FINANCIAL ILLITERACY AND THE SUBPRIME MORTGAGE CRISIS

Ronald P. Volpe
Youngstown State University

Kathleen E. Mumaw
Youngstown State University

ABSTRACT: Consumer financial literacy plays an important role in the efficient allocation of economic resources for productive use in a dynamic economy. Subprime lending has increased the number of individuals who own homes and provided them with the opportunity to improve their standard of living. An array of new financial products, a low interest rate environment, changes in federal laws, the expectation of continued increases in real estate prices and mortgage securitization were catalysts to the explosive growth in subprime lending. However, a low level of consumer financial literacy and the abandonment of sound lending practices made individuals vulnerable to financial decisions that were not in their best interests. For many, the dream of home ownership has been downsized, abandoned or ended in foreclosure. A working knowledge of basic financial concepts would help consumers to better understand the consequences of their financial actions and make more informed financial decisions. Consumer financial education can provide borrowers with tools to protect themselves from lending practices that can bring financial harm.

INTRODUCTION

Homeownership has been viewed as a noble American endeavor by individuals and public policymakers. Traditionally, investment in housing has been considered more reliable and dependable than the stock market. This has contributed to the extensive interest in owning real estate and mortgage-related investments. This paper examines the use of subprime mortgages in the U.S. real estate markets during 2001-2006. It identifies how financially illiterate consumers were vulnerable to questionable lending practices that prevailed in that period.

A mortgage serves as a financing tool to purchase or refinance a home. A lien on the property secures the promise to pay the debt. A subprime mortgage involves making loans to borrowers who do not qualify for prime mortgages because of their poor credit history. These loans became a rapidly growing segment of the mortgage market from 2001 to 2006. Subprime mortgage loans have increased the number of homeowners and provided them with the opportunity to build equity, and create wealth (Chomsisengphet and Pennington-Cross, 2006). However, despite its benefits, a subprime mortgage loan is characterized by high interest rates and fees to compensate lenders for the additional risk they assume.
Mortgages also fall into two main types: fixed-rate mortgages and adjustable-rate mortgages. Fixed-rate mortgages (FRMs) have an interest rate and mortgage payments that remain fixed for the period of the loan. The major advantage of FRMs is that they present predictable maximum housing costs for the life of the loan. Adjustable-rate mortgages (ARMs) are mortgage loans with an interest rate that adjusts periodically as the market rate of interest changes.

There are several variations of subprime loans. A hybrid loan can be structured to carry a low fixed teaser rate and then adjusted periodically over the remaining life of the loan. An interest-only (IO) mortgage requires borrowers to pay only the interest for a stipulated period of time, followed by a large one-time “balloon” payment, after which regular monthly payments continue. A negative amortization (NegAm) mortgage allows the borrower to make less than the full payment of interest and principal to the lender, and the remainder is added to the outstanding loan balance. Thus, the balance the borrower owes increases each period rather than decreases (Sabry and Schopflocher, 2007).

Hybrid loans with teaser rates, IOs and NegAms were market innovations that made subprime mortgages attractive financing vehicles for borrowers. Between 2004 and 2006, approximately 45% of subprime mortgages were ARMs or hybrids; 25% were FRMs; 20% were IOs and 10% were NegAms (Demyanyk and Gopalan, 2007). These types of loans were very compelling to those borrowers anxious to make the goal of homeownership a reality that was heretofore unattainable.

**EXPANSION OF THE SUBPRIME MORTGAGE MARKET**

Starting in the early 1980’s changes in federal laws allowed for the creation of loans that could be granted to those not qualifying for prime loans. The Depository Institutions Deregulatory and Monetary Control Act of 1980 removed interest rate caps; the Alternative Mortgage Transaction Parity Act in 1982 enabled the use of variable interest rates and balloon payments; the Tax Reform Act in 1986 eliminated interest deductions on consumer loans and allowed interest deductions on mortgage debt. These regulatory changes made subprime lending much more feasible for financial institutions.

Technological advancements further contributed to the growth in the subprime market by making it easier for lenders to collect, evaluate and approve loans to individuals based on their credit score. New techniques were developed for setting interest rates on mortgage loans, managing risks and setting underwriting standards. Mortgage loans were securitized and sold to investors as mortgage-backed securities. This improved liquidity in the market and helped to spread the default-risk over a wider group of investors.

From 2001 to 2004, the Federal Reserve Bank lowered the federal-funds target interest rate from 6.5% to 1%. This interest rate reduction lowered the cost of borrowing for the prospective homebuyer. Total mortgage originations grew from $2.2 trillion in 2001 to $3.0 trillion in 2006. Figure 1 illustrates the expansion in subprime mortgage originations from an average of $223 billion during 2001-2003 to a peak level of $625 billion in 2005. Subprime mortgages
grew from 8.6% of total mortgage originations in 2001 to 20% in both 2005 and 2006. Approximately 81% of subprime originations were securitized in the 2005-2006 period (Schumer and Maloney, 2007). Some measure of the credit characteristics for 3.5 million subprime mortgages at December 31, 2007 were as follows: the average FICO score was 621; thirty-six percent had a loan-to-value ratio greater than 90%. In comparison, 2007 year-end data for all Freddie Mac and Fannie Mae prime mortgages shows the average FICO score and loan-to-value ratio was 723, 71% and 721, 71% respectively (Frame, Lehnert, and Prescott, 2008).

Figure 1. Subprime Mortgage Originations.

As shown in Figure 2, the national homeownership rate increased to a record high of 69% during the 2004-2006 period and Figure 3 illustrates that the average price of a new home increased from $229,000 in 2001 to $302,000 in 2006. However, despite these gains, there were serious repercussions as a result of questionable lending standards, predatory practices, a low level of financial literacy and the massive securitization of illiquid assets.
CONTRACTION IN THE MORTGAGE MARKETS

A confluence of events contributed to the subprime mortgage crisis. As Cuff (2007) notes, the government sponsored entities of Fannie Mae and Freddie Mac were instructed by the Department of Housing and Urban Development to fund more loans for underserved minorities particularly those with poor credit histories. Consumers applied for loans to support higher living styles and larger homes rather than being concerned with financial responsibility. It was not
uncommon for mortgage brokers to guide borrowers into unaffordable loans. Appraisers were also under pressure to provide unrealistic appraisal values. Real estate agents sold properties aggressively because mortgage rates were at historic lows. Financial firms contributed by buying and securitizing mortgages without regard for underwriting standards in an effort to enhance their profitability.

Although the value of real estate rose rapidly throughout the 2001-2006 period, prices of homes reached unsustainable levels relative to incomes, price-rent ratios and other economic indicators in 2005-2006. Between 2004 and 2006, as the Federal Reserve increased the federal-funds rate from 1% to 5.25%, the booming housing market began to plunge in many parts of the United States. Home prices started to fall as sales volumes declined and the problem was further intensified by rising inventories, delinquencies and foreclosure rates. Subsequently, the average price of a new home peaked at $302,000 in 2006 and continues to decline (see figure 3). A similar rise and fall is seen in the average price of existing homes from a high of $268,200 in 2006 to $219,800 in September 2009 (National Association of Realtors®, 2009).

The increase in interest rates also caused ARMs to reset and increase payments by at least 30 percent, an amount many borrowers could no longer afford (Schumer and Maloney, 2007). Many ARM borrowers defaulted because they did not have sufficient income to make the higher payments. They could not escape the obligation by refinancing their high-cost mortgages or selling their homes because of the slow real estate market and the continuous fall in the prices of most homes. The subsequent decline in both subprime mortgage originations and the U.S. homeownership rate from their peak levels is illustrated in Figures 1 and 2 respectively.

In 2006, 37% of subprime loans went to borrowers who did not fully document their income as a result of reduced lending standards (Peach, 2008). This made it easier for borrowers to overstate their credit worthiness and enabled them to qualify for loans they could not repay. An example of the reckless lending practices that prevailed is the so called NINJA (no income no job no assets) loans offered by some lenders (Su, 2009).

These problems continued to be reflected in the 2007-2009 period, which saw a very sharp rise in delinquencies and foreclosures. The June 30, 2009 Mortgage Bankers Association National Delinquency Survey reveals 25.35% of subprime mortgages were delinquent. This compares to 6.41% for prime mortgages and 9.24% for all loan types. The survey further shows that 15.05% of sub-prime loans were in foreclosure, whereas only 3.0% of prime loans were in foreclosure. One estimate places the loss in housing wealth from approximately 1.3 million subprime foreclosures at $103 billion for the 2007-2009 period (Schumer and Maloney, 2007). This wealth destruction is yet another unfortunate aspect of the subprime mortgage meltdown.

The prevalence of abusive and deceptive lending practices in the subprime market is well documented. Federal Reserve Bank of St. Louis President William Poole (2008) stated, “Mortgage brokers put too many borrowers into unsuitable mortgages. It was imprudent for mortgage bankers and
lenders to approve borrowers who likely could not service the loan…” Federal Reserve Chairman, Ben Bernanke, in a 2007 speech said, “The practices of some mortgage originators have also contributed to the problems in the subprime sector.” In 2001, former Federal Reserve Chairman Alan Greenspan made the following comments, “…abusive lending practices…can result in unaffordable payments, equity stripping and foreclosure.” A 2000 joint report by the U.S Department of Housing and Urban Development (HUD) and the U.S Treasury Department also identified the subprime market as a breeding ground for such unfair practices.

The increase in defaults caused credit rating agencies to downgrade securities backed by subprime mortgages. Financial institutions have been forced to recognize massive losses on the decline in value of those securities. Lending standards have been tightened and financial institutions have made it more difficult to obtain credit. A number of financial institutions filed for bankruptcy, while others survived through mergers and large capital infusions from the U.S. government. The impact on the U.S. financial markets and the economy has been a reluctance on the part of investors to assume risk and a decline in liquidity, investment, consumption and economic growth.

IMPORTANCE OF FINANCIAL LITERACY

The important role of a financially knowledgeable consumer in allocating economic resources for productive use in a well-functioning economy has been repeatedly addressed in the speeches and testimony of Federal Reserve officials. In a 2009 speech, Chairman Bernanke indicated, “… well informed consumers are better able to make decisions in their own best interests.” Furthermore, in 2006 testimony before the Committee on Banking, Housing, and Urban Affairs of the U.S. Senate concerning financial literacy, Chairman Bernanke remarked, “Informed financial decision making is …vital for the healthy functioning of financial markets.”

Consumer financial literacy has increased in importance as the financial services industry in the United States has moved from simple ways of doing things to a more complex approach. Commenting on the array of products and services available in the financial services marketplace Bernanke (2006) stated, “Clearly, to choose wisely from the variety of products and providers available, consumers must have the financial knowledge to navigate today’s increasingly complex financial services marketplace.” In a 2007 speech that addressed the subprime mortgage market, Chairman Bernanke reiterated the need for homebuyers to understand ARM mortgages and other alternative mortgage products and services. He also emphasized the importance of financial education for consumers.

In a 2008 presentation William Poole, President of the Federal Reserve Bank of St. Louis, discussed some of the problems creating the subprime mess. Included in his comments were the following statements:

“…many borrowers have little financial expertise…”

“…too many borrowers took on mortgages they could not afford.”
Furthermore, he raises the question, “How could better education and financial decision-making have helped people avoid these mistakes?”

FINANCIAL ILLITERACY IN THE U.S.

Many surveys have documented Americans’ lack of knowledge on personal finance issues. The Appendix illustrates twenty-two such studies with summaries of results, sample size, participants, and survey format that have been conducted since 1997 by a variety of authors. The most extensive of these surveys are those conducted by the Jump$tart Coalition for Financial Literacy. From 1997 through 2008 they have conducted six biannual national studies of high school students and one of college students. The average scores for the high school studies ranged from a high of 57.3% in 1997 to a low of 48.3% in the 2008 study. The results of the 2008 college survey showed an average score of 62% (Jump$tart, 2008).

In a news conference held jointly by the Jump$tart Coalition and Federal Reserve Board, Chairman Bernanke (2008) reacted to the 2008 survey results as follows:

In light of the problems that have arisen in the subprime mortgage market, we are reminded of how critically important it is for individuals to become financially literate at an early age so that they are better prepared to make decisions and navigate an increasingly complex financial marketplace.

Other studies summarized in the Appendix show similarly discouraging results regarding the state of financial literacy in America. The U.S. Treasury (President’s Advisory Council) surveyed 75,000 U.S. teenage students about personal finance in the fall of 2008. Unfortunately, the average score was only 52%. A 2007 Capital One and Consumer Action survey found one in five Americans claim they do not know the interest rate on their mortgage. A 2005 Radian Guaranty survey of mortgage knowledge indicated 52% of all U.S. homeowners were not knowledgeable about available mortgage options. More recently, in a paper presented at the 2009 meeting of the American Economic Association titled “Financial Literacy and Mortgage Outcomes”, the authors were able to show that individuals with low financial literacy are more likely to have low-doc loans, a higher mortgage-to-income ratio and tend to search less for information on competing offers (Gerardi, Goette and Meier, 2009).

In a published article on the topic of financial literacy, Emmons (2005) identified the inherent conflict of interest that exists between profit maximizing financial service providers and their financially naïve clients as factors inhibiting the growth of financial literacy in the economy. His recommendations to help curb abuses in the financial sector include consumer protection regulations and an allocation of greater resources toward consumer education. Also noteworthy is the January 6, 2009 Report by the President’s Advisory Council on Financial Literacy which states:
We believe the market turmoil and credit crisis of 2008 underscore the critical need for improved financial literacy in the United States. While there are many causes to the economic problems facing the country, it is undeniable that a lack of financial literacy is a contributing factor. Far too many Americans entered into home and other loan agreements that they did not understand and ultimately could not afford.

The results from these numerous surveys, published articles and reports indicate financial illiteracy of U.S. consumers is pervasive and their knowledge level is very low.

**SUMMARY AND CONCLUSION**

The subprime mortgage market experienced a boom from 2001 to 2006. This was caused by a variety of new financial products, changes in federal regulations, lower interest rates, an expectation that housing prices would continue to rise, and mortgage securitization. Financial innovation and change made it easier to obtain mortgage loans but also increased the chances of default. Unscrupulous lenders made loans to people who did not accurately document their income and could not repay. Excessive fees, prepayment penalties and high interest rates resulted in overly expensive loans that borrowers were unable to service.

Figure 2 shows the national homeownership rate dropped from a record level 69% in 2006 to 67.4% in 2009. Although interest rates are at historically low levels, housing prices continue to decline and financial institutions have tightened their lending standards. Financial markets continue to struggle as the effects of the subprime mortgage crisis ripple through the economy. Many individuals have lost their homes due to foreclosures and communities have been tarnished.

Unfortunately, consumer financial literacy did not keep pace with the various changes in the marketplace. Individuals were introduced to a wide array of financial product choices. However, many were not equipped with the financial skills necessary to make a competent evaluation. The consumers’ ability to comprehend financial material could have prevented some of the undesirable consequences associated with the 2001-2006 real estate boom and subsequent bust.

Some progress has been made with respect to reforms that outlaw abusive and predatory practices. The Board of Governors of the Federal Reserve (2008) approved rules that will apply to all mortgage lenders and prohibit unfair, abusive or deceptive home mortgage lending practices in addition to placing a ban on deceptive or misleading advertising practices. These rule changes are amendments to Regulation Z (Truth in Lending) and are effective October 1, 2009. The Department of Housing and Urban Development has enacted changes to the Real Estate Settlement Protections Act (Respa) effective January 1, 2010 which establishes rules for home-purchase transactions. The new rules are aimed
at simplifying disclosures to ensure borrowers understand the terms of loans they are offered before signing the loan documents (KPMG, 2009).

It is apparent from the many government and private sector proposals and remedies to the mortgage maelstrom that the financial illiteracy of a large segment of the U.S population contributed in part to the subprime mortgage crisis. Most of the subsequent proposals to remedy the situation contain an element for financial literacy education. Increases in personal debt, bankruptcies, delinquencies, foreclosures and predatory lending are some issues that reinforce the need for financial literacy programs.

Passage of new laws may prevent specific incidents of predatory and abusive lending practices. However, if consumers do not understand the information presented to them, new laws will not provide absolute protection against the undesirable consequences of poor financial decisions. Education is the key to eliminating the unnecessary financial distress and misfortune of a knowledge-challenged consumer as evidenced by the subprime mortgage crisis. A strong grasp of basic financial concepts will give individuals the ability to deal with the many complex financial decisions they will make throughout their lives and improve their financial quality of life.

REFERENCES


Do Homeowners Know Their House Values and Mortgage Terms?


### Appendix. Recent Financial Literacy Surveys in the United States

<table>
<thead>
<tr>
<th>Author (Date)</th>
<th>Sample Size and Participants</th>
<th>Survey Focus</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gerardi, Goette and Meier (2009)</td>
<td>585 subprime borrowers</td>
<td>Subprime borrower financial literacy and mortgage outcomes</td>
<td>Survey</td>
</tr>
<tr>
<td>Results: Individuals with low financial literacy are more likely to have low-doc loans, a higher mortgage-to-income ratio and tend to search less for information or competing offers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bell, Gorin, Hogarth/Federal Reserve Board of Governors (2009)</td>
<td>360 U.S. Army soldiers</td>
<td>Personal financial readiness</td>
<td>Survey/interviews</td>
</tr>
<tr>
<td>Results: Soldiers not participating in a financial education course were more likely to engage in negative financial behaviors.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jump$tart Coalition (2008)</td>
<td>1,030 college students</td>
<td>Personal financial literacy</td>
<td>Survey</td>
</tr>
<tr>
<td>Results: Results indicate higher scores than their high school peers with 62 % of the questions correctly answered.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results: Financial Literacy scores of the 2008 high school senior class rank lower than their 2006 peers. High school seniors correctly answered only 48.3% of questions, down from 52.4% answered correctly in 2006.

Results: Only 14% of those surveyed had taken a personal finance class, with 69% stating they learn money management from their parents. 76% want to learn about purchases for cars or a home.

Results: 25% don’t know enough about owning a home to consider buying one. 10% of those with a mortgage report being late or missing a mortgage payment.

Results: Average score was a 56% in the Spring exam, 52% in the Fall exam.

Appendix. Recent Financial Literacy Surveys in the United States

<table>
<thead>
<tr>
<th>Author (Date)</th>
<th>Survey Focus</th>
<th>Sample Size and Participants</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jump$tart Coalition (2008)</td>
<td>Personal financial literacy</td>
<td>6,856 12th graders</td>
<td>Survey</td>
</tr>
<tr>
<td>Capital One (2008)</td>
<td>Money management basics</td>
<td>1,260 teens/parents</td>
<td>Phone interviews</td>
</tr>
<tr>
<td>National Foundation for Credit</td>
<td>Financial knowledge</td>
<td>1,001 Americans</td>
<td>Phone interviews</td>
</tr>
<tr>
<td>President’s Advisory Council/U.S.</td>
<td>Financial literacy</td>
<td>46,000 students (Spring)</td>
<td>On-line survey</td>
</tr>
<tr>
<td>Treasury Department (2008)</td>
<td></td>
<td>75,000 students (Fall)</td>
<td></td>
</tr>
<tr>
<td>Capital One and Consumer</td>
<td>Fundamentals of personal finance</td>
<td>1,003 adults</td>
<td>Phone interview</td>
</tr>
<tr>
<td>Action (2007)</td>
<td></td>
<td>1,200 teens/parents</td>
<td>Phone interview</td>
</tr>
<tr>
<td>Bucks and Pence/ Federal Reserve Board of Governors (2006)</td>
<td>Homeowner knowledge of mortgages and house values</td>
<td>4,442 households</td>
<td>Survey</td>
</tr>
</tbody>
</table>

Results: One in five Americans claim they do not know the interest rate on their mortgage: 33% do not know the interest rate on their savings vehicle. 28% have never checked their credit score, up from 27% in 2006.
Volpe and Mumaw

**Capital One and Consumer Action**
- **Fundamentals of personal finance**
- **1,003 adults (2006)**

*Results:* As with the initial findings in 2005, many Americans are still not taking steps to protect and improve their credit scores. 27% have never checked their score, up from 23% in 2005.

**Jump$tart Coalition/Mandell**
- **Personal financial literacy**
- **5,775 12th graders (2006)**

*Results:* Average score was 52.4%, a slight increase from 2004 scores.

**Visa**
- **Personal financial skills of teens**
- **1,000 parents of H.S. students (2005)**

*Results:* 70% indicated their child did not have any formal training in practical money skills either in school or through any other organization outside the home. 76% agreed that schools should be required to teach a class in practical money skills.

**National Council on Economic Education**
- **Understanding of basic economics and concepts of personal finance**
- **2,242 U.S. students grades 9-12 (2005)**

*Results:* 60% of high school students and over 25% of adults got a failing grade on the economics quiz. Only 58% of students could identify the cost of borrowing as the annual percentage rate. Only 57% of adults understood the effects of inflation and fixed rates of interest.

### Appendix. Recent Financial Literacy Surveys in the United States

<table>
<thead>
<tr>
<th>Author (Date)</th>
<th>Sample Size and Participants</th>
<th>Survey Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radian Guaranty (2005)</td>
<td>2,003 adults; 1,310 homeowners</td>
<td>Mortgage knowledge (Online survey)</td>
</tr>
</tbody>
</table>

*Results:* Overall scores showed the first improvement since the surveys began in 1997. The mean rose by 2.1 percentage points to 52.3%, but still reflects a failing grade. Knowledge of income, spending and credit increased slightly while knowledge of money management and saving continued to decline to the lowest levels recorded by the survey since it started in 1997.
Consumer Federation of America  Adjustable- rate mortgages
1,015 adult Americans  Survey  (2004)
Results: Lower income and minority consumers are most likely to prefer adjustable- rate mortgages but do not understand the associated risk. The 25% of Americans that prefer ARMs are younger, poorer and less well educated than those who prefer fixed- rate risk. Lack of financial knowledge is associated with preference for ARMs.

Jump$tart Coalition/Mandell  Personal financial literacy
4,024 12th graders  Survey  (2002)
Results: Overall test scores were 50.2%, a decline from 51.9% in 2000. Students were slightly more knowledgeable about income; they were less knowledgeable in all other categories.

Jump$tart Coalition/Mandell (2000)  Personal financial literacy
723 12th graders  Survey  Results: Test scores were 51.9% falling from 57.3 % in 1997. There was a decreased understanding of financial concepts.

Chen and Volpe (1998)  Financial planning basics
924 college students  Survey  Results: 53% scored a passing grade.

Jump$tart Coalition/Mandell  Personal financial literacy
1,532 12th graders  Survey  (1997)
Results: Average grade on the exam was a failing 57.3%