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# Depressed Demand\*

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#### Abstract

Using a survey of Dutch households, we find that individuals who have experienced higher national unemployment rates over their lifetime save more and borrow less, after controlling for aggregate shocks, income, wealth, and demographics. These results are consistent with experience-based learning and inconsistent with rational learning. Furthermore, these individuals find it more important to save for retirement and are more worried about losing their job. These observations suggest that periods of high unemployment depress aggregate demand because of persistently more pessimistic beliefs.

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# 1 Introduction

This paper contributes to our understanding of the origins of economic fluctuations by providing empirical support for the popular idea that living through tough economic times may depress consumer sentiment and, hence, aggregate demand. Furthermore, using survey data that features detailed information about the beliefs and preferences of consumers allows us to elucidate some of the underlying mechanisms.

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 and borrowing, our measures of demand. We find that individuals who have experienced 1 percent more unemployment over their lifetime report a 1.5 percentage point higher saving rate and a 10 percentage point lower consumer credit-to-income ratio. These effects are economically significant since the saving response corresponds to a 16% increase for the average saver and the consumer credit response corresponds to a 27% decrease for the average borrower. These first results support the idea that tough economic times depress aggregate demand.

To understand why individuals who have lived through higher unemployment rates save more and borrow less, we then explore the relationship between several saving motives and unemployment experience. 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 the saving rate. Covering unexpected expenses and starting a business may also explain part of the change in saving behavior associated with higher unemployment experience. However, buying a house, leaving a bequest, or generating returns on financial markets are unlikely to explain the saving response, since these saving motives are unrelated or negatively related to unemployment experience.

Studying the relationship between unemployment experience and additional measures of beliefs and preferences allows us to paint a more complete picture of how tough economic times may depress demand. We find that individuals with higher unemployment experience are significantly more worried about losing their job, which could also explain why they save more and borrow less, and expect a lower income, although this effect is not significant. Finally, we are also able to rule out additional possible mechanisms such as changes in income uncertainty or time preferences, which are unrelated to unemployment experience.

All our results control for year fixed effects, age, age square, income, assets, liabilities, and various demographics. The year fixed effects ensure that our results cannot be explained by aggregate shocks that affect all households at the same time in a given year. Controlling for age and age square ensures that our results are not explained by typical changes over the life cycle. Furthermore, the results remain similar if we use different weights in the experience measure or use different measures of experience (GDP growth, growing up in a recession), although the significance levels decrease. They can also be replicated using another Dutch household survey (LISS) which contains similar information but started much later (2009) and thus features less variation in unemployment experience.

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 job and find it more important to save for retirement. Furthermore, these effects are likely to be persistent, because the measure of unemployment experience we use is a weighted average of all unemployment rates experienced since birth.

The results are consistent with experienced-based learning, which has already been documented in different domains, ranging from stock market investment (Greenwood and Nagel, 2009; Malmendier and Nagel, 2011), to corporate finance decisions (Malmendier et al., 2011), 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 Malmendier and Shen (2019), who find that higher unemployment experience decreases consumer spending in the US. Our main contributions are to extend their results to a different country, to use different measures of consumption-saving, and to shed additional light on the underlying mechanisms. Interestingly, unemployment experience affects economic behavior not only in the US but also in the Netherlands, a country that is characterized by more generous unemployment insurance and in which we may expect unemployment to be less scarring. We also show that unemployment experience affects not only measures of consumer spending but also the saving rate and consumer credit. Finally, we provide a more detailed picture of how unemployment affects beliefs. Job loss and pension seem to become more salient concerns for individuals who experienced higher unemployment. Policies that aim to limit the negative effects of experience-based learning may thus want to focus on alleviating these specific concerns.

A possible alternative explanation for our results is that individuals who have experienced higher unemployment save more because they believe, following Bayesian updating, that they are more likely to lose their job. While this story makes intuitive sense, it is unlikely to explain our results. First, the measure of experience we use is based on the national unemployment rate averaged over the lifetime of an individual. To the extent that people find it important to use the national unemployment rate to form beliefs about their job prospects, they could easily access this information for periods before they were born. If they were to do so, everybody at a given time would have used this information and formed the same beliefs. Hence, any effect of experience would have been absorbed by our time fixed effects. Second, the Bayesian learning story predicts that, after controlling for income, higher unemployment experience should decrease, not increase, savings, as has been shown by Malmendier and Shen (2019) in an simulate-and-estimate exercise based on a rich life-cycle model with income and unemployment risk (Low et al., 2010). This is because an individual with the same income as another but a higher unemployment experience likely also has a higher permanent income component. As a result, this individual should rationally save less. Inconsistent with this prediction but consistent with experience-based learning, we observe that, after controlling for income, individuals with higher unemployment experience save more.

The paper is organized as follows. The next section presents the data and shows how we measure the level of lifetime experienced unemployment. Section 3 presents our results and section 4 studies their robustness. Section 5 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. A separate high income panel of about 1,000 households over-samples the households belonging to the 10 percent highest income group. In 1997, this high income panel was stopped due to high associated costs and the households belonging to that group were added to the rest of the panel. We exclude respondents who are younger than 25 or older than 75 and who are not employed. In a few cases, members of the same household participated to the survey and we only keep self-reported household heads. 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 the lifetime of each individual based on the the following formula:

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

Variable	Mean	Std. Dev.	Min.	Max.	Ν
Household Income	34237	18132	0	75000	15839
Total Assets	247793	291042	0	7554500	21713
Total Liabilities	96663	143005	0	3230000	21707
Age	44.085	9.987	25	75	23067
Age squared	2043.196	897.21	625	5625	23067
Number of household members	2.719	1.41	1	9	23067
Children in the house	0.484		0	1	23067
Couple	0.731		0	1	23067
Female	0.204		0	1	23067
College education	0.489		0	1	23067
High income panel	0.09		0	1	23067
Very high urbanization	0.169		0	1	22753
High urbanization	0.247		0	1	22753
Moderate urbanization	0.218		0	1	22753
Low urbanization	0.2		0	1	22753
Very low urbanization	0.166		0	1	22753
High income panel	0.09		0	1	23067

Table 1: Summary Statistics - Demographics

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  $\lambda = +1$ , more weight is attached to more recent experiences. If  $\lambda = -1$ , 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. In Section 4, we replicate our results using  $\lambda = +1.5$  and  $\lambda = +0.5$ .

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 5.9%. Figure 2 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



Figure 1: Unemployment rate from 1910 to 2018

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.

# **3** Results

We estimate the effect of unemployment experience on the saving rate and consumer credit in section 3.1, on saving motives in section 3.2, and on preferences and beliefs in section 3.3. We estimate the following equation:

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

where  $Y_{it}$  is the outcome of interest (saving rate, consumer credit, saving motives, expectations, or preferences),  $E_{it}$  is unemployment experience,  $X_{it}$  a vector of control variables



Figure 2: Evolution of experienced unemployment for different age groups

(income, assets, liabilities, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, and whether they are part of the high income panel), and  $\eta_t$  are year dummies. We estimate this relationship using OLS and cluster the standard errors at the individual level.

## 3.1 Savings and Credit

This section studies the effect of unemployment experience on the saving rate and consumer credit.

Saving rate. About how much money has your household put aside in the past 12 months? Less than 1,500 EUR; between 1,500 EUR and 5,000 EUR; between 5,000 EUR and 12,500 EUR; between 12,500 EUR and 20,000 EUR; between 20,000 EUR and 37,500 EUR; between 37,500 EUR and 75,000 EUR; 75,000 EUR or more. We then construct a measure of savings by taking the middle point of each category. For example, if a household reports savings between 5,000 EUR and 12,500 EUR, we set savings to 8,750

EUR. If a household reports savings higher than 75,000 EUR, we set savings to 75,000 EUR. To compute the saving rate, we take the ratio between savings and the reported net income in the previous year. We exclude the observations with a saving rate higher than 0.9 (less than 1% of the observations) to deal with outliers.<sup>1</sup>

**Consumer Credit to Income Ratio.** We compute the ratio of household's outstanding consumer credit at the end of the previous year to the reported net yearly income in the previous year. Consumer credit consists of private loan, extended lines of credit, credit card debts, finance debts, loans from family or friends, and study loans. Extended lines of credit accounts for nearly half of the total consumer credit. We exclude the top 1% of the distribution to deal with outliers.

Table 2: Summary Statistics - Saving, Consumer Credit, and Hours Worked

Variable	Mean	Std. Dev.	Min.	Max.	$\mathbf{N}$
Saving Rate	0.122	0.136	0	0.9	13139
Consumer Credit to Income Ratio	0.141	0.467	0	6.5	15235
Saving Rate (Savers)	0.16	0.135	0.01	0.9	10033
Consumer Credit to Income Ratio (Borrowers)	0.551	0.791	0	6.5	3910

Table 2 gives summary statistics for these variables. The mean saving rate is 12% and the mean consumer credit-to-income ratio is 14%. The mean saving rate increases to 14% if we exclude the 24% of respondents who do not save anything. The credit ratio increases to 55% if we exclude the 75% of respondents who do not use consumer credit.

We first estimate Equation 1 to study the effect of unemployment experience on the saving rate and consumer credit. We also study the effect of experience on the saving rate of savers only and on consumer credit of borrowers only. Table 3 shows the results. Unemployment experience has a significantly positive effect on the saving rate and a significantly negative effect on consumer credit. The effects are sizable. Individuals who have experienced 1 more percent unemployment over their lifetime have a 1.5 percentage

<sup>&</sup>lt;sup>1</sup>The currency of the Netherlands was the Guilder before it switched to the Euro in 2002. The survey used the following categories for savings until that year: less than 3,000, between 3,000 and 25,000, between 25,000 and 40,000, between 40,000 and 75,000, between 75,000 and 150,000, more than 150,000. These categories roughly correspond to the categories in EUR. The procedure to compute the saving rate is unchanged.

points higher saving rate, which corresponds to a 13% increase for the average saver. Furthermore, experiencing one more percent unemployment leads to a 10 percent point decrease in the consumer credit ratio, a 69% decrease for the average respondent. Note that this latter result is almost unchanged if we further exclude the 5% (instead of 1%) most indebted consumers. Column 3 studies the effect of experience on the saving rate of respondents with a strictly positive saving rate. The coefficient on experience becomes even larger and more significant. Savers who experienced one percent more unemployment increase their saving rate by 2.6 percent points, a 16% increase for the average saver. Column 4 studies the effect of experience on consumer credit for borrowers only. Borrowers who experienced one percent more unemployment decrease their credit ratio by 15 percent points, a 27% decrease for the average borrower.

Table 5: Effects of Macro	Table 5: Effects of Macroeconomic Experience on Saving and Consumer Credit				
	(1)	(2)	(3)	(4)	
	Saving	Consumer Credit	Saving	Consumer Credit	
	Rate	to Income Ratio	Rate	to Income Ratio	
	(Everyone)	(Everyone)	(Savers)	(Borrowers)	
Unemployment Experience	0.0150**	-0.0973***	0.0263***	-0.153***	
	(2.12)	(-3.96)	(3.45)	(-2.58)	
$\mathbb{R}^2$	0.078	0.091	0.098	0.192	
N individuals	4359	4954	3659	1882	
N observations	12881	15068	9836	3867	

Table 3: Effects of Macroeconomic Experience on Saving and Consumer Credit

*t*-statistics in parentheses. Control variables are log of income, log of total assets, log of total liabilities, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, whether they are part of the high income panel, and year fixed effects. Sample period: 1993-2018. Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Next, we study whether the effects of experienced unemployment depend on income, age, and education. To facilitate the exposition, we created four age groups: 25-34 years old, 35-44, 45-54, and 55+; four income quartiles; and two education groups: with and without college degree. We then ran the same specification as Equation 1 but added an interaction between experienced unemployment and each income, age, and education category, separately. Figure 3 shows the marginal effects of experienced unemployment across income, age, and education groups on the saving rate and consumer credit. Although the effect of experience on economic behavior slightly differs across these categories, none

of these differences are significant, suggesting that the effect of experience on economic behavior is homogeneous across different groups.



Figure 3: Marginal Effects of Experience across Income, Age, and Education - 90% CI

To summarize, this section suggests that households who experienced more unemployment over their lifetime save more and borrow less. The following sections investigate more closely the possible mechanisms behind these effects.

### 3.2 Saving Motives

In this section, we explore why individuals who experienced tougher economic times save more by studying the relationship between unemployment experience and six saving motives.

How important is it to you to have some money saved to...(1 very unimportant, 7 very important)

- 1. ... cover unforeseen expenses? (Precautionary motive)
- 2. ... to supplement your general old-age pension? (Pension motive)
- 3. ... to have some money saved so you can buy a (different) apartment or house in the future. (House motive)

- ... to have some money saved to set up your own business? (Business motive)
- 5. ... to save so I can leave money to my children (or other relatives)?(Bequest motive)
- to have some money saved to generate income from interests or dividends? (Returns motive)

Table 4: Summary Statistics - Saving Motives						
Variable	Mean	Std. Dev.	Min.	Max.	$\mathbf{N}$	
Precautionary	5.521	1.327	1	7	18375	
Pension	3.94	2.04	1	7	18111	
House	3.111	1.933	1	7	17746	
Business	2.554	1.784	1	7	17123	
Bequest	2.785	1.823	1	7	17369	
Returns	3.114	1.701	1	7	17955	

Table 4 gives summary statistics for these six variables.

We then estimate Equation 1 to study the effect of unemployment experience on these different saving motives. Table 5 shows the results. Individuals who experienced higher unemployment find it more important to save to cover unexpected expenses, to supplement their pension, or to start a business. Furthermore, they find it less important to leave a bequest or to enjoy financial returns. Finally, experience does not significantly affect the motivation to save to buy a house.

Idole	Table 9. Effects of Macrocontine Enperionee on Saving Mourtes					
	(1) Precautionary	(2) Pension	(3) House	(4) Business	(5) Bequest	(6) Return
Unemployment Experience	$0.168^{***}$ (2.68)	$\begin{array}{c} 1.367^{***} \\ (15.41) \end{array}$	-0.0700 (-0.80)	$\begin{array}{c} 0.542^{***} \\ (5.89) \end{array}$	$-0.570^{***}$ (-5.84)	-0.220** (-2.40)
$\mathbb{R}^2$	0.065	0.331	0.194	0.129	0.132	0.037
N individuals	4464	4425	4393	4294	4304	4404
N observations	13484	13302	13009	12496	12666	13181

Table 5: Effects of Macroeconomic Experience on Saving Motives

*t*-statistics in parentheses. Control variables are log of income, log of total assets, log of total liabilities, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, whether they are part of the high income panel, and year fixed effects. Sample period: 1993-2018. Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Overall, the results in this section suggests that living through tougher economic times changes the priorities of individuals when it comes to savings. In particular, saving for pension becomes very important, as shown by the very high t-statistic of 15, suggesting that the effect of experience on the saving rate is mostly explained by a stronger desire to save for retirement. A stronger desire to save to cover unexpected expenses and to start a business may also contribute to a higher saving rate, although to a smaller extent. Finally, these forces are sufficiently strong to overcome other forces that go in the opposite direction, such as the weaker desire to save to leave a bequest or generate financial returns.

### 3.3 Expectations and Preferences

This section studies the effect of unemployment experience on the following measures of expectations and preferences:

**Expected Income Growth.** What do you expect to be the highest (lowest) total net yearly income your household may realize in the next 12 months? We average these two measures to obtain an estimate of expected income, then compute the expected percentage change with the reported net yearly income of the past year. We exclude those who expect their income to grow by more than 300% to deal with outliers (about 2% of the sample).

**Expected Income Spread.** What do you expect to be the highest (lowest) total net yearly income your household may realize in the next 12 months? We define the expected income spread as the ratio of the difference between these two measures to their average.

**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.

**Discount rate.** With everything I do, I am only concerned about the immediate consequences (say a period of a couple of days or weeks). 1 means extremely uncharacteristic, 7 extremely characteristic.

Table 6 gives summary statistics for these variables. We expect these variables to affect savings in the following way. Respondents with a lower expected income or who are less concerned about losing their job may save less. Furthermore, a more uncertain income and a lower discount rate may also increase savings.

Table 6: Summary Statistics - Expectations and Preferences						
Variable	Mean	Std. Dev.	Min.	Max.	$\mathbf{N}$	
Expected Income Growth $(\%)$	-20.944	46.4	-100	300	13915	
Expected Income Spread	0.253	0.34	0	2	16283	
Expected Job Loss	0.049		0	1	18670	
Discount Rate	3.621	1.529	1	7	14658	

We then estimate Equation 1 to study the effect of unemployment experience on these variables. Table 8 shows the results. Respondents with higher unemployment experience are more pessimistic. They indeed expect their income to grow slower, although the result is insignificant, and they are more worried about losing their job. This greater pessimism may play a role in explaining the higher saving rate. Income uncertainty is not significantly affected by unemployment experience and is thus unlikely to explain the higher saving rate. Finally, unemployment experience does not significantly affect time preferences.

	cts of Macroecononin	c Experience on Ex	pectations and I	references
	(1)	(2)	(3)	(4)
	Exp. Inc. Growth	Exp. Inc. Spread	Exp. Job Loss	Discount Rate
Unemployment	-1.388	-0.00644	$0.0219^{**}$	$0.0786 \\ (0.91)$
Experience	(-0.78)	(-0.45)	(2.46)	
R <sup>2</sup> N individuals N observations	$0.210 \\ 4475 \\ 13527$	$0.036 \\ 4477 \\ 13634$	$0.036 \\ 4667 \\ 14272$	$0.042 \\ 3646 \\ 10949$

Table 7: Effects of Macroeconomic Experience on Expectations and Preferences

*t*-statistics in parentheses. Control variables are log of income, log of total assets, log of total liabilities, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, whether they are part of the high income panel, and year fixed effects. Sample period: 1993-2018 (Model 1-3); 1996-2018 (Model 4). Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Overall, the results in this section shed light on the potential mechanisms that may explain the effect of unemployment experience on the saving rate and consumer credit. A higher saving rate and a lower consumer credit-to-income ratio could be explained by more pessimistic expectations about future employment prospects.

## 4 Robustness

This section examines the robustness of our results. First, we use different weights to construct unemployment experience. Second, we use two alternative measures of experience: GDP growth experience and a dummy variable indicating whether the respondent lived in a recession during his impressionable years (age 18-24).

#### 4.1 Alternative Weights and Experience Measures

The first two rows of Tables 9-11 study the effects of unemployment experience using the weights  $\lambda = .5$  and  $\lambda = 1.5$  instead of  $\lambda = 1$  in the main specification. A higher value of  $\lambda$  means that events that were experienced a longer time ago receive a smaller weight.

Using  $\lambda = 1.5$ , the size and significance of the different effects of unemployment experience remain similar. Using  $\lambda = .5$ , however, the effect of unemployment experience on the saving rate is halved and loses its significance. The effect on consumer credit remains significant and similar in magnitude. Finally, we observe some changes to the effects on preferences. Unemployment experience now significantly increases the discount rate, but the effect remains small (a 1% increase in unemployment experience leads to an increase of 10% of a standard deviation in the discount rate).

The last two rows of tables 9-11 use alternative measures of experience. First, we use the GDP growth experienced over the lifetime of respondents, using the same formula as with the unemployment rate with  $\lambda = 1$  but with real per capita GDP growth as input (source: Statistics Netherlands). The results are consistent with those of unemployment experience. Experiencing one more percent GDP growth leads to a 7 percent point reduction in the saving rate. The effect on consumer credit is insignificant. The effect of GDP experience on the pension saving motive is still significant and consistent with the effect of unemployment experience. The effect of GDP experience on the other saving motives generally become less significant or even insignificant. However, the effect on saving to buy a house becomes significant.

Second, we use a dummy variable measuring whether respondents grew up during the two most severe recessions in the past century in the Netherlands (1932-1940 and 1983-1984) that are characterized by unemployment rates above 10%. More specifically, this variable is equal to 1 if respondents experienced these recessions during their impressionable years (age 18-24). Overall, the effects of impressionable years are broadly consistent with the effects of unemployment experience, although the significance levels drop even further than with GDP experience.

Table 8: Effects of Macroeconomic Experience on Saving and Consumer Credit				
	(1)	(2)		
	Saving	Consumer Credit		
	Rate	to Income Ratio		
Unemployment Exp. $(\lambda = +1.5)$	0.0176***	-0.0827***		
	(2.68)	(-3.71)		
$\mathrm{R}^2$	0.078	0.091		
Unemployment Exp. $(\lambda = +0.5)$	0.00725	-0.105***		
	(0.91)	(-3.58)		
$\mathbb{R}^2$	0.077	0.091		
Impressionable Years	0.00715	-0.00334		
	(1.40)	(-0.26)		
$\mathbb{R}^2$	0.078	0.089		
GDP Growth Experience $(\lambda = +1)$	-0.0711**	0.0353		
	(-2.44)	(0.38)		
$R^2$	0.078	0.089		
N individuals	4359	4954		
N observations	12881	15068		

*t*-statistics in parentheses. Control variables are log of income, log of total assets, log of total liabilities, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, whether they are part of the high income panel, and year fixed effects. Sample period: 1993-2018. Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

		nonno Enp	01101100 01		001100	
	(1)	(2)	(3)	(4)	(5)	(6)
	Precautionary	Pension	House	Business	Bequest	Return
	J				1	
Unemployment Exp.	$0.129^{**}$	$1.378^{***}$	-0.104	$0.469^{***}$	$-0.510^{***}$	$-0.224^{**}$
$(\lambda = +1.5)$	(2.08)	(16.12)	(-1.20)	(5.36)	(-5.54)	(-2.51)
$\mathbb{R}^2$	0.065	0.334	0.194	0.129	0.131	0.037
Unemployment Exp.	0.204***	1.039***	0.0419	0.573***	-0.509***	-0.147
$(\lambda = +0.5)$	(3.12)	(10.58)	(0.45)	(5.60)	(-4.67)	(-1.47)
$\mathbb{R}^2$	0.065	0.317	0.194	0.129	0.130	0.036
Impressionable Years	-0.0617	0.401***	0.00246	0.170***	-0.183***	-0.0398
	(-1.41)	(6.74)	(0.04)	(2.81)	(-2.66)	(-0.60)
$\mathbb{R}^2$	0.065	0.312	0.194	0.125	0.128	0.036
GDP Growth Exp.	0.0536	-1.848***	-0.849**	-1.828***	-0.0542	-0.298
$(\lambda = +1)$	(0.21)	(-4.44)	(-2.14)	(-4.72)	(-0.14)	(-0.73)
$\mathbf{R}^2$	0.064	0.307	0.194	0.127	0.126	0.036
N individuals	4464	4425	4393	4294	4304	4404
N observations	13484	13302	13009	12496	12666	13181

Table 9: Effects of Macroeconomic Experience on Saving Motives

t-statistics in parentheses. Control variables are log of income, log of total assets, log of total liabilities, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, whether they are part of the high income panel, and year fixed effects. Sample period: 1993-2018. Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

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	(1)	(2)	(3)	(4) D'an A Data
	Exp. Inc. Growth	Exp. Inc. Spread	Exp. Job Loss	Discount Rate
Unemployment Exp.	-0.838	-0.0123	$0.0151^{*}$	0.0133
$(\lambda = +1.5)$	(-0.48)	(-0.90)	(1.67)	(0.15)
$\mathbb{R}^2$	0.210	0.036	0.035	0.042
Unemployment Exp.	-2.283	0.00651	0.0365***	0.180**
$(\lambda = +0.5)$	(-1.16)	(0.40)	(3.88)	(2.10)
$\mathbb{R}^2$	0.210	0.036	0.036	0.043
Impressionable	-0.448	-0.00551	$0.0103^{*}$	-0.0795
Years	(-0.36)	(-0.52)	(1.86)	(-1.27)
$\mathbb{R}^2$	0.210	0.036	0.035	0.043
GDP Growth Exp.	-3.847	-0.111	-0.218***	-0.557
$(\lambda = +1)$	(-0.46)	(-1.62)	(-5.36)	(-1.27)
$\mathbb{R}^2$	0.210	0.036	0.038	0.043
N individuals	4475	4477	4667	3646
N observations	13527	13634	14272	10949

Table 10: Effects of Macroeconomic Experience on Expectations and Preferences

t-statistics in parentheses. Control variables are log of income, log of total assets, log of total liabilities, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, whether they are part of the high income panel, and year fixed effects. Sample period: 1993-2018 (Model 1-3); 1996-2018 (Model 4). Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

#### 4.2 LISS survey

We use the LISS Dutch household survey to perform additional robustness checks. The survey is conducted by a research institute at Tilburg university and contains similar questions as DHS. However, the survey started later (2009 vs 1993) and thus features less variation in unemployment experience. First, we use questions about expected financial situation, and expected job loss.

**Expected income.** How do you think the financial situation of your household will develop over the coming 12 months? (-2 Clearly get worse; -1 get a bit worse; 0 stay the same; 1 get a bit better; 2 clearly get better; - I don't know.)

**Expected job loss.** What chance do you think there is that you might lose your job over the coming twelve months? (in terms of a percentage between 0 and 100 percent)

The survey does not ask about savings but asks about consumption. Since we found that respondents who experienced more unemployment have a higher saving rate, we expect that they also cut their consumption. We use two series of questions on consumption for 6 different goods. The first series asks about realized consumption over the past year while the second series asks about planned consumption over the next year.

**Realized consumption.** In the past 12 months (calculated back from today), did you or someone in your household... (yes; no)

- buy a house or have a house built?
- buy a new car (not second-hand or used)?
- buy new big appliances, such as a washing machine or television?
- buy new big interior objects, such as furniture?
- take a long holiday (more than eight days consecutively)?
- take a short holiday (two to seven days consecutively)?

**Planned consumption.** We now ask you to estimate, as well as you can, the chance that you will do one of these things in the future, in terms of a percentage between 0 and 100 percent. For example, if you are fully convinced that you will do one of these things, then you answer with 100 percent. If, on the other hand, there is a small chance that you might not do it, then you answer with 97 percent or less. If you are fully convinced that you will not do one of these things, then you indicate 0 percent. But if there is a small chance that you might do it, then you indicate 3 percent or more. And if you think that the chance is actually just as good as not, then you answer with 50 percent, or slightly more or slightly less if that seems more appropriate to how you feel. How much chance is there that you or someone in your household will, in the coming 12 months... (same goods as realized consumption)

Table 11 gives summary statistics for these variables.

Table 11: S	Table 11: Summary Statistics (LISS)						
Variable	Mean	Std. Dev.	Min.	Max.	$\mathbf{N}$		
Expected Financial Situation	2.824	0.835	1	5	16431		
Expected Job Loss	17.086	24.679	0	100	15711		
Realized consumption							
House	0.056		0	1	16844		
Car	0.091		0	1	16844		
Appliance	0.255		0	1	16844		
Furniture	0.202		0	1	16844		
Short Holiday	0.577		0	1	14140		
Long Holiday	0.678		0	1	14140		
Planned consumption							
House	5.622	18.654	0	100	16839		
Car Expectation	7.115	18.484	0	100	16839		
Appliance Expectation	20.206	26.569	0	100	16839		
Furniture Expectation	18.213	27.685	0	100	16839		
Short Holiday Expectation	60.346	41.851	0	100	14135		
Long Holiday Expectation	64.054	38.473	0	100	14135		

Table 11: Summary Statistics (LISS)

We can now study the effect of unemployment experience on the first five variables. Table 13 shows the results. Respondents who have experienced more unemployment are more pessimistic about their future financial situation. Consistently, they are more likely to believe they will lose their job, although the effect is not significant.

We now study the effect of unemployment experience on both realized and planned

	(1) Expected Financial Situation	(2) Exp. Job Loss
Unemployment Experience	-0.286*** (-2.62)	4.466 (1.23)
R <sup>2</sup> N individuals N observations	$0.085 \\ 3789 \\ 15481$	0.015 3650 14779

Table 12: Effects of Macroeconomic Experience on Expectations (LISS)

*t*-statistics in parentheses. Control variables are log income, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, and year fixed effects. Sample period: 2009-2016 (Model 1-2). Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

consumption. Tables 13 and 14 show the results. All the coefficients are negative, although not all significant. These results are consistent with Malmendier and Shen (2019) and our main results.

			-		-	( )
	(1) House	(2) Car	(3) Appliance	(4) Furniture	(5) Short Holiday	(6) Long Holiday
Unemployment Experience	-0.0883*** (-2.96)	-0.0464 (-1.27)	-0.0949* (-1.80)	-0.191*** (-3.97)	-0.285*** (-2.91)	-0.105 (-1.25)
R <sup>2</sup> N individuals	$0.022 \\ 3819$	$0.009 \\ 3819$	$0.015 \\ 3819$	$0.018 \\ 3819$	$0.077 \\ 3449$	$0.054 \\ 3449$
N observations	15829	15829	15829	15829	13239	13239

Table 13: Effects of Macroeconomic Experience on Realized Consumption (LISS)

*t*-statistics in parentheses. Control variables are log income, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, and year fixed effects. Sample period: 2009-2016. Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

# 5 Conclusion

Using a survey of Dutch households, we find that individuals who experienced higher unemployment over their lifetime save more and borrow less. We also provide evidence suggesting that this result may be explained by more pessimistic beliefs related to retirement and job loss. More generally, our results support experience-based learning and its effect on aggregate demand.

			1			
	(1)	(2)	(3)	(4)	(5)	(6)
	House	Car	Appliance	Furniture	Short	Long
					Holiday	Holiday
Unemployment	-1.528	-0.635	-6.380*	-8.284**	-19.96**	-21.02***
Experience	(-0.58)	(-0.28)	(-1.85)	(-2.32)	(-2.28)	(-2.77)
$\mathbb{R}^2$	0.031	0.008	0.023	0.061	0.103	0.088
N individuals	3819	3819	3819	3819	3449	3449
N observations	15824	15824	15824	15824	13234	13234

Table 14: Effects of Macroeconomic Experience on Planned Consumption (LISS)

t-statistics in parentheses. Control variables are log income, age, age square, education, family size, gender, marital status, level of urbanization, whether households have children, and year fixed effects. Sample period: 2009-2016. Standard errors are clustered at the individual level. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

# References

- Alesina, Alberto and Nicola Fuchs-Schündeln, "Goodbye Lenin (or not?): The effect of communism on people's preferences," American Economic Review, 2007, 97 (4), 1507–1528.
- Fuchs-Schündeln, Nicola and Matthias Schündeln, "On the endogeneity of political preferences: Evidence from individual experience with democracy," *Science*, 2015, 347 (6226), 1145–1148.
- Giuliano, Paola and Antonio Spilimbergo, "Growing up in a Recession," Review of Economic Studies, 2013, 81 (2), 787–817.
- Greenwood, Robin and Stefan Nagel, "Inexperienced investors and bubbles," *Journal of Financial Economics*, 2009, *93* (2), 239–258.
- Laudenbach, Christine, Ulrike Malmendier, and Alexandra Niessen-Ruenzi, "Emotional Tagging and Belief Formation: The Long-Lasting Effects of Experiencing Communism," in "AEA Papers and Proceedings," Vol. 109 2019, pp. 567–71.
- Low, Hamish, Costas Meghir, and Luigi Pistaferri, "Wage risk and employment risk over the life cycle," *American Economic Review*, 2010, 100 (4), 1432–67.

- Malmendier, Ulrike and Leslie S Shen, "Scarred consumption," *Working paper*, 2019.
- and Stefan Nagel, "Depression babies: do macroeconomic experiences affect risk taking?," The Quarterly Journal of Economics, 2011, 126 (1), 373–416.
- and \_ , "Learning from inflation experiences," The Quarterly Journal of Economics, 2015, 131 (1), 53–87.
- , Geoffrey Tate, and Jon Yan, "Overconfidence and early-life experiences: the effect of managerial traits on corporate financial policies," *The Journal of finance*, 2011, 66 (5), 1687–1733.
- Roth, Christopher and Johannes Wohlfart, "Experienced inequality and preferences for redistribution," *Journal of Public Economics*, 2018, *167*, 251–262.