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month period, the independent variables tend to be more strongly associated with purchase probabilities than with purchases simply because the former are more smoothly distributed.

The reason that the independent variables are more closely related to twenty-four-month purchase probabilities than to probabilities for shorter periods of time can probably be attributed to the conservative bias discussed earlier. For the most part, this bias has the form that many respondents misclassify themselves in the distribution of six-month probabilities, putting themselves at zero when they "should" be elsewhere. Although the true six-month probabilities of some households are doubtless scaled less accurately by the twenty-four-month question than by the six-month one, the twenty-four-month one turns out empirically to be better on balance.

Finally, the results strengthen the earlier conclusion that purchase probabilities are apt to be a better time-series predictor of purchase rates than are buying intentions. The basic factors that exert a systematic influence on purchases are presumably actual and prospective changes in financial variables—especially the latter. All seven independent variables in Table 12 measure these kinds of changes either directly or indirectly, and the probability variable combines the influence of the underlying factors into a single number that reflects their relative importance to each household.[31]

The probability variable is much more strongly related to purchases than is any combination of the underlying financial variables because probability is not only affected by these systematic variables but also by a whole host of variables that are idiosyncratic to each household. But the systematic factors will be differently distributed over time, and will cause systematic changes in the distribution of probabilities and in subsequent purchase rates, while the purely idiosyncratic factors will be distributed at random (by definition) and hence will have no systematic influence on either the probability distribution or the subsequent purchase rate.

It turns out that the systematic factors in Table 12 are more closely related to the probability variables than to any of the buying intentions variables.[32] I infer that probability is likely to be a much better predictor of future purchase rates than buying intentions because it is much more strongly related to the underlying variables that actually determine purchase rates.

CONCLUDING REMARKS

One important question that cannot yet be answered concerns the role of disturbances in the relation betwen ex-post purchase behavior and ex-ante purchase probability. The evidence suggests that such disturbances were of little or no consequence during the period examined in this study. Households reporting disturbances of various kinds (intervening events, in the terminology used above) behaved in much the same way as other households. It may be that

[31] See *Anticipations and Purchases*, especially Ch. 5.

[32] There are of course a number of different buying intentions variables that might be used. I tried several combinations (definitely, probably, or may buy =1, all other households =0; any intention =1, all other households =0; definitely will buy =1, all other households =0; and definitely will buy =5, probably will buy =4, . . . , don't know =1, no =0), but none come close to explaining as much variance as the weakest of the three probability variables.

the relation between disturbances and behavior in a cross-section depends on the frequency of the former, and that the above findings reflect the relatively low frequency of disturbances during this particular forecast period. For example, it is quite possible that part of the measured incidence of disturbances in a cross-section analysis is simply a reflection of personality and taste differences among households: those who report unexpected increases or decreases in income may include many respondents to whom changes of any sort are always "unexpected," and thus the real situation of these households may not differ from that of others that do not report disturbances.

During periods when the frequency of disturbances is normal, the observed relationships may thus be mainly a reflection of differences in personality rather than in economic circumstances. The first type of difference, since it is stable over time and has no relation to actual behavior, is uninteresting for analysis of time-series movements. When disturbances are widespread, however (as during cyclical peaks or troughs when expectations are less likely to coincide with outcomes), they might show a much stronger influence on the cross-section relation between ex-ante probabilities and ex-post purchases, and their impact would then of course be observable in changes over time.

Another question concerns the optimum form of a probability survey. Although the experiment reported in this paper was successful, in the sense that the probability statements obtained from households turned out to be better predictors than the intentions statements, it is by no means clear that the experimental design used here is the best way to obtain the former. Cost considerations played a determining role in the general structure of the QSI experiment. The existing QSI is approximately a seven-minute interview; hence the requirement of a short and simple set of questions was imposed on the experimental design, since average time per interview was being held roughly constant. One consequence of this limitation is that use of a self-enumerating scale becomes almost mandatory, since a more roundabout approach through a sequence of questions would consume too much time.

A further limitation on the experiment is that few supplementary data were obtained. There is much to be said, in my view, for the proposition that probability judgments would be sharpened by making the household explicitly aware of all the considerations that ought to have some relevance to purchase prospects. Thus a survey which, prior to asking about probabilities, contains questions on the households' income, income prospects, asset holdings, stocks of durables, repair experiences on durable stock, actual and prospective labor market participation, etc., may obtain more accurate judgments than a survey which does not.

It is an interesting question whether the adjectival descriptions contained on the QSI experimental scale helped or hindered—or had any effect at all. It seems probable that the typical respondent underestimated purchase probability in the QSI experiment. Whether this is inherent in any survey of subjective purchase probabilities or whether it is associated with the particular set of adjectives used to describe scale points in this experiment are questions in need of empirical answers.

Tests now being conducted at the Census Bureau relate to several hypotheses

that seem worth investigation on the basis of existing results. These hypotheses are:

1. That probability judgments are more accurate if questions designed to make the respondent explicitly aware of the considerations underlying such judgments are asked first.

2. That adjectival scale descriptions reduce the accuracy of probability judgments, hence a scale with only quantitative descriptions (10 in 100) is better than one which includes adjectives (slight possibility) as well as numbers.

3. That purchase prospects for household durables will be more accurately described by an aggregate amount representing the "expected value" of future expenditures than by the sum of a set of probability judgments relating to specific items.

Preliminary results indicate that the first of these three hypotheses may have validity for middle- and lower-income families but apparently not for high-income ones, that the second is probably valid, and that the third may or may not be valid. More evidence is needed before firm judgment can be made about any of these hypotheses.