# Depressed Demand[*]

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**Abstract**

A survey of Dutch households shows that individuals who have experienced higher national unemployment rates over their lifetime save more. Consistent with an effect of experience on beliefs, these individuals are also more concerned about their future income, job prospects, and retirement. These results are consistent with experienced-based learning and are not explained by personal employment history, aggregate time fixed effects, individual fixed effects, wealth, or income.

# 1 Introduction

This paper finds empirical support for the popular idea that living through tough economic times may depress consumer sentiment and, hence, aggregate demand. Furthermore, detailed information about beliefs and preferences helps elucidate some of the underlying mechanisms.

Using a survey of Dutch households conducted yearly since 1993, we first investigate the effect of unemployment experience, measured as the weighted average of national unemployment rates experienced over the lifetime of an individual, where earlier experiences receive a lower weight, on savings, our measure of demand. We find that individuals who have experienced higher national unemployment rates over their lifetime save more. These effects are economically significant. A one-standard-deviation increase in unemployment experience increases net financial wealth by about 2,500 euros and net total wealth by about 10,500 euros. These first results support the idea that tough economic times depress aggregate demand.

To understand this result, we also study the relationship between unemployment experience and additional measures of beliefs and preferences. We find that individuals with higher unemployment experience are significantly more pessimistic about their future economic situation and more worried about losing their job, which could explain why they save more. Finally, we do not find an effect of unemployment experience on risk or time preferences, suggesting that changes in preferences do not explain the effect of unemployment experience on savings.

To shed light on the mechanisms behind the saving response, we then explore the effect of unemployment experience on several saving motives. We find that the importance of saving for retirement responds most strongly to unemployment experience, suggesting that stronger concerns about low income during retirement explain an important part of the effect of experience on savings. Saving to buy a house and to start a business are also positively associated with unemployment experience. These motives may also explain part of the change in saving behavior associated with higher unemployment experience.

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Finally, we find that saving to cover unexpected expenses, leave a bequest, or generate financial returns, are not significantly associated with unemployment experience. Overall, these results further suggest that the saving response to higher unemployment experience is driven by concerns about the future economic situation of the household.

These results are consistent with experience-based learning, which implies that one needs to personally experience an event to learn from it. In the context of our study, this means that households who experience high national unemployment rates become more pessimistic about their future income, which would naturally lead them to save more.

However, there are other reasons, which have nothing to do with experienced-based learning, that may lead individuals who have lived through higher national unemployment rates to expect a lower personal income in the future, and hence to save more. First, they are more likely to have been personally unemployed, which could hurt their employment prospects (Oreopoulos et al., 2012). While this alternative explanation of our results cannot be completely ruled out with our data, it is not fully convincing for several reasons. First, since the national unemployment rate has remained generally low in the Netherlands (5% on average), it is a noisy measure of personal unemployment experience, which would make it difficult to uncover an effect of national unemployment experience on savings if this effect was entirely driven by personal unemployment experience. Second, all the results we document control for personal employment history, income, and wealth, making it unlikely that the effect of national unemployment experience on savings is driven by the personal employment history. Finally, we study the effect of national unemployment experience on future household income and on credit constraints up to 5 years into the future and are unable to find significant results, further suggesting that the effect of national unemployment experience on savings is not driven by poorer employment prospects.

Finally, all our results control for individual and year fixed effects, age, age square, and various demographics. The individual fixed effects ensure that unobserved individual characteristics do not explain our results. The year fixed effects control for aggregate shocks that affect all households at the same time. Controlling for age and age square

ensures that our results are not explained by typical changes over the life cycle. Finally, the results remain similar if we use different weights in the experience measure. Alternative measures of macroeconomic experience (GDP growth or inflation) do not seem as important for saving behavior, which may reflect the fact that unemployment is perceived as a major source of household income risk.

Overall, these results suggest that periods of high unemployment may depress aggregate demand through more pessimistic beliefs about future income. More specifically, individuals living through these periods worry more about losing their future income, their job, and find it more important to save for retirement.

The results are consistent with experienced-based learning, which has already been documented in different domains, ranging from financial markets (Kaustia and Knüpfer, 2008; Greenwood and Nagel, 2009; Malmendier et al., 2011; Malmendier and Nagel, 2011; Georgarakos et al., 2014; Knüpfer et al., 2017; Andersen et al., 2019), to housing markets (Kuchler and Zafar, 2019; Malmendier and Steiny, 2019), political preferences and beliefs (Alesina and Fuchs-Schündeln, 2007; Giuliano and Spilimbergo, 2013; Fuchs-Schündeln and Schündeln, 2015; Roth and Wohlfart, 2018; Laudenbach et al., 2019), and inflation expectations (Malmendier and Nagel, 2015).

Our work is most closely related to Choi et al. (2009), Campos and Reggio (2015), Malmendier and Shen (2019), and Kuchler and Zafar (2019). Choi et al. (2009) find that individuals who have experienced higher returns on their 401(k) retirement plan subsequently increase their contribution to the plan. Our paper instead focuses on unemployment experience and looks at a broader measure of savings. Campos and Reggio (2015) find that higher national unemployment rates in Spain decreased the consumption of households who remained employed. They attribute this result to more pessimistic income expectations, in line with our findings. Malmendier and Shen (2019) find that higher unemployment experience decreases consumer spending in the US. Our findings are complementary since we use the same measure of experience and study savings instead of consumption. We show that unemployment experience also matters in a country with more generous unemployment experience and shed additional light on the underlying

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mechanisms, by studying the different categories of assets and liabilities, saving motives, as well as different measures of expectations and preferences. Finally, Kuchler and Zafar (2019) find that individuals who personally experience unemployment experience become more pessimistic about future nationwide unemployment. By contrast, we find that nationwide unemployment experience affects expectations about personal unemployment, even after controlling for personal unemployment experience.

The paper is organized as follows. Section 2 presents the data, Section 3 shows the results, and Section 4 concludes.

# 2    Data

**DNB Survey**   We use various measures of preferences, expectations, and economic behavior from the DNB Household Survey, conducted annually since 1993 and administered by CentERdata, a survey research institute at Tilburg University that specializes on Internet surveys. The survey aims to be representative of the Dutch population and provides information on about 2000 households. The purpose of the survey is to study the economic and psychological determinants of the saving behavior of households. The survey therefore also contains detailed information on household characteristics such as age, income, wealth, liabilities, family situation, gender, retirement status, education, region, etc. Households participate for as long as they want and the survey is refreshed with new households. We exclude respondents who are younger than 25 or older than 75. In a few cases, members of the same household participated to the survey and we only keep self-reported household heads. We observe each respondent 4 times on average, which will allow us to control for individual fixed effects. Table 1 summarizes these demographics.

**Macroeconomic Experience**   To measure unemployment experience, we follow Malmendier and Nagel (2011) and construct a measure of experienced unemployment during

Table 1: Summary statistics - Demographics

| Variable | Mean | Std. Dev. | Min. | Max. | N |
|---|---|---|---|---|---|
| Household income (euro, price 2018) | 39093 | 28571 | -3902 | 1751826 | 22642 |
| Wealth (euro, price 2018) | 143986 | 157359 | -45799 | 924726 | 22642 |
| Employed | 0.658 | 0.474 | 0 | 1 | 22642 |
| Number of years worked | 23.584 | 13.338 | 0 | 50 | 22642 |
| Age | 50.559 | 13.194 | 25 | 75 | 22642 |
| Female | 0.213 | 0.409 | 0 | 1 | 22642 |
| College education | 0.481 | 0.5 | 0 | 1 | 22642 |
| Couple | 0.706 | 0.456 | 0 | 1 | 22642 |
| Number of children in the house | 0.688 | 1.068 | 0 | 7 | 22642 |
| Number of household members | 2.415 | 1.291 | 1 | 9 | 22642 |
| High income panel | 0.093 | 0.29 | 0 | 1 | 22642 |
| Degree of urbanization | 2.935 | 1.317 | 1 | 5 | 22642 |
| Very high urbanization | 0.163 | 0.37 | 0 | 1 | 22642 |
| High urbanization | 0.256 | 0.436 | 0 | 1 | 22642 |
| Moderate urbanization | 0.222 | 0.415 | 0 | 1 | 22642 |
| Low urbanization | 0.202 | 0.402 | 0 | 1 | 22642 |
| Very low urbanization | 0.157 | 0.364 | 0 | 1 | 22642 |

the lifetime of each individual based on the following formula:

$$E_{it}(\lambda) = \sum_{k=0}^{age_{it}-1} w_{it}(k,\lambda)U_{t-k}$$

where:

$$w_{it}(k,\lambda) = \frac{(age_{it}-k)^{\lambda}}{\sum_{k=0}^{age_{it}-1}(age_{it}-k)^{\lambda}}$$

The experienced aggregate unemployment ($E_{it}$) of individual $i$ in year $t$ is given by the weighted average of the aggregate unemployment rate in each year $k$ since birth. The weights $w_{it}$ depend on $\lambda$. If $\lambda = 0$, each year receives the same weight and the unemployment experience is a normal average of all the unemployment rates experienced by the individual over his lifetime. If $\lambda > 0$, more weight is attached to more recent experiences. If $\lambda < 0$, more weight is attached to experiences earlier in life. Following Malmendier and Shen (2019) and other papers, we use $\lambda = 1$ for our baseline analysis, which has become the standard in this literature. In the Appendix, we experiment with different values of $\lambda$ and show that $\lambda = 1$ maximizes the R-squared of our main specification.

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Figure 1: Unemployment rate from 1910 to 2018
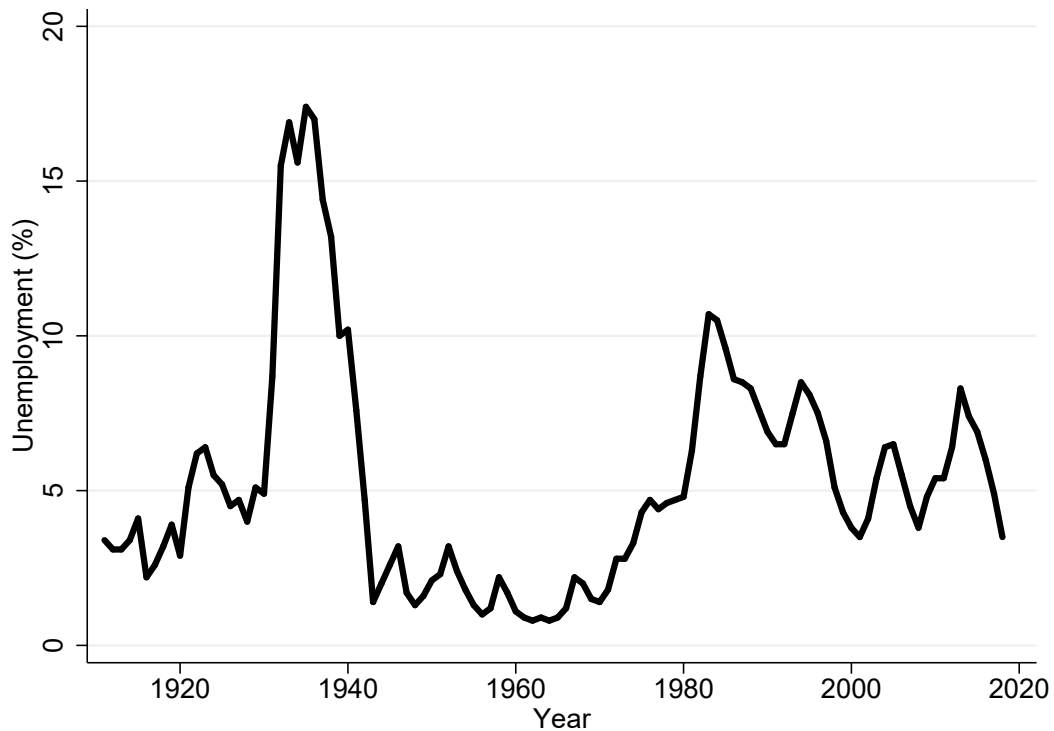


To construct the measure of experienced unemployment, we use the unemployment rate in the Netherlands over the period 1910-2018, which is constructed by Statistics Netherlands and shown in Figure 1.

The measure of unemployment experience ranges from 4.7 % to 7.5%, with a mean of 5.7%. Figure A1 shows the evolution of this measure for three age groups. In 2005, a 25-year old has experienced 6.3% aggregate unemployment over his lifetime, whereas a 65-year old in the same year has experienced 5.1%. Ten years later, in 2015, however, the experience of these two groups is much closer. A 25-year old has experienced 5.8% unemployment, whereas a 65-year old in 2015 has experienced 5.6%. The 45-year-old experienced lower unemployment than the 25-year-old until 2008 but higher experienced unemployment afterwards.

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Figure 2: Evolution of experienced unemployment for different age groups
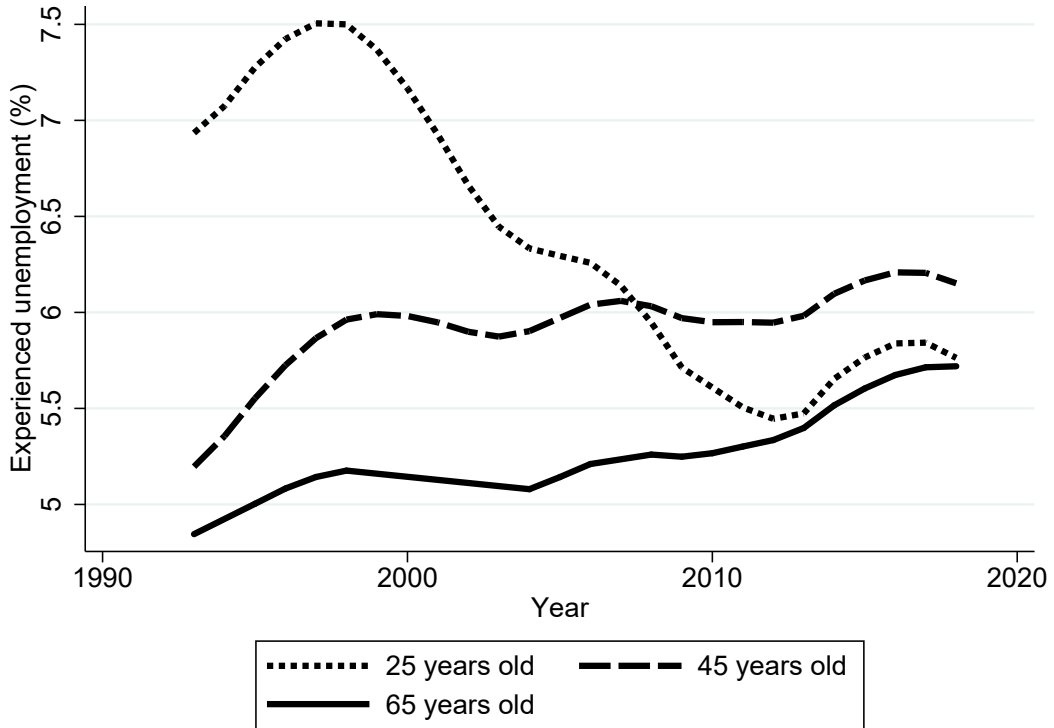


# 3 Results

We estimate the effect of unemployment experience on savings in section 3.1, on preferences and beliefs in section 3.2, on different saving motives in section 3.3, and on future income and credit constraints in section 3.4. We estimate the following equation:

$$Y_{it} = \alpha + \beta E_{it} + \gamma X_{it} + \eta_t + \nu_i + \epsilon_{it}, \tag{1}$$

where $Y_{it}$ is the outcome of interest, $E_{it}$ is unemployment experience, $X_{it}$ a vector of control variables (income, net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies), $\nu_i$ are the individual fixed effects, and $\eta_t$ are year dummies. We estimate this relationship using OLS and cluster the standard errors at the individual level.

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## 3.1 Savings and Credit

This section studies the effect of unemployment experience on savings, which we measure as the change in net wealth. The data include a detailed description of the assets and liabilities of respondents. Assets include housing, vehicles, stocks and bonds, life insurance, savings accounts, and cash holdings. Liabilities include the value of mortgages, private loans, consumer loans, family loans, and study loans. All these assets and liabilities are measured in euros and adjusted for inflation using the 2018 price level. These measures are self-reported and hence suffer from measurement errors, which should work against us finding an effect. To alleviate this measurement error, we exclude observations that belong to the 2.5% lowest and highest levels of net wealth. In the Appendix, we experiment with different cutoff rules.

We construct three measures of savings as follows.

**Δ Wealth**   First, we take the overall change in net wealth, which considers all assets and liabilities.

**Δ Financial Wealth**   Second, we construct a measure of the change in financial net wealth, which excludes house value and vehicle value from the assets, and mortgages and study loans from the liabilities.

**Δ Non Financial Wealth**   Non financial net wealth is the complementary measure that uses house value, vehicle value, mortgages, and study loans.

Table 2 shows the summary statistics for these three measures of savings as well as their individual components.

We first estimate Equation 1 to study the effect of unemployment experience on the three measures of savings outlined above. Table 3 shows the results. Unemployment experience has a significantly positive effect on the three measures. The effects are sizable. A 0.1 percent point increase (the within-individual standard deviation) in unemployment experience increases their total net wealth by about 10,500 EUR. The second column suggests that most of this effect is driven by changes in their non financial wealth, which

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Table 2: Summary statistics - Savings (euro, price 2018)

| Variable | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|
| Δ Wealth | 8177 | 85726 | -721560 | 745877 |
| Δ Financial Wealth | 593 | 41800 | -669953 | 529391 |
| Δ Non Financial Wealth | 7585 | 77100 | -718446 | 746630 |
| Δ House | 13943 | 92839 | -717694 | 1260618 |
| Δ Vehicle | 39 | 9529 | -238604 | 214649 |
| Δ Stock | 178 | 21599 | -657514 | 469821 |
| Δ Life Insurance | -170 | 19093 | -431515 | 361274 |
| Δ Deposit | 410 | 24228 | -512419 | 529482 |
| Δ Cash | 12 | 8060 | -463006 | 465652 |
| Δ Mortgage | 5999 | 58935 | -579555 | 885934 |
| Δ Priate loan | -11 | 4154 | -120966 | 257913 |
| Δ Consumer loan | -85 | 6599 | -254147 | 239323 |
| Δ Family loan | -84 | 4897 | -325821 | 142347 |
| Δ Study loan | -37 | 1044 | -41697 | 24820 |
| N | | 16465 | | |

increases by about 8,000 EUR. The rest of the total effect consists of changes in their financial net wealth, which is about 2,500 EUR higher.

Table 3: Effects of Experience on Savings

| | (1) Δ Wealth | (2) Δ Non Fin. Wealth | (3) Δ Fin. Wealth |
|---|---|---|---|
| Unempl. Experience | 105205.4*** | 79899.3*** | 25306.0*** |
| | (24047.5) | (20528.7) | (9463.5) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.396 | 0.321 | 0.081 |
| N individuals | 4654 | 4654 | 4654 |
| N observations | 16465 | 16465 | 16465 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

To understand which components of wealth drive these results, Table 4 runs the same regression for each individual change in asset holdings. The biggest change, again considering a 0.1 percent change in unemployment experience is the change in deposits (which include all savings accounts), which is about 2,000 EUR and is highly significant,

following by the increase in vehicle value of nearly 400 EUR. The effect on housing value is also large (about 2,100 EUR) but insignificant, which may in part reflect the fact that respondents may be uncertain about the value of their house. Part of the increase in total savings is channeled to life insurance, with an increase of about 25 EUR and to stock, with an increase of about 370 EUR, although none of these effects are statistically significant.

Table 4: Effects of Experience on Assets

|  | (1) $\Delta$ House | (2) $\Delta$ Vehicle | (3) $\Delta$ Stock | (4) $\Delta$ Insurance | (5) $\Delta$ Deposit | (6) $\Delta$ Cash |
|---|---|---|---|---|---|---|
| Unempl. Experience | 20975.3 | 3882.6* | 3701.0 | 242.8 | 20541.0*** | -1129.4 |
|  | (24007.5) | (2165.2) | (4098.7) | (4120.3) | (5900.5) | (1272.0) |
| Control variables | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | 0.259 | 0.019 | 0.033 | 0.037 | 0.035 | 0.005 |
| N individuals | 4654 | 4654 | 4654 | 4654 | 4654 | 4654 |
| N observations | 16465 | 16465 | 16465 | 16465 | 16465 | 16465 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5 runs the same regression for each individual change in liability holdings. Individuals with 0.1% percent more unemployment experience reduce mortgage debt faster, by about 4,000 EUR more per year. The same is true for their student loan, which they reduce by 100 EUR more per year. Unemployment experience does not significantly affect the other types of debt.

The Appendix examines the robustness of these results to a number of alternative specifications. First, we investigate whether experiences concerning other macroeconomic variables also affect savings. The previous literature has examined inflation, GDP, growing-up in a recession, inequality, house prices, institutions, etc. More specifically, we expected that inflation experience and GDP growth experience may also play an important role for savings, where the measures of experience are constructed using the same formula as for unemployment, but replacing unemployment rates by inflation rates or

Table 5: Effects of Experience on Liabilities

|  | (1) $\Delta$ Mortgage | (2) $\Delta$ Private | (3) $\Delta$ Consumer | (4) $\Delta$ Family | (5) $\Delta$ Study |
|---|---|---|---|---|---|
| Unempl. Experience | -38299.3** | -79.33 | -74.80 | 878.8 | -1176.5** |
|  | (15395.6) | (690.6) | (1306.2) | (1469.4) | (513.9) |
| Control variables | Yes | Yes | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | 0.068 | 0.003 | 0.010 | 0.002 | 0.013 |
| N individuals | 4654 | 4654 | 4654 | 4654 | 4654 |
| N observations | 16465 | 16465 | 16465 | 16465 | 16465 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

GDP growth rates. Tables A1-3 show the results. These alternative measures of experience are not as robustly associated with savings as unemployment experience, probably reflecting the fact that unemployment is perceived as a more important source of income risk. The only significant effect is that individuals who experienced higher inflation rates increase their financial wealth more. We do not study the effects of growing up in a recession because it features almost no variation within individuals. Focusing on periods with unemployment rates higher than 10% would give us zero variation within individual, since these periods occurred before our sample started (in 1932-1940 and 1983-1984). We also do not look at stock market experience because few people participate in the Netherlands (about 10% versus more than 50% in the US) and it is not clear what the reference portfolio should be (unlike in the US with the S&P500).

The effect of unemployment experience on savings is also robust to different truncation rules of the data. In our main specification, we excluded the top and bottom 2,5% of wealth, to alleviate measurement errors. Tables A4-5 show the results when we truncate wealth at either the 5% level or the 10% level. The coefficients remain highly significant but becomes smaller, reflecting the exclusion of wealthier individuals.

We also have access to a measure of unemployment rates for each of the 12 provinces of the Netherlands, but only starting from 1981. To build a measure of local unemploy-

ment experience, we select a subsample of respondents who lived in the same province in the past 5 years (71% of the full sample). To build a measure of local unemployment experience, we use the same formula as before but combine these local unemployment rates for the past 5 years and the national unemployment rates before that. This mixed measure may better reflect the actual unemployment experienced by households. However, the national rates may be more relevant if they are more often reported in the news or if the different provinces are well integrated. Table A6 shows the results. We find that the effect of this local measure on savings is also positive and significant, but the size of the coefficient is divided by two, suggesting that the measure of local unemployment experience is less important for households than the national measure.

Finally, we also estimate our main specification using different values of the parameter $\lambda$, ranging from -3 to 5 with intervals of 0.5. Figure A1 shows the resulting $R^2$. Consistent with the earlier literature, we find that the $R^2$ is maximized for $\lambda = 1$. Finally, Tables A7-8 show the detailed results of our main specification with $\lambda = 0.5$ and $\lambda = 1$. The coefficients remain significant but slightly lower.

To summarize, this section suggests that households who experienced more unemployment over their lifetime save more. The following sections investigate possible explanations for this result.

## 3.2    Expectations and Preferences

We now consider several explanations for the higher savings of individuals who have experienced higher unemployment. Do they save more because they believe their income is going to be lower? Because they are more worried that someone in their household is going to lose his job or is not going to find one? Or do they save more because their time and risk preferences have changed?

To answer these questions, we use the following measures available from the survey, which are summarized in Table 6.

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**Expected Income in the Next 5 Years.** *Do you think the total net income of your household will increase, remain the same, or decrease, in the next five years? 1 Decrease, 2 Remain the same, 3 Increase* . This question was used from 1993 until 2002, but was slightly modified from 2004 to 2018: *How do you think the economic situation of your household will be in five years' time in comparison to the current situation? 1 Much Worse, 2 Worse, 3 The same, 4 Better 5 Much Better.* To harmonize the categories, we recode the answers from 2004 to 2018. "Much worse" and "Worse" are combined and coded as 1. "The same" is coded as 2. "Better" and "Much better" are combined and coded as 3.

**Expected Job Loss.** *Do you expect the total net yearly income of your household to change in the next 12 months because a member of your household who currently has a job, will stop working? 1 Yes, 0 No.*

**Expected Job Find.** *Do you expect the total net yearly income of your household to change in the next 12 months because a member of your household who is currently out of work, will start working? 1 Yes, 0 No.*

**Forward-Looking.** *I often work on things that will only pay off in a couple of years. 1 means extremely uncharacteristic, 7 extremely characteristic.*

**Risk Aversion.** *I think it is more important to have safe investments and guaranteed returns, than to take a risk to have a chance to get the highest possible returns. 1 totally disagree, 7 totally agree.*

Table 6: Summary Statistics - Expectations and Preferences

| Variable | Mean | Std. Dev. | Min. | Max. | N |
|---|---|---|---|---|---|
| Expected Income | 2.089 | 0.698 | 1 | 3 | 19080 |
| Expected Job Loss | 0.047 | 0.211 | 0 | 1 | 20927 |
| Expected Job Find | 0.028 | 0.164 | 0 | 1 | 20927 |
| Forward-Looking | 3.64 | 1.569 | 1 | 7 | 15929 |
| Risk Aversion | 5.034 | 1.733 | 1 | 7 | 18767 |

We then estimate Equation 1 to study the effect of unemployment experience on these variables. Table 7 shows the results. Respondents with higher unemployment experience are more pessimistic about the economic situation of their household, which could explain why they save more. They are also more worried that the employed members of their household will lose their job and more pessimistic that the unemployed members will find one. This latter effect, however, is insignificant, which could come from the fact that the unemployment rate is low in the Netherlands and few respondents actually have unemployed members in their household. Finally, unemployment experience does not significantly affect time and risk preferences, which are thus unlikely to explain their saving response.

Table 7: Effects of Experience on Expectations and Preferences

|  | (1) Exp. Inc. | (2) Job Loss | (3) Job Find | (4) F. Looking | (5) Risk Av. |
|---|---|---|---|---|---|
| Unempl. Experience | -0.339** | 0.0818* | -0.0667 | 0.182 | 0.139 |
|  | (0.14) | (0.04) | (0.05) | (0.39) | (0.35) |
| Control variables | Yes | Yes | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | 0.065 | 0.013 | 0.014 | 0.015 | 0.009 |
| N individuals | 6100 | 6362 | 6362 | 4893 | 5794 |
| N observations | 19080 | 20927 | 20927 | 15929 | 18767 |

Note: Control variables are income, net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Overall, the most promising mechanism to explain the effect of unemployment experience on savings seems to rely on more pessimistic beliefs about the economic situation of the household.

## 3.3 Saving Motives

To shed light on the potential drivers of the saving response, this section studies the relationship between unemployment experience and six saving motives:

How important is it to you to have some money saved to. . . (1 very unimpor-

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tant, 7 very important)

1. ...to supplement your general old-age pension? **(Pension motive)**

2. ...to have some money saved so you can buy a (different) apartment or house in the future. **(House motive)**

3. ...to have some money saved to set up your own business? **(Business motive)**

4. ...cover unforeseen expenses? **(Precautionary motive)**

5. ...to save so I can leave money to my children (or other relatives)? **(Bequest motive)**

6. ...to have some money saved to generate income from interests or dividends? **(Returns motive)**

Table 8 gives summary statistics for these six variables.

Table 8: Summary Statistics - Saving Motives

| Variable | Mean | Std. Dev. | Min. | Max. | N |
|---|---|---|---|---|---|
| Pension | 3.846 | 2.111 | 1 | 7 | 19512 |
| House | 2.818 | 1.912 | 1 | 7 | 18752 |
| Business | 2.282 | 1.706 | 1 | 7 | 18023 |
| Precautionary | 5.536 | 1.35 | 1 | 7 | 20001 |
| Bequest | 2.749 | 1.788 | 1 | 7 | 18975 |
| Returns | 3.087 | 1.746 | 1 | 7 | 19361 |

We then estimate Equation 1 to study the effect of unemployment experience on these different saving motives. Table 9 shows the results. Individuals who have experienced higher unemployment find it more important to save to supplement their pension, to buy a house, or to start a business. The effect on pensions is especially noteworthy, with a t-stat of more than 7. Furthermore, unemployment experience does not significantly affect the importance of saving to cover unexpected expenses, to leave a bequest, or to enjoy financial returns.

Overall, the results in this section suggest that living through tougher economic times reinforces the importance of saving for households, especially for retirement, starting

Table 9: Effects of Experience on Saving Motives

| | (1) Pension | (2) House | (3) Business | (4) Precautionary | (5) Bequest | (6) Return |
|---|---|---|---|---|---|---|
| Unempl. Experience | 3.335*** | 0.734* | 1.460*** | -0.367 | 0.242 | -0.164 |
| | (0.41) | (0.39) | (0.41) | (0.28) | (0.33) | (0.33) |
| Control variables | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | 0.227 | 0.019 | 0.083 | 0.037 | 0.026 | 0.017 |
| N individuals | 6086 | 6009 | 5890 | 6151 | 5949 | 6077 |
| N observations | 19512 | 18752 | 18023 | 20001 | 18975 | 19361 |

Note: Control variables are income, net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

a business, or buying a house. This suggests that the effect of experience on savings documented above is likely to be driven by these considerations. Individuals who have lived through tougher economic times save more because they seem more worried about their retirement. The fact that they find it more important to save to buy a house or start a business may reflect concerns about losing their job or paying the rent.

## 3.4 Alternative Explanations

These results are consistent with experience-based learning, which implies that one needs to personally experience an event to learn from it. In the context of our study, this means that households who experience high national unemployment rates become more pessimistic about their future income, which would naturally lead them to save more.

Another possible explanation, however, is that individuals who have lived through higher national unemployment rates have been personally more often unemployed, which would hurt their future unemployment prospects (Oreopoulos et al., 2012). As a result, these individuals would also become more pessimistic and save more. While we cannot completely rule out this alternative explanation with our data, it is not fully convincing for several reasons.

First, a historically low national unemployment rate in the Netherlands is bound

to remain a noisy measure of personal unemployment experience, which would make it difficult to uncover an effect of national unemployment experience on savings if this effect was entirely driven by personal unemployment experience.

Second, all the results we document control for personal employment history, income, and wealth, making it unlikely that the effect of national unemployment experience on savings is driven by the personal employment history.

In this section, we further shed light on this alternative explanation by estimating the effect of national unemployment experience on future household income and future credit constraints. More specifically, we estimate equation 1 using as outcome variables future income and credit constraints at one-year and five-year horizons.

To measure future income, we use the net household income measured in 2018 prices. To measure credit constraint, we use the following question from the survey:

**Credit Constraint.** *If you would need credit now, would you expect your application to be accepted? 0 no, 1 yes.*

Table 10 presents the results. Column 1 shows that individuals with higher unemployment experience do not report a lower income next year or in 5 years. In fact, they report a higher income although the coefficients are not significantly different from 0. The standard error increases a lot when looking at income 5 years from now, which reflects the drop in the number of observations. Since households only participate a limited number of times in the survey, measuring their future income implies that we have to drop those households who no longer participate. The further in the future we measure income, the more households drop out of the sample. These results are thus only indicative. However, they do not support the idea that experiencing higher national unemployment rates decreases future income, after controlling for time fixed effects, personal unemployment experience, wealth, and income. These results suggest that although individuals with higher unemployment experience are more pessimistic about their future income, this pessimism seems unwarranted.

In columns 3 and 4, we further examine whether individuals with higher unemploy-

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ment experience tend to become more credit constrained. Again, the coefficients are insignificant, suggesting that higher national unemployment experience does not affect future constraints and that this channel is unlikely to explain the effect of unemployment experience on expected income and savings.

Table 10: Effects of Experience on Changes in Future Income and Credit Constrained

|  | (1) Income(t+1) | (2) Income(t+5) | (3) Constrained(t+1) | (4) Constrained(t+5) |
|---|---|---|---|---|
| Unempl. Experience | 0.0627 | 2.382 | -0.0958 | 0.0120 |
|  | (0.18) | (6.88) | (0.08) | (0.17) |
| Control variables | Yes | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes | Yes |
| $R^2$ | 0.493 | 0.010 | 0.020 | 0.030 |
| N individuals | 4701 | 915 | 4944 | 1569 |
| N observations | 14942 | 3609 | 16147 | 6973 |

Note: Control variables are income, net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. $^*$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Overall, these results suggest that the higher savings of individuals with higher unemployment experience is unlikely to be driven by a lower permanent income or by lower future creditworthiness.

# 4  Conclusion

Using a survey of Dutch households, we find that individuals who experienced higher unemployment over their lifetime save more. We also provide evidence suggesting that this result may be explained by more pessimistic beliefs related to future income, job loss, and retirement. The results are consistent with experience-based learning and with the narrative that tough economic times can depress economic sentiment and aggregate demand.

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# Appendix

Table A1: Effects of Inflation Experience on Savings

| | (1) $\Delta$ Wealth | (2) $\Delta$ Non Fin. Wealth | (3) $\Delta$ Fin. Wealth |
|---|---|---|---|
| Inflation Experience | 35525.6 | -4058.2 | 39583.8** |
| | (48485.1) | (41621.0) | (17642.6) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.395 | 0.320 | 0.081 |
| N individuals | 4654 | 4654 | 4654 |
| N observations | 16465 | 16465 | 16465 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. $^*$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Table A2: Effects of GDP Experience on Savings

| | (1) $\Delta$ Wealth | (2) $\Delta$ Non Fin. Wealth | (3) $\Delta$ Fin. Wealth |
|---|---|---|---|
| GDP Experience | -18858.4 | -14642.6 | -4215.8 |
| | (31713.0) | (29066.7) | (12603.4) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.394 | 0.320 | 0.081 |
| N individuals | 4654 | 4654 | 4654 |
| N observations | 16465 | 16465 | 16465 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. $^*$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Table A3: Effects of Macro Experience on Savings

| | (1) $\Delta$ Wealth | (2) $\Delta$ Non Fin. Wealth | (3) $\Delta$ Fin. Wealth |
|---|---|---|---|
| Inflation Experience | 83526.4 | 15642.7 | 67883.7*** |
| | (57829.4) | (49502.0) | (23269.7) |
| GDP Experience | 48653.8 | 15632.5 | 33021.4* |
| | (38022.1) | (35281.5) | (17583.3) |
| Unempl. Experience | 114543.6*** | 82611.2*** | 31932.4*** |
| | (25705.1) | (22210.8) | (10583.0) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.396 | 0.321 | 0.082 |
| N individuals | 4654 | 4654 | 4654 |
| N observations | 16465 | 16465 | 16465 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Effects of Experiences on Savings, Excluded top and bottom 5% of Wealth

| | (1) $\Delta$ Wealth | (2) $\Delta$ Non Fin. Wealth | (3) $\Delta$ Fin. Wealth |
|---|---|---|---|
| Unempl. Experience | 86172.6*** | 62119.6*** | 24053.0*** |
| | (23325.1) | (19975.5) | (9050.7) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.401 | 0.325 | 0.071 |
| N individuals | 4410 | 4410 | 4410 |
| N observations | 15230 | 15230 | 15230 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Effects of Experience on Savings: Excluded top and bottom 10% of Wealth

|  | (1)<br>Δ Wealth | (2)<br>Δ Non Fin. Wealth | (3)<br>Δ Fin. Wealth |
|---|---|---|---|
| Unempl. Experience | 67749.6*** | 52004.5*** | 15745.0* |
|  | (22630.1) | (19329.8) | (8798.0) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.386 | 0.316 | 0.056 |
| N individuals | 3992 | 3992 | 3992 |
| N observations | 13310 | 13310 | 13310 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: Effects of Local Unemployment Experience on Savings

|  | (1)<br>Δ Wealth | (2)<br>Δ Non Fin. Wealth | (3)<br>Δ Fin. Wealth |
|---|---|---|---|
| Local Unempl. Experience | 45468.6** | 23548.6 | 21920.0*** |
|  | (18485.2) | (15041.8) | (8209.0) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.440 | 0.371 | 0.089 |
| N individuals | 3396 | 3396 | 3396 |
| N observations | 11724 | 11724 | 11724 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7: Effects of Unemployment Experience on Savings: $\lambda = 0.5$

|  | (1) $\Delta$ Wealth | (2) $\Delta$ Non Fin. Wealth | (3) $\Delta$ Fin. Wealth |
|---|---|---|---|
| Unempl. Experience | 77824.5*** | 59644.7** | 18179.7* |
|  | (28116.4) | (23976.5) | (10972.2) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.395 | 0.321 | 0.081 |
| N individuals | 4654 | 4654 | 4654 |
| N observations | 16465 | 16465 | 16465 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8: Effects of Unemployment Experience on Savings: $\lambda = 1.5$

|  | (1) $\Delta$ Wealth | (2) $\Delta$ Non Fin. Wealth | (3) $\Delta$ Fin. Wealth |
|---|---|---|---|
| Unempl. Experience | 79405.0*** | 59786.6*** | 19618.4*** |
|  | (18842.0) | (15953.8) | (6959.6) |
| Control variables | Yes | Yes | Yes |
| Individual FE | Yes | Yes | Yes |
| $R^2$ | 0.396 | 0.321 | 0.081 |
| N individuals | 4654 | 4654 | 4654 |
| N observations | 16465 | 16465 | 16465 |

Note: Control variables are income, past net wealth, employment status, number of years worked more than 32 hours per week, age, age square, gender, education, marital status, number of children in the house, family size, whether they are part of the high income panel, level of urbanization, and province dummies. Sample period: 1993-2018. Standard errors are clustered at the individual level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure A1: $R^2$ for different values of $\lambda$