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A THEORY OF EXTRAMARITAL AFFAIRS

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by

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I. Introduction

Relationships with other people are generally an important part of a person's life. The key relationship for most adults is, of course, that with one's spouse and children. The fact that most adults are married and have children has undoubtedly been an important reason for the emphasis in the literature on the household as a basic decision unit. Because of this emphasis, little consideration has been given to the question of the allocation of a person's leisure time[1] between activities with household members and activities with non-household members. Even Becker's pioneering work on marriage [1], which as Becker points out (p. 816) does not require that different members of the household have the same preference function, concentrates on the allocation of a person's time between time spent in household activities and time spent in market activities. For many people leisure time spent with non-household members plays an important role in their lives, and it is unfortunate that this fact has received so little attention by economists.

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[1]By "leisure time" in this paper is meant any time spent in non-market activities.

The purpose of this paper is to consider the determinants of leisure time spent in one particular type of activity with non-household members: extramarital affairs. The extent of such activity is by no means small. In one of the two surveys used for the empirical work in this study 27.2 percent of the first-time-married working men and 22.9 percent of the first-time-married working women were having an extramarital affair at the time of the survey. In the other survey (of women only) 32.2 percent of the first-time-married working women had had at least one affair during their married life. Given the apparent frequency of extramarital affairs, it is of some interest to see if economic analysis can help to predict its incidence.

In Section II of this paper a model is presented that explains the allocation of a married person's time among work, spouse, and paramour. Time spent with paramour is seen to be a function of the person's wage rate, the price level, the person's nonlabor income, the time spent by the spouse in the marriage, the value of goods supplied by the spouse to the marriage, the time spent by the paramour in the affair, the value of goods supplied by the paramour to the affair, and any other variables that have an effect on the utility received from the marriage or on the utility received from the affair. Some data are available from two recent magazine surveys, conducted respectively by Psychology Today and Redbook, that can be used to test the model. The variables that were constructed from these surveys for use in this study are discussed in Section III. The results of estimating the model (by the Tobit estimator [5]) are presented and discussed in Section IV. Although the data are far from ideal for testing the model, the results presented in Section IV are generally supportive of it. The results clearly appear to be good enough

to warrant further tests of the model in the future if more data became available.

II. The Theoretical Model

Consider a married individual i deciding in a period how much time to spend with spouse (t_1), with paramour (t_2), and working (t_3). For simplicity, there is assumed to be only one possible paramour per person per period and only one type of good in existence. The utility derived by i from the spouse relationship (U_1) is postulated to be a function of t_1, of the time spent by the spouse in the relationship (t_s), of the number of units of the good consumed in the relationship (x_1), and of a vector of other variables (E_1):

$$U_1 = f(t_1, t_s, x_1, E_1) . \tag{1}$$

The vector E_1 is taken to include all variables that have an effect on U_1 other than t_1, t_s, and x_1. The function f is similar to what Becker [1] calls the household production function. Variables such as the times spent by the children in the household, which are included in Becker's household production function, are assumed here to be included in E_1.

Similarly, the utility derived by i from the affair (U_2) is postulated to be a function of t_2, of the time spent by the paramour in the affair (t_p), of the number of units of the good consumed in the affair (x_2), and of a vector of other variables (E_2):

$$U_2 = g(t_2, t_p, x_2, E_2) . \tag{2}$$

The vector E_2 is taken to include all variables that have an effect on U_2 other than t_2, t_p, and x_2. The total utility of i in the period (U) is postulated to be the sum of U_1 and U_2:

$$U = U_1 + U_2 . \tag{3}$$

The functions f and g are assumed to be strictly concave.

x_1 consists of units of the good supplied by i (x_{1i}) and of units of the good supplied by the spouse (x_{1s}):

$$x_1 = x_{1i} + x_{1s} . \tag{4}$$

Similarly, x_2 consists of units of the good supplied by i (x_{2i}) and of units of the good supplied by the paramour (x_{2p}):

$$x_2 = x_{2i} + x_{2p} . \tag{5}$$

t_1, t_2, and t_3 are assumed to sum to the total available time in the period (T):

$$T = t_1 + t_2 + t_3 . \tag{6}$$

The decision problem for i is to choose t_1, t_2, x_{1i}, and x_{2i} so as to maximize U, subject to the budget constraint:

$$w(T - t_1 - t_2) + V = p(x_{1i} + x_{2i}) , \tag{7}$$

where p is the price of the good, w is i's wage rate, and V is i's nonlabor income. The problem is also restricted in that t_1, t_2, x_{1i}, and x_{2i} cannot be negative. Taken as given for purposes of this

problem are t_s , t_p , x_{1s} , x_{2p} , p , w , V , E_1 , and E_2 . Note that the budget constraint (7) is not the household budget constraint, but is rather i's individual budget constraint. The decision problem analyzed here is an individual decision problem, not a household decision problem. Note also that the treatment of t_s and x_{1s} as exogenous means that no consideration is given to possible effects of i's decisions on the spouse's decisions. Likewise, the treatment of t_p and x_{2p} as exogenous means that no consideration is given to possible effects of i's decisions on the paramour's decisions.

The decision problem for i can be solved in the standard way by setting up the Lagrangian,

$$\mathcal{L} = U + \lambda(w(T - t_1 - t_2) + V - p(x_{1i} + x_{2i})) \quad (8)$$

and differentiating $\mathcal{L}$ with respect to the four decision variables and λ . The first order conditions are:

$$\frac{\partial f}{\partial t_1} - \lambda w = 0 \quad (9a)$$

$$\frac{\partial g}{\partial t_2} - \lambda w = 0 \quad (9b)$$

$$\frac{\partial f}{\partial x_{1i}} - \lambda p = 0 \quad (9c)$$

$$\frac{\partial g}{\partial x_{2i}} - \lambda p = 0 \quad (9d)$$

$$w(T - t_1 - t_2) + V - p(x_{1i} + x_{2i}) = 0 \quad (9e)$$

These conditions hold if the solution is an interior one; they do not necessarily hold if, for example, the optimum value of t_2 is zero.

For purposes of the rest of the discussion in this section, however, the solution is assumed to be an interior one.

The first order conditions can be interpreted in the usual way. At the optimum, the marginal utility of time spent in the marriage is equal to the marginal utility of time spent in the affair $(\partial f/\partial t_1 = \partial g/\partial t_2)$. Similarly, the marginal utility of consumption of the good in the marriage is equal to the marginal utility of consumption of the good in the affair $(\partial f/\partial x_{1i} = \partial g/\partial x_{2i})$. Finally, the marginal rate of substitution between time spent in the marriage (affair) and consumption of the good in the marriage (affair) is equal to the real wage $(\partial f/\partial t_1 \div \partial f/\partial x_{1i} = w/p$ and $\partial g/\partial t_2 \div \partial g/\partial x_{2i} = w/p)$.

The main concern of this paper is to trace the effects of changes in the various exogenous variables on t_2. This can be done by taking the total derivatives of equations (9a)-(9e) and then solving, using Cramer's Rule, for the derivative of t_2 with respect to each exogenous variable (all other exogenous variables assuming to remain unchanged). The results from this exercise will now be summarized.[2] The following discussion of signs is based on the assumption that all first derivatives of f and g are positive, that all cross partial derivatives of f and g are positive, and that all second derivatives of f and g are negative.

The determinant of the bordered Hessian is positive because of the strict concavity of f and g. The following derivatives relating to t_2 are unambiguous in sign:

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[2]The detailed calculations are available from the author upon request; space limitations prevent their presentation here.

$$(10) \qquad \frac{dt_2}{dt_s} < 0 \; ; \quad \frac{dt_2}{dx_{1s}} > 0 \; ; \quad \frac{dt_2}{dx_{2p}} > 0 \; ; \quad \frac{dt_2}{dV} > 0 \; ; \quad \frac{dt_2}{dE_1} < 0 \; .$$

The first two terms relate to the influence of the spouse on the time that i spends in the affair. The sign of the first term is as expected. If the spouse spends more time in the marriage, this increases the utility that i derives from the marriage and thus causes the time spent in the affair to fall. The reason for the sign of the second term is perhaps less obvious. If the spouse supplies more units of the good to the marriage, this causes the time spent in the affair to rise. This result holds because, from i's perspective, an increase in x_{1s} is similar to a bequest. If x_{1s} increases, i's real income increases and thus i's working time falls. This decrease in working time leaves more leisure time available <u>both</u> for the marriage and for the affair. It should be noted that since an increase in x_{1s} also increases the marginal utility that i derives from time in the marriage, the <u>relative</u> time spent in the affair versus the marriage (t_2/t_1) falls as x_{1s} increases.

The last three terms in (10) are fairly straightforward to interpret. An increase in x_{2p}, units of the good supplied by the paramour to the affair, also causes i to work less and to increase both t_2 and t_1. In this case, the relative time spent in the affair versus the marriage rises as x_{2p} increases. An increase in V, i's nonlabor income, increases both t_2 and t_1, once again by reducing working time. Finally, as one would expect, an increase in E_1, a variable that has a positive effect on the utility from the marriage, reduces t_2.

The following derivatives relating to t_2 are ambiguous in sign:

(11) $$\frac{dt_2}{dw} \; ; \; \frac{dt_2}{dp} \; ; \; \frac{dt_2}{dt_p} \; ; \; \frac{dt_2}{dE_2} \; .$$

The ambiguity of the wage effect comes from the usual ambiguity about the slope of the labor supply curve. If a backward bending supply curve is ruled out (i.e., if $dt_3/dw > 0$), then $dt_2/dw < 0$. Conversely, if $dt_3/dw < 0$, then $dt_2/dw > 0$. The ambiguity of the price effect similarly comes from the ambiguity about the slope of the labor supply curve. If $dt_3/dp < 0$, then $dt_2/dp > 0$; and if $dt_3/dp > 0$, then $dt_2/dp < 0$.

Consider now the third term in (11), the effect of the time spent by the paramour in the affair on the time spent by i in the affair. The first and most obvious effect of an increase in t_p is to increase for i the marginal rate of substitution between time spent in the affair and time spent in the marriage. This, in turn, leads to a shift in the allocation of i's leisure time toward the affair (i.e., t_2/t_1 increases). An increase in t_p also, however, affects the division of i's time between work and leisure, and it is from this effect that the ambiguity in the sign of dt_2/dt_p arises. In particular, an increase in t_p increases the marginal utility that i derives from consuming the good in the affair. This, in turn, induces some increase in working time. If this effect of a decrease in leisure time is very large, it may swamp the substitution effect and cause an overall fall in t_2. In most cases, this seems unlikely, so in general it is likely that dt_2/dt_p is positive. A similar argument holds for dt_2/dE_2; in general it is likely to be positive.

This completes the presentation of the formal model. A summary

of the model is presented in the first half of Table 2. Before concluding this section, mention should be made of three other ways that one might model behavior concerning extramarital affairs. One way would be to borrow from the literature on the economics of crime[3] and consider the decision on whether or not to have an affair to be analogous to the decision on whether or not to commit a crime. The individual in making the decision would weigh the gains from the affair against the expected loss, where the expected loss is the probability of being caught times the cost if caught. In this framework one would consider the factors that influence the gain from the affair, the factors that influence the probability of getting caught, and the factors that influence the cost if caught.

The second way would be to set the decision problem up as a multi-period optimization problem, where each period the individual would choose paths of the decision variables. The range of the paths would be from the initial period (the period in which the decision was made) to the end of the person's life. This treatment would allow one to consider in an explicit way the effects of future events (or expected future events) on current decisions. Finally, the third way would be to drop the assumption that i's decisions have no effect on the spouse's decisions and either set up the problem as a game theory problem or else postulate explicitly how i's decisions affect the spouse's decisions. In future work it may be of interest to pursue one or more of these approaches, but for present purposes the analysis is limited to the above static model.

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[3] See, for example, Becker [2].

III. The Data and Estimation Technique

It is possible from two recent magazine surveys to gather data that can be used to estimate the above model. As with much data, they are not the best that one might hope for, but they do appear to be at least of some use for present purposes. The first survey was conducted in 1969 by Psychology Today (PT). A questionnaire on sex was published in the July 1969 issue of PT, and readers were asked to mail in their answers. About 10,000 replies were received, of which about 2000 were coded onto tape. The second survey, of women only, was conducted in 1974 by Redbook (RB). A questionnaire on sex was published in the October issue of RB, and readers were asked to mail in their answers. About 100,000 replies were received, of which about 18,000 were coded onto tape. The questionnaires included questions about extramarital affairs, as well as about many other aspects of sexual behavior, and about various demographic and economic characteristics of the individual. The PT and RB questionnaires included 101 and 81 questions, respectively. The discussion of the answers to the PT survey can be found in the July 1970 issue of PT.

It should be noted that neither of these two surveys is likely to be a random sample of the U.S. population. For present purposes, however, a random sample is unnecessary. What is needed here is the condition that the samples have not been selected on the basis of the size of the dependent variables used in the estimation work. There are fortunately no strong reasons for expecting that the samples are biased in this way.

Table 1 contains a list of the variables that were constructed from the data on the two tapes. Only people who were married and married for the first time were included in the sample from each tape. People who were married but married more than once were excluded because of lack

TABLE 1

Variables Constructed from the Data on the PT and RB Tapes

PT Tape				
Question Number	Notation for Variable	Description of Variable	Values of Variable	Mean Value
75	y_{PT}	How often engaged in extramarital sexual intercourse during the past year	0 = none, 1 = once, 2 = twice, 3 = three times, 7 = four to ten times, 12 = monthly, 12 = weekly, 12 = daily	1.46
42	z_1	Sex	0 = female, 1 = male	0.476
43	z_2	Age	17.5 = under 20, 22.0 = 20 to 24, 27.0 = 25 to 29, 32.0 = 30 to 34, 37.0 = 35 to 39, 42.0 = 40 to 44, 47.0 = 45 to 49, 52.0 = 50 to 54, 57.0 = 55 or over	32.5
47	z_3	Number of years married	0.125 = 3 months or less, 0.417 = 4 to 6 months, 0.75 = 6 months to 1 year, 1.5 = 1 to 2 years, 4.0 = 3 to 5 years, 7.0 = 6 to 8 years, 10.0 = 9 to 11 years, 15.0 = 12 or more years	8.18
50	z_4	Children?	0 = no, 1 = yes	0.715
56	z_5	How religious	5 = very, 4 = somewhat, 3 = slightly, 2 = not at all, 1 = anti	3.12
60	z_6	Level of education	9.0 = grade school, 12.0 = high school graduate, 14.0 = some college, 16.0 = college graduate, 17.0 = some graduate work, 18.0 = master's degree, 20.0 = Ph.D., M.D., or other advanced degree	16.2
64	z_7	Occupation	1 to 7, according to Hollingshead classification (reverse numbering)	4.19
66	z_8	How rate marriage	5 = very happy, 4 = happier than average, 3 = average, 2 = somewh at unhappy, 1 = very unhappy	3.93

TABLE 1 (continued)

RB Tape

Question Number	Notation for Variable	Description of Variable	Values of Variable	Mean Value
	y_{RB}	Measure of time spent in extramarital affairs (= 0.0 or = $q_1 q_2 / v_3$)	0.0 to 57.6	0.705
49	q_1	If since marriage have had sexual relations with man other than husband, with how many different men	1.0 = 1, 3.5 = 2 to 5, 8.0 = 6 to 10, 12.0 = more than 10	
50	q_2	Continuing from question 49, approximate number of times had sexual relations with each man	1.0 = once, 3.5 = 2 to 5, 8.0 = 6 to 10, 12.0 = more than 10, 5.6 = it varied greatly from partner to partner	
2	v_1	How rate marriage	5 = very good, 4 = good, 3 = fair, 2 = poor, 1 = very poor	4.11
61	v_2	Age	17.5 = under 20, 22.0 = 20 to 24, 27.0 = 25 to 29, 32.0 = 30 to 34, 37.0 = 35 to 39, 42.0 = 40 or over	29.1
63	v_3	Number of years married	0.5 = less than a year, 2.5 = 1 to 4 years, 6.0 = 5 to 7 years, 9.0 = 8 to 10 years, 13.0 if more than 10 years and oldest child under 12 years of age, 16.5 if more than 10 years and oldest child between 12 and 17 years of age, 23.0 if more than 10 years and oldest child 18 years of age or over	9.01
66	v_4	Number of children	0.0 = none, 1.0 = 1, 2.0 = 2, 3.0 = 3, 4.0 = 4, 5.5 = 5 or more	1.40
70	v_5	How religious	4 = strongly, 3 = fairly, 2 = mildly, 1 = not	2.43

TABLE 1 (continued)

Question Number	Notation for Variable	Description of Variable	Values of Variable	Mean Value
72	v_6	Level of education	9.0 = grade school, 12.0 = high school, 14.0 = some college, 16.0 = college graduate, 17.0 = some graduate school, 20.0 = advanced degree	14.2
75	v_7	Occupation	6 = professional with advanced degree, 5 = managerial, administrative, business, 4 = teacher, counselor, social worker, nurse; artist, writer; technician, skilled worker; 3 = white-collar (sales, clerical, secretarial), 2 = farming, agriculture; semiskilled or unskilled worker; other, 1 = student	3.42
77	v_8	Husband's occupation	Same as v_7	3.85

of information on some of the variables for these people. The questions regarding the number of years married and the number or existence of children, for example, pertain to all marriages, and it is not possible if a person has been married more than once to determine the length of the current marriage and the number or existence of children from the current marriage. Also, only employed people were included in the sample from each tape. For unemployed people, t_3 in the above model is zero, and the solutions to their maximization problems are not interior ones. The first order conditions, therefore, do not necessarily hold for unemployed people, and so these people must be excluded from the samples. Also excluded from the samples were people who failed to answer all of the relevant questions. The size of the useable sample from the PT tape was 601 observations, and the size of the useable sample from the RB tape was 6366 observations.

Table 1 is fairly self explanatory, and only a few remarks about it will be presented here. In the column "Values of Variable" the items to the right of the equal signs are the answers that were allowed on the questionnaires. The number to the left of each equal sign is the value chosen by the author to represent that answer. A number of questions were open-ended in the upper range, and fairly arbitrary values for the largest value of the variables had to be used in these cases (see z_2, z_3, v_2, v_3, and v_4). The 5.6 value used for the last answer pertaining to q_2 is the average of values of the other answers weighted by the number of people who chose each answer.

The largest value of y_{PT} was taken to be 12, even though larger values could have been used for people who answered that they engaged in extramarital sexual intercourse weekly or daily. This means that t_2

was assumed to be the same for monthly, weekly, and daily people. As discussed below, a linear specification was used for the estimated equation, and it did not seem reasonable in this case, given the range of values of the explanatory variables, to have a dependent variable that ranged from, say, 0 to 365.

The RB questionnaire did not ask if the person was currently having an affair, and y_{RB} as defined in Table 1 was the best that could be done regarding a measure of t_2. The implicit assumption here in the use of y_{RB} as a measure of t_2 is that the current value of t_2 is highly correlated with past values of t_2. The occupation variable z_7 was coded onto the tape according to the Hollingshead classification [4], a classification that is meant to correspond in at least some rough way to social position.

Table 1 includes all variables from the two tapes that appeared to be relevant for purposes of this study.[4] Table 2 contains a matching of these variables with the variables from the theoretical model. The first half of Table 2 contains a list of the explanatory variables in the theoretical model and their expected effects on t_2. The second half of the table contains a list of the observed explanatory variables, their likely correlation with the explanatory variables in the theoretical model, and then their likely effects on the dependent variable. The following is a brief discussion of the second half of Table 2.

The occupation variables (v_7 and z_7) are likely to be posi-

[4] Both surveys included a question about the size of family income, but this variable is unfortunately of no use here. Family income is, among other things, a function of t_3, which is itself a decision variable ($t_3 = T - t_1 - t_2$). It would be inappropriate to use as an explanatory variable for t_2 a variable that is directly related to t_3 in this way.

TABLE 2

Matching of the Variables in the Theoretical Model with Observed Variables

Theoretical Model

Dependent variable: t_2 = time spent in affair

Explanatory variables:

Variable	Effect on t_2
t_s = time spent by spouse in marriage	-
x_{1s} = number of units of the good supplied by the spouse to the marriage	+
x_{2p} = number of units of the good supplied by the paramour to the affair	+
V = nonlabor income	+
E_1 = any variable that has a positive effect on the utility from the marriage	-
P = price of the good	ambiguous
w = wage rate	ambiguous
t_p = time spent by paramour in affair	ambiguous, but likely to be +
E_2 = any variable that has a positive effect on the utility from the affair	ambiguous, but likely to be +

TABLE 2 (continued)

Empirical Work

Observed dependent variables: y_{PT} and y_{RB} (see Table 1)

Observed explanatory variables:

Variable			Likely to be Correlated With (sign)	Likely Effect on Dependent Variable
PT	RB			
z_7	v_7	Occupation	w (+)	ambiguous
z_6	v_6	Education	w (+)	ambiguous
	v_8	Husband's Occupation	x_{1s} (+)	+
z_8	v_1	Marital Happiness	E_1 (+)	-
z_2	v_2	Age	E_2 (-) [or none]	ambiguous, but likely to be - [or none]
z_3	v_3	Number of Years Married	E_1 (-) [or none]	+ [or none]
z_4	v_4	Children	E_1 (+) [or none]	- [or none]
z_5	v_5	Degree of Religiosity	E_2 (-)	ambiguous, but likely to be -
z_1		Sex	none	none

tively correlated with the wage rate (w) . The correlation may not, however, be very large for z_7 , since the Hollingshead classification used in the coding of the variable is more a classification by social position than it is by wage rate. Even if z_7 and v_7 are positively correlated with w , their effect on the dependent variables is ambiguous because the effect of w on t_2 is ambiguous. The effect of the education variables (z_6 and v_6) on the dependent variables is likewise ambiguous, even though z_6 and v_6 are likely to be positively correlated with w .

With respect to the husband's occupation variable (v_8) , to the extent that it is positively correlated with the husband's wage rate, it is likely to be positively correlated with x_{1s} , the value of goods supplied by the husband to the marriage. The effect of v_8 on the dependent variable is thus expected to be positive.

The variables z_8 and v_1 measure marital happiness, which in the present context means that they are positively correlated with E_1 . They are thus expected to have a negative effect on the dependent variables. These two variables are quite unusual and useful variables to have in a study of this kind. There are clearly many factors that have an effect on the utility from a marriage that are not observed, and variables like z_8 and v_1 are likely to capture the effects of a number of these factors.

If age has a negative effect on the enjoyment of sexual activity, something which may or may not be true, and if affairs are primarily sexual, then age will have a negative effect on the utility from an affair. The age variables (z_2 and v_2) may thus be negatively correlated with E_2 , in which case they are likely to have a negative effect on the dependent variables. If the number of years married has a negative effect on the

utility from the marriage because of boredom, something which again may or may not be true, then the variables z_3 and v_3 will be negatively correlated with E_1 and will thus have a positive effect on the dependent variables. If the existence or number of children has a positive effect on the utility from the marriage because of time spent by the children in the household, then the variables z_4 and v_4 will be positively correlated with E_1 and will thus have a negative effect on the dependent variables.

The degree of religiosity of a person may have a negative effect on the utility from an affair to the extent that it is related to concerns about divine or moral disapprobations from engaging in an affair. The religious variables z_5 and v_5 may thus be negatively correlated with E_2, and if they are, they are then likely to have a negative effect on the dependent variables.[5] The last variable in Table 2, the sex of the person (z_1), is not expected from the theoretical model to have any effect on t_2. No behavioral differences between men and women were postulated in the model; i in Section II can be either a man or a woman.

This completes the discussion of Table 2. While it would be useful to have access to more data, the data from the two tapes do allow enough variables to be constructed to provide at least a rudimentary test of the model. The last item to be discussed in this section is the estimation technique used.

When the dependent variable t_2 is zero, the first order condi-

[5] If, as discussed at the end of Section II, the person's decision problem were set up as a multiperiod optimization problem, the effects of concern about divine or moral disapprobations could be handled in a more explicit way. In this framework, the person could be considered as weighing the current utility from the affair against possible loss of utility in the future (perhaps in a future life) from divine or moral disapprobations.

tions do not necessarily hold. Because of this and because many values of y_{PT} and y_{RB} are zero, it would clearly be incorrect to use ordinary least squares to estimate the equations. The obvious technique to use in this case is the Tobit estimator [5]. Let $\bar{z}_i$ and $\bar{v}_i$ denote row vectors of observations on the explanatory variables for individual i from the PT and RB tapes, respectively. Let α and β denote the corresponding column vectors of unknown coefficients. The stochastic specification of the model is then:

$$(12a) \qquad \begin{aligned} y_{PTi} &= \bar{z}_i\alpha + u_{PTi} \quad \text{if} \quad RHS > 0 \\ &= 0 \qquad\qquad\quad \text{if} \quad RHS \leq 0 \end{aligned} \quad , \quad i = 1, 2, \ldots, 601 ,$$

$$(12b) \qquad \begin{aligned} y_{RBi} &= \bar{v}_i\beta + u_{RBi} \quad \text{if} \quad RHS > 0 \\ &= 0 \qquad\qquad\quad \text{if} \quad RHS \leq 0 \end{aligned} \quad , \quad i = 1, 2, \ldots, 6366 ,$$

where u_{PTi} is an independently distributed error term with distribution $N(0, \sigma^2_{PT})$, and similarly for u_{RBi}. This specification is consistent with the theoretical model in the sense that the variables in $\bar{z}_i$ and $\bar{v}_i$ have an effect on y_{PTi} and y_{RBi} if the latter two are nonzero (no corner solutions), but not otherwise.

Tobit estimates are generally computed by some version of Newton's method, but with 6366 observations this can be quite expensive. Tobit estimates can, however, as discussed in Fair [3], be computed by a much simpler procedure, and this is the procedure that was used for the work in this study. Some initial experimentation indicated that considerable computer time could be saved by the use of this procedure over Newton's method.

IV. The Results

The results of estimating equations (12a) and (12b) by the Tobit estimator are presented in Table 3. Two sets of coefficient estimates are presented for each equation. For the first set all of the z_j or v_j variables in Table 1 were used as explanatory variables; for the second set some of these variables were excluded.

The PT and RB results are in fairly close agreement. Variables that are clearly significant[6] are marital happiness (-), age (-), number of years married (+), and degree of religiosity (-). The signs of the coefficient estimates are as expected from Table 2. The sex dummy variable, z_1, is not significant, which is also as expected from the discussion in the previous section. The fact that the coefficient estimates of age and length of marriage are significantly negative and positive, respectively, is interpreted from the theory to mean that utility from affairs declines with age and that utility from marriage declines with length of marriage. The negative significance of the religiosity variable means from the theory that utility from affairs declines with the degree of religiosity of the person. Finally, the high negative significance of the marital happiness variable indicates that it is a good proxy for a number of unobserved factors that have an effect on the utility from marriage.

The results regarding the occupation and education variables are mixed. For the PT results neither variable is significant. For the RB

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[6] In what follows a variable will be said to be "significant" if its t-statistic in Table 3 is greater than 1.65 in absolute value, 1.65 being the critical value of the t distribution with infinite degrees of freedom at the 95 percent confidence level for a one-tailed test.

TABLE 3

The Results

		PT Data (y_{PT} is dependent variable)					RB Data (y_{RB} is dependent variable)			
		Coeff. Est.	t-stat.	Coeff. Est.	t-stat.		Coeff. Est.	t-stat.	Coeff. Est.	t-stat.
Constant		7.60	1.92	8.17	2.96		7.85	11.10	7.18	11.39
Occupation	z_7	0.213	0.67	0.326	1.29	v_7	0.314	3.77	0.255	3.30
Education	z_6	0.0252	0.11			v_6	-0.0853	-2.24		
Husband's Occupation						v_8	0.0151	0.27		
Marital Happiness	z_8	-2.27	-5.48	-2.28	-5.61	v_1	-1.53	-20.68	-1.53	-20.82
Age	z_2	-0.193	-2.37	-0.179	-2.26	v_2	-0.107	-4.24	-0.120	-4.91
Number of Years Married	z_3	0.533	3.63	0.554	4.13	v_3	0.130	4.82	0.140	6.11
Children	z_4	1.02	0.79			v_4	-0.0285	-0.36		
Degree of Religiosity	z_5	-1.70	-4.15	-1.69	-4.14	v_5	-0.944	-11.03	-0.950	-11.14
Sex	z_1	0.945	0.88							
	$\hat{\sigma}^2_{PT}$	8.26		8.25		$\hat{\sigma}^2_{RB}$	4.50		4.50	
No. of Observations		601 (150 nonzero)		601 (150 nonzero)			6366 (2053 nonzero)		6366 (2053 nonzero)	

Note: "t-stat." = ratio of coefficient estimate to estimated standard error of coefficient estimate.

results the estimates of the coefficients of the two variables are significant but of opposite signs, which is not as expected if both variables are positively correlated with the wage rate. The occupation variable had a higher t-statistic associated with it than did the education variable in each case in Table 3, and so for the second set of estimates in each case the education variable was excluded from the equation. In both cases the sign of the estimate of the coefficient of the occupation variable is positive, which if the variable is a proxy for the wage rate implies from the analysis in Section II that the wage rate has a negative effect on hours worked (i.e., that the labor supply schedule is backward bending). It is not clear, however, that much confidence should be placed on this result because of the overall mixed results regarding the occupation and education variables. It may be that neither variable is a good proxy for the wage rate.

For the RB results the estimate of the coefficient of the husband's occupation variable is of the expected positive sign, but it is not significant. It may also be that this variable is not a good proxy for the husband's wage rate (and thus for the value of goods supplied by the husband to the marriage), which would explain its lack of significance. For both the PT and RB results the children variable is insignificant. This means from the theory that children have no independent effect on the utility from the marriage. Any positive effects of children must be offset by a sufficient number of negative ones. This is not necessarily as expected, but it does seem to be what both the PT and RB data indicate.

This completes the discussion of the results in Table 3. Although the data are far from ideal for testing the theoretical model proposed

in this paper, the results in Table 3 do lend some support to it. It is clear for any future tests of the model that better data on wage rates are needed. A better test of the model could also be performed if data on nonlabor income were available. The results so far, however, are encouraging regarding the ability of economic analysis to help predict the incidence of extramarital affairs and, perhaps, by implication, other leisure time activities with non-household members.

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