10-1-2010

Financial Literacy and 401(k) Loans

Stephen P. Utkus
Vanguard Center for Retirement Research, steve_utkus@vanguard.com

Jean A. Young
Vanguard Center for Retirement Research

Financial Literacy and 401(k) Loans

Abstract

Based on a survey of nearly 900 401(k) participants, we find that borrowing in 401(k) plans is related not only to standard demographic factors, but also to measures of general financial literacy, 401(k) contribution rates and wealth, non-retirement wealth, and credit card repayment behavior. Taken together, these results suggest that the decision to borrow from a 401(k) plan is linked to a broader impatience in financial decision-making, namely high discount rates in time preferences. Meanwhile, conditional on loan-taking, financial literacy appears unrelated to whether a given loan is used for consumption or investment purposes. Given the interrelated nature of these borrowing and behaviors, efforts to educate participants about the benefits and risks of 401(k) borrowing may need to be more comprehensive in scope than previously realized.

Disciplines

Economics

Comments

The published version of this Working Paper may be found in the 2011 publication: *Financial Literacy: Implications for Retirement Security and the Financial Marketplace*.

Comp. by: pg2649 Stage : Revises1 ChapterID: 0001296847 Date:26/7/11
Time:08:46:27 Filepath:d:/womat-filecopy/0001296847.3D
OUP UNCORRECTED PROOF – REVISES, 26/7/2011, SPi

Financial Literacy: Implications for Retirement Security and the Financial Marketplace

EDITED BY

Olivia S. Mitchell
and Annamaria Lusardi

OXFORD
UNIVERSITY PRESS

OXFORD
UNIVERSITY PRESS

Great Clarendon Street, Oxford OX2 6DP

Oxford University Press is a department of the University of Oxford.
It furthers the University's objective of excellence in research, scholarship,
and education by publishing worldwide in

Oxford New York

Auckland Cape Town Dar es Salaam Hong Kong Karachi
Kuala Lumpur Madrid Melbourne Mexico City Nairobi
New Delhi Shanghai Taipei Toronto

With offices in

Argentina Austria Brazil Chile Czech Republic France Greece
Guatemala Hungary Italy Japan Poland Portugal Singapore
South Korea Switzerland Thailand Turkey Ukraine Vietnam

Oxford is a registered trade mark of Oxford University Press
in the UK and in certain other countries

Published in the United States
by Oxford University Press Inc., New York

First published 2011

British Library Cataloguing in Publication Data
Data available

Library of Congress Cataloging in Publication Data
Data available

Typeset by SPI Publisher Services, Pondicherry, India
Printed in Great Britain
on acid-free paper by
MPG Books Group, Bodmin and King's Lynn

ISBN 978–0–19–969681–9

1 3 5 7 9 10 8 6 4 2

Contents

Chapter 4

Financial Literacy and 401(k) Loans

Stephen P. Utkus and Jean A. Young

Defined contribution plans (DC), more commonly known as 401(k) plans, are today the dominant form of private-sector pension provision in the United States, covering more than 60 million workers. One of the unique elements present in many 401(k) plans is a loan feature. Plan participants are able to borrow a portion of the assets in their retirement accounts and repay the loan with interest over time. The loan feature is subject to various legal and plans-specific limits, most notably the requirement that not more than half of the vested account balance can be borrowed (with the maximum loan amount not to exceed $50,000). Unique among sources of credit for US households, 401(k) loans impose no credit underwriting limits, as participants are in effect borrowing from their own accumulated retirement assets. As of year-end 2008, 18 percent of DC plan participants had a loan outstanding against their account, with a mean value borrowed of $7,191 or 16 percent of the average account balance (Holden et al., 2009).[1]

One of the perennial questions surrounding loans in 401(k) plans is whether they pose an undue risk to retirement security (USGAO, 2009). When a participant terminates employment, any outstanding loan balance is due and payable to the account; otherwise, the amount of the unpaid loan, which represents an asset held in the retirement account, is written off and reported as a ‘deemed distribution’ subject to taxes and penalties. Such deemed distributions amounted to some $600 million in 2007, representing 0.2 percent of $3.7 trillion in assets held in DC plans (USDOL, 2010). While such costs are small relative to the aggregate asset holdings, they may be high for particular groups of economically vulnerable or financially unsophisticated participants. Loans also pose a potential opportunity cost for plan participants, generating a fixed income rate of return rather than a possibly higher return based on a balanced portfolio with a higher equity allocation.[2] At the same time, there is evidence that loans may raise participation or contribution rates in DC plans, thereby at the margin enhancing old-age income security (USGAO, 1997; Munnell et al., 2002; Mottola and Utkus, 2005; Mitchell et al., 2007). These 401(k) loans;

also offer a low-cost source of borrowing to households that are liquidity-constrained, although it is not clear whether 401(k) participants fully take advantage of this benefit relative to other types of borrowing, such as credit card debt (Li and Smith, 2008).

This chapter considers a specific question about the nature of the risks posed by 401(k) loans; namely, to what extent is financial literacy related to loan-taking behavior in US 401(k) plans? Outside of these plans, there is much evidence that financial literacy and poor borrowing habits are intertwined, whether with respect to payday loans, credit cards, or mortgages (FINRA, 2009). Yet 401(k) loans are different from these other sources of borrowing in that no profit-seeking financial intermediary is involved, and borrowing takes place in a relatively noncommercial setting, the workplace, as an adjunct to a broader retirement saving program sponsored by the employer. A 401(k) loan also represents individuals' propensity to borrow from their own accumulated wealth, rather than from other savers in the economy intermediated by lending institutions.

Our research draws on a survey of nearly 900 plan participants conducted in August and September 2008 and augmented with relevant 401(k) administrative records. Our survey asked plan participants four questions relating to general financial knowledge, from which we construct a simple financial literacy index. We find, first, that job tenure has the strongest link to 401(k) borrowing. Less educated, lower-income, younger, and, somewhat paradoxically, higher-income households are more likely to borrow. Second, loan-taking is strongly related to financial literacy. A low literacy score raises the probability of having a 401(k) loan by 6 percentage points, an increase of 27 percent relative to the 22 percent of participants in our sample who have a loan outstanding. Finally, we find that 401(k) loan-taking is strongly correlated with other behaviors, such as low 401(k) employee contributions, low nonretirement wealth, and the failure to repay credit card debt each month. These results together suggest that 401(k) borrowing does not occur in isolation, but is related to a common unobserved variable relating to impatience in financial decision-making, namely high discount rates in time preferences (i.e., the tendency to 'spend now and save later'). Thus, efforts by policymakers or plan sponsors to educate participants about the benefits and risks of 401(k) loans may need to be broader in scope than previously imagined, and they must consider households' overall ability to manage income, expenses, and debt, not simply the 401(k) loan feature.

In what follows, we begin by describing our dataset, the characteristics of 401(k) borrowers, and our literacy index. We then consider a simple logistic model of loan-taking behavior incorporating financial literacy and other metrics of financial behavior. We conclude with a discussion of findings and implications for financial education efforts.

Data and descriptive statistics

Our survey sample is drawn from a dataset of 1.3 million participant accounts in 707 401(k) plans offering a loan feature; the dataset was extracted as of June 30, 2008, from Vanguard's 401(k) recordkeeping system. Our survey was administered by telephone in August and September 2008; a total of 895 complete participant responses (in 249 plans) were received. The survey sample was drawn from the recordkeeping dataset based on various loan behaviors; as a result, all responses from respondents are reweighted back to the original dataset.[3] Table 4.1 provides descriptive

TABLE 4.1 Descriptive statistics (%)

	All participants		Participants with loan outstanding	
	Survey sample	Recordkeeping sample	Survey sample	Recordkeeping sample
	(A)	(B)	(C)	(D)
Sex				
Male	66	33	67	36
Female	34	16	33	17
Missing	0	51	0	47
Age				
Under 35	26	25	17	17
35–50	43	43	53	52
Over 50	31	32	30	31
Income				
<$75,000	38	42	44	55
$75,000–$100,000	31	15	27	16
>$100,000	21	22	23	18
Refused/unknown	10	21	6	11
Job tenure				
<4 years	27	33	8	12
4–10 years	29	27	26	31
>10 years	44	39	66	56
Missing	0	1	0	1
Education				
High school or less	21	N/A	32	N/A
Some college	28	N/A	38	N/A
College graduate or higher	51	N/A	30	N/A

(*continued*)

TABLE 4.1 Continued

	All participants		Participants with loan outstanding	
	Survey sample	Recordkeeping sample	Survey sample	Recordkeeping sample
	(A)	(B)	(C)	(D)
401(k) employee contributions				
<$3,000	44	50	56	57
$3,000–$10,000	36	33	37	35
>$10,000	20	17	7	8
401(k) account balance				
<$10,000	24	33	8	16
$10,000–$50,000	31	30	37	42
>$50,000	45	37	55	42
Nonretirement wealth				
<$25,000	40	42	59	25
$25,000–$100,000	31	27	24	54
>$100,000	23	22	11	13
Refused/unknown	6	9	6	8
n (unweighted)	895	1,628,273	308	337,505
n (weighted)	857		190	

Notes: Survey responses are weighted to the recordkeeping population by age and loan status; see text. Recordkeeping sample was extracted as of June 30, 2008. Survey sample is as of August and September 2008. 401(k) contributions are for entire year 2008.

Source: Authors' calculations; see text.

statistics for the two samples. These variables include age, household income, job tenure, and levels of educational attainment, as well as employee contributions to their 401(k) account in 2008, 401(k) account balance, and nonretirement wealth (measuring the mean wealth of households in the same zipcode).[4] Columns A and B compare the survey sample with the recordkeeping dataset. The two are virtually identical, except for a tendency of the survey sample to be somewhat overweighted in participants with more than 10 years of job tenure (44 percent of the survey sample versus 39 percent for the recordkeeping sample), 401(k) account balances greater than $50,000 (45 percent of the survey sample versus 37 percent for the recordkeeping sample), and participant incomes under $75,000 (38 percent versus 42 percent).

Descriptive statistics for 401(k) participants with a current loan outstanding appear in Columns C and D. Current borrowers tend to have somewhat higher incomes and 401(k) account balances compared to all participants, but they are more likely to have low nonretirement wealth (below $25,000). They are also older and longer-tenured. In part, these effects due to age, tenure, and account balance may reflect the need for participants to accumulate sufficient saving before borrowing from their account. Most plans in our sample impose a $1,000 loan minimum, and thus participants under typical circumstances would need an account balance of at least $2,000 before being able to take a loan. Another reason for these effects may be that participants become more familiar with the features of their 401(k) plan over time.

Our survey also includes four literacy questions shown in Table 4.2 that address four topics: compounding, credit card debt, stock market risk, and investment returns. These questions are designed to test participants' general awareness of personal finance ideas, not their knowledge of 401(k) plans or 401(k) loan features. Table 4.3 summarizes responses of participants with a current 401(k) loan outstanding, and compares them with those of participants with no current loan. Participants with a 401(k) loan outstanding are less likely to answer the credit card question correctly than those with no loan outstanding (78 percent for borrowers versus 82 percent for nonborrowers, respectively); borrowers are also less likely to provide the correct response to the stock market risk question (60 percent for borrowers versus

Table 4.2 Financial literacy questions

Question category	Question text	Answer choices	Correct answer
Compounding	If you are saving for a future goal, it's better to start early so that your money earns more and builds up faster over time.	True or false	True
Credit card debt	Keeping a balance on your credit cards is okay as long as you can make the minimum payments each month.	True or false	False
Stock market risk	If you were to invest $1,000 in a stock mutual fund, it would be possible to have less than $1,000 when you withdraw the money.	True or false	True
Investment returns	In which ONE of the following products would you choose to invest your money for the highest expected long-term growth?	A savings account, a certificate of deposit, an insurance policy, a stock mutual fund	A stock mutual fund

Notes: Question category are for reference only and were not included in the question to respondents.

Source: Hilgert et al. (2003), John Hancock Financial Services (2002), and Jump$tart Coalition for Personal Financial Literacy (2004).

TABLE 4.3 Financial literacy scores (%)

	Respondents with loan outstanding	Respondents without loan outstanding	All respondents
Compounding			
Correct	99	99	99
Incorrect	1	1	1
Not sure/refused	0	0	0
Credit card debt			
Correct	78	82	81
Incorrect	20	16	17
Not sure/refused	2	2	2
Stock market risk			
Correct	60	78	74
Incorrect	22	14	16
Not sure/refused	18	8	10
Investment returns			
Correct	71	77	75
Incorrect	18	15	16
Not sure/refused	11	8	9
Summary of responses			
Zero correct	1	0	0
One correct	6	2	3
Two correct	19	15	16
Three correct	33	27	29
All four correct ('high literacy')	41	56	52
n (unweighted)	308	587	895
n (weighted)	190	667	857

Source: Authors' calculations; see text.

78 percent for nonborrowers) and the general question on investment returns (71 percent for borrowers versus 77 percent for nonborrowers). At least in terms of descriptive statistics, some aspects of general financial literacy appear linked to 401(k) borrowing behavior.

Just over half of the population, or 52 percent, can provide correct answers for all four literacy questions, and we classify this subset as the 'high' literacy group. Another 29 percent of respondents answered three questions accurately; 16 percent of respondents two questions; and 3 percent of respondents, only one question. This second subset (48 percent of the survey) we classify as 'low' literacy participants. Table 4.4 provides descriptive statistics

TABLE 4.4 Financial literacy score by various characteristics (%)

	Low financial literacy score	High financial literacy score	All respondents
Sex			
Male	57	74	66
Female	43	26	34
Age			
Under 35	30	23	26
35–50	40	45	43
Over 50	30	32	31
Income			
<$75,000	45	33	39
$75,000–$100,000	19	24	22
>$100,000	26	34	30
Refused/unknown	10	9	9
Job tenure			
<4 years	29	26	27
4–10 years	30	28	29
>10 years	41	46	44
Education			
High school or less	31	13	21
Some college	27	28	28
College graduate or higher	42	59	51
401(k) employee contributions			
<$3,000	58	32	44
$3,000–$10,000	30	42	36
>$10,000	12	26	20
401(k) account balance			
<$10,000	32	17	24
$10,000–$50,000	32	29	31
>$50,000	36	54	45
Nonretirement wealth			
<$25,000	44	37	40
$25,000–$100,000	26	36	31
>$100,000	22	23	23
Refused/unknown	8	4	6
n (unweighted)	454	441	895
n (weighted)	447	410	857
Percent of sample	52	48	100

Notes: Literacy score of 4 is defined as 'high'; otherwise 'low'. See Table 4.1 for more information on survey sample.

Source: Authors' calculations; see text.

for the 'high' and 'low' literacy groups. Low-literacy participants are disproportionately female (43 percent versus 57 percent), younger, and have lower levels of income and educational attainment. They are also more likely to have lower 401(k) contribution amounts and balances.

Factors related to 401(k) borrowing

We examine the relationship between 401(k) borrowing and demographic, literacy, and behavioral variables, using a straightforward logistic regression model of loan-taking behavior. In equation (1), $\text{BORROWER}_{i,j}$ refers to the probability that the ith participant has a 401(k) loan outstanding in the jth plan as of September 2008, the time of our administrative data extraction:

$$\text{BORROWER}_{i,j} = \alpha\text{DEMOGRAPHICS}_i + \beta\text{LITERACY}_i + \gamma\text{FIN}_{\text{BEHAVIOR}_i} + v_i + \epsilon_{i,j,t}$$

where the dependent variable takes a value of 1 if the participant has a loan outstanding in September 2008, and 0 otherwise. In our survey sample, the mean (weighted) value of $\text{BORROWER}_{i,j}$ is 22.2 percent. The DEMOGRAPHICS vector includes measures of the demographic factors in Table 4.1, including sex, age, income, job tenure, and education.[5] LITERACY is an indicator variable indicating whether the participant has a low literacy score. FIN_BEHAVIOR includes indicators for a variety of variables relating to the non-401(k)-loan elements of participant financial profiles, including 401(k) contributions, 401(k) account balance, nonretirement plan wealth, and whether the household carries credit-card debt from month to month.

Table 4.5 reports results for three logistic regression models: Model A uses only standard demographic variables as explanatory variables, while Model B adds the financial literacy measure. Model C uses additional financial characteristics. In Model A, job tenure has the strongest relationship with 401(k) borrowing: participants with more than ten years of job tenure are 21 percentage points more likely to have a loan outstanding, a relative increase of nearly 100 percent on a mean borrowing rate of 22 percent. The least educated are also more likely to have a loan outstanding. 401(k) borrowers are also more likely to be under the age of 35 and have incomes below $75,000. Paradoxically, borrowers are also more likely to have incomes over $100,000. In Model B, low financial literacy is associated with a 6 percentage point increase in the probability of having a loan outstanding, a relative increase of 27 percent. It is also statistically significant at the 1 percent level. Introducing a literacy variable into the model

TABLE 4.5 Logistic estimation of the probability of a loan outstanding

	Demographic characteristics		With literacy score		With financial characteristics	
	Estimated coefficient	Marginal effects (%)	Estimated coefficient	Marginal effects (%)	Estimated coefficient	Marginal effects (%)
Sex (reference: male)						
Female	–0.034	–1	–0.065	–1	–0.102	–2
Age (reference: over 50)						
Under 35	0.141	3	0.102	2	0.221	3
35–50	–0.379**	–9	–0.363	–8	–0.399***	–6
Income (reference: $75,000–$100,000)						
Less than $75,000	0.188	4	0.173	4	–0.087	–1
More than $100,000	0.104	2	0.102	2	0.146*	7
Job tenure (reference: 4–10 years)						
Under 4 years	–1.092***	–25	–1.103***	–23	–0.725***	–11
Over 10 years	0.921***	21	0.942***	20	0.641***	10
Education (reference: some college)						
High school graduate or less	0.400***	9	0.309**	7	0.227	4
College graduate or higher	–0.693***	16	–0.626	–13	–0.467***	–7
Financial literacy (reference: high)						
Low			0.275***	6	0.273***	4
401(k) employee contributions (reference: $3,000–$10,000)						
Less than $3,000					0.830***	13
More than $10,000					–1.046***	–16
401(k) account balance (reference: $10,000–$50,000)						

(*continued*)

Table 4.5 Continued

	Demographic characteristics		With literacy score		With financial characteristics	
	Estimated coefficient	Marginal effects (%)	Estimated coefficient	Marginal effects (%)	Estimated coefficient	Marginal effects (%)
Less than $10,000					–1.167***	–18
More than $50,000					0.784***	12
Nonretirement wealth (reference: $25,000–$100,000)						
Less than $25,000					0.543***	9
More than $100,000					–0.394*	–6
Credit card balance (reference: no)						
Yes					0.283**	4
n (unweighted)	895		895		895	
n (weighted)	857		857		857	
R-square	0.191		0.204		0.315	

Notes: The dependent variable was whether a 401(k) participant had a loan outstanding (1 = yes, 0 = no). The mean was 22.2 percent. Logistic regression with clustering for plan-level heteroskedasticity. * Indicates significance at the 10 percent level,
** is 5 percent, and
*** is 1 percent. Also includes controls for missing variables.

Source: Authors' calculations; see text.

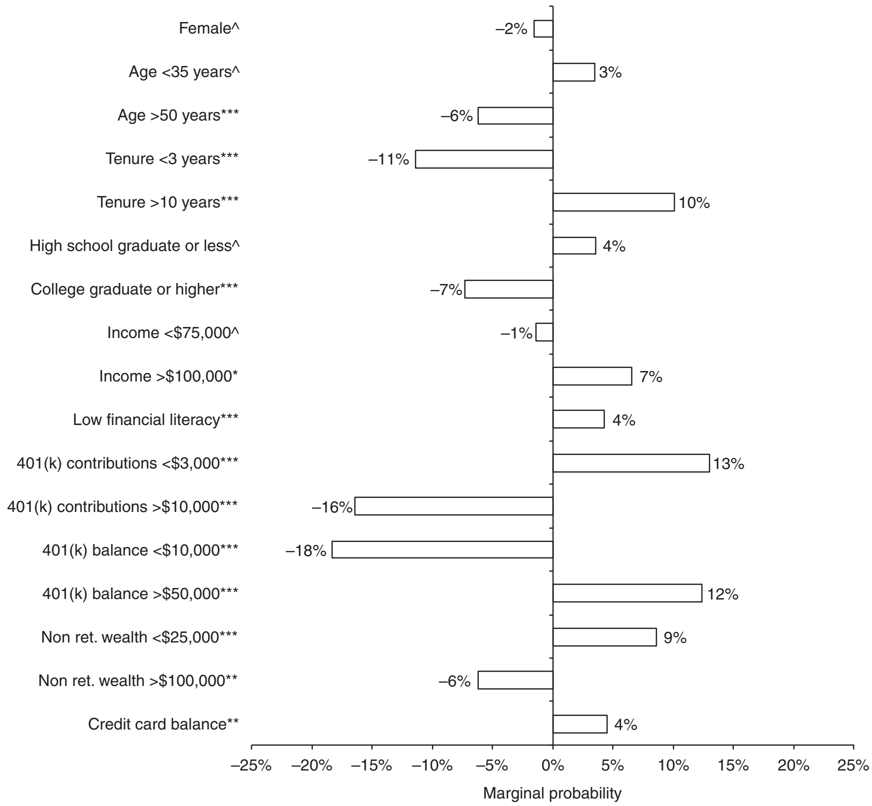

Figure: 4.1 Full model marginal effects predicting an outstanding loan

Notes: Logistic regression with clustering for plan-level heteroskedasticity.
* Indicates significance at the 10 percent level, ** is 5 percent, and *** is 1 percent; ^ indicates no significance. Also includes controls for missing variables.

Source: Authors' calculations; see text.

has the effect of reducing the relative impact of tenure, education, age, and income on borrowing behavior. For example, in Model B the relative effect of having a high school education (or less) is only 7 percentage points, compared to 9 percentage points in the demographics-only model.

Table 4.5 and Figure 4.1 report on results for Model C, which incorporates a variety of other financial characteristics relating to the participant's wealth, saving, and borrowing behavior. Perhaps the most striking finding is the relationship between 401(k) plan contribution behavior and borrowing. Participants who contribute $3,000 a year to their 401(k) plans are 13 percentage points more likely to have a loan outstanding, compared to the reference group of those saving between $3,000 and $10,000 a year (after controlling on other differences, including income and education that might influence propensity to save). This is a relative increase in propensity to borrow of 59 percent (13 divided by 22) among low savers. All things being equal, 401(k) borrowers appear also to be 401(k) low savers. By contrast, high savers (those contributing $10,000 or more a year) are 16 percentage points less likely to have a 401(k) loan outstanding compared to the reference group—again, controlling on other differences that would influence the propensity to save.

Another important effect is the impact of the expanded model specification on the role of income. In prior models, having earned higher (above $100,000 per year) or lower (below $75,000 per year) income is associated with increased loan-taking. In this expanded model, lower-income is no longer significant, while the marginal effect of a higher income is now 7 percentage points—an increase of nearly one-third compared to a 22 percent loan-taking rate. Although the result is significant only at the 10 percent level, it is nonetheless suggestive that high-income households are the most likely to take advantage of a 401(k) loan feature, in a more robust model of loan-taking, including other financial assets and behaviors.

401(k) and nonretirement plan wealth are also linked to the propensity to have a 401(k) loan, although with opposite effects. The propensity to borrow rises with 401(k) account balances, with participants having balances below $10,000 being 18 percentage points less likely to borrow than the reference group (with balances between $10,000 and $50,000). Meanwhile, those with balances above $50,000 are 12 percentage points more likely to borrow than the reference group. The larger the 401(k) balance—the larger the resources available for borrowing—the more likely it is that a participant has a loan outstanding. In contrast, nonretirement wealth has just the opposite effect. Those with low retirement wealth are more likely liquidity-constrained outside the 401(k) plan and so more likely to rely on the plan's loan feature (by 9 percentage points); those with high retirement wealth are more likely less liquidity-constrained, and so they are less likely to borrow (by –6 percentage points) through the 401(k) plan. A final variable in Table 4.6 measures whether or not a participant had an outstanding balance on his or her credit cards in the prior month. Those answering 'Yes' were 4 percentage points more likely to have a loan outstanding—a relative increase of 18 percent (4/21). This is on par with the marginal effect of 4 percentage points associated with 'low' financial literacy.

We interpret these results broadly as suggesting that 401(k) loan behavior is reflective of participants' unobserved time preferences or discounting behavior—how patient or impatient people are when balancing present and future consumption. Participants with high-discount rates—impatient

TABLE 4.6 Reported use of loan proceeds (%)

	Low financial literacy score	High financial literacy score	All respondents
Home improvement or repairs (I)	35	58	32
Purchase or refinance home (I)	17	22	19
Purchase automobile (I)	12	16	14
College/education expenses (I)	10	13	11
Bill consolidation/pay off debt (C)	41	37	39
Medical expenses (C)	12	10	11
Vacation expenses (C)	7	4	6
Wedding costs (C)	5	1	3
Other (C or I)	16	12	15
Summary			
Investment (I)	36	43	40
Consumption (C)	37	33	35
Both investment and consumption	26	22	24
Not sure or refused	1	2	1
n (unweighted)	316	263	579
n (weighted)	137	108	245
Percent of sample (weighted)	56	44	100

Notes: Multiple responses allowed. Consumption expenditures are classified as 'C'; investments are classified as 'I'.

Source: Authors' calculations; see text.

decision-makers who place high value on current consumption and a low value on current saving—are less likely to contribute to their 401(k) plans, more likely to take 401(k) loans, and more likely to carry balances on their credit card from month to month. For such participants, higher 401(k) balances appear to pose a greater temptation for borrowing. Low nonretirement plan wealth is also indicative that 401(k) borrowers may have lower saving rates outside the plan as well, all other things being equal. All of these factors are correlated with lower financial literacy levels. Conversely, patient investors, with low discount rates, are likely to be associated with a set of exactly the opposite behaviors: they have larger 401(k) contributions and fewer 401(k) loans, pay off their credit cards monthly, have high nonretirement plan wealth, and display higher financial literacy.

Use of loan proceeds

One question in our survey asks 401(k) borrowers with a loan outstanding in September 2008 as well as those who had previously borrowed from their 401(k) plans and repaid the loans, about their use of the loan proceeds.[6] While 401(k) loans can be used for essentially any purpose, under federal law loans are classified as either general purpose (having a term of five years or less) or for home purchase (having a term of up to thirty years). Ninety-five percent of loans in our broad recordkeeping sample are of the general purpose type, although even such loans can be used at the time of home purchase for either home downpayments and closing costs or new home expenses.

Table 4.6 reports on use of loan proceeds. Survey respondents can indicate multiple responses: four in ten respondents indicate that the 401(k) loan was used for bill or debt consolidation, while 32 percent report that proceeds were used for home improvement or repair. A total of 19 percent of respondents indicate the loan was used for home purchase, 14 percent for the purchase of an automobile, and 11 percent for college expenses.

We separately classified these uses of funds as to whether they are predominantly ‘consumption’ related, ‘investment’ related, or both. A total of 40 percent of respondents report uses that are principally investment-related; 35 percent report uses that are consumption-related; and for 24 percent, uses fell into both categories. Table 4.6 also tabulates use of proceeds by our financial literacy score. There is a tendency for low-literacy respondents to use proceeds for consumption, rather than investment purposes, but the differences are small and none are statistically significant. Our tentative conclusion is that, conditional on loan-taking, financial literacy seems unrelated to whether a loan is ultimately used for consumption or investment purposes (or both). Additional research with a larger sample could yield a different result, however.

Conclusion

One of the unique features of many 401(k) plans is the presence of a loan feature, whereby participants may borrow a portion of their account balance and repay it, with interest, over time. Just under one-fifth of 401(k) participants typically have a loan outstanding at any point in time. Although a small fraction of the average participant’s account balance is borrowed, 401(k) loans may still pose a risk to retirement wealth accumulation in that they are typically due and payable upon job change, job loss, or retirement. If the loan goes unpaid at the time of employment termination, the loan is treated as a taxable distribution of funds from the participant’s account and gives rise to both a tax liability and a penalty. In effect, the loan amount borrowed from the account is no longer able to be replenished. At the same time, loans are thought to encourage contributions into 401(k) plans, inasmuch as they reduce the illiquidity associated with a tax-deferred retirement plan account.

We examine the role that financial literacy plays in the decision to borrow from a 401(k) plan using a survey of nearly 900 plan participants. Our measure of literacy uses a simple four-question index assessing participant knowledge of compounding, stock market risk, investment returns, and credit card debt. We find that low financial literacy is associated with an increase in the probability of having a loan outstanding of 4–6 percentage points. Thus, in our sample, where 22 percent of participants had an outstanding loan, low levels of general financial literacy on a relative basis mean an 18–27 percentage point increase in the chances of borrowing from a 401(k) plan, depending on the model specification.

Equally important, however, is that 401(k) borrowing is correlated with a wide range of other financial decisions and behaviors. In particular, borrowing from one's 401(k) is inversely related to 401(k) plan contributions: low savers are more likely to borrow from their 401(k) plan, while high savers are less likely to do so (this after controlling on other factors that influence the propensity to save). The tendency to carry a credit card balance from month to month is also correlated with 401(k) borrowing. As well, low levels of nonretirement financial wealth are linked to 401(k) borrowing, suggesting that non-401(k) saving rates are also low. We interpret these findings as indicative of impatience in financial decision-making, namely high discount rates in time preferences.

One way for plan sponsors and policymakers to mitigate the potential risks of 401(k) borrowing is to offer greater financial education. Yet our results suggest that 401(k) borrowing does not exist in isolation, but rather it appears linked to behaviors associated with having high discount rates or impatience in financial decision-making. Efforts to educate participants would therefore need to be comprehensive in scope, addressing not only the merits and risks of the 401(k) loan feature itself, but also participants' attitudes and behaviors regarding saving and borrowing, both within and outside retirement plans. This latter type of education, of course, would likely be more complex and costly compared to the former. Moreover, it remains to be seen whether and how financial education can fundamentally alter a constellation of behaviors—401(k) loans, credit card loans, low 401(k) saving, low nonplan saving—that are so inextricably related.

Acknowledgments

The authors acknowledge support from Vanguard for the participant survey instrument and the provision of recordkeeping data under restricted access conditions. Opinions and conclusions are solely those of the authors, and do not reflect views of the institutions supporting the research, with whom the authors are affiliated.

Endnotes

1 The lifetime incidence of loan usage is no doubt higher than this point-in-time estimate.

2 Based on historic asset class returns over the 1926–2009 period, for a participant with a 70 percent allocation to stocks and a 30 percent allocation to bonds (the average allocation of all participants in our population), a shift to 60 percent stocks and 40 percent bonds would reduce the participant's real average annual rate of return from 5.85 to 5.48 percent, a reduction of thirty-seven basis points. A shift in allocation of twenty points would roughly double this amount.

3 The sample was drawn from four categories of loan behavior: participants with a current loan; participants who had previously taken out and paid off a loan, but had none outstanding at the time of the data extraction; participants who had never taken a loan from their current employer's 401(k) plan; and a fourth group of participants who had terminated employment with a loan outstanding in the twelve months ending June 30, 2008. Given our initial interest in the relationship of literacy factors and loan-taking behavior, the fourth group was excluded from the analysis, and a final survey sample resulted in 895 participants, weighted back to the original recordkeeping sample of 1.3 million by age and loan-taking behavior.

4 The IXI company provides a measure of average wealth held outside retirement plans within a ZIP+4 area.

5 The econometric model also corrects for plan-level heteroskedasticity (ν_i).

6 Some 401(k) borrowers responded that they did not currently or previously have a plan loan. The question about the use of loan proceeds was asked only of those indicating that they currently or previously had a plan loan.

References

FINRA (2009). *2009 National Financial Capability Study*. Washington, DC: FINRA Investor Education Foundation. http://www.finrafoundation.org/resources/research/p120478

Hilgert, M. A., J. M. Hogarth, and S. G. Beverly (2003). 'Household Financial Management: The Connection between Knowledge and Behavior,' *Federal Reserve Bulletin*, July: 309–22.

Holden, Sarah, J. VanDerhei, and L. Alonso (2009). *401(k) Plan Asset Allocation, Account Balances and Loan Activity in 2008*. Washington, DC: Investment Company Institute. http://www.ici.org/pdf/per15-02.pdf

John Hancock Financial Services (2002). *Insight into Participant Investment, Knowledge and Behavior: Eighth Defined Contribution Survey*. Boston, MA: John Hancock Financial Services. http://www.mfcglobal.com/gsfp/survey2002.pdf

Jump$tart Coalition for Personal Financial Literacy (2004). *Jump$tart Survey of Personal Financial Literacy among High School Students*. Washington, DC: Jump$tart Coalition for Personal Financial Literacy. http://www.jumpstart.org/survey.html

Li, Geng and P. A. Smith (2008). 'Borrowing from Yourself: 401(k) Loans and Household Balance Sheets,' Federal Reserve Working Paper 2008-42. Washington, DC: Federal Reserve.

Mottola, Gary R. and S. P. Utkus (2005). *Life-Cycle Funds Mature: Plan and Participant Adoption*. Malvern, PA: Vanguard Center for Retirement Research. https://institutional.vanguard.com/iip/pdf/LifeCycleStudy.pdf

Mitchell, Olivia S., S. P. Utkus, and T. Yang (2007). 'Turning Workers into Savers: Incentives, Liquidity and Choice in 401(k) Plans,' *National Tax Journal*, 60: 468–89.

Munnell, Alicia, A. Sunden, and C. Taylor (2002). 'What Determines 401(k) Participation and Contributions?,' *Social Security Bulletin*, 64(3): 64–75.

United States Department of Labor (USDOL) (2010). *Private Pension Plan Bulletin: Abstract of 2007 Form 5500 Annual Reports*. Washington, DC: US Department of Labor, Employee Benefits Security Administration. http://www.dol.gov/ebsa/pdf/2007pensionplanbulletin.pdf

United States Government Accountability Office (USGAO) (1997). *401(k) Pension Plans: Loan Provisions Enhance Participation But May Affect Income Security for Some*. Washington, DC: US Government Accounting Office. http://www.gao.gov/archive/1998/he98005.pdf

—— (2009). *401(k) Plans: Policy Changes Could Reduce the Long-Term Effects of Leakage on Workers' Retirement Savings*. Washington, DC: US Government Accounting Office. http://www.gao.gov/products/GAO-09-715.