

Insights: American Financial Capability

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What's Inside:

Summary	1
Background	1
Mortgage Behavior and Income Shocks	2
Do Emergency Savings Help?	3
The Demographics of Mortgage Behavior	4
Implications and Conclusions	5
Acknowledgements	7
References	7
Appendix	8

Softening the Blow: Income Shocks, Mortgage Payments and Emergency Savings

Summary

Data from the FINRA Investor Education Foundation's National Financial Capability Study suggest that households without emergency savings are more likely to experience mortgage payment problems when faced with an income shock—a significant, unexpected drop in income—than those with emergency savings. Among households experiencing an income shock, those without emergency savings are three times more likely than households with emergency savings to make a late mortgage payment—and almost twice as likely to be involved in a foreclosure. Further, low levels of financial literacy are related to an increased likelihood of late mortgage payments.

Background

Income shocks, or sudden and unexpected decreases in household income, can negatively affect the financial stability and well-being of households that experience them—and they are not uncommon. One recent study found that a third of American adults age 18 and over experienced a large and unexpected drop in income over a 12-month period.¹

Income shocks can result from a number of causes, including changes in family structure (*i.e.*, divorce or the death of a parent), health issues and, of course, job loss—so the weak job market of recent years has likely contributed to the number of households grappling with income shocks. For example, in 2008 and 2009 over 4.5 million jobs were lost.² In addition, the unemployment rate increased from 5 percent at the beginning of 2008 to 9.9 percent by the end of 2009, and as of December 2012 the unemployment rate was 7.8 percent and the underemployment rate was 14.4 percent.³ Once hit with an income shock, regardless of the cause, a household may encounter a number of financial strains, including difficulty paying their mortgage.

Late mortgage payments and foreclosures can have long-term and far-reaching financial effects, including the loss of access to credit and/or significantly higher interest rates. Further, mortgage payment behavior is an issue that affects a broad swath of the American public, with nearly 4 in 10 households having a mortgage.⁴ And, for many households, their home is the most valuable financial asset they own, so behavior that undermines this asset is particularly problematic. As such, a better understanding of the factors that affect the relationship between income shocks and mortgage behavior could prove useful in limiting the financial impact of unexpected drops in income.

¹ Lusardi (2011).

² United States Department of Labor, Bureau of Labor Statistics (2013a). Data for the current study were collected in late 2009, so the 2008 and 2009 job-loss figures are more relevant for this research than more recent years. Figures are seasonally adjusted.

³ United States Department of Labor, Bureau of Labor Statistics (2013b). Figures are seasonally adjusted.

⁴ FINRA Investor Education Foundation (2009).

Conventional wisdom suggests that households can use emergency savings, also called “rainy day funds,” to soften the financial blow of an income shock by providing funds to compensate for the loss of income—and empirical research backs up this line of thinking. For example, researchers at the Urban Institute found asset holdings help families cope with negative family events.⁵ Similarly, another study found that households’ own savings are the resource most commonly used to address financial shocks.⁶ Most Americans, however, lack emergency savings. One study found that less than half of respondents surveyed reported that they had set aside funds sufficient to cover expenses for three months in case of sickness, job loss, economic downturn or other emergency.⁷ Yet despite this statistic, emergency savings may represent the best line of defense against the harmful financial effects of income shocks. To further explore this possibility, this brief uses data from the 2009 National Financial Capability Study (State-by-State Version) to examine the relationship between emergency savings and mortgage payment behavior among respondents who experienced an unexpected drop in income.

Mortgage Behavior and Income Shocks

Two-thirds of respondents indicated that they currently have a mortgage, and of those with a mortgage, 39 percent reported experiencing an income shock in the previous 12 months. Figure 1 depicts the mortgage payment behavior of these households, and stark differences in behavior are evident. Households that experienced an income shock were nearly two and a half times more likely to have made a late payment on their mortgage relative to households that did not experience an income shock—34 percent versus 13 percent (Figure 1).⁸

Figure 1— Households Experiencing Income Shocks Were More Likely to Make Late Mortgage Payments

Status	Percent Making a Late Mortgage Payment
Households that Experienced an Income Shock	34%
Households that Did Not Experience an Income Shock	13%
All Households	21%

Notes: Based on households that indicated they currently have a mortgage. Data are weighted using NFCS weights. Total unweighted sample size is 11,385. All differences are statistically significant at the .01 level.

The relationship between foreclosure rate and income shock was also examined. The sample for the foreclosure rate analysis, however, is based on the entire population—not just respondents who currently hold a mortgage. This approach was taken because a respondent may not currently have a mortgage but could have foreclosed on a house in the past. In addition, in an attempt to exclude respondents who never had a mortgage and, consequently, never had the opportunity to foreclose on a house, respondents under 30 years of age were removed from the analysis. (The cutoff was based on research that estimated the average age of first-time home buyers at 34.)⁹ Although this approach creates a cleaner sample, it could still result in respondents who never owned a home being included in the analysis. As a result, the foreclosure rate estimates could be biased downward slightly.¹⁰

⁵ McKernan, Signe-Mary, Caroline Ratcliffe and Katie Vinopal (2009).

⁶ Lusardi, Schneider and Tufano (2011).

⁷ Lusardi (2011).

⁸ The Appendix includes the survey questions used to assess if respondents had a mortgage, experienced an income shock, made late mortgage payments, were involved in a foreclosure or had emergency savings.

⁹ Taylor (2010).

¹⁰ Trawinski (2012) reports a foreclosure rate during the same time period (2009 and 2008) of approximately 2.5 percent (author’s calculations based on data reported in the paper).

Forty percent of households in the foreclosure sample indicated that they experienced an income shock in the previous 12 months, and the relationship between foreclosure rate and income shock is very similar to the relationship between late mortgage payments and income shock (Figure 2). Households that experienced an income shock were nearly three times as likely as households that did not experience an income shock to report having been involved in a foreclosure in the previous two years—5 percent compared to 1.7 percent.

Figure 2—Households Experiencing Income Shocks Were More Likely to be Involved in a Foreclosure

Status	Percent Involved in a Foreclosure
Households That Experienced an Income Shock	5.0%
Households That Did Not Experience an Income Shock	1.7%
All Households	3.0%

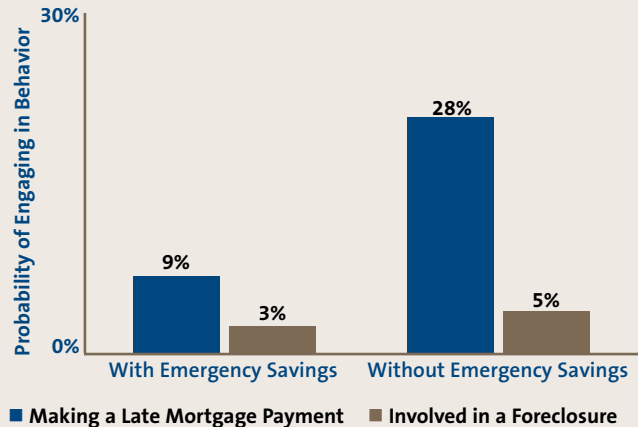
Notes: Sample includes all respondents, except those younger than age 30. Data are weighted using NFCS weights. Total unweighted sample size is 21,966. All differences are statistically significant at the .01 level.

Do Emergency Savings Help?

There are clearly differences in mortgage payment behavior and foreclosure rates based on whether or not a respondent experienced an income shock. But can emergency savings lessen the impact of these shocks? To answer this question, the relationship between emergency savings and mortgage payment behavior for respondents who experienced an income shock was examined using regression analysis. The regression controlled for a number of demographic variables that could affect mortgage payment behavior, such as household income, education and minority status.

The findings from this analysis suggest that emergency savings are strongly related to mortgage payments and foreclosure rates—even after controlling for key demographic variables. Households that experience an income shock and have emergency savings are predicted to have a 9 percent chance of making a late mortgage payment, compared to 28 percent for households that experience an income shock and do not have emergency savings (Figure 3). Similarly, emergency savings are associated with lower foreclosure rates. Households that experience an income shock with emergency savings have a 3 percent chance of being involved in a foreclosure, compared to 5 percent for demographically similar households without emergency savings. In other words, among households experiencing an income shock, households without emergency savings are 67 percent more likely than households with emergency savings to be involved in a foreclosure.

Figure 3—Households Without Emergency Savings Were More Likely to Make a Late Mortgage Payment and Be Involved in a Foreclosure When Experiencing an Income Shock



Notes: Linear probability regressions with corrections for heteroskedastic errors were estimated. No evidence of collinearity was found. The following control variables were used: income, minority status, presence of dependents, education, marital status, gender, age, financial literacy level and geographic region. Data were weighted using NFCS weights. Total unweighted sample size was 4,228 for the late mortgage regression (includes respondents who experienced an income shock and currently have a mortgage) and 8,410 for the foreclosure regression (includes respondents who experienced an income shock and are 30 years of age or older). Statistical significance is calculated based on the difference between those with and without emergency savings, and all differences are statistically significant at the .01 level. The predicted probabilities in the figure assume non-minority, dependents in the household, household income greater than \$50,000, college educated, high financial literacy, married, male, age greater than 45 and living in the West.

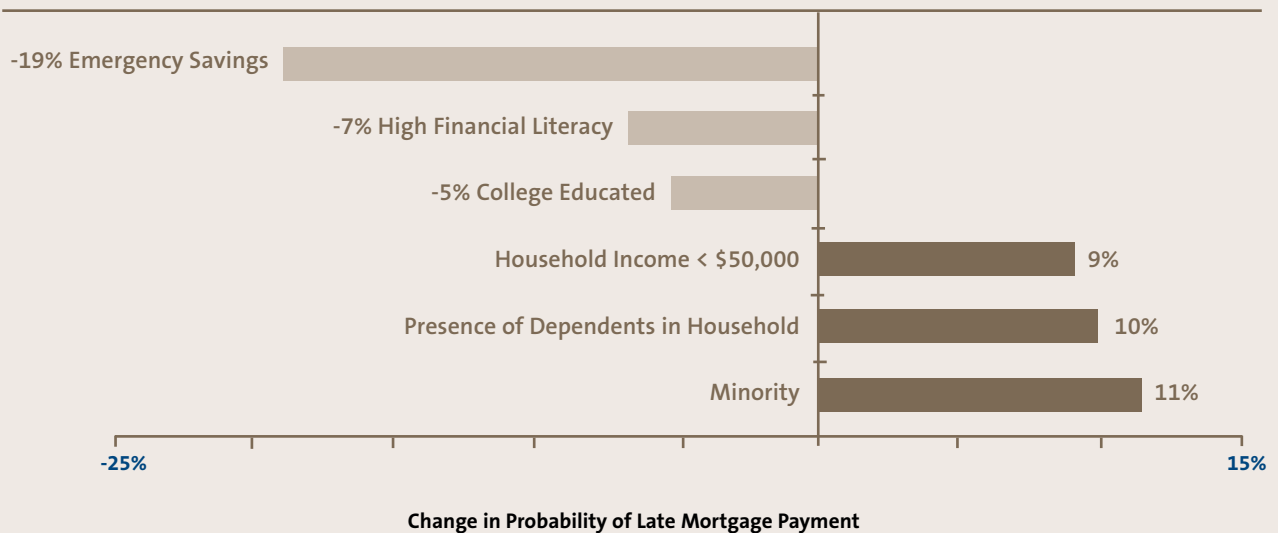
The Demographics of Mortgage Behavior

Late Mortgage Payments

A more in-depth look at the factors related to late mortgage payments when experiencing an income shock is provided in Figure 4, which is based on the same analysis as Figure 3. Clearly, among the variables examined, emergency savings has the strongest relationship with mortgage payment behavior. Controlling for key economic and demographic variables, households with emergency savings are 19 percentage points less likely to make a late mortgage payment relative to households without emergency savings.

However, other demographic variables play an important role, as well. Respondents with high financial literacy are 7 percentage points less likely than respondents with low financial literacy to make late mortgage payments.¹¹ A college education is also associated with a lower likelihood of late mortgage payments, but coming from a household with less than \$50,000 in annual income, having dependents in the household or being a minority is associated with a higher probability of late payments—a 9, 10 and 11 percentage point increase, respectively. Considering that 21 percent of households with a mortgage made a late payment (see Figure 1), the 11 percentage point increase for minorities represents a relative increase in late mortgage payments of 52 percent (*i.e.*, $11/21=52$). Similarly, the 10 percentage point increase for households with dependents translates to a relative increase of 48 percent and the 9 percentage point increase for households with less than \$50,000 in income translates to a relative increase of 43 percent.

Figure 4—Factors Related to Late Mortgage Payments Among Households Experiencing an Income Shock



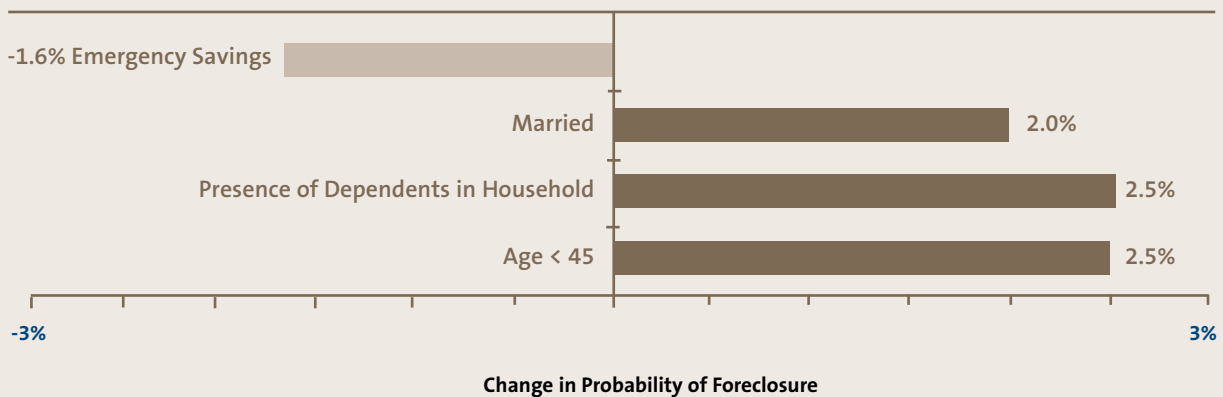
Notes: A linear probability regression with correction for heteroskedastic errors was estimated. No evidence of collinearity was found. The following control variables were used: income, minority status, presence of dependents, education, marital status, gender, age, financial literacy level and geographic region. Data were weighted using NFCS weights. Total unweighted sample size was 4,228 (includes respondents who experienced an income shock and currently have a mortgage). All coefficients in the figure are statistically significant at the .01 level, and only significant coefficients are shown.

¹¹ Respondents were separated into high and low financial literacy groups via a median split. Those who answered four or all five financial literacy questions correctly were coded as high financial literacy and all others were coded as low financial literacy. The financial literacy questions are included in the Appendix.

Foreclosures

The factors related to foreclosures are somewhat comparable to the factors related to late mortgage payments. Similar to the late mortgage payment analysis, emergency savings decreases the likelihood of being involved in a foreclosure and dependents in the household increases the likelihood, but the similarities end there (Figure 5). Older and married households have a greater likelihood of foreclosure relative to their younger and single counterparts, yet these factors do not appear to play a role in late mortgage behavior. In addition, some factors that are related to late mortgage payments do not appear to be associated with foreclosure behavior—namely, financial literacy, household income, minority status and education level.

Figure 5—Factors Related to Foreclosure Among Households Experiencing an Income Shock



Notes: A linear probability regression with correction for heteroskedastic errors was estimated. No evidence of collinearity was found. The following control variables were used: Income, minority status, presence of dependents, education, marital status, gender, age, financial literacy level and geographic region. Data were weighted using NFCS weights. Total unweighted sample size was 8,410 (includes respondents who experienced an income shock and are 30 years of age or older). All coefficients in the figure are statistically significant at the .01 level, and only significant coefficients are shown.

Implications and Conclusions

While these findings do not establish a causal relationship between emergency savings and mortgage payment behavior or foreclosures, they provide empirical support for the conventional wisdom that emergency savings or “rainy day funds” can help prevent financial problems when a household encounters a financial strain. Consequently, these findings suggest that encouraging emergency savings through, for example, educational initiatives or automated savings programs may be an effective way to help protect people from the consequences of income shocks. In addition, this research suggests that efforts to increase financial literacy can help mitigate the consequences of income shocks, perhaps because individuals with high levels of financial literacy are more aware of how late payments will impact their credit scores and are better at budgeting household expenses.

These findings do, however, raise some issues that the current research does not address. The duration and severity of the income shock experienced by the respondents are not known, and these factors could play a significant role in how households respond to changes in their cash flow. Households can also use other resources—beyond savings—to deal with financial shocks. For example, the resources of family and friends, money derived from the sale of possessions, and various forms of credit can all be used along with or independently from emergency savings to help address income shocks, and future research could explore the importance of these resources on mortgage behavior.¹² In addition, for some households, emergency savings may not be the best use of their resources because saving can involve meaningful opportunity costs—particularly among low-income households. Perhaps resources are better used to pay off high-interest credit card debt, purchase nutritious meals or obtain educational resources than to accumulate emergency savings. So, although this study found emergency savings help reduce mortgage payment problems, more research is needed to better understand circumstances when emergency savings should be encouraged and situations when encouraging the accumulation of emergency savings may not be in the best interest of a particular household or demographic group.

Although *prima facie* it would appear that households with emergency savings are less likely to make late mortgage payments and suffer foreclosure because they have money to fall back on during hard times, other explanations are possible, as well. Another variable could explain the relationship, such as a personality trait. For instance, researchers have found a relationship between the personality characteristic conscientiousness and financial behavior.¹³ It is possible that conscientious people are more likely to save for emergencies and less likely to make late mortgage payments. In this example, the personality variable conscientiousness would be responsible for the apparent relationship between emergency savings and mortgage payment behavior.

Some additional caveats pertaining to our results are related to timing effects. The income shock question in the NFCS asks about unexpected drops in income over the “past 12 months,” whereas the mortgage payment and foreclosure questions ask about activity over the “last two years.” So, it is possible that the mortgage payment behavior reported occurred prior to the income shock. Similarly, it is also possible that respondents who reported experiencing an income shock did so near the time that they responded to the survey and, as a result, not enough time would have passed for the income shock to affect their mortgage payment behavior. However, these issues are likely to weaken the relationship between income shocks and mortgage behavior, so our estimate of the strength of this relationship is probably understated.

Data

This study uses data from the State-by-State version of the 2009 National Financial Capability Study. The National Financial Capability Study was funded by the FINRA Investor Education Foundation and conducted by Applied Research and Consulting. The study used a sample of 28,146 adults age 18 and older (approximately 500 per state plus the District of Columbia) obtained from Research Now and SSI via proprietary, online panels of individuals who have agreed to participate in the panel and who are compensated for completing surveys. Nonprobability quota sampling was used to obtain the sample. The data is representative of the U.S. adult population (age 18 and up) on age by gender, ethnicity, education and census division when weighted, and data from the U.S. Census Bureau’s 2008 *American Community Survey* were used to construct the weights. The survey was fielded from June 2009 to October 2009, and the average time to complete the survey was 15 minutes. A pure probability sample of this size would have an estimated margin of error half a percentage point (*i.e.*, plus or minus 0.5 percent), and the margin of error would increase somewhat for sub-groupings of the sample. As in all survey research, there are possible sources of error—such as coverage, nonresponse and measurement error—that could affect the results. More information about the National Financial Capability Study can be found at www.USFinancialCapability.org.

¹² Lusardi, Schneider and Tufano (2011) explore this issue in their examination of financial fragile households.

¹³ Duckworth and Weir (2011).

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Appendix

Survey Questions Used to Measure Key Variables in the Study

Emergency Savings:

Have you set aside emergency or rainy day funds that would cover expenses for 3 months, in case of sickness, job loss, economic downturn or other emergencies?

Yes

No

Don't know

Prefer not to say

Income Shock:

In the past 12 months, has your household experienced a large drop in income which you did not expect?

Yes

No

Don't know

Prefer not to say

Note: If the respondent was single, “has your household” was replaced with “have you.”

Mortgage:

Do you currently have a mortgage on your home?

Yes

No

Don't know

Prefer not to say

Late Mortgage Payments:

How many times have you been late with your mortgage payments in the last 2 years? (If you have more than one mortgage on your home(s), please consider them all.)

Never

Once

More than once

Don't know

Prefer not to say

Foreclosure:

Have you been involved in a foreclosure process on your home in the last two years?

Yes

No

Don't know

Prefer not to say

Financial Literacy Questions

Interest Rate Calculation:

Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

More than \$102

Exactly \$102

Less than \$102

Don't know

Prefer not to say

Inflation:

Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

More than today

Exactly the same

Less than today

Don't know

Prefer not to say

Bond Prices and Interest Rates:

If interest rates rise, what will typically happen to bond prices?

They will rise

They will fall

They will stay the same

There is no relationship between bond prices and the interest rate

Don't know

Prefer not to say

Mortgage Interest Payments and Maturity:

A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.

True

False

Don't know

Prefer not to say

Risk Diversification:

Buying a single company's stock usually provides a safer return than a stock mutual fund.

True

False

Don't know

Prefer not to say

The full NFCS survey, including the questions used to measure the control variables in the regression analyses, can be found at www.finrafoundation.org/programs/capability.

About the FINRA Investor Education Foundation:

The mission of the FINRA Investor Education Foundation is to provide underserved Americans with the knowledge, skills and tools necessary for financial success throughout life. The FINRA Foundation envisions a society characterized by universal financial literacy.

Established in 2003, the FINRA Foundation supports innovative research and educational projects aimed at segments of the investing public that could benefit from additional resources.

These resources come in various forms. Our grants allow researchers to explore investor behavior and develop practical ways to avoid costly mistakes and prepare for the future. Grant funding also helps nonprofit organizations ensure that reliable financial and investor education is available to all who need it, when they need it—at the workplace, online 24/7, or wherever it's most effective.

By sharing research and tools broadly, the FINRA Foundation adds to the collective wisdom about how best to help investors. Such information also shapes our directed programs. When we work on behalf of military service members and their families, with older Americans nearing or in retirement, or with students in all parts of the country, we have the opportunity to apply the latest research and adapt innovative strategies to their circumstances and needs.

Our goal is to reach more and more investors each year, educate them on their own terms, and teach them how to protect themselves in a world that is complex and dynamic.

Foundation Partnerships:

The FINRA Foundation maintains partnerships with leading nonprofits and agencies to ensure best practices in grant making and financial literacy education across the lifespan. Indeed, partnerships are the strength of the FINRA Foundation's grants and projects. By collaborating with others, the FINRA Foundation maximizes the value of every dollar spent. Our partners, in both the public and private sectors, help us reach individuals and families who need thoughtful, unbiased guidance.

FINRA Investor Education Foundation National Financial Capability Study:

In consultation with the U.S. Department of the Treasury and the President's Advisory Council on Financial Literacy, the FINRA Investor Education Foundation commissioned a national study of the financial capability of American adults. The objectives were to benchmark key indicators of financial capability and evaluate how these indicators vary with underlying demographic, behavioral, attitudinal and financial literacy characteristics. Reports and data from this study were published in 2009 in 2010, and can be found at www.usfinancialcapability.org. The FINRA Foundation conducted the second wave of the study in 2012, and results will be available in 2013.

About the Financial Industry Regulatory Authority:

FINRA, the Financial Industry Regulatory Authority, is an independent regulatory organization empowered by the federal government to ensure that America's 90 million investors are protected. Our independent regulation plays a critical role in America's financial system—at no cost to taxpayers. We register brokers and brokerage firms, write and enforce rules governing their activities, examine firms for compliance, and foster market transparency and educate investors. For more information, visit www.finra.org.

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