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DETERMINANTS OF KNOWLEDGE
ABOUT SOCIAL SECURITY: A STUDY OF
NONREMARRIED WIDOWS CARING FOR CHILDREN

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ABSTRACT

Social security beneficiaries and the general public alike are concerned about the financial solvency of the social security program. But how much do they know about how the system works? This study analyzes the determinants of knowledge about social security among nonremarried widows having children under their care. It builds a research model based on the economic theory of rational decision making. Using ordinary least squares regression estimation techniques, the level of knowledge about specific social security provisions is regressed on family income, implicit tax rate, number of children, human capital variables, and other demographic and locational variables. The findings support the economic theory applied to this study. Widows who gain more by knowing social security provisions indeed know more about them than those who gain less.

For months before Congress enacted the Social Security Amendments of 1983 many Americans had been concerned

about an impending financial collapse in social security. Since the social security system is complex, they must have been concerned about the program knowing very little about exactly how the system works. Many politicians too must have been in such a situation. Thus, an interesting question can be raised: How much do people know about social security?

The Social Security Administration (SSA) has recently pursued this question. Using data from the 1978 Survey of Survivor Families with Children, SSA conducted a study that produced descriptive statistics on the level of knowledge that nonremarried widows, remarried widows, and widowers have about social security (Abbott, 1873).

It seems pertinent for policymakers to study how much social security beneficiaries know about social security. For one thing, since social security is an important source of income for many surviving families, economists theorize that many beneficiaries may base their economic actions on what they know about it. In addition, legislators pass laws regarding social security, assuming that beneficiaries respond to such new laws. Thus, knowledge about social security potentially is an important factor influencing the daily lives of social security beneficiaries. Yet, very little study has been devoted to the whole question of how much social security beneficiaries know about the workings of the social security program (Abbott, 1983; Peter D. Hart Associates, 1979).

RELATED STUDIES

Earlier studies related—albeit indirectly—to the present study look at the effect of knowledge on the behavior of those receiving transfer payments. For example, a study by Coe shows that a family receiving Aid to Families with Dependent Children (AFDC) is more likely to apply for food stamps than a family not receiving AFDC (Coe, 1977). His findings imply that AFDC families acquire knowledge about the food stamp program through their AFDC experience and, using that knowledge, proceed to apply for food stamps. In a study on characteristics of the elderly who contact a social security office to apply for Supplemental Security Income (SSI), Ozawa (1980) finds that the elderly who have received

social counseling services are more likely to contact a social security office to inquire about SSI. This finding implies that when the elderly receive social counseling services, they acquire knowledge about SSI, which leads them to contact the social security office. Further, it is a well-proven fact that retirees limit the amount of earnings in order to escapte reduction of benefits, implying that knowledge about social security influences beneficiaries' behavior (Reno, 1976).

The present study extends SSA's recent research effort. Using the same data file, it attempts to assess the extent to which widows' characteristics have a bearing on their level of knowledge about social security (Abbott, 1983). Focusing on nonremarried widows, this study investigates the determinants of social security knowledge in a more systematic, detailed, and analytical fashion than the SSA survey did. It includes numerous, additional variables that capture more detailed information regarding family income, family backgrounds, widows' human capital, demographic backgrounds, and location of residence.

The SSA study presented cross tabulations of knowledge in relation to various independent variables taken one at a time; the present study uses regression estimation techniques instead. Applying these techniques, the study attempts to measure the net effect of each independent variable in the regression model. Furthermore, this study develops composite indices of knowledge covering several areas of social security provisions and all areas combined. In contrast, the SSA study deals with each questionnaire item separately. The use of indices enables researchers to put research questions in a somewhat broader perspective.

The major objective of this study, then, is to provide more systematic information for answering the following question: How much do nonremarried widows know about the way the social security program works and what makes some of them more knowledgeable about this than other widows? Nonremarried widows are chosen as the focus of this study because they depend heavily on social security as a source of income and therefore may have more at stake in knowing about it.[1]

FRAMEWORK

Traditional economic theory about rational decision making is applied in building a model for this study. This theory asserts that beneficiaries acquire knowledge about social security—like any other economic good—in order to maximize utility. Three phenomena are involved in the theory: income effects, price effects, and the effect of opportunity costs of forgone benefits. According to the theory, individuals having a high, normal expected income demand more of all goods, including knowledge about social security. On the other hand, individuals who have to pay a higher price for acquiring knowledge are less likely to invest their resources for acquiring it than those who pay a lower price. Finally, individuals who face greater opportunity costs of forgone benefits because of ignorance have a greater incentive to acquire knowledge than those facing less of such costs (Stigler, 1961). We shall build a research model using family income, the number of children, the implicit tax rate on earnings, and human capital variables that reflect these theoretical constructs. Other demographic and locational variables will also be included as controls.

On the basis of this theory, we can expect family income to be positively related to widows' knowledge about social security. We can disaggregate income into three parts and thus consider three income variables: social security benefits for the survivor family, the widow's own earnings, and other family income, which includes children's earnings, rent, dividends, and interest. It should be noted, however, that the widow's wage rate is a more appropriate measure of normal expected income than her actual earnings (which may be influenced by the earnings test, hours worked, and other transitory factors). Therefore, we will use the widow's wage rate as a component of family income instead of her actual earnings. But it is hard to predict which way the widow's wage rate is related to her knowledge. Wages, unlike other types of income, not only create income effects but also price effects. That is, on the one hand, high-wage widows are expected to acquire more knowledge than low-wage widows because high wages mean more income; on the other hand, high-wage widows have to pay a higher price for acquiring knowledge because their time is more valuable than that of

low-wage widows. Thus, the question of how the widow's wage rate affects her knowledge is empirical in nature.

The number of children potentially has both price effects and the effect of opportunity costs of forgone benefits on the knowledge level among widows. On the one hand, widows caring for a large number of children value their time at home more than their time spent elsewhere. Thus time spent for acquiring knowledge about social security is relatively costly for them. On the other hand, since such women expect larger amounts of family benefits than do widows with fewer children, they potentially forgo larger benefits if they remain ignorant of the program. Thus, widows in this case have a greater stake in knowing about the program.

One also needs to be aware of the effects of specific social security provisions. When widows have more than 2 children, for instance, it is likely that their family will receive maximum family benefits regardless of how much they earn.[2] Conversely, if there is only one child, widows' earnings potentially result in benefit reductions. Thus, it is plausible that widows with more children know more about the provision of maximum family benefits than widows with fewer children. It is plausible as well that widows with fewer children know more about the earnings test than those with many children. At any rate, because the number of children is expected to influence the knowledge level in many directions, it is difficult to predict which way this variable is related to a widow's knowledge about social security.

For the purposes of this study, children will be considered in three age brackets: (a) the number of children younger than age 18, (b) the number between 18 and 21, and (c) the number older than 21. Differentiating children according to age brackets seems important since social security treats them differently.[3]

The age of the youngest child is expected to make a difference in the widow's knowledge about social security. Widows whose youngest child is still of tender age may have to spend more time on child care. This increases the price of the widow's time at home in relation to time spent for other purposes, including acquisition of knowledge about the program. Thus, we expect the age of the youngest child to be inversely related to the widow's knowledge level.

The opportunity costs of forgone benefits because of ignorance are involved in the implicit tax rate that many working widows are subjected to. In 1977 widows could earn up to $3,000 without having their benefits reduced. If they earned more than this amount, their benefits were cut at the rate of $1 for each $2 of excess earnings in the same year. Thus, not knowling about this specific provision would result in a forgone opportunity to maximize their social security benefits, reduce hours of work, or both. The higher the implicit tax rate on earnings, the greater the forgone opportunity costs of not knowing about the program. Therefore, we expect widows subjected to higher implicit tax rates to have a greater incentive to acquire knowledge about the program than other widows.

Also, we infer from economic theory that widows with more human capital are more efficient in acquiring knowledge than those with less. By human capital, we mean, for the purposes of this study, age, education, labor market experience, and health. Widows with more human capital can acquire a given amount of knowledge at a lower price (cost) than those with less human capital. Thus we hypothesize that human capital variables are positively related to program knowledge. For instance, better educated widows can understand more readily what the publications on social security mean to them, and thus pay a lower price for acquiring knowledge than do less educated widows. This line of reasoning applies also to the other human capital variables mentioned above. We shall consider these human capital variables in this study, since human capital theoriest agree that they constitute vital components of human capital (Becker, 1964; Mincer, 1973; Mincer, 1974; Sorenson, 1975; Kalacheck and Raines, 1976).

For the purposes of this study, labor market experience among widows can be compartmentalized into three phases: work experience before marriage to the deceased husband, work experience during that marriage, and work experience after the husband's death. Work experience is disaggregated for two reasons: First, the knowledge level may be related to the vantage point of work experience. Second, only earnings after the husband's death potentially results in a reduction of benefits that widows' families are nominally entitled to, which in turn may be related to the knowledge levels of

widows (Mincer and Polachek, 1974; Sandall and Shapiro, 1978).

In addition to years of education, it seems relevant to consider whether the widow was in school at the time of the survey. Being exposed to contemporary education might heighten a widow's awareness about social security, other things being equal.4

Further, we hypothesize that being healthy is directly related to the level of knowledge. It is known that healthy people are more productive in the labor market. Given this fact, we expect healthy widows to acquire knowledge at a lower cost than unhealthy ones. Similar arguments can be made about age, which we hypothesize is inversely related to knowledge.

We have so far discussed a conceptual framework built around the economic theory of rational decision making. However, other variables may affect the level of knowledge about social security. For example, length of time since the husband's death may be positively related to the level of knowledge. The longer the survivor's family receives social security benefits, the longer the widow's exposure to the program and thus the more knowledge about it. Location of residence may also have some bearing on the knowledge level. Rural living, compared with urban, may facilitate development of closer relationships and therefore more communication among widows and between widows and other residents, resulting in widows' greater knowledge about social security. Similarly, living in different regions may have different effects on the level of knowledge, although it is hard to predict a priori which region is most positively related to the level of knowledge. Race, too, may have some influence; varying lifestyles and value systems of white and nonwhite families may have different effects on knowledge about social security. Also, a variable that captures varying marital status of the currently nonremarried widows will be considered as a control. There may be a difference in the level of knowledge between widows who stayed nonremarried since their husband's death and widows who remarried and then became nonremarried once again due to divorce or separation from their new husband.

Independent and control variables discussed here are presented with their definitions in Appendix 1.

METHODOLOGY

Variables Further Defined

In the 1978 survey, SSA asked respondents 10 specific questions regarding the Survisors Insurance component of the social security program. The questions fall into four areas: (a) the provisions of children's benefits (4 items); (b) the provision of widows' benefits (3 items); (c) the maximum family benefit rule (1 item); and (d) the provision of earnings test (2 items). The questions and their correct answers are shown in Appendix 2.

For the purpose of this study, the proportion of correct answers in each area was obtained. In this way, we developed 4 dependent variables, covering the four specific areas of knowledge. We developed an additional dependent variable, covering all questions taken as a whole—that is, the proportion of correct answers involving all 10 questions. In contrast, SSA dealt with each question separately (Abbott, 1983).

The implicit tax rate and the widow's wage rate require further explanation. Under social security, widows who earned less then $3,000 in 1977 could keep their benefits without reduction. Therefore, up to this point, the implicit tax rate was zero. When earnings exceeded $3,000, benefits were reduced at the rate of $1 for each $2 of excess earnings, resulting in an implicit tax rate of 50 percent. But the implicit tax rate became zero once again when earnings over $3,000 reached twice the amount of the benefit, so that no benefits were received. For the purposes of this study, therefore, a tax rate of zero or 0.5 was assigned to widows, depending on their earnings.[5]

Wage rates were expressed as hourly wages. To those widows who did not work in 1978, the value of zero was assigned. Of all widows under study, 40 percent did not work. All other independent variables are straightforward.

Source of Data

As noted, this study used data from the 1978 Survey of Survivor Families with Children, collected by SSA (Hastings and Springer, 1980). This survey updated a previous SSA survey (Palmore, Stanley, and Cormier, (1966). The 1978 survey included families headed by nonremarried widows, and

for the first time, those headed by remarried widows and those headed by nonremarried or remarried widowers as well. All families had at least one child age 18 or younger and were receiving survivors' benefits at the time of the survey. The survey data were merged with the social security program data to produce a sample of 5,752 widows and widowers. Income data apply to 1977; non-income data to 1978.[6]

The present study selected widows who were not married at the time of the survey. Some, however, had remarried after their husband's death and later were divorced or separated from their new husband. After excluding persons for whom data were missing, the sample data size for the present study became 3,438.

Statistical Method

In order to measure the strength of each independent variable's effect in determining the dependent variables, controlling for the effects of other variables, the ordinary least squares (OLS) regression estimation technique was used.[7] The Statistical Package for the Social Sciences (SPSS) was used for computer programming.

FINDINGS

Level of Knowledge

The mean proportions of correct answers and their standard deviations covering the various areas of questions are shown in Table 1.

All questions taken together, widows seem to have a relatively high level of knowledge about social security. On the average, they answered correctly 62 percent of the questions. Among the areas investigated, these widows seem to have a particularly high level of knowledge on how children's benefits are provided. In this area, the average proportion of correct answers is 82 percent. However, in other areas their average level of knowledge appears drastically lower: 50 percent in questions dealing with how widows' benefits are provided; 48 percent in questions involving the earnings test, and 42 percent in the question involving the maximum family benefit rule. In general, these findings are consistent with those in the SSA study. Readers

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TABLE 1

Mean Proportions and Standard Deviations
of Correct Answers

	Mean Proportion	s.d.
Questions regarding children's benefits	0.82	0.22
Questions regarding widows'benefits	0.50	0.25
Questions regarding maximum benefits	0.42	0.49
Questions regarding the earnings test	0.48	0.28
All questions combined	0.62	0.18

interested in finding the level of knowledge about each specific question should consult that study (Abbott, 1983).

Regression Results

Table 2 presents the results from five separate OLS regressions. Each column shows coefficients of independent and control variables in determining the proportion of correct answers to quesitons: first, children's benefits; second, widow's benefits; third, the maximum family benefit rule; fourth, the earnings test; and fifth, all questions taken together.

Income-related Variables: Generally, income-related variables appear to have strong influence on widows' knowledge about social security. First, the amount of social security benefits (SS$FAM) is positively, and statistically significantly, related to knowledge in all areas of concern. The directions of the coefficients are all as expected. High-benefit recipients seem to know particularly well how the earnings test works. All questions considered together, widows with high levels of benefits tend to know more about social security.

Other income (OTHINC) is also related to the widows' level of knowledge. In all areas except that concerning children's benefits, the relationships between other income and the dependent variables are statistically significant. The directions of relationship are positive, as expected, in all areas. Again, as in the case of SS$FAM, OTHINC is strongly related to overall knowledge about social security. Widows who command a large amount of OTHINC know more about social security than others do.

However, the wage rate (WAGE) is not related to knowledge about social security, although the directions of relationship are as predicted in all areas. This may indeed show that this variable exerts on the dependent variables both the income effect and the price effect, which offset each other, with the former slightly outweighing the latter. That is, the wage rate measures not only a widow's own normal income but also the value of her time. Thus, on the one hand, high-wage widows demand more knowledge because they have more income; on the other hand, they use less time for acquiring program knowledge because their time is expensive.

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TABLE 2

REGRESSION ANALYSIS OF KNOWLEDGE ABOUT SOCIAL SECURITY
("t" ratios in parentheses)

Dependent Variables: Knowledge Regarding Provisions of

Independent Variables	Children's Benefits	Widows' Benefits	Maximum Family Benefits	The Earnings Test	All Questions Combined
SS$FAM	0.0000043* (2.36)	0.0000106*** (4.98)	0.0000185*** (4.45)	0.0000169*** (7.20)	0.0000101*** (7.11)
OTHINC	0.0000011 (1.52)	0.0000020* (2.31)	0.0000071*** (4.06)	0.0000025** (2.86)	0.0000023*** (3.84)
WAGE	0.0007438 (1.06)	0.0001558 (0.19)	0.0023861 (1.51)	0.0014632 (1.65)	0.0008755 (1.62)
TAX	0.0149143 (0.77)	0.0612302** (2.77)	0.0762232 (1.76)	0.0158190 (0.65)	0.0351209* (2.37)
NUMLT18	0.0020531 (0.56)	-0.0163173*** (3.94)	0.0084534 (1.04)	-0.0186159*** (4.08)	-0.0169517* (2.49)
NUM1821	0.0106485* (2.03)	-0.0103180 (1.72)	0.0361031** (3.08)	-0.0195860** (2.96)	0.0008571 (0.21)
NUMGE22	-0.0024815 (0.35)	0.0052684 (0.64)	0.0144892 (0.91)	-0.0143474 (1.60)	-0.0008326 (0.15)
AGEYG77	0.0001123 (1.10)	0.0001878 (1.60)	-0.0001024 (0.44)	-0.0000397 (0.30)	0.0000831 (1.05)

(Table 2 Continued)

PREMAREX	-0.0006836 (0.64)	0.0016061 (1.31)	-0.0009254 (0.38)	0.0004218 (0.31)	0.0002001 (0.24)
MAREX	0.0014652** (2.64)	0.0003160 (0.49)	0.0014356 (1.15)	0.0003828 (0.54)	0.0009010' (2.10)
POSTEX	0.0012032 (0.87)	0.0011966 (0.75)	0.0074814* (2.41)	0.0011147 (0.63)	0.0018114 (1.70)
EDUCATN	0.0092379*** (6.30)	0.0024456 (1.45)	0.0223414*** (6.79)	0.0121281*** (6.55)	0.0090886*** (8.04)
INSCHOOL	-0.0287556 (1.24)	0.0169936 (0.64)	0.0772157 (1.49)	0.0001050 (0.0036)	0.0013384 (0.75)
HEALTH	-0.0080413 (0.64)	-0.0154245 (1.07)	0.0241887 (0.86)	-0.0196167 (1.24)	-0.0093483 (0.97)
AGE	-0.0002108 (0.36)	-0.0008263 (1.24)	0.0015500 (1.19)	0.0003076 (0.42)	-0.0001156 (0.25)
WHITE	0.0474005*** (5.04)	0.0538321*** (5.00)	0.0302848 (1.43)	0.0855330*** (7.21)	0.0552449*** (7.63)
DURATN	0.0003307*** (3.33)	0.0003954*** (3.47)	0.0001984 (0.89)	0.0004006*** (3.19)	0.0003509*** (4.58)
URBAN	-0.0161857* (1.95)	-0.0327582*** (3.45)	0.0158606 (0.85)	0.0030209 (0.28)	-0.0141115* (2.21)
RD1	-0.0188497 (1.84)	-0.0034848 (0.29)	0.0627882** (2.74)	0.0092782 (0.72)	-0.0041621 (0.52)
RD2	-0.0029993 (0.30)	-0.0142764 (1.27)	0.0456816* (2.08)	-0.0024781 (0.20)	-0.0014101 (0.18)

(Table 2 continued)

RD4	-0.0161025 (1.32)	-0.0404232** (2.89)	0.0044288 (0.16)	-0.0540906*** (3.52)	-0.0289432** (3.08)
CURSD	0.0105395 (0.93)	-0.0060649 (0.46)	0.0219347 (0.86)	-0.0416897** (2.91)	-0.0037481 (0.43)
CONSTANT	0.6228804	0.4027825	-0.1646607	0.1915816	0.3918372
R^2	0.04593	0.05533	0.06052	0.09857	0.11465
F	7.47299***	9.09141***	9.99986***	16.97362***	20.10084***
N	3,438	3,438	3,438	3,438	3,438

*   significant at the 0.05 level.
** significant at the 0.01 level.
*** significant at the 0.001 level.

Implicit Tax Rate (TAX): We hypothesized that widows subjected to the earnings test—that is, those whose benefits were reduced because of excess earnings—would have a higher stake in knowing how social security works because they would face greater forgone opportunity costs of not knowing social security provisions. When all questions are considered, the coefficient of TAX is positive and statistically significant, confirming our hypothesis. However, when we focus on specific areas, statistical significance is obtained in only one area, although all coefficients are positive as expected. The implicit tax rate exerts a significant effect on widows' knowledge about how their own benefits are provided but not about other aspects of social security.

Why does TAX make difference in knowledge only in this particular area? We can explain the situation as follows: Under social security, widows' earnings in excess of the exempted amount result in a reduction in their own benefits but not in their children's benefits. Thus, widows subjected to the earnings test were more aware of rules and regulations regarding their own benefits than about other aspects of social security. On the other hand, it is somewhat puzzling that the implicit tax rate is not related to their knowledge about the earnings test itself. We expected that widows subjected to the earnings test would know more about it.

Number of Children: Variables regarding the number of children appear to be related to knowledge about social security in a complex way. First, the number of children under age 18 (NUMLT18) is significantly and negatively related to widows' knowledge about how widows' benefits are provided and how the earnings test works. On the other hand, NUMLT18 is related to widows' knowledge in other areas in the opposite direction, albeit without statistical significance.

The number of children age 18 through 21 (NUMLT1821) is related to widows' knowledge in all 4 specific areas in the same directions as those observed when the dependent variables were regressed on NUMLT18. But the level of statistical significance differs.

The number of children age 22 and over (NUME22) seems to have nothing to do with widows' knowledge about social security. Statistical significance is not achieved in any of the areas of knowledge, and the coefficients have differing

signs.   We will henceforth ignore this variable in our discussion.

What can we make of the complex relationship between the number of children and widows' knowledge about social security?   We explain the situation in two ways: first, by examining the significance level of coefficients; second, by looking at the pattern of relationship between independent and dependent variables in specific areas of concern, ignoring statistical significance.

Earlier, we hypothesized that both the price effect and the effect of forgone benefits are involved in the number of children and that these effects counteract each other. The preponderance   of   statistically   significant,   negative coefficients involving NUMLT18 seems to indicate that in this variable the price effect outweights the effect of forgone opportunity costs. That is, widows with many young children (those in the age bracket of one to 18) find it more valuable to spend their time in caring for the children than in acquiring knowledge about social security, even though more children mean more benefits.   On the other hand, the preponderance   of   statistically   significant,   positive coefficients involving NUM1821 seems to indicate that the reverse is true for this age bracket. That is, widows with several children in this age bracket no longer need to spend as much time and energy caring for them as might be needed to care for young children, and therefore are willing or able to invest their time in acquiring knowledge, because more children mean more benefits.

Next, we attempt to explain the pattern of relationship between the number of children and the dependent variables in specific areas of concern. By observing how NUMLT18 and NUM1821 are related to the four specific areas of knowledge, ignoring the coefficients' statistical significance, we can offer the following explanation. First, we observe a negative relationship between the number of children and widows' knowledge about the earnings test. In a family with only a few children—for example, one chile—the widow's earnings potentially result in a reduction in family benefits. Thus, such families may have a high opportunity cost of ignorance. On the other hand, in a family with many children, the widow's earnings would not result in a reduction in family benefits.   The family simply continues to receive the

maximum family benefit. Thus, we can surmise that widows
with fewer children would have more at stake in knowing how
the earnings test works, and therefore would try to be more
knowledgeable about it.

On the other hand, the number of children would exert a
positive effect on widows' knowledge about the maximum
family benefit rule. Families with a larger number of
children (more than two) would receive only the maximum
family benefit, which is less than the sum of benefits for all
eligible family members. Thus, we can expect that widows
with many children would be exposed to this provision and
therefore would have a greater opportunity and interest in
knowing about it. This is exactly what the coefficients of
NUMLT18 and NUM1821 seem to indicate.

An inverse relationship is observed between the number
of children and widows' knowledge about how widows' benefits
are provided. All three questions used to develop a
knowledge index in this area deal with the relationship
between children's benefits and widows' benefits. Under the
law, widows are entitled to their benefits only when they
have children in their care. When children's benefits
terminate, widows' benefits also terminate. Widows can
resume receiving benefits in their own right as aged widows
when they reach 60. Thus, we can surmise that a larger
number of children ensures greater stability of benefits for
widows. Conversely, a smaller number of children would
heighten concern about widows' benefits being terminated
some day, resulting in widows' greater stake in understanding
the provisions of widows' benefits. Perhaps, this is why the
coefficients of these variables are negative. That is, the
smaller the number of children in either age bracket, the
greater the level of the widow's knowledge about the
provisions of widows' benefits: here again the potential
opportunity costs of ignorance are high.

On the other hand, the direction of relationship between
the number of children and widows' knowledge about
children's benefits is positive. All four questions in this area
deal strictly with children's benefits. Thus, we can surmise
that a larger number of children translate into a widow's not
only wanting to understand the provisions but also being more
extensively exposed to the workings of social security. More
children mean more benefits, subject to the maximum family

benefit ceiling; frequent dealings with the Social Security Administration lower the price of acquiring program knowledge.

The age of the youngest child (AGEYG77) was included in the regression to measure the price of widows' time. This variable appears to have no bearing on widows' knowledge level about social security. Statistical significance is not achieved in any area.

Human Capital Variables: First, with regard to work experience, we observe that all of the signs of the coefficients of work experience during marriage (MAREX) and after the husband's death (POSTEX) are positive as expected. Statistical significance is achieved only sporadically, however. Note also that the signs of the coefficients of work experience before marriage (PREMAREX) differ depending on the areas of knowledge about social security, with no statistical significance in any area. We might tentatively interpret as follows: The number of years of work experience before marriage to the deceased husband has little to do with widows' extent of knowledge about social security. However, there is some indication that the number of years of work, either during the marriage or after the husband's death, is positively related to the knowledge level among widows.

There is no question that education (EDUCATN) is a strong determinant of knowledge about social security. Observe the strong relationship between the number of years of schooling and the knowledge level in all areas, except the provision of widows' benefits. As hypothesized, the more educated widows are, the greater their knowledge in all areas except that dealing with widows' benefits. These findings indicate that more educated widows are more productive in acquiring knowledge, given the same price and opportunity costs, than less educated widows. This certainly is consistent with economic theory.

On the other hand, the variable capturing current school attendance (INSCHOOL) is not a significant determinant of knowledge. However, all signs of the coefficients for this variable are as expected except in the regression involving theh provisions of children's benefits. The relatively weak effect of this variable may stem from the fact that it not only measures a widow's human capital but also captures the

price of acquiring knowledge. Widows attending school should feel that it is more costly to spend their time acquiring knowledge about social security than those not in school. Perhaps because of these two opposing forces at work in the same variable, statistical significance is not attained in any area.

Health status (HEALTH) is another variable measuring widows' human capital. None of its coefficients, however, is statistically significant, indicating that health status is not related to the level of knowledge about social security. The widow's age (AGE) as a human capital variable is not a significant determinant of knowledge about social security, either.

Control Variables: The control variables that emerge as consistently strong determinants of knowledge about social security are race (WHITE) and duration of time since the death of the husband (DURATN). Being white is positively related to the knowledge level in all aspects of social security. Statistical significance is achieved in all areas except the one dealing with the maximum family benefit rule. In general, we can say that white widows know significantly more about social security than nonwhite widows.

Duration of time since the husband's death is another strong determinant of knowledge about social security. Statistical significance is achieved in all areas except the one involving the maximum family benefit rule, and the directions of the coefficients are as expected in all areas. Widows who have spent more years since their husband's death indeed know more about how social security works than do widows who have spent fewer years.

Another control variable of interest is urban vs. rural residence (URBAN). Notice that there are two statistically significant coeffecients with negative signs. This indicates that widows living in the rural areas know more about social security than do widows living in urban areas. However, two coefficients are not significant, and indeed have positive signs. With these two sets of internal forces working against each other, the coefficient for all of the questions taken together (see column 5) is negative and statistically significant at the .05 level. Thus, we tentatively conclude that rural widows appear to know more about certain aspects of social security than do urban widows.

Region seems to make a difference in the knowledge level. We observe that, compared with widows in the South, those in the West (RD4) are less knowledgeable about social security. The level of Western widows' knowledge is significantly lower in two specific areas and also when all questions are considered as a whole. In one area only, RD4 is positively related to the knowledge level but without statistical significance.

Comparing widows in Northeastern (RD1) and North Central (RD2) with Southern widows, we observe that the former are significantly more knowledgeable about the maximum family benefit rule than the latter. In all other areas, however, no statistical significance is achieved and the coefficients of these variables are negative. Thus, region of residence makes some difference in widows' knowledge, although it is difficult to explain why.

Whether widows were separated or divorced (CURSD) at the time of survey seems to have a statistically significant difference in knowledge about one aspect of social security—the earnings test. Those who were either separated or divorced at the time of the survey knew significantly less about how the earnings test works. It is hard to explain why, however.

SUMMARY AND CONCLUSIONS

In general, nonremarried widows have a surprisingly high level of knowledge about social security. Their average proportion of correct answers is 62 percent. However, their level of knowledge varies depending on the specific area of knowledge. They tend to know the provisions regarding benefits for surviving children particularly well. They know least about the maximum family benefit rule.

Findings from this study validate the economic theory of rational decision making. Major findings in support of this theory are summarized below:

1. High-income widows demand and therefore acquire more knowledge about social security—like any other normal good—than low-income widows.

2. Widows who pay a higher price for acquiring knowledge acquire less knowledge about social security than those who pay a lower price. For example, widows who have

to take care of many children of minor age are less knowledgeable about the program than their counterparts even though more children mean larger family benefits, subject to the family maximum benefit rule.

3. Widows facing greater forgone opportunity costs of not knowing specific provisions indeed know more about them than widows not facing such a predicament. For instance, widows with a smaller number of children need to be more aware of possible cuts in family benefits because of widows' earnings than widows with more children. Widows in such a predicament indeed know more about specific provisions of the earnings test. Conversely, widows with a larger number of children know more about the maximum family benefit rule than those with fewer children, because the former are more likely to be affected by this rule than the latter. All this indicates that widows facing certain issues indeed know about social security provisions specifically related to such issues.

4. Widows with greater human capital know more about social security provisions because they can acquire a given amount of knowledge for a lower price than those with less human capital. For instance, women who are more educated are more efficient in acquiring knowledge about social security and therefore know more aobut the program than the less educated. Furthermore, directions of coefficients regarding work experience and health status (though statistical significance is rarely achieved), seem to further support the argument that human capital positively affects the level of knowledge about social security.

In addition to the findings specifically related to the economic model developed in this study, two control variables stand out as important determinants of knowledge: race and length of time since the husband's death. The finding about race indicates that white widows know more about the program than nonwhite widows, although the reason remains to be discovered. The finding about the effect of time elapsed since the husband's death indicates that widows get more experienced as time passes in understanding social security provisions and as a result become more knowledgeable about them than recent widows.

None of the findings in this study contradict those of the SSA study. However, our findings do indeed extend and

clarify the SSA findings about beneficiaries' knowledge of how social security works; they also present an enlightened view of why some beneficiaries know more than others. This study provides more precise information on the extent to which independent variables determine nonremarried widows' knowledge level regarding social security. For instance, the SSA study reports that length of time since the husband's death does not affect overall social security knowledge, although it does affect knowledge about some specific quesitons (Abbott, 1983). Our study, by using regression estimation techniques, succeeds in capturing the net effect of this variable—which emerges as a strong determinant of knowledge, not only in specific areas but in all areas combined. The same statement can be made about the finding in regard to the relationship between the number of children and the knowledge level; the use of regression techniques reveal the relationship more clearly than does the SSA crosstab approach.

Although our study is limited to nonremarried widows caring for children, the findings should be important for policy makers because social security is a major source of income for this groups of survivor families and because what they know—or don't know—about it affects their daily lives.

FOOTNOTES

1. For families of nonremarried widows, social security benefits in 1977 constituted 45 percent of their total money income. This compared with 22 percent for remarried widows' families, 15 percent for nonremarried widowers' families, and 11 percent for remarried widowers' families. The data source is the same as for the present study.

2. Under social security, each survivor is nominally entitled to benefits equivalent to 75 percent of the Primary Insurance Amount (PIA, the basic benefit for the insured worker if the worker retires at age 65 or is disabled). However, when there are more than two survivors, the surviving family faces the maximum family benefit rule. Under this rule, the sum of all survivors' benefits in the family may not be more than 1.5 to 1.88 times the PIA, depending on the deceased worker's prior earnings

level. Therefore, when there are more than two surviving children, the widow's earnings do not affect the amount of social security benefits that her family receives.

3. In 1978 when the survey was taken, children under age 18 could receive benefits with no restriction. Those between 18 and 21 could receive benefits only if they were full-time students. Those older than 21 could not receive benefits unless they were disabled and the diability started before they reached age 22. Their benefits terminate upon marriage regardless of their age.

4. Of all nonremarried widows under study, 3 percent were attending school at the time of the survey.

5. Recall, however, that at the time of the survey widows were asked about the exempt amount effective as of 1978. Therefore, the right answer to the question regarding the earnings test was $3,240; but the exempt amount of $3,000, which was effective in 1977, was used by the author to assess whether these widows were subjected to the earnings test in 1977.

6. The sampling frame consisted of an area probability design conducted in three stages. First, the 99 primary sampling units in SSA's contractor's national design. Next, the choice of ZIP codes within the primary sampling units was made with probability proportional to size. Finally, cases within the specified sampling units were selected from a social security list of eligible cases. In order for the sample to represent properly across the nation the universe of survivor families with children, the sample was weighted to adjust for nonresponse and for universe cell size. Thus, the sample used in the survey represented a universe of 910,000 survivor families with children on social security. Among them were 605,000 families of currently nonremarried widows; 183,000 families of currently remarried widows; 52,000 families of currently nonremarried widowers; and 70,000 families of currently remarried widowers.

7. Logistic regression estimation techniques are particularly appropriate to use when the dependent variable takes the form of proportion, as was the case in this study. We used both statistical procedures (logistic

and OLS regression techniques) and obtained almost identical results. Since OLS regression results are more comprehensible than logistic regression results, we report the former in this paper.

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APPENDIX 1

INDEPENDENT VARIABLES
USED IN THE REGRESSION ANALYSIS

Independent Variables

Income Variables

SS$FAM   Annual social security benefits for the surviving family.

OTHINC   Income other than social security benefits and the widow's own earnings.

WAGE   The widow's hourly wage rate. If the widow did not work at the time of survey, the value of zero is assigned.

Variables Capturing the Price Effect and the Effect of Forgone Opportunity Costs

TAX   Implicit tax rate resulting from being subjected to the earnings test: 0.5, if subjected; zero, otherwise.

NUMLT18   Number of children age under 18.

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NUM1821   Number of children age 18 through 21.

NUMGE22   Number of children age 22 or older.

AGEYG77   Age of the youngest child in 1977.

Human Capital Variables

PREMAREX   Number of years of work experience before marriage to the the deceased husband.

MAREX   Number of years of work experience during marriage to the deceased husband.

POSTEX   Number of years of work experience after the death of husband.

EDUCATN   Number of years of schooling

INSCHOOL   School attendance at the time of survey: One, if in school; zero otherwise.

HEALTH   Having health problems: One, if widow assessed her health as poor; zero, otherwise.

AGE   The widow's age in 1978.

Control Variables

WHITE   Race: One, if white; zeor, otherwise.

DURATN   Number of years elapsed since the death of husband.

URBAN   Urban vs. rural residence: One, if the widow lived in an urban area: zero, otherwise.

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RD1   Region of residence: One, if the widow
           lived in the Northeastern region; zero,
           otherwise.

RD2   Region of residence: One, if the widow
           lived in the North Central region; zero,
           otherwise.

RD4   Region of residence: One, if the widow
           lived in the Western region; zero,
           otherwise

CURSD   Current marital status: One, if divorced
           or separated at the time of survey;
           zero, otherwise.

Note that South is dropped from the regression. This
means that all other regions are compared with South.

APPENDIX 2

QUESTIONS USED TO DEVELOP
THE SOCIAL SECURITY INDEX
(correct answers in parentheses)

Because of (NAME OF DECEASED)'s Social Security
coverage, your family now gets benefits. For each of the
following questions about these benefits, please answer yes,
no, or not sure.

Regarding benefits for children

1. If that child is no longer enrolled in school, would that
    child's benefits continue past the 18th birthday? (No)

2. When the youngest child receiving benefits reaches age
    18, could the widow still receive mother's benefits? (No)

3. If something happened to (one of your children/your
    child) while still young, and this child became disabled
    and couldn't work, could this child keep getting Social
    Security as an adult? (Yes)

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4. If a child marries before age 20, would his/her benefits continue? (No)

Regarding benefits for widows

1. If a widow herself remarried while her children were still young, could eligibility for her own benefits as a mother continue? (No)

2. If a widow were to remarry, would her children's benefits continue? (Yes)

3. A widow can also receive benefits when she reaches a certain age, even if she has no young children. At what age do you think you can first receive these aged widow benefits? (60)

Regarding the maximum family benefit rule

1. Is there a maximum amount Social Security will pay to a family, no matter how many family members there are? (Yes)

Regarding the earnings test

1. Can the benefits that a widow receives ever be affected by the money she receives from work? (Yes)

2. What is the maximum yearly amount a person can earn and still not affect their benefits? ($3,240 in 1978. Note: For the purpose of this study, a margin of error up to 5 percent on either side of $3,240 is allowed. Thus amounts ranging from $3,078 to $3,402 are considered to be correct responses.)