The Long-Run Consumption Effects of Earnings Shocks

by

Melvin Stephens Jr.
University of Michigan

February 1999
Current version: October 1999

Address. Institute for Social Research, Room 3051, 426 Thompson Street, University of Michigan, Ann Arbor, MI 48106-1248. E-mail: mstep@umich.edu

I would like to thank Bob Barsky, John Bound, Charlie Brown, and Matthew Shapiro for comments on an earlier version and seminar participants at the University of Michigan and the NBER Summer Institute for comments and suggestions. This research was supported by a National Institute on Aging Post-Doctoral Research Fellowship.

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Abstract. While prior studies of job displacement and disability have measured the impact of these shocks in terms of lost earnings, there has been no previous research which links these permanent earnings shocks to the long-run consumption smoothing behavior of these households. Since consumption is generally considered a better measure of well-being than income, understanding the link between these earnings shocks and consumption is important in trying to gauge the magnitude of the long-run impact caused by such events. Using the Panel Study of Income Dynamics, the analysis finds the percentage change in consumption is generally less than that of the head's earnings and total family income, especially at the time of the shock. The results also indicate that displaced households respond to an increase in the probability of future job losses by reducing their consumption prior to a job loss. These results suggest that only focusing on earnings will overestimate the impact of these shocks on household well-being.

JEL Classification. D12, I12, J63

1. Introduction

This paper examines the long-run consumption effects of two "shocks", job displacement and disability, which are known to have permanent effects on earnings. The job displacement literature finds that earnings fall by 25% to 40% in the year of displacement, but that contemporaneous hourly wages only fall by 12%, leaving much of the initial lost earnings due to unemployment (Topel 1990; Ruhm 1991; Stevens 1997). Although the increase in unemployment eventually subsides (Ruhm 1991), hourly wages and annual earnings are both still 10% below expected levels six years after a job loss (Stevens 1997). Disability is another type of earnings shock which has lasting effects. Charles (1997) finds that earnings fall by roughly 15% in all periods following the onset of a disability.[1]

Although these shocks have severe effects on the displaced/disabled individual's long-run earnings prospects, standard economic models stress utility maximization based on consumption not income. While these two measures are inextricably linked, the life-cycle/permanent income hypothesis stresses that the two are not perfectly correlated at any given point in time. The consumption response to changes in income depends crucially upon how much of the income change is determined to be permanent and how much is transitory as well as how much of the change is anticipated. Since households "smooth" consumption in response to income fluctuations, consumption is usually cited as a better measure of household well-being rather than income (Cutler and Katz 1992). In addition, a household does not necessarily depend entirely upon the income of a single worker. Spouses and/or other household members can increase their work effort to help offset the household head's earnings losses, while multiple government programs are designed to help families financially in response to adverse labor market events.[2] Only examining the earnings of the displaced/disabled individual may give an incomplete as well as incorrect picture as to the extent of the impact of an earnings shock on a household's well-being.

[1] Disability is defined by the individual's response to a question which asks if health limits the amount or kind of work he can do. Unlike with job displacement, the hourly wage losses of disabled workers *increase* over time. However, the annual earnings losses remain fairly constant because hours of work recover after an initial decline.

[2] Stephens (1998) finds evidence of a permanent increase in the labor supply of wives in response to their husbands' job displacements.

Although both displacement and disability have large and permanent effects on earnings, it is not clear that the consumption response will be similar for both types of shocks. First, as mentioned above, the earnings of displaced workers undergo a period of recovery following an initial severe drop while the earnings of disabled workers do not rebound after the disability occurs. If families have inadequate savings and lack access to capital markets, consumption may be more volatile for displaced workers than for disabled workers. Second, differences in the social insurance programs designed to help workers respond to these earnings shocks make it likely that the responses might vary by the type of shock. Displaced workers may be eligible to receive unemployment insurance, but these benefits only are available for a limited duration. Reducing the magnitude of the consumption loss over the long-run requires additional adjustments by these households. Disabled workers, however, may be eligible to receive government disability payments for an indefinite period. In addition, worker's compensation or private disability insurance from employers may also help lessen the magnitude of the consumption losses for disabled workers. Thus, the long-run consumption impact of these two shocks may differ dramatically.

While the idea that consumption immediately responds to permanent earnings shocks is a basic implication of the permanent income/life-cycle hypothesis, it is surprising then that no study using micro-level data has examined the timing of the consumption response to an explicit permanent earnings shock. In the wake of Hall's (1978) seminal work, micro data consumption studies have primarily focused on testing whether consumption (more accurately, changes in consumption) is correlated with information and/or events that theory tells us it ought not be (e.g., Hall and Mishkin 1982; Altonji and Siow 1987; Zeldes 1989; Runkle 1991). However, there have been no studies which examine the dynamics of the consumption adjustments made both before and after an earnings shock. Thus, this paper serves an additional purpose by providing evidence on the timing of the consumption response to permanent household-level income shocks.

This paper examines the long-run response of food consumption to earning shocks using the Panel Study of Income Dynamics (PSID).[3] By allowing the earnings shock to impact

[3] While more complete measures of consumption would be preferable, there is no panel dataset with such data available which also allows the examination of the long-run response to a household-level shock.

consumption both before and after the event, the regression results map out the long-run consumption response. The time path of the consumption response is plotted along with the response of the head's earnings and total family income. Comparing the magnitude of the consumption response with the movements in the income measures gives an indication of the household's ability to "smooth" over earnings shocks.

The results show that in the long-run, consumption is significantly reduced following both types of earnings shocks affecting the household head. However, consumption is far less volatile than earnings, especially during the initial drop in the head's earnings. In part, the relative stability of consumption is due to the fact that the magnitude of the reduction in total family income is far less than the reduction in the head's earnings. In addition, displaced households begin to adjust their consumption prior to the husband's job loss, likely in response news concerning an increase in the probability that the husband will be laid off. These results suggest that families undertake steps to offset the impact of an earnings shock and that the magnitude of the impact on the household's well-being is not as large as one might be led to believe by only examining the earnings losses of the household head.

2. Empirical Methodology

Rather than choose a specific functional form for the consumer's utility function, the approach here is to analyze the reduced-form consumption response to the earnings shocks. Thus, the equation used in estimation is

$$\ln C_{it} = \alpha_i + X_{it}\beta + \sum_{j=1}^{T_{max}} \gamma_j year_j + \sum_{k=k_l}^{k_u} \eta_k D_{it}^k + \epsilon_{it}, \tag{1}$$

where C_{it} is household i's consumption in year t, α_i is a household specific effect, X_{it} are time-varying regressors which represent the household's preferences for consumption, the $year_j$ terms are intended to capture macro-level year specific effects, and the D_{it}^k terms capture the pre- and post-shock effect on consumption.[4] The k superscript in D_{it}^k

[4] While this specification is agnostic towards the underlying theory, it should be noted that (1) can be generated by modeling life-cycle consumers with power utility functions and assuming 1) intratemporal separability between each consumption measure and other goods, 2) constant preferences across house-

represents how many periods since the earnings shock occurred. k is allowed to take on negative values to capture the effects on consumption prior to the shock. As mentioned above, consumption may begin to fall prior to the shock if households learn that a shock will occur or if there is an increase in the probability of an adverse event.

The presence of the household specific effect in (1) requires the use of a fixed effects, or within, estimator. In addition, the error term for a given household is likely serially correlated over time. The fixed effects estimator is still consistent, but the standard errors for the estimated coefficients need to be adjusted. The analysis reports standard errors which use the Huber (1967) and White (1980) standard error corrections to account for arbitrary forms of serial correlation as well as heteroskedasticity across households.

The first 25 waves (1968-1992) of the Panel Study of Income Dynamics (PSID) are used in the analysis, with attention restricted to the nationally representative sample.[5] Past studies in the consumption literature have been concerned that households which undergo changes in composition will adversely affect the results due to changing consumption preferences. Although the analysis controls for variables thought to impact these preferences, the sample is limited to households with both a head and a wife present and where each spouse is between the ages of 25 and 65.[6] Each couple is followed from their first usable observation until they either divorce/separate, leave the sample, or have an unusable observation.[7] Households with less than three consecutive usable observations are dropped

holds, and 3) time-varying interest rates which are constant across households. Assumption 3) is the only assumption which is not standard in the consumption literature, but likely has minimal effects on the estimation results given that there is little exogenous cross-sectional variation in interest rates across households using standard methods.

[5] Including the poverty over-sample in the analysis yields comparable results.

[6] The restriction to couples focuses the analysis on the relatively stable households. Additional analysis restricting the sample to male heads of households regardless of marital status yields comparable results. Due to the structure of the PSID, it is difficult to follow female headed households because whenever a women is married or has a male companion in the household, the man is considered the head of the household.

[7] A usable observation simply means that the observation does not have missing data for any of the variables used in the analysis. However, as described below, since food consumption and housing consumption are missing in some years, observations with missing values for these variables are dropped only in the years in which these questions are asked. The list of the variables used in the analysis as well as a description of how variables are created from the PSID data files can be found in the Appendix.

from the analysis. However, the PSID does not collect food consumption information in 1968, 1973, 1988, and 1989. Thus, after limiting the sample to those households with consecutive usable observations, observations for the years in which food data are not collected are subsequently dropped. If this final cut results in a household having only one observation, that observation is also dropped to facilitate the fixed effects estimator. The final sample is composed of 31,975 observations on 3308 couples.

Food Consumption

The most widely used consumption measure in the PSID is household food consumption.[8] Food consumption is calculated as the sum of three variables: 1) food consumption at home, 2) food consumption away from home, and 3) the net value of food stamps. The food at home question asks "How much do you (FAMILY) spend on the food that you use at home in an average week?" A comparable question is asked for food away from home. The specific time frame to which these questions refer is unclear. The PSID generally interviews respondents between March and May. This study follows the convention used in Zeldes (1989) and assumes that the response to these questions refer to the first quarter of the calendar year in which the survey is conducted. The time frame for the food stamp question has varied over the PSID's duration. Prior to 1977, the food stamp question was intended to capture total value of food stamps used during the previous calendar year. In subsequent surveys, the food stamp question asks about the value of food stamps used in the prior month.[9]

All food data is converted into 1992 dollars through the use of the appropriate component of the CPI-U. Since all amounts are assumed to refer to the first quarter of the survey year, the CPI-U for that quarter is used here. The household's food at home expenditure

[8] An earlier version of this paper also included housing consumption and Skinner's (1987) predicted total consumption. The results showed that changes in Skinner's predicted measure in response to the earnings shocks examined here were very close in timing and in magnitude to the changes in food consumption. Furthermore, computing housing consumption flows from owner occupied housing is made difficult since some households have no mortgage payments. Since neither of these consumption measures gives any additional information about either the timing or the magnitude of the consumption response, only the results for food consumption are presented here.

[9] Only 2% of couple-year observations report the use of food stamps.

is combined with the value of food stamps and this sum is deflated by the CPI's food at home component. Food expenditure away from home is deflated by the CPI's food away from home component. These values are then summed to form total annualized household food consumption.

The use of food consumption to examine the impact of an earnings shock might be questioned since it both a non-durable and a necessary good. Dynarski and Gruber (1997) find larger expenditure elasticities for durable than for non-durable goods in response to a one year change in income using the Consumer Expenditure Survey. It is not clear, however, how these differences in durable and non-durable *expenditure* elasticities relate to differences in *consumption* elasticities. While households may reduce their purchases of new clothing or delay buying a new washing machine for a few years after suffering an earnings shock, the consumption flows from their existing stocks of these goods will not be reduced by the magnitude of expenditures on these goods. The non-durability of food avoids this issue since changes in food expenditures reflect changes in food consumption between the annual survey intervals. Since food consumption is a necessary good, changes in this consumption measure may understate the changes in household well-being, especially in the short-run. However, previous studies have estimated the income elasticity of food consumption to be between .6 and .7, indicating that food consumption is fairly responsive to changes in income.[10] Given its non-durability and responsiveness to income changes, food consumption would appear to be a reasonable proxy for estimating both the magnitude and the timing of changes in household well-being.

Job Displacements

Job displacements are determined from a question which asks respondents with low levels of current job tenure "What happened to that employer (job)?" The two categories of responses used to identify displacements are plant closed/employer moved and laid off/fired. Although fired workers are generally not considered to be displaced, Boisjoly, Duncan, and Smeeding (1994) report that only 16% of the PSID workers in the laid off/fired category

[10] See Tobin (1950), Maddala (1971), and Izan (1980) for estimates of the income elasticity of food. For more recent estimates using a variety of empirical methods, see Magnus and Morgan (1997).

have indeed been fired. Any potential bias from including fired workers is likely minimal. And to the extent that a firing is also a shock, it is not obvious that these workers should be excluded. Workers who are temporarily laid off at the time of the survey are treated by the PSID as if they are still employed and are not asked any questions about a previous employer/job. If such a worker is subsequently terminated, that information would be recorded as a displacement in the following year's survey.

The year of displacement is measured with some error. The earnings and employment questions are designed to elicit information for the previous calendar year. However, questions about job loss are not specific to calendar years. For the first sixteen waves of the PSID, the survey asks what happened to the last job for those reporting job tenure which is less than one year. Subsequent surveys ask what happened to the previous job if the current job started since January 1 of the previous calendar year. Due to the timing of the interviews, job displacements may have occurred either during the previous calendar year or during the first few months of the current calendar year. For this study, a recorded displacement is assumed to have occurred during the previous calendar year to match the earnings and employment data recorded in the same survey.[11]

The analysis focuses on the husband's first displacement since the couple has been together. Stevens (1997) finds that for workers suffering multiple job losses, the first job loss is by far the most severe in terms of lost earnings and wages. She also finds that displaced workers face an increased risk of future job loss relative to never displaced workers. Stevens concludes that finding stable employment is an important part of the recovery process after an initial job loss. Since the first job loss is the catalyst for the permanent earnings losses and since subsequent job losses appear to be "aftershocks" following the initial displacement, the analysis here is restricted to the impact of the first job loss.

Displacements recorded in the 1968 (first) survey are counted as first displacements, but these couples are not used in the analysis because these displacements may have occurred anytime in the ten years prior to the survey. For families which first appear in the 1968

[11] Stephens (1998) presents evidence from the unemployment experience of displaced workers in the PSID which suggests that this dating of displacements is the correct approach to use.

survey, the displacement is therefore either the husband's first displacement, or his first one in at least ten years. For families which are split-offs from the original sample (e.g., a daughter is married and sets up her own household), the recorded displacement may not be the husband's first displacement, but it will be the first one since the household was formed.

Disabilities

The head's disability status is recorded from a question which asks "Do you (HEAD) have any physical or nervous condition that limits the type of work or amount of work you can do?"[12] Whereas displacement information refers to a specific event which occurred within the past year, disability status refers to a subjective state which can be acute, chronic, or intermittent. Given that these are self-reports, there has been concern that workers may feel compelled to justify lower amounts of labor force participation, especially retirement, by claiming they are limited in their work capacity. While a such bias exists, there also exists an attenuation (measurement error) bias since the work limitation responses are a noisy measure of true work capacity. In fact, the disability literature finds that these opposing biases appear to cancel out one another and concludes that health limitation questions such as those found in the PSID are a good proxy of a worker's disability status (Stern 1989; Bound 1991; Bound et al 1998).[13]

Another issue with the disability measure is determining the date of disability onset. For this study, a disability is assumed to have occurred within the past year of the survey date when the husband first reports an affirmative answer to the disability question. One potential problem with this method is that although husbands may be reporting a

[12] The wording of this question has remained constant throughout the PSID, with the exception of 1969-1971. In these years, disability is recorded from two questions, the first which asks if a condition limits the type of work and the second which asks if a condition limits the amount of work. A disability in these years is recorded as an affirmative response to either question.

[13] To examine this issue more closely, an alternate model was run in which the disability effect was allowed to differentially impact younger (age 25-44) and older (age 45-65) workers. The idea is that it would be much harder for a younger worker to credibly pass himself off as being disabled when he is not than it would be for an older worker. While the disability effects on consumption are larger for the younger workers, a Wald test could not reject the hypothesis that the post-disability effects are the same for two groups.

disability for the first time as limiting their work ability, these disabilities may have been bothering husbands for different lengths of time before they began to limit work activities. Unfortunately, the date of disability onset is only available in a few of the early PSID years and is not used here.[14] To capture "new" disabilities, the disability analysis is limited to those households in which there is at least one pre-disability observation available.[15] Hourly wage and annual earnings regressions estimating the long-run effect of disability using this measure yield results very comparable to Charles (1997).

A final issue with the disability measure is the severity of the disability. Charles (1997) finds that after initially reporting a disability, individuals only again report the existence of a disability in 40% of their subsequent interviews. This lack continuous disability reporting suggests that, at least for some individuals, there exists the potential for some recovery after the disability occurs. Following Charles (1997), a severity index is constructed which is a function of the fraction of survey years after (and including) the initial disability in which the husband also reports a disability. In results not presented here, this severity index is then used to weight the disability variables which appear in the estimated equations. While this weighting scheme results in larger impacts on the all of the outcomes examined here, it does not alter the timing of the consumption response to the husband's disability. Furthermore, the magnitude of the consumption response is not statistically different from the responses reported here.

3. Results

Summary statistics for never displaced/disabled households, displaced households, and

[14] In 1969-1975 and 1978, the PSID asks the respondents how long they have been limited. Charles (1997) uses this information to construct a year of onset variable and to impute year of onset where this variable in not available.

[15] Requiring two, three, or four pre-disability observations does not change the results. Furthermore, allowing workers with no pre-disability observations in the analysis has no appreciable affect on the results reported here. However, in robustness checks not reported here, the results for older workers (age 45-65) depend upon whether or not any pre-disability observations are required. Since there is no way to determine how long a worker has been disabled if he always reports he has been disabled, it seems logical to drop those workers from the analysis as is done here which is concerned with how households respond to the disability "shock".

disabled households are presented in Table 1.[16] As might be expected, displaced households are younger than the average household at the time of the shock while disabled households are older. Both displaced and disabled households are less educated, have lower earnings, and are more likely to be non-white and to be blue collar workers. In addition, displaced workers are more likely to come from the manufacturing sector while disabled workers are only slightly more likely to work in manufacturing. Finally, 49% of couples never report a displacement or a disability, while 28% of couples report a displacement and 27% report a disability.[17]

Response to Displacement

Fixed effect regression results for the effect of a job displacement on all three measures of consumption are presented in Table 2. Following the specification of consumption taste shifters in Zeldes (1989), all regressions include the log of an annual food needs measure, a quadratic in the head's age, and year effects.[18] Consumption is significantly affected by the household's annual food needs and by the head's age quadratic although these coefficients are not shown in Table 2. Robustness checks, made by including a quartic in the head's age and variables for the number of children and young children as taste shifters, do not change the results presented here.

The bottom of column 1 in Table 2 shows the average post-displacement effect on consumption for all displacements.[19] These results indicate that there is a permanent reduction in consumption after a job displacement. On average, food consumption is significantly reduced by 9% during the post-displacement years. The Wald test statistics

[16] The Table reports the average of all observations for households which never suffer a shock. For displaced and disabled households, the averages are for the year the shock is reported. Earnings, wages, and job characteristics are taken from the year prior to the shock.

[17] This disability figure represents the fraction of workers who report a disability conditional on having at least one predisability observation if ever disabled. A slightly higher fraction of all workers, 34%, ever report having a disability.

[18] The annual food needs measure is based on USDA Low-Cost plan estimates of weekly food costs which has been converted to an annual measure and adjusted for household economies of scale. The tables detailing the construction of this variable can be found in various PSID codebooks.

[19] The post-displacement effects include the effect for the year of displacement and all subsequent years.

at the bottom of the table show that the post-displacement dummy variables are jointly significant.

The year by year impacts on consumption are also presented in column 1 of Table 2. Two important trends emerge from these coefficients. First, consumption begins to fall prior to the head's displacement. In fact, consumption is significantly reduced in the year before the displacement. This pre-displacement decline suggests that some households are adjusting to information concerning possible job losses. Second, food consumption is reduced by roughly 9% in every year following the displacement.[20] The Wald test statistic cannot reject the hypothesis that all of the post-displacement effects are equal. Thus, all of the consumption response occurs up until and at the time of displacement but not after the job loss.

While the results in Table 2 show the permanent reduction in consumption following a job loss, an even clearer picture of the household's consumption response can be gathered by contrasting this response with the time paths of both the head's earnings and total family income. Households may receive information about impending job losses prior to the husband's displacement and this information may be reflected in the head's earnings. Jacobson, Lalonde, and Sullivan (1993), using administrative data from Pennsylvania, find that earnings begin to decline three years prior to a job loss. Using the PSID, Stevens (1997) finds pre-separation earnings losses occurring two years before displacement both for workers who are subsequently laid off and for workers who lose their job in a plant closing.[21] A firm facing financial difficulties may choose to either freeze wages or even to cut wages. In addition, these firms may choose to impose temporary layoffs. Any of these events may occur prior to the husband's permanent layoff or the plant closing, and these events would be reflected in lower earnings before a reported displacement. If households are acting optimally, they should infer these events as signals of an increased probability of a future job loss and reduce their current consumption.

[20] Percentage changes are determined as $e^{\beta} - 1$ where β is the regression coefficient.

[21] Another study in this literature by De la Rica (1995) finds evidence of preseparation earnings losses in the Displaced Workers Survey.

In terms of the household's ability to smooth consumption following a displacement, total after-tax family income is more important than the head's annual earnings. In the short-run, temporary income assistance may be provided through unemployment insurance. In the long-run, spouses and other family members may either enter the labor force or increase their current work effort if the head is displaced. They also may be able to work more *prior* to the head's job loss if they learn of an impending displacement. In addition, relatives outside of the household may provide transfers to help out family members in need. Thus, after-tax family income performs the function of being a summary statistic for nearly all of the changes in the ways in which income flows into the household.[22]

Figure 1 shows the results of the consumption regression from column 1 of Table 2 along with the results of fixed effects regressions for the head's earnings and family income which can be found in the first two columns of Table 3. The regressions for head's earnings and after-tax family income include a quartic in the head's experience, year effects, and the displacement dummy variables. After-tax family income is computed by subtracting the household's estimated federal taxes from total family income.[23] Heads with zero earnings are left in the sample since such outcomes may result from a severe job loss. For the head's earnings regressions, only observations with positive values for the head's earnings are included. If anything, this restriction likely will cause the results in Figure 1 to understate the impact of a job loss on the head's earnings.

Head's earnings and after-tax family income begin to decline prior to the husband's displacement. As reported in Table 3, head's earnings are significantly reduced in the year before a job loss. Both head's earnings and family income drop sharply in the year of displacement and reach a trough in the year after displacement. The reason for the largest decline occurring the year after displacement relates back to the timing of the PSID questions. As mentioned in the data section, displacements will on average occur in the latter half of the previous calendar year. Since the income measures are reported

[22] However, the spending down of assets or taking out a new home equity loan to finance current expenditure will not appear in family income measures.

[23] Federal taxes are estimated by the PSID staff in every year used in this study except for the 1992 survey. The 1992 observations are dropped from the family income regressions.

for the entire previous year, only a fraction of income is severely affected in the year of displacement. Thus, annual income measures in the year following a job loss are likely to be reduced more due to the timing issues involved with the survey.

Comparing the time path of food consumption with the paths of the income measures indicates the degree of consumption smoothing that households are able to undertake in response to a displacement. The decline in the head's earnings before a displacement occurs is likely signaling information about an increase in the probability of a job loss. Figure 1 shows that households respond to this information by reducing their consumption. Once the displacement occurs, consumption displays far less volatility in the short-run than either the head's earnings or family income. Between years t-1 and t+1, the head's earnings fall 25% and family income falls 13% while food consumption only falls 5%. In the medium- to long-run, consumption continues to display considerable smoothness. Between years t+1 and t+5, both income measures exhibit appreciable recovery. Consumption is unchanged over this period, a result which is confirmed by the Wald test statistic at the bottom of Table 2. These comparisons suggest a considerable degree of consumption smoothing in response to a displacement.

To understand the relatively smooth response of consumption during a time when the head's earnings are volatile, it is useful to compare the relative movements in the head's earnings and after-tax family income. The overall percentage decline in family income between periods t-1 and t+1 is roughly half the size of the decline in the head's earnings. This difference is in part due to the fact that the head's earnings account for two-thirds of family income. In addition, the loss of income due to the head's job loss can be offset by increased spousal labor supply and the receipt of transfers.[24] These sources of income allow displaced households to reduce both the short-run and long-run consumption loss. Over the long-run, family income continues to remain less affected by the displacement

[24] Stephens (1998) estimates that increases in wives' earnings replace approximately 25% of the head's lost earnings in the long-run. However, immediately following the husband's job loss, wives replace less than 10% of lost earnings. Also, tables not reported here show a sharp increase in the number of households reporting the receipt of transfers from either the government or relatives in the year of displacement and the year following displacement. This short-run increase in transfers is almost entirely driven by an increase in the receipt of unemployment insurance. In addition, there is a small long-run increase in the receipt of transfers.

in percentage terms which explains why the long-run consumption loss is less than the long-run loss in the head's earnings.

The results in this section suggest that households are able to smooth consumption in response to a job loss. Households begin to reduce consumption prior to a displacement, indicating that households either anticipate or receive news indicating an increased probability of future job losses. The flat path of consumption following the displacement indicates that all adjustments to consumption are completed once the the job loss occurs since. The relative smoothness of consumption when compared to the large fluctuation in the head's earnings show that strictly examining the impact of head's earnings may overstate the displacement impact on the household's well-being.

Response to Disability

The second column of Table 2 reports the long-run impact of a disability on consumption. Turning first to the average long-run effects at the bottom of the Table, long-run consumption is on average significantly reduced by roughly 5% following a disability. The Wald test statistics find that the post-disability variables are jointly significant. However, the pattern of the post-disability effects does not show an immediate consumption response. Consumption is not significantly reduced until two years after the initial disability report. The Wald test statistic at the bottom of Table 2 further emphasizes the delayed response to a disability since it rejects the null hypothesis that the post-disability effects are equal.

Figure 2 plots consumption along with the two income measures. Without examining the path of the head's earnings and family income, one might be inclined to believe that consumption does not immediately respond because a disability report does not necessarily mean that earnings will be reduced. However, as can be seen in Figure 2 as well as Table 3, head's earnings decline at the time of the disability. Both income measures show a slight downward trend prior to the disability report and are significantly reduced in the year of disability. Again, due to the survey design, the decline in the income measures is larger in the year after the disability than in the year of the disability. The head's earnings and family income do not show any long-run signs of recovery after a disability. In fact, both measures exhibit small but continued declines in the post-disability period.

Unlike the immediate response exhibited by displaced households, consumption adjusts gradually following a disability. Head's earnings fall by over 12% between years t-1 and t+1, while consumption remains unchanged over this time period. In part, this lack of a change in food consumption is due to the fact that family income only falls 3% over the same time frame. However, when the head's earnings and family income continue to decline in subsequent years, consumption is significantly reduced. These results suggest that the process by which a disability affects household consumption adjustments is not completely finished until a few years after the initial disability report.

The lack of a consumption response at the time of the disability is open to multiple interpretations. Disabled households may benefit from increases in other sources of income. In tables not presented here, transfer payments to disabled households are permanently increased beginning the year a disability occurs.[25] However, as is clear in Figure 2, after-tax family income is significantly reduced at the time the disability occurs and subsequently continues to decline. If anything, consumption appears to "track" these subsequent changes in after-tax income.

Another potential explanation for the lack of a response may be that disabilities are anticipated by households. One way to examine this possibility is to compare the differences in response between younger and older households. Since adverse health events are more likely as one ages, households should adjust to this increasing likelihood of a disability and have to make smaller adjustments when a disability actually occurs. As mentioned in a previous footnote, the consumption response is larger for younger households (the head is under age 45 when disabled), but a Wald test fails to reject the null hypothesis that the response is different by age at displacement. More importantly for understanding the timing of the consumption response, the results for both younger and older workers show a delayed response to the disability.

The results in this section do not give a clean interpretation about the disability impact on household well-being. Consumption is not reduced at the time of the initial earnings shock. When consumption is subsequently reduced, the change is far less in magnitude than

[25] The increase in transfer payments primarily comes from increases in the receipt of Social Security and pension benefits.

the reduction in the head's earnings. This result is consistent with a considerable degree of consumption smoothing. However, there still is a gap between consumption and after-tax family income in the long-run that is slightly larger than would be expected using the food elasticity estimates cited above. One possible explanation for this difference is that these older disabled households are able to remain closer to their previous consumption levels by spending down their accumulated assets. Another possibility is that disabled households choose to adjust other consumption expenditures aside from the food consumption measure examined here. Explaining this gap between the consumption and after-tax income loss along with the continued decline of consumption in the years following the initial disability report are areas which require further research.

4. Summary

This paper documents the response of consumption to two types of permanent earnings shocks, job displacement and disability. Although displaced and disabled workers suffer significant permanent earnings shocks, households are able to smooth their consumption in response to these adverse events. In the short-run, large changes in the head's earnings result in small changes in household consumption. The consumption smoothing ability of households is reflected in the fact that total family income is also less volatile than the head's earnings. In the long-run, household consumption is significantly reduced, but not by the same magnitude as the displaced or disabled individual's earnings. These results suggest that although these shocks permanently reduce the husband's earnings, the overall impact on household well-being is less severe than one would conclude if focusing solely on changes in individual earnings.

Future analysis of the the long-run impact of earnings shocks on consumption would obviously benefit by more extensive consumption information. The results here indicate that the long-run food consumption response to a disability is less than the response to a job loss although the long-run reduction in family income is comparable for both types of shocks. It is quite possible that households choose to adjust different components of consumption depending upon the type of earnings shock. For example, disabled households presumably will be more likely to adjust health expenditures than displaced households. The availability of more complete consumption measures in a panel dataset with a sufficiently long time

horizon could explore if the components of consumption do indeed respond differently to the source of the earnings shock.

Appendix: Data Description

The data used is this study is from the first twenty-five waves (1968-1992) of the Panel Study of Income Dynamics (PSID). The construction of the sample of couples used in this study is described here. First, every individual who is ever a head or a wife/"wife" and not in the poverty or Latino subsamples is extracted from the PSID's individual file. For each year the individual is a head or a wife/"wife" and between the ages of 25 and 65 inclusive, information from the respective PSID family file is merged to the individual dataset. Couples are created by merging together individuals with the same family identification number in a given year.

The final data set is created by first deleting observations with missing data. Food consumption questions are not asked in 1968, 1973, 1988, and 1989 while house values and rent payments are not collected in 1988 and 1989. For these questions, observations are deleted only if there is missing data in the years this information is collected. Starting with the first non-missing data observation for a couple, all consecutive observations for the couple are kept until either a missing data observation is encountered or the couple leaves the samples. Couples with at least three consecutive observations are kept. All remaining observations are then deleted for the years in which the food consumption is not collected. Finally, any couple with at least two remaining observations is used in the final dataset. The reasons for deleting observations are as follows along with the marginal number of deleted observations:

1) Family income is zero. (3)

2) Head's education is missing. (310)

3) Head's wage is missing. (26)

4) Wife's experience is missing. (240)

5) Food consumption is zero in a year when food data is collected. (21)

6) Annual food needs is missing in a year when food data is collected. (1)

7) House value is missing or zero if a homeowner. (2)

8) Rent payment is missing or zero in a year when housing data is collected. (10)

9) Delete observations which are not consecutive with the first observation for each couple. (1598)

10) Delete observations from couples which do not have at least three observations. (2378)
11) Delete observations in years that food consumption is not collected. (9472)
12) Delete observations from couples which do not have at least two remaining observations. (35)
13) Delete observations from the poverty subsample. (18,274)
The resulting sample contains 31975 observations on 3308 couples.

While many of the variables used in the analysis are taken directly from the PSID files, some variables must be created from the available data. Years of education may change during the sample period. However, it is forced to be constant for this study. Education of heads and wives appears on the family file from 1975 to 1984 and on the individual files in 1968, 1972, and from 1975 to 1992. Years of education is created by taking the most recent, non-missing observations from the family file. If years of education are still missing, then the most recent, non-missing observation from the individual file is used. Since for a majority of the survey years of education is top-coded at 16 years, the final education variable used in the analysis is top-coded at 16 years. Potential experience is then created as Age-Education-6. However, if an individual has less than 12 years of education, then experience is created as Age-18. By this method, individuals with very little schooling are not assigned large amounts of labor market experience.

The number of children, number of young children, and age of youngest child are created from the individual file by examining every individual within a given household each year. Cross-tabulations of these child variables for the 1968 and 1969 surveys found major inconsistencies with these generated PSID variables. To be consistent throughout the analysis, these variables were recreated from the individual data file for each survey year.

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Table 1: Summary Statistics[a]			
	Never Displaced or Disabled[b]	**Displaced[c]**	**Disabled[d]**
Husband's Age	40.1	38.3	45.4
Husband's Education	13.3	12.4	11.9
Wife's Age	37.8	36.0	42.5
Wife's Education	13.0	12.3	12.1
% White	0.94	0.90	0.92
Number of Children	1.41	1.46	1.22
Number of Young Kids	0.48	0.53	0.33
Husband's Annual Earnings ($)	43,200	33,400	32,600
Husband's Hourly Wages ($)	19.20	15.60	15.80
Husband's Occupation[e]			
% White Collar	59.5	44.5	40.0
% Blue Collar	38.8	54.9	57.1
Husband's Industry[f]			
% Manufacturing	25.6	32.0	27.2
% Non-Manufacturing	72.1	65.8	69.8
Fraction of couples	49.2	27.5	27.4

[a] Unweighted tabulations using the 1968-1992 PSID surveys. Dollar figures are in 1992 dollars using the CPI-U-X1.

[b] Averages include all observations for all couples where the husband is never displaced or disabled.

[c] Averages are for year of displacement. Pre-displacement industry, occupation, wages, and earnings are taken from the survey year prior to the reported displacement. Couples not in the sample prior to the displacement year are excluded from these calculations.

[d] Averages are for year of disability. Pre-disability industry, occupation, wages, and earnings are taken from the survey year prior to the reported displacement. Couples without at least one pre-disability observation are excluded from these calculations.

[e] Missing values are included in the determination of percentages.

[f] Industry information was not asked until 1971. Averages here are based on years when the information is observed. Missing values for these years are included in the determination of percentages.

Table 2: Effect of Earnings Shocks on Consumption[a]				
	Displacements		Disabilities	
Ind. Variable	Coeff	Std Err	Coeff	Std Err
Four Years Before	.0119	.0171	–.0176	.0153
Three Years Before	.0002	.0182	–.0045	.0165
Two Years Before	–.0291	.0181	–.0046	.0159
One Year Before	–.0502	.0184	–.0303	.0165
Year of Shock	–.0850	.0182	–.0097	.0173
One Year After	–.0981	.0187	–.0229	.0193
Two Years After	–.0999	.0199	–.0522	.0203
Three Years After	–.0944	.0211	–.0514	.0210
Four Years After	–.0932	.0211	–.0685	.0220
Five Years After	–.1012	.0227	–.0647	.0229
6+ Years After	–.1104	.0218	–.0570	.0223
Average of post-shock effects[b]	–.0975	.0172	–.0466	.0145
Wald test statistics (p-value):				
post-shock effects = 0	34.2 (.000)		16.4 (.022)	
post-shock effects are equal	2.8 (.841)		12.8 (.046)	

[a]The dependent variable in each regression is the log of food consumption. All regressions include the log of annual food needs, a quadratic in the head's age, and year effects.

[b]Post-shock effects include the year of the shock and all subsequent years.

Table 3: Effect of Earnings Shocks on Head's Earnings and After-Tax Family Income[a]

	Displacements				Disabilities			
	Head's Earnings		Family Income		Head's Earnings		Family Income	
Ind. Variable	Coeff	Std Err	Coeff	Std Err	Coeff	Std Err	Coeff	Std Err
Four Years Before	.0085	.0260	–.0118	.0234	.0125	.0263	–.0008	.0184
Three Years Before	–.0327	.0302	.0026	.0236	.0099	.0260	–.0100	.0205
Two Years Before	–.0621	.0343	–.0264	.0274	–.0096	.0278	–.0311	.0346
One Year Before	–.0689	.0365	–.0438	.0357	–.0484	.0337	–.0720	.0347
Year of Shock	–.249	.0347	–.136	.0368	–.0973	.0345	–.0740	.0252
One Year After	–.355	.0423	–.171	.0399	–.165	.0414	–.103	.0287
Two Years After	–.236	.0434	–.134	.0353	–.147	.0475	–.0891	.0328
Three Years After	–.244	.0448	–.140	.0398	–.168	.0493	–.106	.0339
Four Years After	–.193	.0436	–.079	.0375	–.216	.0537	–.123	.0355
Five Years After	–.191	.0447	–.114	.0475	–.215	.0548	–.155	.0406
6+ Years After	–.219	.0439	–.134	.0454	–.221	.0531	–.144	.0464

[a]The dependent variable in each regression is the log of the income measure. All regressions include a quartic in head's experience and year effects.

Figure 1 - Effect of Displacement on Consumption, Head's Earnings, and Family Income

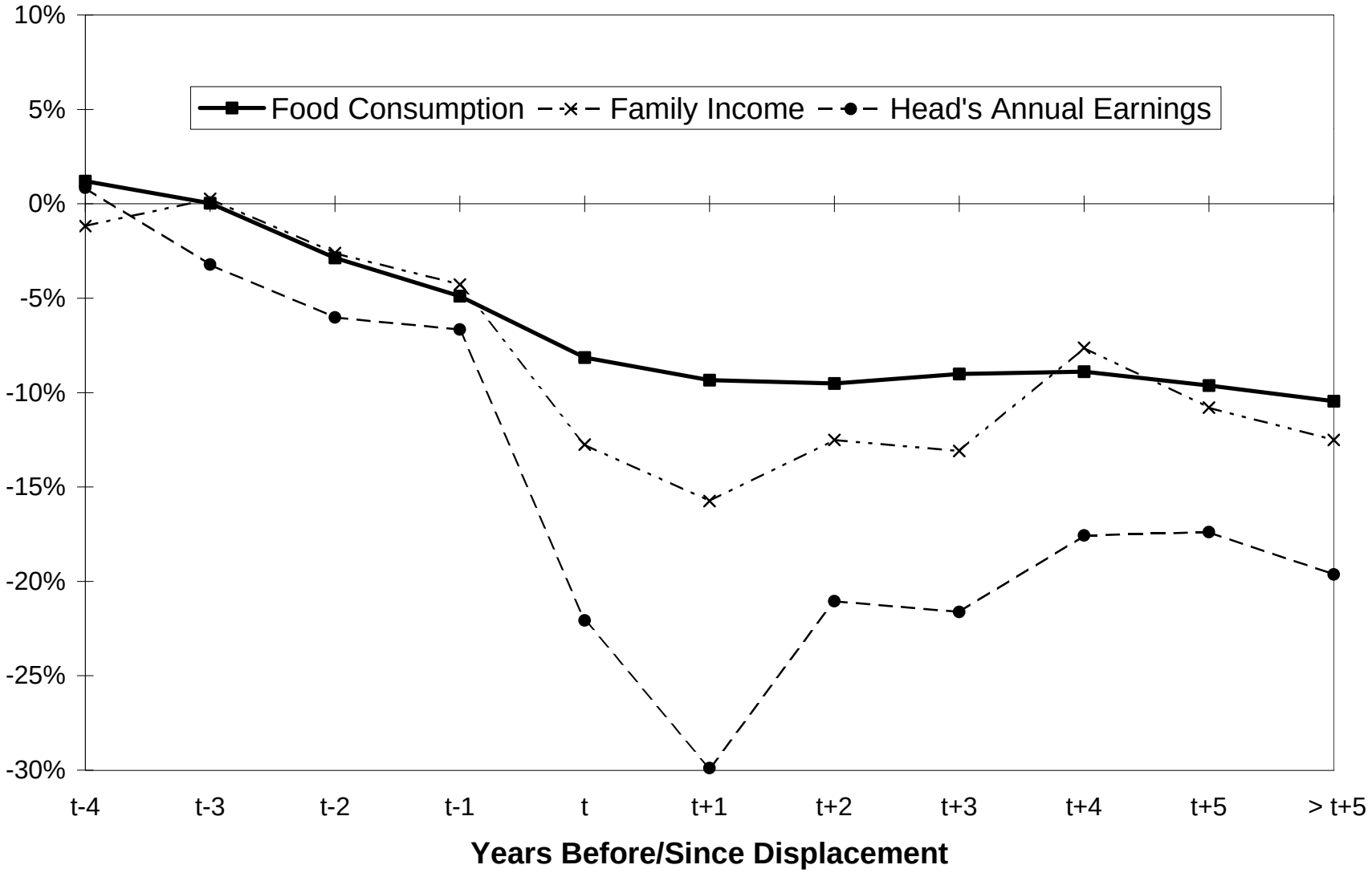

Figure 2 - Effect of Disability on Consumption, Head's Earnings, and Family Income