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Financial Buffers, Unemployment Duration and Replacement Labor Income*

Mats Levander†

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Abstract

This study examines how the financial buffer of unemployed individuals affects the duration of their unemployment and their replacement income after they find a new position. The analysis is conducted on a highly detailed Swedish dataset that includes information on households' balance sheets. Liquid financial wealth and net wealth both have a positive effect on unemployment duration, which is consistent with the theory that individuals with financial buffers are able to search for new positions for longer periods of time. Moreover, individuals with financial buffers use that extended period of time to search for new positions that offer higher labor income replacement rates.

Keywords: Financial buffer, mass layoff, unemployment.

JEL codes: D10, D14.

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1 Introduction

The permanent income model (see, e.g., Deaton (1992)) states that when a household experiences an income shock, it will smooth consumption if the shock is transitory and adjust consumption if the shock is permanent. The permanent income model also indicates that savings respond to transitory declines in income by falling (Campbell (1987)). In other words, households will dissave or borrow. However, these results rely on the assumption of perfect credit markets in which households can borrow as much as they want. If this assumption is relaxed, households might face credit constraints and be unable to borrow to smooth out negative income shocks. In such cases, their consumption will be below the utility-maximizing level of the perfect credit market assumption. The borrowing constraints are more likely to bind the sharper the income drop is, the more indebted the household is, and the fewer assets the household has. Sullivan (2008) investigates whether unsecured debt works as a safety net during unemployment using data from the US. He finds that low-asset households have insufficient access to unsecured credit, while households with more assets borrow and wealthy households do not need to borrow. Based on survey data from several countries, Kaplan et al. (2014) present evidence that many wealthy households tend to have little liquid wealth.[1] Therefore, these wealthy "hand-to-mouth" households tend to consume all of their income in every pay period. They thus have a high marginal propensity of consumption to transitory income changes. Credit can play a useful role in consumption smoothing for these households, which do not appear to be liquidity constrained at first glance.

Given these findings, a financial buffer in the form of financial wealth, real assets, or access to credit is crucial for smoothing consumption in the face of transitory income shocks. Individuals can self-insure through these types of buffers and they can be of particular importance for occupations characterized by high labor-income risk. Betermier et al. (2012) show that households adjust their portfolios when switching jobs between industries with different wage volatilities. These findings are consistent with households hedging their human-capital risk on the stock market.[2] If income shocks can be anticipated, then individuals can prepare for them through precautionary savings. Basten et al. (2016) analyze Norwegian administrative data and find that some households can foresee an upcoming job loss and engage in precautionary saving. Prior to the job loss, these households also shift their assets from riskier to safer and they deplete their savings during the unemployment spell.

In this paper, I empirically examine the effect of having a household financial buffer (i.e., liquid financial wealth, net wealth) on unemployment using detailed Swedish administrative data. More specifically, I examine how households' financial buffers affect the duration of unemployment and the replacement rate of labor income when a new position is found.[3] The analysis is conducted on a very detailed Swedish dataset that gives a complete picture of households' balance sheets without the measurement

[1] Sweden is not part of this survey evidence.

[2] Households that switch from industries with low wage volatility to industries with high wage volatility reduce their share of risky assets.

[3] Labor income from the new position divided by labor income from the position prior to layoff.

errors that are common in survey data. As unemployment events may not be exogenous (e.g., a worker can anticipate unemployment, plan to become unemployed, or be fired for unobserved reasons), I focus on individuals who experience mass layoffs. Such events are generally considered to be exogenous to individual characteristics (see, e.g., Jacobson et al. (1993)). Nevertheless, a household's balance-sheet position at the time of the layoff event may not be exogenous. To alleviate endogeneity issues, I measure household financial buffers in the years prior to the layoff event year.

I find that having a buffer in the form of financial wealth has a positive effect on *both* unemployment duration *and* replacement labor income when a new position is found, which is consistent with households being able to use the buffer to smooth consumption and search more thoroughly for a new position.[4] A standard deviation increase in financial wealth increases unemployment duration by 7% at the sample average, which is more than three weeks, while replacement labor income rises by 3% at the sample average.[5] This means that if a household can replace an additional 1.5 years of labor income via a financial-wealth buffer, the unemployment duration increases by more than three weeks which also materializes in a higher labor income once a new position is found. I find similar results for net wealth. A standard deviation increase in net wealth increases unemployment duration by 8%, which is more than three weeks, and replacement labor income by 4%. Given the positive effects for both financial wealth and net wealth, I split net wealth into financial wealth and home equity to disentangle their impacts. The results suggest that financial wealth is the key driver of the results, which is plausible given that financial wealth is the more readily available of the two buffers.

I also find cross-sectional effects. Household financial wealth is further analyzed by exploring whether it matters who has the financial wealth among married couples or cohabiting partners. I find that it is the financial wealth of the displaced worker's spouse or cohabiting partner that is important. The impact of the financial buffer also differs across educational levels. Having a financial buffer has a statistically significant positive effect on both duration and replacement labor income for workers with low education (education below university level), while I find no significant effect for workers with high education (university education and above). These results add to Dynarski, Gruber, Moffitt and Burtless's (1997) finding that low-educated and low-asset unemployed households are unable to smooth their consumption. Finally, I document that households with individuals with unemployment durations greater than zero decrease their financial-wealth buffers during their unemployment spells, which corresponds to the conclusions made by Basten et al. (2016).

I contribute to the extant literature by demonstrating that liquid financial wealth and net wealth have a positive impact on *both* unemployment duration *and* replacement labor income for displaced workers in Sweden. To the best of my knowledge, this paper is the first to empirically show both these effects. Moreover, the data

[4]Reservation wages and search effort are not observed in the data. My findings are however consistent with that individuals with a larger financial buffer can set higher reservation wages, which should yield longer unemployment durations and higher replacement income when a new position is found.

[5]I assume 45 weeks of work in a calendar year.

used in the study are of better quality than the data used in most previous studies. The use of data on all customers of one of Sweden's major banks from 2002 to 2007 that contain detailed balance-sheet information yields a representative sample of the Swedish population. The finding of financial buffer effects in Sweden is interesting, as Sweden has one of the most generous welfare systems in the world.

A large literature has looked into how unemployment benefits facilitate consumption smoothing and affect labor-market outcomes (see, e.g., Chetty (2008); Mitman and Rabinovich (2014)). However, less is known about how households' balance-sheet positions affect the ability of individuals to find jobs and how well individuals match their human capital to firms. Herkenhoff et al. (2016) find that greater access to consumer credit implies a longer period of time in which to find a new position and that, after finding a new job, individuals earn more and work at more productive firms. Chetty (2008) presents evidence indicating that unemployment insurance affects search efforts, highlighting the importance of a liquidity effect in addition to the traditional moral hazard effect in his search model. He documents that increases in benefits have the greatest impact on unemployment duration for liquidity-constrained households. In addition, he shows that severance payments increase durations for constrained (low-asset) households. Lentz and Tranaes (2005) use a job-search model to evaluate how job-search decisions are influenced by wealth. Search effort increases as wealth decreases in the model, which they also document empirically (using net wealth) for unemployment durations using Danish micro data. Their results suggest that the search intensity of an unemployed job seeker (i.e., the probability of finding a job) is inversely related to the wealth of that individual. I contribute to this literature by showing that a larger financial buffer in the form of both financial wealth and net wealth increases the duration of unemployment, adding to the previous findings.

The results for how financial wealth and net wealth affect replacement labor income contribute to the literature on reservation wages. Previous studies related to this issue have used survey data and lacked exogenous variation. For example, Rendon (2006) uses the National Longitudinal Survey of Labor Market Experience-Youth Cohort data to assess the impact of initial wealth and employment dynamics.[6] More initial assets and greater access to credit lead to higher accepted wages for white males who never went to college or had any type of military experience. Bloemen and Stancanelli (2001) use Dutch survey data to investigate the effect of financial wealth on self-reported reservation wages for unemployed individuals. They find that wealth has a positive impact on reservation wages and a negative impact on employment probability. I contribute to this stream of literature by using exogenous variation from mass layoffs and using high-quality panel data that is representative of the Swedish population. The positive effect on labor income replacement rates indicates that, on average, individuals' use the prolonged durations provided by the financial buffer to find better matches for their human capital. It also highlights the importance of a financial buffer in the form of financial and net wealth.

In addition, I contribute to the literature by providing empirical evidence that liquid financial wealth affects job-search decisions. Such evidence has been scarce

[6]Individuals aged 14 to 21 in January 1979.

in the previous literature, as stressed by Herkenhoff et al. (2016). My findings shed light on the asset-side effects and complement Herkenhoff, Phillips and Cohen-Cole's (2016) findings for consumer credit. In terms of magnitude, the replacement rate for labor income found in this paper is at the lower end of the findings in Herkenhoff et al. (2016). The fact that Sweden has a more generous welfare system than the US is important in this regard.

One limitation of my approach is that, at the time of a layoff, a household's financial buffer may not be exogenous. To alleviate such concerns, I measure household financial buffers in the years prior to layoff. Another potential problem is the reversed causality that might arise if households that expect to have longer unemployment durations save more. I conduct two robustness tests to address this issue. First, I augment the baseline regression with parish, industry, education, and year fixed effects as well as all their interactions to rule out the possibility that certain individuals with specific educational achievements, in a specific industry, in a specific geographical region and in a certain year drive my results. I find no such relations. Second, I investigate whether household and individual financial wealth have any power in predicting future unemployment by regressing unemployment on lagged financial wealth and additional controls. No statistically significant effects emerge, suggesting that individuals on average do not save if they anticipate unemployment or are unable to anticipate unemployment.

The paper is organized as follows. In Section 2, I describe the theoretical background. The data and the institutional setting are described in Section 3, while sample construction and the methodology are covered in Section 4 and 5, respectively. In Section 6, I provide the empirical results, while I offer some concluding remarks in Section 7.

2 Financial Buffers and Job Searches

Having a financial buffer in the form of liquid financial wealth or access to credit makes it possible for households to smooth consumption while experiencing an unemployment spell. Therefore, households with a financial buffer are able to search for a new position more thoroughly and find a better match for their human capital. Households with little or no financial buffer are more likely to face credit and liquidity constraints, and they typically cannot afford to search as thoroughly for a new position. As such, the presence or lack of a buffer will most likely affect how well individuals match their human capital to firms, which will influence their new compensation levels, the productivity of firms that hire them and, potentially, aggregate output. Herkenhoff et al. (2016) show that individuals with higher consumer credit limits spend more time searching for new jobs. They highlight that it is the *potential* to borrow, rather than realized borrowing, that affects search decisions. Workers know that they can borrow, and it is this knowledge that affects their search efforts even if they never borrow. The authors stress that there is limited evidence linking access to liquid assets and job-search decisions. I provide empirical evidence for this relationship.

Danforth (1979) takes financial assets into account in his job-search model and shows that reservation wages increase with financial assets.[7] Higher reservation wages should imply longer unemployment durations and higher wages when a new position is found, according to various search models (see, e.g., Mortensen and Pissarides (1999)). Lentz and Tranaes (2005) evaluate how job-search decisions are influenced by wealth in a job-search model and find that search effort (i.e., the probability of finding a job) increases as wealth decreases.

A complete picture of households' balance sheets is important when assessing how financial buffers affect the time used to find a new job and the replacement labor income when a new job is found. I use a detailed dataset to study the importance of both access to liquid financial wealth and access to credit for unemployment durations and replacement labor income for households experiencing unemployment spells. The following hypotheses are tested:

Hypothesis 1 A larger financial buffer increases unemployment durations for unemployed individuals.

Hypothesis 2 A larger financial buffer results in higher labor income replacement rates when a new position is found.

3 Data and Institutional Setting

The data used in this analysis consist of two parts. The first part is detailed credit information at the account and customer levels obtained from one of the four major Swedish banks. It contains information on the type of account (e.g., credit card, mortgage, unsecured loan) and related details (e.g., rates, fixation, start date, balance, limits). The data are on a monthly frequency from 2002 to 2011.

These data are matched with individual and household background variables from Statistics Sweden. The Statistics Sweden data primarily cover annual tax reports and include information on income, wealth, age, education, place of residence and household identifiers. Information is also available on the industries of the workers. In this regard, each worker is assigned a five-digit SNI code, the Swedish equivalent of NAICS/SIC codes, for the industry from which he or she obtains the most labor income. The values for financial and real assets are market values and not estimates, as Swedish financial institutions and banks are required by law to report market values for individual assets. Real-estate values are estimated by Statistics Sweden using actual transaction prices and tax-assessed values for properties in the same geographical proximity.[8] These data are on an annual frequency from 2002 to 2011. Due to the abolishment of the wealth tax in Sweden in 2007, financial-wealth information is only available from 2002 to 2007. Therefore, I mainly focus on the 2002 to 2007 period.

[7] Danforth (1979) assumes consumption maximization and decreasing relative risk aversion (to rule out risk neutrality).

[8] Valuations for apartments are less reliable (e.g., prices for four-room apartments are used to infer prices for one-room apartments in the same area).

In Sweden, mortgages are full recourse. Therefore, if a household defaults on its mortgage, it is still held accountable for the outstanding debt if equity is negative.

3.1 Unemployment Benefits

Workers who have been working for six months prior to unemployment are eligible for unemployment benefits in Sweden. Starting on July 1, 2002, the unemployment benefit replaced 80% of the individual's income up to a cap of SEK 730 per day for the first 20 weeks and a cap of SEK 680 per day thereafter (see, e.g., Bennmarker et al. (2007)).[9] In 2007, the benefits were changed to 80% for the 40 first weeks, 70% for the next 20 weeks and 65% thereafter. Figure 1 displays the net replacement rate for a selection of countries. Sweden is mainly above the OECD average in this regard from 2001 to 2007 and it is well above the United States.

3.2 Mass layoff

Work-site information from Statistics Sweden can be used to link individuals to work sites. A mass layoff occurs when a work site that has at least 50 employees reduces its workforce by more than 30% from a year to the next. This definition follows the previous literature (see, e.g., Jacobson et al. (1993), and Browning et al. (2006)). One problem with the work-site data is that, due to a merger or change of ownership, a work site might appear to have been shut down even though it still exists. These types of events, which are classified as such by Statistics Sweden, are excluded from the analysis.

3.3 Unemployment duration

I do not specifically observe when an individual enters or exits unemployment. Instead, realized unemployment benefits are observed yearly. From this information, unemployment duration is approximated by comparing received unemployment benefits to the individual's maximum benefit level given his labor income prior to displacement and using the rules of the Swedish unemployment insurance system:

$$Duration\ Days = 226 * \frac{Realized\ Benefits}{MaxBenefits \mid Labor\ Income_{t-1}} \tag{1}$$

Individuals who moved from one work site to another following a layoff without receiving benefits were assigned an unemployment duration of zero. Duration is then translated from years into days based on the fact that a year has approximately 226 workdays in Sweden.[10]

[9]Some labor unions have their own benefit schemes that complement the state-run benefit scheme. Private insurance also exists, although it was relatively uncommon during the focal period. These benefit schemes are not include in the observed in the data, which will induce measurement error. The cap corresponds to a gross monthly income of 18 700 SEK, roughly 80% of the sample had labor incomes above the cap.

[10]The number of workdays varies from 224 to 229 days, depending on holidays and leap years. 226 workdays corresponds to roughly 45 weeks of work in a calendar year.

4 Sample

When constructing the sample, some observations were excluded. As the aim is to investigate the effect of a financial buffer when individuals become unemployed, individuals who started the sample period as unemployed were excluded. Seasonal workers were removed by only allowing an individual to simultaneously have labor income and unemployment benefits for a maximum of two consecutive years. Part-time workers with a labor income of less than SEK 100,000 and no unemployment benefits were also removed.[11] Students, retired, and self-employed individuals were not included in the sample. These restrictions yielded a sample of 14,623 individuals who experienced mass layoffs during the years 2002 to 2007.

Table 1 presents summary statistics for the mass-layoff sample prior to layoff. All relevant variables are winsorized at the first and ninety-ninth percentiles and are expressed in 2002 SEK. Half of the sample had unemployment durations of zero length, and the average unemployment duration was more than 13 weeks. The average individual was a male who was married or had a cohabiting partner, and had at least a high-school education.[12][13] From the table, it is clear that the financial-wealth distribution is skewed to the right, as the mean is around three times as large as the sample median. The distributions of household labor income, net wealth, bank debt, and real assets are also skewed to the right. In the spirit of Gruber (2001) and Kolsrud (2011), a measure of how long an individual consume from the household's liquid financial wealth is also included, which is the ratio of household financial wealth to the labor income of the displaced household member. Its distribution follows the shape of the financial-wealth distribution, as it is also skewed to the right, such that the median displaced worker can replace 0.2 of year's labor income while the mean displaced worker can replace more than 0.5 of a year's labor income. The replacement income, (new labor income divided by previous labor income) conditional on finding a new position is 1.07 on average and the median is 1.04.

5 Methodology

The aim is to empirically evaluate how a household financial buffer affects the length of an individual's unemployment duration and the replacement rate of labor income when he or she finds a new position. An unemployment event may not be exogenous - unobserved factors can change both the financial buffer and the employment status. For example, a worker may increase his financial buffer because he is planning to become unemployed in the future. Workers with a larger financial buffer might also be more inclined to become unemployed and workers struggling with, for example, personal issues might also be more likely to become unemployed. A worker could also be fired due to a lack of skill or ability. To address these problems, I focus on individuals who experienced mass layoffs. These events have been considered to be ex-

[11] SEK is the Swedish Krona.

[12] A calendar year is assumed to have 45 weeks of work.

[13] The presence of children is the only way that cohabiting partners are identified in the data.

ogenous to worker characteristics (see, e.g., Jacobson et al. (1993)), while households' balance-sheet positions at the time of layoff may not be exogenous. Basten et al. (2016) show that households can anticipate unemployment spells and layoff events to some extent.[14] To alleviate these concerns, I measure the financial buffer in the years prior to the layoff. To estimate the effect of a financial buffer on unemployment duration, I use the following regression:

$$\begin{aligned} Duration_{i,t} &= \alpha + \beta_1 FinancialBuffer_{t-j} + \beta_2 X_{i,t-1} \\ &\quad + Year_t + Industry_z \\ &\quad + Industry_z \cdot Year_t + Parish_k + \epsilon_{i,t}, \end{aligned} \tag{2}$$

where the $Duration_{i,t}$ is the duration of the unemployment period for individual i that became unemployed in year t. $FinancialBuffer_{t-j}$ is either household financial wealth or net wealth at $t-j$ years prior to layoff. Financial wealth is used since it is liquid and easily accessible when needed. Net wealth is used since it comprises the resources available to the household. However, it might be misleading because housing wealth is illiquid and might be hard to access during shocks. Financial wealth and net wealth are both scaled by the displaced worker's labor income prior to layoff in order to provide a measure for how much of a year's labor incomes can be replaced. $X_{i,t-1}$ are individual and household controls measured prior to displacement. They include education, age, age squared, labor income, household size, the number of children in the household, and gender. As realized unemployment benefits are used to approximate the duration of unemployment, I include a fourth-order polynomial in labor income prior to layoff to capture the structure of the unemployment-benefit system in Sweden. The regression also includes parish fixed effects to control for unobserved time-invariant location characteristics as well as prior to layoff industry, year and industry times year fixed effects to rule out the possibility that the results are influenced by a specific year, industry, or industry year.[15][16] A positive β_1 coefficient would confirm the hypothesis that a larger financial buffer increases unemployment duration.

The effect of a financial buffer on the replacement rate of labor income is estimated using a similar specification:

$$\begin{aligned} Rep.\ Inc_{i,t} &= \alpha + \beta_1 FinancialBuffer_{t-j} + \beta_2 X_{i,t-1} \\ &\quad + Year_t + Industry_z \\ &\quad + Industry_z \cdot Year_t + Parish_k + \epsilon_{i,t}, \end{aligned} \tag{3}$$

where $Rep.\ Inc_{i,t}$ is the relation between the labor income at the new position divided by the prior displacement labor income for individual i conditional upon finding a new job in year t. $FinancialBuffer_{t-j}$ and $X_{i,t-1}$ are the same as in specification (2), but measured in the years prior to displacement (if an individual's duration of

[14] The anticipation results for mass layoffs are however weak.

[15] Parish is the most granular geographical segment in Sweden.

[16] I employ the first digit of the Swedish SNI 2002 industry classification.

unemployment is longer than, for example, one year). A positive β_1 would confirm that a larger financial buffer yields a higher replacement labor income when a new position is found.

6 Empirical Results

6.1 Unemployment Duration

What is the effect of the household's financial buffer on unemployment duration? I start by testing Hypothesis 1.

H1: A larger financial buffer increases unemployment durations for unemployed individuals.

First, the effect of the household's prior financial wealth is examined, as that wealth is easy to liquidate when buffer is needed. Household financial wealth is expressed in terms of the labor income of the displaced individual to create a measure of how long a worker can consume from the household's financial wealth. The results for financial wealth are displayed in Table 2. Column 1 shows a statistically significant positive effect for household financial wealth measured one year prior to layoff. In other words, more household financial wealth increases unemployment duration and confirms Hypothesis 1. A standard deviation increase in how long an individual can consume from the household's financial wealth increases unemployment duration by 9% ((3.95·1.48)/65.85= 0.088) at the sample mean, which is more than four weeks.[17] This result is consistent with Hypothesis 1 —access to a larger financial buffer in the form of financial wealth enables the individual to smooth consumption and take longer to search for a new job. The impact of financial wealth to labor income decreases both in terms of the magnitude of the coefficient and statistical significance when adding background controls and prior-to-displacement industry fixed effects. As seen in column 2, the effect is now 7% ((2.95·1.48)/65.85= 0.066) at the sample mean (more than three weeks).

To allow for non-linear effects of financial wealth, dummy variables are used to indicate in which quartile of the distribution of the ratio of household financial wealth to the labor income of the displaced worker the individual belongs to. The results are shown in column 3. A U-shaped pattern appears, individuals in quartiles 1 (can consume for less than 0.02 years) and 4 (can consume for more than 0.66 years) exhibit the longest unemployment durations (25 weeks), while quartiles 2 and 3 (consume for 0.02 years to 0.66 years) exhibit a shorter unemployment duration of 23 weeks. The result that households with little or no financial wealth (quartile 1) have long unemployment durations could suggest that these individuals have a harder time finding a new job once they are displaced or that they enjoy the subsidized leisure of unemployment benefits to a greater extent. In non-reported summary statistics for the four quartiles, quartile 1 tends to be younger and less educated, have lower labor income and, hence, enjoy higher replacement rates for unemployment benefits.

[17] Based on 45 week of work per year.

Moreover, individuals in this group are more frequently male and single.

As a robustness test, the ratio of household financial wealth to labor income is measured in $t-2$ in column 4. The coefficient is smaller and statistically insignificant (potentially due to the smaller sample size). The U-shaped pattern for the quartiles is replicated for $t-2$ in column 5. For $t-3$, the results are similar, as reported in Table 15 in the Appendix (columns 1 and 2). The results are also robust to using a Tobit regression.

The second financial buffer measure is net wealth, which takes all of the household's available resources into account. Net wealth is scaled by the labor income of the displaced worker and the sample is limited to house owners.[18] The results are displayed in Table 3. Column 1 shows a positive coefficient for β_1, which is significantly different from zero. The findings for net wealth further confirms the hypothesis that a larger financial buffer leads to longer unemployment durations. A standard deviation increase in net wealth increases duration by 8% at the sample mean, which corresponds to more than three weeks. In column 2, non-linear effects of net wealth are accounted for by dividing net wealth into quartiles. A positive effect across all quartiles is found. The largest effect is for quartile 4, and it is statistically significantly different from the effect for quartile 1. Individuals in quartile 4 have a three-week longer unemployment duration than those in quartile 1, on average.

As a robustness check, the ratio of net wealth to the labor income of the displaced worker is measured in $t-2$. The results are similar, as seen in columns 3 and 4 (the statistical significance is lower, potentially due to the smaller sample size). The results are also robust to measurement in $t-3$ (not reported). Therefore, the results indicate that the greater the net wealth, the longer the unemployment duration.

These results correspond with the findings in the extant literature that greater credit access Herkenhoff et al. (2016) and higher severance payments Chetty (2008) increase unemployment duration. The findings for net wealth are consistent with Lentz and Tranaes's (2005) model in which search effort (i.e., the probability of finding a job) increases as wealth decreases and also with their empirical findings for unemployment duration, which are based on Danish data.

6.2 Replacement Labor Income

I now investigate whether individuals with larger financial buffers are able to find higher paying jobs. In other words, I test Hypothesis 2.

H2: A larger financial buffer results in higher labor income replacement rates when a new position is found.

To ensure an adequate measure of the replacement rate of labor income, I require the individual to have positive labor income in the year after displacement (as individuals with larger buffers who had longer durations are more prone to have zero labor income in the years after the layoff). The mean replacement rate of labor income in the sample is 1.07.[19] Table 4 displays the results of regressing the labor income replacement rate,

[18]This decision is based on the issues related to the valuation of apartments mentioned earlier.

[19]Labor income from a new position is divided by labor income prior to layoff.

conditional on having found a new position, on the ratio of household financial wealth to the displaced individual's labor income. In column 1, the positive and significant coefficient for the household's financial-wealth buffer confirms that the positive buffer effects also materialize in terms of increased replacement labor incomes, which is consistent with Hypothesis 2. In terms of the magnitude of the effect, a standard deviation increase in the ratio of financial wealth to labor income in the year prior to displacement increases the replacement rate by 3% ($(0.02 \cdot 1.48)/1.07 = 0.028$) at the sample mean. In column 2, non-linear effects in financial wealth are allowed, which demonstrates that the effect increases in financial wealth. Quartiles 3 and 4 are statistically significant different from quartile 1. On average, the effect is stronger the higher the quartile (2% for quartile 3, 5% for quartile 4). The lack of a U-shaped effect for replacement labor income suggests that the longer unemployment durations of quartile 1 individuals do not materialize in higher replacement labor income.

As a robustness check, the ratio of the household's financial wealth to the labor income of the displaced worker is measured two years prior to displacement, as reported in columns 3 and 4. Similar results are found, although they are weaker in magnitude and statistical significance for column 3. As an additional test, the replacement rate of labor income is measured an additional year after a new position is found to alleviate concerns that the new full-time labor income is not fully observed in the first year after a new position is found (see column 5). The conclusions remain unchanged.

The results suggest that the ability to consume from financial wealth for a longer period of time leads to a higher replacement labor income when a new position is found. Individuals seem to use the buffer to more thoroughly search for a position that better matches their human capital. In this regard, my findings contribute to the extant literature on reservation wages. Previous studies have relied on survey data that lacks exogenous variation. Rendon (2006) finds that more initial assets and access to credit result in higher accepted wages for a sample of white males in the US. Bloemen and Stancanelli (2001), who use Dutch survey data, find that financial wealth increases reservation wages for unemployed individuals. In addition, my findings are consistent with Danforth's (1979) job-search model in which reservation wages increase with financial assets.

I proceed by analyzing the effect of the ratio of household net wealth to the individual's labor income as a buffer measure for the sample of house owners in Table 5. In column 1, the positive and significant coefficient for net wealth confirms Hypothesis 2. In other words, a larger buffer in terms of household net wealth increases replacement labor income. If household net wealth increases by one standard deviation, the replacement rate increases by 4%. Net wealth is divided into quartiles in column 2, where quartile 4 is statistically significantly different from quartile 1. Individuals in quartile 4 has a 4% higher replacement labor income on average than individuals in quartile 1. As a robustness check, net wealth is also measured two years prior to displacement in columns 3 and 4, in which the quartile estimates are insignificant.

My findings for financial wealth and net wealth are consistent with job-search models (see, e.g., Mortensen and Pissarides (1999)) in which higher reservation wages imply longer unemployment durations and higher wages after a new job is found.

The findings suggest that households with stable balance sheets are better able to smooth consumption when faced with income shocks. The impact of financial wealth is slightly lower than the effect Herkenhoff et al. (2016) find for consumption credit. However, the Swedish welfare system is more generous than the corresponding system in the US. My findings indicate that the ability to replace 10% more of prior labor income translates into an increase in the labor income replacement rate of 0.2%, while Herkenhoff et al. (2016) document replacement rates from 0.3% to 1.72%. The findings are mostly in line with extant literature on the effect of unemployment insurance on replacement rates in the US (see, e.g., Ehrenberg and Oaxaca (1976); Burgess and Kingston (1976); Blau and Robins (1986), Classen (1977); Addison and Blackburn (2000)) who find positive effects. Nekoei and Weber (2017) find a positive relation between unemployment benefits and reemployment wages for Austrian administrative data, while Lalive (2007), Card et al. (2007) and Van Ours and Vodopivec (2006) estimate wage effects that are not statistically different from zero. Schmieder et al. (2016) document statistically significant negative wage effects using German data.

A potential alternative explanation for these findings could be that individuals with financial buffers are more patient. In search theory, patience implies a higher discount factor, which in turn implies higher reservation wages and longer unemployment durations (see, e.g., McCall (1970)). Cagetti (2003) estimates a life-cycle model for the impact of rate of time preference and risk aversion on wealth accumulation using the Panel Study of Income Dynamics and the Survey of Consumer Finances. He finds that the degree of patience increases with education. In the above regressions, education is used as a control and should capture some of the differences in patience across individuals. Educational differences will be further investigated in Section 6.4.

6.3 Financial Wealth and Home Equity

Given that there are positive effects from both financial wealth and net wealth, where the former is included in the latter, it is enlightening to split net wealth into financial wealth and home equity. As mentioned earlier, financial wealth is often easier to access than home equity when households face shocks. Therefore, the estimations were again conducted on households that are houseowners. The effects on unemployment duration when net wealth is split into financial wealth and home equity are reported in columns 1 to 3 in Table 6. In column 1, the effect of financial wealth remains positive but is now statistically insignificant (potentially due to the smaller sample size). Likewise, the effect of home equity is also positive and statistically insignificant, as shown in column 2. If both financial wealth and home equity are included, the magnitude of both coefficients decreases and both remain insignificant, as seen in column 3.

The results for the replacement rate of labor income are displayed in columns 4 to 6 in Table 6. Both financial wealth and home equity have positive effects on replacement labor income and are statistically significant, as seen in columns 4 and 5, respectively. A one standard deviation increase in the amount of time that a displaced worker can consume from the household's financial wealth increases the replacement rate of labor income by 2.4% at the sample mean, while a one standard

deviation in home equity increase the replacement rate of labor income by 3% at the sample mean. If both financial wealth and home equity are included, the results reveal that it is financial wealth that matters, as seen in column 6 —the coefficient has the same magnitude and is still highly statistically significant, while home equity becomes insignificant. The results suggest that financial wealth, which is liquid and easier to access, is of more importance than home equity, which might be harder for the household to tap into when experiencing income shocks.

6.4 Heterogeneity

6.4.1 Education

In the previous regressions, education was included as a control. However, there may be differences in the effect of a financial buffer given the education of the displaced individual. Therefore, I split the sample into low educated (below university level) and high educated (university level and above) workers. The results for unemployment duration, which are provided in Table 7, show a statistically significant positive effect for low-educated workers but not for high-educated workers (columns 1 and 2, respectively). For low-educated workers, a one standard deviation increase in household financial wealth increases unemployment duration by 9% at the sample mean, which translates into a four-week longer duration. Similar results are found for net wealth columns 3 and 4, a one standard deviation increase in household net wealth increases unemployment duration by 7% at the sample mean, which is more than three weeks.

The results for the replacement rate of labor income are displayed in Table 8. The effect of household financial wealth is highly statistically significant for the low-educated sample, such that a one standard deviation increase in the ratio of household financial wealth to the individual's labor income translates into a 3% increase in replacement labor income at the sample mean. For the high-educated group, the effect is weakly statistically significant. A one standard deviation increase in how long the displaced individual can consume from the household's financial wealth yields a 1% increase in replacement labor income at the sample mean. Net wealth has a statistically significant impact on replacement labor income for low-educated workers but not for high-educated workers. A one standard deviation increase in net wealth for low-educated workers increases replacement labor income by 4% at the sample mean.

The results suggest that a financial buffer is more valuable for low-educated workers, which is also evident from an inspection of the distributions of the financial buffers for the two groups. High-educated workers are more likely to have a buffer in the form of financial wealth and net wealth. On average, a high-educated worker's education should make that individual more attractive to employers, which should translate into shorter unemployment durations. An alternative story could be that the high-educated workers are more patient and can, therefore, wait longer for a new position and set higher reservation wages. However, high-educated workers generally have shorter unemployment durations (i.e., 8 weeks compared to 14 weeks for

low-educated workers) and the results for replacement labor income also contradict a patience effect. My findings are in line with Dynarski et al. (1997), who find that low-educated and low-asset households that experience earnings losses due to unemployment are unable to smooth their consumption. Therefore, a financial buffer should be more valuable for these households.

6.4.2 Household Composition

The presence of a spouse or partner can have a mitigating effect on the impact of an income shock. The spouse's labor income and wealth add to the household's resources, and the spouse can facilitate consumption smoothing through his or her wealth and access to credit. A spouse may also contribute by increasing labor supply (the "added-worker effect"). Potential differential effects of financial wealth on unemployment duration for single individuals and individuals who are married or have cohabiting partners are explored in columns 1 and 2 in Table 9. The coefficients for household financial wealth are positive but insignificant for both samples. Similarly, differential effects for the replacement rate of labor income are tested in columns 3 and 4 in Table 9. For both groups, replacement labor income is significantly affected by household financial wealth. A standard deviation increase in how long an individual can consume from the household's financial buffer increases the replacement rate of labor income by 2.3% for married and cohabiting individuals and by 1.5% for single individuals at their sample means. In the estimations, financial wealth is measured at the household level. Therefore, for married and cohabiting individuals, the partner's financial wealth is also included. To further investigate the effect of having additional labor income and, potentially, additional savings, I solely focus on married and cohabiting individuals. The roles played by the distribution of financial wealth within the household as well as the household's labor-income shares (e.g., who is the household's breadwinner) are examined. Table 10 shows no statistically significant effects of the financial wealth of the household, the individual, or the partner on unemployment duration (columns 1 to 4). There is a statistically significant effect if the individual was the breadwinner prior to the layoff. In the extreme case, if the breadwinner provided all of the household's labor income prior to the layoff, unemployment duration increases by more than four weeks.

The effects of the partner's financial wealth and the share of labor income prior to layoff on replacement labor income are displayed in Table 11. Total household financial wealth has a positive and significant effect, as shown earlier (see column 1). A one standard deviation increase in household financial wealth increases the replacement rate of labor income by 2% at the sample mean. The displaced worker's own financial wealth does not have a statistically significant impact on replacement labor income, while the partner's financial wealth does (columns 2 and 3, respectively). A one standard deviation increase in the partner's financial wealth increases replacement labor income by 2% at the sample average. If the wealth of both the individual and the partner is included in the regression (column 4), the effect of the partner's financial wealth remains statistically significant. The results suggest that the partner's financial wealth is important and that the individual's own wealth would not

be significant if included in Table 9. When the displaced worker is the breadwinner, replacement income is negatively affected, as seen in column 5. The labor income share results for both unemployment duration and replacement rates are difficult to interpret, as spousal labor supply is not known and little is known about how the household decides on such factors as labor supply and savings within the household. This calls for a deeper investigation that is outside the scope of this paper.

6.5 Reverse Causality

A potential threat to the previous findings would be if individuals who expect to have longer unemployment durations engage in precautionary saving and save more. To test for this possibility, I examine whether financial wealth has any power in predicting unemployment by using the following regression for the full sample of individuals:

$$Unemployed_{i,t} = \alpha + \beta FinancialBuffer_{i,t-j} + \gamma Controls_{i,t-j} + \epsilon_{i,t}, \qquad (4)$$

where $Unemployed_{i,t}$ is a binary variable for unemployment status for individual i at time t, $FinancialBuffer_{i,t-j}$ is the financial buffer measure for individual i, j years before the unemployment event and $Controls_{i,t-j}$ is a vector of controls. A positive and statistically significant coefficient for β in specification (4) would suggest that individuals can foresee unemployment and that the duration of that unemployment period will be long. The results of these regressions are reported in Table 12. Columns 1-3 display the results when household financial wealth scaled by the labor income of the displaced worker is measured one to three years prior to unemployment. No statistically significant effects are found for household financial wealth. The exercise is repeated for the individual's own financial wealth in columns 4 to 6. Again, no significant effects are found, suggesting that individuals do not seem to respond to upcoming unemployment spells by increasing their financial buffers.

Another way to alleviate these concerns is to control for more variation among years, industries, educational levels, and parishes (smallest geographical level). This would rule out the possibility that less-educated educated workers in a specific industry, a specific year and a specific geographical region drive the findings. Consequently, the regressions are complemented by adding parish, industry, year, and educational level fixed effects and their interactions. The results for financial wealth as a buffer are displayed in Table 13. Column 1 reports the baseline regression, while column 2 is the regression augmented with the fixed effects. The magnitude of the coefficient declines slightly but the statistical significance remains. A one standard deviation increase in how long a displaced individual can consume from the household's financial wealth increases unemployment duration by 6% at the sample mean, which is almost three weeks.

6.6 Use of Financial Buffers

Finally, do displaced workers use their buffers to smooth consumption while searching for a new position? To examine this question, I use the sample of displaced individuals

with unemployment durations greater than zero. These individuals are compared with a placebo sample of individuals who did not experience a mass layoff during the same period, but who are randomly assigned a layoff year, as in Basten et al. (2016). The empirical strategy is the following model:

$$Y_{i,t} = \alpha_i + \beta\left(RY_{i,t}\right) + \gamma_t + \epsilon_{it}, \tag{5}$$

where $Y_{i,t}$ is the outcome of interest (e.g. financial wealth, labor income) for household i at time t, α_i is a vector of household fixed effects and γ_t are year fixed effects. $RY_{i,t}$ is vector of dummies for the relative years around the layoff event. Age is also controlled for to capture life-cycle differences. From the specification, I can retrieve the time path for the relative years before, during, and after the layoff event. The results are displayed in Table 14. On average, individuals experiencing mass layoffs with non-zero durations experience decreases in labor income, as seen in column 1. Labor income drops by around SEK 60,000 on average from the year before the layoff to the layoff year. Income drops further in the year after the layoff event and then starts to revert after two years, as more individuals find new positions. Household financial wealth drops by SEK 14,000 on average from one year prior to the layoff to two years after the layoff. The drop in average financial wealth is notable in comparison with the average drop in labor income of between SEK 61,000 and SEK 82,000, especially as households receive unemployment benefits and can adjust along other dimensions, such as consumption and, potentially, spousal or partner labor supply.

Columns 3 and 4 display the evolution of risky assets (i.e., stocks, mutual equity, other securities, insurance) and risk-free assets (i.e., bank accounts, bonds, premium bonds). Both types of assets have decreasing coefficients over the years around the layoff. For the relatively short window around the layoff, I find no evidence of portfolio reallocation between safe and risky assets.

It is worth noting that the financial buffer measures are only available annually, which means that saving and spending within a given year are unobserved. Moreover, the average effect is estimated, such that it includes both individuals who anticipated the layoff and individuals who did not. Given these shortcomings, no evidence of precautionary savings are found for financial wealth (my event window is shorter than in Basten et al. (2016), who also do not find significant results for precautionary saving for their mass layoff sample).

7 Conclusion

In this paper, I analyze how the financial buffers of unemployed individuals affect the duration of unemployment and the replacement rate of labor income after they find new positions. Using very detailed Swedish data at the individual and household levels, I document that a financial buffer in the form of liquid financial wealth has a positive impact on both unemployment duration and replacement labor income. A one standard deviation increase in financial wealth increases unemployment duration by 7%, which is more than three weeks, and increases the replacement rate of labor income by 3%. Similar results are found using net wealth. A one standard deviation

increase in net wealth increases unemployment duration by 8%, which is more than three weeks, and raises the replacement rate of labor income by 4%.

The results for unemployment duration are in line with the findings of Chetty (2008) and Herkenhoff et al. (2016), and with the theoretical model and empirical findings of Lentz and Tranaes (2005). The findings for replacement labor income correspond and add to the findings of Rendon (2006), Bloemen and Stancanelli (2001), and Herkenhoff et al. (2016). Overall, the results presented here indicate that a financial buffer in the form of financial or net wealth enables individuals to smooth consumption and potentially search longer and more thoroughly for a new position.

8 Bibliography

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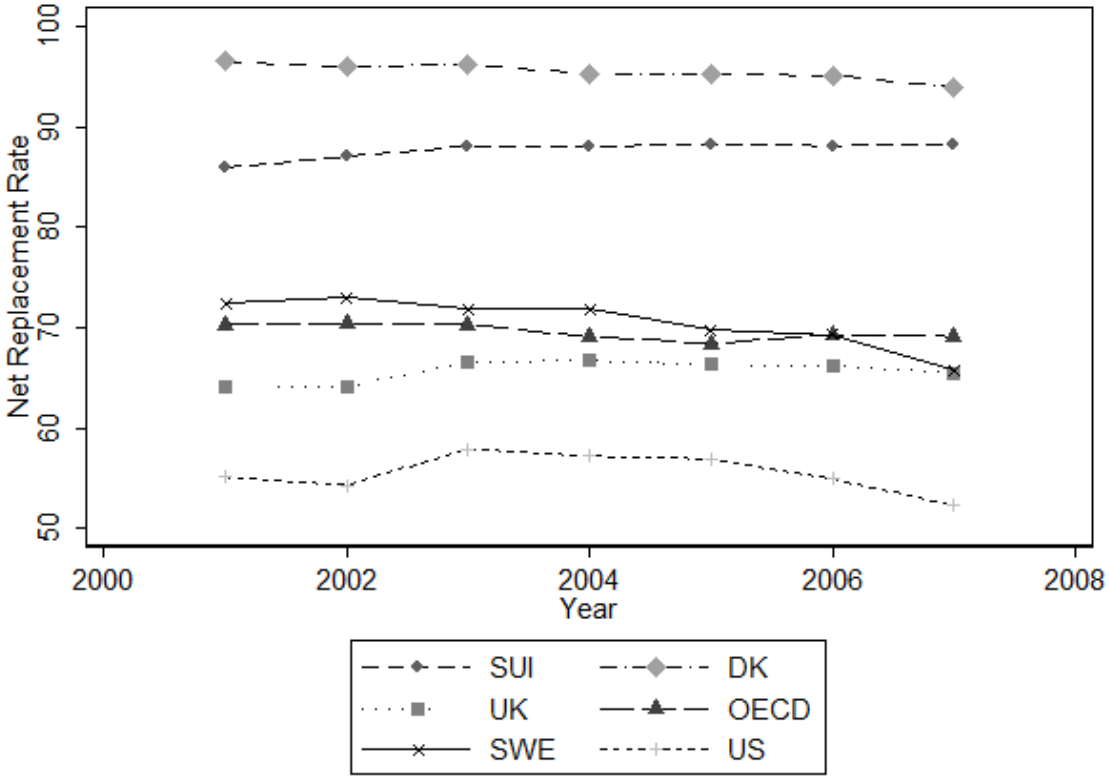
9 Figures

Figure 1: Net replacement rate - initial unemployment, % of previous net income. Initial net replacement rate is calculated based on an annualised income in the second month following unemployment for a one earner couple with two children, where the earner previously earned the average wage. Children are assumed to be aged 6 and 4. Where applicable housing and social assistance benefits are assumed to be in payment. Source: OECD, Tax and Benefits Systems: OECD Indicators.



10 Tables

Table 1: Summary statistics for the sample of mass layoff individuals. All relevant variables have been winsorized at the 1st and 99th percentiles and are expressed in 2002 SEK. Duration is the length of the unemployment period in days. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds. Financial wealth to labor income is financial wealth to labor income of the displaced individual in $t-1$. Net wealth is real assets, financial wealth, and other assets minus all types of debt. Labor income is gross labor income. Real assets is the value of all types of real estate and land as estimated by Statistics Sweden. Bank debt is total balance of bank debt. Education is divided into five categories: no high school, high school, post high school, university and PhD level. Replacement income is labor income once a new position is found divided by prior to displacement labor income.

Variable	Mean	Std Dev.	P10	P50	P90	Obs
Unemployment Duration	65.85	151.20	0.00	0.00	208.63	15,375
Household Financial Wealth to Labor inc t-1	0.67	1.48	0.00	0.18	1.66	13,741
Household Children	0.81	1.03	0.00	0.00	2.00	15,375
Household Size	2.71	1.39	1.00	3.00	4.00	15,375
Age	42.99	10.78	28.00	43.00	57.00	15,375
Male	0.56	0.50	0.00	1.00	1.00	15,375
Married/Cohabit w. children	0.64	0.48	0.00	1.00	1.00	15,375
Education	1.51	0.97	0.00	1.00	3.00	15,371
Household Financial Wealth t-1	194,346	412,590	0	46,732	499,983	15,281
Household Financial Wealth t-2	207,298	436,198	0	46,230	548,964	15,205
Labor Income t-1	307,941	141,224	175,716	280,117	472,742	13,741
Household Labor Income t-1	503,368	254,654	232,147	468,042	823,997	13,934
Household Labor Income t-2	498,683	249,249	233,289	466,073	814,414	9,689
Household Net Wealth t-1	603,027	1,208,298	-267,234	197,558	1,959,965	15,281
Household Net Wealth t-2	613,120	1,290,376	-294,870	156,511	2,107,111	15,205
Household Bank Debt t-1	327,946	530,480	0	64,967	1,036,676	13,740
Household Bank Debt t-2	328,019	509,370	0	74,572	1,010,028	9,461
Household Real Assets t-1	1,038,559	1,239,963	0	688,162	2,656,079	15,281
Household Real Assets t-2	1,065,625	1,352,185	0	634,970	2,850,321	15,205
Replacement Income	1.07	0.23	0.89	1.04	1.25	10,110

Table 2: Regression results for unemployment duration as a function of household financial wealth to labor income of the displaced worker. Dependent variable is unemployment duration in days. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Quartile refers to that quartile in the explanatory variable. Standard errors are clustered at the individual level.

VARIABLES	(1) Duration	(2) Duration	(3) Duration	(4) Duration	(5) Duration
Household Fin. Wealth / Labor inc Quartile 2 t-1			-6.618*		
			(3.816)		
Household Fin. Wealth / Labor inc Quartile 3 t-1			-7.368*		
			(3.879)		
Household Fin. Wealth / Labor inc Quartile 4 t-1			2.196		
			(4.382)		
Household Fin. Wealth / Labor inc t-1	3.946***	2.954**			
	(1.204)	(1.281)			
Household Fin. Wealth / Labor inc t-2				2.357	
				(1.540)	
Household Fin. Wealth / Labor inc Quartile 2 t-2					-5.470
					(4.727)
Household Fin. Wealth / Labor inc Quartile 3 t-2					-9.182*
					(4.720)
Household Fin. Wealth / Labor inc Quartile 4 t-2					6.941
					(5.810)
Constant	55.150***	114.552***	122.980***	160.253***	168.920***
	(5.870)	(26.560)	(26.711)	(41.597)	(40.886)
Observations	13,737	13,012	13,012	9,049	9,049
R-squared	0.125	0.166	0.166	0.197	0.198
Parish FE	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	YES
Industry FE	NO	YES	YES	YES	YES
Industry x Year FE	NO	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Regression results for unemployment duration as a function of household net wealth to labor income of the displaced worker. Dependent variable is unemployment duration in days. Net wealth is real assets, financial wealth, and other assets minus all types of debt. Net wealth to labor income is defined as net wealth to labor income of the displaced individual. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Quartile refers to that quartile in the explanatory variable. Standard errors are clustered at the individual level.

VARIABLES	(1) Duration	(2) Duration	(3) Duration	(4) Duration
Household Net Wealth/ Labor Inc Quartile 2 t-1		7.253		
		(4.883)		
Household Net Wealth/ Labor Inc Quartile 3 t-1		4.469		
		(5.069)		
Household Net Wealth/ Labor Inc Quartile 4 t-1		15.386**		
		(6.137)		
Household Net Wealth/ Labor Inc t-1	0.981*			
	(0.544)			
Household Net Wealth/ Labor Inc t-2			0.911	
			(0.672)	
Household Net Wealth/ Labor Inc Quartile 2 t-2				9.510
				(6.073)
Household Net Wealth/ Labor Inc Quartile 3 t-2				7.951
				(6.217)
Household Net Wealth/ Labor Inc Quartile 4 t-2				14.520*
				(7.849)
Constant	115.159***	120.049***	235.925***	257.992***
	(42.838)	(41.875)	(62.485)	(60.223)
Observations	6,483	6,483	4,625	4,625
R-squared	0.256	0.256	0.305	0.305
Parish FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES
Controls	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Regression results for the replacement rate of labor income as a function of household financial wealth. Replacement rate of labor income is labor income at the new position divided by labor income prior to mass layoff. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds. Financial wealth to labor income is financial wealth to labor income of the displaced individual in the periods *prior to displacement*. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Quartile refers to that quartile in the explanatory variable. Standard errors are clustered at the individual level.

VARIABLES	(1) Rep.Inc	(2) Rep.Inc	(3) Rep.Inc	(4) Rep.Inc	(5) Rep.Inc t+1
Household Fin. Wealth / Labor inc Quartile 2 t-1		0.002			
		(0.006)			
Household Fin. Wealth / Labor inc Quartile 3 t-1		0.021***			
		(0.007)			
Household Fin. Wealth / Labor inc Quartile 4 t-1		0.047***			
		(0.008)			
Household Fin. Wealth / Labor inc t-1	0.023***				0.016***
	(0.003)				(0.004)
Household Fin. Wealth / Labor inc t-2			0.001*		
			(0.000)		
Household Fin. Wealth / Labor inc Quartile 2 t-2				0.008	
				(0.006)	
Household Fin. Wealth / Labor inc Quartile 3 t-2				0.017***	
				(0.006)	
Household Fin. Wealth / Labor inc Quartile 4 t-2				0.039***	
				(0.007)	
Constant	1.769***	1.802***	1.374***	1.367***	1.523***
	(0.085)	(0.086)	(0.088)	(0.088)	(0.111)
Observations	11,700	11,700	9,860	9,860	10,218
R-squared	0.222	0.216	0.177	0.177	0.191
Parish FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Regression results for the replacement rate of labor income as a function of household net wealth for house owners. Replacement rate of labor income is labor income at the new position divided by labor income prior to mass layoff. Net wealth is real assets, financial wealth, and other assets minus all types of debt. Net wealth to labor income is net wealth to labor income of the displaced individual. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Quartile refers to that quartile in the explanatory variable. Standard errors are clustered at the individual level.

VARIABLES	(1) Rep.Inc	(2) Rep.Inc	(3) Rep.Inc	(4) Rep.Inc
Household Net Wealth / Labor inc Quartile 2 t-1		0.001		
		(0.010)		
Household Net Wealth / Labor inc Quartile 3 t-1		0.014		
		(0.011)		
Household Net Wealth / Labor inc Quartile 4 t-1		0.038***		
		(0.013)		
Household Net Wealth / Labor inc t-1	0.006***			
	(0.001)			
Household Net Wealth / Labor inc t-2			0.003*	
			(0.001)	
Household Net Wealth / Labor inc Quartile 2 t-2				0.012
				(0.011)
Household Net Wealth / Labor inc Quartile 3 t-2				0.001
				(0.012)
Household Net Wealth / Labor inc Quart 4 t-2				0.023
				(0.015)
Constant	1.836***	1.873***	1.555***	1.564***
	(0.203)	(0.204)	(0.273)	(0.276)
Observations	5,005	5,005	3,422	3,422
R-squared	0.324	0.320	0.319	0.319
Parish FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES
Controls	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Regression results for unemployment duration and replacement labor income as a function of financial buffer for house owners. Dependent variable in columns 1 to 3 is unemployment duration in days and the replacement rate of labor income in columns 4 to 6. Replacement rate of labor income is labor income at the new position divided by labor income prior to the mass layoff. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds at $t-1$. Home equity is real assets minus total debt. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual in $t-1$. Home equity to labor income is home equity to labor income of the displaced individual in $t-1$. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Standard errors are clustered at the individual level.

VARIABLES	(1) Duration	(2) Duration	(3) Duration	(4) Rep.Inc	(5) Rep.Inc	(6) Rep.Inc
Household Fin. Wealth / Labor inc t-1	2.435		1.585	0.019***		0.017***
	(1.481)		(1.865)	(0.004)		(0.005)
Household Home Equity / Labor inc t-1		1.096	0.810		0.005***	0.003
		(0.694)	(0.855)		(0.002)	(0.002)
Constant	155.054***	151.507***	149.002***	1.835***	1.859***	1.822***
	(40.259)	(40.904)	(40.691)	(0.204)	(0.203)	(0.203)
Observations	6,483	6,483	6,483	5,005	5,005	5,005
R-squared	0.254	0.255	0.255	0.326	0.322	0.327
Parish FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Regression results for unemployment duration as a function of financial buffer for different education levels. Dependent variable is unemployment duration in days. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds at $t-1$. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual in $t-1$. Net wealth is real assets, financial wealth, and other assets minus all types of debt. Net wealth to labor income is defined as net wealth to labor income of the displaced individual. Controls are number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Standard errors are clustered at the individual level.

VARIABLES	(1) Duration	(2) Duration	(3) Duration	(4) Duration
Household Fin. Wealth / Labor inc t-1	4.619**	0.124		
	(1.908)	(1.130)		
Household Net Wealth / Labor inc t-1			1.056**	0.981
			(0.483)	(0.820)
Constant	83.711***	75.979	85.349***	71.216
	(31.616)	(62.555)	(31.704)	(62.188)
Observations	10,193	2,823	10,193	2,823
R-squared	0.187	0.257	0.186	0.258
Parish FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES
Controls	YES	YES	YES	YES
Group	No University	University	No University	University

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Regression results for the replacement rate of labor income as a function of financial buffer for different education levels. Replacement rate of labor income is labor income at the new position divided by labor income prior to mass layoff. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds at $t-1$. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual in $t-1$. Net wealth is real assets, financial wealth, and other assets minus all types of debt. Net wealth to labor income is defined as net wealth to labor income of the displaced individual. Controls are number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Standard errors are clustered at the individual level.

	(1)	(2)	(3)	(4)
VARIABLES	Rep.Inc	Rep.Inc	Rep.Inc	Rep.Inc
Household Fin. Wealth / Labor Inc t-1	0.028***	0.010*		
	(0.005)	(0.006)		
Household Net Wealth / Labor inc t-1			0.008***	-0.000
			(0.002)	(0.002)
Constant	1.866***	1.112***	2.011***	1.163***
	(0.162)	(0.138)	(0.265)	(0.305)
Observations	7,343	2,359	3,646	1,360
R-squared	0.280	0.305	0.390	0.420
Parish FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES
Controls	YES	YES	YES	YES
Group	No University	University	No University	University

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Regression results for unemployment duration and replacement labor income as a function of financial buffer. Dependent variable is unemployment duration in days in columns 1 and 2 and the replacement rate of labor income in columns 3 and 4. Replacement rate of labor income is labor income at the new position divided by labor income prior to mass layoff. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds at $t-1$. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual in $t-1$. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Standard errors are clustered at the individual level.

VARIABLES	(1) Duration	(2) Duration	(3) Rep.Inc	(4) Rep.Inc
Household Fin. Wealth / Labor inc t-1	4.839	2.080	0.017*	0.017***
	(4.645)	(1.499)	(0.009)	(0.004)
Constant	20.373	173.076***	1.348***	1.712***
	(60.705)	(33.154)	(0.146)	(0.168)
Observations	3,502	8,464	2,517	6,435
R-squared	0.293	0.199	0.334	0.256
Parish FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES
Controls	YES	YES	YES	YES
Group	Single	Married	Single	Married

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Regression results for unemployment duration as a function of spouses financial wealth and labor income shares. Dependent variable is unemployment duration in days. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds at $t-1$. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual in $t-1$. Labor income share is the share of the displaced individual prior to layoff. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Standard errors are clustered at the individual level.

VARIABLES	(1) Duration	(2) Duration	(3) Duration	(4) Duration	(5) Duration
Household Fin. Wealth / Labor inc t-1	2.115				2.449
	(1.498)				(1.506)
Fin. Wealth /Labor inc t-1		2.871		2.815	
		(2.449)		(2.446)	
Spouse Fin. Wealth /Labor inc t-1			0.584	0.344	
			(1.690)	(1.648)	
Labor inc share t-1					22.111**
					(10.465)
Constant	177.016***	180.545***	182.199***	179.766***	170.382***
	(32.670)	(32.468)	(32.723)	(32.594)	(32.508)
Observations	8,464	8,464	8,464	8,464	8,464
R-squared	0.199	0.199	0.199	0.199	0.200
Parish FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Regression results for the replacement rate of labor income as a function of spouses financial wealth and labor income shares. Replacement rate of labor income is labor income at the new position divided by labor income prior to mass layoff. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds at $t-1$. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual in $t-1$. Labor income share is the share of the displaced individual prior to layoff. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Standard errors are clustered at the individual level.

VARIABLES	(1) Rep.Inc	(2) Rep.Inc	(3) Rep.Inc	(4) Rep.Inc	(5) Rep.Inc
Household Fin. Wealth / Labor inc t-1	0.017***				0.015***
	(0.004)				(0.004)
Fin. Wealth / Labor inc t-1		0.007		0.005	
		(0.005)		(0.006)	
Spouse Fin. Wealth / Labor inc t-1			0.021***	0.021***	
			(0.005)	(0.005)	
Labor inc share t-1					-0.139***
					(0.020)
Constant	1.712***	1.756***	1.714***	1.710***	1.768***
	(0.168)	(0.166)	(0.164)	(0.165)	(0.167)
Observations	6,435	6,435	6,435	6,435	6,435
R-squared	0.256	0.250	0.256	0.257	0.267
Parish FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Regression results for unemployment outcomes as a function of household financial wealth to labor income of the displaced worker. Dependent variable is unemployment (0/1). Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-j$. Standard errors are clustered at the individual level.

VARIABLES	(1) Unemp (0/1)	(2) Unemp (0/1)	(3) Unemp (0/1)	(4) Unemp (0/1)	(5) Unemp (0/1)	(6) Unemp (0/1)
Household Fin. Wealth t-1	0.023					
	(0.021)					
Household Fin. Wealth t-2		0.019				
		(0.018)				
Household Fin. Wealth t-3			0.016			
			(0.016)			
Fin. Wealth t-1				0.034		
				(0.035)		
Fin. Wealth t-2					0.037	
					(0.036)	
Fin. Wealth t-3						0.021
						(0.029)
Constant	0.179***	0.297***	0.292***	0.179***	0.293***	0.288***
	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Observations	5,081,119	4,479,391	3,979,946	5,081,119	4,672,364	4,105,522
R-squared	0.050	0.048	0.045	0.050	0.048	0.045
Parish FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Industry*Year FE	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: Regression results for unemployment duration as a function of household financial wealth to labor income of the displaced worker. Dependent variable is unemployment duration in days. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds. Financial wealth to labor income is defined as financial wealth to labor income of the displaced individual. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$. Standard errors are clustered at the individual level.

VARIABLES	(1) Duration	(2) Duration
Household Fin. Wealth / Labor inc t-1	2.954**	4.354*
	(1.281)	(2.365)
Constant	114.552***	67.938
	(26.560)	(53.276)
Observations	13,012	13,012
R-squared	0.166	0.807
Parish FE	YES	YES
Year FE	YES	YES
Industry FE	YES	YES
Industry x Year FE	YES	YES
Parish*Industry*Year*Edu FE	NO	YES
Controls	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14: Estimation results for estimating (5) for labor income and buffer measures contrasting mass layoff individuals with a placebo sample of individuals who were never unemployed that are randomly assigned a layoff year. Labor income is the labor income of the displaced worker. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds at the household level. Risky assets are stocks, mutaul equity, other securities and insurance at the household level. Riskfree assets are bank accounts, bonds and premium bonds at the household level. The table displays relative year dummies, T is the layoff year, T-1 the year before layoff etc. The regression also includes relative year dummies interacted with a dummy for the placebo sample and a fourth order polynomial in age (not reported). All variables are denoted in 2002 SEK. Standard errors are clustered at the individual level.

	(1)	(2)	(3)	(4)
VARIABLES	Labor Inc	Household Fin. Wealth	Household Risky	Household Riskfree
T-2	14,977***	12,567**	3,511	8,471**
	(2,615)	(5,488)	(3,609)	(3,389)
T-1	24,638***	13,147**	1,122	8,422**
	(2,422)	(5,688)	(3,594)	(3,564)
T	-33,712***	10,904*	1,399	7,614**
	(2,532)	(5,692)	(3,533)	(3,513)
T+1	-49,563***	6,202	-1,253	4,952
	(2,811)	(5,739)	(3,536)	(3,706)
T+2	-28,520***	-1,068	-6,900*	3,140
	(2,663)	(5,946)	(3,841)	(3,842)
Constant	-1,134,273***	1,501,733***	1,118,720***	366,355***
	(32,212)	(107,055)	(61,850)	(61,841)
Observations	981,618	981,570	981,570	981,570
R-squared	0.906	0.878	0.891	0.771
Individual FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

11 Appendix

Table 15: Regression results for unemployment duration as a function of household financial wealth to labor income of the displaced worker. Duration is in days. Financial wealth is the sum of the value of stocks, mutual equity, other securities, insurance and bank accounts, bonds and premium bonds at $t-1$. Financial wealth to labor income is financial wealth to labor income of the displaced individual in $t-1$. Controls are education, number of household children, gender, age and age squared, married, and a fourth order polynomial in labor income in $t-1$.

VARIABLES	(1) Duration	(2) Duration
Household Fin. Wealth / Labor inc Quart 2 t-3		-9.065
		(6.042)
Household Fin. Wealth / Labor inc Quart 3 t-3		-7.994
		(6.226)
Household Fin. Wealth / Labor inc Quart 4 t-3		12.346
		(8.122)
Household Fin. Wealth / Labor inc t-3	3.196*	
	(1.859)	
Constant	87.358	93.611
	(64.407)	(63.534)
Observations	5,936	5,936
R-squared	0.224	0.226
Parish FE	YES	YES
Year FE	YES	YES
Industry FE	YES	YES
Industry x Year FE	YES	YES
Controls	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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