labor force in 1969, for example, must end up either in or out in 1971, the two predicted probabilities should always sum to 1. After a change in an explanatory variable, the two probabilities must still sum to 1, so the coefficients must sum to 0. As long as these regressions contain a constant term, the constraint will automatically be met.

The model on which these equations are based is a slight extension of the one-period, utility-maximizing model used above. The extension is to include both base-period (1969) variables and certain variables indicating a change in status in the 1969-71 period. The only change

Table 11.—Labor-force status of self-employed white married men aged 58-63, 1969, by social security benefit eligibility, 1969 and 1971

[Numbers in thousands]

Labor-force status	Benefit eligibility							
	Total		Currently				Perhaps eligible	
			Ineligible		Eligible			
Number	Percent	Number	Percent	Number	Percent	Number	Percent	
1969								
Total	438.6	100.0	293.0	66.8	133.7	30.5	111.9	2.7
Out of the labor force	44.6	10.2	15.3	5.2	28.7	21.5	.....	.....
In the labor force	394.1	89.8	277.7	94.8	105.0	78.5	.....	.....
1971								
Total	438.6	100.0	178.1	40.6	209.9	47.8	50.7	11.6
Out of the labor force	96.3	22.0	19.3	10.8	72.9	34.8	4.1	8.0
In the labor force	342.3	78.0	158.8	89.2	136.9	65.2	46.7	92.0

¹Percentage not shown for fewer than 25 observations.

variables that are significant in these regressions are a dummy indicating a deterioration of health condition and another indicating that a person has become eligible for social security benefits since 1969.¹³ As before, this coefficient may combine the age and social security benefit eligibility effects.

In table 12, two of the four labor-force status transition equations are reported. (The other two are redundant.) The most interesting is transition L10, from being in the labor force to out of the labor force. As noted in table 8, about 14 percent of those in the labor force in 1969 moved out by 1971. What explains this interpersonal variation? In this equation, the most important factors are the change variables. A deterioration of health since 1969 increases the probability of this transition by 21 percentage points, and being newly eligible for social security benefits is associated with an 18-point increase. These coefficients are larger than the analogous base-line coefficients, which are .046 (and insignificant) for health and .123 for benefit eligibility. This finding is not surprising since many individuals with poor health and/or social security benefit eligibility in 1969 already have moved out of the labor force by that time and hence are excluded from this transition equation. The coefficient for other pension eligibility by 1969 has the expected positive sign but is insignificant. This finding may reflect the small number (32) of self-employed respondents in the labor force in 1969 who are eligible for pensions. The imputed wage coefficient is significant and negative and suggests that the probability of movement out of the labor force decreases by 1.4 percentage points with each dollar per

hour increase in the hourly wage rate. The asset income variable is insignificant.

The last two coefficients may be biased estimates of the true effects. (This applies to the 1969 cross-section equations as well.) The wage coefficient is probably biased toward zero because wages are positively correlated with the size of social security benefits and pension amounts—variables missing from this analysis. The problem is less severe with an imputed wage, but it is still likely that the coefficient is reflecting both the negative effect of higher wages, and the positive effect of large retirement benefits.

Table 12.—Transition regression results of labor-force status of self-employed white married men aged 58-63, 1969

[t statistics shown in parentheses]

Explanatory variable	Dependent variable	
	L10 In the labor force, 1969/ out of the labor force, 1971	L01 Out of the labor force, 1969/ in the labor force, 1971
Health limitation, 1969 (0,1)	0.046 (1.43)	-0.119 (1.13)
Health worse by 1971 (0,1) .....	.211 (6.54)	-.139 (1.54)
Eligible for—		
Social security benefit, 1969 (0,1) ...	.123 (3.79)	-.292 (2.76)
Pension, 1969 (0,1) .....	.085 (1.31)	-.092 (0.58)
New social security benefit eligibility by 1971 (0,1) .....	.182 (4.73)	-.091 (0.66)
Imputed wage (dollars per hour)	-.014 (2.05)	.007 (0.22)
Asset income (thousands of dollars per year)	-.003 (0.79)	-.023 (2.32)
Constant	0.059	0.498
Mean	0.15	0.12
R ²	0.16	0.26
N	660	77

¹³ The health change variable is based on the answer to the survey question, "How would you say your health today compares with your own health 2 years ago? Is it better, worse, or the same?"

For asset income, a problem arises which was first emphasized by Greenberg and Kosters.¹⁴ In this sample, certain hard-working individuals may be included who, because of this trait, (1) are reluctant to retire and (2) have accumulated large stocks of assets. Here is a negative correlation between assets (or asset income) and movement out of the labor force that tends to mask the positive causative effect predicted by economic theory. In the absence of a variable reflecting this personality dimension, the asset coefficient will be biased toward zero, and perhaps beyond.

It is difficult to draw strong conclusions about the reentry transition (L01), since only 77 self-employed respondents in the sample were out of the labor market in 1969. The signs of the coefficients are all consistent with the theory and the magnitudes are reasonable. The point estimates suggest that the probability of reentry is diminished by poor base-year health, health deterioration, eligibility for social security benefits or other pension benefits, and asset income and that it increases with the market-wage rate available. Because of the sample size, however, only two of the coefficients (social security benefit eligibility in 1969 and asset income) are significant.

As in the cross-sectional work, an attempt was made to check and confirm the regression results with logit analysis of the same transitions. Again, the logit sample is smaller (618, compared with 737) because of the bad data exclusions. The qualitative conclusions, however, are similar. In the transition of primary interest—from in the labor force to out of the labor force—all the coefficient signs (the directions of influence) are the same, and precisely the same coefficients are significant in the regression and logit analyses.

Summary and Conclusions

The self-employed sector in the United States economy is disproportionately populated by older workers because they are from cohorts in which self-employment was once more common, because the self-employed are less likely than wage-and-salary workers to withdraw completely from the labor force, and because some workers shift into self-employment in their later years. (In the RHS sample of older workers, it is estimated that approximately 12 percent of those self-employed in 1969 had been so for 10 years or less.) The labor supply and retirement patterns of the self-employed are quite different from those of wage-and-salary workers. The self-employed, especially the career self-employed, are less likely to have retired (to be out of the labor force) than are wage-and-salary workers. Among the employed the distribution of annual hours worked is much higher for the self-employed and includes a much larger percentage working 2,500 hours or more

per year. At the same time, a larger percentage of the self-employed are working what appear to be part-time or part-year hours, perhaps reflecting their ability to retire gradually from their current jobs. In contrast, the wage-and-salary distribution is completely dominated by the mode near 2,000 hours, with much smaller percentages in the part-time or overtime ranges.

Explaining the retirement patterns and transitions of the self-employed is more difficult than for wage-and-salary respondents. In general, fewer significant coefficients were found and the percentage of variation explained was lower. The poorer empirical results may stem in part from the much smaller sample size, but it also may be because unmeasured and unobserved differences are more important in this subset of the workforce. Nonetheless, some important factors have been discovered, in both the cross-sectional and longitudinal work.

Health status. The most dramatic single explanatory factor for the self-employed is health status. This variable was measured by whether or not the respondent reported a health condition that limited the type or amount of work he could do. Persons with a limitation were much more likely to be out of the labor force. The variable was significant in all the cross-sectional regression and logit equations. In addition, the health term appears to interact with the other explanatory variables, and those with a health limitation are generally found to be more sensitive to other enabling conditions. (This finding is consistent with research on wage-and-salary workers.) In the longitudinal transition analysis, the base-year health limitation remains important, but it is overshadowed by a variable reflecting a deterioration of health status during the 2-year period 1969–71.

Social security eligibility. Current eligibility for social security retired-worker benefits also appears to be an important factor. Because this variable is highly collinear with a variable denoting age 62 or over, some of this benefit effect may in fact be an age effect. Self-employed men currently eligible for social security benefits were more likely to be out of the labor force in 1969. This difference showed up in the tables, regressions, and in the logit analysis. When regressions were run on two separate health subsets, this benefit effect appeared to fall primarily on those persons with a health limitation. In the transition equation (from in to out), base-year (1969) eligibility remained important but was slightly less so than new eligibility during the 1969–71 interval. The magnitude and statistical significance of both the base-year and the change variables suggest that social security benefit eligibility may sometimes work with a lag. This would certainly be the case if some self-employed workers preferred to work beyond age 62 to avoid the permanent benefit reduction.

Other pension eligibility. The evidence on current eligibility for other pensions is slim, probably because this is

¹⁴ Daniel Greenberg and Marvin Kosters, "Income Guarantees and the Working Poor," in *Income Maintenance and Labor Supply*, Glen Cain and Harold Watts (editors), Rand-McNally, Chicago, 1973.

a relatively rare occurrence among the self-employed. Most of those who are eligible are recent self-employed (10 years or less) who are eligible from a previous job and who may be using their self-employed career as a form of partial retirement. The pension terms were insignificant in the cross-sectional and longitudinal labor-force status regressions. Some evidence was found, however, that pension eligibility may interact with social security benefit eligibility to induce some older self-employed persons (especially those in good health) to withdraw from the labor force.

Wage rate and asset income. These factors are not strong explanatory variables, although the signs and significance levels suggest that the effects do exist in the expected directions. In 1969, those with high wages were more likely to be in the labor force, as were those self-employed, other things being equal, with low levels of asset income. Similarly, the probability of transition out of the labor force was diminished by a high market-wage rate but the asset term was insignificant. As explained above, problems stemming from missing variables have probably biased both the wage-rate and asset-income

coefficients toward 0.

The final picture of the self-employed, then, is that of a group whose labor-force and retirement patterns are influenced by many of the same factors that are important in the wage-and-salary sector—health, eligibility for retirement benefits, the individual's market-wage rate, and the flow of asset income. Nonetheless, their labor-supply and retirement patterns are distinct. Of particular importance were the annual hours of work distributions, which showed considerably more variation than for wage-and-salary workers. Given the additional flexibility that comes with self-employed status, the older self-employed men were both more likely to work a greater number of hours and more likely to work less than conventional full time. At this point in the life cycle, the downward flexibility may be more important and it may add an extremely valuable option for partial or gradual retirement that does not exist elsewhere. In view of the financial and psychological traumas that often accompany complete and abrupt labor-force withdrawal, these options should be explored in the wage-and-salary sector.