How do Unemployment and Recessions Affect Time in Food Preparation and Food Expenditures within the Family?*

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During recessions families may be more likely to eat meals at home than during periods of economic growth, at least partly to save money, and this may result in an increase in the amount of time family members spend preparing food. If families eat at home to save money during recessions, we would expect to see similar changes when a family member becomes unemployed, even in periods of economic growth. In this paper I examine the relationships between recession, unemployment, time in food preparation, and expenditures on food within the family using data from the American Time Use Survey and Panel Study of Income Dynamics. The results of this study have implications for those interested in time-use patterns and household labor, as well as for researchers interested in the relationships between economic circumstances and health outcomes.

Background

A vast literature identifies changes in health and health behaviors for individuals when they become unemployed. A complementary literature examines the relationships between the economy and various population health outcomes. With their different units of analysis, these literatures often come to opposing conclusions. At the least they present a paradox—economic downturns seem to be associated with better population-level health while individual unemployment is associated with worse individual health. In this paper I seek to better understand this paradox by examining a particular set of micro-level behaviors that may have associated health consequences—food preparation patterns and expenditures on different types of food.

Yet examining these issues only for unemployed individuals or only at the population level is limiting. Therefore, I link these health literatures to the literature that frames unemployment as a household or family experience, which includes studies of the added-worker effect and how unemployment affects time in household labor. By linking these literatures I can bring to bear a more comprehensive understanding of the processes through which unemployment and economic downturns affect individuals, families, and the population. In addition, this provides me with a more sociological lens through which to view these issues than found in the economy and health literature.

Past Research on the Economy and Food Consumption

Although there is an extensive literature linking the economy and population-level health, and unemployment and individual-level health, few studies focus directly on food consumption or expenditures, even though patterns of food consumption may be linked to negative health outcomes, including obesity, heart disease, and high cholesterol. A few studies examine how business cycles affect food consumption patterns at the population level. Hruschka (2012) studies only white women in the United States and finds little evidence that the recent economic downturn caused individuals to consume cheaper (and presumably less healthy) foods, which could in turn exacerbate obesity. Similarly, Carlson et al. (2009) find that economic factors play only a minor role, or at least a non-statistically significant role, in achieving a higher quality diet. Conversely, Dave and Kelly (2010) examine a longer time period and find that a higher risk of unemployment is linked with reduced consumption of fruits and vegetables and increased consumption of "unhealthy" foods, such as snacks and fast food. They find that the procyclical nature of healthy food consumption (i.e., when the economy is good people eat healthier) is

partly explained by increases in family income and mental health. The study by Dave and Kelly (2010) is more comprehensive than the previously mentioned studies and suggests that even if individuals do consume more meals at home during an economic crisis, they may not be consuming healthier food. Nonetheless, this study is population-based, making it difficult to hypothesize about individual behaviors.

Two studies do examine individual-level behaviors related to food preparation and consumption. Edwards (2011) uses data from seven waves of the American Time Use Survey (ATUS) to examine how rising unemployment rates affect individuals' time use. He finds that when unemployment rates rise, individuals spend more time preparing food as well as eating and drinking. In another study using the ATUS, Aguiar, Hurst and Karabarbounis (2011), examine how the forgone market work hours of the unemployed are allocated to other activities over the business cycle. They find that about 30-40% of forgone market work hours are allocated to increasing home production, which includes time spent preparing food.

Thus, the prior literature on the economy's effect on food preparation and consumption, sparse as it is, suggests individuals and families may be shifting time use or food consumption patterns in response to economic shocks. This is consistent with the types of behavioral changes uncovered in the literature that examines unemployment in the family context, a literature I will turn to now.

Past Research on Unemployment as a Family Experience

The literature that studies unemployment as a family experience is generally focused on one of two themes—the added-worker effect or time in household labor. The former literature is significantly larger than the latter. Literature on the added-worker effect suggests that wives

increase their labor supply under conditions of husbands' unemployment. Lundberg (1985) finds a small increase in wives' labor supply during husbands' unemployment. Maloney (1987) extends the idea to cover cases of husbands' underemployment as well as unemployment and finds that wives increase their work hours substantially when their husbands are underemployed. They also want to increase their work hours when their husbands are unemployed, but they face constraints, similar to their husbands. More recently, Stephens (2002) finds continuing evidence of an added-worker effect, and he finds the effect increases with the magnitude of the husband's wage loss. Although this literature focuses on a very specific aspect of unemployment within the family, it demonstrates the importance of thinking about unemployment as a family-level shock in which more than one actor has a role, not just an individual shock.

There is also a small literature on the relationship between unemployment and time in household labor. Using cross-sectional data from the ATUS, Burda and Hamermesh (2010) show that unemployed men and women spent significantly (and substantively) more time in household production than employed men and women. For men, Brines (1994) finds that unemployed husbands spend more time in housework than fully employed husbands. Using a short panel of data, which allows him to look at changes over time, Shamir (1986) finds that Israeli men and women who become unemployed increase their share of housework modestly during unemployment and then reduce it following re-employment. Similarly, Ström (2002) finds changes in Swedish couples during unemployment, although for men, the higher hours of household labor persist even after re-employment. More recently, Gough and Killewald (2011) used three decades of panel data from the Panel Study of Income Dynamics (PSID) to examine how the unemployment of the husband or wife was associated with changes in the housework time of both spouses. They find that during a period of unemployment, the unemployed spouse

spends more time in housework than in periods when they are employed, and their spouse spends less time in housework. Thus, there is evidence of a shift in household production in the direction of the unemployed individual during unemployment. Interestingly, Gough and Killewald (2011) also demonstrate that the total number of hours of housework completed within the family during periods of unemployment is higher than during periods of employment. This may result from reducing the outsourcing of domestic tasks to save money. Since the most-outsourced task is thought to be food preparation, it seems plausible that I will see a greater amount of time spent in food preparation tasks among the unemployed than among the employed. This literature provides further evidence that aspects of family life shift during periods of unemployment.

Research Questions and Hypotheses

Drawing on these two literatures—economy and health and unemployment as a family experience—I seek to answer two research questions in this paper. First, do individuals spend more time in food preparation during periods of own or partner unemployment? Second, do changes in consumer expenditures on food away from home and food consumed at home during periods of unemployment provide a possible mechanism for changes in food preparation time?

I hypothesize that similar to the changes shown for time in housework in previous work (Gough and Killewald 2011, Shamir 1986, Ström 2002), individuals will spend more time in food preparation activities during periods of own or partner unemployment than will individuals who are not unemployed and have partners who are not unemployed. Furthermore, I hypothesize that when an individual or his partner becomes unemployed, the household will absolutely and relatively reduce spending on food away from home as compared to periods of employment,

although these reductions may be small. Based on past research I expect to find similar results for periods of recession, although the effects may be less pronounced.

These hypotheses do not hinge on whether or not individuals outsource some of their food preparation as part of reducing time in housework, but an increase in time spent in food preparation at home and a reduction in the amount spent on food away from home would be consistent with such a scenario.

Data and Method

I draw on two sources of data to answer the research questions, and I am considering using a third source in future expansions of the paper. To answer the first research question I use data from the ATUS, linked to the last wave of the respondent's Current Population Survey (CPS) data. The ATUS has several advantages for answering this research question. First, it collects detailed measures of time use from the respondent. In particular it allows me to examine time spent preparing food and drink, time spent grocery shopping, time spent purchasing food (other than groceries), and time spent using meal preparation services. Although a limitation of the data set is that ATUS collects time-use data from only one respondent in the household, it does collect information about the employment status of both spouses in the household, which is the key independent variable of interest. The second advantage to using ATUS is that the data were collected before, during, and after the recent recession. Therefore, I can examine population trends in time use under conditions of unemployment to identify whether time-use patterns in the population change during periods of recession as compared to periods of economic growth. Finally, the ATUS can be linked to the CPS, which will allow me to obtain measures of key

variables prior to the observed spell of unemployment. This will be important for the implementation of the analytic strategy.

To answer the second research question about consumer expenditures I draw on data from the PSID, waves 1999-2009 (biannual). As I develop the study further, I may also draw upon the Consumer Expenditure Survey (CEX). The CEX has the advantage of providing detailed measures of consumer expenditures, such as the specific types of food households purchase. However, the PSID provides a longer panel of data, which is helpful for estimating changes in expenditures between periods of unemployment and periods of employment. In addition, for the initial analysis, it seems most sensible to start with an examination of more global measures of expenditures. In particular, I study expenditures on food away from home and expenditures on food to be consumed at home. I also examine the probability of using food stamps during periods of unemployment as compared to periods of employment.

For the analysis of ATUS data I will employ an inverse probability of treatment weighting (IPW) strategy. This makes use of the potential outcomes framework, similar to propensity score matching. To implement this strategy I will first use variables from the CPS to predict the propensity to be unemployed at the time of the ATUS data collection. These propensity scores can then be used to create IPW weights. The weights are added to a regression to obtain the causal estimate of the impact of unemployment on the outcome variables. The intuition behind IPW is that one can use the propensity scores to reweight the observations in the sample so that those individuals experiencing unemployment and those not experiencing unemployment look more similar. This allows one to compare the outcomes between the two groups to obtain the average effect of unemployment on the outcomes for those experiencing unemployment. To predict the propensity for unemployment I will include at least the following

variables in a probit model with unemployment (for the respondent and his/her spouse) as the outcome: state-level unemployment rate, age, education, race, sex, number of children, age of the youngest child, occupation, class of worker, industry, and region. Because this is a two-step estimation procedure, the standard errors obtained from the estimation may be inconsistent. Therefore, I will use robust standard errors in an effort to account for the two-stage estimation. A parametric bootstrap may also be used.

To analyze the data from the PSID I employ fixed-effects models. The fixed-effects are at the level of the individual within a couple. Therefore, if an individual is part of more than one couple within the decade of the survey data, he will have a different fixed effect for the first relationship than for the second relationship. This is the same strategy employed in recent research on housework using the PSID (Gough and Killewald 2011, Killewald and Gough 2010). The fixed effects models are designed to produce estimates that net out individual-specific time-invariant unobserved characteristics. As such, time-invariant variables cannot be included in the models. The models cannot account for time-varying unobserved characteristics, but the ability to control for time-invariant characteristics provides an advantage over standard ordinary least squares models (OLS), as shown in the preliminary results in the next section.

Preliminary Results

In this section I provide preliminary results for the second part of the analysis using data on food expenditures from the PSID. I started with the second part of the analysis simply because I already had the data available. In Table 1 I provide descriptive statistics of the analytic sample. Median earnings of the male partners in the sample are more than double the median earnings of the female partners, with male partners having median earnings of nearly $50,000 and female

partners having median earnings around $24,000. There is a similar differential between male partners' and female partners' average weekly work hours. On average respondents are in their early 40s. About 6-7% of observations come from men and women who are black, while 4% come from Latino men and women. About 10% of observations are for male partners who are immigrants. About one-third of the sample has a college degree, and unemployment is low—only 1-2% of person-year observations include an unemployment spell—and most individuals experiencing unemployment only experience one spell of unemployment during the observed waves. The average state-level unemployment rate over the period is 5.65%.

[Table 1 about here.]

Turning to the outcome variables, we see that in only 2% of observations are individuals using food stamps. The average weekly expenditure on food to be consumed at home is about $110, and the average weekly expenditure on food away from home is about $46. Thus, on average, individuals in this sample are spending about $156 per week on food, or nearly $650 per month. The proportion of food expenditures allocated to food away from home is a little less than one-third. These statistics indicate that food expenditures are a large monthly expense for the average household. They also suggest there may be quite a bit of room for reducing spending by shifting money away from food away from home toward food to be consumed at home, assuming that food consumed at home is a better value on average than food away from home.

Next I turn to the results of the models of unemployment on food expenditures and use of food stamps, controlling for relevant individual and contextual characteristics. I show both OLS results and fixed-effects results in Table 2. I first estimate the effect of unemployment on the log of expenditures on food to be consumed at home. Although there is a negative and statistically significant effect of the male partner's unemployment on the amount spent on food to be

consumed at home—about 12% ($p<.01$)—this effect does not persist in the fixed-effects model. Thus, on average, unemployment does not seem to be related to expenditures on food to be consumed at home, after accounting for individual time-invariant differences.

[Table 2 about here.]

Having examined food to be consumed at home, I now look at the log of expenditures on food away from home in Table 3. Unlike in the model of food to be consumed at home, I find a negative and statistically significant effect of the male partner's unemployment on the amount spent on food away from home in both OLS and fixed-effects models. The size of the coefficient is also substantively large. The fixed-effects models indicate that during periods of male partner's unemployment households spend 17% less per week on food away from home ($p<.01$). With regard to total expenditures on food, the fixed-effects model indicates that during periods of the male partner's unemployment, households spend 9% less per week on food ($p<.01$) (results not shown). These results suggest that households may change their spending on food away from home during periods of unemployment but not adjust their spending on food to be consumed at home. Therefore, I examine whether there is a change in the amount spent on food away from home as a proportion of total food spending. Consistent with the absolute results, the fixed-effects model indicates that during periods of the male partner's unemployment, the proportion of money households spend on food away from home is about 2% lower than during periods of employment ($p<.01$) (results not shown)

[Table 3 about here.]

Along with spending less on food during periods of unemployment, households can also seek outside resources to help cover the cost of food. This could take on a number of forms, including visiting a food pantry and applying for food stamps if they meet the income thresholds.

Here I examine food stamp receipt. As above, I report results for both the OLS and fixed-effects models in Table 4. The results of the OLS model with controls indicate that during periods of male partners' unemployment households are 8% ($p<.001$) more likely to be using food stamps. During periods of female partners' unemployment households are 4% ($p<.05$) more likely to be using food stamps. After taking into account the individual time-invariant characteristics that may affect both employment and food stamp usage using the fixed-effects models, the coefficients are reduced, but the effects remain statistically significant. The fixed-effects models show that during periods of male partners' unemployment, households are 3% ($p<.05$) more likely to be using food stamps, and during periods of female partners' unemployment they are also 3% ($p<.10$) more likely to be using food stamps.

[Table 4 about here.]

Interactions with Recession Indicator

Although I have controlled for year and state-level unemployment rate in these models, there could be a moderating effect of the recent recession on the relationship between unemployment and food expenditures, along with mediating effects of year and state-level unemployment rate. To examine the possibility of moderating effects, I estimate fixed-effects models that interact unemployment status with an indicator variable for the recession period. Namely, the recession indicator identifies the period covered by the 2007 and 2009 waves of the survey. The results of these models illuminate changes in expenditure patterns for households that do *and* do *not* experience the unemployment of one of the partners[1].

First, considering households in which neither partner experiences unemployment during the recession, I find that during the recession these households spend about 4% ($p<.05$) more

[1] These results are available on request but are not included in the current set of tables.

money (in absolute terms) on food to be consumed at home. Furthermore, they spend about 13% ($p<.001$) less on food away from home. And, examining food away from home as a proportion of food expenditures, these households reduce the proportion of money spent on food away from home by about 2% ($p<.001$). Thus, the results of these interaction models indicate that even families that do not experience the unemployment of a partner during the recession do revise their spending patterns with regard to food expenditures.

Turning to households that *do* experience the unemployment of a partner during the recession, I find that households spend about 16% ($p<.001$) less on food to be consumed at home during periods of male partners' unemployment. Similar to households without unemployed individuals, during the recession, households spent 16% ($p<.10$) less on food away from home during periods in which the male partner was unemployed, and 20% ($p<.10$) less on food away from home during periods in which the female partner was unemployed. Examining total food expenditures, the results suggest that during the recession, households spent 16% less on food overall during periods in which the male partner was unemployed. Unlike in households without an unemployed individual, during the recession there is no statistically significant difference in the proportion of money expended on food away from home compared to all food expenditures. Nonetheless, the results indicate that during the recession, households with an unemployed partner had substantially different spending patterns on food compared to periods in which they did not have an unemployed partner, or compared to periods of unemployment that did not coincide with the recession. These results suggest an overall reduction in food expenditures, while for households without an unemployed partner the reductions come from what might be considered "non-essential" food purchases. The results of the food stamps model suggest that some of the reduction in spending on food (at least food to be consumed at home) could be

attenuated by the receipt of food stamps, but this is probably only the case for a small percentage of households with unemployed individuals. During the recession, households with an unemployed male partner were marginally more likely to be receiving food stamps (6%; $p<.10$) than in other periods.

Conclusions and Next Steps

The preliminary results of the expenditure analysis suggest that during the recent recession even families without an unemployed partner in the household shifted their food expenditure patterns. They spent significantly less on food away from home but slightly more on food to be consumed at home. For families with an unemployed partner during the recession the changes were more profound. During the recession, households with an unemployed male partner spent 16% less on food overall, and reductions came from both food away from home and food to be consumed at home. Households with unemployed female partners also saw substantial reductions in expenditures on food away from home. Thus, the preliminary results suggest that families adjusted spending on food during the recent economic downturn, especially if there was male partner unemployment in the household, and this is generally consistent with my hypothesis.

The primary next step of the analysis is to estimate the effect of unemployment on time in food preparation using the data and methods described earlier. In addition, I will consider supplementing the PSID expenditure analysis with an analysis of the types of foods purchased for consumption at home using the Consumer Expenditure Survey. Because the samples of these surveys all differ, I intend to do a sensitivity analysis in which I constrain the samples to be as similar as possible and examine the results. Although it will not be possible to draw a causal link between time use and expenditures, this will allow me to make suggestive claims about how

individuals within families seem to be responding to economic shocks (downturns or unemployment) in terms of time in food preparation and food expenditures. Finally, I plan to revise the tables to include results for the total expenditures and proportional expenditures results, and the interaction models.

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Table 1. Descriptive Statistics (person-year observations)

	Mean (SD)	**Range**
Male partner's median earnings	49020.00 (53082.30)	0-285000.00
Female partner's median earnings	23800.00 (28096.72)	0-131100.00
Male partner's age	42.54 (9.87)	18-60
Female partner's age	40.73 (9.89)	15-60
Male partner is Black	0.07	0-1
Male partner is Latino	0.04	0-1
Female partner is Black	0.06	0-1
Female partner is Latino	0.04	0-1
Male partner is immigrant	0.10	0-1
Male partner has BA/BS	0.34	0-1
Female partner has BA/BS	0.32	0-1
Male partner unemployment	0.02	0-1
Female partner unemployment	0.01	0-1
State-level unemployment rate	5.65 (2.01)	2.60-13.30
Living in urban area	0.96	0-1
Male partner's weekly work hours	42.06 (14.50)	0-80
Female partner's weekly work hours	26.80 (17.28)	0-65
Respondent is female partner	0.55	0-1
Respondent is male partner	0.45	0-1
Male partner's total unemployment spells (if ever unemployed)	1.12 (0.35)	1-3
Female partner's total unemployment spells (if ever unemployed)	1.07 (0.27)	1-3
Used food stamps	0.02	0-1
Weekly expenditure on food for home	110.27 (56.00)	0-300
Weekly expenditure on food away from home	46.24 (39.89)	0-200
Proportion food away from home/total food expenditure	0.28	0-1
Total weekly food expenditure	156.51 (76.10)	0-500

Table 2. OLS and Fixed-Effects Results for Estimates of the Effect of Unemployment on (log) Expenditures for Food to be Consumed in the Home

	Model 1. Reduced Form		Model 2. Model with Controls	
	OLS	FE	OLS	FE
Male partner's unemployment	-0.08 (0.04)*	0.02 (0.04)	-0.11 (0.04)**	-0.04 (0.04)
Female partner's unemployment	-0.03 (0.05)	0.04 (0.05)	-0.06 (0.05)	-0.01 (0.05)
Kids 1			0.17 (0.02)***	0.21 (0.02)***
Kids 2			0.13 (0.02)***	0.09 (0.02)***
Kids 3			0.13 (0.02)***	0.08 (0.02)***
Age youngest child			0.01 (0.002)***	0.0005 (0.002)
Respondent is male partner			0.02 (0.01)	0.02 (0.02)
Male partner's age			0.01 (0.002)**	
Female partner's age			0.01 (0.002)**	
Year			0.02 (0.002)***	0.03 (0.002)***
Male partner is Black			-0.17 (0.02)***	
Male partner is Latino			-0.06 (0.04)$^{+}$	
Male partner is immigrant			0.10 (0.03)**	
Male partner has BA/BS			0.09 (0.02)***	
Female partner has BA/BS			0.07 (0.02)***	
State-level unemployment rate			0.002 (0.003)	0.0001 (0.003)
Constant	4.56 (0.01)***	4.55 (0.001)***	3.72 (0.04)***	4.19 (0.02)***
R^2	0.0004	0.001	0.12	0.05
Rho		0.49		0.50
N	17934	17934	17934	17934

Table 3. OLS and Fixed-Effects Results for Estimates of the Effect of Unemployment on (log) Expenditures for Food Consumed Away from Home

	Model 1. Reduced Form		Model 2. Model with Controls	
	OLS	FE	OLS	FE
Male partner's unemployment	-0.18 (0.06)**	-0.10 (0.05)*	-0.19 (0.06)**	-0.16 (0.05)**
Female partner's unemployment	-0.09 (0.07)	-0.003 (0.06)	-0.10 (0.07)	-0.06 (0.06)
Kids 1			-0.21 (0.04)***	-0.23 (0.04)***
Kids 2			0.03 (0.03)	0.04 (0.02)
Kids 3			-0.03 (0.04)	0.04 (0.04)
Age youngest child			0.02 (0.003)***	0.02 (0.003)***
Respondent is male partner			0.13 (0.03)***	0.14 (0.04)***
Male partner's age			-0.0004 (0.003)	
Female partner's age			0.003 (0.003)	
Year			0.04 (0.003)***	0.05 (0.003)***
Male partner is Black			-0.12 (0.04)**	
Male partner is Latino			-0.07 (0.07)	
Male partner is immigrant			-0.11 (0.05)*	
Male partner has BA/BS			0.23 (0.03)***	
Female partner has BA/BS			0.21 (0.03)***	
State-level unemployment rate			-0.01 (0.005)*	-0.03 (0.004)***
Constant	3.47 (0.01)***	3.46 (0.001)***	3.01 (0.06)***	3.31 (0.03)***
R^2	0.001	0.001	0.09	0.04
Rho		0.58		0.58
N	17934	17934	17934	17934

Table 4. Results of Linear Probability Models (OLS and FE) Estimating the Effect of Unemployment on the Probability of Food Stamp Receipt

	Model 1. Reduced Form		Model 2. Model with Controls	
	OLS	FE	OLS	FE
Male partner's unemployment	0.09 (0.02)***	0.04 (0.02)*	0.08 (0.02)***	0.03 (0.02)*
Female partner's unemployment	0.04 (0.02)*	0.03 (0.02)$^{+}$	0.04 (0.02)*	0.03 (0.02)$^{+}$
Kids 1			0.01 (0.005)*	0.01 (0.01)*
Kids 2			0.01 (0.004)*	0.01 (0.004)$^{+}$
Kids 3			0.04 (0.01)***	0.02 (0.01)*
Age youngest child			-0.001 (0.0004)*	-0.001 (0.0005)$^{+}$
Respondent is male partner			-0.005 (0.003)	-0.004 (0.01)
Male partner's age			-0.0001 (0.0006)	
Female partner's age			-0.001 (0.001)	
Year			0.001 (0.0005)**	0.001 (0.0004)*
Male partner is Black			0.02 (0.01)**	
Male partner is Latino			0.005 (0.01)	
Male partner is immigrant			0.02 (0.01)**	
Male partner has BA/BS			-0.01 (0.002)***	
Female partner has BA/BS			-0.02 (0.002)***	
State-level unemployment rate			0.002 (0.001)*	0.0002 (0.001)
Constant	0.02 (0.002)***	0.02 (0.0004)***	0.04 (0.01)***	0.01 (0.01)$^{+}$
R^2	0.01	0.01	0.05	0.04
Rho		0.71		0.71
N	17934	17934	17934	17934