HOW DOES JOB INSECURITY AFFECT HOUSEHOLD CONSUMPTION IN AUSTRALIA?

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Declaration

I hereby declare that this submission is my own work and to the best of my knowledge it contains no material previously written by another person, or material which to a substantive extent has been accepted for the award of any other degree or diploma of a university or other institute of higher learning, except where referenced in the text.

I also declare that the intellectual content of this thesis is the product of my own work, and any assistance that I have received in preparing the project, writing the program as well as presenting the thesis, has been duly acknowledged.

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Joel Ashley Bowman

Date: 4th November 2013

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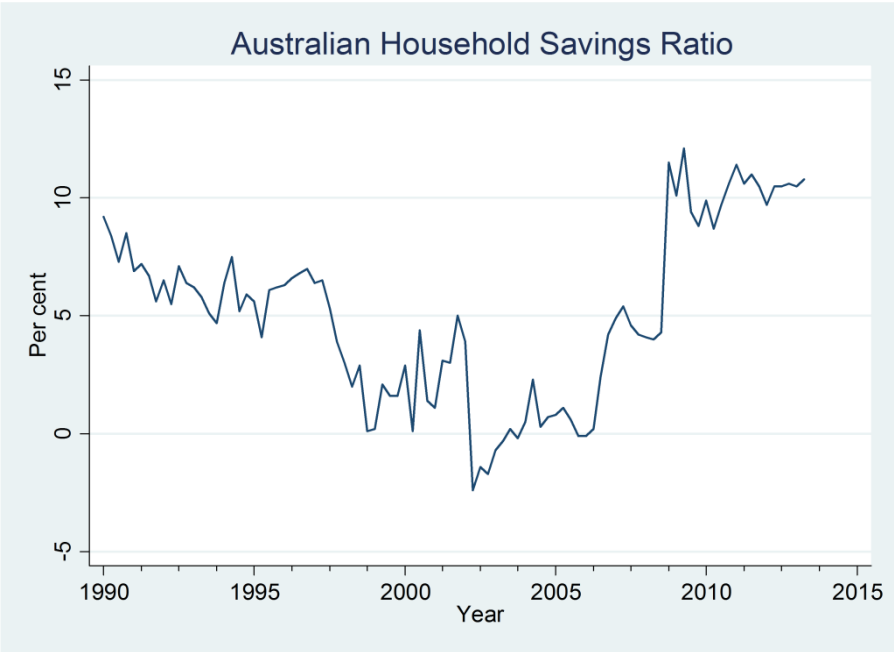
Abstract

This paper analyses the relationship between job insecurity and household consumption in Australia using the HILDA dataset from 2005 to 2011. This paper employs two measures of job insecurity including the self-reported probability of job loss and the predicted probability of unemployment for both the head and partner of the household. There are three main measures of consumption that are used including food, non-food and durable consumption. Job insecurity was found to have a significant and negative effect on food consumption whereby a one standard deviation increase in unemployment risk is estimated to reduce food consumption by 3.01 per cent. The relationship between job insecurity and non-food consumption appears relatively stronger compared to food consumption with a one standard deviation increase in unemployment risk causing non-food consumption to fall by 4.8 per cent. The evidence of precautionary savings also extends to durable goods with a one percentage point increase in job insecurity for the head of household reduces the probability of purchasing durable goods by 9 percentage points. The relationship is stronger for the head of the household. The paper also explores potentially heterogeneity by considering the impact that housing occupational status, home values and wealth has on the relationship. There was a negligible difference in the responsiveness of consumption to changes in job insecurity between home owners and renters. Increases in home values were found to increase the sensitivity of consumption to job insecurity, potentially being attributed to the influence of welfare, differences in risk aversion and opportunity cost of engaging in precautionary savings. Higher levels of household wealth decreased the sensitivity of consumption to changes in job insecurity, reflecting the reduced need to engage in precautionary savings. In particular, higher levels of financial assets appear to have a noticeably larger effect at reducing the sensitivity of household consumption to changes in job insecurity compared to non-financial assets.

1. Introduction

The relationship between uncertainty and consumption has attracted increasing attention with most economies facing declining consumption growth and heightened levels of uncertainty in response to the Global Financial Crisis (GFC). As consumption comprises of approximately 50 per cent of the Australian gross domestic product, restoring consumption levels became increasingly important to help mitigate the prospect of slower economic growth. The decline in consumption may in part be attributed to the rising levels of uncertainty that households faced, which may give rise to a precautionary motive for saving (Carroll et al. 2003). This is particularly evident by observing Australia's household savings ratio, which has gradually declined from approximately 9 per cent in 1990 to as low as -2 per cent in 2003, as a result of stable long term economic growth. The global financial crisis in 2007 caused uncertainty to rise, which triggered a significant increase in Australia's household savings rate in 2008, as shown in figure 1.1. This in turn resulted in weak consumption in the short term due to the rapid increase in savings. This paper aims at assessing the impact that job insecurity has on household consumption that may provide insight into the recent increase in the household savings rate, which may also provide additional insight for policy makers.

Figure 1.1: *Australian Household Savings Ratio*



This paper will use the Household Income and Labour Dynamic in Australia survey (HILDA), which is a micro dataset to assess the impact that job insecurity has on household consumption in Australia from 2005 to 2011. This paper will employ two measures of job insecurity, a self-reported measure of job insecurity and the predicted probability of unemployment for both the head and partner of the household. The subjective measure is based on a survey question in which respondents who were employed are asked:

"What do you think is the per cent chance that you will lose your job during the next 12 months?"

Due to the lack of variation in the subjective measure of job insecurity a predicted probability of unemployment measure is also used. This is estimated using a combination of varying instruments to determine the sensitivity of results to different model specifications. This paper will measure the impact that job insecurity has on various components of consumption including food, non-food and durable consumption.

This paper extends existing literature in several ways. Firstly, the paper will employ similar techniques used by Benito (2006) who assessed the impact of job insecurity on household consumption using British data and apply this framework to Australian data. Secondly, the proxy for job insecurity will be expanded into both the probability of voluntary and involuntary separation, which may provide additional insight into the responsiveness towards different types of employment risk. Thirdly, the paper will determine whether the responsiveness towards job insecurity varies based on housing occupational status and home values. Fourthly, the paper will also consider the impact that wealth has on the relationship between job insecurity and household consumption. This section will compare households' responsiveness towards job insecurity for households with positive and negative values of wealth, households with increasing positive values of wealth and it will also decompose wealth into financial assets, non-financial asset and liabilities to determine whether the relationship differs across various components of assets.

This paper finds that unemployment risk for the head of the household is significant and a one standard deviation increase in unemployment risk is estimated to reduce food consumption by 3.01 per cent, which is larger than Benito (2006) estimate of 1.6 per cent using British data[1]. The relationship between job insecurity and non- food consumption appears relatively stronger compared to food consumption with a one standard deviation increase in unemployment risk causing non-food consumption to decrease by 4.8 per cent. The evidence of precautionary savings

[1] Estimates use the predicted probability of unemployment as the proxy for job insecurity. Self-reported values are insignificant, which may be attributed to the lack of variation in the data.

also extends to durable goods with a one per cent increase in unemployment risk reducing the probability of purchasing durable goods by 9 percentage points.

Involuntary separation is generally insignificant, whilst voluntary separation is significant for only the partner of the household, with the results being robust across both food and non-food consumption. This may be in part attributed to the higher degree of foreseeability of voluntary separation relative to involuntary separation. The results also highlight the importance of the partner of the household. These measures though may be limited as it does not capture the ability of finding alternative employment, which could explain the insignificant findings for the head of the household.

The sensitivity of consumption to changes in job insecurity is approximately the same for home owners and renters. Whilst renters appear relatively more sensitive using food consumption this effect is only marginal and does not hold for other components of consumption.

The sensitivity of consumption to changes in job insecurity increases with home values for both non-food and durable expenditure. This relationship does not hold for food consumption, which may be due to households responding to increased job insecurity by reducing alternative forms of consumption such as non-food expenditure that can be easily deferred in contrast to food. The increased sensitivity may be attributed to the increased opportunity cost of engaging in precautionary savings for households with lower home values, welfare effect and differences in relative risk aversion.

In terms of wealth, those households with positive levels of wealth were relatively more sensitive to changes in job insecurity compared to households with negative levels of wealth. This may be attributed to the relatively high opportunity cost of engaging in precautionary savings for households with negative wealth values in addition to these households being more likely to have lower levels of risk aversions. Higher levels of household wealth decreased the sensitivity of consumption to changes in job insecurity, reflecting the reduced need to engage in precautionary savings. In particular, higher levels of financial assets appear to have a larger effect at reducing the sensitivity of household consumption to changes in job insecurity compared to non-financial assets.

2. Literature Review

Consumption has historically attracted a large amount of attention in the past as economist tried to better understand the households' decision to either consume or save their income. Each of these theories has different implications on the way households respond to uncertainty, changes in risk aversion and wealth. This has been an area of ongoing debate as there has been mixed empirical results. These theories can be divided into optimisation theories, whereby consumers optimise their consumption subject to a budget constraint, and behavioural theories, which provides rule of thumbs (Wallace 2012).

Keynesian theory of consumption suggests that consumers consume and save a constant proportion of their income (Keynes 1936). This helped explain the positive relationship between income and consumption levels amongst households, and also demonstrated that higher income earners typically spend a smaller proportion of their incomes. Whilst this explained the relationship between consumption and current income well, the theory failed to account for differences between ethnic groups or cross country comparisons (Romer 2006), and also failed to explain trends well in a time series context (Kuznet's 1952). In addition, the framework failed to accommodate factors such as uncertainty or risk aversion in a household's decision making process.

These shortcomings led Friedman (1952) to develop the optimisation based theory of consumption, which is better known as the permanent income hypothesis. Under the permanent income hypothesis, consumers are rational forward looking agents that attempt to smooth their consumption over their lifetime. Consumers save when their incomes are high and dissave when incomes are low. This in part helped explain why younger demographics typically were in debt, as they normally undertake mortgages to help purchase property. As they get older, they repay the mortgage and begin accruing a surplus of assets. Consumers then begin to use the accumulated assets to fund consumption in their later years during retirement.

The framework helped dissect income into both temporary and permanent income. The theory postulates that the marginal propensity to consume out of temporary income is low, as the one off payment is spread over the entire period. This is in contrast to permanent income, whereby the income is expected to remain at these levels in future periods, resulting in the marginal propensity to consume to be relatively larger. If the current income is deemed to be largely transitory, then the household would be expected to have a low marginal propensity to consume. Conversely, if the current income is largely permanent, then the marginal propensity to consume would be close to one.

This framework helped explain the impact that variability of income, uncertainty and risk aversion can have on the households' decision making process. An increase in uncertainty or risk aversion would expect to have a negative effect on consumption, as individuals would expect that their permanent income or future incomes to be lower. In order to smooth consumption over their lifetimes they would then typically consume a smaller proportion of their income, resulting in consumption levels to also fall. This helps explain the impact that the business cycle has on household consumption patterns. The differences in savings behaviour between different groups in society may be explained by differences in permanent incomes (Wallace 2012).

The Hall (1978) random walk hypothesis asserted that the bulk of correlation between income and consumption is the response of consumption to changes in permanent income. This implies that all relevant information about future consumption is reflected in current consumption, and so no other variable has forecasting power; however, this is unlikely to hold (Campbell and Mankiw 1989; Carroll and Dunn 1997); although in the long run, variation in income reflects mostly changes in permanent income (Romer 2006)

The permanent income hypothesis failed to explain the closer relationship between current income and consumption, which led to the development of the buffer stock savings model. The buffer stock savings models extended the permanent income hypothesis by postulating that consumption growth and income growth are much more closely related (Carroll and Summers 1991). Consumption smoothing takes place over periods of several years not decades. Uncertainty may result in a buffer stock saving behaviour, whereby prudent consumers may find it optimal to accumulate a small protective buffer to smooth consumption in the short term in response to potential short term variability in income (Carroll 1994).

The consumption models were further extended by Zeldes (1989) who incorporated borrowing constraints into the model. His results suggest that an inability to borrow against future labour income affects the consumption of a significant portion of the population. Attanasio and Weber (2010) extended this further to help explain that some consumers may engage in additional precautionary saving to protect themselves from fluctuations in their short run incomes arising from a binding borrowing constraint. They also incorporated demographic characteristics to help explain the lifetime consumption profiles, such as the impact that children may have on a household's consumption patterns.

Deaton (1991) dissected the impact that uncertainty has on household consumption by assessing the sensitivity of consumption to a household's income process including the degree of persistence, volatility and degree of risk aversion. The model provides a mechanism that explains how job insecurity and employment prospects impacts upon current consumption.

The development of the consumption theories has provided a theoretical framework in which to model the relationship between uncertainty and household consumption. These models suggest that households seek to maximise the present value of utility subject to the budget constraint and the transversality condition, as shown in the equations below (Caballero 1990).

$$\max_{c_{t+i}} E_t\left[\sum_{i=0}^{\infty}(1+\delta)^i U(c_{t+i})\right] \tag{2.1}$$

Subject to:

$$c_{t+i} = y_{t+i} + (1+r)a_{t+i-1} - a_{t+1} \tag{2.2}$$

$$\lim_{i\to\infty} a_{t+i}(1+r)^{-i} = 0 \tag{2.3}$$

Whereby E_t is the conditional expectations, δ is the discount rate, U is the utility function, c represents consumption, y is labour income, a is financial wealth and r is the riskless return on the bond. Equation 2.3 represents the transversality condition, which implies that households are unable to finance consumption indefinitely by simply borrowing. These intertemporal budget constraints generate the following first order conditions or Euler equation.

$$E_t u'(c_{t+1}) = \left[\frac{1+\delta}{1+r}\right] u'(c_t) \tag{2.4}$$

The steady state of these models suggests that the marginal utility of consuming goods must be equal across time periods. If these are different, then the household or individual can re-arrange their consumption to increase their overall utility. Taking the second order Taylor expansion will enable a closed form approximation of consumption that includes an explicitly derived uncertainty premium. This uncertainty premium is closely related to the Arrow-Pratt uncertainty premium in which it is equal to

$$\gamma = -\frac{u''(c_t)}{u'(c_t)} \tag{2.5}$$

The Arrow-Pratt uncertainty premium reflects the degree of uncertain prospect of wealth that is discounted relative to the level of certain wealth $\widehat{W}$ that are equal when:

$$\widehat{W} = \overline{W}\left(1 - \frac{\gamma}{2}\sigma_w^2\right) \tag{2.6}$$

This suggests that a risk averse individual would discount the value of uncertain prospect by one half of the Arrow-Pratt risk aversion measure γ in proportion to the variance σ_w^2.

Taking the second order Taylor series expansion around $u'(c_t)$ in the Euler equation shown in 2.4 gives

$$E_t(lnc_{t+1} - lnc_t) \approx \underbrace{\left(\frac{1}{\xi(c_t)c_t}\right)\left(\frac{1+\delta}{1+r} - 1\right)}_{CEQ} + \underbrace{\frac{1}{2}\left(\frac{\Psi(c_t)}{c_t}\right)E_t[(c_{t+1} - c_t)^2]}_{Precautionary} \tag{2.7}$$

Whereby $\frac{1}{\xi(c_t)c_t} = u'(c_t)/u''(c_t)c_t$ reflects the elasticity of substitution, $\Psi(c_t) = -(\frac{u''(c_t)}{u'(c_t)})$ increases the precautionary saving motive with increases in the variance of future consumption growth. As a result, higher levels of consumption growth are associated with lower levels of current consumption, due to increases in precautionary savings (Benito 2006).

When $r = \delta$ and with a constant coefficient of risk aversion κ and income $y_t = \lambda y_{t-1} + (1 - \lambda)\hat{y} + \epsilon_t$, whereby λ measures the persistence in income shocks. The larger the persistence of an income shock, the larger the impact this will have current income. The solution is given by

$$c_t = c_t^{CEQ} - \frac{\kappa\sigma^2}{(R-\lambda)} \tag{2.8}$$

This shows that precautionary savings is increased given an increase the variance of income σ^2, increase in the persistence of the shock λ, or an increase in the degree of risk aversion κ. Benito (2006) provides a brief summary of the theoretical framework.

The relationship between durable and non-durable consumption differs. Hall (1978) claimed that non-durable consumption growth should be unpredictable under the permanent income hypothesis, with no other variable apart from current consumption having any predictive power over future consumption. These results do not appear to be consistent with empirical work; albeit the hypothesis almost holds. There is even stronger evidence to reject Hall's proposition when using aggregate durable expenditures, with the US stock of durables showing a strong positive serial correlation (Caballero 1994).

Durable consumption differs from non-durable goods due to the infrequent and intermittent adjustment of the stock of durables that are caused by the fixed costs of adjustment (Caballero, 1994). These fixed costs arise due to transaction costs, time spent purchasing and imperfect secondary markets. It is only once the departures reach the critical thresholds, that the consumer is then induced to buy or sell to return back to the equilibrium. These mechanisms are referred to as the (S,s) rules. These fixed costs will result in micro data on consumer's durable goods to be lumpy

and intermittent, while aggregate data will be display inertia, if consumers are not synchronised. The imposition of these fixed costs increases the complexity of the models. This is due to the purchasing decision being dependent on the relative magnitudes between the shocks and fixed costs of adjustments. If the fixed costs are relatively larger than the shocks, then consumers will not adjust at all. Conversely, if the fixed costs of adjustments are smaller than the shock then consumers will adjust. The relative size of a shock and the decision to adjust also is dependent on the accumulation of shocks since last time consumer adjusted. This is modelled by constructing a disequilibrium variable z, which is equal to the difference between a consumer's actual stock of durable, k and the amount which they would prefer to hold if fixed costs were equal to zero.

$$z_t = k_t - k_t^* \tag{2.9}$$

A consumer or household purchases durable goods when the z_t falls below a certain threshold. The total change in durable goods is equal to gross upgrading (I_t), gross downgrading (D_t) and the rate of depreciation (δK_{t-1}).

Given an aggregate shock, durable consumption displays significant inertia as these shocks only affect a proportion of consumers who have depreciation (z_t) that is close to their lower trigger. The proportion of the population that are approaching their lower triggers will have a significant impact on the effect that aggregate shocks have on changes to durable consumption. Increases in the fixed costs of durable goods will increase the inertia of these consumption items, as it takes relatively longer or higher levels of shocks to induce consumers to re-purchase.

These models have motivated several empirical papers that have aimed to identify the significance of the impact that uncertainty has on durable consumption. Carroll and Dunn (1997) found evidence of postponement of consumer durables for those households that face an increase in unemployment risk, using aggregate US data. Similar results were found using micro data on automobile purchases (Foote et al. 2000). Both support the proposition that households that face higher levels of uncertainty are less likely to have recently purchased durable goods.

The conflicting theories and theoretical framework for consumption have motivated a substantial amount of empirical research that aims at exploring the relationship between uncertainty and consumption. This paper will focus on the impact of job insecurity on consumption in particular.

Job insecurity is a particularly valuable indicator to assess uncertainty as the risk of job loss represents a substantial risk in household income in which individuals may have little or no control. Whilst some previous studies have used the variability of household income as a proxy for

uncertainty (Carroll 1994; Carroll and Samwick 1997), this may be a poor proxy as they contain large controllable elements (Carroll et al. 2003).

Workers' perceptions of job insecurity have been found to vary significantly across various characteristics and vary pro-cyclically with the business cycle. In Australia, job insecurity has tended to decrease at least up to 2002 (Borland 2002). This is also evident in America whereby workers currently face lower risk of job loss compared to 10 years earlier, contrary to some economists' speculation (Davis 2008). Davis (2008) went further to explain that these economists' have typically interpreted the decline in durability of employment as evidence of a decline in job security; however, such an approach may be erroneous as most separations are not employer initiated. The long term decline in job insecurity is largely attributed to a decline in unemployment inflow rates, with the job finding rates experiencing little change over time.

Households that face higher levels of job insecurity have a relatively larger amount of income uncertainty, which is predicted to cause the household to consume less (Deaton 1991). This is consistent with 'buffer-stock' model of consumption, whereby precautionary motives reduce the willingness of prudent consumers to consume out of uncertain future income (Carroll 1994).

The empirical works have focused on varying components of consumption. There has been a substantial amount of work that has specifically focused on food and groceries expenditure as it is an important component of non-durable expenditure (Benito 2006; Hall and Mishkin 1982). The relationship between food expenditure and job insecurity may be easier to identify relative to other forms of consumption which encounter fixed costs of adjustments. The presence of fixed costs of adjustments may impose additional identification difficulties. As food expenditure is a 'necessity' any finding of precautionary savings using food expenditure could infer an even larger precautionary effect for broader measures of consumption.

The relationship between job security and household consumption has been analysed before using micro data on British households by Benito (2006). Benito's results suggest that unemployment risk leads households to defer consumption, with a one standard deviation increase in unemployment risk for the head of household estimated to reduce household consumption on food by 1.6%. Similar results were found when consumer durables were examined.

Benito used two main proxies for consumption, food expenditure and purchases durable goods, allowing a comparison between non-durable and durable goods. Several specifications of job insecurity were also used, adopting both the subjective measure or self-reported likelihood of job loss (Lusardi 1998) and the predicted probability of job loss (Carroll et al. 2003) for both the head of

the household and partner. The predicted probability of unemployment was estimated using a probit model on a set of variables including education, unemployed in the previous year, contract type, age, union status, sex, tenure and workplace size. Being unemployed in the previous year was a particularly important factor as it has been argued to be the best predictor of individual's future risk of unemployment (Arulampalam et al. 2001). Arulampalam et al. (2001) has explained that interruptions to employment not only bring about loss of income in the short run, but also inflict longer term 'scar' through increased incidence of unemployment and lower subsequent earnings in employment.

The subjective measure of job insecurity was found to be insignificant, which was attributed to the lack of variation that could result in identification issues. This motivated the use of the predicted probability of unemployment which displays substantially more variation. In order to assess the sensitivity of the results to the predicted probability of unemployment specification, an array of instruments were used to estimate the predicted probability of unemployment, including unemployment experience in previous year, employer size and union status. Other additional instruments could potentially be used including region (Carroll et al. 2003). These measures were found to be significant for both the head of household and partner. The predicted probability of unemployment was estimated using a probit model; albeit a linear probability model was also used to determine the results sensitivity to the normality assumption. A fixed effects specification was also used to assess the sensitivity of the results to the random effects assumption, which identified an even larger precautionary effect than under the random effects specification.

The impact that unemployment risk has on durable purchases was estimated using a probit model, which measures the propensity for a household to have purchased any consumer durable in the previous year. The durable goods include nine listed consumer durables in the past years. Foote et al. (2000) conducted similar studies and used the variability of income as his proxy of security. Foote et al. suggests that greater variance in income leads to less frequent adjustment using data on automobiles, which was potentially attributed to liquidity constraints and precautionary savings. This is line with Carroll and Dunn (1997) that found that consumers postpone durable purchases when uncertainty increases until the balance sheet position improves. The results using the British dataset indicate that there is a strong precautionary effect on durable goods.

All of these models controlled for income across all of the models, estimating both permanent and transitory income as defined by (Guiso et al. 1992). Permanent income is a normal annual income adjusted for age and cohort effects, whilst transitory income is the difference between permanent and current incomes. Consumers responded relatively more strongly to changes in permanent

incomes relative to transitory income across most of the models, which are in line with the permanent income hypothesis expectations.

This paper aims to apply the Benito (2006) framework and apply it to Australian data, which will also allow a cross country comparison. This paper aims to further dissect the proxy for uncertainty, by estimating the impact that the probability of voluntary and involuntary separation has on household consumption. This is in conjunction with additional subjective measures, which include the probability of quitting your current job in the next twelve months. The additional subjective measure is potentially useful as subjective expectations data reveal private information about subsequent realisations both of job loss and re-employment (Dickerson and Green 2012). Whilst the probability of job loss has been found to be only weakly related to both exogenous job separation and subsequent transition to unemployment and/or inactivity; quit intentions may provide an additional source of valuable information that may influence a household's consumption patterns as quit intentions are strongly correlated with voluntary separation and transition to alternative employment (McGuiness 2012). Using these additional measures of voluntary and involuntary separation may help provide additional insights into household consumption patterns, as consumers may react differently to the probability of each. For example, voluntary job separation may capture workers who expect to quit in order to avoid dismissal. Voluntary job separation was also found positively correlated with education indicating a potential increase in occupational mobility. Home owners believe they are less likely to voluntary leave their jobs and hence the overall job separation is lower for home owners (Borland 2002). These additional measures can help capture such relationships which are overlooked when just using the probability of unemployment as a proxy for job security.

Whilst the use of the subjective measures was initially used with much criticism (Machlup 1946), the use of the additional subjective data provides the additional benefit of relaxing or validating assumptions that economists assert, including the fact that individuals form probabilistic expectations for unknown quantities and maximise expected utility. This provides untestable assumptions about the distribution of preferences in the population of interest (Manski 2004). Manski (2004) went further to assert that the combination of choice data with additional data should be used to minimise the credibility problem and improve predictive power when considering human behaviour. Historically these subjective measures have displayed significant variation by gender, age and education that tend to vary pro-cyclically with the business cycle and have decreased significantly from late 2001 onwards (Borland 2002). Borland (2002) also found that the

probability of involuntary job loss appears correlated with the institutional environment. This may offer a potential explanation for differences in results between Benito (2006) and the current paper.

This paper will also expand the models by incorporating the impact that home occupational status, home values (self-reported) and wealth has on the relationship between job security and household consumption. More specifically there will be a focus on self-reported measures of home value. Whilst the previous papers have focused on the relationship between consumption and job security, there is also a substantial body of literature that looks at the precautionary effect that uncertainty has on wealth, which in turn may influence consumption. Carroll (2003) found that precautionary variation in the wealth holdings of households with medium and high permanent income, but do not find precautionary effects for low income households.

Studies using British data have also looked at the relationship between earnings uncertainty and wealth on household consumption (Miles 1997). Earnings uncertainty was found to have a powerful effect on spending and precautionary motives account for a substantial proportion of household saving. Miles (1997) also considered whether households react to changes in wealth stemming from movements in house prices in the same way to other elements of income with theoretical reason to doubt. Net income from financial assets did not appear to have well defined impact on consumption but imputed income from home ownership seems to have powerful and consistent effect. Changes in sign of relationship on capital gains on housing suggest impact of housing prices on consumption changes over time.

The impact of housing assets may be particularly important when assessing the impact of precautionary savings, or the extent to which job security affects household consumption. This is due to household assets typically being an important form of self-insurance (Carroll et al. 2003; Debelle 2004). Owning a house may make a particular household less sensitive to various degrees of job security, as the consequences of unemployment may be less severe compared to households that have little or no protective buffer. As a result, it is important to consider these factors as they may be a potential source of omitted variable bias if these factors are excluded. Housing wealth is of particular importance with a permanent increase in housing wealth of one dollar being estimated to increase long run annual consumption by 3 per cent, whilst a permanent increase in households' stock market wealth of one dollar is estimated to increase consumption by 6 to 9 per cent. As housing wealth is approximately three times the size of stock market wealth, a one per cent increase in housing wealth has the same impact on aggregate consumption as a one per cent rise in stock market wealth (Dvornak and Kohler 2003).

When considering the impact that wealth has on the relationship between consumption and job security, it is important to treat housing different from other forms of wealth. This is due to housing price movements affecting both the value of the house that people own in conjunction with the cost of living with them. Changes in the housing prices have no impact on aggregate wealth but have a distributional impact (Aoki et al 2001). For example, an increase in house prices re-distributes wealth from those that have less housing assets than they consume (short housing) to those that have more housing assets than they consume (long housing).

The relationship between house prices and household spending has attracted considerable attention. There are three hypotheses, which offer potential explanations (Windsor et al. 2012; Attanasio et al. 2009). Firstly, increases in home prices raise spending via a 'traditional wealth effect' which suggests a stronger effect on spending of older households as they typically possess excess housing. Secondly, increases in home prices raise spending by easing credit constraints, which suggests a stronger link between home prices and spending for younger homeowners, as they are more likely to be credit constrained (Disney et al. 2010; Buiter 2010). Lastly, home prices and spending are influenced by a common 'third factor' such as something that affects expectations regarding future income, suggesting a stronger effect on spending by younger households (King 1990; Pagano 1990). This implies higher spending for young homeowners and young renters should both rise.

There is not a clear consensus in the empirical literature as to which relationship is the most significant. Studies conducted using English panel data have found that the co-movement in house prices and consumption growth to be the most significant explanation, with the other channels having a much smaller impact. Campbell and Cocco (2007) disagree and find home price wealth effect largest for older homeowners and lowest for renters. This is in contrast with Windsor et al. (2012) and Maellbauer (2009) which used Australian and British panel data respectively, that found young homeowners who are more likely to be credit constrained, have a relatively large MPC that supports the second hypothesis as the most important determinant. The non-response of young renters to changes in home prices argues against the third hypothesis. Bernanke (2007) went further to assert that the benchmark model should be one in which there is no wealth effect from changes in house prices and therefore the collateral effect is instead of, not in addition to the normal wealth effect.

The credit constrained channel can help explain some prominent features in savings behaviour (Deaton 1991). Consumers may accumulate assets to act as buffer stock, protecting consumption against bad draws of income. The precautionary demand for saving interacts with borrowing constraints to provide a motive for holding assets. Housing prices may also boost spending as it is

likely to affect the availability and price of unsecured credit (Antal et al. 2006), whereby increases in house prices may reduce the borrowing cost and increase the availability of unsecured credit. For most households, house prices appear to have little influence over indebtedness. Re-mortgaging has been associated with high levels of unsecured debt rather than high loan to value ratios. Total debt increases among households with housing equity gains that initially face high loan to value ratios and high levels of unsecured debt, providing further support for the collateral channel (Disney et al. 2010).

The third hypothesis considers that both house prices and consumption are driven by common factors. This relationship may be mitigated by several other factors and can vary considerably over time (Benito et al. 2006): demand of housing may have been boosted by rate of household formation, investment demand, declining long term interest rates, less prevalent high loan to value ratios than previous twenty years reflecting more cautious lending practice. Greater access to unsecured credit on favourable terms may have potentially weakened the collateral channel. It is also possible that the desire for precautionary savings has declined in recent years as households may potentially foresee a lower probability of future adverse developments. These developments highlight the impact that both common factors and causal links have played in the weakening association between house prices and consumer spending in recent years.

3. Data

The paper uses data from the Household Income and Labour Dynamic Australian Survey (HILDA), which has data from 2001 to 2011. HILDA is a comprehensive panel dataset that collects information on a broad range of social and economic topics, with a focus on family and household formation, income and work. The survey began with approximately 7,700 responding households, with most questions being asked repeatedly each year, although this was extended to include 2,153 new household in 2011.

The sample uses an unbalanced panel that is restricted to 2005 through to 2011 (waves 5 to 11), as detailed information about the composition of consumption was only first collected in 2005 and has since then been continued in the following waves. The sample only includes households that have been in the sample for at least two consecutive waves, to enable the inclusion of additional dynamic instruments including previous unemployment experience. This sample also enables the impact that self-reported measures such as the risk of job loss or probability of quitting their current job has on future labour market outcomes.

The sample is restricted to head and partners' of the household that are of working age, which is between 18 to 65 years old. Those individuals who have reported no labour income have also been excluded as it is necessary that the individuals have been employed during the sample, as the paper is interested in the risk of transitioning out of employment. Individuals who were self-employed were also excluded from the sample as they may react differently to a given amount of job insecurity compared to employees (Green and Dickerson 2012). Full time students were also excluded as economic inactivity is not necessarily associated with economic distress, unlike those that are unemployed and are seeking employment. Households that had individuals divorce over the sample period were also excluded as it is likely to cause substantial financial stress, and cause shifts in consumption behaviour (Finlay et al. 2012). Households that recorded missing values for consumption were also dropped from the sample. After the selection requirements there are a total of 4,080 households that remain in the sample[2].

The impact of job uncertainty on household consumption is constructed for both the head and partner of the household. The concept of the household 'head' is not employed in the HILDA survey unlike overseas panel data, which makes it difficult to compare results to estimates that have been produced by overseas studies (Scutella and Wooden 2004). Overseas studies such as the British

[2] See table A.1 for more information regarding sample selection

Household Panel Survey (BHPS) use the nominated household reference person as the household head. Previous works that have used the HILDA data have defined the household head as "the person that is most likely to make financial decisions for the household" (Finlay et al. 2012); however, there is still ambiguity as to how this is measured. This paper will define the household head as the person that has the highest aggregate labour income across every available wave within each household. This assumes that the person with the highest total labour income is the person that is most likely to make financial decisions for the household.

3. Summary Statistics

3.1 Dependent Variable

The dependent variable will consist of varying components of consumption including food, total less food and durable consumption. The HILDA dataset started to collect information on household consumption in 2005, which included the household expenditure on groceries[3]. The list of expenditure items that were collected in the HILDA survey was extended in 2006. The extensions in 2006 included new cars, computers, audio visual equipment and household appliances, which have been used as the proxy for durable consumption[4]. As a result, analysis for durable consumption is restricted from 2006 to 2010. The analysis of total less food expenditure is restricted from 2006 to 2010, due to changes being made to the collection of some sub categories of consumption in 2011.

Food consumption comprises a substantial 22.46 per cent of total consumption that is collected by the HILDA survey[5]. The household real expenditure on groceries has an average of $10,653 and median of $9,936 annually[6]. The real total less food consumption comprises of approximately 67.67 per cent with an average of $34,968.22 and median of $28,285.65 annually. Durable consumption in the context of this paper includes purchases of new cars, computers, audio visual equipment and household appliances. These durable goods comprise of approximately 9.80 per cent of total consumption collected by the HILDA survey. Durable consumption is a binary variable taking on the value 1 if the households have spent any money on these items in the last 12 months and 0 otherwise. On average only 15.53 per cent of households' report that they have not purchased durable goods in the last 12 months. These durable goods are expected to be relatively more

[3] Groceries or food expenditure is separate to meals eaten out and collected to the nearest dollar.
[4] The person responsible for the household bills was asked to complete the household expenditure questions, although multiple persons were allowed to provide answers. If multiple people in the household responded, the average between them was taken.
[5] Refer to table A.2 in appendix for the detailed composition of household consumption.
[6] These are valued in 2011 dollars and have been deflated using the Reserve Bank of Australia's consumer price index measure.

sensitive to a given level of uncertainty as households can typically defer these purchases (Foote et al. 2000).

Accordingly, real food expenditure has increased rather rapidly from 2005 reaching a peak in 2008 before declining, as shown in figure 3.1 below. In 2008 the level of uncertainty facing housing substantially rose, suggesting that uncertainty or job insecurity may affect even food expenditure[7]. Similar relationships hold for total less food expenditure, which has experienced a clear upward trend that plateaued in 2008. The probability of purchasing durable goods experienced a slowdown in the increase in probability of purchasing durable goods, reaching its peak in 2009 before falling in 2010, as shown in figure 3.2.

Figure 3.1: *Household Real Expenditure*

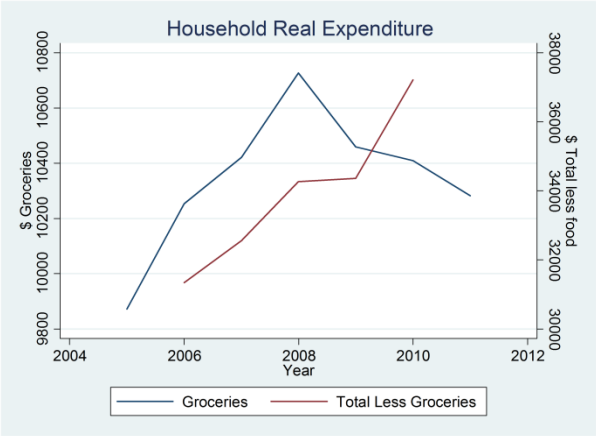
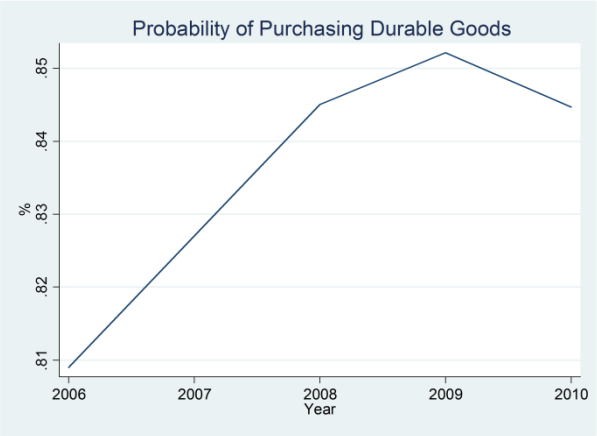


Figure 3.2: *Probability Purchase Durable Goods*



In terms of drawing inferences about broader consumption using the HILDA estimates, HILDA non housing expenditure has been estimated to equal approximately half of the Australian Bureau of Statistics (ABS) financial consumption expenditure and has a stable correlation coefficient of 0.7 for aggregate consumption over the period 2003 to 2010 (Finlay et al. 2012). Finlay et al (2012) also noted that the differences may be attributed to the ABS data being relatively broader by including accrual based measures, whilst HILDA only collects regular and recurring spending[8].

[7] Increased in uncertainty is evident by the substantial increase in the self-reported probability of losing their job in the next 12 months in 2008.

[8] Finlay et al. (2012) also noted that the HILDA data omits "entertainment expenses, non-fee education expenses, gifts and donations, personal and household services, health and beauty products, ornaments, art and jewellery, and financial service charges.

3.2 Job Insecurity

Job insecurity is estimated using both the self-reported and the predicted probability of unemployment. The self-reported measure of job insecurity is collected by asking individuals who are currently employed

""What do you think is the per cent chance that you will lose your job during the next 12 months?"

In addition to job insecurity the respondents were also asked about their predicted probability of unemployment[9]. The distribution of these measures are highly skewed with approximately 8.5 per cent report values of greater than or equal to 50 per cent risk of losing their job in the next 12 months[10]. The results for probability of quitting have approximately 15 per cent of individuals recording values of greater than 50 per cent chance of quitting their job in the next 12 months[11]. In response to the lack of variation in the subjective measures these have been categorised into high risk; that is values greater than or equal 50 per cent and low risk for values less than 50 per cent. The lack of variation in the subjective measure may potentially cause identification issues, which has motivated the use of predicted probabilities (Benito 2006).

The composition of these subjective measures for both the head of household and partner are shown in table 3.1 below, which also includes the correlation between the head and the partners' terms. The correlation between the head and partner whilst positive is still relatively low at approximately 5.45 per cent for job insecurity, which suggests that there may be sufficient variation to identify different effects that the subjective measures has on household consumption for both the head and partner.

Table 3.1: Self-Reported Values

	Head		*Partner*	
	Observations	Per cent	Observations	Per cent
Job Insecurity				
Low Risk	20,604	91.48	10,631	90.70
High Risk	1,918	8.52	1,090	9.30
Correlation		5.45		
Job Quit				
Low Risk	17,211	76.28	8,515	72.54
High Risk	5,352	23.72	3,224	27.46
Correlation		7.65		

Source: HILDA Release and author's calculations

[9] Respondents asked *"I would like you think about your employment prospects over the next 12 months. What do you think is the per cent chance that you will leave your job voluntarily (that is, quit or retire) during the next 12 months?"*

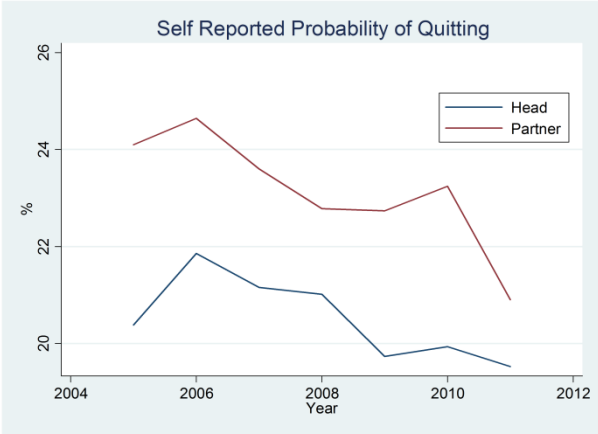
[10] Histogram of self-reported job insecurity is shown by figure A.1 in the appendix

[11] Histogram of self-reported job quit is shown by figure A.2 in the appendix

The highly skewed self-reported values are also evident in the British dataset Benito (2006). This is somewhat expected with aggregate unemployment ranging between 5 to 6 per cent. Job security has increased substantially from 2007 to 2009, in response to the global financial crisis and increased uncertainty, with partners responding higher levels across all of the waves, as shown in the figure 3.3 below.

Figure 3.3: *Self-Reported Job Insecurity*

Figure 3.4: *Self-Reported Probability of Quitting*



The probability that individuals will quit their job in the next twelve months is higher for partners relative to the head of the households. Approximately 24 per cent of head of households record a greater than 50 per cent chance of quitting their job in the next twelve months as opposed to 27 per cent for the partners. This probability of quitting has been on a downward trend for both the head and partner, as shown in the figure 3.4 above[12].

The relative importance and significance of using self-reported measures are particularly noticeable observing the correlation between the self-reported measures and future labour market outcomes in 12 months' time. The relationship between the self-reported measure of job insecurity and future labour market outcomes are summarised in table 3.2. Accordingly, recording a greater than 50 per cent chance of losing your job in the next 12 months for the head of household decreases your probability of being employed in 12 months' time by 5.91 percentage points, increase the risk of being unemployed by 2.57 percentage points and increase the chance of not being in the labour force by 3.34 percentage points. Similar results are also evident using the probability of quitting your job in the next twelve months. Those heads of household that record greater than 50 per cent

[12] Younger demographics record higher levels of probability of quitting. This may reflect increased occupational mobility, whereby younger demographics may be more inclined to voluntarily leave their job to find better fit or find alternative employment that provides a better match. Self-reported probabilities of finding alternative employment also decrease with age.

probability of quitting their jobs are 6.51 percentage points less likely to be employed, 1.87 percentage points more likely to be unemployed and 4.64 percentage points more likely to not be in the labour force in 12 months' time. Similar patterns are also evident for the partner in the households although they tend to face a lower probability of being employed relative to the head of household and a higher probability of being unemployed and not being in the labour force. This again suggests that the partners of a household tend to face higher levels of job insecurity relative to the head of households.

Overall, these figures indicate that these subjective measures do have predictive power over future labour market outcomes. Those that indicate a greater than 50 per cent chance of losing or quitting their jobs face a lower probability of being employed and increased probability of being unemployed or not being in the labour force.

Table 3.2: Average expected probabilities of job separation at t+1 by labour market status

	Labour Market Status t+1					
Expectation time t	Employed		Unemployed		Not in labour force	
	Head	Partner	Head	Partner	Head	Partner
Probability Job Loss < 50%	96.13%	91.18%	1.17%	1.87%	2.70%	6.95%
Probability Job Loss > 50%	90.22%	85.70%	3.74%	4.21%	6.04%	10.10%
Probability of quitting <50%	97.17%	93.22%	0.94%	1.46%	1.89%	5.32%
Probability of quitting >50%	90.66%	83.71%	2.81%	3.77%	6.53%	12.52%

Source: HILDA Release and author's calculations

In addition to these self-reported measures, the predicted probability of unemployment will be dissected into both voluntary and involuntary separation. The reason for leaving is asked to those who lost their job in the last twelve months which have been categorised into voluntary, involuntary and other reasons for separation[13].

In total, 86 per cent of the head of households do not separate from their jobs, leaving 14 per cent that do separate. Out of those that separate, voluntary separation comprises of the largest proportion at 8.35 per cent, followed by other at 2.92 per cent and then involuntary with 2.69 per cent, as shown table 3.3 below. Accordingly, voluntary separation is three times larger than involuntary separation. In comparison with the household partner, they tend to display higher levels

[13] Involuntary separation includes getting laid off, no work available, retrenched or self-employed business closed down. Voluntary separation includes those that were not satisfied with job, obtain between job, want change, to start new business, retired or did not want to work any longer, change of lifestyle, to return to study, too much travel time or too far from public transport. Other incorporates the fact that the job was temporary, seasonal, holiday job, own sickness or disability, pregnancy or to have children, to stay at home and look after children, the house or someone else and the spouse or partner transferred.

of total separation, and double the amount of other separation being the main contributor to this increase. This may in part be attributed to the increased proportion of partners taking time off for child rearing. The relationship between subjective measures of job loss and probability of quitting on reasons for leaving are shown in table A.3 in the appendix.

Table 3.3: Reason For Separating

	Head		*Partner*	
	Observations	Per cent	Observations	Per cent
No Separation	19,449	86.03	9,690	82.25
Involuntary	608	2.69	360	3.06
Voluntary	1,888	8.35	1,023	8.68
Other Separation	661	2.92	708	6.01

Source: HILDA Release and author's calculations

3.3 Control Variables

When assessing the impact of job insecurity on household consumption the models also include additional controls. These controls include various components of income including permanent, transitory and investment income. Permanent income is the normal annual labour income adjusted for age and cohort effects (Guiso et al. 1992)[14]. This is calculated by using the predicted values from a random effects model that uses the log of household income on a vector of household demographic variables[15]. This predicted value is then projected forward until the individual retires using estimates of how household incomes vary with age. Transitory income is the difference between current and permanent labour income. Investment income incorporates return from capital or non-human wealth. Household average annual permanent income is $113,435 and has an average transitory income of $5,658. Investment income is much smaller than labour income with a mean of only $3,985 and median of $31.75. This is due to most Australian households holding little to no wealth in financial assets which yield positive investment income. Real investment income rose from 2005 to 2006, and has been gradually declining since then. This may be due to substantial losses in financial markets, and lower returns on interest bearing assets, with interest rates declining substantially over this period. Approximately 43 per cent of households do not yield any investment income, 6 per cent that yields negative returns and only 50.5 per cent that yields positive investment income.

[14] See data appendix for more information on how permanent income is estimated.
[15] See the appendix for the results, table D.A.1.

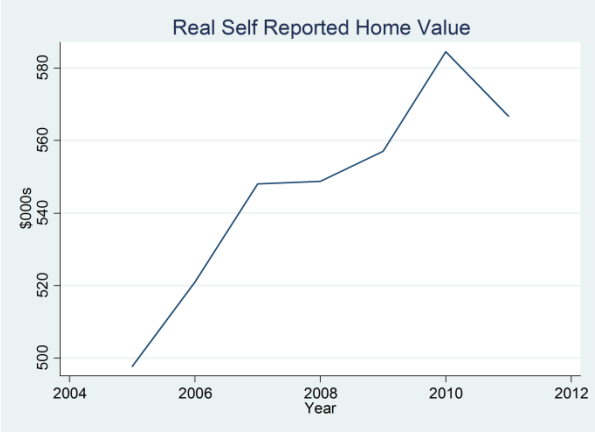
The models also control for household characteristics including the number of children[16] and number of employed persons[17]. The models also incorporate controls for the head and partner of the household including marriage status, age, education, health, sex, job tenure and occupation. Varying combinations of workplace size, union status, unemployed history and region have been used to also estimate the predicted probability of unemployment. The distribution and analysis of each of these controls for both the household head and partner are included in table A.4 in the appendix.

3.4 Extensions

3.4.1 Home Values

The extensions to the models include controls for both housing occupational status and also home values[18]. Approximately 71.3 per cent of households in the survey are home owners with an average real home value of $552,213.90 and median of $470,437.7[19]. These home values have increased from 2005 to 2007, before displaying noticeably small growth from 2007 to 2009 in response to the GFC. Home values experienced a boost from 2009 to 2010, with those gains largely being offset by a fall in 2011 as shown in figure 3.5. These changes in home values may have a significant impact on consumption.

Figure 3.5: *Self-Reported Home Value*



In order to determine whether the self-reported home values reflect changes in aggregate household prices, the HILDA estimates are compared to an independent nationwide measure. The HILDA estimates display consistently higher means in home values compared to the mean of the independent nationwide measure with an average ratio of 1.16 (Finlay et al. 2012). The series do appear to move together with a correlation of 0.6 per cent, albeit the difference between the two did differ substantially between 2008 and 2009 having missed the nationwide fall in house prices.

[16] Children defined as under the age of 18
[17] Results are also robust to the use of number of adults.
[18] Home prices reflect home values, and will include changes in value due to capital improvements in addition to price changes (Finlay et al. 2012).
[19] Home values deflated using RBA trimmed CPI in 2011 dollars.

3.4.2 Wealth

Information on wealth is only collected in special modules that were asked only in 2002, 2006 and 2010. This provides comprehensive information on the households' financial assets[20], non-financial assets[21] and total debt[22], which provides an overall detailed account of a households' wealth. Households' have an average of $264,672 in financial assets and a median of $126,100. Non-financial assets are significantly larger with an average of $597,709, which largely comprises of the property. Total debt has an average of $207,851 that largely comprises of property debt. These values are summarised in table 3.4 below.

Table 3.4: Household Wealth

	Mean	*Median*
Financial Assets	$264,672	$126,100
Non-Financial Assets	$597,709	$459,000
Total Debt	$207,851	$100,000
Net Worth	$652,651	$421,743
Observations		5820

Source: HILDA Release and author's calculations

[20] Financial assets incorporates bank accounts and superannuation.
[21] Non-financial assets includes property, business assets, collectibles and vehicles.
[22] Debt includes credit card debt and property debt.

4. Statistical Analysis

The impact that job insecurity has on household consumption is estimated using a random effects specification, which takes advantage of the panel structure in the data by accounting for unobserved household heterogeneity. The exact estimation strategy that is used varies for different components of consumption depending on whether the consumption variable is continuous or discrete. Food consumption and non-food consumption are continuous variables but durable consumption is discrete taking on the value of 1 if households have spent any funds purchasing durable goods in the last 12 months and 0 otherwise. If consumers engage in precautionary saving then higher levels of job insecurity would reduce the probability that individuals will purchase durable goods in the next 12 months. In order to account for the discrete nature for durable consumption, a random effects probit is used. The two different frameworks do differ in terms of estimation with a random effects model being estimated using generalised least squares when the outcome is continuous and the random effects probit being estimated using maximum likelihood estimation for the binary variables. Despite these differences, both models are based on similar assumptions. The base model is shown in equation 4.1 below.

$$\ln(C_{it}) = \alpha_i + \delta_1 \widehat{u_{it}}^{HOH} + \delta_2 \widehat{u_{it}}^{SEC} + \beta_1 y_{it}^{p} + \beta_2 y_{it}^{T} + \beta_3 y_{it}^{W} + \beta_4 X_{it} + \gamma_t + \mu_{it} \qquad (4.1)$$

The dependent variable C_{it} is some measure of consumption. This includes food expenditure and total less food consumption. The term α_i is the household random effect which helps capture household unobservables. The term γ_t denotes set of common year effects and error term μ_{it}.

The key explanatory variables of interest are the job insecurity terms for both the head ($\widehat{u_{it}}^{HOH}$) and partner of the household ($\widehat{u_{it}}^{SEC}$). There are two broad measures of job insecurity that are utilised, including the self-reported probability of job loss and the predicted probability of unemployment in 12 months' time[23]. The latter form of job insecurity has been motivated by the lack of variation in the self-reported measures that could create potential identification issues (Benito 2006). The predicted probability of unemployment is estimated using a prospective random effects probit model, which accounts for both the binary nature of the dependent variable and the panel structure by incorporating unobservables. The random effects probit model is specified as

$$UE_{it+1} = \Phi(Z_{it}'\beta + \alpha_i + \mu_{it}) \qquad (4.2)$$

[23] The self-reported probability of job loss has been categorised into high risk, which is equal to or greater than 50 per cent and low risk. This is due to the lack of variation.

Whereby, Φ is the standard normal distribution function and β represent the maximum likelihood probit estimates. The term Z' includes controls for education, casual employment, marriage status, age, health, married, sex, job tenure and occupation for both the head and partner of the household in addition to year effects. The term α_i is an individual random effects term that controls of unobservables. These models also include various combinations of lagged unemployment, workplace size, union status, controls for regions and self-reported measures of job insecurity. Using combinations of these controls can help assess the sensitive of the results to changes in the predicted probability of unemployment specification.

Other key controls include permanent income (y_{it}^{p})[24], transitory income (y_{it}^{T}) and investment income (y_{it}^{W}) which are all measured in levels, in units of $1,000. The income variables are not measured in logs as transitory income takes on negative values. An increase in all of these income measures are likely to result in higher levels of consumption as they reflect an expansion of the households budget constraint. These measures help control for both changes in human and non-human forms of wealth.

The term X_{it}represents a vector of additional controls including marriage, number of children, number of employed persons in the house[25], age for the head and partner of the household, education for the head and partner of the household, sex, health, job tenure and occupation for both the head and partner of the household.

Both the random effects probit model and the random effects estimator utilise the panel structure by capturing unobserved heterogeneity. The random effects specification does this by decomposing the error term into an individual specific effect α_i and the error term μ_{it}, as shown in equation 4.3.

$$\varepsilon_{it} = \alpha_i + \mu_{it} \tag{4.3}$$

This specification assumes that the unobservable effects are random variables that are independent from the regressors. The random effects estimator will provide consistent estimates of the effect of job insecurity on household consumption if both the random effects and error terms are independently and identically distributed. These assumptions can be shown below.

$$cov(X_{it}, a_i) = 0 \tag{4.4}$$

$$a_i \sim [a, \sigma_a^2] \tag{4.5}$$

$$\mu_{it} \sim [0, \sigma_\varepsilon^2]$$

[24] Information on how permanent income is constructed is outlined in the data appendix.
[25] Results are robust to the inclusion of the number of adults. This is likely to be more relevant than the number of employed persons when analysing certain components of consumption such as food.

The random effects estimator will provide a consistent and efficient estimate of the effect that job insecurity on household consumption if the individual effects are strictly uncorrelated with the regressors, as shown in equation 4.4. This is quite an onerous assumption and will produce inconsistent estimates if the assumption does not hold. The individual specific effect that accounts for the variation in the dependent variable is estimated by

$$Corr[\varepsilon_{it,}\varepsilon_{is,}|X] = \rho = \frac{\sigma_\alpha^2}{1+\sigma_\alpha^2} \tag{4.6}$$

In the binary models these assumptions also includes the normalization of the variance of μ_{it}, which is not required for the linear models. This assumption enables identification of the coefficients. This can be shown by

$$var(\mu_{it}) \sim N(0,1) \tag{4.7}$$

Using normal standard errors imposes that assumption that the error terms must be independently and identically distributed (i.i.d) with variance σ^2. This is unlikely to hold as different households may have varying levels of variances in consumption even after controlling for these covariates. To help relax this assumption, robust standard errors have been used which allows for the error terms to not be identically distributed only when the dependent variable is continuous. The use robust standard errors are restricted to the continuous frameworks as they are not generalizable to a discrete framework.

The random effects specification does provide consistent estimates that are more efficient than the pooled specification if the conditions are met. Unlike the fixed effects model, the random effects framework can estimate non time varying effects as it is estimated using a matrix weighted average of the between and within estimator, with the weights being dependent on the relative variances of the estimators. The generalised least squares estimate of the random effects terms will use the optimal combination of the between and within estimators.

The fixed effects specification provides an alternative method of estimating this relationship. The fixed effect model allows for unobserved individual effects by including a fixed constant for each household. Unlike the random effects model, the consistency of the fixed effect estimator in maintained irrespective of any correlation between the individual specific effect and the regressors. The identification of the coefficients in a fixed effects specification is identified by within group variation. The fixed effects model will also eliminate all time invariant variables. This could result in potential identification issues with job insecurity, as there appears to be little variation over time at the individual level. As a result, the fixed effects specification has been used as an additional means

of robustness to determine sensitivity to the zero correlation assumption between the individual specific effects and the regressors in the random effects model. The fixed effects specification has only been used when the dependent variable is continuous. Applying the fixed effects specification when the dependent variable is binary is problematic, as this specification does not generalise to nonlinear models such as a probit. This is due to the fixed effects term not being able to be differenced away, which creates an incidental parameter problem.

4.1 Extensions

The inclusion of involuntary and voluntary separation as the proxy of job insecurity will also be considered. These are estimated under the similar framework adopted in the base models. Both of these measures will utilise self-reported measures, whereby the probability of losing your job in the next 12 months being used as the self-reported measure for involuntary separation and the self-reported probability of quitting your job being used as the measure for voluntary separation. The predicted probability of involuntary and voluntary separation is estimated using a prospective random effects probit model.

The models are going to be further expanded to investigate whether there is heterogeneity in job insecurity on other key variables including home ownership, home values, wealth and age. This is estimated by including interaction terms between these key variables and the job insecurity measure.

In order to assess the relative difference in sensitivity between home owners and renters an additional term such as home ownership status (HS) is included in the structural equation in conjunction with interaction terms for both the head and partner of the household as shown below

$$\ln(C_{it}) = a_i + \beta_1 \ln(y_{it}^p) + \beta_2 \ln(y_{it}^T) + \beta_3 (y_{it}^W) + \delta_1 \widehat{u_{it}}^{HOH} + \delta_2 \widehat{u_{it}}^{SEC} + \lambda_1 HS_{it} + \lambda_2 (\widehat{u_{it}}^{HOH} * HS_{it}) + \lambda_3 (\widehat{u_{it}}^{SEC} * HS_{it}) + X_{it}\beta + \gamma_t + \mu_{it} \quad (4.8)$$

The terms λ_2 and λ_3 both determine whether the sensitivity differs for home owners and renters. A similar framework is used to determine whether this relationship varies for households with different home values (HV), with the model shown by

$$\ln(C_{it}) = a_i + \beta_1 \ln(y_{it}^p) + \beta_2 \ln(y_{it}^T) + \beta_3 (y_{it}^W) + \delta_1 \widehat{u_{it}}^{HOH} + \delta_2 \widehat{u_{it}}^{SEC} + \lambda_1 HV_{it} + \lambda_2 (\widehat{u_{it}}^{HOH} * HV_{it}) + \lambda_3 (\widehat{u_{it}}^{SEC} * HV_{it}) + X_{it}\beta + \gamma_t + \mu_{it} \quad (4.9)$$

The impact of wealth is also considered and is estimated using three main frameworks. The first determines whether the sensitivity various for households with positive or negative values of wealth (DW), whereby DW takes on the value of 1 if he household has positive wealth and zero otherwise. This is estimated by

$$\ln(C_{it}) = a_i + \beta_1 \ln(y_{it}^p) + \beta_2 \ln(y_{it}^T) + \beta_3 (y_{it}^W) + \delta_1 \widehat{u_{it}}^{HOH} + \delta_2 \widehat{u_{it}}^{SEC} + \lambda_1 DW_{it} + \lambda_2 (\widehat{u_{it}}^{HOH} * DW_{it}) + \lambda_3 (\widehat{u_{it}}^{SEC} * DW_{it}) + X_{it}\beta + \gamma_t + \mu_{it} \quad (4.10)$$

The second aims at measuring how the sensitivity various for households with larger amounts of positive wealth (W). This is estimated by

$$\ln(C_{it}) = a_i + \beta_1 \ln(y_{it}^p) + \beta_2 \ln(y_{it}^T) + \beta_3 (y_{it}^W) + \delta_1 \widehat{u_{it}}^{HOH} + \delta_2 \widehat{u_{it}}^{SEC} + \lambda_1 W_{it} + \lambda_2 (\widehat{u_{it}}^{HOH} * W_{it}) + \lambda_3 (\widehat{u_{it}}^{SEC} * W_{it}) + X_{it}\beta + \gamma_t + \mu_{it} \quad (4.11)$$

The last framework decomposes wealth into financial (FW) and non-financial (NFW) assets including total debt(D). These measures are also interacted with job insecurity to determine how the responsiveness of job insecurity changes with varying levels of financial and non-financial wealth in addition to debt. This model can be shown below.

$$\ln(C_{it}) = a_i + \beta_1 y_{it}^p + \beta_2 y_{it}^T + \beta_3 y_{it}^W + \delta_1 \widehat{u_{it}}^{HOH} + \delta_2 \widehat{u_{it}}^{SEC} + \lambda_1 \ln(FW_{it}) + \lambda_2 \ln(NFW_{it}) + \lambda_3 D_{it} + \lambda_4 (\widehat{u_{it}}^{HOH} * \ln(FW_{it})) + \lambda_5 (\widehat{u_{it}}^{HOH} * \ln(NFW_{it})) + \lambda_6 (\widehat{u_{it}}^{HOH} * D_{it}) + \lambda_7 (\widehat{u_{it}}^{SEC} * \ln(FW_{it})) + \lambda_8 (\widehat{u_{it}}^{SEC} * \ln(NFW_{it})) + \lambda_9 (\widehat{u_{it}}^{SEC} * D_{it}) + X_{it}\beta + \gamma_t + \mu_{it} \quad (4.12)$$

5. Results of the Statistical Analysis

We will analyse the impact of job insecurity on various components of consumption including food, non-food and durable consumption in order to assess the robustness of the results.

The results section will be broken into two main parts. The first part will use the base model to examine the impact that job insecurity has on the various components of consumption. This section will also examine the relationship using the risk of voluntary and involuntary separation as the proxy for job insecurity. The second part will examine potential heterogeneity in the impact that job insecurity has on consumption using some key variables including home occupational status, self-reported home values, and wealth.

This paper has also analysed the key drivers of self-reported and predicted probability of unemployment, which have been presented in the appendix as they are not essential for the key results.

5.1 Base Model

The base model uses a random effects framework with the dependent variables consisting of various components of logged consumption and the key variable of interest being job insecurity for both the head and partner of the household, as shown in equation 4.1. The results tables consist of 6 columns, each consisting of different proxies for job insecurity. The first column presents the results using the self-reported measure as the proxy for job insecurity. This variable is binary taking on the value of 1 if they report a probability of 50 per cent or greater. Therefore, the per cent change in consumption of reporting high risk can be estimated by multiplying the coefficient by 100. Columns 2 to 6 use the predicted probability of unemployment as the proxy for job insecurity, each using different combinations of instruments in order to estimate the predicted probability of unemployment. This provides an additional means of robustness as it assesses the results sensitivity to the predicted unemployment specifications. As these job insecurity measures are continuous, the coefficient represents the percentage change in consumption following a one percentage point increase in job insecurity or predicted probability of unemployment.

Job insecurity has been found to have a significant and negative impact on food consumption for both the head and partner of the household, as shown in table 5.1 below. The self-reported values of job insecurity were insignificant for both the head and partner of the household as shown in column one, which may be attributed to the lack of variation in the data creating potential identification issues. Using the predicted probability of unemployment as a proxy for job insecurity

produces significant results, which is robust to different specifications of predicted unemployment that utilise varying combinations of instruments. The results appear sensitive to the inclusion of union status, with job insecurity appearing to have a larger impact only on those models that use union status as an instrument. Union status does have a significant impact on the predicted probability of unemployment, which does reduce the probability that individuals will become unemployed, as shown in table A.5.1 in the appendix. This is consistent with previous work that has found that changes in job insecurity are largely influenced by unions as they tend to increase job security (Bender and Sloane 1999).

Accordingly, a one percentage point increase in job insecurity for the head of household implies an estimate of 0.276 per cent decrease in food consumption, using the predicted probability of unemployment as estimated in model 3[26]. Given the distribution of the predicted likelihood of unemployment, moving from the bottom to the top of the distribution of job insecurity reduces consumption by 18.42 per cent. Alternatively, a one standard deviation increase in job insecurity will reduce consumption by 3.01 per cent. This is notably larger than Benito (2006) estimate of a 1.6 per cent reduction using British data. These values suggest that job insecurity does have a noticeable impact on food consumption. As food consumption is deemed a necessity, these values could suggest an even larger relationship between job insecurity on aggregate consumption.

Table 5.1: Food Consumption

Model	(1)	(2)	(3)	(4)	(5)	(6)
Head Risk	-0.009	-0.155***	-0.276***	-0.229***	-0.159**	-0.246***
	(0.012)	(0.035)	(0.066)	(0.067)	(0.064)	(0.067)
Partner Risk	-0.002	-0.074***	-0.087**	-0.090**	-0.086**	-0.087***
	(0.010)	(0.029)	(0.035)	(0.036)	(0.036)	(0.033)
Perm Income	0.011***	0.011***	0.010***	0.010***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Transitory Income	-0.015***	-0.014***	-0.014***	-0.014***	-0.014***	-0.014***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Investment Income	0.007***	0.007***	0.010***	0.010***	0.010***	0.007***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Married	0.058***	0.055***	0.047***	0.049***	0.052***	0.047***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.011)
Number Children	0.112***	0.112***	0.107***	0.108***	0.108***	0.112***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Num. Emp Persons	0.003	0.003	0.003	0.003	0.003	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Aged 30 to 39	0.011	0.012	0.011	0.011	0.012	0.008
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Aged 40 to 49	0.112***	0.106***	0.104***	0.104***	0.107***	0.101***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Aged 50 to 65	0.113***	0.133***	0.153***	0.146***	0.139***	0.141***
	(0.018)	(0.018)	(0.020)	(0.020)	(0.020)	(0.019)
Tafe	0.013	0.005	-0.008	-0.005	0.001	-0.002
	(0.012)	(0.013)	(0.014)	(0.014)	(0.014)	(0.013)
Degree	-0.008	-0.010	-0.009	-0.008	-0.006	-0.018
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Higher Degree	0.027	0.026	0.039**	0.038**	0.039**	0.026
	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)	(0.017)

[26] The conclusions drawn from Benito were also estimated using the predicted probability of unemployment using the same set of instruments as model 3.

Male	0.021*	0.010	0.014	0.017	0.021	0.008
	(0.012)	(0.013)	(0.014)	(0.014)	(0.014)	(0.013)
Health	0.002	0.014	0.019*	0.016	0.012	0.019*
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)
Job Tenure						
7-12 months	0.001	-0.001	0.011	0.013	0.013	-0.005
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
1-2 years	-0.025*	-0.028**	-0.028*	-0.026*	-0.026*	-0.032**
	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.014)
2-4 years	-0.020*	-0.036***	-0.043***	-0.038***	-0.032**	-0.045***
	(0.011)	(0.012)	(0.012)	(0.013)	(0.012)	(0.013)
4 years or more	-0.012	-0.034***	-0.045***	-0.038***	-0.028**	-0.046***
	(0.011)	(0.012)	(0.014)	(0.014)	(0.014)	(0.014)
Partner						
Tafe	-0.021*	-0.020*	-0.016	-0.016	-0.016	-0.021*
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Degree	-0.054***	-0.055***	-0.045***	-0.045***	-0.045***	-0.052***
	(0.015)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)
Higher Degree	-0.011	-0.007	-0.006	-0.006	-0.006	-0.005
	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)	(0.018)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14769	14137	13885	13893	13893	14846

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

[1]subjective measures
[2] Subjective Measures: unemployed previous year, employer size and union status (subjective job security measures)
[3] unemployed previous year, employer size and union status (predicted probability becoming unemployed)
[4] unemployed previous year and employer size (predicted probability becoming unemployed)
[5] unemployed previous year, employer size and region (predicted probability becoming unemployed)
[6] employer size and union status (predicted probability becoming unemployed)

In terms of the additional controls, permanent income has a significant and positive effect on household consumption across all of the model specifications. The coefficient and standard errors for all measures of income have been multiplied by 1,000. As a result the coefficients reflect the impact that an increase of $1,000 has on the log of food consumption. Permanent income is significant with an increase in permanent income of $1,000 cause's food consumption to increase by 0.01 per cent[27]. The estimate of permanent income has elasticity with respect to food of 0.116 evaluated at the mean of permanent income. This relationship does not hold with transitory income, with increases in transitory income causing food consumption to fall. This could be due to households spending the increase in transitory income on other components of consumption. Investment income has a positive effect; albeit the magnitude of the impact is small. A one unit increase ($1,000) in investment income is associated with only a 0.01 per cent increase in food consumption with elasticity estimated at 0.002, which suggests that only a very small proportion of investment income is used to increase spending on food.

Those households that have the head of household that are married, those with more children and households with more employed persons are also more likely to spend more on food consumption. This is due to the household having to feed relatively more people, resulting in the need to purchase

[27] Permanent income has a mean of $130,328 and transitory income has a mean of $28,437.

a larger quantity of food. The magnitude of this effect is quite substantial with each additional child increasing food consumption by 10.7 per cent. Those households that are married increase their food consumption by 4.7 per cent. This increase may be attributed to married couples being more inclined to purchase higher quality food products.

Age is significant and positive from 40 years and older, indicating that older households spend more on food consumption. This may reflect older households having a stronger preference for higher quality food relative to younger demographics. A household with a head of household aged 40 years or older have food consumption that is 10.4 per cent higher compared to those aged 18 to 29 years, increasing further to 15.3 per cent for those aged 50 to 65.

Controls for education appear significant for the head of the household with higher degree qualifications increasing consumption by 3.9 per cent. Education degrees are also significant for the partner of the household with a degree reducing food consumption by 4.5 per cent. Overall, the joint test on all of the education controls for both the head and partner of the household being found to have a significant effect on household food consumption[28]. Similarly, self-reported health appears marginally significant causing food consumption to increase by 1.9 per cent. Those households with higher tenure appear to consume less on food, with these estimates being jointly significant[29].

This significant relationship for job insecurity does transcend to the remaining components of consumption, with job insecurity appearing significant for non-food consumption, as shown in table 5.2 below. The estimates suggest that evidence of precautionary savings is stronger for non-food consumption relative to food consumption. A one percentage point increase in the probability of unemployment reduces non-food consumption by 0.429 per cent in contrast to 0.276 per cent for food. A one standard deviation increase in job insecurity will reduce non-food consumption by 4.8 per cent. The increased sensitivity of non-food consumption could be driven by differing levels of opportunity cost of engaging in precautionary savings for various components of consumption. As food consumption is a necessity, the relative cost of deferring or reducing consumption is likely to be greater than non-food consumption.

[28] Head of household education controls has a joint test of $\chi^2 = 10.09$ and partner of the household having a joint test of $\chi^2 = 9.83$.
[29] Joint test of job tenure appears insignificant with a $\chi^2 = 17.15$

Table 5.2: Non-Food Consumption

Model	(1)	(2)	(3)	(4)	(5)	(6)
Head Risk	0.038**	-0.049	-0.429***	-0.405***	-0.321***	-0.391***
	(0.019)	(0.061)	(0.108)	(0.111)	(0.104)	(0.106)
Partner Risk	0.028	-0.064	-0.217***	-0.215***	-0.198***	-0.213***
	(0.017)	(0.044)	(0.057)	(0.060)	(0.059)	(0.054)
Perm Income	0.026***	0.026***	0.025***	0.025***	0.025***	0.025***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Trans Income	-0.026***	-0.026***	-0.025***	-0.025***	-0.025***	-0.025***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Invest Income	0.020***	0.022***	0.026***	0.025***	0.025***	0.021***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)
Married	0.081***	0.083***	0.051***	0.052***	0.057***	0.058***
	(0.015)	(0.016)	(0.017)	(0.017)	(0.017)	(0.016)
Number Children	0.026***	0.027***	0.028***	0.028***	0.028***	0.026***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Num. Emp Persons	-0.004	-0.004	-0.004	-0.004	-0.004	-0.005
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Aged 30 to 39	0.012	0.008	0.010	0.011	0.013	0.011
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Aged 40 to 49	0.037	0.028	0.011	0.012	0.018	0.013
	(0.024)	(0.024)	(0.025)	(0.025)	(0.025)	(0.024)
Aged 50 to 65	0.026	0.027	0.081***	0.079***	0.072**	0.070**
	(0.026)	(0.027)	(0.030)	(0.030)	(0.031)	(0.028)
Tafe	0.083***	0.076***	0.056***	0.057***	0.065***	0.061***
	(0.017)	(0.018)	(0.020)	(0.020)	(0.020)	(0.018)
Degree	0.066***	0.061***	0.059**	0.060**	0.063***	0.051**
	(0.023)	(0.024)	(0.024)	(0.024)	(0.024)	(0.023)
Higher Degree	0.051**	0.047*	0.063**	0.063**	0.063**	0.052**
	(0.024)	(0.024)	(0.025)	(0.025)	(0.025)	(0.024)
Male	-0.030*	-0.038**	-0.046**	-0.046**	-0.042**	-0.046**
	(0.017)	(0.018)	(0.019)	(0.019)	(0.019)	(0.018)
Health	0.007	0.007	0.034**	0.033**	0.028*	0.032**
	(0.015)	(0.015)	(0.017)	(0.017)	(0.017)	(0.016)
Job Tenure						
7-12 months	0.017	0.021	-0.040	-0.039	-0.039	0.009
	(0.033)	(0.033)	(0.035)	(0.035)	(0.035)	(0.033)
1-2 years	0.014	0.021	-0.007	-0.005	-0.005	0.000
	(0.024)	(0.025)	(0.025)	(0.025)	(0.025)	(0.024)
2-4 years	-0.023	-0.026	-0.077***	-0.074***	-0.066***	-0.066***
	(0.020)	(0.021)	(0.022)	(0.022)	(0.022)	(0.022)
4 years or more	-0.006	-0.011	-0.081***	-0.077***	-0.066***	-0.067***
	(0.019)	(0.021)	(0.024)	(0.025)	(0.024)	(0.023)
Partner						
Tafe	0.007	0.012	0.013	0.014	0.013	0.008
	(0.015)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)
Degree	0.075***	0.078***	0.085***	0.086***	0.086***	0.074***
	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)	(0.021)
Higher Degree	0.075***	0.078***	0.102***	0.102***	0.101***	0.084***
	(0.023)	(0.023)	(0.024)	(0.024)	(0.024)	(0.023)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11222	10763	10451	10459	10459	11269

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

[1]subjective measures
[2] Subjective Measures: unemployed previous year, employer size and union status (subjective job security measures)
[3] unemployed previous year, employer size and union status (predicted probability becoming unemployed)
[4] unemployed previous year and employer size (predicted probability becoming unemployed)
[5] unemployed previous year, employer size and region (predicted probability becoming unemployed)
[6] employer size and union status (predicted probability becoming unemployed)

In terms of the additional controls, permanent income is significant and has a relatively larger impact on non-food consumption than food consumption. An increase in permanent income by one unit ($1,000) increases non-food expenditure by 0.025 per cent with an elasticity of non-food consumption of 0.299 evaluated at the mean of permanent income, suggesting a much higher proportion of permanent income is devoted to non-food consumption as expected. Marriage has a significant and positive impact on non-consumption, increasing consumption by 5.1 per cent. This suggests that married households tend to have higher levels of consumption for both food and non-food consumption. The number of children in the household is also significant, with each additional child increasing non-food consumption by 2.8 per cent. This is substantially lower than the 10.7 per cent estimate on food consumption. This suggests that households with relatively more children allocate a relatively larger proportion on food, which is to be expected.

Age is significant for only those aged 50 to 65 years, with this age group consuming 8.1 per cent more. Those households that have males as the head of the household have non-food consumption that is 4.6 per cent less compared to females. Job tenure is also significant, with increases in job tenure reducing the level of non-food consumption[30]. Those households with long term health problems are also significant with these households consuming more, which may be attributed to increased expenditure on medical fees. The head and partners' level of education displays a larger and clearer impact on non-food consumption relative to food expenditure with increases in education increasing the amount of non-food consumption. Accordingly, head of households that have a tafe qualification results in a 5.6 per cent increase in non-food consumption and the magnitude is even higher for those with a degree with non-food consumption increasing by 6.3 per cent[31].

These results highlights the existence of varying degrees of responsiveness of certain components of consumption to changes in job insecurity, which potentially reflect differing levels of opportunity cost of engaging in precautionary savings. Those components of consumption that are deemed necessities such as food, typically carry higher levels of opportunity cost of engaging in precautionary savings compared to other luxury items such as holidays or the purchase of new motor vehicles, which can be deferred.

[30] Jointly significant with $\chi^2 = 17.15$, p-value (0.002).
[31] Estimated using the predicted probability of unemployment in model 3.

Another important sub component of consumption includes durable consumption, which yields utility over a period of time[32]. Due to the infrequency and relatively large transactional values of durable consumption it is relatively more difficult to assess or estimate whether there is evidence of precautionary savings by using the level of consumption. Alternatively, it is possible to determine whether there is evidence of precautionary savings in durable consumption by measuring the impact that changes in job insecurity have on the likelihood of purchasing the durable goods in the past 12 months (Foote et al. 2000). This is due to the increase in job insecurity being likely to increase the likelihood that households defer their purchases of durable goods.

Accordingly, job insecurity has a significant negative impact for only the head of the household; albeit only for those models that use the predicted probability of unemployment as the proxy for job insecurity, as shown in table 5.3. The self-reported values of job insecurity are insignificant for both the head and partner of the household, which again can be attributed to the lack of variation in the subjective terms. The models suggest that a one percentage point increase in job insecurity for the head of household reduces the probability of purchasing durable goods by 9 percentage points, which is quite substantial considering the average probability of purchasing durable goods is 84.48 per cent. These values were estimated using average marginal effects on the predicted probability of unemployment using the instruments employed in model 3. This effect is larger than Benito (2006) average marginal effect estimate of 6 percentage points. These differences may be attributed to differences in defining durable goods.

The number of children also increases the likelihood of purchasing durable goods, which may be due to the increased need or utility derived from purchasing these goods. As a result, households with children are less likely to delay the purchases of durable goods. Education also appears significant, with those that are highly educated being more likely to purchase durable goods. This is likely caused by higher relative wages and greater job security, which will in turn likely reduce the impact that job uncertainty has on their consumption decisions.

The results appear robust to several specifications of durable consumption, including the use of purchases of new motor vehicles (Foote et al. 2000) and household appliances (Benito 2006)[33].

[32] Durable goods incorporate the purchase of new motor vehicles, computers, audio visual equipment, and household appliances. These comprise of 9.87 per cent of total consumption collected by HILDA.
[33] These additional components of consumption were estimated using the same framework. Results are not reported.

Table 5.3: Durable Consumption

Model	(1)	(2)	(3)	(4)	(5)	(6)
Head Risk	-0.023	-0.132	-0.914***	-0.880***	-0.622**	-1.046***
	(0.062)	(0.190)	(0.306)	(0.312)	(0.293)	(0.293)
Partner Risk	0.019	0.296**	0.101	0.093	0.110	0.093
	(0.056)	(0.132)	(0.165)	(0.171)	(0.169)	(0.156)
Permanent Income	0.018***	0.019***	0.020***	0.021***	0.022***	0.016***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Transitory Income	-0.017***	-0.018***	-0.020***	-0.020***	-0.020***	-0.016***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
Investment Income	0.004	0.011	0.008	0.008	0.008	0.006
	(0.013)	(0.014)	(0.016)	(0.016)	(0.015)	(0.013)
Married	-0.050	-0.058	-0.077	-0.076	-0.062	-0.097**
	(0.043)	(0.045)	(0.048)	(0.048)	(0.048)	(0.045)
Number Children	0.104***	0.105***	0.105***	0.105***	0.106***	0.104***
	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)	(0.021)
Num. Emp Persons	-0.003	-0.005	0.005	0.004	0.004	-0.002
	(0.023)	(0.023)	(0.024)	(0.024)	(0.024)	(0.023)
Aged 30 to 39	-0.043	-0.061	-0.058	-0.058	-0.055	-0.048
	(0.059)	(0.060)	(0.062)	(0.062)	(0.062)	(0.058)
Aged 40 to 49	0.048	0.045	0.027	0.027	0.037	0.020
	(0.065)	(0.067)	(0.070)	(0.070)	(0.070)	(0.066)
Aged 50 to 65	0.062	0.099	0.184**	0.180**	0.152*	0.189**
	(0.071)	(0.075)	(0.086)	(0.087)	(0.087)	(0.078)
Tafe	0.098**	0.086*	0.024	0.025	0.048	0.032
	(0.044)	(0.047)	(0.052)	(0.053)	(0.052)	(0.047)
Degree	0.214***	0.242***	0.206***	0.208***	0.215***	0.174***
	(0.061)	(0.063)	(0.064)	(0.064)	(0.064)	(0.061)
Higher Degree	0.253***	0.270***	0.254***	0.253***	0.255***	0.254***
	(0.070)	(0.072)	(0.073)	(0.073)	(0.073)	(0.069)
Male	-0.028	-0.082*	-0.135***	-0.134**	-0.119**	-0.113**
	(0.045)	(0.049)	(0.052)	(0.052)	(0.052)	(0.050)
Health	0.023	0.028	0.067	0.065	0.048	0.096*
	(0.047)	(0.050)	(0.053)	(0.054)	(0.053)	(0.051)
Job Tenure						
7-12 months	-0.010	-0.044	-0.083	-0.082	-0.077	-0.033
	(0.100)	(0.101)	(0.106)	(0.106)	(0.106)	(0.100)
1-2 years	0.001	-0.013	-0.046	-0.043	-0.042	-0.038
	(0.077)	(0.079)	(0.081)	(0.081)	(0.081)	(0.077)
2-4 years	0.035	0.016	-0.086	-0.082	-0.056	-0.082
	(0.062)	(0.067)	(0.073)	(0.073)	(0.072)	(0.070)
4 years or more	0.037	0.006	-0.143*	-0.137*	-0.098	-0.124*
	(0.057)	(0.065)	(0.076)	(0.077)	(0.075)	(0.072)
Partner						
Tafe	0.105**	0.100**	0.115***	0.115***	0.116***	0.106***
	(0.041)	(0.042)	(0.043)	(0.043)	(0.043)	(0.041)
Degree	0.245***	0.229***	0.243***	0.242***	0.243***	0.243***
	(0.062)	(0.063)	(0.065)	(0.065)	(0.065)	(0.061)
Higher Degree	0.125*	0.097	0.133*	0.133*	0.133*	0.117
	(0.075)	(0.077)	(0.079)	(0.079)	(0.079)	(0.075)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13500	12962	12528	12536	12536	13558

Significance level: *10%, **5%, ***1%

[1]subjective measures
[2] Subjective Measures: unemployed previous year, employer size and union status (subjective job security measures)
[3] unemployed previous year, employer size and union status (predicted probability becoming unemployed)
[4] unemployed previous year and employer size (predicted probability becoming unemployed)
[5] unemployed previous year, employer size and region (predicted probability becoming unemployed)
[6] employer size and union status (predicted probability becoming unemployed)

5.1.1 Types of Separation

The job insecurity measures have been further decomposed into the risk of involuntary and voluntary separation for both the head and partner of the household. These measures are used as an additional proxy for job uncertainty. Household's responsiveness between involuntary and voluntary separation may differ, as households typically have greater control over the latter. The subjective measures include the predicted probability of losing your job in the next 12 months as a proxy for involuntary separation and the predicted probability of quitting the respondents' current job as a proxy for voluntary separation.

The predicted probability of involuntary separation for the head of the household was found to have an insignificant effect on food consumption, whilst the probability of involuntary separation for the partner of the household was found to have a significant and positive effect on food consumption, although this relationship does not hold for the self-reported measures[34]. The insignificant finding of involuntary separation may have been caused by a multitude of factors including the inability to foresee involuntary separations, resulting in the household not engaging in precautionary savings. In addition, using the predicted probability of separation as a proxy for job insecurity may potentially be limited as it does not capture the ability to find alternative employment. For example, those households that feel they have a high probability of involuntarily separating in the next 12 months may in turn seek to find alternative employment before the separation occurs, which may in turn cause an increase in voluntarily separation. As a result, the financial impact of a high probability of involuntary separation may still be minimal if the individual can find alternative employment, which in turn would reduce the need for the household to engage in precautionary savings. Interestingly, involuntary separation for the partner of the household has a positive impact on food consumption. This result is surprising and it is not clear how to interpret these results. One possibility is that the risk of involuntary separation may have a negligible impact on food consumption as the partners of the households may feel they are able to find alternative employment relatively easy, which would minimise the need to reduce consumption. This could also reflect a form of precautionary savings as households may reduce their expenditure on meals eaten out and in turn substitute these for meals prepared at home which are relatively cheaper. This would in turn increase the spending on food expenditure.

[34] Results are robust to every predicted probability of unemployment specification. For simplicity, only the results from model 3 are reported.

The risk of voluntary separation for both the head and partner in the household has a negative effect on food consumption. Voluntary separation using the subjective data is only significant for the head of the household, whilst the predicted probability measure is significant for only the partner of the household. This suggests that household heads who report a high probability of quitting their job in the next 12 months causes food consumption to fall by 2.6 per cent using the subjective measure, whilst the partner of the household reduces food consumption by approximately 0.162 per cent using the predicted probability measure. The probability of voluntary separation appears to have a relatively larger effect on food consumption, which could be due to voluntary separation having a higher degree of foreseeability compared to involuntary separations.

It is important to note that these measures may be further obscured by the impact that the probability of finding alternative employment. Those individuals that may have a high probability of voluntary and involuntary separation may also have a high probability of finding alternative employment, which would minimise the potential of precautionary savings. Estimating the models using the predicted probability of involuntary or voluntary separation leading to unemployment is not feasible, due to the lack of observations that meet these criteria. As a result, the analysis is restricted to the probability of voluntary and involuntary separation. The results can be shown in table 5.4 below.

Table 5.4 Food and Total Less Food Consumption -Separation

	Food Consumption		*Total Less Food*	
	Subjective Measure	Predicted Probability	Subjective Measure	Predicted Probability
Head Risk				
Involuntary Separation	-0.005	-0.144	0.039**	-0.303
	(0.012)	(0.141)	(0.019)	(0.231)
Voluntary Separation	-0.026***	-0.180	-0.002	-0.174
	(0.007)	(0.132)	(0.013)	(0.220)
Partner Risk				
Involuntary Separation	-0.002	0.117**	0.025	0.033
	(0.010)	(0.046)	(0.017)	(0.075)
Voluntary Separation	-0.006	-0.162***	0.009	-0.276***
	(0.007)	(0.061)	(0.012)	(0.103)
Permanent Income	0.011***	0.010***	0.026***	0.025***
	(0.001)	(0.001)	(0.001)	(0.002)
Transitory Income	-0.014***	-0.014***	-0.026***	-0.025***
	(0.001)	(0.001)	(0.001)	(0.001)
Investment Income	0.007***	0.010***	0.020***	0.025***
	(0.003)	(0.003)	(0.004)	(0.005)
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	14744	13885	11214	10451

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

These results do transcend to non-food consumption with both involuntary and voluntary separation being significant for both the head of the household using the predicted probability measures. Involuntary separation is significant using the subjective measures for the head of the households, although the magnitude of the relationship suggests a weak relationship still. Voluntary separation is negative for both the head and partner of the households but is only significant for the partner of the household using the predicted probability measure. A one percentage point increase in the probability of voluntary separation for the partner of the household will reduce non-food consumption by 0.276 per cent. The results suggest the responsiveness of consumption is still largely influenced by the risk of voluntary separation with the relationship being less clear for involuntary separation.

In terms of durable consumption, the risk of voluntary or involuntary separation is insignificant for the head of the household, using both the subjective and predicted probability measures. The results are not as clear for the partner of the household with voluntary separation being significant for the subjective measures and only involuntary separation being significant using the predicted probability measure. These results again suggest that the responsiveness of consumption to changes in job insecurity differ for each component of consumption.

Table 5.5: Durable Consumption – Separation

	Subjective		*Predicted Probability Unemployment*	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Head Risk				
Involuntary Separation	-0.030	-0.005	-0.636	-0.111
	(0.063)		(0.698)	
Voluntary Separation	0.025	0.004	-0.704	-0.123
	(0.042)		(0.694)	
Partner Risk				
Involuntary Separation	0.000	0.000	0.504**	0.088
	(0.057)		(0.222)	
Voluntary Separation	0.084**	0.015	-0.365	-0.064
	(0.037)		(0.285)	
Permanent Income	0.018***	0.003	0.021***	0.004
	(0.004)		(0.004)	
Transitory Income	-0.017***	-0.003	-0.020***	-0.003
	(0.003)		(0.004)	
Investment Income	0.004	0.001	0.009	0.002
	(0.013)		(0.016)	
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	13488		12528	

Significance level: *10%, **5%, ***1%

Overall, households appear relatively more responsive to changes in voluntary separation for only the partners of the household using both food and non-food consumption. The insignificant findings for the head of the households may be attributed to the head of the households having an increased ability to find alternative employment, which would minimise the financial impact on the household in the event of either a voluntary or involuntary separation, thus reducing the need to engage in precautionary savings.

5.2 Extensions

5.2.1 Home Ownership Status

Household consumption behaviour may differ depending on whether the household is a renter or a home owner. This section will focus on analysing the impact that home ownership has on the relationship between job insecurity and consumption.

Those individuals that are not home owners may be more sensitive to changes in job insecurity, as the consequences of job loss may be relatively more severe. The severity of unemployment for renters may be relatively more severe as they are required to make regular rental payments. Renters who experience periods of unemployment, and who do not have adequate wealth to fund rental payments may then face the threat of being homeless. Conversely, those who are home owners may have regular mortgage repayments that they need to meet and failure to do so can result in potential bankruptcy. However, homes are typically the largest source of precautionary savings for households, which can be used to act as a buffer against potentially bad draws of income in the future (Debelle et al. 2004). This in turn could result in the threat of unemployment to be less severe for home owners relative to renters. Both of these factors may alter their relative perceptions or responsiveness to job insecurity.

Additionally, it may also capture the impact that housing prices has on consumption indirectly. Increases in housing prices may result in home owners' net wealth to increase, thus causing their consumption to increase relative to renters.

Job insecurity for the head of the household is significant and has a negative effect on household food consumption; albeit only for models estimated using the predicted probability of unemployment, as shown in table 5.6 below. Those households that are home owners do have higher levels of consumption of food. Home owners' responsiveness to job insecurity is marginally less compared to renters, as indicated by the positive interaction term, and by the marginally smaller gradient in figure 5.1, with this difference being statistically significant. These results are expected as renters do not have the security of home ownership, which individuals could use to fund future consumption in the event that the household head loses their job (Debelle et al. 2004).

Accordingly, a one percentage point increase in job insecurity for the head of household causes food consumption to decrease by 0.395 per cent for renters/other and only 0.231 per cent for home owners. The difference in sensitivity between home owners and renters for the partner of the

household differs, as home owners appear to be more sensitive to changes in job insecurity compared to renters; albeit this relationship is only significant using the subjective measures.

Table 5.6: Food and Total Less Food Consumption – Home Status

	Food Consumption		*Non-Food Consumption*	
	Subjective Measure	Predicted Probability	Subjective Measure	Predicted Probability
Head Risk	-0.010	-0.395***	0.055	-0.541***
	(0.027)	(0.086)	(0.044)	(0.142)
Partner Risk	0.037*	-0.091	0.055	0.014
	(0.022)	(0.069)	(0.035)	(0.107)
Home Owner	0.118***	0.039	0.146***	0.162**
	(0.012)	(0.040)	(0.017)	(0.068)
Head R * Home	-0.002	0.164**	-0.023	0.186
	(0.030)	(0.078)	(0.048)	(0.128)
Partner R *Home	-0.051**	0.022	-0.033	-0.226**
	(0.025)	(0.073)	(0.040)	(0.113)
Permanent Income	0.010***	0.009***	0.026***	0.024***
	(0.001)	(0.001)	(0.001)	(0.002)
Transitory Income	-0.014***	-0.013***	-0.025***	-0.024***
	(0.001)	(0.001)	(0.001)	(0.001)
Investment Income	0.007***	0.011***	0.019***	0.025***
	(0.003)	(0.003)	(0.004)	(0.005)
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	14528	13659	11034	10279

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

Figure 5.1: *Food Consumption-Home Ownership*

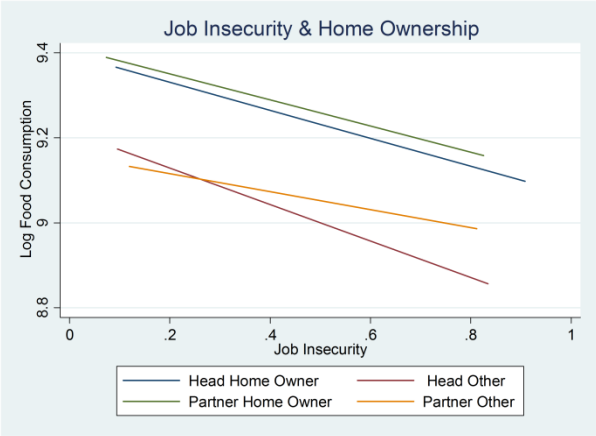
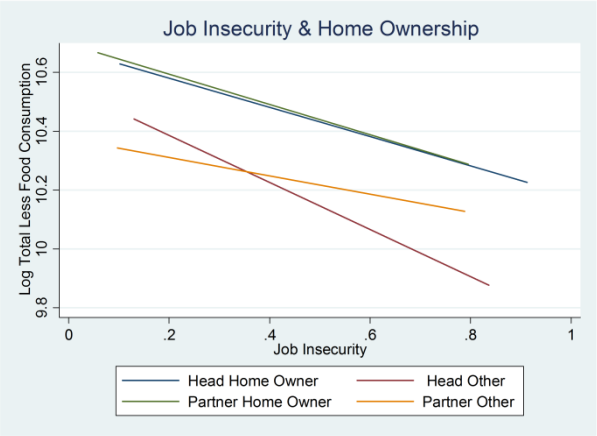


Figure 5.2: *Non-Food - Home Ownership*

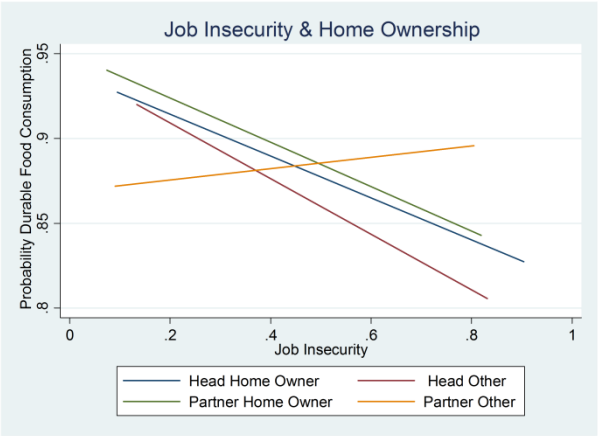


Home ownership also increases the amount of non-food consumption with the responsiveness towards job insecurity differing from those results found using food consumption. Renters appear to be more sensitive to changes in job insecurity although this difference is not statistically significant as shown by figure 5.2 and table 5.6. The difference in sensitivity is significant for the partner of the household with home owners appearing to be more sensitive to renters. These findings suggest that there is not a clear relationship between home status and the responsiveness of consumption to changes in job insecurity.

In terms of durable consumption, the sensitivity of consumption to changes in job insecurity is larger for renters although these differences are statistically insignificant, as shown in table A.2.1 and figure 5.3. The responsiveness to the partners' level of job insecurity is again larger for home owners, with this difference being statistically significant using the predicted probability measure.

The increased sensitivity towards job insecurity on durable consumption for renters can be shown in figure 5.3 below. The steeper gradient for renters suggests that they are relatively more sensitive to changes in job insecurity; albeit this difference is not statistically significant.

Figure 5.3: *Durable Consumption – Home Ownership*



The results suggest that home owners have consumption that is more sensitivity to changes in the level of the partner's job insecurity compared to renters. This may be caused by partners contributing a relatively larger proportion to the household finances compared to renters, so the risk of unemployment would have a relatively greater impact on home owners.

Overall, the results do not support the hypothesis that home ownership reduces the sensitivity of consumption to changes in job insecurity. Whilst renters appear relatively more sensitive using food consumption, this effect is only marginal and does not hold for other components of consumption.

5.2.3 Home Value Status

This section of the paper aims to identify how a household's sensitivity of consumption to job insecurity is affected by the household's home value. Those households that have high home values may be relatively less sensitive to changes in job insecurity, as they have an increased precautionary buffer in the event that the household head or partners lose their jobs. This affect will be analysed using food, non-food and durable consumption to determine both the significance and magnitude of this affect.

Households with higher home values do increase their food consumption. The responsiveness of household food consumption to changes in job insecurity does not vary with home values, as indicated by figure 5.4 and the interaction term being statistically insignificant for both the self-reported and predicted probability measure of job insecurity in table 5.8[35]. Similar relationships hold using the partner's level of job insecurity.

Table 5.8: Food and Non-Food Consumption – Home Value

	Food Consumption		*Non-Food*	
	Subjective Measure	Predicted Probability	Subjective Measure	Predicted Probability
Head Risk	0.131	-1.066	0.218	2.359
	(0.364)	(0.969)	(0.701)	(1.524)
Partner Risk	0.252	0.759	-1.155**	0.880
	(0.289)	(0.852)	(0.580)	(1.722)
Home Value	0.161***	0.156***	0.228***	0.323***
	(0.013)	(0.034)	(0.020)	(0.061)
Home Value x Head Risk	-0.011	0.069	-0.014	-0.207*
	(0.028)	(0.074)	(0.054)	(0.117)
Home Value x Partner Risk	-0.020	-0.064	0.090**	-0.085
	(0.022)	(0.065)	(0.044)	(0.132)
Permanent Income	0.005***	0.005***	0.017***	0.016***
	(0.001)	(0.001)	(0.002)	(0.002)
Transitory Income	-0.009***	-0.009***	-0.017***	-0.017***
	(0.001)	(0.001)	(0.001)	(0.001)
Investment Income	0.004*	0.008**	0.010***	0.012**
	(0.003)	(0.003)	(0.004)	(0.006)
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	11509	10982	8664	8218

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

[35] Results are robust to the use of percentage changes in consumption. These tests were conducted to determine whether the results reflect a base effect. The results are not reported.

Figure 5.4: *Food Consumption – Home Value*

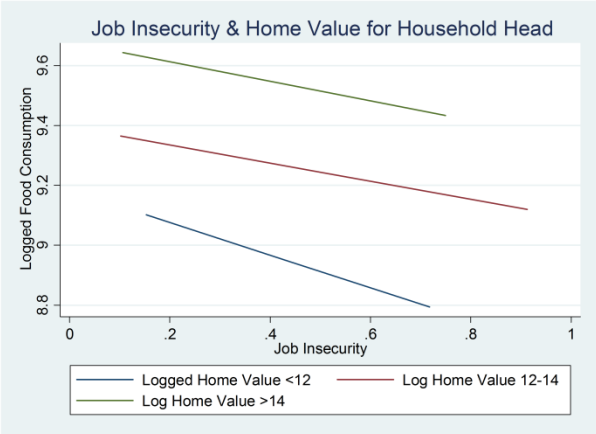
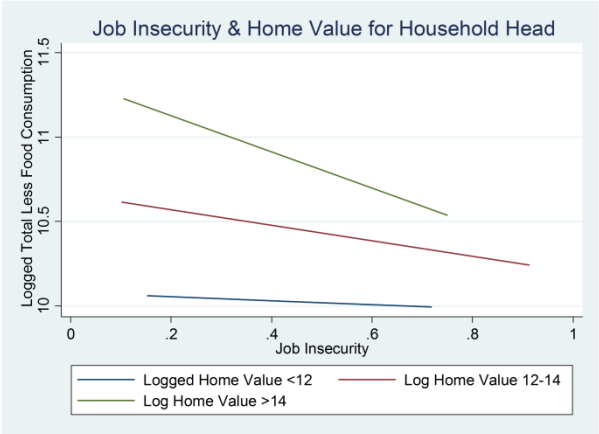


Figure 5.5: *Non-Food Consumption –Home Value*



This effect does not hold for non-food expenditure. The sensitivity of non-food expenditure to changes in job insecurity increases with rising levels of home values. This effect is statistically significant for the head of the household as shown by the interaction term using the predicted probability measure in table 5.8, and by the increasing gradients as shown in figure 5.5. Similar relationships also hold for the partner of the household.

The higher levels of sensitivity of non-food consumption for households with higher home values to changes in job insecurity may be attributed to several factors including differing levels of opportunity costs of engaging in precautionary savings, welfare effect and differences in relative risk aversion. Those households that have higher home values consume relatively more on non-food consumption and therefore are likely to spend a higher proportion of their consumption on 'luxury items'. Conversely, those households with lower home values are likely to have a higher concentration of their consumption consisting of 'necessities'. As a result, the opportunity cost of reducing consumption of 'luxury' items is likely to be relatively less compared to the cost of reducing consumption of 'necessity' items. These factors could in turn cause households with higher home values to become more receptive to changes in job insecurity as the relative cost of engaging in precautionary savings is less.

The provision of welfare state spending may also have a large impact on the increased sensitivity of consumption for households with higher home values to changes in job insecurity. Households with lower home values typically have lower levels of income. As unemployment benefits are standardised, the relative wage differential between employment wages and unemployment benefits are larger for those with higher levels of income. As a result, in the absence of precautionary savings, households with lower wage incomes are more likely to being able to fund

current levels of consumption in the event of unemployment by using unemployment benefits. In order for higher income households to maintain their higher levels of consumption in the event of unemployment, it is necessary that these households engage in precautionary savings. As a result, those households with higher home values are more likely to have consumption levels that are more receptive to changes in job insecurity.

The differences may also reflect variations in relative risk aversions between households with low and high home values. Although the probability of unemployment may be equal, employees are likely to differ in the amount of job insecurity experienced (Jacobson 1991). Those households with higher levels of income tend to have higher levels of education and are more likely to work in highly skilled occupations, as shown in table D.A.1 in the data appendix. These characteristics tend to lead to lower levels of job insecurity, as shown in table A.5.1 in the appendix. This means that households with higher home values tend to face on average lower levels of job insecurity. As a result, households with lower home values may exhibit lower levels of risk aversion as they are more exposed to the risk of job loss, and are therefore more likely to become comfortable with a given amount of job insecurity compared to households with higher home values. The higher levels of risk aversion experienced by households with higher home values would in turn increase the incentive for the household to engage in precautionary savings.

It is also important to note that the measure of home values used in this paper does not capture the amount or proportion of equity that the household has. As a result, households may have home values that are relatively high but could be largely leveraged, so the amount of wealth that the household has that can be used to fund future consumption may still be low. Housing is also very different from other forms of wealth as it also represents another form of consumption (Aoki et al. 2001). Higher levels of housing consumption combined with low levels of wealth may increase the incentive to engage in precautionary savings, so the household can maintain higher levels of consumption in the event of unemployment.

These results suggest that the responsiveness of job insecurity on various components of consumption differs across varying levels of home values. The sensitivity of food consumption to changes in job insecurity does not vary with home values. In contrast, the responsiveness towards job insecurity increases with home values using non-food consumption.

Increases in home values also increases the sensitivity of the probability of durable consumption to changes in job insecurity, with this relationship being statistically significant as shown in table A.2.2. These results are similar to those found using non-food consumption. This infers that as the value of houses increases, the household becomes more receptive to increases in job insecurity by reducing the probability that they will purchase durable goods (Figure 5.6). This relationship does not hold for the partner of the household as they display decreasing sensitivity when home values increase, which is similar to the results found in non-food consumption.

These results provide further support that level of precautionary savings across different components of consumption. These differences may be driven by differing opportunity costs of engaging in precautionary savings.

Figure 5.6: *Job Insecurity Durable Consumption*

Overall, the sensitivity of consumption to changes in job insecurity appears to increase with home values for both non-food and durable expenditure. This relationship does not hold for food consumption, which may be due to households responding to increased job insecurity by reducing forms of consumption such as non-food expenditure that can be easily deferred in contrast to food. The increased sensitivity may be attributed to the increased opportunity cost of engaging in precautionary savings for households with lower home values, welfare effect and differences in relative risk aversion.

5.2.4 Wealth

It is important to consider other forms of wealth besides housing when assessing the impact that job insecurity has on consumption. This section of the paper will control for a broader spectrum of wealth, which may provide additional insights including whether household sensitivity of consumption to changes in job insecurity varies depending on the households level of wealth. The data in this section is restricted to 2006 and 2010, as detailed information on wealth is provided only in special modules which are not asked annually.

Increased wealth may represent an increase in the buffer stock available that households can use to finance future consumption in the event that labour income is less than expected or they transition into unemployment (Carroll et al. 2003). As a result, increases in wealth may result in a decreased sensitivity towards job insecurity as households are in a better position to finance future consumption during periods of potential unemployment. Additionally, increases in the value of wealth may also increase the amount of resources available to finance current consumption, which may lead to higher overall levels of consumption. This effect has already been indirectly controlled for by the inclusion of investment income. Those that reported positive investment income appear relatively less sensitive to changes in job insecurity for both food and non-food consumption, although the difference is not statistically significant, with results shown in the appendix.

This section of the paper will have several sub sections that will assess the household's consumptions sensitivity to job insecurity. The first sub section will compare the difference across households with positive and negative levels of wealth. The second sub section will analyse how this relationships changes as the level of household wealth increases. The last sub section will analyse the impact that varying components of wealth has on the relationship, including the level of financial assets, non-financial assets and liabilities.

Wealth: Positive and Negative Wealth

Household wealth is calculated as the total amount of household assets less outstanding debt. In 2006 approximately 3.78 per cent of households recorded negative values of wealth, which decreased to just 3.39 per cent in 2010. Accordingly, those households with negative values of debt may respond to a given amount of job insecurity differently compared to those households with positive values of wealth.

Households with positive levels of wealth have consumption which is relatively more sensitive to changes in job insecurity compared to those households with negative levels of debt. The difference is statistically significant as shown in table 5.10 and can be seen by the relatively steeper slope in both figures 5.7 and 5.8. The results are robust across food and non-food consumption.

Job insecurity is insignificant for households with negative wealth, with consumption increasing with rising levels of job insecurity for both food and non-food consumption. Those households with negative values of wealth also face higher levels of unemployment risk with 8.19 per cent of these household heads being unemployed in 12 months' time in comparison to 6.05 per cent for households with positive values of wealth.

These results are interesting as it would be expected that households with negative values of wealth would be more sensitive to changes in job insecurity as they are less likely to being able to fund future consumption in the event of unemployment. As a result, the incentive to engage in precautionary savings is expected to be higher. The insignificant result may be attributed to the differences in opportunity cost of engaging in precautionary savings, welfare effects and differences in risk aversion, that were explained in the previous section.

Those households with negative values of wealth are likely to spend a larger portion of their income on 'necessities' and are therefore likely to have a higher opportunity cost of engaging in precautionary savings compared to households with positive levels of wealth. This could result in the precautionary effect of savings being less for those with negative levels of wealth. The influence of welfare payments could also distort the precautionary motive of saving for households. This is due to the relative wage differential between employment wages and unemployment benefits likely to be greater for those households with higher levels of wealth. Therefore, in the absence of precautionary savings, households with negative levels of wealth are more likely to being able to fund current levels of consumption in the event of unemployment by using unemployment benefits. In order for the households with higher levels of wealth to maintain their higher levels of consumption in the event of unemployment, it is necessary for them to engage in precautionary

savings. Lastly, the difference in sensitivity towards job insecurity could also be a result of differences in relative risk aversion. Those households with negative levels of wealth are more likely to have lower levels of risk aversion, which would also reduce the household's sensitivity to job insecurity.

Figure 5.7: *Job Insecurity Food Consumption – Net Worth*

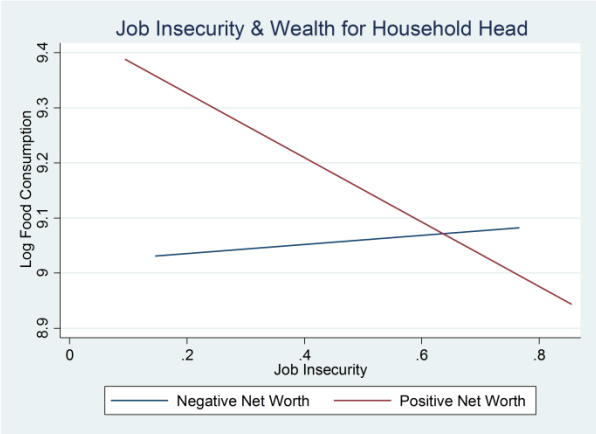


Figure 5.8: *Job Insecurity Non-Food Consumption – Net Worth*

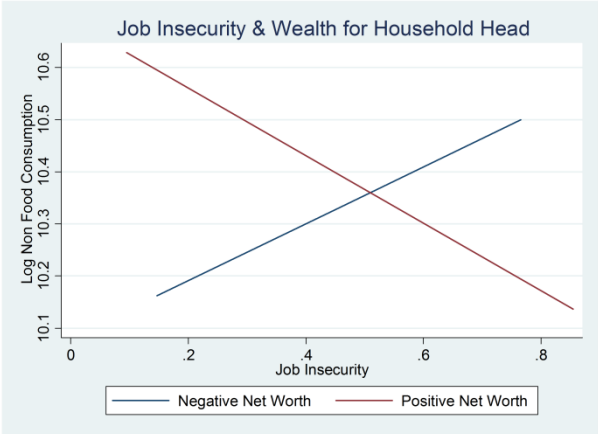


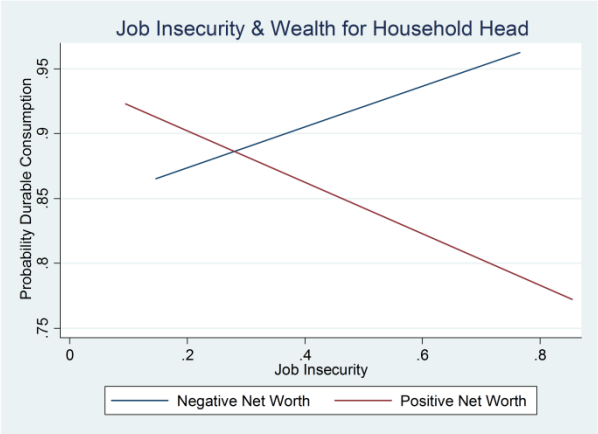
Table 5.10: Food and Non-Food Consumption – Positive or Negative Wealth

	Food Consumption		*Non-Food*	
	Subjective Measure	Predicted Probability	Subjective Measure	Predicted Probability
Head Risk	-0.180	0.179	-0.151	0.712
	(0.157)	(0.333)	(0.149)	(0.438)
Partner Risk	-0.626***	0.121	-0.391***	-0.338
	(0.228)	(0.365)	(0.072)	(0.446)
Positive Wealth	0.039	0.437**	0.101	0.335
	(0.038)	(0.194)	(0.064)	(0.237)
Head Risk*Positive Wealth	0.185	-0.615*	0.170	-0.937**
	(0.159)	(0.327)	(0.153)	(0.429)
Partner Risk*Positive Wealth	0.651***	-0.291	0.418***	0.164
	(0.228)	(0.366)	(0.078)	(0.450)
Permanent Income	0.012***	0.010***	0.027***	0.026***
	(0.002)	(0.002)	(0.002)	(0.003)
Transitory Income	-0.014***	-0.014***	-0.026***	-0.026***
	(0.001)	(0.001)	(0.002)	(0.002)
Investment Income	0.010***	0.009**	0.011**	0.011**
	(0.004)	(0.004)	(0.005)	(0.004)
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	4957	4609	4486	4169

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

This relationship also transcends to durable consumption as households with positive levels of wealth are relatively more sensitive to changes in job insecurity compared to households with negative values of wealth as seen in figure 5.9, albeit the difference is not statistically significant unlike food and non-food consumption as shown in table A.2.3.

Figure 5.9: *Job Insecurity Non-Food Consumption – Positive Wealth*



Wealth: Positive Wealth

This section of the paper compares how varying levels of positive household wealth impacts on the households sensitivity of consumption to changes in job insecurity. Accordingly, increases in the value of the households wealth appears to marginally decrease the household's food consumption sensitivity to job insecurity, although this difference is not statistically significant as shown in figure 5.10 and table 5.12. The relationship differs for non-food consumption, which shows that the sensitivity to job insecurity actually decreases as the level of household wealth increases, with this difference being statistically significant as shown in figure 5.11 and table 5.12. The sensitivity of non-food consumption may be less for households with higher levels of wealth as they are in a relatively better financial position to being able to fund future consumption in the event of unemployment, so the need to engage in precautionary savings is less. The reduced need to engage in precautionary savings is due to wealthier households being less reliant on labour income as they earn a relatively larger amount of investment income, in conjunction with the increased ability of accessing additionally funds by simply selling assets which they can use to fund future consumption.

The difference in the sensitivity of food consumption to job insecurity may not differ for households with higher levels of wealth, as the relative opportunity costs of engaging in precautionary savings using food consumption may be relatively high. This is due to food consumption being an important necessity for households that cannot be easily deferred relative to other components of consumption. Conversely, non-food consumption is likely to comprise of goods which can be easily

deferred, so the relative opportunity cost of engaging in precautionary savings are likely to be lower for these components. As a result, households with higher levels of wealth have non-food consumption that is relatively less sensitivity to job insecurity.

These relationships differ compared to the results found using home values, which indicated that the sensitivity towards non-food consumption appeared to actually increase with rising levels of home values. These differences may be attributed to several factors. Firstly, it is important to recognise that home values differ from other forms of wealth as households simultaneously consume the good. Changes in the housing prices have no impact on aggregate wealth but have a distributional impact as it only re-distributes wealth from those that have less housing assets than they consume (short housing) to those that have more housing assets than they consume (long housing) (Aoki et al. 2001). Secondly, the measure of home values used in this paper does not capture the amount or proportion of equity that the household has. As a result, households may have home values that are relatively high but could be largely leveraged, so the amount of wealth that the household has that can be used to fund future consumption may still be low. Higher levels of housing consumption combined with low levels of wealth may increase the incentive to engage in precautionary savings, so the household can maintain higher levels of consumption in the event of unemployment. Lastly, the home value measure does not capture the influence that financial assets may have on the relationship. Increases in financial assets are likely to reduce the need to engage in precautionary savings as the households benefit from higher levels of investment income, which reduces the reliance on labour income in conjunction with the ability to access funds that they can use to finance future consumption by selling financial instruments in the event of unemployment. These funds will better enable the household to maintain current consumption levels in the event of unemployment.

Figure 5.10: *Job Insecurity & Food Consumption – Positive Wealth Values*

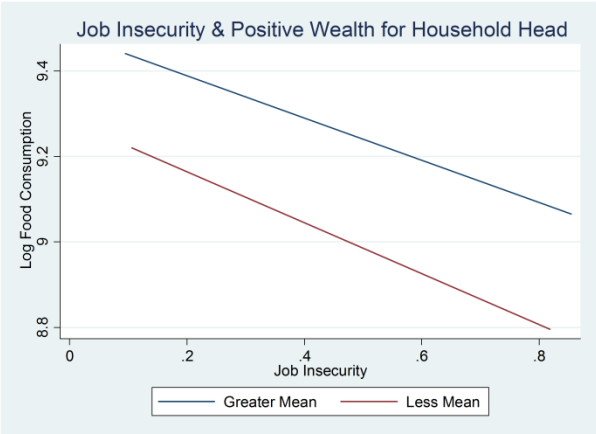


Figure 5.11: *Job Insecurity & Non Food Consumption – Positive Wealth Value*

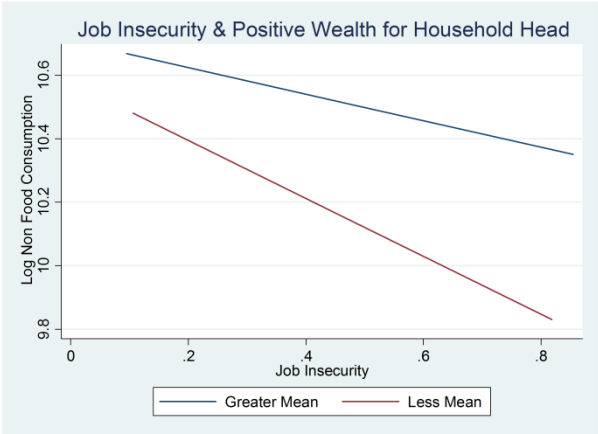
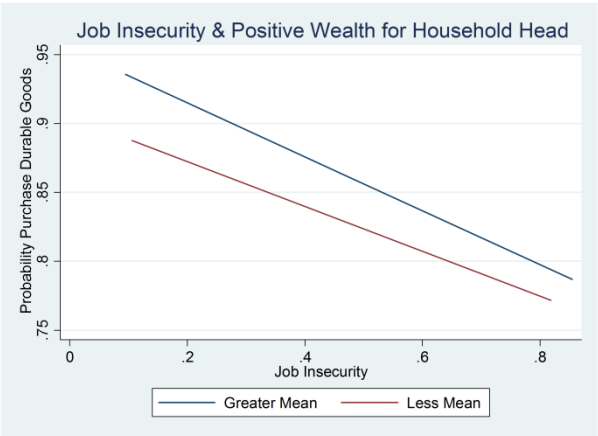


Table 5.12: Food and Non-Food Consumption – Positive Wealth Value				
	Food Consumption		*Non-Food*	
	Subjective Measure	Predicted Probability	Subjective Measure	Predicted Probability
Head Risk	-0.155	-0.637	0.012	-2.372***
	(0.271)	(0.570)	(0.321)	(0.760)
Partner Risk	0.428**	1.917***	0.202	1.511**
	(0.206)	(0.506)	(0.325)	(0.713)
Positive Wealth	0.070***	0.128***	0.096***	0.090***
	(0.007)	(0.023)	(0.010)	(0.031)
Head Risk*Positive Wealth	0.012	0.014	-0.000	0.169***
	(0.021)	(0.045)	(0.025)	(0.060)
Partner Risk*Positive Wealth	-0.032**	-0.160***	-0.014	-0.127**
	(0.016)	(0.039)	(0.025)	(0.055)
Permanent Income	0.009***	0.008***	0.024***	0.023***
	(0.002)	(0.002)	(0.002)	(0.003)
Transitory Income	-0.011***	-0.010***	-0.020***	-0.020***
	(0.001)	(0.001)	(0.002)	(0.002)
Investment Income	0.006**	0.005*	0.004	0.005
	(0.003)	(0.003)	(0.004)	(0.004)
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	4867	4538	4403	4105
				Significance level: *10%, **5%, ***1%
				Robust Standard Errors Reported

The reduced sensitivity of consumption for households with higher levels of wealth does not hold for durable consumption, which actually suggests the opposite relationships. Households with higher levels of wealth report the probability of purchasing durable goods as being more sensitive to changes in job insecurity, although this relationship is only marginal, as shown in figure 5.12. Despite this the difference is not statistically significant, which suggests that there is little difference in terms of durable consumptions receptiveness towards job insecurity between households with high and low levels of wealth, as shown in table A.2.4 in the appendix.

Figure 5.12: *Job Insecurity & Durable Consumption – Positive Wealth Value*



Wealth: Negative Wealth

Due to insufficient observations it is not possible to determine how households with varying levels of negative wealth respond to job insecurity. Only 214 households or 3.78 per cent of households recorded negative values of wealth in 2006 further decreasing to just 197 in 2006 or 3.39 per cent of households.

Wealth: Decomposition

Wealth has been decomposed into financial assets, non-financial assets and liabilities. It may be insightful to determine how consumptions sensitivity to job insecurity varies across different levels of each of these measures. This section of the paper will identify whether there are certain components of wealth that alters the household's sensitivity more than others.

In terms of food consumption, increases in financial assets marginally decreases the sensitivity of household consumption to changes in job insecurity for the head of the household, with this decrease being statistically significant, as shown in figure 5.13 and table 5.14. An increase in non-financial assets has an insignificant effect on a household's food consumption to the responsiveness of changes in the household head's job insecurity. The insignificant impact of non-financial assets can be attributed to these resources not being readily available to fund consumption in the short run in the event that the household head or partner lose their job. Higher levels of debt also reduce the responsiveness of food consumption to changes in job insecurity, albeit this relationship is only statistically significant using the subjective measure of job insecurity. These results may be again driven by differences in risk aversion, with those households that have higher levels of debt being more likely to have attached a higher discount rate to future consumption, which therefore reduces their probability that they would engage in precautionary saving to the same extent.

Figure 5.13: *Job Insecurity & Food Consumption Assets*

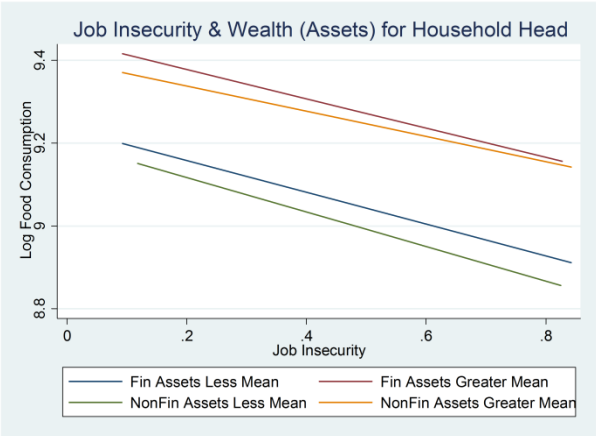


Figure 5.14: *Job Insecurity & Food Consumption Debt*

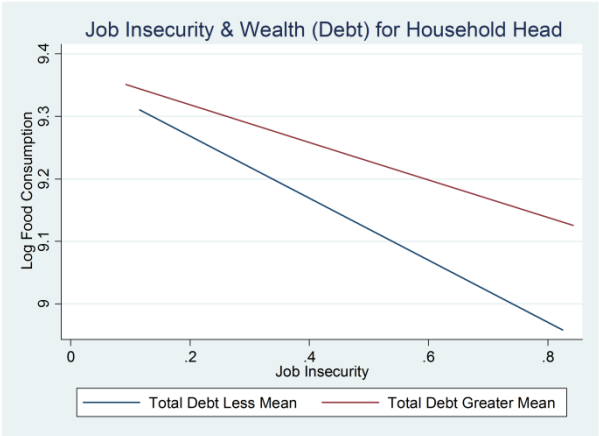


Table 5.14: Food and Non Food Consumption – Wealth Decomposition

	Food Consumption		*Total Less Food*	
	Subjective Measure	Predicted Probability	Subjective Measure	Predicted Probability
Head Risk	-0.084	0.163	-0.189	-1.712*
	(0.285)	(0.598)	(0.418)	(0.903)
Partner Risk	0.832***	0.308	0.377	1.043
	(0.264)	(0.586)	(0.386)	(0.879)
Financial Assets	0.062***	0.070***	0.050***	-0.059
	(0.008)	(0.025)	(0.012)	(0.042)
Non-Financial Assets	0.034***	0.095***	0.069***	0.227***
	(0.007)	(0.023)	(0.009)	(0.035)
Total Debt	-0.011**	-0.066***	0.002	-0.058**
	(0.005)	(0.016)	(0.008)	(0.028)
Head Risk*Fin Assets	0.038*	-0.101**	0.045	0.199**
	(0.021)	(0.049)	(0.038)	(0.086)
Head Risk*NonFin Assets	0.006	0.055	-0.037	-0.079
	(0.022)	(0.049)	(0.027)	(0.068)
Head Risk*Total Debt	-0.037**	0.009	0.012	0.015
	(0.017)	(0.038)	(0.026)	(0.057)
Partner Risk*Fin Assets	-0.045**	0.055	-0.029	0.103
	(0.023)	(0.048)	(0.033)	(0.079)
Partner Risk*NonFin Assets	-0.005	-0.188***	-0.014	-0.315***
	(0.018)	(0.044)	(0.028)	(0.069)
Partner Risk*Total Debt	-0.019	0.118***	0.018	0.139**
	(0.016)	(0.032)	(0.023)	(0.059)
Permanent Income	0.007***	0.006***	0.019***	0.019***
	(0.002)	(0.002)	(0.002)	(0.002)
Transitory Income	-0.009***	-0.008***	-0.018***	-0.017***
	(0.001)	(0.001)	(0.002)	(0.002)
Investment Income	0.002	0.001	0.002	0.002
	(0.003)	(0.006)	(0.005)	(0.008)
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	4471	4144	4041	3743

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

The decreased sensitivity of food consumption for households with higher levels of financial resources aligns with prior expectations as these households are in a relatively better position to being able to fund future consumption in the event of unemployment. As a result, the need to engage in precautionary savings for these households is reduced. Additionally, those households with larger amounts of financial wealth are likely to be relatively more skilled and are likely to face lower durations of unemployment in the event that they do lose their job. This will further reduce the need for those households with higher levels of financial assets to engage in precautionary savings.

The results are similar for non-food consumption which shows that the sensitivity of consumption to changes in job insecurity decreases as the level of households financial assets increase, with this relationship being even more noticeable compared to food consumption. This decreased sensitivity is statistically significant and can be shown in figure 5.15 below. The sensitivity of non-food consumption does not differ across various levels of non-financial assets and total debt, which is

similar to the results found using food consumption. Similar results are also found for the partner of the household.

Figure 5.15: *Job Insecurity & Non-Food Consumption Assets*

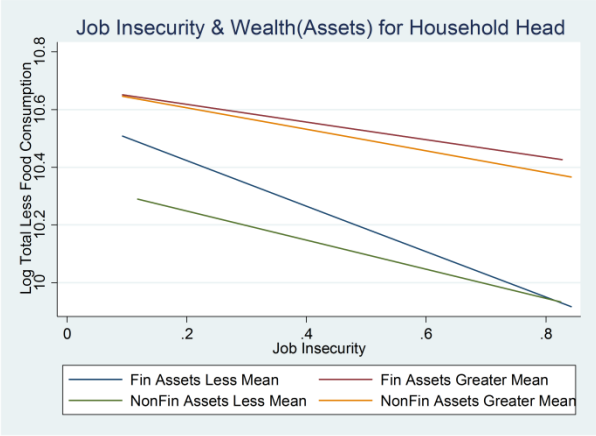
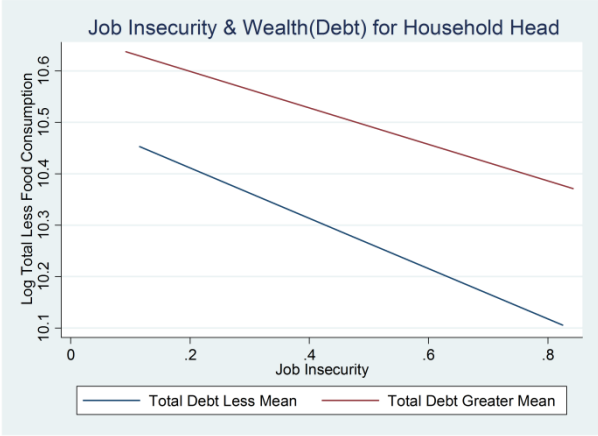


Figure 5.16: *Job Insecurity & Non-Food Consumption Debt*



These relationships do not hold for durable consumption, with increases in both financial and non-financial assets appearing to have a negligible difference on the sensitivity of the probability of purchasing durable goods given an increase in job insecurity, with these results being insignificant as shown in table A.2.5 and figure 5.17. This applies to both the household head and partner.

Figure 5.17: *Job Insecurity & Durable Consumption - Assets*

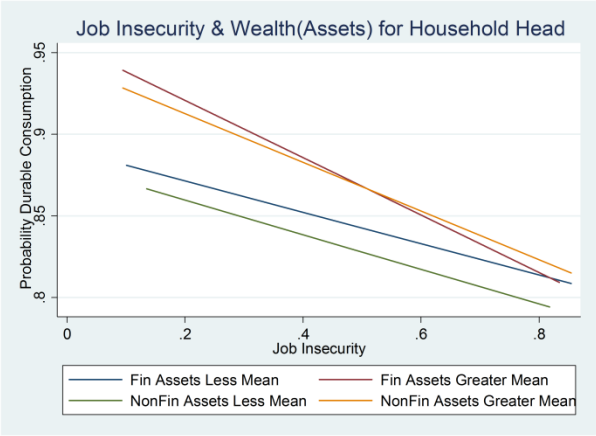
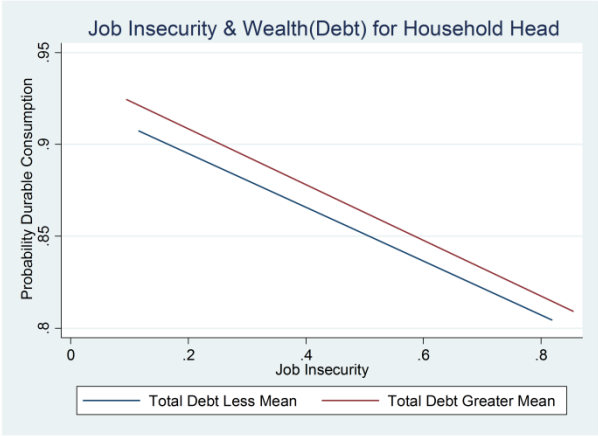


Figure 5.18: *Job Insecurity & Durable Consumption - Debt*



The sensitivity of consumption decreases given an increase in the household's financial assets. This is due to the household being in a better position to being able to fund future consumption in the short run in the event of unemployment, which reduces the need for the household to engage in precautionary savings. An increase in non-financial assets does not have a significant impact on consumptions sensitivity to job insecurity. This is due to non-financial assets not being readily accessible to fund future consumption in the event of unemployment; therefore it does not reduce the need to engage in precautionary savings. Those households with less debt are also more sensitive to changes in job insecurity, which may reflect a higher degree of risk aversion relative to households with higher levels of debt.

5.3 Robustness Tests

5.3.1 Fixed Effects Estimation

Fixed effects specification is an additional measure of robustness that involves relaxing the random effects assumption that the household specific heterogeneity is uncorrelated with the regressors. A fixed effects captures unobservable heterogeneity by including an household specific effect constant. These estimates are very different in nature compared to the random effects framework, as it a within estimator and identification of the coefficients is achieved by only considering the variation across time for each household. These estimates can only be used when the dependent variable is continuous. This is due to the fixed effects specification not being generalizable when the dependent variable is discrete, as explained in section 4 above[36].

In terms of food consumption, the results appear robust to a fixed effects specification, with job insecurity being significant and negative across all of the models that use the predicted probability of unemployment as a proxy for job risk as shown in table 5.14 below. These results are consistent with the results in the random effects specification and actually indicate an even larger effect between job insecurity and food consumption. These results still suggest that a one percentage point increase in job insecurity for the head of the household reduces household consumption on food by approximately 0.327 per cent in comparison to the 0.276 estimate produced by the random effects specification. Similar results are also found for the partner of the household.

Table 5.16: Food Consumption - Fixed Effects Specification

Model	(1)	(2)	(3)	(4)	(5)	(6)
Head Risk	-0.016	-0.144***	-0.327***	-0.314***	-0.286***	-0.250***
	(0.013)	(0.040)	(0.078)	(0.079)	(0.077)	(0.082)
Partner Risk	-0.006	-0.035	-0.059	-0.069	-0.066	-0.071*
	(0.011)	(0.034)	(0.042)	(0.044)	(0.044)	(0.041)
Perm Income	0.007***	0.006***	0.005**	0.005**	0.005**	0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Tran Income	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Invest Income	0.004	0.004	0.007*	0.007*	0.007*	0.004
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14769	14137	13885	13893	13893	14846

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

[1]subjective measures
[2] Subjective Measures: unemployed previous year, employer size and union status (subjective job security measures)
[3] unemployed previous year, employer size and union status (predicted probability becoming unemployed)
[4] unemployed previous year and employer size (predicted probability becoming unemployed)
[5] unemployed previous year, employer size and region (predicted probability becoming unemployed)
[6] employer size and union status (predicted probability becoming unemployed)

[36] Whilst a Mundlak specification can help minimise some of these shortcomings in the random effects specification, it is not feasible in the present application as an unbalanced panel is used, which introduces several other problems (Greene 2012).

Similarly, the non-food consumption estimates appear robust to a fixed effects specification, although the estimated effect of job insecurity appears less than under a random effects framework. The fixed effects specification suggests that a one percentage point increase in unemployment risk reduces non-food consumption by 0.265 per cent. The estimates are also not significant across all of the model specifications that used the predicted probability of unemployment. These results suggest that whilst job insecurity is still significant for the head of the household, the size and sensitivity of these results compared to the random effects model is not as clear.

Table 5.17: Non-Food Consumption - Fixed Effects Specification

Model	(1)	(2)	(3)	(4)	(5)	(6)
Head Risk	0.037	0.034	-0.265*	-0.286*	-0.315**	-0.142
	(0.023)	(0.074)	(0.159)	(0.159)	(0.155)	(0.153)
Partner Risk	0.039*	0.041	-0.096	-0.122	-0.118	-0.112
	(0.021)	(0.059)	(0.086)	(0.088)	(0.088)	(0.081)
Perm Income	0.010***	0.008**	0.010**	0.010**	0.010**	0.009***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
Trans Income	-0.012***	-0.011***	-0.011***	-0.011***	-0.011***	-0.011***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Invest Income	0.012**	0.013***	0.014*	0.014*	0.014*	0.012**
	(0.005)	(0.005)	(0.008)	(0.008)	(0.008)	(0.005)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11222	10763	10451	10459	10459	11269

Significance level: *10%, **5%, ***1%
Robust Standard Errors Reported

[1]subjective measures
[2] Subjective Measures: unemployed previous year, employer size and union status (subjective job security measures)
[3] unemployed previous year, employer size and union status (predicted probability becoming unemployed)
[4] unemployed previous year and employer size (predicted probability becoming unemployed)
[5] unemployed previous year, employer size and region (predicted probability becoming unemployed)
[6] employer size and union status (predicted probability becoming unemployed)

5.3.2 Euler Equation Estimates

The Euler equation estimates the impact that changes in job insecurity has on the level of consumption growth. Previous models have only measured the impact that job insecurity has on the level of consumption. The Euler equation is estimated using generalised method of moments using the equation

$$\Delta c_{it+1} = \alpha_i + \lambda \Delta c_{it} + \beta_1 \Delta y_{it} + \delta_1 \hat{u}_{it}^{HOH} + \delta_2 \hat{u}_{it}^{SEC} + X_{it}' \beta + \gamma_t + \mu_{it} \tag{5.1}$$

where α_i represents the fixed effects term that accounts for unobserved heterogeneity, λ measures the impact that previous lags has on the relationship, β_1 measures the impact that changes in the log of total real household income, δ measures the change in job insecurity, β includes controls for change in the number of adults, number of children and age, γ captures the time effects and μ_{it} is the error term. This estimation strategy was also employed by Benito (2006) and included a lagged dependent variable to reflect habit formation (Guariglia and Rossi 2002).

There has been debate over the usefulness of Euler equations with Carroll (2001) arguing that the equations are invalid and should be abandoned. Carroll (2001) argues that the Euler equations are unable to reveal structural parameters including the coefficient of relative risk aversion. The consumption growth is also strongly correlated with predictable income growth which would result in 'excess sensitivity' tests. If consumers were acting according to the buffer-stock model, then it is impossible for consumption growth to differ from underlying income growth. Any excess consumption growths were permanently less than income growth then consumers' wealth would increase to infinity. Attanasio and Low (2004) assert that the Euler equation can still produce consistent estimates conditional on the utility being isoelastic and the sample covers a long time period. Overall, the theories make predictions based on the level of consumption with no real focus on consumption growth.

Despite the controversy, the Euler equation has been estimated. Findings of a positive relationship between job insecurity and future consumption growth indicates that households delay consumption in the presence of higher levels of job insecurity, which would provide further evidence to assert the presence of precautionary savings.

The results do find that increased levels of job insecurity leads to the deferral of food consumption, which is significant as shown in table 5.16. This relationship only holds for the head of the household. This finding does not transcend to non-food consumption with job insecurity for both the head and partner of the household appearing to be insignificant.

In order for the Generalised Method of Moments estimator to produce consistent estimates it is necessary that the moment conditions to be valid. Whilst this cannot be directly tested, the Sargan test provides a means of estimating whether the over identifying conditions are valid. The Sargan test results provide support for the model specification. The use of the instruments also requires that there is no second order serial correlation in the first differenced residuals, as this would violate the exclusion restriction (Arellano and Bond 1991). This is tested using the Arellano-Bond test which found that there is no second order serial correlation, further supporting the use of these instruments and overall model specification.

Table 5.18: Euler Equation Estimates

Δc_{it+1}	*Food Consumption*	*Non Food Consumption*
Δc_{it}	0.036	0.031
	(0.036)	(0.065)
Δy_{it}	0.034	0.436**
	(0.120)	(0.190)
$\hat{\mu} - HOH_{it}$	0.378**	0.076
	(0.167)	(0.352)
$\hat{\mu} - SEC_{it}$	0.255	0.249
	(0.163)	(0.339)
Sargan (p-value)	0.702	0.152
Instruments	t-2…t-4, $\Delta t - 1$	t-2…t-4, $\Delta t - 1$
$M_1(p - value)$	0.000	0.000
$M_2(p - value)$	0.313	0.154
Households	2132	1372
Observations	3373	1847

Significance level: *10%, **5%, ***1%

6. Implications

This thesis has shown that job insecurity does have a significant impact on household consumption in Australia. This framework provides a quantitative measure of the effect, with a one standard deviation increase in unemployment risk causing food consumption to decrease by 3.01 per cent and non-food consumption by 4.8 per cent. The evidence of precautionary savings also extends to durable goods with a one percentage point increase in job insecurity for the head of household reduces the probability of purchasing durable goods by 9 percentage points. These measures can help assess the extent that changes in consumption can be attributed to job insecurity.

These results may also have implications for the design of fiscal stimulus measures as it provides magnitudes which could be used for forecasting the impact of fiscal policy. This would be particularly valuable in forecasting consumption if Australia is faced with a large negative economic shock that causes job insecurity to substantially increase. The results also provide additional insight into forecasting how certain subgroups of the population respond to increases in job insecurity.

These findings may also have an implication for the job loss insurance market in Australia. The framework presented in this paper provides estimates as to the potential value that households may assign to job security. Households may then face the additional option of deciding whether to engage in precautionary savings by reducing consumption or purchase income protection insurance, which will also provide a financial buffer in the event that the individual loses their job.

7. Conclusion

In this paper job insecurity was found to have a significant and negative impact on household consumption only when using the predicted probability of unemployment as the proxy for job insecurity. The self-reported measure was found to be robustly insignificant that may be driven by the lack of variation in the data, which is consistent with the findings of Benito (2006). The relationship between job insecurity and its impact on consumption differs substantially between different components of consumption with job insecurity having a much more noticeable negative effect on non-food consumption relative to food expenditure. These findings may be attributed to the difficulties in engaging in precautionary savings using food consumption, as these products reflect 'necessities' that are difficult to defer. The results also find that job insecurity does have a significant negative effect on the purchase of durable goods, with an increased probability of unemployment leading to an increased probability that a household will delay purchases of durable products. The effect is also larger for the head of the household.

This paper also decomposed job insecurity to both the predicted probability of voluntary and involuntary separation and found that only voluntary separation had a significant negative effect on consumption. This may be driven by voluntary separation being relatively more foreseeable compared to involuntary separations. There is also significant heterogeneity in terms of the responsiveness of consumption across housing occupational status, home values, wealth and age. There appears to be a negligible difference in sensitivity of job insecurity between renters and home owners. Those households with higher home values have non-food consumption that is relatively more sensitive to job insecurity, reflecting the increased need to engage in precautionary savings so that those households can maintain higher levels of consumption in the event of unemployment. In contrast, households with higher levels of wealth have consumption which is less sensitive to job insecurity as they are in a relatively stronger financial position to being able to fund future consumption in the event of unemployment, thus minimising the need to engage in precautionary savings.

The paper faces several limitations including the comprehensiveness of the consumption data collected by HILDA. The consumption data collected by HILDA is only equivalent to 50 per cent of total non-housing expenditure collected by the Australian Bureau of Statistics (Finlay et al. 2012). As a result, it is not possible to assert or confirm whether the relationships found in this paper hold for aggregate consumption. Future research into this area may also be limited with HILDA decreasing the amount of detailed consumption information collected in 2011. If HILDA increases the amount of

detailed consumption data in the future, further wealth modules would create opportunities for future research.

The estimation of permanent income may also lead to a downward bias of the impact that job insecurity has on consumption, as this estimate may be capturing some of the precautionary effects. Additionally, the sample period does not include a major recession period in Australia, which may alter these findings. Whilst the GFC did cause uncertainty to rise, unemployment still peaked at 5.8 per cent, which is considerably low by historical and global standards. Assessing the impact that job insecurity has on household consumption during a recession is an area open to future research.

Future research could consider expanding the measures of precautionary savings by considering whether an increase in job insecurity alters the accumulation of household wealth. Carroll et al. (2003) conducted similar studies but there are no studies to my knowledge that have considered this relationship using Australian data. Further wealth modules would create opportunities for research of this type.

Further research can also consider employing similar techniques to measure the significance and magnitude of these relationships using American and British panel data which will allow a cross country analysis. This may provide additional insights for policy makers as it may help assess the impact that economic effects or differences in labour market policies has on precautionary savings.

Areas of future research can also consider the impact that welfare has on the relationship between job insecurity and household consumption. This may be feasible in countries such as the United States, whereby unemployment benefit regimes differ between states. These cross state comparisons may be helpful in identifying the effect that unemployment benefits have on the relationship.

This study concludes that job insecurity does have a significant impact on household consumption for Australia. These results have important implications for policy makers as they provide magnitudes that can help assess the extent that changes in consumption can be attributed to job insecurity.

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9. Appendix

9.1 Summary Statistics

Table A.1: Sample Selection

	Number of Households	
	Dropped	*Remaining*
Responded in any given year		28,636
In the sample for two consecutive years	4,156	24,480
Waves 5 to 11	15,046	9,434
No Average Labour Income / Employment	3,367	6,067
Age between 18 to 65 years	439	5,628
Drop self-employed	523	5,105
Drop Full Time Students	380	4,725
Drop those that separate or divorce	645	4,080
Sample Size		4,080

Source: HILDA Release and author's calculations

Table A.2: Household Consumption

	Proportion Total Spending	*Cumulative per cent*
Groceries	22.46%	22.46%
Alcohol	3.72%	26.19%
Cigarettes and tobacco	1.85%	28.03%
Public transport and taxis	1.07%	29.10%
Meals eaten out	6.35%	35.45%
Motor vehicle fuel	6.05%	41.50%
Men's clothing and footwear	1.40%	42.90%
Women's clothing and footwear	2.20%	45.10%
Children's clothing and footwear	1.16%	46.26%
Telephone rent and calls, internet charges	4.64%	50.90%
Private health insurance	2.55%	53.45%
Other insurances	3.23%	56.68%
Fees paid to health practitioner	2.24%	58.92%
Medicines, prescriptions and pharmaceuticals	1.00%	59.92%
Electricity, gas and other heating fuels	3.40%	63.32%
Repairs, renovation and maintenance to home	8.22%	71.54%
Motor vehicle repairs and maintenance	2.29%	73.82%
Education fees	2.85%	76.68%
Buying used vehicle	4.41%	81.08%
Computers and related expenses	1.50%	82.59%
Audio visual equipment	1.23%	83.82%
Household appliance	1.30%	85.11%
Furniture	1.84%	86.95%
Buying a brand new vehicle	5.84%	92.79%
Holidays and holiday travel costs	7.21%	100.00%

Source: HILDA Release and author's calculations

Figure A.1: *Histogram Self-Reported Job Insecurity*

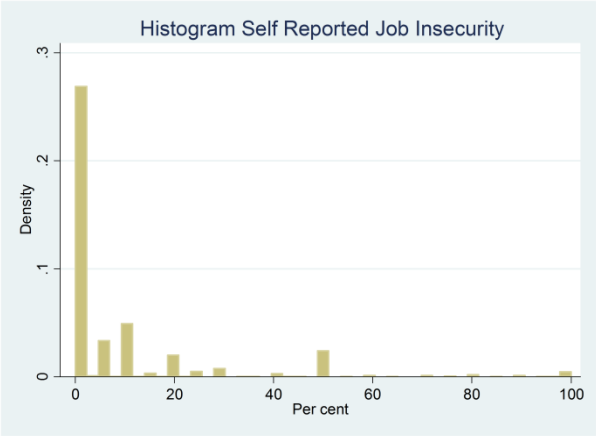


Figure A.2: *Histogram Self-Reported Probability of Quitting*

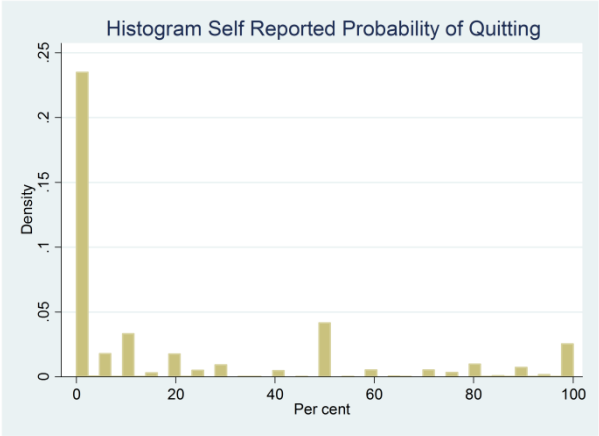


Table A.3: Expected probability of job separation at time t by job separation type at t+1

Expectation time t	Time t + 1 Involuntary		Voluntary		Other		All job separation	
	Head	Partner	Head	Partner	Head	Partner	Head	Partner
Probability Job Loss > 50%	2.12%	2.13%	8.14%	8.32%	2.61%	5.78%	12.86%	16.23%
Probability Job Loss < 50%	9.55%	9.77%	10.94%	11.47%	6.76%	8.27%	27.26%	29.51%
Probability of quitting >50%	2.12%	2.46%	4.74%	4.78%	1.92%	4.08%	8.77%	11.32%
Probability of quitting <50%	4.79%	3.79%	19.87%	18.95%	6.27%	11.24%	30.93%	33.99%

Source: HILDA Release and author's calculations

Table A.4 Household Controls						
	Head			*Partner*		
	Obs	Per cent	Cumulative per cent	Obs	Per cent	Cumulative per cent
Labour force status						
Employed (FT)	19,154	77.42	77.42	7,077	49.62	49.62
Employed (PT)	3,466	14.01	91.43	4,694	32.91	82.54
Unemployed, looking FT work	472	1.91	93.34	309	2.17	84.71
Unemployed, looking PT work	99	0.40	93.74	135	0.95	85.65
Not in labour force, marginally attached	514	2.08	95.82	614	4.31	89.96
Not in labour force, not marginally attached	1,035	4.18	100.00	1,432	10.04	100.00
Age						
18 to 29 years	5,934	23.58	23.58	4,285	29.08	29.08
30 to 39 years	6,574	26.12	49.70	3,908	26.53	55.61
40 to 49 years	6,394	25.41	75.10	3,585	24.33	79.94
50 to 65 years	6,266	24.90	100.00	2,955	20.06	100.00
Occupation						
Managers	3,219	14.24	14.24	893	7.59	7.59
Professionals	6,302	27.87	42.11	3,039	25.83	33.42
Technicians and Trades Workers	3,335	14.75	56.86	1,206	10.25	43.67
Community and Personal Service Work	1,800	7.96	64.82	1,496	12.72	56.39
Clerical and Administrative Workers	3,096	13.69	78.51	2,590	22.01	78.40
Sales Workers	1,292	5.71	84.22	1,092	9.28	87.68
Machinery Operators and Drivers	1,760	7.78	92.01	486	4.13	91.81
Labourers	1,807	7.99	100.00	963	8.19	100.00
Education						
Higher degree	3,291	13.33	13.33	1,565	10.97	10.97
Degree	4,405	17.84	31.16	2,499	17.52	28.50
Tafe Qualification	8,850	35.84	67.00	4,328	30.35	58.85
Highschool	8,088	32.75	99.74	5,792	40.61	99.46
Underdetermined	63	0.26	100.00	77	0.54	100.00
Job Tenure						
0-7 months	3,026	12.05	12.05	1,883	12.78	12.78
7-12 months	987	3.93	15.98	670	4.55	17.33
1-2 years	1,852	7.37	23.35	1,151	7.81	25.14
2-4 years	4,307	17.15	40.50	2,518	17.09	42.23
4+ years	14,943	59.50	100.00	8,511	57.77	100.00
Health (Long term health problems)						
No	20,867	83.10	83.10	12,306	83.53	83.53
Yes	4,244	16.90	100.00	2,426	16.47	100.00
Workplace Size						
1 to 9 employees	4,202	18.74	18.74	2,605	22.39	22.39
10 to 19 employees	2,882	12.85	31.59	1,720	14.78	37.18
19 to 49 employees	3,946	17.60	49.18	2,146	18.45	55.62
50 to 99 employees	2,831	12.62	61.81	1,471	12.64	68.27
100 to 199 employees	2,518	11.23	73.04	1.188	10.21	78.48
200 to 499 employees	2,424	10.81	83.84	929	7.99	86.46

500 plus employees	3,623	16.16	100.00	1,575	13.54	100.00
Union						
No	15,402	68.17	68.17	8,814	74.92	74.92
Yes	7,190	31.83	100.00	2,951	25.08	100.00
Number of Children Under 15 Years						
0	16,309	66.04	66.04			
1	3,746	15.17	81.20			
2	3,416	13.83	95.04			
3	988	4.00	99.04			
4	190	0.77	99.81			
5	33	0.13	99.94			
6	12	0.05	99.99			
Number of Employed Adults						
0	2,289	9.11	9.11			
1	17,141	68.25	77.36			
2	4,832	19.24	96.60			
3	697	2.78	99.38			
4	124	0.49	99.87			
5	28	0.11	99.98			
6	4	0.02	100.00			
Number of Adults						
1	4,404	17.84	17.84			
2	13,521	54.78	72.63			
3	3,761	15.24	87.87			
4	2,105	8.53	96.39			
5	628	2.54	98.94			
6	166	0.67	99.61			
Unemployed Previous Year						
No	19,678	97.69	97.69			
Yes	466	2.31	100.00			
Regions						
NSW	7,361	29.31	29.31			
VIC	6,107	24.32	53.63			
QLD	5,544	22.07	75.70			
SA	2,191	8.72	84.42			
WA	2,323	9.25	93.67			
TAS	776	3.09	96.76			
NT	209	0.83	97.60			
ACT	604	2.40	100.00			

Source: HILDA Release and author's calculations

The characteristics between the head and partner of the household do differ. The head of the household is more likely to be engaged in full time employment, are approximately only half as likely to be in part time employment, face lower levels of unemployment and are less likely to transition to being not in the labour force. These demographics suggest that job insecurity appears to be relatively more favourable for the head of the household compared to the partner of the household. Given that the definition of head is arbitrary; these results are to be expected.

In terms of age, the head of households appear to be marginally older compared to partners and tend to dominate the more highly skilled professions such as managers, professionals and technicians. Partners on the other hand tend to dominate community and personal service work, clerical and sales workers that are typically lower skilled.

Education does differ as well with the head of household more likely to have higher degrees, or tafe qualifications as opposed to partners that are more concentrated towards lower levels of education such as high school. This can help explain the occupational difference between the head of household and partner, as the head of households tend to be in higher skilled occupations. The heads of the household also display longer periods of job tenure, which may potentially reflect greater security in their jobs relative to the partners of the household. Interestingly there was no considerable difference between the health status of the head of house or partner. The workplace size also did differ with the head of household having a greater tendency to be employed by larger companies, again potentially indicating that their jobs are relatively more secure than partners. This is due to larger workplaces typically displaying greater job security and less uncertainty than smaller workplaces. Most of the households have no children under the age of 15 years whilst the number of employed adults and numbers of adults are largely concentrated towards two. Accordingly, the differences in demographics between the head and partner of the household may result in different reactions to a given level of job insecurity for both the head and partner of the household.

9.2 Output for Durable Consumption

Table A.2.1: Durable Consumption – Home Status

	Subjective		*Predicted Probability Unemployment*	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Head Risk	-0.014	-0.002	-0.941**	-0.163
	(0.129)		(0.379)	
Partner Risk	0.044	0.008	0.699**	0.121
	(0.117)		(0.310)	
Home Owner	-0.050	-0.008	0.208	0.036
	(0.047)		(0.181)	
Head R * Home	-0.030	-0.005	0.188	0.032
	(0.146)		(0.333)	
Partner R *Home	-0.037	-0.006	-0.739**	-0.128
	(0.134)		(0.335)	
Permanent Income	0.021***	0.004	0.023***	0.004
	(0.004)		(0.005)	
Transitory Income	-0.020***	-0.003	-0.023***	-0.004
	(0.004)		(0.004)	
Investment Income	0.003	0.001	0.007	0.001
	(0.013)		(0.016)	
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	13233		12282	

Significance level: *10%, **5%, ***1%

Table A.2.2: Durable Consumption – Home Value

	Subjective		*Predicted Probability Unemployment*	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Head Risk	3.534*	0.581	9.256*	1.520
	(1.937)		(4.789)	
Partner Risk	-6.409***	-1.054	-9.023**	-1.482
	(2.112)		(4.479)	
Home Value	0.044	0.007	0.041	0.007
	(0.054)		(0.188)	
Home Value x Head Risk	-0.275*	-0.045	-0.728**	-0.120
	(0.149)		(0.368)	
Home Value x Partner Risk	0.490***	0.081	0.681**	0.112
	(0.163)		(0.343)	
Permanent Income	0.014**	0.002	0.014**	0.002
	(0.006)		(0.006)	
Transitory Income	-0.017***	-0.001	-0.017***	-0.001
	(0.004)		(0.004)	
Investment Income	0.002	0.001	0.008	0.001
	(0.014)		(0.015)	
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	10255		9662	

Significance level: *10%, **5%, ***1%

Table A.2.3: Durable Consumption – Positive Wealth				
	Subjective		*Predicted Probability Unemployment*	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Head Risk	-0.581	-0.113	-0.328	-0.062
	(0.503)		(1.862)	
Partner Risk	4.321	0.841	1.615	0.307
	(401.660)		(1.319)	
Positive Wealth	-0.252	-0.049	1.082	0.206
	(0.201)		(0.790)	
Head Risk*Positive Wealth	0.353	0.069	-1.360	-0.258
	(0.511)		(1.843)	
Partner Risk*Positive Wealth	-4.331	-0.843	-1.782	-0.339
	(401.660)		(1.332)	
Permanent Income	0.024***	0.005	0.024***	0.005
	(0.007)		(0.007)	
Transitory Income	-0.021***	-0.004	-0.021***	-0.004
	(0.005)		(0.005)	
Investment Income	-0.009	-0.002	-0.004	-0.001
	(0.013)		(0.015)	
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	5358		4960	
				Significance level: *10%, **5%, ***1%

Table A.2.4: Durable Consumption – Positive Wealth Value				
	Subjective		*Predicted Probability Unemployment*	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Head Risk	0.503	0.097	-0.261	-0.049
	(0.996)		(1.993)	
Partner Risk	0.154	0.030	2.206	0.417
	(0.820)		(2.071)	
Positive Wealth	0.021	0.004	0.154*	0.029
	(0.024)		(0.090)	
Head Risk*Positive Wealth	-0.057	-0.011	-0.115	-0.022
	(0.078)		(0.156)	
Partner Risk*Positive Wealth	-0.013	-0.003	-0.186	-0.035
	(0.064)		(0.161)	
Permanent Income	0.022***	0.004	0.020***	0.004
	(0.007)		(0.008)	
Transitory Income	-0.020***	-0.003	-0.018***	-0.003
	(0.005)		(0.006)	
Investment Income	-0.012	-0.002	-0.009	-0.002
	(0.013)		(0.015)	
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	5255		4883	
				Significance level: *10%, **5%, ***1%

Table A.2.5: Durable Consumption – Wealth Decomposition				
	Subjective		*Predicted Probability Unemployment*	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Head Risk	1.665	0.315	2.188	0.393
	(1.147)		(2.575)	
Partner Risk	-0.491	-0.093	3.844	0.691
	(1.004)		(2.531)	
Financial Assets	0.031	0.006	0.176	0.032
	(0.031)		(0.116)	
Non-Financial Assets	0.036	0.007	0.189*	0.034
	(0.026)		(0.105)	
Total Debt	-0.027	-0.005	-0.082	-0.015
	(0.022)		(0.088)	
Head Risk*Fin Assets	-0.050	-0.010	-0.266	-0.048
	(0.090)		(0.225)	
Head Risk*NonFin Assets	-0.045	-0.009	-0.143	-0.026
	(0.086)		(0.191)	
Head Risk*Total Debt	-0.075	-0.014	0.042	0.007
	(0.068)		(0.166)	
Partner Risk*Fin Assets	-0.040	-0.008	-0.168	-0.030
	(0.084)		(0.217)	
Partner Risk*NonFin Assets	0.018	0.003	-0.160	-0.029
	(0.071)		(0.196)	
Partner Risk*Total Debt	0.061	0.012	0.026	0.005
	(0.068)		(0.168)	
Permanent Income	0.019***	0.004	0.019**	0.003
	(0.007)		(0.008)	
Transitory Income	-0.014***	-0.002	-0.015**	-0.001
	(0.005)		(0.006)	
Investment Income	-0.004	-0.001	-0.004	-0.001
	(0.014)		(0.015)	
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	4790		4441	
				Significance level: *10%, **5%, ***1%

9.3 Determinants of job insecurity

It may be insightful to consider the main factors that cause changes in both the self-reported and predicted probability of unemployment. The results from a random effect probit specification for both the self-reported and predicted probability of unemployment are reported in table A.5.1 below. These specifications help access the main factors that cause changes in both the self-reported and predicted probability of unemployment.

Individuals with higher levels of qualifications typically face lower levels of job insecurity. Individuals that have a degree face a 0.7 percentage points less chance of reporting at being a high risk of losing their job in the next 12 months compared to those individuals who have received no further education post school. The effect is even larger for those with a higher degree who face a 1.5 percentage points less chance of being a high risk. In terms of predicted probability of unemployment, only tafe is significant and reduces the probability of unemployment by 0.3 percentage points. Whilst these effects may seem small, the average probability of an individual

reporting of being at a high risk of job loss is 8.5 per cent. As a result, these effects are still substantial.

An individual who has been unemployed in the last 12 months faces an increase of 2.6 percentage points chance of being unemployed within the next 12 months. This effect is again quite substantial. Interestingly, lagged periods of unemployment is insignificant for the self-reported measure. This may suggest that those individuals who have been unemployed in the last 12 months may be overly optimistic about their future probability of unemployment. This finding is consistent with existing literature, which have found that unemployment has a scarring effect, whereby previous periods of unemployment increases the risk of future unemployment considerably (Arulampalam et al. 2000). This may be attributed due to the discrimination that people who have been unemployed find in trying to find alternative jobs and it may also capture many unobservables such as the employability of each person.

Those that are in casual or temporary employment report higher probabilities of being at a high risk of job loss and also face higher probabilities of unemployment. Those individuals who are in casual employment contracts are 3.1 percentage points more likely to report a high risk of job loss and face only a 0.8 percentage points increased chance of unemployment. This suggests that those that are in casual employment contracts overestimate their level of job insecurity.

Being a member of the union appears to decrease both the self-reported and predicted values of unemployment. Union membership reduces the probability that an individual will record a high risk of job loss by 0.5 percentage points and actually decrease the risk of unemployment by 0.3 percentage points. These results support the proposition that union membership does increase the job security of its employees as they can help to minimise events such as unfair dismissal.

Older age cohorts report a 2.3 percentage points increased probability of reporting a high risk of job loss. This value is consistent across the three age cohorts, those aged 30 to 39, 40 to 49 years and those 50 to 65 years. Despite this, only those aged 50 to 65 face an increased 0.4 percentage points risk of unemployment. This suggests that the relative level of risk aversion appears to be higher for older age cohorts.

Individuals that have long term health problems record a 1.7 percentage points increased risk of recording a high risk of losing their job; albeit this effect is insignificant for the predicted probability of unemployment. This suggests that those that have long term health problems overestimate the risk of job loss. Marriage is significant and reduces both the probability of recording a high risk of job loss and predicted probability of unemployment. Being male also increases the probability of

unemployment by 0.3 percentage points, whilst not having any significant effect using the self-reported measures. This suggests that males underestimate the probability of job loss.

Increased job tenure also appears to reduce both the self-reported and predicted probability of unemployment. The more time an employee works at their job, the more specialised knowledge and experience they develop, which may make it more costly for the employer to layoff the employee. This may also indicate that those employees with higher job tenure may be more likely to be more satisfied in their current job relative compared to new employees. Those employees that are not satisfied with their job are more likely to leave. This means that those individuals with higher levels of job tenure are likely to be relatively more satisfied and less likely to voluntarily separate compared to those with lower levels of job tenure.

Workplaces with relatively more employees appears to marginally decrease the probability of recording a high risk of job loss and predicted probability of unemployment; albeit the relationship is not significant.

Table A.3.1: Self-Reported Job Insecurity and Predicted Probability of Unemployment

	Self-Reported Job Insecurity		Predicted Unemployment	
	Coefficient (standard error)	Marginal Effect	Coefficient (standard error)	Marginal Effect
Tafe	0.038	0.002	-0.128**	-0.003
	(0.044)		(0.061)	
Degree	-0.114*	-0.007	0.039	0.001
	(0.062)		(0.086)	
Higher Degree	-0.278***	-0.015	0.006	0.000
	(0.071)		(0.103)	
Lag Unemployment	0.154	0.011	0.593***	0.026
	(0.100)		(0.119)	
Casual	0.365***	0.031	0.276***	0.008
	(0.049)		(0.071)	
Union	-0.078**	-0.005	-0.127**	-0.003
	(0.039)		(0.064)	
Aged 30 to 39	0.309***	0.023	-0.031	-0.001
	(0.052)		(0.072)	
Aged 40 to 49	0.312***	0.023	0.028	0.001
	(0.056)		(0.076)	
Aged 50 to 65	0.309***	0.023	0.163**	0.004
	(0.059)		(0.080)	
Health	0.222***	0.017	0.062	0.001
	(0.040)		(0.067)	
Married	-0.155***	-0.010	-0.271***	-0.006
	(0.040)		(0.059)	
Male	-0.002	-0.000	0.157**	0.003
	(0.043)		(0.063)	
Job Tenure				
7-12 months	-0.116	-0.007	0.010	0.000
	(0.073)		(0.108)	
1-2 years	-0.349***	-0.017	-0.054	-0.001
	(0.060)		(0.091)	
2-4 years	-0.351***	-0.019	-0.184**	-0.003
	(0.049)		(0.078)	
4 years or more	-0.466***	-0.033	-0.393***	-0.009
	(0.046)		(0.074)	
Workplace size				
10 to 19 Employees	0.019	0.001	0.002	0.000
	(0.053)		(0.082)	

20 to 49 Employees	-0.027	-0.002	0.042	0.001
	(0.051)		(0.076)	
50 to 99 Employees	-0.123**	-0.007	-0.106	-0.002
	(0.058)		(0.095)	
100 to 199 Employees	0.024	0.002	-0.031	-0.001
	(0.059)		(0.094)	
200 to 500 Employees	-0.031	-0.002	-0.095	-0.002
	(0.059)		(0.101)	
500 or more Employees	-0.047	-0.003	-0.214**	-0.004
	(0.056)		(0.099)	
ρ				
Observations	27933		22187	
				Significance level: *10%, **5%, ***1%

9.4 Positive Investment Income

A potentially insightful extension on these base models is to determine whether the sensitivity of household consumption varies according to whether or not the household has positive investment income. Investment income may reduce the household's sensitivity to changes in unemployment risk as the household has access to alternative sources of revenue which they can use to fund future consumption in the event that they do lose their job. This section of the paper aims to capture this effect by analysing the sensitivity of household consumption to changes in unemployment risk for those households with and without positive investment income. Approximately 88.4 per cent of households report positive investment income.

Accordingly, those households with positive investment income are less sensitive to changes in unemployment risk, which is consistent across both food and non-food consumption, although the relationship is only significant using the subjective measures as shown in figures A.3 and A.4 below. The households with positive investment income have relatively flatter slopes, indicating that they are less sensitive to changes in unemployment risk. Those households also report higher levels of total food and non-food consumption.

Figure A.3 *Job Insecurity & Food Consumption – Positive Investment Income*

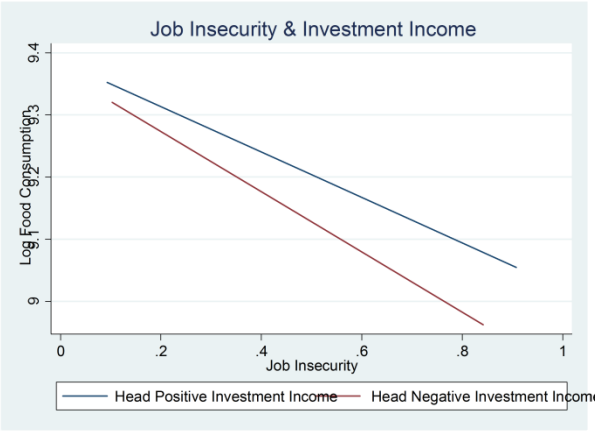


Figure A.4 *Job Insecurity & Non Food Consumption – Positive Investment Income*

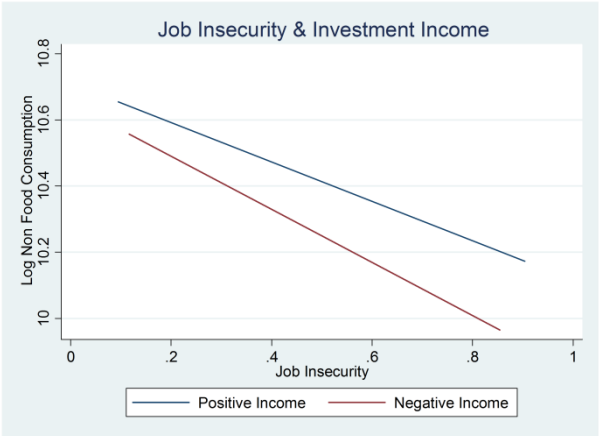
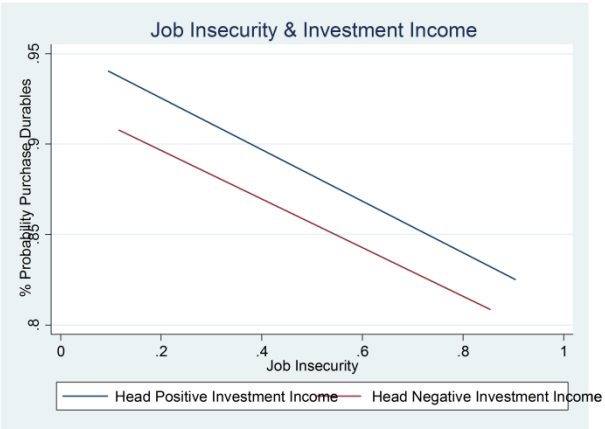


Table A.4.1: Food and Total Less Food Consumption – Positive Investment Income				
	Food Consumption		*Total Less Food*	
	Subjective Measure	Predicted Probability	Subjective Measure	Predicted Probability
Head Risk	0.012	-0.304***	0.014	-0.430***
	(0.016)	(0.071)	(0.026)	(0.115)
Partner Risk	-0.025	-0.080*	0.015	-0.266***
	(0.016)	(0.047)	(0.025)	(0.070)
Pos Invest Income (PII)	0.025***	0.001	0.039***	-0.021
	(0.007)	(0.024)	(0.012)	(0.044)
Head R * PII	-0.041*	0.068	0.048	0.044
	(0.021)	(0.055)	(0.038)	(0.093)
Partner R *PII	0.041*	-0.005	0.021	0.115
	(0.021)	(0.051)	(0.033)	(0.084)
Permanent Income	0.011***	0.010***	0.026***	0.025***
	(0.001)	(0.001)	(0.001)	(0.002)
Transitory Income	-0.014***	-0.014***	-0.026***	-0.025***
	(0.001)	(0.001)	(0.001)	(0.001)
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	14769	13885	11222	10451
				Significance level: *10%, **5%, ***1%
				Robust Standard Errors Reported

These results do not transcend to durable consumption as there is a minimal difference between the sensitivity of those households with and without positive investment income. These results may suggest that those households that do not have positive investment income are more likely to engage in precautionary savings on components of consumption such as food and not in components including the probability of purchasing durable goods. These results can be shown in figure A.5 below, with the relative gradients between those with and without positive investment income being negligible.

Figure A.5 *Job Insecurity & Durable Consumption – Positive Investment Income*



The difference in the slopes is also statistically insignificant, as shown in table A.4.2 below.

Table A.4.2: Durable Consumption – Positive Investment Income				
	Subjective		*Predicted Probability Unemployment*	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Head Risk	-0.076	-0.013	-0.456	-0.079
	(0.082)		(0.324)	
Partner Risk	-0.053	-0.009	-0.270	-0.047
	(0.080)		(0.207)	
Pos Invest Income (PII)	0.035	0.006	-0.052	-0.009
	(0.037)		(0.139)	
Head R * PII	0.157	0.027	-0.340	-0.059
	(0.119)		(0.276)	
Partner R *PII	0.092	0.016	0.577**	0.100
	(0.112)		(0.263)	
Permanent Income	0.016***	0.003	0.016***	0.003
	(0.005)		(0.005)	
Transitory Income	-0.016***	-0.001	-0.016***	-0.001
	(0.003)		(0.004)	
Wave dummies	Yes		Yes	
Occupation dummies	Yes		Yes	
Observations	13434		12466	
				Significance level: *10%, **5%, ***1%

9.5 Age Interactions

Another potentially insightful extension is to consider whether the impact of job insecurity on various components of consumption exhibits heterogeneity between age groups. The differences in sensitivity of job insecurity may be driven by changes in financial, occupational and demographical characteristics of the household.

Overall the households' consumptions responsiveness to job insecurity appears to increase with age, although this effect is insignificant, as shown in table A.5.1 and figure A.6 and figure A.7. As a result, there does appear to be any strong evidence that suggests a heterogeneous effect of consumptions responsiveness to job insecurity across ages for both food and non-food consumption. Only those aged 30 to 39 report a lower level of sensitivity of both food and non-food consumption to changes in job insecurity; albeit only using the subjective measures.

Table A.5.1: Food and Total Less Food Consumption – Age Interactions				
	Food Consumption		*Total Less Food*	
	Subjective Measure	Predicted Probability	Subjective Measure	Predicted Probability
Head Risk	0.027	-0.188*	0.116**	-0.316**
	(0.040)	(0.103)	(0.057)	(0.155)
Partner Risk	0.015	-0.099**	0.050	-0.257***
	(0.021)	(0.043)	(0.037)	(0.069)
Head Risk*Age 30 to 39	-0.090*	-0.001	-0.131**	-0.103
	(0.046)	(0.107)	(0.066)	(0.164)
Head Risk*Age 40 to 49	-0.040	-0.047	-0.055	-0.157
	(0.044)	(0.113)	(0.066)	(0.183)
Head Risk*Age 50 to 65	0.007	-0.174	-0.092	-0.155
	(0.045)	(0.109)	(0.068)	(0.168)
Partner Risk*Age 30 to 39	-0.029	0.008	-0.058	0.009
	(0.031)	(0.027)	(0.047)	(0.044)
Partner Risk*Age 40 to 49	-0.029	0.160***	-0.055	-0.008
	(0.026)	(0.039)	(0.047)	(0.067)
Partner Risk*Age 50 to 65	-0.008	0.150***	0.046	0.063
	(0.030)	(0.032)	(0.054)	(0.049)
Perm Y	0.011***	0.010***	0.026***	0.025***
	(0.001)	(0.001)	(0.001)	(0.002)
TranY	-0.015***	-0.014***	-0.026***	-0.025***
	(0.001)	(0.001)	(0.001)	(0.001)
InvestY	0.007***	0.010***	0.020***	0.026***
	(0.003)	(0.003)	(0.004)	(0.005)
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	14769	13885	11222	10451
				Significance level: *10%, **5%, ***1%

Figure A.6: *Head – Job Insecurity on Food Consumption & Age*

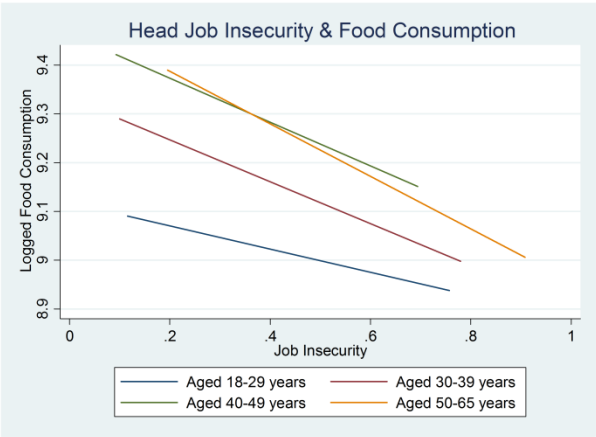
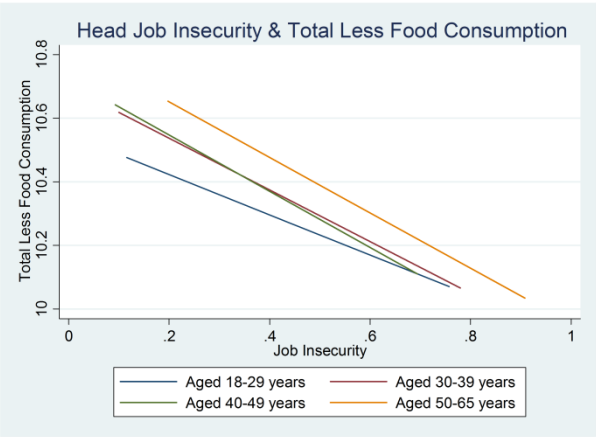


Figure A.7: *Head – Job Insecurity on Non-Food Consumption & Age*



Unlike food and non-food consumption, the sensitivity of the probability of purchasing durable goods to changes in job insecurity does appear to increase with age. Those aged between 40 to 49 years have durable consumption that is relatively more sensitive to changes in job insecurity relative to the other age cohorts, which is also statistically significant as shown in table A.5.2 below. This is followed by those aged 50 to 65, and then those aged 30 to 39 followed by those between 18 to 29 years old. These results could be driven by those aged 40 to 49 years having a relatively lower

opportunity cost to engage in precautionary savings, as incomes are typically higher and they are less likely to be debt constrained.

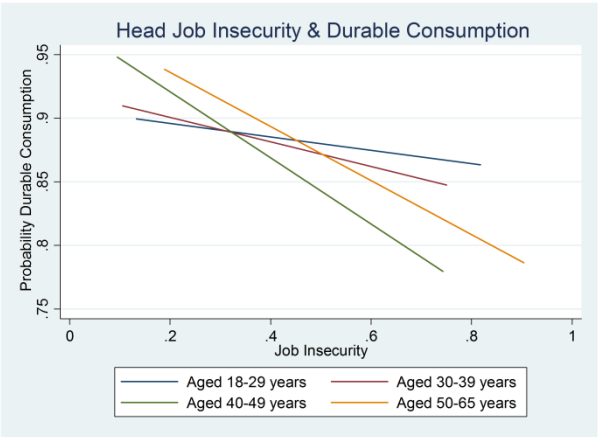
Overall there does not appear to be strong evidence of heterogeneity in the households consumption responsiveness to changes in job insecurity across various age groups. Only with durable consumption is there a significant heterogeneous effect with those aged 40 to 49 being the most sensitive.

Table A.5.2: Durable Consumption – Age Interactions

	Subjective		*Predicted Probability Unemployment*	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Head Risk	0.308*	0.054	-0.298	-0.052
	(0.186)		(0.461)	
Partner Risk	0.070	0.012	0.224	0.039
	(0.111)		(0.200)	
Head Risk*Age 30 to 39	-0.538**	-0.093	-0.271	-0.047
	(0.216)		(0.497)	
Head Risk*Age 40 to 49	-0.236	-0.041	-1.052**	-0.184
	(0.217)		(0.510)	
Head Risk*Age 50 to 65	-0.354	-0.062	-0.940**	-0.165
	(0.221)		(0.478)	
Partner Risk*Age 30 to 39	-0.103	-0.018	-0.151	-0.027
	(0.152)		(0.124)	
Partner Risk*Age 40 to 49	-0.045	-0.008	-0.093	-0.016
	(0.150)		(0.180)	
Partner Risk*Age 50 to 65	-0.058	-0.010	-0.113	-0.019
	(0.162)		(0.127)	
Perm Y	0.018***	0.003	0.021***	0.004
	(0.004)		(0.004)	
TranY	-0.017***	-0.003	-0.020***	-0.003
	(0.003)		(0.004)	
InvestY	0.004	-0.008	0.009	0.002
	(0.013)		(0.016)	
Wave dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Observations	13500		12528	

Significance level: *10%, **5%, ***1%

Figure A.8: Job Insecurity & Durable Consumption – Age



10. Data Appendix

Permanent Income

Permanent income is defined as the normal annual labour income adjusted for age and cohort effects. Permanent income is constructed by following Guiso et al. (1992), which assumes that permanent earnings of a household at age τ can be shown by

$$Y(\tau) = Z\beta + \phi(\tau)$$

The vector Z represents an array of household controls that includes education, lagged unemployment, health, union status, marriage status, job tenure, workplace size and occupation and ϕ is a quadratic function of age. Permanent income is then estimated by running a random effects equation on the log household labour income on a vector of household demographics and age effects, whilst projecting this value forward until retirement. The estimation can be shown by

$$Y_p(\tau_0) = (65 - \tau_0 + 1)^{-1} \sum_{\tau=\tau_0}^{65} [Zb + f(\tau) \left(\frac{1+n}{1+r}\right)^{(\tau-\tau_0)}$$

Whereby b and f are the respective coefficients for β and ϕ. Assuming the growth of productivity and the rate of interest are equal simplifies the equation to

$$Y_p(\tau_0) = Zb + (65 - \tau_0 + 1)^{-1} \sum_{\tau=\tau_0}^{65} f(\tau)$$

Transitory income is the difference between permanent and current labour income. Transitory income does not necessarily have to have a mean of zero. As transitory income can take on negative values the income terms are used in levels rather than logs.

The results of the random effects estimation of the log of household income are shown in table D.A.1 below.

Table D.A.1: Household labour income	
	Log Household Income
Tafe	0.121***
	(0.019)
Degree	0.283***
	(0.025)
Higher Degree	0.375***
	(0.028)
Lag Unemployment	-0.402***
	(0.028)
Casual	-0.197***
	(0.014)
Health	-0.048***
	(0.011)
Union	0.027**
	(0.011)
Married	0.211***
	(0.015)
Male	0.234***
	(0.019)
Number of employed adults	0.059***
	(0.006)
Number of children	-0.090***
	(0.007)
Tenure:	
7-12 months	0.006
	(0.018)
1-2 years	0.056***
	(0.014)
2-4 years	0.097***
	(0.012)
4 years or more	0.112***
	(0.012)
Workplace size:	
10 to 19 Employees	0.059***
	(0.014)
20 to 49 Employees	0.096***
	(0.014)
50 to 99 Employees	0.116***
	(0.015)
100 to 199 Employees	0.101***
	(0.016)
200 to 500 Employees	0.146***
	(0.016)
500 or more Employees	0.157***
	(0.016)
Occupation Dummies	Yes
Region dummies	Yes
Wave dummies	Yes
ρ	0.740
Observations	18063
	Significance level: *10%, **5%, ***1%
	Robust Standard Errors Reported