

## **Smoking, Wealth Accumulation and the Propensity to Plan\***

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### **Abstract**

We investigate the relationship between wealth, smoking, and individual propensities to plan. Planning propensity affects wealth but not smoking, suggesting that planning is not an all-purpose skill. Financial planning may draw on different abilities than those that facilitate smoking cessation.

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## **I. Introduction**

The decision to quit smoking is both common and consequential for health, even at older ages. At least 30% of smokers attempt to quit annually (Fiore et al. 1990; Hughes et al. 1992); and even those who quit smoking at age 65 will gain, on average, 2-3 years in life expectancy (Taylor et al. 2002). Given the numbers trying to quit, and the benefits from quitting, it is important to understand better what determines which smokers stop smoking.

Economists would typically attribute variation in smoking among otherwise similar people to differences in unobserved tastes such as risk or time preferences. Recent research suggests, however, that the propensity to plan for the future may be important in determining choices, like the decision to quit smoking, that involve immediate costs and delayed rewards. Ameriks, Caplin and Leahy (2003, hereafter ACL) regressed an individual's wealth holdings on a measure of the time s/he spends making financial plans to estimate the effect of planning on asset accumulation. The problems of reverse causation (someone with more wealth may have more incentive to make plans) and omitted variables (those who plan may have unobserved characteristics correlated with wealth) were addressed by instrumenting for financial planning with, most importantly, a measure of time spent planning vacations.<sup>1</sup> The results in ACL indicate that financial planning has an economically important association with wealth levels, and can explain variation in wealth that leading theories cannot.

If planning skills influence saving decisions then they may affect other decisions, like the choice to quit smoking, which also involve intertemporal trade-offs. In this letter, we pursue two goals. First, we investigate the robustness of ACL's results about wealth and planning by replicating their analysis on a different sample. Second, we explore whether the

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<sup>1</sup> In the sample of education professionals used by ACL, this measure was well correlated with financial planning but little correlated with logical determinants of wealth.

benefits of planning extend to the smoking decision. Using the same IV strategy, we estimate the relationship between time spent planning smoking behavior and actual smoking behavior.

Our analysis provides qualified evidence that ACL's findings are robust to a change in the population sampled. In our data on approximately 600 older Americans from three cities, instrumenting for time spent on financial plans with both time spent on vacation plans and numerical ability indicates that financial planning has an economically important association with wealth levels, though this relationship is significant at only the 9% level. We also find, however, that while time spent on financial plans is well correlated with time spent on vacation plans, neither is well correlated with time spent planning smoking. As a result, vacation planning is a weak instrument for smoking planning smoking; our point estimates of the effect of planning on smoking are negative, but imprecisely estimated.

We interpret this latter set of findings to suggest that the propensity to plan is not an all-purpose skill. Financial and vacation planning may draw on similar skills, while making plans about smoking may require different abilities and draw on different motivations.<sup>2</sup> If, for example, opportunities for excess spending occur in limited and predictable circumstances and are not very tempting, it may be relatively straightforward to make and execute plans to avoid those circumstances. If, on the other hand, opportunities to smoke are unpredictable, common and tempting, the skills required to set and attain goals to avoid them may be much greater or different. Moreover, the skills useful for resisting the temptation to smoke caused by nicotine addiction may be qualitatively different from those that help individuals resist short-sighted purchases. Our understanding of the determinants of the decision to quit

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<sup>2</sup> See Gollwitzer (1999) for a review of evidence from psychology on the factors which appear to influence the ability to set and achieve goals.

smoking would therefore be improved by further research on the variety of planning skills and their interaction with successful setting and achievement of goals.

## **II. Methods**

### **II.A. Data**

The Survey on Smoking (SOS) was conducted for our research from October 2004-January 2005 at three sites: Durham, North Carolina, St. Louis, Missouri, and Seattle, Washington. There were three interviews, a telephone screener to determine age eligibility and smoking status, a second longer telephone interview, and an in-person computer-assisted interview. All information used in this paper came from the screener and longer telephone interview. The SOS sample consisted of adults aged 50-70 at the interview date. Since much of the survey dealt with smoking status, current smokers were oversampled. The analysis sample consisted of 663 individuals, 252 current, 257 former, and 154 never smokers. The response rate for the longer telephone interview was approximately 80%.

### **II.B. Specification**

To determine whether the ACL results can be replicated in the SOS sample, we first estimate specifications from ACL with a few exceptions noted below. The dependent variable for the wealth analysis is the log of net household wealth. In the SOS, wealth information is collected in categories. We converted these categorical responses to a dollar value using the mid-points for all but the bottom and top categories. For the bottom category (<\$0), we set wealth at \$1 to avoid taking the log of a negative value.<sup>3</sup> For the top category (>\$1 million), we used a value of \$3 million.

The key explanatory variable is financial planning. The SOS asked for extent of agreement with the following statement: “I have spent a great deal of time developing a

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<sup>3</sup> Only 3.4% of the SOS sample reported negative net worth. 12.6% reported net worth between \$0 and \$35,000.

financial plan.” The six possible responses are coded from a low of 1 for disagree strongly to 6 for agree strongly. Other explanatory variables are age and its square, gender, education, which falls in two categories to match ACL as closely as possible, college or less and more than college, and marital status—currently, previously, and never married.

As ACL recognized, financial planning may be simultaneously determined with wealth. To account for this endogeneity, we follow ACL and use vacation planning and numerical ability as instrumental variables. The SOS asked: “Before going on a vacation, I spend a great deal of time examining where I would most like to go and what I would like to do.” Response categories and variable construction are the same as for financial planning. Our measure of numerical ability derives from answers to five questions on the SOS;<sup>4</sup> each person is given a point for each correct answer (range: 0-5).

Our second step is to evaluate whether the propensity to plan, as captured by ACL, influences smoking decisions. The dependent variables are alternatively: (1) number of cigarettes smoked daily; and (2) number of cigarettes the person thinks s/he will smoke per day two years from the interview date. Current cigarette consumption ranges from 5 to 40 cigarettes a day for current smokers, and the predicted cigarette consumption in two years ranges from 0 to 50 for current smokers. For former smokers, current consumption is zero cigarettes, and we assume that former smokers think they will not smoke two years from the interview date. Never smokers are excluded from the analysis of smoking behavior.

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<sup>4</sup>(1) “If the chance of getting a disease is 10%, how many people out of 1,000 would be expected to get the disease?”(2) “If 5 people all have the winning numbers in the lottery and the prize is two million dollars, how much will each of them get?” (3) “Let’s say you have \$200 in a savings account. The account earns 10 percent interest per year. How much would you have in the account at the end of one year?” (4) “Please try to count backwards out loud as quickly as you can from the number I will give you” (respondent given number 20). And (5) “One hundred minus 7 equals what?”

The main explanatory variable is an index of smoking planning. This index is constructed from answers to two questions. Current smokers were asked to respond to the statements: (1) “I have spent a great deal of time thinking about how much I will be smoking during the daytime;” (2) “I have spent a lot of time thinking about when and how I will quit smoking.” Former smokers were asked: (1) “Before I quit the last time, I had spent a great deal of time thinking about when, where, and how much I would smoke during the daytime;” and (2) “Before I quit the last time, I had spent a lot of time thinking about when and how I would quit smoking.” The SOS allowed six response categories ranging from “disagree strongly” to “agree strongly.” Our index of smoking planning has three values: 1 if the respondent disagrees with both statements; 3 if the respondent agrees with both statements; and 2 if s/he disagrees with one and agrees with the other statement. We combine “disagree strongly, disagree and disagree somewhat” into a single category “disagree;” those with some form of agreement with the statements are treated analogously. In analysis not presented in the regression tables, we use an alternative index of smoking planning, termed “smoking planning total” which sums responses to the two smoking planning questions. This index ranges from 2 to 12 with 2 indicating “strongly disagree” with both statements and 12 indicating “strongly agree” with both statements.

## **II.C. Estimation**

We use two dependent variables in the estimation, (i) current cigarette consumption and (ii) self-assessed cigarette consumption in two years. There is a concentration of values at the lower limit of both smoking variables: current daily consumption (50.5%); and smoking in two years (74.0%). To account for the endogeneity of planning we use two estimation strategies, (i) two-stage least squares (2SLS), like ACL, and (ii) a generalized

methods of moment (GMM) estimator appropriate for dependent variables that are counts (see Mullahy 1997 for details). For instrumental variables, we use the following pairs separately, vacation planning and numerical ability (which are similar to the IVs used by ACL),<sup>5</sup> and financial planning and numerical ability.

### III. Results

Means and standard deviations of relevant variables are in Table 1. SOS respondents were, on average, less educated than those in ACL's data.<sup>6</sup> The correlation between "smoking planning type" and "smoking planning total" is 0.91. We therefore restrict analysis to the former. The correlation between vacation and smoking planning is a statistically significant 0.36. However all other pairwise correlations between the planning variables are, while positive, less than a third as large, suggesting that planning is domain-specific.

As ACL found, OLS estimates (Table 2) indicate that those who do more financial planning have higher net worth, as do those with higher numerical ability and higher education. Married households had higher net worth. Age has no effect. In the OLS analysis, smoking planning type has a statistically significant association with anticipated cigarette consumption; although negative, the coefficient on smoking planning type in the analysis of current consumption is not quite statistically significant at conventional levels ( $p=0.065$ ). Less educated persons smoke more.

Using 2SLS, the coefficient for financial planning in the wealth analysis is positive but not statistically significant ( $p=0.086$ ) (Table 3). ACL obtained a positive and slightly more precisely estimated coefficient on this variable in their analysis ( $p=0.035$ ). Their

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<sup>5</sup> Their IVs were vacation planning and confidence in one's mathematical ability.

<sup>6</sup> ACL used data from two surveys of a sample of TIAA-CREF participants fielded in 2000 and 2001.

coefficient was 0.324 while ours is 0.210. In the analysis of smoking, using either GMM or 2SLS, smoking planning type has no effect on current or anticipated cigarette consumption. In all cases, the associated standard errors exceed their respective coefficients.

As in ACL, vacation planning is a statistically significant predictor of financial planning (Table 4). Financial planning is also a significant predictor of smoking planning, but vacation planning is unrelated to smoking planning.

#### **IV. Conclusion**

Our results have two primary implications. First, we find qualified evidence that the positive relationship between the propensity to plan and financial wealth in ACL is robust to a change in the population sampled. Second, our findings that (i) while the propensity to plan may explain wealth accumulation it does not explain smoking decisions, and (ii) the planning of smoking decisions is not correlated with vacation planning and has a small correlation with financial planning, suggest that the propensity to plan is multidimensional. Individuals who plan more about finance and vacations (both perhaps coded as money matters, while smoking is not<sup>7</sup>) do not smoke less in the current period; nor are there differences in anticipated levels of smoking two years hence.

There is evidence that most quit attempts are unplanned and made for health reasons (Larabie 2005). We find similar evidence in the SOS.<sup>8</sup> Taken together, our findings suggest that encouraging smokers to plan is neither productive in increasing quits nor, as some have suggested, counterproductive in leading smokers to defer quitting.

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<sup>7</sup> Consumers may underestimate total expenditure on many small cigarette purchases and therefore not see it as an important financial choice (Gourville 1998).

<sup>8</sup> The SOS asked former smokers, “Think about the last time you quit. In a sentence or two, what is the main reason you quit?” Responses were (percentages in parentheses): health problems occurred (44.4), to avoid health problems (13.6), because of family or family request (11.3), just decided to quit/no reason (5.8), financial (3.89), family or friend had health problems/died (3.89).

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**Table 1. Summary Statistics**

Variables	Mean	Std. Dev.
Smoking status		
Current smoker	0.380	0.486
Former smoker	0.388	0.488
Never smoker	0.232	0.423
Demographic characteristics		
Age	59.620	5.823
Non Hispanic white	0.863	0.344
Male	0.357	0.479
Married	0.587	0.493
College or less	0.848	0.359
Net Worth (\$1,000)	399.440	680.235
Numerical ability	3.789	1.248
Planning variables		
Financial planning	3.714	1.572
Vacation planning	3.788	1.624
Smoking planning type	1.735	0.792
Smoking planning total	5.962	2.905
Number of observations	663	

**Table 2. OLS Regression Results**

Variables	Net worth		Current cigarette consumption		Anticipated cigarette consumption in two years	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Financial planning	0.185**	0.041				
Smoking planning type			-1.131	0.611	-2.031**	0.500
Numerical ability	0.350**	0.052	-0.285	0.412	0.179	0.344
Age	-0.020	0.202	-0.534	1.924	0.336	1.755
Age <sup>2</sup>	0.000	0.002	0.004	0.016	-0.003	0.015
Male	-0.041	0.124	-1.707	1.092	-1.258	0.960
College or less	-0.521**	0.160	3.811**	1.347	1.838	1.098
Prev. married	-0.829**	0.133	1.046	1.113	1.282	0.989
Never married	-0.819**	0.252	0.815	1.859	2.178	1.786
Constant	4.645	6.017	25.048	57.601	-4.982	52.080
N	588		497		474	
R <sup>2</sup>	0.217		0.030		0.039	

\* significant at 5% level ; \*\* significant at 1% level.

**Table 3. Second Stage Results of IV Regression**

Variables	2SLS		GMM								2SLS							
	Net worth		Current cigarette consumption				Anticipated cigarette consumption in two years				Current cigarette consumption				Anticipated cigarette consumption in two years			
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Financial planning	0.210	0.122																
Smoking planning (IV1) <sup>§</sup>			-1.144	1.695			-0.721	1.646			-6.293	6.446			-3.167	4.955		
Smoking planning (IV2) <sup>§§</sup>					-0.603	1.312			0.528	2.198			-2.845	9.867			6.255	11.395
Age	-0.041	0.223	0.011	0.241	0.006	0.233	0.063	0.347	0.037	0.403	-0.398	2.054	-0.311	1.957	0.400	1.758	0.210	2.073
Age <sup>2</sup>	0.000	0.002	0.0001	0.002	0.0001	0.002	-0.001	0.003	0.0002	0.003	0.003	0.017	0.002	0.016	-0.003	0.015	-0.001	0.017
Male	-0.008	0.130	-0.284	0.172	-0.228	0.167	-0.286	0.247	-0.168	0.357	-2.299	1.353	-1.797	1.409	-1.335	1.113	-0.422	1.554
College or below	-0.700**	0.158	0.671	0.257**	0.625	0.265*	0.445	0.328	0.294	0.433	4.525**	1.483	4.126*	1.667	1.883	1.231	0.729	1.975
Prev. married	-0.866**	0.137	0.167	0.145	0.129	0.137	0.256	0.205	0.202	0.266	1.546	1.287	1.029	1.343	1.325	1.036	0.701	1.427
Never married	-0.909**	0.262	0.271	0.292	0.195	0.313	0.511	0.408	0.150	0.719	2.333	2.463	1.365	3.266	2.464	2.090	-0.446	4.093
Constant	6.707	6.533	2.948	6.900	2.451	6.609	0.170	9.919	-1.181	12.738	28.199	62.193	20.087	58.666	-4.157	51.821	-14.802	62.050
N	580		496		492		473		469		496		492		473		469	

\* significant at 5% level ; \*\* significant at 1% level.

§ The instrumental variables are financial planning and numerical ability.

§§ The instrumental variables are vacation planning and numerical ability.

**Table 4. First Stage Results of 2SLS**

Variables	Financial planning		Smoking planning; second stage dependent variable is current cigarette consumption				Smoking planning; second stage dependent variable is anticipated future cigarette consumption			
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Vacation planning	0.325**	0.040			0.032	0.021			0.028	0.022
Financial planning			0.055*	0.022			0.059**	0.023		
Numerical ability	0.033	0.051	0.001	0.029	0.001	0.030	-0.001	0.030	-0.002	0.031
Age	0.187	0.233	0.016	0.131	0.021	0.132	0.004	0.135	0.010	0.136
Age <sup>2</sup>	-0.002	0.002	0.0001	0.001	0.0002	0.001	0.000	0.001	0.000	0.001
Male	0.119	0.134	-0.105	0.074	-0.100	0.074	-0.102	0.076	-0.100	0.077
College or below	-0.104	0.169	0.132	0.115	0.116	0.113	0.144	0.117	0.124	0.114
Prev. married	-0.229	0.135	0.101	0.078	0.079	0.079	0.093	0.081	0.068	0.082
Never married	0.149	0.260	0.265	0.145	0.276	0.142	0.301*	0.152	0.309*	0.149
Constant	-2.730	6.929	0.932	3.936	0.888	3.954	1.317	4.052	1.301	4.067
N	580		496		492		473		469	
Partial R <sup>2</sup>	0.113		0.012		0.004		0.014		0.003	

\* significant at 5% level ; \*\* significant at 1% level.