

A WORKING PAPER

# Debt and the Retirement Savings Equation

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SEPTEMBER 2019



# Debt and the Retirement Savings Equation

Financial firms and advisors have historically spent more time focusing on the asset side of the household balance sheet than the liability side. However, this focus has recently begun to shift, as the industry has begun using the lens of financial wellness to assess individuals' overall financial well-being, including liabilities such as student loan debt. As a result, financial professionals need to consider their clients' financial health within the context of households' entire balance sheets, taking both assets and liabilities into consideration.

The debt levels of American households have increased significantly since the 2007-2009 economic recession.<sup>1</sup> As of December 31, 2018, total U.S. household indebtedness was approximately \$13.5 trillion according to the Federal Reserve Bank of New York. This figure is higher than the previous peak of \$12.7 trillion in the third quarter of 2008 (adjusted to 2018 dollars) and is an increase of 21.4% compared with the second quarter of 2013.<sup>2</sup>

These high debt levels have created significant challenges for average American households. Data from the 2016 Survey of Consumer Finances (SCF) suggest that American households with net worths under \$1 million spend more in total interest payments on debts than they can expect to gain from their financial assets.<sup>3</sup> Therefore, spending time on "debt optimization" is likely to result in better outcomes than focusing on assets alone.



<sup>1</sup> Bricker, Jesse, Lisa J. Dettling, Alice Henriques, Joanne W. Hsu, Lindsay Jacobs, Kevin B. Moore, Sarah Pack, et al. 2017. *Changes in US Family Finances from 2013 to 2016: Evidence from the Survey of Consumer Finances*. *Federal Reserve Bulletin*, 103, 1.

<sup>2</sup> Federal Reserve Bank of New York Center for Microeconomic Data. 2019. *Quarterly Report on Household Debt and Credit, 2018:Q4*. Retrieved April 17, 2019, [newyorkfed.org/microeconomics/hhdc.html](http://newyorkfed.org/microeconomics/hhdc.html).

<sup>3</sup> Federal Reserve Board. 2016. *Survey of Consumer Finances*. [federalreserve.gov/econres/scfindex.htm](http://federalreserve.gov/econres/scfindex.htm).

## Mapping the current state of household debt

Consistent with past research, our study found that certain types of “bad” debts, such as credit cards, are relatively common on household balance sheets today despite their high interest rates (averaging approximately 15%<sup>4</sup>). It is not clear to what extent interest rates could have been lower had the household done more due diligence on its debt decisions, or the extent to which these debts can be refinanced, but it is likely that some, and possibly many, households’ situations can be improved (i.e., the household could reduce the interest rate on outstanding debt). This analysis suggests more work should be done to understand the potential benefits of improving household credit decisions.

To demonstrate the urgency, importance and potential impact of household liability management, we set out to answer the following questions:

- What are the current financial situation and retirement outlook of mass-affluent U.S. households?
- What factors are associated with household debts and leverage ratios?
- What is the difference between “good” and “bad” debts?
- Will the attributes related to households carrying different types of debts be similar?
- What kinds of families are more likely to be in the higher debt category, and how much could they save by accessing liability optimization?

Our analysis focused on mass-affluent households — that is, households with less than \$1 million in net worth. Households with very high net worth often have their own unique leveraging and investment strategies, which makes them less suitable for inclusion in a study of the ways debt affects average households.

### Debt and the average U.S. household

Based on the SCF data, the average return on investment assets is approximately 62% of the debt interest charges for mass-affluent households.<sup>4</sup> In other words, the average American family is spending much more on interest servicing household debt than they earn from investing their financial assets. This situation suggests that liability management could potentially generate a much more positive impact on household finances than focusing sole focus on asset management.



## Liability management in action: A look at the Platts Family

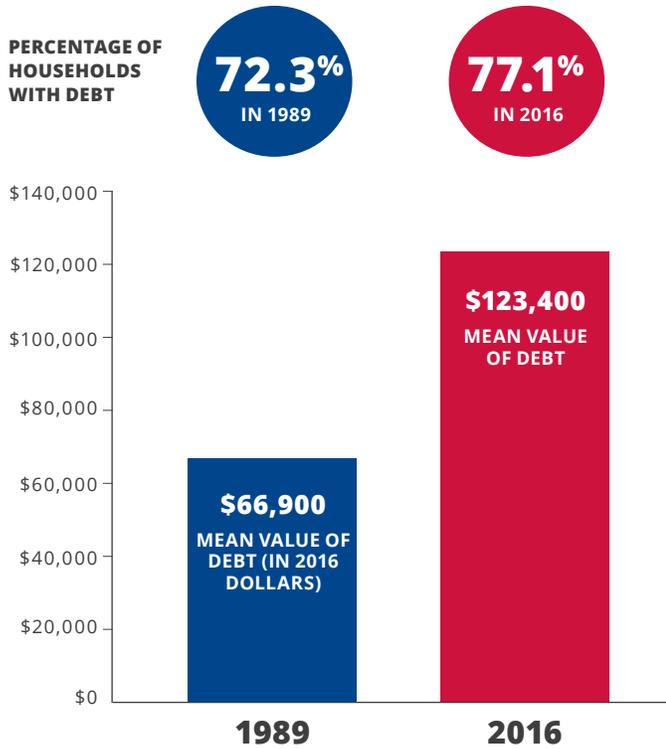
For many families with relatively tight budgets, it can be difficult to decide whether to commit their next dollar to savings or to pay off debt. Say the Platt family carries credit card debt at interest rates of roughly 15%. If they decided to save money that could otherwise go toward paying down their credit card bills, they would end up losing money over time as they ultimately pay out more to settle their debts than they could earn with savings.

In that case, the Platts’ finances would improve dramatically over the long term by focusing first on debt repayment. They could shift toward savings when it makes better economic sense to do so — after they’ve eliminated their credit card debt.

*For illustrative purposes only.*

<sup>4</sup> This is the lower end of average credit card and retail store installment card interest rates. Source: 2016 Survey of Consumer Finances (SCF) data weighted average credit card interest rate for mass-affluent households.

# U.S. households and debt



While the share of U.S. households with debt has been relatively constant, ranging from 72.3% in 1989 to 77.1% in 2016, the mean value of debt for American families has increased significantly from \$66,900 in 1989 (in 2016 dollars) to \$123,400 in 2016.

Households are likely to continue spending more on their debt interest payments than their investment returns. Therefore, it is essential that financial planning firms and advisors start putting more emphasis on their clients' debt structures and provide liability management assistance in order to help ensure brighter retirement outlooks for their clients.

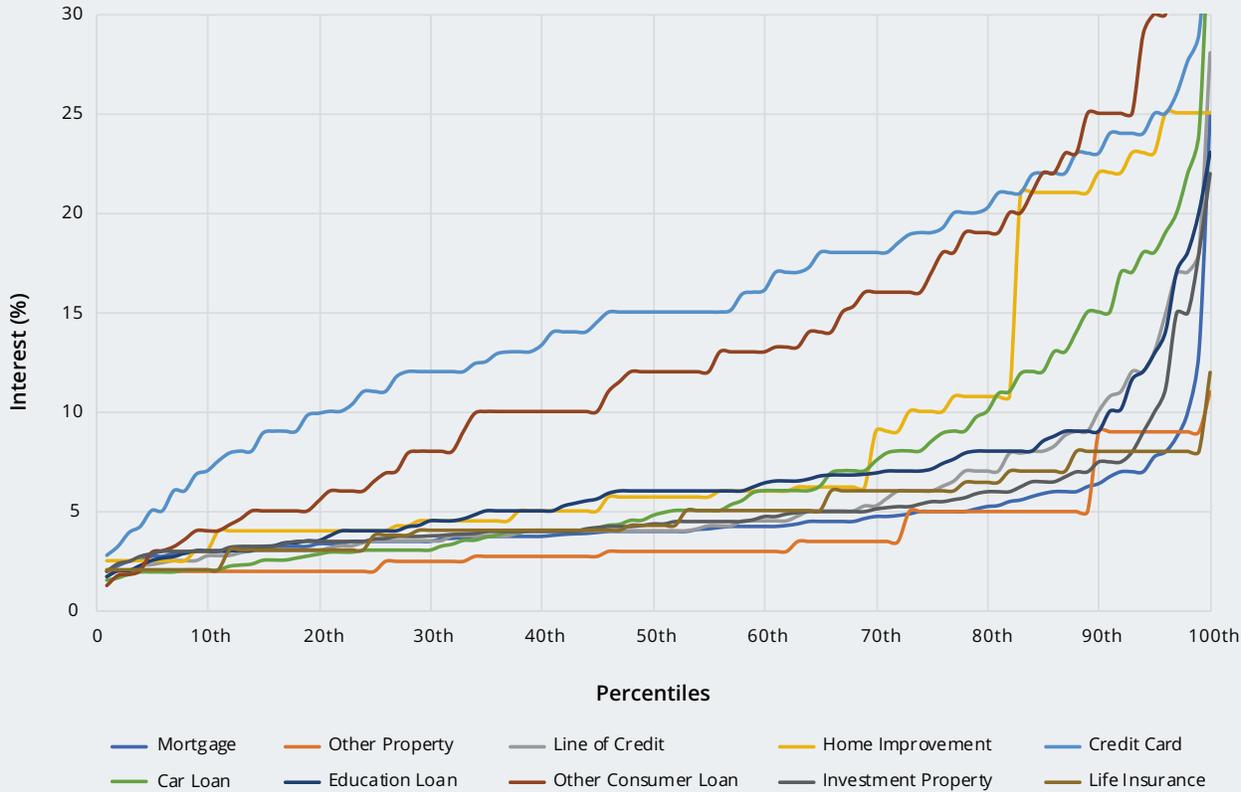
Not surprisingly, interest rates differ significantly across different types of loans. Unsecured personal loans (such as credit card loans and other consumer loans) typically have the highest interest rates. These loans are also typically categorized as "bad" debts, despite their high interest rates, because they are not used to purchase assets that improve the long-term financial condition of the household.

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<sup>5</sup> Bricker, Jesse, Lisa J. Detling, Alice Henriques, Joanne W. Hsu, Lindsay Jacobs, Kevin B. Moore, Sarah Pack, et al. 2017. Changes in US Family Finances from 2013 to 2016: Evidence from the Survey of Consumer Finances. Federal Reserve Bulletin, 103, 1.

# Distribution of household loan interest rates



Source: Federal Reserve Board Survey of Consumer Finances 2016 survey wave.

Notes: Weights applied.

This figure shows the percentile distribution of interest rates across different types of loans. “Other consumer loans” include loans for household appliances, furniture, hobby or recreational equipment, medical bills, friends or relatives, etc. This category does not include credit cards, margin loans, or loans against life insurance or pensions.

## How household characteristics affect debt holdings

To gain a better understanding of how different family attributes affect household debt, we looked at the economic, demographic and behavioral factors that could potentially impact the likelihood of carrying household debt, the total debt amount, the debt-to-financial-asset ratio and the debt-to-income ratio.

Our analysis showed that in some cases, relatively wealthier families that are in good financial condition still carry larger amounts of debt because of their high income or large financial asset accumulations. While some financially challenged families might not carry a sizable sum of debt in terms of dollar amounts, these debts are typically detrimental

to their financial well-being compared with their income and asset levels.

According to our study, married families with children are more likely to carry household debts. Families that own their houses are much more likely to borrow, and the more real assets a family owns, the more likely the family is to carry debts. Liquid assets and age are negatively related to the likelihood of having debts, likely because households are less likely to borrow if they have enough liquid assets to cover their needs. This finding supports the advocacy of emergency savings through liquid accounts for the general public. Older families are less likely to have debts because they generally have had a longer time to accumulate wealth and pay off their various household debts.

## Savers' attributes associated with household debt<sup>6</sup>

### How to interpret this table

“+” indicates that the dependent variable (such as total household debt amount) goes up when the attribute goes up. For example, household debt is higher for a married person than for a person who is not married.

“-” indicates that the dependent variable goes down when the attribute goes down. For example, the total amount of household debt decreases with each additional \$10,000 of liquid assets.

**Blank cells** indicate that the relationships are not statistically significant at the 95% confidence level. For example, the debt-to-income ratio has no significant relationship to the number of children.

The magnitude of these positive or negative relationships is omitted in this table. For detailed economic significance for each of these relationships, please refer to Appendix 1.

Variables	Have debt	Total debt amount (\$)	Debt-to-financial-asset ratio	Debt-to-income ratio
Married	+			-
Number of children	+	+		
Education level	+	+		+
Real assets (per \$10K)	+	+		+
Liquid assets (per \$10K)	-	-		-
Have houses	+	+		+
Have savings	+		-	
Income (per \$10K)	+	+		-
Age	-	-	-	-
Financial planning horizon (omitted baseline category “next few months”)				
Next year	-		-	
Next few years		-	-	-
Next 5 to 10 years	-	-	-	-
Longer than 10 years	-	-	-	-
Next few years			-	-

*Significant at the p-value less than 0.05 (more than 95% confidence level) or better. i.e., We are more than 95% confident that the (positive or negative) relationships between the dependent variables and independent variables indicated in the table above are statistically significant. Sample size is 4,481.*

It appears to be counterintuitive that education and income level, as well as reporting having savings, are positively related to carrying household debt. This phenomenon occurs because high-income families are more likely to leverage and have larger debt sizes while their debt-to-income ratios are lower and negatively related to their income level. Households that have savings demonstrate much lower debt-to-financial-asset ratios despite their higher likelihood to borrow.

The combined results could indicate that these families may be more financially literate and leverage lower-interest debts to increase their investments in financial assets and savings. When it comes to education level, more educated households

are more likely to carry debt, have higher debt balances and have a higher debt-to-income ratio, keeping all other factors, such as income and assets, the same. These results are a strong indication of the impact of student loans on these families: All other things being equal, the educated families are more likely to carry student loans compared with the less educated ones because of the prevalence of student loans used to finance education today.

A family's financial planning horizon is also a strong behavioral indicator for its likelihood of carrying household debt. Households with longer financial planning horizons are much less likely to have debts. Total debt amount, as well as

<sup>6</sup> Table with amounts and standard errors can be found in Appendix 1.

debt-to-financial-assets ratio and debt-to-income ratio, are all negatively associated with a longer financial planning horizon. This finding supports the myopic planning hypothesis, which predicts that having a myopic financial planning horizon fuels households' borrowing and may lead families deeper into debt. It also suggests that promoting long-term financial planning horizons serves as a good approach to help families with their liability management.

### Factors that drive families to higher levels of debt<sup>7</sup>

After studying the attributes that are associated with household debts, we looked at the population distributions according to their total household debt amount in the SCF sample and considered what factors are driving higher levels of debt among households with otherwise similar characteristics. Families with higher debt levels may need more debt management assistance and could potentially benefit significantly from liability optimization. Therefore, financial planners and advisors can use our categorical analysis to identify the factors that are associated with higher-debt households.

Married families that raise more children are more likely to be in the higher debt categories. Real asset holdings and homeownership are also significantly correlated with higher debt households, and student loan debt drives more educated families to be in higher debt categories as well. Age and liquid assets help households move to lower debt levels, but income and savings appear to have the opposite effects, all other factors being equal. Again, older families with more liquid assets are less likely to carry a large amount of debt because they generally have had a longer time and more asset accumulation to help pay off their liabilities. High-income families with savings have access to more credit sources and are able to leverage more "good" debts to support their investments, as discussed above.

A household's financial planning horizon also demonstrates a significant inverse relationship with its debt level. Compared with the households with short financial planning horizons short (e.g., "the next few months"), families with longer financial planning horizons are much less likely to be in the higher debt category than households with otherwise similar characteristics. This finding further supports the myopic

planning theory and continued promotion of long-term financial planning for American households.

### Factors that drive good debt vs. bad debt<sup>8</sup>

"Not all debt is created equal," as the saying goes. "Good" debts are typically defined as those with lower interest rates that help households finance activities and purchases that provide long-term benefits (e.g., mortgages). "Bad" debts, by contrast, are usually associated with higher interest rates and are used to purchase depreciating assets that do not generate long-term benefits. The costs of "good" debts themselves are generally outweighed by the benefits. "Bad" debts, on the contrary, carry high interest rates with no long-term returns. These types of debts can potentially negatively impact the borrower's credit scores, retirement goals and financial health as well as family relationships. In some circumstances, bad debts can create a vicious borrowing cycle and cause stress and mental as well as physical health problems.<sup>9</sup>

Our study found that although some household attributes are related to both "good" and "bad" debts, certain factors are particularly noteworthy when it comes to explaining what kinds of households are more likely to carry "bad" debts. Having more children is positively associated with both credit card loans and mortgages. However, factors such as interest rates, real assets, liquid assets and income have different relationships with credit card debt than with mortgages.

For instance, mortgages are more sensitive to interest rate changes, but credit card loans are more sensitive to liquid assets and income. The reason for this difference could be interpreted as a "liquidity needs" compromise. Credit card loans are typically used to cover short-term liquidity needs. Their insensitivity to interest rates could be largely caused by a lack of liquid assets to cover certain short-term needs (such as holiday shopping). Therefore, credit card debts are negatively related to liquid asset levels. On the other hand, mortgages are negatively associated with interest rates because of their relatively larger debt size (hence larger interest payments) and longer investment horizons.

<sup>7</sup> The conclusions in this section are derived from the results of a categorical analysis which divided the households in to quintiles. The detailed quintile analysis results table are omitted from this paper. If the readers are interested in seeing the regression results, please contact us for more details.

<sup>8</sup> The conclusions in this sections are derived from an Ordinary Least Squares (OLS) regression on different debt categories. The results table of the OLS regression is omitted from this paper. If the readers are interested in seeing the regression results, please contact us for more details.

<sup>9</sup> Davies, Will, Johnna Montgomerie, and Sara Wallin. 2015. *Financial Melancholia: Mental Health and Indebtedness*. London: Political Economy Research Centre.

One interpretation of the income effect on credit card loans could be that, keeping everything else (including liquid assets) equal, households with higher incomes have the ability and resources to borrow — and pay back — more credit card loans. Age is another factor that is only negatively related to mortgages. This finding indicates that older households are more likely to have had a longer time to pay off their mortgages and hence reduce the size of this type of “good” debt. Because houses are a major component of most households’ real assets, it is not surprising that the real asset level is positively related to family mortgage loans. We found that the financial planning horizon factor is negatively associated with both credit card loans and mortgages. This result is consistent with previous results, which indicated that families with longer financial planning horizons are less likely to carry both kinds of debts.

We also found that households with less education, lower levels of assets, fewer savings and older age are subject to higher interest rates. Therefore, families with these attributes are more likely to need help with liability management and could potentially benefit significantly from interest rate reductions.

### The positive impact of debt management

To quantify the impact liability management could potentially have on American families’ financial well-being, we calculated the potential benefit associated with an interest rate reduction and put it in the context of a household’s financial assets (investment) returns. Consider a household that is currently at the 75th percentile in terms of its overall weighted average debt interest rate. According to our study, if this household can reduce its loan rates through liability management and drop to the 70th percentile, the benefit of this rate reduction is equivalent to a 5.5% “alpha,” or 550 basis points extra return in investments. In other words, this reduction in rates would equal \$492 in extra annual returns from this family’s investment assets. If this household could reduce the loan rates further and drop 10 percentiles, the equivalent alpha generated by this improvement would be equal to 11.7%, or \$953, annually.



# How reducing interest rates affects debt

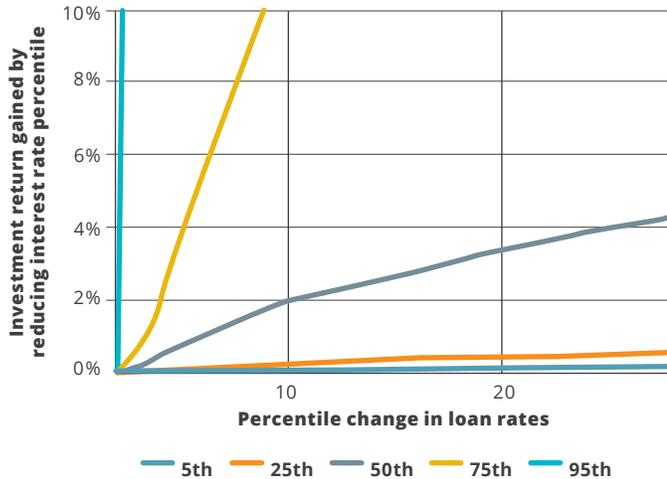
## How to interpret the percentage point chart and table

If a household in the 75th percentile can reduce its interest rate by 5 percentile points, the benefit of the rate reduction would be equal to 5.5% additional return on their investments.

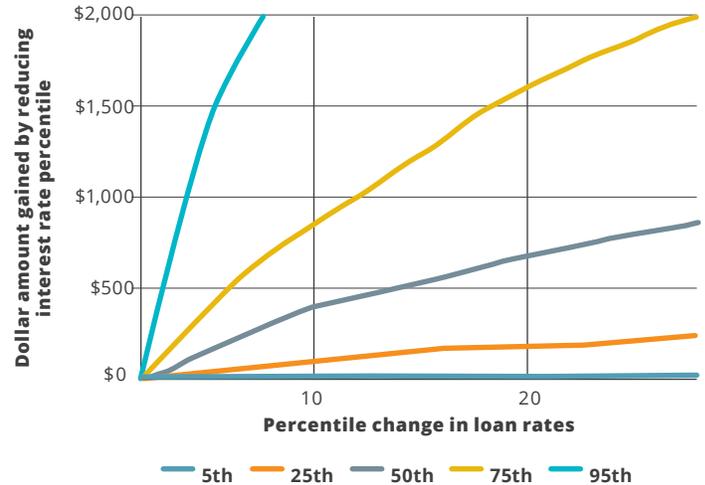
## How to interpret the dollar amount chart and table

If a household in the 75th percentile can reduce its interest rate by 5 percentile points, the benefit of the rate reduction would be equal to \$492 additional return on their investments.

**POTENTIAL INVESTMENT RETURN BENEFIT OF AN INTEREST RATE REDUCTION**



**POTENTIAL DOLLAR AMOUNT BENEFIT OF AN INTEREST RATE REDUCTION**



**POTENTIAL PERCENTAGE POINT BENEFIT OF AN INTEREST RATE REDUCTION**

Current interest rate percentile	Decrease in interest rate percentile				
	5 percentile decrease	10 percentile decrease	15 percentile decrease	20 percentile decrease	25 percentile decrease
5th	0.00%	0.00%	0.10%	0.10%	0.10%
25th	0.10%	0.40%	0.60%	0.70%	0.80%
50th	0.80%	1.90%	2.90%	3.60%	4.20%
75th	5.50%	11.70%	16.90%	21.70%	24.70%
95th	113.50%	237.50%	302.80%	382.20%	455.40%

**POTENTIAL DOLLAR AMOUNT BENEFIT OF AN INTEREST RATE REDUCTION**

Current interest rate percentile	Decrease in interest rate percentile				
	5 percentile decrease	10 percentile decrease	15 percentile decrease	20 percentile decrease	25 percentile decrease
5th	\$0	\$7	\$14	\$20	\$23
25th	\$36	\$120	\$189	\$243	\$290
50th	\$175	\$410	\$580	\$763	\$889
75th	\$492	\$953	\$1,328	\$1,683	\$1,980
95th	\$1,641	\$2,614	\$3,409	\$4,278	\$4,840

The positive impact of debt management is more significant for households that are in higher-interest percentiles. Based on 2016 data, if a household's weighted average debt interest rate is currently in the 95th percentile, a five-percentile drop could generate 113.5% equivalent alpha, or an extra \$1,641 in annual investment returns. If the drop reaches 10 percentiles, a household could save an extra \$2,614, or 237.5% of investment alpha!

Source: Federal Reserve Board Survey of Consumer Finances 2016 survey wave.

Notes: The subsample is restricted to households that carry loans, reported complete data on all loan types and have more than \$1 in financial assets. The number of observations is 3,371. The 2016 SCF sample weights were applied.

## How financial professionals can use this information to improve their effectiveness

Debt is a significant and growing component of U.S. household balance sheets. With total interest rate payments on loans exceeding the expected returns on household financial assets, the impact of liability optimization should draw more focus from financial advisors, financial firms and consumers.

In particular, financial planning practitioners and financial institutions can recognize the potential benefits of liability management for mass-affluent American families and identify the attributes associated with those households that most need debt assistance. This information can also help consumers find an integrated approach to making decisions about their marginal income and benefit significantly from analyzing both sides of their balance sheet extensively and regularly.

Our study indicates that households with lower assets, income and education levels need assistance the most and could significantly benefit from debt management. Households' time discounting preferences also play an important role in their borrowing decisions. Families with longer financial planning horizons are less likely to carry loans and have lower debt-to-income ratios. Among the borrowers, a shorter financial planning horizon is usually an indicator of a higher debt amount as well as higher debt-to-asset and debt-to-income ratios. Families with myopic planning horizons are also more likely to carry a higher amount of "bad" debts, such as credit card balances.

The results of our study can also inspire advisors and financial services firms to consider alternative approaches to helping consumers improve their financial well-being. For example, advisors could help their clients design a road map for debt restructuring and interest rate reduction along with building portfolio investment strategies. By reviewing both sides of the household balance sheet extensively and periodically, advisors can integrate both investment and liability management strategies to better improve their clients' economic outlooks. These strategies would be particularly effective for households with lower income, education and asset levels.

Large retirement firms could explore the possibility of building a bridge between their retirement plan participants and lending institutions to help their participants gain access to loans with competitive rates. Participants could utilize these "group rate" loans to restructure and reduce the interest payments on their existing debts. Financial planners could also implement different behavior coaching strategies (such as behavioral nudging devices) to help their

clients increase their financial planning horizons and avoid the consequences of myopic planning.

## Implications for retirement plan design

Financial wellness has become a bit of a buzzword in the retirement industry. At its core, it involves addressing employees' financial stressors and improving financial literacy. Providers of workplace savings plans now offer solutions to deal with these stressors, such as helping employees address student loan debt, helping create emergency savings accounts and incorporating health savings accounts into retirement planning strategies. Based on the data shared in this paper, employers interested in helping employees improve their overall financial wellness should look to workplace plan providers that offer an integrated, personalized approach that helps employees address both the asset and liability sides of their households' balance sheets.



## Analysis of factors associated with household debts

Variables	Have debt	Total debt amount (\$)	Debt-to-financial-asset ratio	Debt-to-income ratio
Married	0.115** (0.039)	-819.6 (3,577.505)	-119.2 (186.344)	-0.223* (0.102)
Number of children	0.0787*** (0.019)	5,433.1*** (762.826)	151.1 (142.587)	0.0172 (0.025)
Education level	0.0593*** (0.007)	2,830.9*** (658.963)	-62.01 (33.751)	0.102*** (0.020)
Real assets (per \$10K)	0.0109*** (0.002)	4,314.9*** (207.030)	6.767 (8.760)	0.0416*** (0.003)
Liquid assets (per \$10K)	-0.0794*** (0.010)	-4,076.7*** (0.051)	7.407 (0.001)	-0.0459*** (0.000)
Have houses	0.583*** (0.057)	6,711.6** (2,509.261)	123.3 (253.975)	0.750*** (0.069)
Have savings	0.298*** (0.035)	3,114.6 (1,963.956)	-853.9*** (149.459)	0.109 (0.089)
Income (per \$10K)	0.0578*** (0.011)	3,410.2** (1,128.458)	-35.24 (18.272)	-0.0950** (0.029)
Age	-0.0161*** (0.001)	-1,237.7*** (52.300)	-12.94*** (3.904)	-0.0238*** (0.002)
Financial planning horizon				
Next year	-0.150** (0.052)	-3,839.2 (2,043.248)	-930.4** (286.531)	0.136 (0.160)
Next few years	-0.0195 (0.043)	-5439.2* (2,269.333)	-734.6* (293.134)	-0.123* (0.057)
Next 5 to 10 years	-0.202*** (0.050)	-11,861.2*** (2,530.713)	-969.5*** (262.833)	-0.193** (0.070)
Longer than 10 years	-0.245*** (0.060)	-6,553.9* (3,156.322)	-630.7* (306.992)	-0.276** (0.090)

Data Source: Federal Reserve Board Survey of Consumer Finances 2016 survey wave.

Standard errors in parentheses.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

For example, significant at the  $p$ -value less than 0.05 (more than 95% confidence level) or better. i.e., We are more than 95% confident that the (positive or negative) relationships between the dependent variables and independent variables indicated in the table above are statistically significant.

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