TIAA Institute

Debt close to retirement and its implications for retirement well-being

Annamaria Lusardi,
GFLEC, The George
Washington University
School of Business,
TIAA Institute Fellow

Olivia S. Mitchell,
The Wharton School
University of Pennsylvania,
TIAA Institute Fellow

Noemi Oggero,
University of Turin

Introduction

In recent decades, consumers have been in the historically unusual position of being able to decide how much to borrow, which has resulted in a large rise in Americans' indebtedness. In particular, our previous research has shown that older persons today are more likely to enter retirement in debt, mainly because of larger home mortgages. Yet debt–including credit card and other high-interest, non-collateralized borrowing–has also swelled over time. The rising trend in indebtedness at older ages has important implications for retirement well-being since it portends that many older Americans will need to allocate larger fractions of their incomes to service their debt.

Using data from the National Financial Capability Study (NFCS), we analyze the factors associated with older people's debt, and we also highlight signs of financial distress among individuals who should be at the peak of their wealth accumulation profiles. We find that a sizeable proportion of the older population is holding debt associated with high-interest payments and fees, and there is a strong correlation between the types of debt instruments held. In particular, those who use one source of high-cost debt are also likely to use other expensive types of debt. Moreover, those facing difficulty with debt are disproportionately ethnic minorities and persons having low income, and there is an educational divide when it comes to debt near retirement. We examine three potential explanations for why people hold excessive debt near and into retirement: lack of financial literacy, lack of information, and behavioral biases. Our research demonstrates that each of these factors helps explain why many older persons near retirement hold excessive debt that is likely to create future financial difficulties.

BUILT TO PERFORM.
CREATED TO SERVE.

The National Financial Capability Study sample

According to the standard life cycle model of saving, adults nearing retirement should be at or near the peak of their wealth accumulation processes. Given the likely drop in labor earnings they face, and the fact that pensions and Social Security do not entirely replace preretirement earnings, it stands to reason that they should seek to pay down their debt and, if possible, carry debt charging low interest rates.

We investigate whether this is the case by examining the financial situations of older Americans approaching retirement using data from the 2015 wave of the NFCS. Supported by the FINRA Investor Education Foundation, the NFCS is a triennial survey first conducted in 2009 with the goal of assessing and establishing a baseline measure of financial capability among American adults. The NFCS has a large number of observations (more than 27,000 in 2015), allowing researchers to study population subgroups such as the ones we examine here, namely persons age 56-61 (before they are eligible to claim Social Security retiree benefits). The 2015 wave included several questions available in two prior NFCS surveys (2009 and 2012), yet it also included several new questions about student debt, debt management,

and financial literacy related to debt, which are of key interest to our research. Additionally, it also provides unique information about non-traditional methods of borrowing. Our analysis sample is made up of 2,672 respondents age 56-61.

Debt held by near-retirees

Though the literature has dedicated little attention to older Americans' balance sheets, using the 2015 NFCS data we find that individuals age 56-61 carry many different types of long- and short-term debt close to retirement. Moreover, they tend to hold expensive debt, which typically charges more than the rates older people are likely to earn on their assets.

Table 1 shows that more than one-third of near-retirees (37%) still have a home mortgage, and 11% have outstanding home equity loans. For some, managing mortgages is difficult; in fact, 10% of those with mortgages have been late with their payments at least once in the previous year. Moreover, 30% of older individuals also carry auto loans, and 6% are still paying off student loans they took out for themselves. Additionally, many near-retirees have already tapped into their retirement accounts, as 8% of those who have retirement accounts had taken a loan or a hardship withdrawal in the previous 12 months.

Table 1. Financial assets, obligations, and debt among older households: 2015 NFCS

	% having	Debt or Financial Obligation	% conditional on holding asset	% unconditional
Home	72.6	Home mortgage	51	37
		Home equity loan	14.8	10.8
		House value underwater*	8.9	3.7
		Late w/ mortgage payments (≥once)*	9.6	3.6
College degree	33.6	Own student loan	8.4	6.4
Student loan debt	14.6		na	14.6
Altern. fin. services	17.5		na	17.5
Auto loan	29.6		na	29.6
Credit card	81.5	Pay interest on credit card balance	44.6	36.4
		Credit card fees/ expensive behaviors	28.2	23
Retirement account**	57.5	Retirement account: loan or hardship withdrawal	8	4.6

Note: 2015 NFCS respondents age 56-61 (see text; N=2,672). *Use alternative financial service* refers to the use of payday loans, auto title loans, rent-to-own or pawnshops. *Credit card fees/expensive behaviors* include paying the minimum only, paying late or over-the-limit fees, and using the card for cash advances.
*Percentages conditional on having a mortgage or home equity.
**Having retirement plans through an employer where choosing how the money is invested or any other retirement accounts not through an employer, like an IRA, Keogh, SEP, myRA, or any other type of retirement account that individuals have set up themselves.
Source: Lusardi, Mitchell, and Oggero (2019).

In addition to long-term debt, older individuals also borrow short term. Specifically, near-retirees engage in borrowing behaviors that are likely to generate fees and steep interest payments: more than one-third of the respondents (36%) carried a balance on their credit card and were charged interest, while 23% exhibited expensive credit card behaviors such as paying the minimum only, paying late or over-the-limit fees, or using the card for cash advances. Moreover, 17% of our respondents had borrowed from alternative financial services in the past five years via payday loans, auto title loans, rent-to-own, or pawn shops. Accordingly, many older Americans will enter retirement not only with collateralized lower-interest debt but also with non-collateralized loans that charge high interest rates.

Debt by socio-demographic characteristics

Table 2 reports debt experiences for our analysis sample overall as well as by education, income, and ethnicity. Almost all debt behaviors show a monotonic relationship with educational levels: the best educated are much less likely to use high-cost borrowing. The opposite is observed for home mortgages and, to a lesser extent, home equity loans.

Table 2. Demographics of older adult borrowing behavior: 2015 NFCS (%)

	Full sample	≤High school	Some college	≥College	Income <$35K	Income $35-75K	Income >$75K	White	African American	Hispanic	Asian	Other
Home mortgage	0.37	0.33	0.35	0.42	0.18	0.38	0.52	0.38	0.30	0.43	0.31	0.30
Home equity loans	0.11	0.07	0.11	0.13	0.04	0.10	0.17	0.11	0.06	0.14	0.20	0.04
Auto loan	0.29	0.32	0.30	0.28	0.15	0.34	0.38	0.31	0.26	0.29	0.17	0.24
Own student loan	0.06	0.02	0.07	0.08	0.11	0.06	0.02	0.05	0.17	0.06	0.01	0.15
Use altern. fin. service	0.17	0.21	0.21	0.10	0.30	0.17	0.07	0.14	0.36	0.21	0.10	0.28
Pay interest on credit card balance	0.36	0.39	0.38	0.31	0.33	0.43	0.33	0.35	0.43	0.4	0.2	0.41
Credit card fees/expensive behaviors	0.23	0.27	0.24	0.19	0.25	0.28	0.16	0.21	0.38	0.25	0.13	0.17
Loan or hardship withdrawal from retirement account	0.05	0.03	0.05	0.05	0.03	0.05	0.05	0.04	0.06	0.05	0.07	0.04
N	2.672	621	1.154	897	815	903	954	2.092	280	147	71	82

Note: 2015 NFCS respondents age 56-61 (see text). *Use alternative financial services* refer to the use of payday loans, auto title loans, rent-to-own or pawnshops. *Credit card fees/expensive behaviors* include paying the minimum only, paying late or over-the-limit fees, and using the card for cash advances.
Source: Lusardi, Mitchell, and Oggero (2019).

In addition to the educational divide, our data reveal a clear difference in terms of the types of debt by income. Respondents with household income below $35,000 are 13 percentage points (30% versus 17%) more likely to use alternative financial services compared to those with income $35,000-$75,000. The data also show that the lowest income group is more likely to report expensive credit card behaviors.[1] Turning to long-term debt, we see that the highest income group is, not surprisingly, more likely to have mortgages, home equity loans, and auto loans. By contrast, people in the lowest income group are more likely to have an outstanding student loan for their own education.

Finally, Table 2 reports a breakdown of debt by type for different ethnic groups, and in particular we notice that older African-Americans are far more likely to use alternative financial services, exhibit expensive credit card behaviors, and have borrowed for their own education.

In summary, older higher-income and better-educated persons tend to have long-term debt, including mortgages, while lower-income and less-educated persons tend to rely on alternative financial services. In the next section, we explore correlations across debt types.

[1] In our previous research, expensive credit card behaviors have been defined as paying the minimum amount due, running late fees, incurring over-the-limit fees, and using the credit card to get cash advances (Lusardi and Tufano, 2015). While in the NFCS we do not have information on the card balance carried over, we do know that these four behaviors characterize a costly use of the credit card that generates relevant expenditures.

Are types of debt held at older ages correlated?

Since people can engage in several types of debt simultaneously, we investigate whether older Americans engage in multiple borrowing. As shown in Table 3, there is a positive and significant correlation across types of long-term collateralized debt such as having a mortgage, having a home equity loan, and having an auto loan.

We also find that having a home mortgage is negatively correlated with using alternative financial services, and having student loans at older ages. Interestingly, those still holding student loans for their own education and people who pay credit card fees are most likely to use non-traditional methods of borrowing. In sum, these correlations again point to a clear differentiation between peoples' use of debt.

Table 3. Correlation of borrowing behaviors among older respondents: 2015 NFCS

	Home mortgage	Home equity loans	Auto loan	Own student loan	Use altern. in. service	Pay interest on credit card balance
Home equity loans	0.15					
Auto loan	0.19	0.06				
Own student loan	-0.06	-0.04	0.02			
Use altern. fin. service	-0.10	-0.05	0.03	0.19		
Pay interest on credit card balance	0.16	0.09	0.2	0.05	0.06	
Credit card fees/ expensive behaviors	0.06	0.07	0.09	0.05	0.15	0.54

Note: 2015 NFCS respondents age 56-61 (see text; N=2,672). *Use alternative financial services* refer to the use of payday loans, auto title loans, rent-to-own or pawnshops. *Credit card fees/expensive behaviors* include paying the minimum only, paying late or over-the-limit fees, and using the card for cash advances.
Source: Lusardi, Mitchell, and Oggero (2019).

Multivariate analysis of debt close to retirement

To better investigate what explains debt at older ages, we perform a multivariate analysis of debt types on a set of socio-demographics. Marginal effects from Probit regressions are reported in Table 4. Our estimates show that older African-Americans are more likely to carry student loans for themselves as well as debt that charges high interest, such as credit cards or payday loans. Those with financially dependent children are also significantly more likely to have expensive debt behaviors. The income divide clearly emerges when it comes to debt. While higher-income people carry loans such as mortgages, home equity lines of credit or auto loans, they are less likely use high-cost alternative financial services. Those with low income use credit cards in expensive ways.

Table 4. Factors associated with respondents' debt and debt behaviors: 2015 NFCS (Probit marginal effects)

	Home mortgage	Home equity loans	Auto loan	Own student loan	Use altern. fin. service	Pay interest on credit card balance	Credit card fees/ expensive behaviors
Female	0.05**	0.01	0.01	0.01	-0.01	0.03	0.04**
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Age	-0.00	0.00	-0.01*	-0.01***	-0.01*	-0.00	-0.00
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
African American	0.00	-0.02	0.03	0.06***	0.17***	0.08**	0.14***
	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
Hispanic	0.06	0.02	-0.01	0.00	0.04	0.05	0.03
	(0.04)	(0.03)	(0.04)	(0.01)	(0.03)	(0.04)	(0.04)
Asian	-0.11**	0.06	-0.13***	-0.03***	-0.01	-0.14***	-0.08*
	(0.05)	(0.04)	(0.04)	(0.01)	(0.05)	(0.05)	(0.04)
Other	0.00	-0.05***	0.01	0.05*	0.10**	0.09	-0.04
	(0.06)	(0.02)	(0.05)	(0.03)	(0.05)	(0.06)	(0.04)
≤High school	0.11	0.08	-0.02	0.01	-0.03	-0.02	0.01
	(0.09)	(0.09)	(0.07)	(0.04)	(0.04)	(0.07)	(0.06)
Some college	0.11	0.10	-0.05	0.09*	-0.02	-0.03	-0.02
	(0.08)	(0.08)	(0.07)	(0.05)	(0.04)	(0.07)	(0.06)
≥College	0.11	0.11	-0.11*	0.16**	-0.08**	-0.10	-0.04
	(0.09)	(0.09)	(0.07)	(0.08)	(0.04)	(0.07)	(0.06)
Single	-0.14***	-0.05***	-0.08***	0.01	-0.03	0.01	0.03
	(0.03)	(0.01)	(0.03)	(0.01)	(0.02)	(0.03)	(0.03)
Separated /divorced	-0.07***	-0.05***	-0.06***	0.04***	0.03	0.01	0.01
	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)	(0.03)	(0.02)
Widow	-0.03	-0.05***	-0.02	0.01	0.03	-0.01	0.06
	(0.04)	(0.02)	(0.04)	(0.02)	(0.03)	(0.04)	(0.04)
Has dependent children	0.08***	0.01	0.02	0.01	0.04*	0.09***	0.10***
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Income $15-25K	0.10*	0.23**	0.15***	-0.02***	-0.03	0.23***	0.15***
	(0.05)	(0.11)	(0.06)	(0.01)	(0.02)	(0.05)	(0.04)
Income $25-35K	0.23***	0.25**	0.27***	-0.02**	-0.02	0.28***	0.15***
	(0.05)	(0.12)	(0.06)	(0.01)	(0.03)	(0.05)	(0.05)
Income $35-50K	0.27***	0.28**	0.32***	-0.03***	-0.07***	0.28***	0.14***
	(0.05)	(0.11)	(0.05)	(0.01)	(0.02)	(0.04)	(0.04)

Table 4. Factors associated with respondents' debt and debt behaviors: 2015 NFCS (Probit marginal effects)							
Income $50-75K	0.35***	0.29***	0.41***	-0.04***	-0.10***	0.31***	0.14***
	(0.05)	(0.10)	(0.05)	(0.01)	(0.02)	(0.04)	(0.04)
Income $75-100K	0.39***	0.34***	0.43***	-0.04***	-0.13***	0.25***	0.06
	(0.05)	(0.11)	(0.05)	(0.01)	(0.02)	(0.05)	(0.04)
Income $100-150K	0.48***	0.38***	0.42***	-0.05***	-0.15***	0.25***	0.07
	(0.04)	(0.12)	(0.05)	(0.01)	(0.01)	(0.05)	(0.04)
Income $150K+	0.39***	0.38***	0.42***	-0.04***	-0.15***	0.08	-0.10**
	(0.05)	(0.13)	(0.06)	(0.00)	(0.01)	(0.06)	(0.04)
Pseudo R-squared	0.09	0.08	0.07	0.18	0.11	0.04	0.05

Note: 2015 NFCS respondents age 56-61 (see text; N=2,672). *Use alternative financial services* refer to the use of payday loans, auto title loans, rent-to-own or pawnshops. *Credit card fees/expensive behaviors* include paying the minimum only, paying late or over-the-limit fees, and using the card for cash advances. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Source: Lusardi, Mitchell, and Oggero (2019).

In sum, these findings underscore some of the descriptive results mentioned earlier. Nevertheless, more remains to be learned about why people approach retirement with so much debt, leaving them vulnerable to financial shocks. Accordingly, in the next section, we turn to some additional explanations for observed patterns.

Inside the black box of debt at older ages

To dig more deeply into the explanations driving debt at older ages, we next investigate three potential factors: low financial literacy, lack of information, and behavioral biases. Our analysis relies both on the 2015 NFCS along with other information available from previous waves, to be detailed below.

Low financial literacy. Financial decisions such as saving for retirement, investing, and drawing down retirement wealth require that people have a basic understanding of financial topics; yet prior research has found evidence linking debt management and financial literacy. To evaluate the role of financial literacy among older persons nearing retirement, we consider the so-called "Big Five" questions we have devised to evaluate people's capacity to do simple interest rate calculations, to understand inflation and risk diversification, to evaluate how mortgages work, and to understand asset pricing. In addition, to better investigate the problem of

debt at older ages, we also considered a sixth question about interest compounding in the 2015 NFCS.

Some might anticipate that people nearing retirement would have acquired the financial know-how required to manage financial decisions, and borrowing in particular, but the data show that older Americans only answered 3.69 questions of the 6 financial literacy questions correctly, on average, performing only moderately better than the entire NFCS sample (scoring 3.15 correct on average). Some topics like mortgage payments and simple interest rate are relatively more familiar to near-retirees, but interest compounding in the context of debt is clearly not understood by people who have made many financial decisions. Even more concerning is the fact that respondents tend to overestimate the amount of time it would take for debt to double when borrowing at a high interest rate.

We also undertake a deeper analysis of the determinants of debt, where we now include financial literacy as an additional control. Our findings may be summarized as follows: people scoring higher on the financial literacy tests were also less likely to use alternative financial services or credit cards in expensive ways. They were also less likely to have auto loans close to retirement. In other words, financial knowledge is a significant predictor of debt close to retirement, since even after controlling

for all the other factors discussed above, financial literacy still helps older people manage their resources and curtail their debt as they approach retirement.

Lack of information. Another problem facing those nearing retirement is that making financial decisions requires knowing what information to obtain to successfully manage their resources. To explore debt decisions, the 2009 NFCS dataset does provide additional insight about the information people gathered during their decision process. Yet as age was not

recorded as a continuous variable in that survey, in what follows we focus on individuals age 55-64.[2]

Table 5 shows that older people had little or no information on critical variables: for instance, 30% of those having auto loans did not know the interest rate they were paying, and 11% of individuals with a mortgage did not know their mortgage interest rates. Among the near-retirees with at least one credit card, almost one-fifth (23%) of those who did not always pay their credit card in full stated that they did not know the interest charged on the card where they had the largest balance.

Table 5. Self-reported financial behaviors and perceptions among older respondents: 2009 and 2015 NFCS

	%; 2009 NFCS
Do not know the interest rate they are paying on their auto loan*	30.5
Do not know the interest rate they are paying on their mortgage*	11.1
Do not know whether they have an interest-only mortgage or a mortgage with an interest-only option*	23.8
Do not know the interest charged on their credit card with the largest balance*	22.6
When getting their most recent auto loan, did not compare offers from different lenders*	51.2
When getting their mortgage in the previous 5 years, did not compare offers from different lenders*	38.1
When getting their most recent credit card, collected information about different cards from more than one company*	33.5
Did not check their credit score in the previous year	55.3
Did not obtain their credit report in the previous year	53.6
N	*4,543*

	%; 2015 NFCS
Student loan for themselves, spouses/partners, children, grandchildren, or others	14.6
Did not try to figure out their future monthly payments*	55.8
Concerned about their ability to pay off student loans*	44.0
Do not know whether their payments are determined by their income*	20.0
If they could go through the borrowing process again, they would do something differently*	50.6
N	*2,672*

Note: 2009 NFCS respondents age 55-64, and 2015 NFCS respondents age 56-61 (see text).
*Values conditional on holding the asset or debt.
Source: Lusardi, Mitchell, and Oggero (2019).

[2] In the 2009 wave of the NFCS, 4,543 out of 28,146 respondents belong to the age group 55-64.

More than half (51%) of near-retirees with an auto loan and 38% of those with a mortgage said they did not compare offers, and only one-third of credit card holders collected information from more than one card company. In other words, people with years of borrowing experience did not do much to compare pricing nor did they shop around to get good terms. The 2009 NFCS also shows that many near-retirees were unaware of their credit scores. In fact, 55% of people age 55-64 in the 2009 NFCS had not checked their credit scores in the previous year, and almost the same percentage (54%) did not obtain their credit reports.

There is also unique information in the 2015 NFCS on student loan behaviors and attitudes. A relatively small fraction (6%) of near-retirees still held student loans taken out for their own education, but when all educational debt is taken into account including for others, over twice that many (15%) of our older sample held student debt. More concerning is that many borrowers indicated they did not fully comprehend what they were getting into when they took out these loans. Specifically, more than half (56%) of borrowers in this age group did not try to figure out how much their future monthly payments would be before taking out the loans. Interestingly, more than half (51%) of these older student loan borrowers indicated that, if they could go through the borrowing process again, they would do something different.

Behavioral biases. The evidence on heavy debt burdens held by many Americans has suggested to some that behavioral biases could be responsible for observed borrowing patterns. In what follows, we briefly review some of the biases influencing decision making around debt, and we offer an assessment of the extent to which they can explain the evidence provided in the previous sections.

One of behavioral economics' central contributions is to recognize psychological factors driving behavior, such as, for example, lack of self-control (Benton, Meier, and Sprenger, 2007). Gathergood (2012a) showed that consumers having self-control problems were more likely to report over-indebtedness and make greater use of high-cost credit products such as payday

loans. Additional research by Achtziger, et al. (2015) suggested that compulsive buying serves as a link between self-control skills and impulse control: that is, people lacking self-control buy compulsively, in turn affecting debt. Impulsivity driving debt decisions has also been confirmed by Ottaviani and Vandone (2011), who showed that impulsivity predicted unsecured debt like consumer credit, but it was not significantly associated with secured debt such as mortgages. This finding may explain the significant percentage of older individuals with short-term high-cost debt we found above.

Lack of self-control and impulsive spending behavior can also help explain the "co-holding puzzle," i.e., the co-existence of high-cost revolving consumer credit together with low-yield liquid savings (Gathergood and Weber, 2014; Bertaut, Haliassos, and Reiter, 2009). In fact, consumers can minimize their vulnerability to impulsive spending by maintaining revolving consumer debt while simultaneously having savings accounts that are less accessible for immediate consumption. Laibson, Repetto, and Tobacman (2000) identified hyperbolic time preferences as a possible resolution of this debt puzzle: that is, some consumers act inconsistently, acting patiently when accumulating illiquid wealth but impatiently when using credit cards.

Another source of suboptimal decision making related to credit cards is known as "anchoring." This arises since credit card companies indicate on their bills the "minimum amount due," an amount generally less than the full bill. Keys and Wang (2019) showed that this minimum payment acts as a lower psychological repayment bound for a majority of consumers, so anchoring can generate suboptimally high debt levels.

Still another behavioral bias linked to household decision making around debt refers to "exponential growth bias," or people's tendency to linearize exponential growth and hence to underestimate the future value of a variable growing at a constant rate. For example, Stango and Zinman (2009) showed that this can explain peoples' propensity to underestimate the effect of high interest rates; moreover, they found that more biased households borrowed more and saved less.

Gathergood and Weber (2017) investigated behavioral biases in the presence of low financial literacy, and they showed that poor financial literacy and impatience boosted the likelihood of choosing mortgages with lower up-front costs but larger eventual payments. Others have found that people with present-biased preferences are also more likely to have credit card debt and higher credit card balances (Meier and Sprenger, 2010), and fail to stick to their self-set debt paydown plans (Kuchler and Pagel, 2018). Campbell, et al. (2011) argued that many present-biased consumers would display greater patience if they could commit to a plan of savings and future consumption.

Discussion and conclusions

Our research shows that a sizeable proportion of older Americans carry debt on the verge of retirement, and they also differ with regard to the types of debt they hold. Using the 2015 NFCS, we found that the low-income, those with financially dependent children, and African Americans tended to be more likely to hold high-cost debt at older ages. Those with higher income appeared better protected against these stresses.

Several explanations can be put forward to understand why individuals carry debt late in the life cycle. In addition to traditional explanations related to demographic characteristics and income, we investigated the importance of the lack of financial literacy, lack of information, and behavioral biases. While more research is needed to pin down the quantitative importance of each explanation, our analysis indicated they are all promising explanations for why so many individuals carry debt close to retirement. Yet to the extent that these are some of the reasons that explain debt close to retirement, we can expect that debt at holder ages will negatively affect retirement well-being.

References

Achtziger, A., M. Hubert, P. Kenning, G. Raab, and L. Reisch. (2015). "Debt Out of Control: The Links between Self-control, Compulsive Buying, and Real Debts." *Journal of Economic Psychology*. 49: 141–149.

Almenberg, J., and C. Gerdes. (2012). "Exponential Growth Bias and Financial Literacy." *Applied Economics Letters*. 19(17): 1693–1696.

Almenberg, J., A. Lusardi, J. Säve-Söderbergh, and J. R. Vestman. (2018). "Attitudes Toward Debt and Debt Behavior." NBER Working Paper No. 24935.

Benton, M., S. Meier, and C. Sprenger. (2007). "Overborrowing and Undersaving: Lessons and Policy Implications from Research in Behavioral Economics." Public and Community Affairs Discussion Paper No. 2007-4, Federal Reserve Bank of Boston Discussion Paper.

Bertaut, C. C., M. Haliassos, and M. Reiter. (2009). "Credit Card Debt Puzzles and Debt Revolvers for Self Control." *Review of Finance*. 13(4): 657–692.

Campbell, J., H. E. Jackson, B. C. Madrian, and P. Tufano. (2011). "Consumer Financial Protection." *Journal of Economic Perspectives.* 25(1): 91–114.

Gathergood, J. (2012a). "Self-control, Financial Literacy and Consumer Over-indebtedness." *Journal of Economic Psychology.* 33: 590–602.

Gathergood, J. (2012b). "Debt and Depression: Causal Links and Social Norm Effects." *The Economic Journal.* 122: 1094–1114.

Gathergood, J. and J. Weber. (2014). "Self-control, Financial Literacy and the Co-holding Puzzle." *Journal of Economic Behavior & Organization.* 107: 455–469.

Gathergood, J. and J. Weber. (2017). "Financial Literacy, Present Bias and Alternative Mortgage Products." *Journal of Banking and Finance*. 78: 58–83.

Keys, B. J. and J. Wang. (2019). "Minimum Payments and Debt Paydown in Consumer Credit Cards." *Journal of Financial Economics* 131(3): 528-548.

Kuchler, T. and M. Pagel. (2018). "Sticking to Your Plan: The Role of Present Bias for Credit Card Paydown." NBER Working Paper No. 24881.

Laibson, D., A. Repetto, and J. Tobacman. (2000). "A Debt Puzzle." NBER Working Paper No. 7879.

Lea, S. E. A., P. Webley, and R. M. Levine. (1993). "The Economic Psychology of Consumer Debt." *Journal of Economic Psychology.* 14:85–119.

Lusardi, A., O. S. Mitchell, and N. Oggero (2019). "Debt Close to Retirement and Its Implications for Retirement Well-being." Report to the TIAA Institute.

Lusardi, A. and P. Tufano. (2015). "Debt Literacy, Financial Experiences, and Overindebtedness." *Journal of Pension Economics and Finance*. 14(4): 332–368.

Meier, S. and C. Sprenger. (2010). "Present-Biased Preferences and Credit Card Borrowing." *American Economic Journal: Applied Economics*. 2(1): 193–210.

Ottaviani, C. and D. Vandone. (2011). "Impulsivity and Household Indebtedness: Evidence from Real Life." *Journal of Economic Psychology*. 32: 754–761.

Stango, V. and J. Zinman. (2009). "Exponential Growth Bias and Household Finance." *Journal of Finance*. 64(6): 2807–2849.

About the authors

Annamaria Lusardi is the Denit Trust Chair of Economics and Accountancy at the George Washington University School of Business. She previously taught at Dartmouth College, Princeton University, the University of Chicago Harris School of Public Policy and Booth School of Business, and Columbia Business School. She also was a visiting scholar at Harvard Business School.

Lusardi has won numerous awards for her economic and financial literacy research, including a research fellowship from the University of Chicago Harris School of Public Policy, a faculty fellowship from the John M. Olin Foundation, and a junior and senior faculty fellowship from Dartmouth College. She earned her B.A. from Bocconi University in Milan and Ph.D. from Princeton University.

Olivia S. Mitchell is the International Foundation of Employee Benefit Plans Professor; professor of insurance/ risk management and business economics/public policy; Executive Director of the Pension Research Council; and Director of the Boettner Center for Pensions and Retirement Research; all at the Wharton School of the University of Pennsylvania.

The author or coauthor of over 230 books and articles, Mitchell serves as independent trustee on the Wells Fargo Fund Boards; co-investigator for the Health and Retirement Study at the University of Michigan; and executive board member of the Michigan Retirement Research Center. She earned her B.A. in economics from Harvard University and Ph.D. in economics from the University of Wisconsin – Madison.

Noemi Oggero is a Ph.D. candidate at the University of Turin in Italy, and she has collaborated on research projects with the Center for Research on Pensions and welfare Policies at the Collegio Carlo Alberto. She has also been a Temporary Research Faculty Member and a Research Associate at the Global Financial Literacy Excellence Center at the George Washington University School of Business, where she was responsible for the design, development, and delivery of research projects on financial capability and financial literacy. She holds two Masters in Economics from Collegio Carlo Alberto and University of Turin.