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JOB LOSS EXPECTATIONS, REALIZATIONS, AND HOUSEHOLD CONSUMPTION BEHAVIOR

Melvin Stephens, Jr.*

Abstract—Although the theoretical importance of expectations in decision-making is well known to economists, only a few empirical papers investigate the impact of individual subjective expectations on economic outcomes. This paper examines the link between expectations of future job losses and the subsequent impact that these expectations have on household consumption behavior. The first part of the paper documents the empirical relationship between job loss expectations and subsequent job losses. Subjective job loss expectations have significant predictive power in explaining future job losses even when standard demographic information known to be associated with the prevalence of job displacement is included in the analysis. Furthermore, higher subjective job loss probabilities are correlated with an increased expectation of future earnings declines. Overall, these results indicate that the variable for subjective job loss expectations is a meaningful predictor of subsequent displacement. Since a job displacement results in large and persistent earnings losses, job loss expectations should have an important impact on household consumption smoothing following a job loss. The second part of the paper finds that although a job loss significantly reduces household consumption, there is little evidence that the degree to which households anticipate job losses reduces the impact of displacement on consumption. Alternative models of interpreting responses to expectations questions and of household consumption behavior that may explain these results are discussed.

I. Introduction

THE belief that expectations of future outcomes weigh heavily in agents' decisions plays an important role in modeling economic behaviors. For example, many of the recent advancements made in understanding household consumption and savings decisions have focused on the role played by earnings uncertainty and households' optimal responses in the presence of such future variability (Kimball, 1990; Deaton, 1991; Carroll, 1992). The majority of the progress in this literature has been due to either theoretical innovations or the use of dynamic simulations. Some empirical studies have analyzed the degree to which households adjust their behavior in the face of uncertainty (for example, Skinner, 1988). These analyses, however, have been forced to estimate individual expectations, because such measures are typically unavailable.

In recent years there have been increased efforts to collect individual expectations information in large-scale surveys in order to evaluate the role of expectations in decision-making. The limited empirical literature comparing expectations and realizations of outcomes has examined such topics as the relationship between income expectations and realized income (Dominitz, 1998) and the relationship between subjective survival probabilities and subsequent mortality (Hurd & McGarry, 1997; Smith, Taylor, & Sloan, 2001). These studies find that the subjective measures have significant predictive power even when other information available to the econometrician (and presumably to the individual) is included in the analysis. Therefore, the prospects for using these variables in economic analyses appears promising.

The greatest research potential for subjective expectations measures will be the extent to which they can be incorporated into the analysis of economic models and explain the large amount of heterogeneity in the population that currently cannot be accounted for in empirical analysis. For example, the ability to include individual mortality expectations into models of life cycle consumption decisions might be able to help explain some empirical puzzles, such as why retired individuals do not appear to dissave quickly enough (see, for example, Kotlikoff, 1988). Therefore, understanding whether these expectations measures not only predict own outcomes (for example, whether mortality expectations predict subsequent mortality) but also are correlated with the outcomes of related economic decisions is important in assessing the ultimate usefulness of these measures in empirical research.

A very small number of studies have attempted to link individual expectations to outcomes aside from the variable in the expectations question itself. Jappelli and Pistaferri (2000) test whether households' subjective income growth is a significant predictor of household consumption growth, using data from a Bank of Italy household survey. Consistent with the permanent income hypothesis, they find no evidence that expected income growth is correlated with consumption growth. They also use information on household beliefs concerning their degree of earnings risk and find, consistent with the precautionary savings motive, that households with larger subjective earnings risk have faster growth rates of consumption. Guiso, Jappelli, and Terlizzese (1996), using data from the same survey, find that households with larger earnings risk have a larger portfolio allocation of less risky assets. These results suggest that the use of subjective expectations variables may prove to be very fruitful in understanding the impact expectations have in determining economic outcomes.

This paper analyzes the degree to which subjective expectations of future job losses affect household consumption using the Health and Retirement Study (HRS). Prior research on job displacement has documented the large and persistent earnings losses of displaced workers (Ruhm, 1991; Jacobson, LaLonde, & Sullivan, 1993). Therefore, job loss expectations should be correlated with beliefs concerning the level of future income. If consumption and saving decisions are influenced by beliefs concerning job losses as

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one would expect, then consumption changes when a job loss occurs will depend upon the perceived probability of a job loss. The more likely a household believes the possibility of losing a job, the smaller the impact on consumption once a job loss occurs. The extent to which subjective job loss probabilities influence household decisions can be understood by analyzing the relationship between these beliefs, job loss realizations, and consumption changes.

The first part of the paper documents the relationship between job loss expectations and subsequent job loss realizations. This analysis is important in its own right for assessing the ability of workers to foresee and adjust to impending job losses, although it has received little previous attention.[1] As with prior studies that examine the relationship between individual expectations of a variable and that variable's subsequent outcome, the subjective job loss measure is found to be very important in predicting future job losses, even once demographic information known to be associated with the propensity to be displaced is added to the analysis. Although this relationship is positive and monotone, households appear to be overly pessimistic in regard to their job loss probabilities during the sample period examined here. In addition, workers with higher subjective job loss probabilities are more likely to expect their earnings to go down in the future. Overall, the subjective job loss measure is very useful in predicting future job loss.

The second part of the paper examines the relationship between job loss expectations and household consumption. In particular, for a worker who suffers a displacement, a higher subjective job loss probability should lead to a smaller impact on consumption. Instead, the analysis finds no relationship between job loss expectations and household consumption conditional upon losing a job. Therefore, it appears that although households have superior information in regard to their potential job losses, they do not act on this information in the expected manner. Under standard assumptions, this result suggests that households either are unable to prepare adequately for adverse earnings shocks or do not fully take account of their expectations when making consumption and savings decisions. Potential explanations for these results, including alternative models of interpreting responses to expectations questions and of household consumption behavior, are also discussed.

The paper proceeds as follows. The next section describes the data used in this study, the HRS. The following section shows the empirical relationship between job loss expectations and subsequent job losses. Then the extent to which household expectations mitigate consumption losses following a displacement is investigated. The final section concludes.

[1] A small literature has analyzed the impact of receiving advance notice of layoffs on subsequent earnings and unemployment outcomes (for example, Addison & Portugal, 1992).

II. Data

The data for this paper come from the first four waves of the Health and Retirement Study (HRS).[2] Beginning in 1992 with a sample of roughly 7,700 households that contained at least one person born between 1931 and 1941, inclusive, the HRS is a panel survey that reinterviews households biennially. Individuals who met the birth year criterion, as well as their spouses (regardless of their year of birth), were interviewed, resulting in approximately 12,700 initial respondents. The survey collects detailed information in a variety of areas including demographic, employment, financial, cognitive, and psychological.

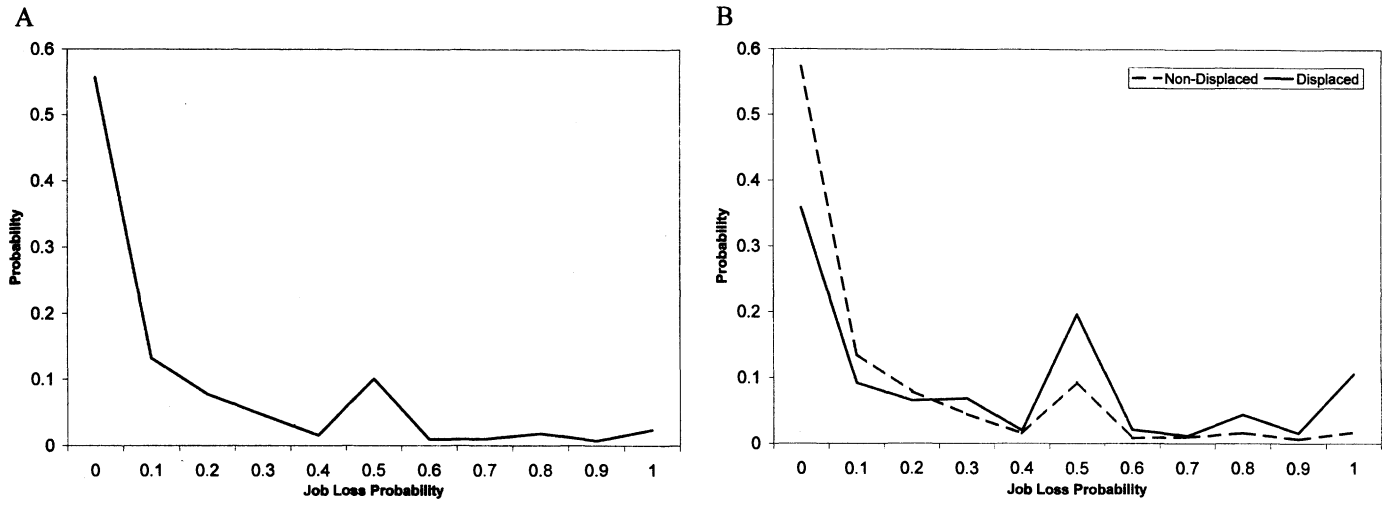
Since the focus of this study is job loss, the sample is limited to men who are working, although not self-employed, at the first of two consecutive waves. For example, men who were employed at wave 2 are considered to be at risk for a job loss between wave 2 and wave 3 and therefore are included in the sample if they are also observed at wave 3. Thus, from the four waves of the HRS, an individual can potentially contribute up to three observations to the sample used in the analysis. Restricting the sample to men interviewed at the first survey wave and who fit the initial age criterion leaves approximately 4,600 individuals. Of these men, nearly 2,800 are deemed to be at risk for a job loss (as defined above) at least once.

A job loss is determined from a series of questions determining the worker's employer and job tenure. Each wave the HRS collects the names of employers for each employed respondent. In the following wave, respondents are asked if they are still working for the same employer. If they state that they no longer work for that employer, the survey inquires as to the reason why the employment relationship ended. Respondents who give as a reason for leaving their previous employer as "Business closed/moved" or "Laid off" are coded as having experienced a job displacement. Using this definition, nearly 450 (roughly 16%) of the men in the sample are displaced at some point between the six years encompassing the first four waves of the HRS. Using the Displaced Workers Survey, Farber (1997) finds that the 3-year job loss rate for men aged 45–54 and for men aged 55–64 was approximately 12% during the first half of the 1990s. Thus, the rates of job loss in the HRS may be slightly lower than those found in the general population.

The HRS also includes questions concerning respondents' expectations of various life events, including job loss. Employed respondents are asked "Sometimes people are permanently laid off from jobs that they want to keep. On the scale from 0 to 100 where 0 equals absolutely no chance and 100 equals absolutely certain, how likely is it that you will lose your job during the next year?" The respondent's answer to this question is considered to be his subjective

[2] See Juster and Suzman (1995) for an overview of the HRS.

FIGURE 1.—PROBABILITY DISTRIBUTION OF JOB LOSS EXPECTATIONS: (A) ALL OBSERVATIONS; (B) BY DISPLACEMENT OUTCOME



probability of a job loss.[3] In the first wave of the HRS, respondents were asked exactly the same question except that the scale ranged from 0 to 10. For comparability across waves, the responses from the first wave are multiplied by 10. Finally, the subjective expectations variable is converted to a probability which ranges between 0 to 1 by dividing the variable by 100.

For the analysis, additional restrictions are imposed on the sample to eliminate missing data for variables used in the analysis. In particular, eliminating observations with missing data for industry, occupation, job tenure, and job loss probability reduces the total number of observations by roughly 9%. Finally, once an individual suffers a displacement in the sample, his subsequent observations are not used in the analysis.[4] The resulting sample has 5,390 observations on 2,643 men, of whom 386 are displaced.[5]

III. Relating Job Loss Expectations and Realizations

A. *Job Loss Expectations*

The probability distribution of workers' subjective job loss measure for all observations is presented in Figure 1A.[6] Since workers in the first wave reported their beliefs on a 0-to-10 scale, this approach is the easiest way to the present the results while making the variable comparable across surveys. The figure indicates that the job loss probability measure exhibits a heaping of responses at 0, 0.5, and (to some extent) 1, which has been found previously for other HRS subjective probability measures (Lillard & Willis, 2000). Despite this feature of the data, the figure clearly indicates that most workers have a very low subjective probability of a job loss, with more than half of the workers reporting 0.

Figure 1A also demonstrates that there is a large degree of heterogeneity in job loss probabilities across workers. To see how much of the variation in job loss probabilities can be accounted for by observable characteristics, OLS regressions of the job loss probability variable on observable characteristics typically used in job displacement studies are reported in table 1.[7] In column 1, the analysis controls for race, four education groups (of which high school dropout is omitted), marital status, a quadratic in age, four job tenure groups (of which less than 4 years of tenure is omitted), and dummy variables for the survey waves. While the F-test for overall significance of the model is significant at the .001 level, the R^2 from this regression is only .027. Column 2 adds controls for eleven industry and thirteen occupation categories to the analysis.[8] Although the industry variables are jointly significant, the overall R^2 only improves to .048. While undoubtedly more observable characteristics could be added to explain more of the variation in job loss probabilities, these results suggest that the subjective probability reports are very idiosyncratic.[9]

[3] The form of the question used in the HRS is very similar to that of the job loss probability question on the Survey of Economic Expectations, whose data are analyzed in much detail by Manski and Straub (2000).

[4] The exclusion of these observations has no discernible effect on the results reported here.

[5] The earnings and income data used in this paper are taken from an extract of the HRS prepared by researchers at the RAND Corporation. See St. Clair et al. (2002) for details of the RAND extract. The remaining data were prepared by the author.

[6] In the figure as well as the subsequent analysis, the subjective job loss measure variable is rounded to the nearest 0.1.

[7] As noted in section II, the dependent variable in the regressions lies between 0 and 1, inclusive.

[8] The HRS reports thirteen industry and seventeen occupation categories in the public-use data, the grouping of which is based on Census codes. Due to small sample sizes, some of these HRS categories are combined to obtain the number of categories used in the analysis.

[9] Guiso, Jappelli, and Pistaferri (2002) estimate an R^2 of nearly .08 for similar regressions using Italian data. The results presented here are also consistent with survey respondents having uncertainty concerning the job loss probability distribution. A model of survey responses to probabilistic expectations questions in this situation, proposed by Lillard and Willis (2000), is examined in section IV.

TABLE 1.—OBSERVABLE DETERMINANTS OF JOB LOSS EXPECTATIONS

Independent Variable	(1) Coeff.	(1) Std. Err.	(2) Coeff.	(2) Std. Err.
Age	.060*	.035	.056	.035
Age^2/100	−.054*	.031	−.050*	.031
White	−.013	.012	−.019	.012
Married	.014	.012	.011	.012
High school graduate	−.011	.013	−.006	.013
Some college	−.008	.014	.001	.015
College graduate	−.044***	.012	−.014	.015
4 ≤ job tenure < 10	−.042***	.012	−.043***	.012
10 ≤ job tenure < 20	−.063***	.013	−.067***	.013
20 ≤ job tenure	−.082***	.012	−.094***	.012
P-value for industry dummies	—		.001	
P-value for occupation dummies	—		.533	
R^2	.027		.048	
P-value for test of overall model significance	.001		.001	

The dependent variable ranges between 0 and 1, inclusive. The regressions also include dummy variables for survey waves, and the analysis is weighted using the HRS wave 1 sampling weights. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

TABLE 2.—COMPARISON OF NEVER DISPLACED AND DISPLACED MEN

	Never Displaced	Displaced
Age	56.6	56.5
% white	89.5	91.4
% married	86.5	83.4
Years of education	13.0	12.6
Annual earnings	51,000	43,100
Weekly hours worked	43.4	42.9
Annual weeks worked	50.6	49.3
Job tenure	16.1	9.7
Occupation:		
% white collar	49.5	49.1
% blue collar	50.5	50.9
Industry:		
% manufacturing	27.9	30.7
% nonmanufacturing	72.1	69.3
Subjective job loss prob.	13.8	32.3

Weighted tabulations using the HRS wave 1 sampling weights. Averages for men who are never displaced are calculated using every observation for these workers. Averages for displaced men are calculated using the observation from the year of the displacement. Dollar figures are converted to calendar-year-2000 dollars using the CPI-U.

B. *The Descriptive Relationship between Job Loss Expectations and Realizations*

Table 2 presents summary statistics for the sample, distinguished according to whether or not the worker is displaced during the survey period. The statistics for the nondisplaced men are averages across all of their sample observations; those for displaced men are from the observation in which the job loss occurs. The sample statistics correspond to the first of the two waves used to form each consecutive wave observation. The summary statistics are consistent with the results found previously in the displaced-worker literature.[10] Displaced workers have less education, are less likely to be married, and are more likely to be in the manufacturing sector than nondisplaced workers. Consistent with these observable differences, displaced workers also have lower earnings. Interestingly, the displaced are no more likely to be blue collar or nonwhite in the sample. Kletzer (1998) reports evidence suggesting that the racial disadvantage in job displacement rates faced by blacks in the 1980s disappeared in the 1990s, the time frame for this sample. She also notes that this shift is explained in part by the relative increase in the share of displaced workers who are white collar.

The last row in table 2 shows the difference in the main variable of interest, the subjective job loss probability. On average, nondisplaced workers report a job loss probability of 13.8%; displaced workers, 32.3%. As an initial examination of the data, this result suggests that the subjective probability measure might have predictive power for forecasting job losses.

The probability distributions of the subjective job loss measure for observations in which a worker is displaced and observations in which no job loss occurs are presented in figure 1B.[11] This plot indicates that the distribution for the nondisplaced observations is very concentrated at very low probabilities and highly skewed. In fact, the median subjective probability for the nondisplaced observations is 0%, and the 75th percentile is 20%. For displaced observations, the distribution is more dispersed. Their median subjective probability is 20%, and their 75th percentile is 50%. It is interesting to note that more than one-third of displaced workers reported a 0% (or nearly 0%) chance of experiencing a job displacement. For a sizable fraction of displaced workers, suffering a displacement represents an unforeseen shock.

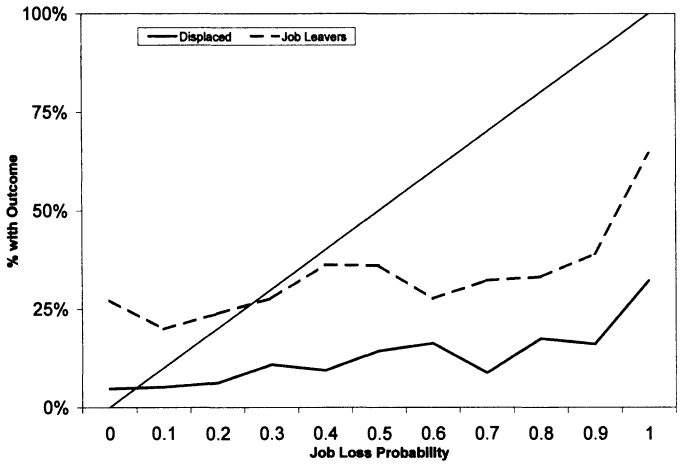
The direct relationship between the subjective job loss probability and subsequent job displacements is shown in figure 2. The solid line in the figure is the fraction of workers suffering a displacement by their subjective job loss probability. The figure indicates that there is a positive relationship between the workers' probabilities and the incidence of job displacement. Most notably, there is a doubling of realized job losses between those with a 80% to 90% job loss probability and those with a 100% job loss probability. These results are suggestive of the subjective job loss variable's predictive power. However, one would expect that the line would coincide with the 45-degree line under the assumptions of rational expectations and no aggregate shocks. That is, one would expect 70% of workers who believed they had a 70% of losing their job to subsequently suffer displacements. The fact that the realizations line falls below the 45-degree line suggests that a number of workers in the sample tend to overstate their job loss probability.[12]

[10] See Fallick (1996) and Kletzer (1998) for recent surveys of the literature.

[11] Note that this plot does not divide the data between displaced and nondisplaced workers, but between displaced and nondisplaced observations.

[12] This result does not necessarily mean that individuals systematically overstate their probability of a job loss. The unexpected positive macroeconomic shocks of the 1990s may have resulted in workers ex post

FIGURE 2.—JOB LOSS EXPECTATIONS AND JOB TRANSITIONS



One reason for the divergence between the solid line and the 45-degree line in figure 2 could be strategic behavior on the part of workers. In order to avoid losing their jobs, workers may opt to leave jobs with high displacement probabilities. This behavior would reduce the number of realized displacements, especially for those with a high subjective displacement probability, and reduce the slope of the job loss line in figure 2. Such strategic behavior can bias results in job displacement studies, which must rely upon observed realizations of job displacement and implicitly assume that strategic job leaving is uncorrelated with the outcomes of interest such as lost earnings and unemployment durations.

In order to examine this issue, the fraction of workers leaving their employers, no matter the reason for departing, is also plotted in figure 2. Strategic behavior on the part of workers should lead this line to be steeper than the job displacement line. In fact, the two lines are roughly parallel. This result is suggestive of an exogenous job-leaving rate for reasons other than a displacement across all levels of subjective job loss probability. The one exception is between the 90% and 100% groups, where the increase in the fraction displaced is 16% (from 16% to 32%), whereas the increase in the fraction leaving overall is 26% (39% to 65%). Thus, the data are mildly suggestive of some strategic action by workers who believe a job loss is inevitable. However, since figure 1 shows that only 2% of workers are in the highest subjective probability group and only a small fraction of these appear to engaging in any strategic behavior, it does not appear that such behavior is quantitatively important.

overstating their job loss probabilities although they are rational ex ante. The magnitude of the deviations between the expectations and realizations in figure 2, however, are likely too large to be explained solely by macroeconomic factors.

C. *Regression Analysis of Job Loss Expectations and Realizations*

Table 3 presents the results of using probit regressions to analyze the relationship between job loss expectations and subsequent displacements conditional on demographic characteristics. For ease of interpretation, the table contains the estimated marginal effects, along with their corresponding standard errors, rather than the probit coefficients.[13] The baseline results using only the demographic variables are presented in column (1).[14] For the most part, the coefficients on the demographic variables exhibit the expected signs but are statistically insignificant. However, the industry variables as well as the occupation variables are jointly significant in explaining job displacements.

The predictive power of the subjective job loss probability is shown in the next two columns of the table.[15] When only the subjective job loss probability is included in the regression [column (2)], the coefficient on this variable is highly statistically significant, with a t-statistic exceeding 10. Since the variable used in the regression ranges from 0 to 1, the coefficient can be interpreted as stating that a 10-percentage-point increase in job loss expectation increases the probability of a displacement by 1.5 percentage points. This result also reinforces the apparent pessimism (in the sense of overstating the probability of a job loss) of survey respondents: assuming no aggregate shocks, a 10-percentage-point increase in the expectations variable should increase the realized job loss probability by 10 percentage points.

Including the demographic characteristics in the regression [column (3)] only has a slight qualitative effect on the relationship between workers' subjective job loss probabilities and future displacements. The expectations variable remains highly significant, with a t-value close to 10. The estimated coefficients for the observable characteristics are essentially unchanged after including the subjective job loss probability variable. In other words, the predictive power of the probability variable is essentially orthogonal to predictive ability of the demographic variables. Although the results in the figures shown earlier suggest that workers with high probabilities of displacement tend to overestimate their actual job loss probabilities, this expectations variable

[13] The marginal effects in the table were computed by first calculating for each individual the change in their likelihood of a displacement due to an increase in a dependent variable. The marginal effects for dummy variables were computed as the difference in the probability of a displacement for an individual if their value of the dummy variable were to change from 0 to 1. The effects presented were then computed by averaging the individual marginal effects. Jonah Gelbach graciously provided the Stata code to perform these calculations.

[14] As before, indicator variables for the survey wave are also included, although the results are not reported.

[15] Whereas the dependent variable indicates whether the worker is displaced between the two waves, the time frame for the subjective probability variable is the upcoming year. Restricting the dependent variable to job losses within a year yields comparable results to those presented here.

TABLE 3.—RELATIONSHIP BETWEEN JOB LOSS EXPECTATIONS AND REALIZATIONS

Independent Variable	Displaced between Waves				Left Job but Not Displaced
	(1)	(2)	(3)	(4)	(5)
Age	−.016	—	−.027	−.026	−.059
	(.033)		(.033)	(.033)	(.053)
Age²/100	.014	—	.024	.023	.068
	(.029)		(.029)	(.029)	(.046)
White	.008	—	.011	.010	.017
	(.011)		(.010)	(.010)	(.017)
Married	−.015	—	−.018	−.017	−.019
	(.013)		(.013)	(.013)	(.019)
High school graduate	−.012	—	−.010	−.009	.007
	(.010)		(.010)	(.010)	(.017)
Some college	.002	—	−.003	−.002	.001
	(.013)		(.013)	(.013)	(.020)
College graduate	−.018	—	−.016	−.015	−.016
	(.013)		(.013)	(.013)	(.022)
4 ≤ job tenure < 10	−.031***	—	−.026***	−.025***	−.099***
	(.009)		(.009)	(.009)	(.015)
10 ≤ job tenure < 20	−.059***	—	−.052***	−.051***	−.067***
	(.008)		(.008)	(.008)	(.016)
20 ≤ job tenure	−.086***	—	−.074***	−.074***	−.015
	(.009)		(.009)	(.009)	(.016)
P-value for industry dummies	.001	—	.001	.001	.001
P-value for occupation dummies	.020	—	.018	.011	.259
Job loss probability	—	.146***	.122***	—	—
		(.013)	(.013)		
Job loss probability = 10%	—	—	—	.003	−.062***
				(.013)	(.016)
Job loss probability = 20%	—	—	—	.006	−.024
				(.015)	(.022)
Job loss probability = 30%	—	—	—	.058**	−.032
				(.024)	(.028)
Job loss probability = 40%	—	—	—	.034	.057
				(.034)	(.049)
Job loss probability = 50%	—	—	—	.080***	.006
				(.018)	(.020)
Job loss probability = 60%	—	—	—	.097*	−.087*
				(.053)	(.044)
Job loss probability = 70%	—	—	—	.041	.045
				(.035)	(.065)
Job loss probability = 80%	—	—	—	.118***	−.044
				(.041)	(.036)
Job loss probability = 90%	—	—	—	.101	.020
				(.068)	(.070)
Job loss probability = 100%	—	—	—	.249***	.074*
				(.042)	(.040)
P-value for job loss prob. vars.	—	—	—	.001	.002

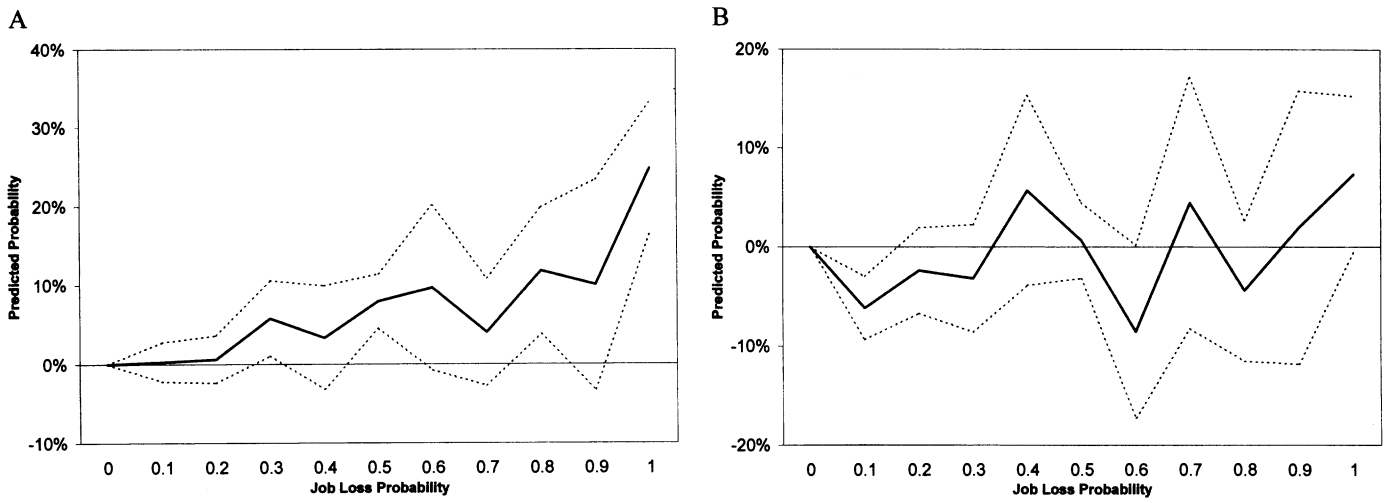
The table reports marginal effects from probit regressions by first calculating the marginal effect for each observation and then averaging across the sample marginal effects. The marginal effects for dummy variables are calculated as the change in the probability on changing the value of the dummy variable from 0 to 1. Standard errors for the marginal effects are in parentheses. All regressions also include dummy variables for survey waves and are weighted using the HRS wave 1 sampling weights. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

contains very important private information that is otherwise unseen by the econometrician.

As shown in figure 2, the relationship between the job loss probability and actual displacements appears to be nonlinear, especially for high probabilities. The fourth column of table 3 includes a series of dummy variables to capture the nonlinearity in a (somewhat) nonparametric fashion. As with the figures presented above, the job loss probability is rounded to the nearest tenth, and dummy variables for all of the nonzero probability categories are included in the regression model. To more easily interpret the results, the marginal effects for the job loss probability categories are plotted in figure 3A. The solid line in the figure represents the point estimates, and the dashed lines represent the cutoffs for the 95% confidence interval.

The regression coefficients tend to increase in magnitude as the job loss probabilities increase and are statistically significant for most of the job loss probability categories exceeding 20%. The relationship between the job loss probability and the probability that a displacement actually occurs is quite similar to the pattern found in figure 2. The probability of a displacement is slightly increasing in the worker's job loss expectations up to the 90% category and then jumps up rather sharply for those with the highest subjective job loss probabilities. The result in the bottom row of table 3 indicates that these variables are jointly

FIGURE 3.—JOB LOSS EXPECTATIONS AND JOB TRANSITIONS REGRESSION COEFFICIENTS: (A) DISPLACED BETWEEN THE WAVES; (B) LEFT JOB BUT NOT DISPLACED BETWEEN WAVES



significant at the 0.001 level of significance. Thus, even conditional upon numerous observable characteristics, the subjective job loss measure remains a strong predictor of future displacements.

The final column of table 3 examines the issue of strategic job leaving by those workers who might switch employers in anticipation of a potential job loss. The dependent variable used in this regression takes on the value 1 if the worker left his job between two waves but was not displaced. A positive correlation of this variable with the subjective job loss measure is suggestive of the strategic departure hypothesis. The results in column (5) of table 3 and figure 3B provide mixed evidence for this hypothesis. Consistent with the hypothesis, the marginal effect for the 100%-probability group is statistically significant at the 7% level, although the number of observations that fall into this group is small. In addition, the subjective probability variables are jointly significant. On the other hand, the coefficients for the lowest-probability groups are *negative* relative to the excluded zero-probability-of-displacement group. Furthermore, including a continuous job loss probability variable using a specification similar to the one in column (3) yields a positive but small and insignificant coefficient on the subjective measure (t-value 1.164). Thus, there is only mild support for the selective departure hypothesis.

D. *Job Loss Expectations and Expected Earnings Changes*

As an additional check of the job loss probability measure, workers' expectations of job losses are related to their expectations of future earnings changes. The HRS does not elicit point estimate expectations of future income or earnings. However, workers are asked if they expect their earnings to change in the future. Specifically, in the first two waves of the HRS workers are asked "Over the next several years, do you expect your earnings, adjusted for inflation, to go up, stay about the same, or go down?" Although the reference period for this measure of expected earnings change differs from that of the job loss probability, it still may be a reasonable proxy for expected earnings changes within the next year.

In order to regress earnings change expectations on subjective job loss probabilities, the earnings expectations variable is converted into a continuous measure. Following Souleles (2001), this continuous earnings expectations measure equals +1 if the worker expects his earnings to go up, equals 0 if the worker expects his earnings to stay about the same, and equals −1 if the worker expects his earnings to go down. Since the earnings expectations variable is only asked for in wave 1 or wave 2, the sample for this analysis is limited to observations at risk beginning in these waves. The resulting sample comprises 4,100 observations.[16]

The results of regressing the expected earnings change on the subjective job loss probability are presented in table 4. When the job loss probability measure is the only regressor (aside from dummy variables indicating the survey waves) and is entered linearly [column (1)], the results show that higher job loss probabilities are significantly correlated with an expected reduction in future earnings. Introducing demographic variables into the analysis [column (2)] slightly increases the magnitude of the coefficient on the job loss probability measure. The final two columns of table 4 again break the subjective job loss probability measure into categorical variables rounded to the nearest tenth. With the exception of the anomalously large coefficient for the group presenting 40% job loss probability, the relationship between the expected earnings changes and the subjective job loss measure is fairly monotone. The results in the table indicate that the job loss probability measure is correlated with workers' expectations of future earnings changes.

[16] Fifteen potential observations were deleted where the respondent did not answer the earnings expectations question.

TABLE 4.—RELATIONSHIP BETWEEN JOB LOSS EXPECTATIONS AND EARNINGS CHANGE EXPECTATIONS

Independent Variable	(1)	(2)	(3)	(4)
Job loss probability	−.299***	−.339***	—	—
	(.051)	(.050)		
Job loss probability = 10%	—	—	−.023	−.042
			(.636)	(.035)
Job loss probability = 20%	—	—	−.060	−.091**
			(.041)	(.040)
Job loss probability = 30%	—	—	−.071	−.117**
			(.052)	(.052)
Job loss probability = 40%	—	—	−.340***	−.372***
			(.091)	(.088)
Job loss probability = 50%	—	—	−.119***	−.144***
			(.038)	(.038)
Job loss probability = 60%	—	—	−.186	−.212*
			(.115)	(.114)
Job loss probability = 70%	—	—	−.107	−.124
			(.099)	(.097)
Job loss probability = 80%	—	—	−.036	−.074
			(.086)	(.086)
Job loss probability = 90%	—	—	−.338**	−.342**
			(.140)	(.142)
Job loss probability = 100%	—	—	−.444***	−.475***
			(.098)	(.091)
P-value for job loss prob. vars.	—	—	.001	.001
Demographics included?	No	Yes	No	Yes

The dependent variable is the expectation of future earnings changes described in the text. All regressions include time dummy variables. Regressions using demographic variables also include a quadratic in age and indicators for marital status, race, education, tenure, industry, and occupation. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

In brief, the results in this section indicate that the subjective job loss measure is a significant predictor of future job displacements. More importantly, the results show that the measure provides additional predictive power in determining future displacements beyond what can be explained by observable characteristics. The correlation between this measure and expectations of future earnings changes is additional evidence that important idiosyncratic information is contained in the job loss measure.

IV. The Impact of Job Loss Expectations on Consumption Behavior

Whereas the results in the previous section illustrate the power of job loss expectations in predicting future job losses, an equally important issue from the perspective of economic theory is the degree to which individuals act upon their expectations to lessen the impact of these negative earnings events. If households are able to anticipate future job losses, then they should also take steps to ease the consumption losses that will occur upon being displaced. In particular, a higher likelihood of a job loss should lead to a less devastating impact on household consumption upon suffering a displacement.

The intuition behind the relationship between job loss expectations and household consumption can be illustrated best by assuming that infinite-lived households obey the basic life-cycle–permanent-income hypothesis with quadratic preferences. Under these assumptions, Campbell and Deaton (1989) show that the equation for consumption can be specified as

$$c_t = \frac{r}{1+r}\left[A_t + \sum_{k=0}^{\infty}\left(\frac{1}{1+r}\right)^{-t} E_t y_{t+k}\right], \tag{1}$$

where c_t is consumption at time t, A_t is the stock of assets at time t, r is the constant real rate of interest, y_t is labor income at time t, and E_t is the operator for expectations at time t. Assets are assumed to evolve over time according to the equation

$$A_{t+1} = (1+r)[A_t + y_t - c_t]. \tag{2}$$

Equation (1) is the basic PIH consumption equation where current consumption is the annuity value of current assets and the present discounted value of future income.

To understand how changes in expectations of future income relate to consumption changes, it is useful to first-difference equation (1). Doing so yields

$$\Delta c_{t+1} = r\left[\left(\frac{1}{1+r}\right)(y_{t+1} - E_t y_{t+1}) + \sum_{k=2}^{\infty}\left(\frac{1}{1+r}\right)^{-t}(E_{t+1} - E_t) y_{t+k}\right]. \tag{3}$$

According to equation (3), changes in consumption between two periods can be decomposed into two terms. The first term is due to the household's expectations error concerning current income, y_{t+1}. The second term corresponds to the

influence of changing expectations regarding future income y_{t+k}, $k \geq 2$.

This formulation of consumption changes indicates a direct relationship between job loss expectations errors and household consumption. For individuals who are displaced between periods t and $t + 1$, the change in consumption is affected by both terms in equation (3). For those who perfectly forecasted their displacement, the unexpected change in current income $y_{t+1} - E_t y_{t+1}$ will be zero. For other displaced workers, this unexpected change will be larger the lower the household's subjective job loss probability under the assumption that $E_t y_{t+1}$ is decreasing in this probability. Therefore, the more surprised a worker is by his displacement, the larger his consumption loss due to the unexpected current income change.

One problem with the testing the relationship between job loss expectations and consumption using this approach is the link between $y_{t+1} - E_t y_{t+1}$ and the subjective job loss probability. Although an individual may perfectly foresee a future job loss, that does not necessarily imply they also have perfect foresight with regard to their future level of income. However, the results in table 4 show that the subjective job loss probability measured is correlated with expectations of future income. In addition, Dominitz (1998) finds that the subjective median of individual income expectations is negatively correlated with individual job loss probabilities, even after controlling for demographic characteristics and current income. Thus, it seems reasonable to assume that $E_t y_{t+1}$ is correlated with individual job loss expectations and, by extension, that the current income shock $y_{t+1} - E_t y_{t+1}$ is correlated with the job loss expectations error. Under this assumption, the more the household is surprised by its job loss outcome, the larger (in magnitude) its current income shock will be.

Experiencing a job loss can also have an influence on a worker's expectations of future income. As mentioned in the introduction, job displacement is typically associated with large and persistent earnings losses. To the extent that experiencing a job displacement reduces an individual's expectations of future income, the second term in equation (3) will also be reduced. Furthermore, the lower the probability a displaced worker had placed on suffering a job loss (and therefore the larger worker's job loss expectation error), the larger the reduction in expected future income should be. Thus, both unexpected current income changes and revisions of expected future income should affect current consumption changes for displaced workers, and the magnitude of the consumption change should be correlated with the worker's job loss expectations error.

Expectations errors concerning job loss should also affect the consumption of nondisplaced workers. For these workers, the unexpected change in current income, $y_{t+1} - E_t y_{t+1}$, will be positive and increasing in the ex ante job loss probability. In other words, the more likely they believed their chances of a job loss, the larger their current income shock. However, the link between a worker's surprise at not being displaced and future income is unclear. Unless not being displaced between periods t and $t + 1$ signals new information concerning future income, expectations of future income should not be affected by not being displaced.[17] Thus, current consumption should increase for nondisplaced workers, primarily being driven by the unexpected current income increase.

In summary, the model predicts that consumption changes should be positively correlated with the worker's job loss expectations error. For displaced workers, smaller ex ante job loss probabilities lead to larger expectations errors and larger (more negative) consumption changes. For nondisplaced workers, larger job loss probabilities correspond to larger expectations errors and to larger positive consumption changes. Thus, the importance of workers' job loss expectations in helping workers lessen the impact of a displacement can be tested by regressing consumption changes on the job loss expectation error. If workers can predict job losses as we saw in the first part of the paper, then the usefulness of these expectations should translate into how displaced workers are able to offset their consumption losses.

A. *Consumption Data in the HRS*

The primary measure of consumption available in the HRS is food consumption as measured by the expenditures on food both at home and away from home. Because of the lack of other consumption information in longitudinal data sets, food consumption has been used in numerous studies of household consumption behavior.[18] Although food is only a one component of overall household expenditures, it has the benefit of being a nondurable good (especially at an annual frequency), as is necessary for estimating standard models of household consumption behavior. Evidence on the nonseparability of food consumption with other types of consumption (Attanasio and Weber, 1995) as well as the large amount of measurement error in food consumption (Shapiro, 1984) has made researchers wary of relying on food consumption to test models of consumption behavior. Despite these concerns, previous studies have found that food consumption is significantly reduced following a job displacement (Cochrane, 1991; Stephens, 2001). If consumption and savings decisions depend upon expectations of future job losses as predicted, then these expectations

[17] Scenarios in which not being displaced between two periods increases expected future earnings are quite plausible. For example, a worker surveyed at date t may be employed in a firm that has announced future layoffs will occur. If the worker is not laid off as part of this restructuring, then continued employment at period $t + 1$ may signal to the worker that his job is now secure. Even if workers do experience positive future income shocks, the sign of the effect on the current consumption change is the same as that of the effect of unexpected current income.

[18] See, for example, Hall and Mishkin (1982), Altonji and Siow (1987), Zeldes (1989), and Shea (1995).

should also manifest themselves in household food consumption.

Food consumption information is collected in the first three waves of the HRS. For the analysis of consumption behavior, the sample is limited to observations corresponding to changes between wave 1 and wave 2 and changes between wave 2 and wave 3.[19] Following Zeldes (1989), household food expenditure is the sum of usual household food-for-home expenditures, food-away-from-home expenditures, and the dollar amount of food stamps.[20] Using the index number corresponding to the month and year of the household interview, food at home and food stamps are deflated using the CPI-U for food at home while food away from home is deflated using the CPI-U for food away from home. All food amounts are annualized and converted to January 2000 dollars. The final data set used in the consumption analysis consists of 3,509 observations on 2,432 individuals, with displacements occurring in 271 observations.

To control for the influence of household composition on food expenditures, a measure of household annual food needs was created.[21] The food needs measure is constructed using the same methodology used to construct the one available in the Panel Study of Income Dynamics. The food needs for each household member depend upon the age and gender of that household member. The needs of all the household members are then aggregated to form a total food needs measure, which is then adjusted to allow for economies of scale in the cost of food for households of different sizes.

The primary variable of interest in this analysis is the worker's expectations error. From the data, it is constructed as

$$\begin{aligned} &\textit{Expectations Error} \\ &\quad = E_t[\textit{Probability of Job Loss at } t+1] \\ &\quad - 1(\textit{Job Loss at } t+1). \end{aligned} \tag{4}$$

In equation (4), $E_t[Probability\ of\ Job\ Loss\ at\ t+1]$ is the respondent's subjective job loss probability at time t, and $1(Job\ Loss\ at\ t+1)$ is an indicator function which takes on the value 1 if the respondent is displaced at time $t+1$ and 0 otherwise. Workers who report a positive job loss probability but are not displaced will have a positive expectations error. Those workers who are displaced but gave a job loss probability that is less than 1 will have a negative expectations error. The theory predicts that larger expectations errors lead to larger changes in consumption. Thus, the coefficient on the expectations error should be positive.

TABLE 5.—IMPACT OF JOB DISPLACEMENT ON CONSUMPTION

	HRS Sample		PSID Sample	
Independent Variable	(1)	(2)	(3)	(4)
Change in annual food needs	1.08**	1.05**	3.50***	3.51***
	(.42)	(.42)	(.50)	(.50)
Age	58.3	58.2	−26.1*	−27.0*
	(49.4)	(49.5)	(13.7)	(13.7)
Displaced between waves	−1090***	—	−788**	—
	(292)		(303)	
Displaced within 1 year	—	−1290***	—	−1210***
		(341)		(401)

The dependent variable is the change in annual food consumption. All regressions include time dummy variables. HRS sample regressions are weighted by the HRS wave 1 sampling weights. PSID sample regressions are weighted by the individual's weight from their first observation used in the analysis. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

B. *The Impact of Job Loss on Household Consumption*

Before examining the relationship between job loss expectations and consumption, it is instructive to understand the impact of experiencing a job loss on consumption. The results in the first two columns of table 5 show the impact of a job displacement on household food consumption in the HRS. Following the specification in equation (3), the dependent variable is the change in food consumption.[22] The controls used in the regression are the change in annual food needs, the age of the respondent, and survey year indicators.[23] When an indicator for being displaced between the two waves is included in the regression [column (1)], the results indicate that food consumption is reduced by roughly $1,100 and that this decrease is highly significant. Since average household food consumption is $6,700 in the sample, this result indicates that consumption falls by roughly 16% upon being displaced.[24] As noted above, the job loss expectations question inquires about job loss probabilities within a year of the initial survey. Because that question therefore refers to job losses within a year of the survey date, column (2) includes an indicator for job loss within a year of the survey so as to use a comparable time frame for displacements. The results indicate that the consumption loss is slightly larger for this group of job losers and still highly significant. Overall, these results confirm that within the HRS, a job loss leads to a large and significant consumption decrease.

One potential problem with the HRS data is that consumption information in the third wave was not collected for all households. Rather than including food consumption in the core survey, the food consumption questions were

[19] In addition to the restrictions described in section II, observations are also deleted if information is missing for all three components of food expenditure.

[20] Less than 2% of observations report the use of food stamps.

[21] Zeldes (1989) uses this measure to control for changes in household composition. The appendix of his paper details the construction of this variable.

[22] Because many studies examine the change in log consumption, the results of the analysis using this alternative dependent variable are presented in appendix tables.

[23] Although the list of controls may appear sparse, studies of consumption changes routinely use a similar or the same limited set of regressors.

[24] The comparable analysis using the change in the log of food consumption in table A1 finds that displacement causes consumption to fall by 14%.

asked at the beginning of the experimental modules that are placed at the end of the survey. At the conclusion of the core portion of the survey, respondents are asked if they are willing to answer additional questions. Roughly one-quarter of respondents say no. For the remaining respondents who agree to answer more questions, they are first asked questions concerning food expenditures. If there is any correlation between the willingness to answer additional questions and household consumption behavior, the results in table 5 might be biased.

To examine whether sample selection on the wave 3 consumption question is biasing these results, the same regressions are estimated on a sample of observations from the Panel Study of Income Dynamics (PSID). The PSID is a nationally representative longitudinal data set that has been collected annually since 1968. Both data sets use nearly identical methodologies to collect food consumption information. For comparability with the biannual HRS, the sample is restricted to examining two-year changes in food consumption from the PSID, beginning in 1970 and ending in 1992. The sample is further restricted to households with a male head between ages 51 and 65 (inclusive) and employed by someone else in the first year of a two-year change. Job losses in the PSID are categorized in a manner similar to the HRS.[25] The PSID sample used in the analysis here consists of 1,857 observations on 683 individuals with displacements occurring in 87 observations.

Column (3) of table 5 reports the results of estimating the same consumption change model for the PSID as is used in column (1) for the HRS. There is a noticeable difference in the coefficients on the change in log annual food needs and the head's age between the two sample. However, the coefficient for having been displaced over the two-year period corresponds to roughly an $800 reduction in annual food consumption, a figure that is slightly smaller than but still similar to the result found for the HRS. Column (4) repeats the analysis but now includes an indicator for whether the individual was displaced within the first year of the two-year period. Again, the result for the PSID is similar to the result found for the HRS.[26] Thus, the results suggest that the impact of a job loss on household food consumption estimated in the HRS is fairly robust across the two data sets.[27]

C. *Testing the Impact of Job Loss Expectations on Consumption*

Table 6 presents the results of regressing the change in consumption on the expectations error.[28] As before, the expectations error is defined as the subjective job loss probability minus the job loss realization. For individuals who do not lose their job, this measure will be either positive or equal to 0. The more positive the expectations error, the more surprised the household is with regard to its job loss outcome and the larger we would expect their consumption change to be. For displaced individuals, the expectations error will be either negative or 0, with a more negative error indicating a more surprised household with a larger consumption decline. Therefore, the coefficient on the expectations error in the regression should be positive and significant. Column (1) of table 5 shows results completely consistent with this hypothesis. The coefficient on the expectations error is positive and marginally significant. The results suggest that a fully unexpected displacement reduces consumption by $645 and that not being displaced when one had completely expected to be increases consumption by the same magnitude.

An important question to ask is what the estimated value should be for the coefficient on the expectations error. Consider a displacement that is a complete surprise, that is, the expectations error is -1. Research in the displaced workers literature indicates that the short-run impact of a job loss on annual earnings ranges from 25% to 40%, and the long-run impact is roughly a 10% reduction (Ruhm, 1991; Jacobson, LaLonde, and Sullivan, 1993; Stevens, 1997). Using these numbers, the overall impact on lifetime earnings ranges from 12% to 15%. According to equation (3), the impact of a complete surprise displacement on consumption should also fall in this range. At the sample mean of $6,700, average household food consumption should fall by $800–$1,000. The literature on job displacement, however, finds that both the short- and long-run impacts on earnings increase with tenure. A more plausible range for workers in the HRS may be 12%–18%, or $800–$1,200. Thus, the estimated coefficient $645 is slightly smaller than what would be predicted by this simple calculation.

As previously noted, the consumption response to the expectations error for displaced and nondisplaced workers may be asymmetric. If so, then the specification in column (1) is incorrect. To address this concern, column (2) splits the expectations error into two regressors. The first one equals the worker's expectations error if that error term is positive and is 0 otherwise. The second regressor is similarly constructed, except it identifies negative expectations

[25] Further details of the PSID sample construction are included in the appendix.

[26] As can be seen in table A1, using the change in the log of consumption as the dependent variable also yields similar results for the HRS and the PSID.

[27] Since the workers in the HRS are approaching retirement, another sample selection issue that may influence the results presented in table 5 is the withdrawal of workers from the labor force. Restricting the sample to observations where the worker remains in the labor force in the second wave of the observation yields results similar to those presented in table 5.

[28] The analysis using the change in the log of consumption as the dependent variable is presented in table A2. In addition, although the results presented here are for all observations, they are similar on limiting the sample to workers who remain in the labor force in the second wave of the observation.

TABLE 6.—RELATIONSHIP BETWEEN JOB LOSS EXPECTATIONS ERROR AND CONSUMPTION

	All Observations			Nondisplaced Only		Displaced Only	
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Change in annual food needs	1.06**	1.07**	1.07**	1.00**	0.99**	1.83**	1.80*
	(.42)	(.42)	(.42)	(.45)	(.48)	(.90)	(.95)
Age	59.8	58.3	58.4	59.6	62.6	44.1	38.6
	(49.6)	(49.4)	(49.4)	(52.8)	(56.3)	(55.2)	(55.5)
Expectations error	645*	—	—	79.8	—	63.5	—
	(355)			(699)		(603)	
Positive error values	—	130	80.7	—	—	—	—
		(694)	(699)				
Negative error values	—	1260***	41.0	—	—	—	—
		(368)	(606)				
Displaced	—	—	−1050*	—	—	—	—
			(553)				
Job loss probability = 10%	—	—	—	—	−360	—	−667
					(316)		(714)
Job loss probability = 20%	—	—	—	—	−528	—	−202
					(401)		(495)
Job loss probability = 30%	—	—	—	—	2719	—	423
					(3523)		(741)
Job loss probability = 40%	—	—	—	—	596	—	−539
					(525)		(585)
Job loss probability = 50%	—	—	—	—	−467	—	−982**
					(376)		(465)
Job loss probability = 60%	—	—	—	—	593	—	−1475**
					(745)		(634)
Job loss probability = 70%	—	—	—	—	−188	—	−601
					(499)		(1049)
Job loss probability = 80%	—	—	—	—	−49	—	968
					(575)		(993)
Job loss probability = 90%	—	—	—	—	−978	—	1004
					(1002)		(1043)
Job loss probability = 100%	—	—	—	—	292	—	220
					(735)		(837)
P value for job loss prob. vars.	—	—	—	—	.330	—	.130

The dependent variable is the change in annual food consumption. The expectations error is the difference between the individual's subjective job loss probability and their job loss realization (1 if displaced, 0 if not). All regressions include time dummy variables and are weighted using the HRS wave 1 sampling weights. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

errors. The result of splitting the error term is again consistent with the predicted result. Positive expectations errors are positively correlated with consumption, but the relationship is insignificant, as would be expected if this error represents a transitory income shock. The coefficient for negative expectations errors is also of the correct sign and highly significant. Furthermore, it falls at the upper end of the expected range mentioned in the previous paragraph.

Although the evidence indicates that negative expectations errors are correlated with reduced consumption, the main interest in this paper is to determine the relationship between the magnitude of the consumption loss and the magnitude of the expectations error. The specification in column (2) constrains the impact for workers experiencing no surprise to be the same regardless of whether or not they experience a displacement. Although theoretically these responses should be the same (that is, there should be no response for those with a zero expectations error, whether displaced or not), this implication can be tested by allowing both the correlation between the expectations error and the consumption change as well as the average impact on consumption to differ between the displaced and nondisplaced workers. Such a specification includes an indicator for whether or not the worker is displaced, along with the positive and negative expectations errors used in column (2). In this specification, the coefficient on the indicator for being displaced represents the effect of a displacement for someone who is not surprised by a displacement. Theoretically, the coefficient on the displaced variable should be 0 and the results should be the same as those found in column (2).

The results from estimating this specification are shown in column (3). The coefficient on the positive expectations error is positive but insignificant. Thus, as with the result in column (2), the expectations error does not have a significant effect on consumption for the nondisplaced workers. However, there are two surprising results. First, the coefficient on the indicator for being displaced is approximately the same magnitude as is found in the first column of table 5, although the result is only marginally significant. This coefficient is expected to be 0. Second, the coefficient on the negative expectations error, although positive as expected, is also insignificant, meaning that job loss expectations do not affect the magnitude of the consumption loss for displaced workers.

One might note that the coefficients on the expectations errors in column (3) are of the expected sign although they are both statistically insignificant. It may be that job loss

expectations affect the magnitude of the consumption loss for displaced workers, but this relationship cannot be precisely measured in the data. The point estimate on the negative expectations variable gives an indication of the effect of expectations on consumption changes. Since the negative expectations variable ranges from -1 to 0, the coefficient can be read as stating that the difference between being completely surprised by a displacement and entirely anticipating a job loss will reduce the consumption loss by $41. However, since the estimated impact of a displacement on consumption is $-$1,050, being prepared for a displacement only mitigates the consumption loss by roughly 4%.[29] Thus, even if one ignores the fact that the coefficients on the expectations variables are statistically insignificant, the implied magnitude of the estimates is still very small.

To further investigate the results, the sample is divided between nondisplaced and displaced observations. Within each group, the theory predicts that the more likely the individual perceives a job loss to occur, the more positive (less negative) their consumption change will be. Column (4) presents the results for the subsample of nondisplaced workers. Again the results indicate that the subjective job loss probability does not affect consumption changes for this group. The comparable results for the subsample of displaced workers are shown in column (6). Although the coefficient on the expectations variable is of the correct sign, it is far from statistically significant.

The final approach to examining the impact of job loss expectations on consumption changes is to allow for the relationship to be nonlinear. This nonlinearity is examined by replacing the expectations error variable with the individual's categorical subjective job loss probability variables. For nondisplaced workers, a higher ex ante job loss probability should translate into a larger consumption increase, because a higher probability means the worker is more surprised by not being displaced. However, the results in column (5) of table 6 again confirm that job loss expectations have no influence on the consumption changes of subsequently nondisplaced workers. None of the coefficients are statistically significant, and the p-value for the overall significance of these variables is 0.330. For displaced workers, a higher job loss probability should translate into a larger increase (or smaller decrease) in consumption. The results in column (7) again show no evidence that workers' expectations regarding job losses affect their consumption job losses upon being displaced, that is, that there is a positive coefficient on the expectations error. The coefficients do not show any consistent evidence of increasing as the probability of a displacement increases. Rather, the consumption effect appears to be the largest for those workers whose expectations are in the neighborhood of 50%, and the coefficient is of the wrong sign. Thus, the results in table 6 run contrary to the hypothesis that job loss expectations are correlated with consumption changes.

D. *Reconciling the Results with the Theory*

What can explain the inability of job loss expectations to help households smooth their consumption once they are displaced? One possibility is that individuals do not have exact priors concerning their true job loss probability, but rather are uncertain as to its value. Suppose that p^* is an individual's true job loss probability. In the preceding analysis, it has been assumed that each person knows p^*. Lillard and Willis (2000) develop a model in which, instead, workers may have a prior distribution of beliefs for their job loss probability. If individuals respond to the job loss probability question by giving the expected value of this prior distribution, they will still report an exact response. However, individuals may instead report the most likely, or modal, value from this distribution. In their stylized model, Lillard and Willis show that as the uncertainty concerning an individual's true job loss probability becomes very large, the modal probabilities of the prior distribution will lie at the extreme values of 0 and 100. If individuals respond to expectations questions following what Lillard and Willis call the *modal choice hypothesis,* then finding a large number of focal responses of 0, 50, or 100 is to be expected.[30] Thus, for a large number of households, their response to the job loss probability question may not reflect their expected job loss probability.[31]

One way to investigate the importance of focal responses is to limit the analysis to households which give an exact (nonfocal) job loss probability. In the Lillard-Willis model, the individuals who give a nonfocal response are those who face lower levels of uncertainty concerning their subjective job loss distribution. Even if these individuals are responding according to the modal choice hypothesis, nonfocal responses are likely to be closer to the expected job loss probability than are focal responses. Thus the consumption response to a job loss for these individuals may better match the theoretical predictions. Restricting the consumption sample to nonfocal responses eliminates nearly two-thirds of the observations, leaving 1,187 observations on 986 individuals, with displacements occurring in 99 observations.

The results from using only the nonfocal subsample in the analysis are reported in the bottom panel of Table 7.[32] The results in column (1) show that suffering a displacement reduces consumption by $1,120 within the nonfocal subsample, which is almost identical to the result found for the

[29] Similar results are found when using log consumption as the dependent variable, as seen in table A2.

[30] The heaping of responses at 50 occurs because individuals with a bimodal distribution with modes at 0 and 100 will answer 50.

[31] Bernheim (1989) finds evidence that responses to questions about the expected age of retirement are consistent with households giving modal rather mean responses.

[32] The results of estimating this model using the change in log consumption as the dependent variable are found in table A3.

TABLE 7.—JOB LOSS EXPECTATIONS AND CONSUMPTION CHANGES

Independent Variable	(1)	(2)	(3)	(4)
A. All Observations				
Change in annual food needs	1.08**	1.06**	1.07**	1.07**
	(.42)	(.42)	(.42)	(.42)
Age	58.3	59.8	58.3	58.4
	(49.4)	(49.6)	(49.4)	(49.4)
Expectations error	—	645	—	—
		(355)		
Positive error values	—	—	130	80.7
			(694)	(699)
Negative error values	—	—	1260***	41.0
			(368)	(606)
Displaced	−1090***	—	—	−1050*
	(292)			(553)
B. Observations with Nonfocal Responses				
Change in annual food needs	.54	.56	.56	.56
	(.73)	(.73)	(.73)	(.73)
Age	97.1	95.9	96.3	96.5
	(94.6)	(93.9)	(94.1)	(94.8)
Expectations error	—	1060**	—	—
		(453)		
Positive error values	—	—	814	796
			(552)	(539)
Negative error values	—	—	1380**	1080
			(699)	(1150)
Displaced	−1120*	—	—	−231
	(599)			(1090)

The dependent variable is the change in annual food consumption. All regressions include time dummy variables and are weighted using the HRS wave 1 sampling weights. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

full sample in the top panel of the table.[33] The coefficient on the expectations error in column (2) is significant and larger when restricted to the nonfocal responses, suggesting that expectations may play a more important role in the consumption response for this group. When the expectations errors are divided between positive and negative values in column (3), the coefficients are larger in magnitude for both groups, especially for the positive expectations error group (although this coefficient is still insignificant). Column (4) shows the results of including an indicator for being displaced between the waves. Compared with the full-sample results presented in the top panel of table 7, the results are much more consistent with the theory. The coefficients on both the positive and negative expectations errors are much larger in magnitude, and the coefficient on the displaced indicator is smaller and near its predicted value of 0. However, the standard errors on the estimates are too large to draw any inferences from these results. Nonetheless, these results are suggestive that allowing for the manner in which individuals may respond to the expectations question produces results more consistent with the theory.

An alternative explanation for the results in table 6 is that the expectations error might not be correctly specified. Figure 2 indicates that while the subjective probabilities range from 0 to 100, the realized displacements move from 4% to 32% over this same interval. Although this relationship between expectations and (the mean of) realizations is positive, the lack of a one-to-one correspondence leaves open the possibility that the expectations error might need to be adjusted for use in the consumption change regression. One method to align the expectations and realizations is to use a simple linear transformation so that the spread of the expectations error is the same as the spread of the realizations. In results not presented here, the expectations error described by equation (4) is divided by 3 so it ranges from −0.33 to +0.33 rather than from −1.0 to +1.0.[34] The impact of this modification is to scale up the coefficients on the expectations error variables by a factor of 3. Thus, in column (3) of table 6, the difference between an expected and a surprise displacement becomes $123 rather than $41 but (of course) remains insignificant. Even when scaled in this way, the coefficient only implies a 12% difference in the consumption loss that can be explained by expectations (relative to the estimated $1,050 surprise displacement effect).

A slightly different method to transform the expectations error is to divide the job loss probability in equation (4) by 3 rather than dividing the entire expectations error by 3. This modification allows the expectations error to range from 0 to +0.33 for the nondisplaced while ranging from −1.0 to −0.67 for the displaced workers. Though this transformation better reflects the empirical finding that only one-third of those reporting a 100% probability of a displacement are subsequently displaced, it has the implication that displaced workers in this same group are surprised by a displacement. Using this rescaling method in column (3) of table 6 again increases the coefficients on the expectations errors by a factor of 3. The coefficient on the displacement dummy variable becomes slightly more negative, but becomes statistically insignificant. Overall, though rescaling the expectations error implies a larger role for expectations than estimated above, these transformations cannot explain the large gap between the theory and the estimates.

A final explanation for the lack of a correlation between job loss expectations and consumption changes may lie in an alternative model of household consumption behavior. Bowman, Minehart, and Rabin (1999) examine the consumption and savings decisions of loss-averse households. Loss-averse households are risk-averse in income gains but risk-loving in income losses. In this model, bad news concerning future income does not cause households to immediately lower their consumption. Rather, these households wait until they experience a bad income realization before adjusting their consumption. Consistent with this hypothesis, Shea (1995) finds that the consumption of workers under union contracts does not respond to expected wage increases but does respond to expected wage declines. The finding in this paper that suffering a job loss reduces

[33] For convenience, the top panel of table 7 shows the full-sample results previously shown in table 5 [column (1)] and table 6 [columns (2)–(4)].

[34] A preferred method would be to estimate this scale factor rather than to assume its value. Unless the estimated scale factor differs dramatically from 3, however, the discussion here would not change appreciably.

consumption but expectations of a job loss do not affect the magnitude of the consumption loss is consistent with loss-averse behavior.

V. Conclusion

This paper examines the relationship between subjective job loss expectations and household consumption behavior. If individual expectations can predict future job losses, then the degree to which workers are surprised by subsequent job loss outcomes should be correlated with household consumption changes. More generally, understanding the relationship between subjective expectations of a variable and outcomes that economic models predict to be affected by these expectations is important in assessing both the usefulness of incorporating expectations into empirical estimation as well as providing additional methods for testing these models.

The results show that subjective job loss expectations are highly significant predictors of subsequent job losses. Individual job loss expectations include much information beyond that found in demographic variables known to be related to the incidence of job displacement. In addition, job loss expectations are correlated with expected changes in future earnings. However, the examination of the relationship between consumption changes and expectations of job displacement does not show that job loss expectations influence household consumption decisions. In particular, the estimated magnitude of the consumption loss following a displacement does not depend upon a household's perceived likelihood of a displacement. These results are consistent, however, with two alternative models of behavior: individuals exhibiting loss aversion over future consumption changes and individuals giving modal rather than mean responses to the job loss expectations question, although the empirical evidence for the latter explanation is only suggestive.

The results in this paper present an interesting disconnect between household expectations and how they are incorporated into household behavior. Although the results shown here do not display the expected relationship between job loss expectations and household consumption, they do suggest the need for additional research to assess the empirical relationship between expectations and economic behaviors. The availability of subjective expectations information offers an exciting opportunity to validate the importance of expectations in decision-making that are an integral part of economic theory. Further research on the empirical importance of subjective expectations in explaining economic behaviors is needed.

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APPENDIX

Panel Study of Income Dynamics Data

The Panel Study of Income Dynamics (PSID) is a nationally representative longitudinal data set that has been collected annually since 1968. For comparability with the biannual HRS, the sample is restricted to examining 2-year changes in food consumption from the PSID, beginning in 1970 and ending in 1992. Observations of 2-year intervals are created spanning 1970–1972, 1972–1974, . . . , 1984–1986. In addition, 1990–1992 observations are used, the intervening observations being unavailable because food consumption was not asked about in 1988. The sample is further restricted to households with male head between the ages of 51 and 65 (inclusive) and employed by someone else in the first year of a 2-year change. Since, by default, the PSID assigns men as the head of the household except in very rare circumstances, the head-of-household designation does restrict the sample in any particular way. Observations are weighted using the weight from the first observation in which the individual is observed to be at least age 51.

Job losses in the PSID are determined from questions in the job tenure sequence of the employment section. If a respondent states that they have less than 1 year of tenure in their current position (or responds that they started their position since January 1 of the previous calendar, beginning in the 1984 survey), the respondent is asked what happened to the previous employer. If the respondent's reason for leaving their last job is categorized as a "employer closed/moved" or "laid off/fired," then a job loss is assumed to have occurred.

For the analysis with the HRS data, observations after the first displacement which occurs during the HRS sample period are not used. Since the HRS does not begin following individuals until age 51 (at the earliest), it is not possible to determine if an individual suffered a job displacement prior at some earlier date (unless it is from a job with significant tenure). For comparability between the two datasets, observations after the first displacement which occurs after age 51 are deleted from the PSID sample. As with the HRS analysis, including the postdisplacement observations gives similar results. The PSID sample used in the analysis here consists of 1,857 observations on 683 individuals, with displacements occurring in 87 observations.

TABLE A1.—IMPACT OF JOB DISPLACEMENT ON LOG CONSUMPTION

	HRS Sample		PSID Sample	
Independent Variable	(1)	(2)	(3)	(4)
Change in log annual food needs	.162***	.157***	.410***	.412***
	(.053)	(.053)	(.049)	(.049)
Age	.002	.002	−.004**	−.004**
	(.003)	(.003)	(.002)	(.002)
Displaced between waves	−.154***	—	−.122***	—
	(.036)		(.044)	
Displaced within 1 year	—	−.177***	—	−.150**
		(.051)		(.065)

The dependent variable is the change in the log of annual food consumption. All regressions include time dummy variables. HRS sample regressions are weighted by the HRS wave 1 sampling weights. PSID sample regressions are weighted by the individual's weight from their first observation used in the analysis. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

TABLE A2.—RELATIONSHIP BETWEEN JOB LOSS EXPECTATIONS ERROR AND LOG CONSUMPTION

	All Observations			Nondisplaced Only		Displaced Only	
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Change in log annual food needs	.160***	.162***	.162***	.152***	.154***	.255**	.264*
	(.053)	(.053)	(.053)	(.057)	(.057)	(.130)	(.138)
Age	.003	.002	.002	.002	.002	.008	.008
	(.003)	(.003)	(.003)	(.003)	(.003)	(.011)	(.011)
Expectations error	.091***	—	—	.010	—	.008	—
	(.029)			(.044)		(.110)	
Positive error values	—	.016	.010	—	—	—	—
		(.044)	(.044)				
Negative error values	—	.180***	.014	—	—	—	—
		(.047)	(.111)				
Displaced	—	—	−.143*	—	—	—	—
			(.087)				
Job loss probability = 10%	—	—	—	—	−.013	—	−.081
					(.028)		(.147)
Job loss probability = 20%	—	—	—	—	.003	—	−.045
					(.043)		(.096)
Job loss probability = 30%	—	—	—	—	−.013	—	.081
					(.057)		(.101)
Job loss probability = 40%	—	—	—	—	.071	—	−.036
					(.066)		(.102)
Job loss probability = 50%	—	—	—	—	−.022	—	−.157*
					(.034)		(.094)
Job loss probability = 60%	—	—	—	—	.105	—	−.272
					(.085)		(.172)
Job loss probability = 70%	—	—	—	—	.003	—	.022
					(.057)		(.125)
Job loss probability = 80%	—	—	—	—	.005	—	−.102
					(.081)		(.394)
Job loss probability = 90%	—	—	—	—	−.083	—	.256
					(.104)		(.163)
Job loss probability = 100%	—	—	—	—	.065	—	.084
					(.111)		(.114)
P-value for job loss prob. vars.	—	—	—	—	.924	—	.208

The dependent variable is the change in the log of annual food consumption. The expectations error is the difference between the individual's subjective job loss probability and their job loss realization (1 if displaced, 0 if not). All regressions include time dummy variables and are weighted using the HRS wave 1 sampling weights. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

TABLE A3.—JOB LOSS EXPECTATIONS AND CONSUMPTION CHANGES

Independent Variable	(1)	(2)	(3)	(4)
	A. All Observations			
Change in log annual food needs	.162***	.160***	.162***	.162***
	(.053)	(.053)	(.053)	(.053)
Age	.002	.003	.002	.002
	(.003)	(.003)	(.003)	(.003)
Expectations error	—	.091***	—	—
		(.029)		
Positive error values	—	—	.016	.010
			(.044)	(.044)
Negative error values	—	—	.180***	.014
			(.047)	(.111)
Displaced	−.154***	—	—	−.143*
	(.036)			(.087)
	B. Observations with Nonfocal Responses			
Change in log annual food needs	.126	.125	.126	.126
	(.094)	(.094)	(.094)	(.094)
Age	.002	.002	.002	.002
	(.005)	(.005)	(.005)	(.005)
Expectations error	—	.111**	—	—
		(.046)		
Positive error values	—	—	.043	.036
			(.071)	(.070)
Negative error values	—	—	.199**	.086
			(.082)	(.299)
Displaced	−.151**	—	—	−.087
	(.064)			(.223)

The dependent variable is the change in the log of annual food consumption. All regressions include time dummy variables and are weighted using the HRS wave 1 sampling weights. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.