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Consumption responses to unemployment shocks

Jim Been, Eduard Suari-Andreu, Marike Knoef, Rob Alessie

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Consumption Responses to Unemployment Shocks *

Jim Been † Eduard Suari-Andreu ‡ Marike Knoef § Rob Alessie ¶

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Abstract

This paper analyzes consumption responses to unexpected unemployment shocks in a Life-Cycle Model (LCM) using subjective (un)employment probabilities. Prior papers have either distinguished between the degree of unexpectancy or the degree of persistency. Our proposed method takes into account both unexpectancy through subjective job loss expectations and persistency through subjective job finding expectations as well as non-liquidity driven age effects. Panel data with detailed information on a wide array of spending categories allows us to analyze the effects of job loss on intratemporal substitution from work-related to leisure-related spending and from spending to home production. Our results suggest substantial decreases in spending (about 34%) due to job loss shocks. We find little evidence for consistently increasing spending on leisure activities after a job loss shock, but we find reasonable evidence for shifts from spending to home production. However, this shift is only small compared to the total spending drop.

JEL codes: C33, D1, H55, J22, J26
Keywords: Consumption, Home production, Job loss, Unexpectancy, Permanency, Subjective expectations

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†Department of Economics at Leiden University and Netspar. Corresponding address: Department of Economics, Leiden University, PO Box 9520, Steenschuur 25, 2300 RA Leiden, the Netherlands. Tel.: +31 71 527 8569. (e-mail address: j.been@law.leidenuniv.nl).

‡Department of Economics at Leiden University and Netspar.

§Department of Economics at Leiden University and Netspar.

¶Department of Economics, Econometrics & Finance at University of Groningen and Netspar.

1 Introduction

Job loss is often a disruptive life event. It can occur unexpectedly anytime during the life-course, it can happen multiple times throughout the life-course, and often has a detrimental effect on income (Stevens, 1997). Individuals usually suffer an immediate income drop upon job loss, which may also translate into a decline in future income. On the one hand because it may take a while before an unemployed individual rejoins the labor market. On the other hand because of potential scarring effects that may reduce future wages substantially (Arulampalam, 2001). In all these circumstances, consumption drops and welfare declines.

Welfare losses can be mitigated through insurances. Prior studies have investigated the extent to which unemployment insurance from government helps to smooth consumption (e.g. Gruber, 1997). Other forms of insurance that have been analyzed are spousal labor supply (e.g. Stephens, 2002; Hardoy, 2014; Cammeraat et al., 2019) and private savings (Gallen, 2013; Basten et al., 2016). The seminal Life-Cycle Hypothesis (LCH) of Ando & Modigliani (1963) suggests that people maximize utility by smoothing the marginal utility of consumption over the life-course. This means that when workers are forward looking and anticipate potential job loss, they reduce consumption and increase private saving in advance to mitigate welfare losses. Welfare losses can also be mitigated by home production[1], or by redirecting resources away from work-related expenditures and towards leisure-related expenditures. Therefore, it is important to study the consequences of unemployment for a wide variety of consumption categories over the life-cycle.

In the present paper, we analyze the consequences of job loss on consumption behavior. To do so, we use data from *Longitudinal Internet Studies for the Social Sciences* (LISS). The latter is a panel survey representative of the Dutch population, which provides rich information on labor market status of individuals, as well as on different consumption categories. The consumption categories provided are: food at home, house and garden cleaning, trips and vacations, debts and loans, alimony, childcare services, insurances, transport, utilities, rent, mortgages, and other. Interestingly for us, the LISS also provides information on subjective job loss expectations, as well as on subjective job find expectations

[1](Aguiar & Hurst, 2005) find that after an income shock substitution between spending and home production matters substantially for food spending, but many spending categories are non-substitutable (Been et al., 2019).

of unemployed individuals. The availability of different consumption categories allows us to investigate intratemporal substitution from work-related to leisure-related consumption, substitution from spending to home production, and substitution from (precautionary) savings to spending.

To estimate the causal effect of expected and unexpected job loss on consumption, we build upon the model by Stephens (2004). The latter employs data from the Health and Retirement Study (HRS) to set up an estimation equation that distinguishes between expected and unexpected job loss. We make four contributions to the existing literature. First, we add to the scarce literature investigating the effect of job loss on total consumption and on separate consumption categories, while Stephens (2004) only uses food consumption. This is important since access to different spending categories allows for a better understanding of the welfare effects of unemployment and the insurance mechanisms that are at play. There are only two other studies analyzing the effect of job loss on different consumption categories, i.e. Gruber (1998) and Gerard & Naritomi (2019).[2] We are not aware of another study investigating the effects of *expected* and *unexpected* job loss on several consumption categories.

Second, whereas Stephens (2004) uses the HRS and thus focuses on the 50+ population, we analyze the effects of job loss on consumption for workers of ages from 25 to 64.[3] This is relevant since, for several reasons, the effects of job loss may be different over the life cycle. For instance, younger workers may be more likely to lose their job, while it may be more difficult for older workers to find a new job once they are unemployed (Chan & Stevens, 2001). In addition, there is a stream of literature indicating that scarring effects from unemployment on (future) wages are especially strong when unemployment occurs early in the life-cycle (Gregg & Tominey, 2005; Mroz & Savage, 2006; Cockx & Picchio, 2013). However, late career job losses are also shown to have substantial effects on lifetime income (Merkurieva, 2018). Another important difference between young and older workers is that, in general, older households have accumulated more wealth. At the same time, consumption may be more urgent for young workers, with children living in their household. Therefore, the latter may be more

[2]Gruber (1998) uses the Consumer Expenditure Survey (CEX) and suggests that responses to job loss can differ substantially between consumption categories. Gerard & Naritomi (2019) focus on the effect of severance payments on total durable expenditures, total nondurable expenditures, food, entertainment, and home improvement.

[3]Much of the literature regarding job loss use HRS or PSID data, although both are limited regarding consumption spending information. With the CAMS supplement to the HRS there are possibilities to have detailed information on consumption spending, but the information is only available for persons aged 50+.

liquidity constrained, influencing their capacity to smooth consumption upon job loss.

Third, whereas Stephens (2004) only differentiates the effect of job loss on consumption by the unexpectancy of the job loss,[4] we apply an empirical model that differentiates between both the expectancy and the persistency of job loss shocks. Although both unexpectancy and persistency is important in explaining consumption responses according to the LCH, we are the first to estimate an empirical model that includes both. Contrasting the approach by Stephens (2004), which includes unexpectancy but no persistency, there is a large empirical literature that includes persistency but no expectancy.[5] We take two approaches in taking into account the persistency of job loss shocks. The first approach is using job finding expectations and assuming that subjective job finding probabilities once unemployed are negative correlated with the persistency of job loss. Mueller et al. (2018) suggest that subjective job finding probabilities provide strong predictive power of the duration of unemployment. Partly because it captures job search efforts which is an important force in the persistency of earnings losses due to unemployment (Jung & Kuhn, 2018). The second approach is analyzing age-effects and liquidity-effects in explaining the effect of job loss shocks. This allows us to analyze age-effects and the extent to which these are driven by liquidity or by age-dependent persistency of job loss.

Fourth and finally, whereas most literature is based on U.S. households[6] and Canadian households,[7] this paper presents results for the Netherlands. The Dutch labor market is less flexible, unemployment is more persistent, and the UI benefit system is more generous compared to the U.S. and Canada. Therefore, it is interesting to compare the effects of unemployment on consumption across countries and see the extent to which results are generalizable.

Our findings show that job loss leads to a contemporaneous reduction in spending of 269 euros (18%) per month. When taking into account job loss expectations, i.e. by using the discrepancy between subjective expectations and realizations, the effect becomes 517 euros (34%) per month. This effect does not significantly change when accounting for permanency of unemployment shocks by using

[4] Stephens (2004) simply assumes that the degree of unexpectancy is positively correlated with the degree of persistency.

[5] Pistaferri (2001); Guiso et al. (2002); Bertola et al. (2005); Hryshko (2014); Kukk et al. (2016); Kovacs et al. (2018); Attanasio et al. (2019). These papers identify transitory and permanent (income) shocks by assuming that all shocks are unexpected by definition.

[6] Gruber (1997); Stephens (2004); Aguiar & Hurst (2005); Michelacci & Ruffo (2015); Kroft & Notowidigdo (2016); Hendren (2017)

[7] Browning & Crossley (2001, 2008, 2009)

subjective job find expectations upon job loss. However, non-liquidity driven age-effects are substantial and suggest that older workers face a more substantial drop in consumption spending most likely due to a higher persistency of the job loss shock.[8] Estimating the same effects using disaggregated spending categories, we find little evidence for increases in leisure-complementary spending. However, the important reduction we find for expenditures on transport is likely to be linked to a decline in work-related expenditures. In addition, substantial increases in food at home and decreases in cleaning and gardening spending indicates the presence of home production as a substitute for these type of expenditures. Unlike suggested in the prior literature (Aguiar & Hurst, 2005), the shift from spending to home production is unlikely to fully mitigate the effects of job loss on consumption. Finally, our results suggest that households tend to decrease savings in favor of spending when facing a job loss shock suggesting some degree of myopia. Therefore, job loss shocks are also likely to affect households' balance sheets.

The reminder of the paper is organized as follows. Section 2 provides an overview of the institutional background of unemployment insurance benefits. Sections 3 and 4 explain the theoretical framework and empirical model. Section 5 explains the data and provides descriptive statistics. Section 6 provides the results of the baseline model and extensions. Section 7 concludes the paper and explains the importance of our results for analyses of welfare and optimal unemployment insurance.

2 Institutional background

People who become unemployed usually have the right to claim unemployment insurance (UI) benefits in the Netherlands. There is a right to claim UI benefits if a person worked at least 26 of the last 36 weeks and if the job loss is not culpable to the employee. Culpable reasons to become unemployed are mostly instant dismissals by the employer and voluntary quits. Every paid employee is automatically covered by UI benefits.

The duration of UI benefits depends on work history. The minimum duration is three months. This is extended by one month for every year worked up to a maximum of 38 months for those who worked at least 4 out of the last 5 years. As from 2016, the maximum of 38 months has been reduced to 24 months. The accumulation of months has also been made less generous: one month for every of the first

[8] We find substantial negative age-effects in explaining subjective job-finding probabilities.

10 years of work and half a month for every year of work beyond 10 years.

The first two months, the UI benefits replace 75% of the last earnings with an absolute maximum of about 3,100 euros. From the third month on, the replacement rate is reduced to 70% of the last earnings with an absolute maximum of about 2,900 euros. Prior to 2016, replacement rates were 70% for the total duration of UI benefits. In some specific sectors,[9] collective agreements require employers to complement UI benefits to a 100% replacement rate. The duration of the employer's supplement depends on the collective agreement in the sector. Upon job loss, contributions to occupational pensions are automatically stopped or reduced, depending on the sector's collective agreement.[10]

When UI benefits are exhausted, people can claim asset- and income-based means-tested welfare benefits that guarantee a minimum standard of living. In addition, older unemployed have two extra options to receive extended benefits during unemployment. 1) Those born before January 1st 1965, who become unemployed after the age of 50 may be eligible for *IOAW* benefits after the exhaustion of regular UI benefits. These benefits complement household income up to the subsistence level for those households that fall below this level. Hence, eligibility is means-tested based on household income, but assets are not taken into account (that is the main difference compared to welfare benefits). 2) Persons who become unemployed after the age of 60, and received UI benefits for a minimum of 3 months, can receive *IOW*-benefits after the exhaustion of regular UI benefits. These benefits are at most 70% of the minimum wage, depending on the level of income before unemployment. Compared to *IOAW* benefits, *IOW* benefits do not take into account household income, but only personal income. *IOW* was initially introduced in 2009 as a temporary arrangement to alleviate job finding difficulties among older unemployed during the Great Recession. However, in 2014 and 2019 the arrangement has been extended for four years.

The right to claim benefits comes with the obligation to apply for jobs. Mandatory job-search requirements apply to claimants regardless of age in order to increase the probability of finding a job. Exemptions are made for those who are within one year of their statutory retirement age, informal care-

[9] Such as agriculture, industry, and construction.

[10] As occupational pensions are largely mandatory with substantial contributions by employers, unemployment can have substantial consequences for pension savings. For the median Dutch household, occupational pensions are about equally important as the state pension, and make up about 35% of total retirement income available (including personal and housing wealth)(Knoef et al., 2016).

takers, voluntary workers (under some conditions), and starting entrepreneurs. Exceptions are made because they may increase the probability to find a job. Not abiding by the mandatory job-search requirements can have severe consequences that can range from financial sanctions to losing the right to claim UI benefits. After some time, people even have to accept all job offers irrespective of their educational level.

From an international perspective, UI benefits are relatively generous in the Netherlands. OECD (2019a) shows that the net replacement rate for the first 2 months of job loss is one of the highest in the OECD and is about 30, 40, and 15 percentage points higher than in the U.S., U.K., and Germany, respectively. Also at the unemployment duration of 24 months, the net replacement rate is relatively generous compared to other OECD countries (it is about 65, 35, and 35 percentage points higher than in the U.S., U.K., and Germany, respectively). After 24 months, the generosity of Dutch UI benefits drops relatively strongly.

Although unemployment rates are generally low, the duration of unemployment is relatively high in the Netherlands. OECD (2019b) shows that the share of unemployment spells shorter than a month is only about 6% in the Netherlands. In the U.S., the U.K., and Germany this is about 30%, 15%, and 10%, respectively. Only in Greece this share is lower (2.5%). In the Netherlands more than 40% of all unemployment spells take longer than one year. This is about 20%, 30% percent, and 40% in the U.S., U.K., and Germany, respectively. In the OECD countries this share is only higher in Belgium, Greece, Ireland, and Portugal (about 50%, 70%, 60%, and 60%, respectively).

The problem of relatively high long-term unemployment is structural in nature and has severe consequences, especially for older workers (CPB, 2015). More than 40% of the long-term unemployed is at least 50 years old. This prevalence of long-term unemployment among older workers may be due to several reasons. First, additional age-dependent rights in collective agreements in several sectors increase the generosity of UI benefits for older workers. This reduces their search effort and increases their reservation wage. Second, under Dutch labor law, employers are obliged to continue payments for at least 70% of the employees' wages during the first and second year of sickness absence/disability. This makes employers hesitant to hire older workers, as they have a higher probability of long-term sickness

absence. Third, employers tend to have concerns about the capability and employability of older workers (van Dalen et al., 2019).

In summary, the information we provide in this section suggests that, despite a relatively generous replacement rate, job-loss can have severe consequences for current and future income of households in the Netherlands. Once unemployed, individuals are likely to stay unemployed for at least a year. Whereas job loss is mostly of transitory nature in countries like the U.S. and he U.K., unemployment spells are more lengthy in the Netherlands. Especially, for those aged 50 and over.

3 Theoretical Framework

To illustrate the problem at hand and derive testable hypotheses we make use of a simplified version of the life-cycle model of consumption and saving. Building on the previous work of Campbell & Deaton (1989), we define how consumption of a representative individual reacts to changes in income. We assume a one-good model with quadratic utility, an infinitely-lived household, and a constant interest rate which abstracts from labour supply decisions. These assumptions imply that future income is the only source of uncertainty in the model. Following the derivations by Campbell & Deaton (1989), optimal consumption can be expressed as

$$c_t = \frac{r}{1+r}\left[A_t + \sum_{j=0}^{\infty} \frac{1}{(1+r)^j}\mathbb{E}_t y_{t+j}\right], \tag{1}$$

where c_t denotes consumption at time t, r is the constant interest rate, y_t denotes income, and A_t is wealth. Given the solution for consumption in Equaiton (1), the change in consumption over time can be written as [11]

$$\Delta c_{t+1} = \left(\frac{r}{1+r}\right)(y_{t+1} - \mathbb{E}_t y_{t+1}) + \sum_{j=2}^{\infty} \frac{r}{(1+r)^j}(\mathbb{E}_{t+1} - \mathbb{E}_t) y_{t+j}. \tag{2}$$

Equation 2 separates the contemporaneous effect of income changes on consumption into two components. These are described by the first and the second summation terms on the right-hand side respectively. The first term implies that changes in income only have a contemporaneous effect on consumption

[11] This derivation requires as well substituting in the budget constraint, i.e. $A_{t+1} = (1+r)[A_t + y_t - c_t]$.

if they are unexpected. The second term illustrates the fact that a change in current income may convey new information about future realizations of income. If that is the case, the house hold will adjust consumption further by taking into account this new information. In summary, Equation 2 illustrates that changes in income will have the strongest contemporaneous effect on consumption when they are unexpected and have a high degree of permanency.

Since we want to estimate the effects of involuntary job loss, the use of this framework assumes that expectations about job loss and job finding once unemployed correlate with expectations about income, and that actual job loss implies a loss of income. Stephens (2004) shows that this assumption hold in the context of the US. As we have explained in Section 2, replacement rates of UI benefits in the Netherlands are in most cases around 70% and drop sharply after two years. Therefore, it is reasonable to assume that unemployment shocks will lead to an immediate drop in income, and that, if the unemployment spell is expected to be long, expectations about future income will also be affected.

Even though the framework of the basic life-cycle model provides some very useful insights for the study of the problem at hand, we acknowledge that there are additional mechanisms that may also have explanatory power. We consider here several of these mechanisms. First, if households are liquidity constrained they will not be able to smooth consumption over time even when income shocks are expected. Second, if there are complementarities between leisure and consumption, consumption will change upon job loss simply because of the increase in available free time.[12] Third, substitution between expenditures and home production may imply that expenditures decline after job loss while actual consumption is kept constant or declines by less than expenditures do. All of these situations imply that individuals may change their consumption upon job loss regardless of whether income shocks are unexpected and permanent. In our baseline empirical analysis we will be using Equation 2 as a benchmark. However, we will incorporate the mentioned additional theoretical factors in the analysis to the extent that the data allow.

[12]This insight can be introduced in the theoretical model by employing a utility function that features non-separability between leisure and consumption. In that case, the marginal utility of consumption will depend on leisure. This feature captures the notion that work-related consumption might decrease when an individual becomes unemployed, while leisure-related consumption might increase.

4 Empirical Strategy

In this section we translate the insights of the theoretical framework explained in Section 3 into an empirical specification. For that purpose, we set up the following regression equation

$$\Delta c_{it} = \gamma_0 + \gamma_1 [jobloss_{it} - \mathbb{E}_{it-1} jobloss_{it}] + \mathbf{age}'_{it}\gamma_2 + \Delta \mathbf{X}'_{it}\gamma_3 + \mathbf{t}'_t\gamma_4 + \varepsilon_{it}, \tag{3}$$

where c_{it} refers to consumption of individual i at time t; $jobloss_{it}$ is a dummy variable that takes value one if and individual suffers an involuntary job loss between periods $t-1$ and t; $\mathbb{E}_t$ is an operator denoting the expectations an individual forms conditional on the information available at t; $[jobloss_{it} - \mathbb{E}_{it-1} jobloss_{it}]$ is the unemployment shock at time t, which takes values in the interval $[0,1]$ if $jobloss_{it} = 1$, and takes values in the interval $[-1,0]$ if $jobloss_{it} = 0$; $\mathbf{age}_{it}$ is a vector of age dummies; $\mathbf{X}_{it}$ is a vector of control variables including marital status and number of children in the household; $\mathbf{t}_t$ is a vector of year dummies; and ε_{it} is the error term.

Our estimation equation is based on the previous work by Stephens (2004), who also sets up a specification distinguishing between expected and unexpected involuntary job loss. However, an issue with this specification is that it does not take into account the persistence of unemployment shocks. The theoretical model presented in Section 3 suggests that the expected persistence of unemployment shocks matters for the consumption response. Furthermore, there is a large empirical literature, inspired by Pistaferri (2001), pointing at the importance of identifying the effects of transitory and permanent income shocks separately. Stephens (2004) acknowledges the importance of the persistence of the shock. However, he does not account for it in the empirical specification. Therefore, he implicitly assumes that job loss expectations also capture expectations about the duration of the unemployment spell.

In the present paper, we go beyond the specification in Stephens (2004) and account for the persistence of unemployment shocks in our specification. To that end, we follow two different strategies. First we expand our baseline specification in Equation 3 by interacting the unemployment shock with the subjective expectation of finding a job within the coming year in case $jobloss_{it} = 1$. Second, we first show that there is a strong negative correlation between age and the expectations of finding a job once unemployed, and then interact the unemployment shock with different age dummies. By expanding

Equation 3 in these ways, the model allows individuals who expect to stay longer in unemployment to react differently from those who expect a short unemployment spell. Our strategy has an important advantage with respect to Pistaferri (2001), which is that it does not require imposing strong assumptions regarding the structure of transitory and permanent income shocks within a given income process.[13]

To account for the potential role of liquidity constraints in conditioning consumptions responses to unemployment shocks, we consider an additional expansion of our baseline specification. In this case, we interact the unemployment shock with a variable indicating whether the individual lives in a household with problems making ends meet at period $t-1$. In line with the theoretical considerations in Section 3, we argue that a household that does not have access to enough financial resources to meet its consumption needs will not be able to smooth consumption when income drops upon job loss. Therefore, this additional interaction term allows for an empirical test of the role of liquidity constraints in moderating the relationship between unemployment shocks and consumption.

Next to our main dependent variable, *i.e.* total consumption, we consider as well different subcategories of consumption as dependent variables. This allows for an empirical assessment of two other mechanisms through which job loss may lead to changes in consumption. First, by studying how leisure-related and work-related expenditures change, it allows assessing to what extent there are complementarities between leisure and consumption. Second, it allows as well investigating the potential role of home production as a way to reduce expenditures while keeping consumption constant.

5 Data

We employ data from the Longitudinal Internet Studies for the Social sciences (LISS) panel, administered by CentERdata at Tilburg University. The LISS Core Study consists of about 4,500 households representative of the Dutch population and it is run every year since 2007. It was supplemented with an additional module on time use and expenditure in the 2009, 2010, 2012, 2015, and 2017 waves. We use these five waves in our empirical analysis. To implement our empirical strategy, we select the following respondents: we keep household heads who are aged 25 to 64, who are observed for at least two

[13] Pistaferri (2001) assumes that transitory income shocks follow an AR(1) process, while permanent income shocks follow a random walk. These assumptions are crucial for his empirical strategy to be valid. However, they are difficult to test empirically.

periods, who are employed or became unemployed since the previous wave, and who have no missing data on employment status and expenditure. In addition, we drop those observations that are in the top percentile for any expenditure category. In that way, we exclude a few observations with unreasonably large values. This leaves us with 1,603 household heads and 4,762 household-year observations, which we use to calculate wave-to-wave changes in employment status and expenditure.

5.1 Job loss and expenditures

We consider thus that an individual transits to unemployment if at period $t-1$ he/she reports to be employed, while at period t he/she reports to have lost his/her job due to layoff, plant closure, or contract ending, and he/she reports to be looking for a new job. Since consumption is only available for the 2009, 2010, 2012, 2015 and 2017 waves, we take transitions into unemployment that take place between $t-1$ and t, where t denotes any of these years.[14] The data show that, for all years, out of all individuals employed at $t-1$, only about 2% have become unemployed at t. This percentage is larger for the years around the financial crisis, reaching a maximum of 2.82% in 2010, and a minimum of 1.59% in 2017.

The data on expenditures consist of retrospective questions about money spent monthly at the household level on a number of consumption categories. To define total spending we sum all expenditure categories in the data. These are food at home, house and garden cleaning, trips and vacations, debts and loans, alimony, childcare, insurances, transport, utilities, rent, mortgages, and other. Data on these categories are obtained by means of the following question:

> *Can you indicate for each type of expenditure how many euros your household spends on this on average, per month? Consider as reference period the past 12 months.*

We deflate individuals' responses using the Consumer Price Index expressing prices in 2006 euros. When pooling all households and waves together, average household spending in our sample is 1,542 Euros per month. The expenditure categories with the largest share out of this total average are mortgages (27.84%), food at home (17.64%), insurances (11.21%), and utilities (15.54%). These are followed by

[14] For all other variables in our analysis, we take wave to wave changes exclusively using the waves for which consumption is available. We use transitions into unemployment that take place between $t-1$ and t because subjective job loss and job find expectations provided by the LISS always refer to the following 12 months only.

transport (7.85%), trips and vacations (7.56%), rent (5.82%), other (5.79%), house and garden cleaning (1.99%), debts and loans (1.56%), childcare (1.54%), and alimony (0.97%).

5.2 Job loss expectations

The LISS provides information about subjective job loss expectations. We rely on the following question to assess to what extent transitions into unemployment are unexpected:

> *What is the probability of losing your job in the next 12 months on scale from 0 to 100? 100 is absolutely certain that you lose your job.*

Figure 2a provides the distribution of job loss expectations in our sample, rounded to the closest decimal point. The distribution shows that most individuals report low probabilities of losing their job. In addition, it shows signs of rounding around 0, 0.5, and 1. Columns 1 and 2 of Table 1 show that individuals above 35 years of age report higher changes of losing their job than those below that age. However, there are no noticeable differences between the age categories above 35. In addition, females, individuals with a partner, higher educated individuals, and individuals with more years of tenure in a particular job provide lower probabilities of losing their job. The effect of education disappears once occupation and sector dummies are included in the regression.

The local peaks observed at values 0, 0.5, and 1 in Figure 2a suggest not only the presence of rounding but also that there might be an issue of focal point type of answers. In that case, individuals would be responding a particular value when they do not know the answer or have high uncertainty about it, thus rendering the distribution of job loss expectations uninformative. To check for this, we link job loss expectations in period *t-1* to realizations in period *t*. Figure 2b clearly shows that individuals who report a high probability of job loss at period $t-1$, are more likely to lose their job in period t. For example, 30% of the individuals who actually lost their job reported a 100% chance of losing their job, as opposed to 2% of the individuals who did not lost their job. The figure also shows that there is a non-negligible share of individuals who lose their job at t while reporting low probabilities of such event at $t-1$ (25% of the individuals who lost their job reported a probability of job loss less than 20% in the year before). These individuals provide interesting cases for our analysis since they are the ones who are surprised by the job loss.

In columns 1 and 2 of Table 2 we further investigate the relation between job loss and subjective job loss probabilities. The results show that an additional decimal point in the subjective probability of job loss increases the chance of actual job loss by 1.50%. Therefore, individuals who report a 100% chance of losing their job are 15% more likely to actually lose it compared to those who report a zero chance. However, this effect is substantially diminished once age, education, tenure, sector, and occupation are included in the regression. Column (2) shows that older workers are more likely to loose their job, while job tenure reduces the probability to lose a job. In addition to these socio-demographic variables, job loss expectations have predictive power; respondents who report a 100% chance of losing their job are 2.3% more likely to lose their job (note that on average 2% of the individuals become unemployed between period *t-1* and *t*).

Columns 1 and 2 of Table 3 show that job loss expectations negatively correlate with individual's financial expectations. The latter are measured by means of a question in the LISS asking respondents whether they expect their financial situation to get better or worse over the coming year. The answers are given on a scale from one to five meaning "a lot worse", "a bit worse", "the same", "slightly better", and "much better". The negative relationship between job loss expectations and financial expectations implies that, even taking the generosity of the Dutch UI benefit system, individuals expect their income to decline in case they become unemployed. This negative relationship is nearly unaltered when controlling for socio-demographic characteristics.

5.3 Job find expectation

To gain a better understanding of the permanency of job loss, we investigate job finding expectations among the unemployed. The following question is asked to unemployed respondents:

> *What is the probability of finding job in the next 12 months on scale from 0 to 100? 100 is absolutely certain that you find a job.*

Pooling all waves together, the LISS sample contains 760 individual-wave observations in unemployment, from 153 unique individuals. In 523 of these observations subjective job find probabilities are non-missing. Based on this sample, Figure 2c provides the distribution of subjective job find probabilities. For example, 20% of the unemployed individuals do not expect to find a job in the next 12

months, 20% thinks the chance will be 50%, and 10% feel certain about finding a job. Columns 3 and 4 of Table 1 show that older unemployed individuals report substantially lower probabilities of finding a job compared to younger unemployed individuals. In addition, unemployed individuals with a university degree provide higher probabilities of finding a job compared to those with lower levels of education.

Figure 2d shows that those who found a job reported higher job finding probabilities than those who did not find a job. This suggests that subjective job find expectations have some predictive power when it comes to actual job finding. This is confirmed by the results in Columns 3 and 4 of Table 2, which show a large effect of subjective job find probabilities at $t-1$ on actual job finding at t. Similarly to the case of subjective job loss probabilities, the estimated effect becomes smaller once we control for socio-demographic characteristics. Interestingly, even though Table 1 shows that older individuals report substantially lower probabilities of finding job when they are unemployed, Table 2 shows that age does not have an effect on the probability of actual job finding when we take job finding expectations into account.

Columns 3 and 4 of Table 3 show that also subjective job find probabilities are correlated with the expected financial situation of individuals. In this case, the estimated coefficients are positive and larger in absolute terms compared to those in Columns 1 and 2. This suggests that when individuals are unemployed and expect to find a job within the coming year they also expect their income to increase.

6 Results

6.1 Total consumption

In Table 4, we present our baseline estimates of the effect of job loss on total consumption spending as outlined in Equation 3. The controls used in the regressions are age dummies, the change in marital status, the number of children, and year dummies. Since the regressions are estimated in first-differences, we control for time-invariant unobserved characteristics. First, we estimate the impact of facing a job loss on consumption in column (1). The indicator variable for being displaced between two waves shows that those who face a job loss reduce total consumption spending by about 269 euros per month and this decrease is highly significant. Relative to the average total consumption spending, this reduction

in consumption is about 18% of total spending. The estimated impact of unemployment on spending unconditional on expectations indicates that consumption spending responds to job loss regardless of the unexpectancy of job loss.

In column (2) we present the estimation results of the consumption spending changes due to the error in expectations regarding job loss, e.g. the shock of unemployment. As shown in Equation 3, the shock is defined as the job loss realization minus the subjective job loss probability. The shock is negative for those who do not lose their job, and positive for those who lose their job. The larger the value of the shock, the more surprised the household head is regarding his or her job status. We expect to see larger consumption spending decreases when the shock is more positive, and larger consumption spending increases when the shock is more negative. The estimated coefficient of the shock indicates that a fully unexpected shock in unemployment, decreases total spending by about 84 euros per month which is about 6% of total average spending.

As argued by Stephens (2004), effects of shocks may be asymmetrical in unexpected job loss and job stay. The decrease in consumption spending after unexpected job loss may be different from the increase after unexpected job stay. To address this concern, we split the shock in column (3). Our results suggest that a no job loss shock increases total consumption spending but the increase is not significantly different from zero. In terms of the LCM, this should imply that these shocks have a transitory and no permanent nature. A job loss shock substantially decreases consumption spending by about 517 euros per month (about 34% of total average spending). This effect is highly significant. The estimation results in column (3) suggest that much of the effect of the shock in column (2) is attributable to the shock of those who become unemployed.

In Column (4), we show the estimation results of the effect of a job loss shock on total consumption spending while taking into account the persistency of the unemployment. The persistency is measured by the job finding expectations once unemployed. Those who face a job loss shock and do not expect to find a job next year decrease total spending by about 243 euros per month. This effect is not significantly different from zero. Those who face a job loss shock and who are certain to find a job next year decrease total spending by about 489 (sum of 243 and 246) euros per month. Hence, a lower persistency of

the unemployment shock gives bigger consumption responses which contrasts the LCM. However, the decrease in spending by about 489 euros per month is not significantly different from zero. Moreover, the interaction term between the job loss shocks and job finding expectations is not significant and suggests that there is no significant difference between a low or high persistency of the job loss shock. This contradicts the LCM in which only unexpected and persistent shocks induce changes in consumption. Our results suggest that the substantial effect of job loss shocks on total consumption spending found in column (3) are not particularly due to the most persistent shocks. However, we should note that estimated effects regarding job finding probabilities are relatively imprecise partially due to a loss of relevant observations.

6.2 Heterogeneous effects of age and liquidity

To increase our understanding of the underlying mechanisms, we take columns (1) and (3) in Table 4 as our baseline estimations and present heterogeneous effects in this section. In particular, we are interested in the heterogeneous effects with regard to age and households' ability to make ends meet. Age may capture the effects of both persistency and liquidity constraints as older workers report to be less likely to find a job once unemployed (see Table 1) and older workers are more likely to have accumulated (precautionary) savings (Michelacci & Ruffo, 2015). We present the estimation results of the heterogeneous effects in Table 5.

In column (1), the indicator variable for being displaced between two waves shows that those 25-49-year olds and 50-64-year olds who face a job loss decrease total consumption spending significantly by about 307 and 250 euros per month, respectively. The difference in the spending drop between the two age categories is not significant which suggests that the two age categories respond similarly to job loss. However, column (2) suggests that the older age group decreases consumption spending more substantially in response to a job loss shock: 25-49 year olds decrease spending by about 365, and 50+ year olds decrease spending by about 596 euros per month.[15]

Similarly, in columns (3) and (4) we differentiate between those who report to be liquidity constrained and those who are not. Those who are not constrained are assumed to be able to make ends

[15] P-value = 0.09.

meet well or very well. Those who are constrained are assumed to be unable, likely unable, or neutral to make ends meet. We find that those who are liquidity constrained respond less to being displaced. The constrained reduce total consumption spending by about 232 euros per month while the not constrained reduce total consumption by about 309 euros per month.[16] The same holds for the effect of the job loss shock: constrained households decrease spending by about 346 and not constrained households decrease spending by about 696 euros per month.[17] This result is consistent with our estimates in Table 4 where the effect of job loss becomes much bigger once expectations are taken into account. Our findings regarding the importance of liquidity constraints contradict the LCM and suggest that UI benefits are sufficiently generous for liquidity constrained households to mitigate some of the impact of unexpected job loss on consumption spending.

According to the estimation results of the heterogeneous effects liquidity constraints are not a big concern in explaining consumption drops when facing job loss shocks in the Netherlands. In contrast, 50+ year olds face relatively substantial shocks. This combination of results in which liquidity constraints do not seem to matter much may suggest that the substantial decreases in spending for 50+ year olds is particularly due to difficulties finding a new job and, hence, the persistency of the job loss shock. Age is a substantial predictor of job finding probabilities once unemployed, which can be seen in Table 1, and has less variance around the mean than actual subjective job finding probabilities. Therefore, it may capture the persistency of job loss shocks better than the subjective job finding probabilities.

6.3 Consumption categories

In Table 6 we disaggregate total household consumption spending into 12 household spending categories. This disaggregation provides us with information on which categories are most responsive to job loss shocks. Contrasting studies that analyze a single spending category such as food spending (Stephens, 2004; Aguiar & Hurst, 2005), this allows us to draw conclusions regarding leisure-complementary and home production substitutable spending.

Firstly, we find some reasonable evidence for substitution between spending and home production. Given a negative intertemporal elasticity of substitution between spending and home production, as

[16] Estimated coefficients are not significantly different though.
[17] Estimated coefficients are not significantly different though.

suggested by Aguiar & Hurst (2005), it is expected to see decreases in spending categories that can be substituted by home production. We find a relatively substantial increase in food spending at home in response to a job loss shock (about 26 euros per month). This increase in spending is likely due to substituting away from food consumption outside of the home and is consistent with increased home production at unemployment (Aguiar & Hurst, 2005). However, the point estimate is relatively imprecise and not significant. We find that a job loss shock decreases spending on cleaning the house (including gardening) by about 19 euros per month. This effect is significant and may suggest that households substitute away from hired housekeepers and gardeners to cleaning and gardening themselves, which would be consistent with increased home production at unemployment. Similar to food and cleaning, childcare has both a market variant and a home-produced variant, but we do not find decreased childcare spending suggesting that households do not substitute away from childcare centers. Instead, we find that job loss shock increases spending in childcare although the effect is not significant.

Secondly, we find little evidence for leisure-complementary spending. Given an increasing marginal utility of consumption in leisure (Laitner & Silverman, 2005), it is expected to observe increases in consumption categories that correlate positively with the number of hours of leisure and negatively with the number of work hours. We find a small but insignificant increase in utilities with about 9 euros per month which may be due to spending more time at home. In contrast, we find a relatively substantial decrease of about 40 euros per month in holidays and trips albeit not significant. Although having more time available when unemployed, households do not use this time to have more or more expensive holidays and trips. Since unemployed do not have to commute to work daily, we expect to see a decrease in work-related spending such as transport. We find a relatively substantial and significant decrease in transport expenses (about 64 euros per month). For displaced workers in general, we do find a significantly negative effect. We find a substantial reduction in spending on other undefined expenses. Many of the interpreted expenses in this category are related to leisure expenses such as sports, hobbies, cinema, etc. such that this result shows no evidence for increases in leisure-complementary spending. Instead, the significantly negative effect suggests that the marginal utility of spending on these leisure categories decreases when leisure increases.

We find no significant effects of job loss shocks on spending regarding alimony, rent, and mortgage. These spending categories are unrelated to leisure and home production and, moreover, often contain more long-term contracts. Although unrelated to leisure and home production, we do find significant effects of job loss shocks on spending regarding debt and insurance. Since debt includes repaying it is likely that unemployed households reduce paying off debt which is consistent with unemployed households saving less. This suggests that households tend to decrease savings in favor of spending when facing a job loss shock suggesting some degree of myopia. Moreover, it shows that job loss shocks are also likely to affect households' balance sheets. A job loss shock also substantially reduces spending on insurances. Although insurances are often long-term contracts, our measure also includes spending on basic and additional health insurances which can be changed once a year towards the end of the year. A job loss shock seems to induce shopping for a cheaper health insurance or cutting additional health insurances.

6.4 Consumption categories and heterogeneity

In Table 7 we show the heterogeneous effects of age on spending categories. For the 25-49 year olds we only find significant decreases in response to the unemployment shock in spending on alimony and transport. We find no significant changes in home production-related spending and, apart from substantially decreases transportation costs, no significant changes in leisure-complementary spending. Consistent with Table 5 we find that 50-64 year olds generally respond more strongly to the unemployment shock. For this age group, estimation results are largely in line with the estimation results in Table 6. An unemployment shock seems to induce a shift from consumption spending to home production in the older age group: there is a substantial increase in food at home spending (though not significant) and reduced spending on cleaning the house. An unemployment shock also seems to induce spending on leisure-complementary consumption categories (increase in utilities though not significant) and decreases in work-related spending such as transportation (though this effect is smaller than for the younger age group). However, we also observe that the older age group cuts spending on holiday trips substantially. Our estimation results also indicate that the cuts in debt expenses in response to an unemployment shock are not due to a particular age group. In contrast, we find that especially the older age group cuts spend-

ing (health) insurances. Also, we find that the older age group reduces mortgage spending in response to an unemployment shock implying that the older age groups saves less in response to the unemployment shock. Hence, the effect of job loss shocks on households' balance sheets may especially be apparent in older households.

The lack of substantial spending responses of the young age group in Table 7 suggests that liquidity constraints are relatively unimportant in explaining consumption behavior of the unemployed in the Netherlands. Meaning that most of the changes in total consumption we find in Table 4 is due to the unexpected decrease in income, home production, and leisure-consumption complementarities. In Table 8 we show the heterogeneous effects of liquidity constraints on spending categories. Consistent with Table 6, we find that non-constrained households change spending more than constrained households in most categories. Whereas constrained households do not change spending, non-constrained households significantly decrease spending on cleaning, transport, and mortgages. Their endowment in these spending categories may be such there is more scope for reduction. Non-constrained household are, for example, more likely to have a housecleaner (and/or gardener) which can be cut in response to an unemployment shock. Hence, the importance of home production is likely to differ between (non-)constrained households. Though not significant, this is confirmed by food spending at home. Similarly, they might have had a longer commute which allows them to decrease commuting expenses much more. The changes in other leisure-complementary spending seems to heavily depend on the type of spending. For example, non-constrained households increase spending on holiday trips (52 euros), but constrained households primarily increase spending on utilities (46 euros) and decrease spending on hobbies and such ('other' category, 80 euros) and not on holidays and trips. We find that non-constrained households reduce spending on their mortgage more substantially than constrained households. This suggests that non-constrained households have a bigger scope for decreasing repayments. Similarly, constrained households are likely to have accumulated (more) non-mortgage debt of which the repayment is more substantially reduced after an unemployment shock. Finally, we find that especially the constrained households decrease insurance spending.

7 Conclusion

Although the seminal Life-Cycle Model (LCM) predicts changes in consumption to unexpected and persistent shocks only, our estimation results suggest that households decrease total consumption spending in response to unemployment. Households primarily respond to unforeseen unemployment shocks in which job loss is unexpected but apparent. Taking into account the persistency of job loss shocks by subjective job finding expectations gives little extra information. Additionally, we show that the decrease in total spending in response to an unemployment shock differs between age groups and liquidity constraints. Age is shown to be a strong predictor of job finding expectations and, hence, persistence of job loss. We conclude that liquidity constraints are relatively unimportant in explaining consumption responses to unemployment shocks and that different age-effects are most likely due to the difference in persistency of unemployment shocks. This implies that earlier estimates by Stephens (2004), who focuses on the 50+ population, are likely to be non-generalizable to the whole population.[18]

Disaggregating total consumption spending to 12 household consumption spending categories gives no evidence for substantial increases in leisure-complementary spending apart from reducing commuting expenses. However, we find some reasonable evidence for households substituting away from consumption spending to home produced alternatives especially regarding food at home and cleaning expenses. Hence, despite reducing total consumption spending by about 34% in response to an unexpected job loss, households seem to be able to mitigate this effect by increasing home production. However, given the different consumption categories it is unlikely that home production can fully insure against unemployment shocks, such as suggested by Aguiar & Hurst (2005), which is in line with US evidence regarding wealth shocks Been et al. (2019). Given our estimated effects on debt (re)payments, our results suggest that households tend to decrease savings in favor of spending when facing a job loss shock suggesting some degree of myopia. Therefore, job loss shocks are also likely to affect households' balance sheets.

Regarding the heterogeneity in responses to job loss shocks, we find that consumption patterns in response to unexpected job loss differs by age groups and liquidity constraints. Younger and liquidity-constrained households generally tend to respond less strongly which may partially be due to differences

[18] This also applies to Hendren (2017) who builds upon Stephens (2004) and also uses HRS 50+ data.

in the endowment of spending and possibilities to reduce spending substantially. Therefore, liquidity constraints may not be strongly related to total consumption responses but it does seem to be important for consumption patterns. Similarly, age-effects, including differences in the persistency of unemployment, is related to both changes in consumption levels and patterns.

Our analysis provides new and detailed insights into households' consumption behavior in response to unemployment shocks. These insights help us improve our understanding of the LCM and its assumptions. An important takeaway from our analysis is that the often used food spending (Aguiar & Hurst, 2005), or even total consumption spending, may not give a representative response in consumption patterns to job loss. Also, leisure-complementary spending may not give a consistent view as suggested by theory (Laitner & Silverman, 2005) as different leisure categories response differently to job loss. This makes it difficult to understand life-cycle consumption behavior by simply allowing for complimentary effects between consumption and leisure in the LCM. Next, unemployed households tend to shift away from spending to home production in potentially substitutable spending categories thereby mitigating the effect of job loss on welfare (Aguiar & Hurst, 2005), but the size of substitution makes it highly unlikely that households can fully self-insure against job loss shocks using home production (Been et al., 2019). Finally, our results suggest that it is important to take into account the persistency of job loss (Mueller et al., 2018). Especially, since older age groups respond more strongly to job loss shocks which is shown to be unrelated with liquidity constraints. These takeaways have important consequences for future analyses of optimal unemployment insurance (Michelacci & Ruffo, 2015; Hendren, 2017).

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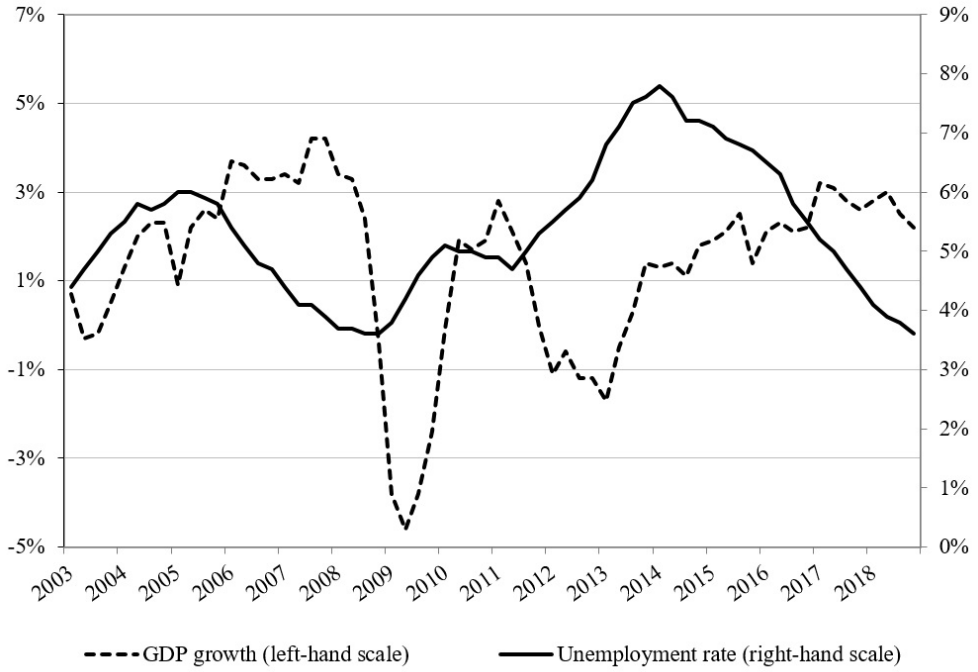
Figures

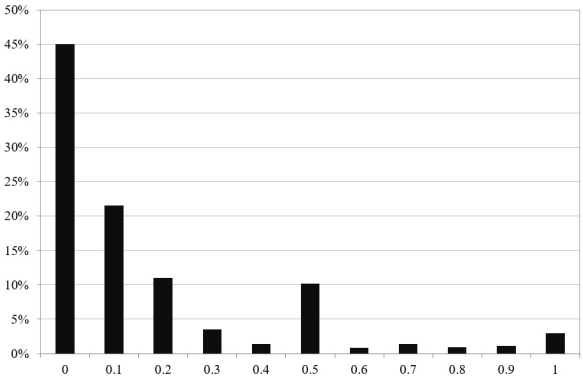
Figure 1: Unemployment Rate and GDP Growth



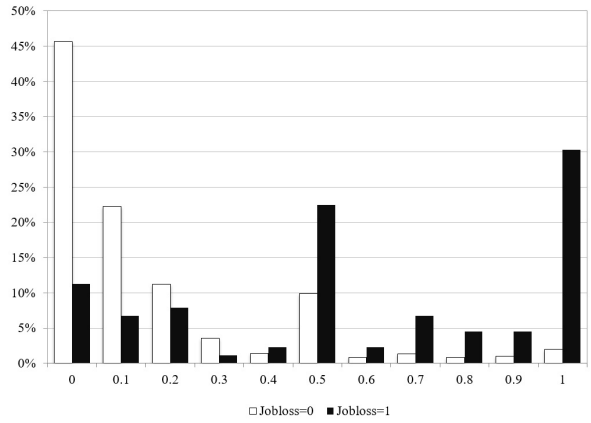
Source: Statistics Netherlands. *Notes*: GDP is given in nominal terms. Unemployment is seasonally adjusted.

Figure 2: Job Loss and Job Find Expectations

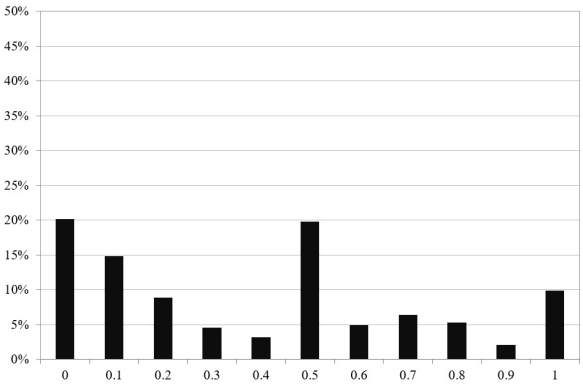
(a) Job Loss Expectations



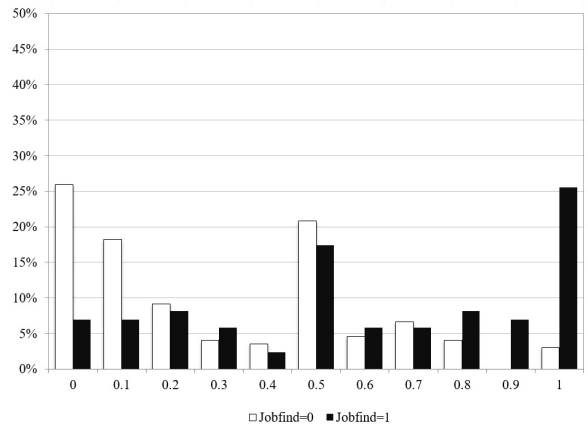
(b) Job Loss Exp. by Job Loss Outcome



(c) Job Find Expectations



(d) Job Find Exp. by Job Find Outcome



Notes: Probabilities are rounded to the nearest decimal point. Panels b and d report expectations at $t-1$ by outcome at t.

Tables

Table 1: Determinants of Job Loss and Job Find Expectations

	Dep. variable: job loss exp.		Dep. variable: job find exp.	
Variable	(1)	(2)	(3)	(4)
Age				
35 to 44	0.082***	0.076***	0.064	0.029
	(0.015)	(0.014)	(0.048)	(0.049)
45 to 54	0.076***	0.078***	-0.130***	-0.145***
	(0.015)	(0.015)	(0.044)	(0.046)
55 to 64	0.079***	0.089***	-0.329***	-0.340***
	(0.016)	(0.016)	(0.041)	(0.044)
Female	-0.024**	-0.007	-0.023	-0.034
	(0.011)	(0.012)	(0.038)	(0.039)
Partner	-0.034***	-0.037***	0.032	0.020
	(0.010)	(0.010)	(0.037)	(0.038)
Education				
Secondary	-0.033*	-0.013	-.0007	0.005
	(0.017)	(0.018)	(0.039)	(0.041)
Professional education	-0.043***	-0.006	0.063	0.068
	(0.015)	(0.017)	(0.039)	(0.043)
University	-0.063***	0.004	0.142***	0.141***
	(0.018)	(0.021)	(0.047)	(0.054)
Tenure				
4 to 9 years	-0.028**	-0.022		
	(0.014)	(0.013)		
10 to 19 years	-0.080***	-0.072***		
	(0.014)	(0.014)		
20+ years	-0.098***	-0.090***		
	(0.015)	(0.014)		
Occupation dummies	No	Yes	No	Yes
Sector dummies	No	Yes	No	Yes
Observations	2,835	2,835	523	523
$\mathbb{R}^2$	0.044	0.090	0.278	0.345

Notes: Coefficients are estimated by means of pooled OLS. Standard errors are clustered at the individual level. *Significant at the 10% level, **significant at the 5% level, ***significant at the 1% level.

Table 2: Job Loss and Find Expectations and Realizations

	Dep. variable: job loss		Dep. variable: job find	
Variable	(1)	(2)	(3)	(4)
Job loss expectation at $t-1$	0.150***	0.023***		
	(0.010)	(0.005)		
Job find expectation at $t-1$			0.568***	0.190**
			(0.070)	(0.145)
Age				
35 to 44		0.000		-0.098
		(0.004)		(0.089)
45 to 54		0.009		0.015
		(0.004)		(0.077)
55 to 64		0.010**		-0.049
		(0.005)		(0.077)
Female		0.000		0.129**
		(0.003)		(0.057)
Partner		-0.002		0.119
		(0.003)		(0.138)
Education				
Secondary		0.002		0.012
		(0.004)		(0.075)
Professional education		0.006		0.105
		(0.006)		(0.085)
University		0.014		0.011
		(0.009)		(0.096)
Tenure				
4 to 9 years		-0.008		
		(0.005)		
10 to 19 years		-0.010**		
		(0.005)		
20+ years		-0.012**		
		(0.005)		
Occupation dummies	No	Yes	No	Yes
Sector dummies	No	Yes	No	Yes
Observations	2,835	2,835	283	283
$\mathbb{R}^2$	0.060	0.822	0.167	0.561

Notes: Coefficients are estimated by means of pooled OLS. Standard errors are clustered at the individual level. *Significant at the 10% level, **significant at the 5% level, ***significant at the 1% level.

Table 3: Job Loss and Find Expectations and Financial Expectations

	Dep. variable: expected financial situation			
Variable	(1)	(2)	(3)	(4)
Job loss expectation	-0.76***	-0.783***		
	(0.065)	(0.068)		
Job find expectation			1.445***	1.364***
			(0.146)	(0.179)
Age				
35 to 44		-0.154***		-0.083
		(0.050)		(0.208)
45 to 54		-0.219***		-0.226
		(0.053)		(0.196)
55 to 64		-0.279***		-0.123
		(0.055)		(0.197)
Female		0.022		0.059
		(0.069)		(0.161)
Partner		-0.068		-0.028
		(0.066)		(0.157)
Education				
Secondary		0.021		0.134
		(0.060)		(0.183)
Professional education		0.0211		0.131
		(0.055)		(0.203)
University		0.042		0.231
		(0.066)		(0.255)
Tenure				
4 to 9 years		-0.084**		
		(0.042)		
10 to 19 years		-0.123***		
		(0.045)		
20+ years		-0.121**		
		(0.046)		
Occupation dummies	No	Yes	No	Yes
Sector dummies	No	Yes	No	Yes
Observations	2,768	2,768	484	484
$\mathbb{R}^2$	0.068	0.100	0.205	0.265

Notes: Coefficients are estimated by means of pooled OLS. Standard errors are clustered at the individual level. *Significant at the 10% level, **significant at the 5% level, ***significant at the 1% level.

Table 4: Effect of Unemployment Shocks on Total Expenditure

	Dependent variable: change in total expenditure			
Variable	(1)	(2)	(3)	(4)
Job loss	-269.30*** / 17.70%			
	(92.07)			
Shock		-84.19** / 5.53%		
		(53.30)		
Shock (no job loss)			-25.43 / 1.67%	
			(58.25)	
Shock (job loss)			-516.85*** / 33.97%	-243.13 / 15.97%
			(141.98)	(349.94)
Job find expectation				-61.56 / 4.05%
				(244.02)
Shock (job loss)× job find exp.				-246.03 / 4.84%
				(943.42)
Age				
35 to 44	-73.85	-82.52*	-80.24	-76.09
	(49.34)	(49.78)	(49.67)	49.81
45 to 54	-128.88***	-137.64***	-134.66***	-134.06***
	(47.40)	(47.76)	(47.66)	47.88
55 to 64	-124.62***	-134.87***	-129.89***	-129.06***
	(155.56)	(48.65)	(48.47)	48.83
Δ Marital status				
Single to married	91.60	81.59	89.53	90.77
	(93.75)	(94.28)	(93.70)	94.06
Married to single	29.46	24.36	32.20	26.38
	(166.74)	(167.21)	(166.71)	167.11
Δ Nr. of children	80.73**	82.58**	81.68**	87.14**
	(39.11)	(39.38)	(39.33)	39.22
Observations	3,159	3,159	3,159	3,131
$\mathbb{R}^2$	0.011	0.009	0.012	0.010

Notes: Standard errors are clustered at the individual level. *Significant at the 10% level, **significant at the 5% level, ***significant at the 1% level.

Table 5: Effect of Unemployment Shocks on Total Expenditure - Interaction Effects

	Dependent variable: change in total expenditure			
Variable	(1)	(2)	(3)	(4)
Job loss - age 25-49	-306.53* / 19.44% (161.54)			
Job loss - age 50-64	-249.58** / 17.21% (111.11)			
Shock (job loss) - age 25-49		-365.39** / 23.18% (143.70)		
Shock (job loss)- age 50-64		-596.38*** / 41.12% (194.62)		
Job loss - not constrained			-309.49** / 19.72% (133.27)	
Job loss - constrained			-232.44* / 16.37% (128.04)	
Shock (job loss) - not constrained				-695.81*** / 44.33% (230.90)
Shock (job loss) - constrained				-345.72** / 24.34% (147.91)
Observations	3,159	3,159	3,111	3,111
$\mathbb{R}^2$	0.011	0.010	0.012	0.010

Notes: Standard errors are clustered at the individual level. *Significant at the 10% level, **significant at the 5% level, ***significant at the 1% level.

Table 6: Effect of Unemployment Shocks on Expenditure - Disaggregated

	Food	Cleaning	Holidays	Debt
Job loss	2.48 / 0.97%	-15.22** / 54.31%	-36.80** / 35.98%	-20.94* / 85.42%
	(23.25)	(7.44)	(18.99)	(12.04)
Shock (job loss)	25.97 / 10.21%	-19.22** / 68.57%	-39.96 / 39.07%	-39.12* / 159.54%
	(41.22)	(8.45)	(29.48)	(23.51)
	Alimony	Childcare	Insurance	Transport
Job loss	-5.47 / 34.85%	6.54 / 30.33%	-36.97** / 23.14%	-40.85*** / 36.66%
	(7.41)	(6.59)	(17.98)	(12.64)
Shock (job loss)	-27.17 / 172.82%	2.28 / 10.58%	-81.02** / 50.72%	-64.23*** / 57.65%
	(17.28)	(5.63)	(32.45)	(23.60)
	Utilities	Rent	Mortgage	Other
Job loss	13.67 / 15.09 %	4.40 / 4.91%	-27.59 / 6.98%	-33.11* / 40.96%
	(8.92)	(15.45)	(37.37)	(17.28)
Shock (job loss)	9.11 / 5.94%	15.63 / 17.41%	-100.93 / 25.53%	-57.05* / 70.5%
	(17.84)	(30.03)	(67.88)	(30.57)

Notes: All regressions employ the same sample as in Table 4. Standard errors are clustered at the individual level. *Significant at the 10% level, **significant at the 5% level, ***significant at the 1% level.

Table 7: Effect of Unemployment Shocks on Expenditure - Age Interaction - Disaggregated

	Food	Cleaning	Holidays	Debt
Job loss - age 25-49	-33.89 / 13.64% (29.53)	-27.27** / 101.11% (11.82)	9.11 / 9.60% (18.23)	-30.92 / 113.23% (20.15)
Job loss - age 50 - 64	21.91 / 8.34% (31.90)	-8.41 / 9.36% (29.31)	-61.41** / 55.90% (26.86)	-15.64 / 83.59% (14.95)
Shock (job loss) - age 25-49	-3.89 / 1.56% (59.32)	-21.51 / 79.73% (19.17)	24.44 / 25.77% (29.27)	-36.28 / 132.83% (27.12)
Shock (job loss) - age 50-64	39.01 / 14.85% (54.50)	-18.28** / 63.67% (8.14)	-75.33* / 68.57% (42.00)	-40.50 / 216.45% (32.81)
	Alimony	Childcare	Insurance	Transport
Job loss - age 25-49	-3.27* / 32.83% (1.70)	15.13 / 34.84% (18.14)	-26.26 / 17.31% (25.41)	-35.92** / 31.55% (15.10)
Job loss - age 50 - 64	-7.11 / 31.60% (11.35)	1.79 / 118.71% (2.15)	-43.33* / 25.70% (23.90)	-43.37** / 40.43% (17.64)
Shock (job loss) - age 25-49	-6.30** / 63.16% (3.17)	8.00 / 18.43% (13.76)	-46.42 / 30.59% (43.56)	-77.22***/ 67.83% (29.38)
Shock (job loss) - age 50-64	-37.02 / 164.50% (25.40)	0.46 / 31.08% (3.15)	-95.95** / 56.92% (42.93)	-56.80* / 52.95% (32.23)
	Utilities	Rent	Mortgage	Other
Job loss - age 25-49	-6.26 / 4.38% (30.01)	2.23 / 2.71% (14.47)	18.59 / 3.97% (72.25)	-59.15* / 72.20% (31.03)
Job loss - age 50 - 64	24.54 / 15.25% (16.26)	5.46 / 5.90% (22.42)	-50.93 / 16.09% (41.81)	-18.58 / 23.53% (20.20)
Shock (job loss) - age 25-49	-5.53 / 3.87% (29.68)	-7.48 / 9.09% (28.66)	4.01 / 0.85% (120.76)	-75.25 / 91.85 % (48.48)
Shock (job loss) - age 50-64	17.12 / 10.64% (22.31)	25.33 / 27.36% (42.61)	-145.02* / 45.82% (80.16)	-50.46 / 63.91% (39.28)

Table 8: Effect of Unemployment Shocks on Expenditure - Liquidity Constraints - Disaggregated

	Food	Cleaning	Holidays	Debt
Job loss - not constrained	19.11 / 7.31% (37.88)	-13.50 / 45.35% (13.28)	-54.35** / -44.83% (23.44)	-5.41 / 38.40% (16.32)
Job loss - constrained	-11.98 / 4.83% (28.30)	-16.56** / 66.99% (7.69)	-19.76 / 28.27% (28.98)	-34.39** / 93.42% (17.07)
Shock (job loss) - not constrained	48.61 / 18.59% (65.32)	-24.68* / 82.93% (12.99)	51.76** / 42.70% (24.24)	-10.42 / 73.98% (26.78)
Shock (job loss) - constrained	-0.30 / 0.12% (47.62)	-14.59 / 59.01% (10.48)	28.29 / 40.47% (54.28)	-68.23* / 185.32% (36.85)
	Alimony	Childcare	Insurance	Transport
Job loss - not constrained	-5.96 / 37.31% (15.65)	1.59 / 7.15% (2.69)	-43.08 / 26.21% (29.77)	-54.05*** / 46.49% (20.68)
Job loss - constrained	-5.04 / 31.18% (3.32)	11.57 / 53.70% (12.16)	-32.31 / 21.02% (21.38)	-29.02* / 28.71% (15.19)
Shock (job loss) - not constrained	-39.28 / 245.82% (32.45)	-1.18 / 5.30% (3.97)	-77.27 / 47.01% (50.87)	-83.07**/ 71.45% (33.38)
Shock (job loss) - constrained	-12.66 / 78.32% (8.94)	5.21 / 24.21% (10.45)	-80.74**/ 52.54% (39.95)	-45.21 / 44.73% (31.48)
	Utilities	Rent	Mortgage	Other
Job loss - not constrained	0.47 / 0.30% (18.05)	35.79 / 59.26% (24.74)	-96.57* / 22.11% (57.81)	-9.91 / 11.42% (21.56)
Job loss - constrained	25.66 / 17.00% (23.25)	-24.18 / 18.49% (19.04)	32.33 / 10.08% (46.45)	-51.75** / 73.63% (25.59)
Shock (job loss) - not constrained	-27.96 / 18.26% (25.87)	75.80 / 125.50% (48.11)	-243.97** / 55.85% (117.56)	-36.10 / 41.61% (35.74)
Shock (job loss) - constrained	46.39* / 30.74% (23.95)	-46.89 / 35.87% (36.42)	45.49 / 14.19% (41.81)	-79.96* / 113.78% (48.72)