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Is Job Insecurity Making Australians Fat? Evidence from Panel Data on Perceived Risk of Job Loss[1,2]

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Abstract

A growing body of research supports the "economic insecurity" theory of obesity, which posits that uncertainty with respect to one's material well-being may be an important root cause of the modern obesity epidemic. This literature has been limited in the past by a lack of reliable measures of economic insecurity. In this paper we use panel data from HILDA that measures body weight and self-reported employment security between 2006 and 2011. In an individual fixed effects model, we find a robust positive and statistically significant relationship between body weight and employment insecurity for unemployed women, but not for men or employed women.

Keywords: obesity, body mass index, job insecurity

[1] Selected Paper prepared for presentation at the Agricultural & Applied Economics Association's 2014 AAEA Annual Meeting, Minneapolis MN, July 25-29, 2014. As this is a preliminary working draft, please do not cite without permission from the authors.

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1. Introduction

Though obesity has been on the rise for more than a century, the rate of increase has doubled or tripled in many countries since the early 1980s, lending urgency to calls for more and better research into causes and consequences. While most obesity research has focused on dietary quality or the implicit price of a calorie (World Health Organization, 1998; Cutler et al., 2003; Chou et al., 2004), a growing body of evidence suggests economic insecurity (defined, roughly speaking, as the extent to which an individual's financial well-being is at risk) may be an important causal factor. The theory–inspired by theory and evidence from behavioral ecology–posits that economic insecurity triggers a physiological fattening response, in which at-risk individuals gain weight in a biological attempt to "prepare for the famine" (Smith, 2009; Smith et al., 2009; Offer et al., 2010; Wisman and Capehart, 2010; Smith, 2012b).

One longstanding difficulty in estimating the effect of economic insecurity on obesity has been the inherent difficulty involved with measuring economic insecurity over the period of time over which the obesity epidemic has occurred. Defined as "uncertainty of future income," measuring insecurity necessarily requires estimation of a probability distribution, a data intensive task. Researchers interested in this question have thus resorted to aggregate (e.g, country-level) data (Offer et al., 2010; Smith, 2012a; de Vogli et al., 2013), for which aggregate indicators of economic insecurity are available, or to individual-level panel data from which income or employment volatility over time can be to generate cross-sectional estimates of economic insecurity (Smith et al., 2009; Barnes et al., 2013). This paper makes use of unique panel data from the Household, Income and Labour Dynamics

in Australia (HILDA) survey, which includes information about both body weight and perceived (self-reported) risk of job loss for a cohort of approximately 5,500 individuals interviewed six times between 2006 and 2011. These data allow us to examine the dynamics of body weight and perceived job insecurity, while controlling (via an individual fixed effects model) for permanent unobserved heterogeneity among respondents.

2. Data

2.1. The Household, Income and Labour Dynamics in Australia Survey

We examine the impact of self-reported economic insecurity on weight using longitudinal data from the nationally representative HILDA survey for the years 2006-2011. This survey began in 2001 and has since been administered annually. It collects information on economic and subjective well-being, labour market dynamics and family dynamics from a sample of more than 7,600 Australian households encompassing almost 20,000 individuals aged 15 and older (see Wooden et al. (2002)). Individuals in sample households are followed over time regardless to whether they remain in the original households. Four survey instruments are included in HILDA: a Household Form and a Household Questionnaire are completed during a personal interview with one adult member of each household; a Person Questionnaire is administered to all adult household members; and a Self-Completion Questionnaire (SCQ) is provided to all respondents to the Person Questionnaire and is collected at a later date or returned by post.

Self-reported weight (in kg) and height (in cm) have been collected annually in the SCQ since wave 6. While there is evidence of systematic mis-

reporting of weight by individuals in survey (Gorber et al., 2008), our main analysis focuses on changes in weight for the same individuals over time and hence is less likely to be affected by systematic misreporting unless this is also correlated with our measures of job insecurity.

We consider four measures of job insecurity. The first question is asked in the PQ of all employed individuals and states, "What do you think is the per cent chance that you will lose your job during the next 12 months?" (That is, get retrenched or fired or not have your contract renewed). Respondents must give an answer between 0-100%. The second question is asked in the PQ of both employed and unemployed individuals, but with a different wording for each group. For employed individuals, it states, "If you were to lose your job during the next 12 months, what is the per cent chance that the job you eventually find and accept would be at least as good as your current job, in terms of wages and benefits?" Again, this is answered on the 0-100% scale. The similar question for the unemployed reads, "I would like you to think about your employment prospects over the next 12 months. What do you think is the per cent chance that you will find a suitable job during the next 12 months? Choose the number from 0% to 100% that is closest to your answer."

Our third measure combines the two previous ones to create a proxy for overall job insecurity. This is equal to

[% chance of losing job * (100 - % chance of finding job)] / 100.

This means that someone who believes they have a 100% chance of losing their job and 0% chance of finding a new job is going to have a job insecurity measure of 100%, while someone with the same belief of losing their job but believes they have a 100% chance of finding a new job will have a job

insecurity measure of 0%. Our final measure of job insecurity is asked on the SCQ and is self-reported response to the question, "I have a secure future in my job," where the responses are recorded as part of a likert scale, where 1 is strongly disagree and 7 is strongly agree.

2.2. Analysis Samples

We begin by restricting out sample to prime-age adults aged between 25 and 64 in each round of HILDA. We exclude younger and older individuals because the nature of job insecurity is likely to be quite different for them and many individuals are not in the labor force. We then create two analysis samples. The first features all consecutive waves of employment for all individuals that are employed for at least two waves in HILDA. For example, if an individual is employed in waves 2, 3, 4, 6, 8 and 9, then their information from waves 2, 3, 4, 8 and 9 will be included in the analysis sample. Since changes in employment status potentially have direct impacts on individual weight either via stress on income effects, we abstract from this by only looking at weight changes among individuals in rounds where they are employed. This is also necessary because our measures of job insecurity differ for the employed and unemployed. This results in sample of 2,749 men and 2,841 women contributing 11,667 and 11,565 observations, respectively.

Our second analysis sample is similarly designed but focuses on all consecutive waves where an individual is not employed and searching for a job for all individuals that are not employed and searching for a job for at least two waves in HILDA. This results in sample of 166 men and 331 women contributing 436 and 887 observations, respectively.

2.3. Descriptive Statistics

Table 1 presents summary statistics for outcome and covariates used in our analysis for each analysis sample separately for men and women. The distribution of weight and most background characteristics (age, height, and household composition) are quite similar across the two samples. The largest difference is seen in household income with the employed samples having much higher income than the unemployed. In general, job insecurity is quite low with mean job loss probability of 9% for employed men and 8% for employed women and job finding probabilities of 63% for employed men, 66% for employed women and 56% for unemployed men and 55% for unemployed women.

3. Regression Results

3.1. Empirical Model

In this section, we examine the relationship between self-reported economic insecurity on weight in a regression framework. We do so by estimating the following linear regression model:

$$Weight_{it} = \delta * Insecurity_{it} + \beta X_{it} + \alpha_i + e_{it} \tag{1}$$

where $Weight_{it}$ is individual i's self-reported weight in kilograms at time t, $Insecurity_{it}$ is one of the measures of job insecurity discussed above, X_{it} is a vector of other potential confounding variables, α_i is an individual-specific fixed effect, and e_{it} is a normally distributed mean zero error term that is potentially correlated over time for the same individual and across

individuals in the same couple, but uncorrelated with the other explanatory variables.

Including individual fixed effects in the regression model is asymptotically equivalent to examining the relationship between changes in job insecurity and changes in weight for the same individual over time. Importantly, this controls for any time invariant unobserved characteristics of the individual that are related to both their likelihood of being in an insecure job and their reported weight. For example, individuals who have a positive outlook about life might be more likely to have a good job and less likely to be overweight. If this is the case, a cross-sectional OLS regression will find a positive relationship between job insecurity and weight, when, in fact, there may not be a direct relationship.

On the other hand, the fixed effects estimates will be unbiased as long as there are no time-varying unobservables that are correlated with both the propensity to be in an insecure job and weight. We do not believe that this is likely to be an important concern. However, we examine whether our results are robust to the inclusion of time-varying control variables, such as household composition and income, which may be correlated with both job insecurity and weight. It is worth noting that these variables are also potentially pathways through which job insecurity affects weight and hence may not belong as explanatory variables in the regression. Hence, we first present results both including and excluding these additional covariates.

3.2. Main Results

Our main results are presented in Table 2 for the employed sample and Table 3 for the unemployed sample. These tables each have the same lay-

out. Each row presents, δ, the estimated coefficient on the job insecurity variable(s) in regression model (1) for a particular measure of job insecurity, while each column presents the results from a different specification of the regression model. All results are also stratified by gender. We begin by discussing the results for the employed.

In column (1), we first present results where model (1) is estimated using OLS regression including controls for each individual's age, height (in cm) and indicator variables for the year of observation. In the first panel, job insecurity is measured by including both the percent chance of losing one's job and the percent chance of finding a comparable new job as regressors. In the second panel, job insecurity is measured using the combined 'overall job insecurity' measure and, in the third panel, by one's rating of the security of their job on a 1-7 scale. We find no evidence of a correlation between job insecurity and weight for any measure of job insecurity for employed men or women.

As discussed above, the results in this column will be biased if there are unobserved characteristics of individuals that are correlated with both the likelihood of being in an insecure job and weight. Hence, in column (2), we now present results from regression models that also include individual fixed effects to control for time-invariant unobserved characteristics of individuals. Consistent with the OLS results, we find no evidence of a causal link between job insecurity and weight for any measure of job insecurity for employed men or women.

In column (3), we add further controls for household composition and, in column (4), for household income. As discussed above, these control variables should be included if they are correlated with both changes in job

insecurity and changes in weight, but do not belong in the model if they are intermediate outcome variables that also may be influenced by changes in job insecurity. Adding these other control variables to the regression has no quantitative or qualitative impact on results.

Next, turning to the results for the unemployed sample. Here, we only have one panel of results for each gender since our only measure of job insecurity for this group is their likelihood of finding a job. For unemployed men, we find a positive correlation between their reported likelihood of finding a job and their weight, but once individual fixed effects are included in the model (with and without further covariates), no evidence of a causal link between job insecurity and weight.

On the other hand, for women, we find a negative correlation between their reported likelihood of finding a job and their weight and this results persists with the addition of fixed effects and further covariates. The OLS relationship suggests that an unemployed women who believes her likelihood of finding a job in 10 percentage points higher (say 60% versus 50%) weighs 594 grams less than a comparable women. However, around 70% of this difference is explained by unobserved heterogeneity and the fixed effects estimates suggest that the true causal relationship is that a 10 percentage point increase in the likelihood of finding a job leads to a weight loss of 171-186 grams for women. In terms of the variation in the data, a one standard deviation (28.33 percentage points) increase in the likelihood of finding a job leads to a weight loss of 0.026-0.028 standard deviations for unemployed women.

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Table 1: Summary Statistics for the Employed and Unemployed

	Employed				Unemployed			
	Male		Female		Male		Female	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Weight (kg)	87.21	15.94	72.05	16.74	84.18	17.98	73.23	18.62
Height (cm)	178.29	7.49	164.43	7.48	177.05	9.18	163.66	8.14
% chance of losing job	9.48%	18.47%	8.02%	18.07%				
% chance of finding job	63.33%	32.45%	65.59%	32.90%	55.74%	30.81%	54.69%	28.33%
Overall Job Insecurity	3.69%	9.44%	3.17%	9.43%				
Secure Job Future (1-7)	5.14	1.52	5.29	1.56				
Age	42.22	10.19	42.80	9.95	44.44	10.68	41.34	10.05
Household Income	92,911	54,274	90,125	57,823	43,729	31,956	57,033	58,456
# of other adults in hhold	1.20	0.87	1.21	0.90	1.20	1.08	1.11	0.91
# of kids aged 0 to5	0.31	0.65	0.20	0.51	0.20	0.53	0.47	0.74
# of kids aged 6 to 12	0.32	0.66	0.34	0.67	0.27	0.68	0.56	0.85
# of kids aged 13 to 15	0.15	0.41	0.18	0.43	0.14	0.39	0.21	0.49
Year = 2007	0.17	0.38	0.17	0.38	0.16	0.37	0.18	0.39
Year = 2008	0.17	0.38	0.18	0.38	0.17	0.38	0.16	0.37
Year = 2009	0.18	0.38	0.17	0.38	0.21	0.41	0.19	0.39
Year = 2010	0.18	0.39	0.18	0.38	0.21	0.41	0.20	0.40
Year = 2011	0.16	0.36	0.15	0.36	0.13	0.34	0.12	0.33
# Observations	11,667		11,565		436		887	
# Individuals	2,749		2,841		166		331	

Table 2: Relationship Between Job Insecurity and Weight for the Employed

	OLS Controlling for Height	Baseline Fixed Effects	Additional Controls for Household Composition	Additional Control for Household Income	OLS Controlling for Height	Baseline Fixed Effects	Additional Controls for Household Composition	Additional Control for Household Income
Specification 1: Job insecurity measured by % chance of losing your job and % chance of finding one if current one lost								
	Men				Women			
% chance of losing job	0.00285	0.00596	0.00599	0.00597	-0.00948	-0.00637	-0.00633	-0.00625
	(0.011)	(0.004)	(0.004)	(0.004)	(0.012)	(0.004)	(0.004)	(0.004)
% chance of finding job	-0.00298	0.00329	0.00328	0.00337	-0.0125	0.00424	0.00425	0.00434
	(0.007)	(0.002)	(0.002)	(0.002)	(0.008)	(0.003)	(0.003)	(0.003)
Specification 2: Job insecurity measured by (% chance losing your job)*(100-% chance of finding one if current one lost)/100								
	Men				Women			
Overall job insecurity	0.0169	0.0068	0.00694	0.00685	-0.0175	-0.00998	-0.0101	-0.0101
	(0.021)	(0.007)	(0.007)	(0.007)	(0.025)	(0.008)	(0.008)	(0.008)
Specification 3: Job insecurity measured by self-reported secure job future on 1-7 scale								
	Men				Women			
Secure job future	0.00248	0.00117	0.00124	0.00193	0.129	-0.00837	-0.00712	-0.00854
	(0.147)	(0.049)	(0.049)	(0.049)	(0.158)	(0.059)	(0.058)	(0.058)
# Observations	11,667				11,565			
# Individuals	2,749				2,841			

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Robust standard errors allowing for arbitrary correlation for individuals over time in parentheses.

Table 3: Relationship between Insecurity and Weight for the Unemployed

	OLS Controlling for Height	Baseline Fixed Effects	Additional Controls for Household Composition	Additional Control for Household Income
			Men	
% chance of finding job	0.0804**	0.0143	0.0154	0.0156
	(0.037)	(0.017)	(0.018)	(0.018)
# Observations			436	
# Individuals			166	
			Women	
% chance of finding job	-0.0594**	-0.0171**	-0.0186**	-0.0183**
	(0.027)	(0.008)	(0.008)	(0.009)
# Observations			887	
# Individuals			331	

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Robust standard errors allowing for arbitrary correlation for individuals over time in parentheses.