

---

# FRBSF ECONOMIC LETTER

Number 2001-38, December 28, 2001

## Subprime Mortgage Lending and the Capital Markets

Subprime mortgage lending has grown tremendously since the early 1990s and now constitutes a significant fraction of the overall mortgage market. This *Economic Letter* defines subprime mortgage lending, describes its growth, and presents evidence on the link between this market and the capital markets. This link should help encourage the flow of funds into subprime lending, thereby encouraging competition in this important market segment.

### What is subprime lending?

Lenders typically make subprime mortgage loans to borrowers with high credit risk, that is, the risk that the borrower will not fully repay the lender. A lender may view a borrower as presenting a high level of credit risk because his credit history is impaired or not very long, or because he carries a large amount of debt relative to his income. These and other borrower characteristics go into credit scoring models that statistically analyze the historical relationships between these characteristics and defaults. Data from the Mortgage Information Corporation (MIC) show Fair Isaac Company (FICO) credit scores of borrowers whose loans were included in secondary market mortgage pools averaging 605 for borrowers represented in subprime pools, as opposed to 721 for the lower risk "prime" mortgage borrowers. (In the FICO system, scores of 620 or below represent, in the absence of countervailing circumstances, unacceptable levels of credit risk for lenders in the prime mortgage market.)

To compensate for the added credit risk, lenders tend to charge much higher interest rates and fees on subprime loans than on prime mortgage loans. Subprime loan contracts also are more likely to include penalties associated with another type of risk, prepayment risk. Prepayment is a risk because the lender must reinvest the prepaid funds, which had been anticipated to yield a certain return, at an uncertain, and possibly lower, interest rate. The risk of prepayment is probably higher in the subprime mortgage market than in the prime mortgage market, due to the greater scope for improvements in the borrower's financial condition that make it advantageous for the borrower to prepay.

Subprime mortgage loans tend to have other characteristics besides being generally risky. It appears

that most are not mortgages for purchasing a home but are, rather, home equity loans. Home Mortgage Disclosure Act (HMDA) data for 1999 indicate that 76% of the lending by institutions identifying themselves as primarily subprime lenders was home equity lending. Subprime mortgage loans also tend to be first lien loans, meaning that the first mortgage has been paid off and the subprime lender has the first claim to the home over any other lenders should the borrower default. MIC data show that about three-fourths of the subprime loans originated in 1999 were first lien loans.

### Growth of subprime lending

Subprime mortgage lending has grown tremendously in recent years, both in terms of dollars and in terms of the share of total mortgage originations. Subprime mortgage originations grew from \$35 billion in 1994 to \$140 billion in 2000, indicating an average annual growth rate of 26%. Similarly, subprime originations as a share of total mortgage originations grew from 5% in 1994 to 13.4% in 2000. According to HMDA data, the proportion is higher for home equity loans, with subprime lenders accounting for about 16% of total home equity lending in 1999. (HMDA data indicate that subprime lenders accounted for about 6% of total home purchase lending in 1999.) The true proportion of home equity lending that is subprime probably is even higher, given that some subprime lending is done by institutions that do not identify themselves primarily as subprime lenders.

The roots of subprime lending growth in the 1990s can be found in two pieces of legislation enacted in the 1980s. The 1980 Depository Institutions Deregulation and Monetary Control Act (DIDMCA) effectively eliminated states' interest rate ceilings on home mortgages where the lender has a first lien. In principle, at least, this permitted interest rates on such loans—home equity loans as well as home purchase loans—to go high enough to compensate the lender for the high risk of lending to subprime borrowers. But this new flexibility on rates did not immediately result in a significant increase in subprime lending, presumably because of the back-to-back recessions that hit the economy in the early 1980s. Subprime home equity lending, as well as home equity lending in general, did grow

following the passage of the Tax Reform Act of 1986. This legislation disallowed the deductibility of consumer interest but permitted taxpayers to deduct interest paid on loans secured by the taxpayer's principal and one other residence. Therefore, the Tax Reform Act gave consumers an incentive to shift their consumer borrowing that was not secured by their home into home equity borrowing. During the 1990s, the economic expansion was accompanied by a rapid increase in consumer debt, and the concomitant boosts to house values continued to encourage home equity borrowing in particular.

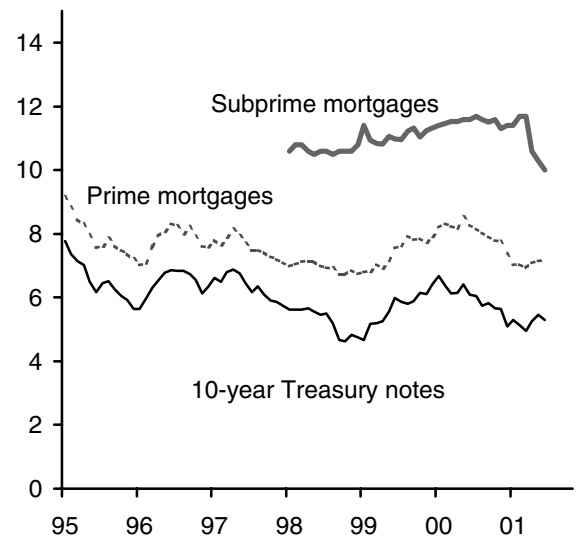
### Links to the capital markets

An increase in access to the capital markets through loan securitization also contributed to growth in subprime lending in the 1990s. Securitization is the repackaging, pooling, and reselling of loans to investors as securities. It increases liquidity and funding to an industry both by reducing risk—through pooling—and by more efficiently allocating risk to the investors most willing to bear it. Investors had already become comfortable with securitized prime mortgage loans, and subprime mortgage loans were among various other types of credit, such as multi-family residential mortgage loans, automobile loans, and manufactured home loans, that began to be securitized in the 1990s. Through securitization, the subprime mortgage market strengthened its links with the broader capital markets, thereby increasing the flow of funds into the market and encouraging competition. (The degree of competition is especially a matter of concern in a market, such as the subprime mortgage market, in which reports of abusive lending practices have been frequent.)

By 2000, the proportion of outstanding subprime mortgage loans that had been securitized was roughly in line with prime mortgage securitization. According to Moody's Investors Service and SMR Research Corporation, about \$100 billion, or about 42%, of the roughly \$240 billion in subprime mortgage loans outstanding in early 2000 had been securitized, not much less than the 53% of conventional prime mortgage loans that had been securitized as of 1998, the latest date for which those data were available.

If the subprime mortgage market is linked to the broader capital markets, then we also might expect changes in subprime mortgage interest rates to be positively correlated with changes in market rates, such as the 10-year Treasury note rate. While the interest rate on the loan is only one part of the overall price of the loan, it is an important element. Figure 1 shows monthly data for the 10-year Treasury note rate from the beginning of 1995 through June of this year. The figure also shows the average subprime mortgage rate of lenders in the MIC sample (approximately 30 subprime lenders), beginning in

**Figure 1**  
Interest rates  
Percent



January 1998. For comparison, the average mortgage rate for “prime” mortgages also is shown, for the whole period. Both the subprime and the prime mortgage interest rates are for fixed-rate, 30-year (“over 15 years” in the case of the subprime loans) home purchase loans in which the down payment is less than 20% of the loan and the lender has a first lien on the home. (Interest rates for home equity loans were not available.)

As expected, the mean subprime mortgage interest rate is much higher than the mean prime mortgage rate. Over the 1998–2001 period, the subprime mortgage rate exceeded the prime mortgage rate by an average of 3.7 percentage points. In addition, it appears that the prime mortgage rate tends to go up and down, by roughly proportional amounts, with the Treasury rate, but the subprime mortgage rate, although positively correlated with the Treasury rate over the period as a whole, does not follow it as closely. Statistics confirm this; the correlation coefficient between the prime mortgage rate and the 10-year Treasury note rate over the 1998–2001 period is 0.9, whereas the correlation coefficient for the subprime mortgage rate is only 0.4. (Two sets of numbers that are perfectly correlated have a correlation coefficient of 1.)

However, the discussion so far is inadequate for judging how extensive are the links between the subprime mortgage market and the capital markets in general because it does not take into account that subprime mortgages are much riskier than prime mortgages or 10-year Treasury notes. For example, because subprime mortgages carry more credit risk, their interest rates will be more sensitive to economy-wide shifts in credit risk than are prime

mortgage rates. Therefore, a more appropriate comparison might be between the subprime interest rate and another high-risk security interest rate.

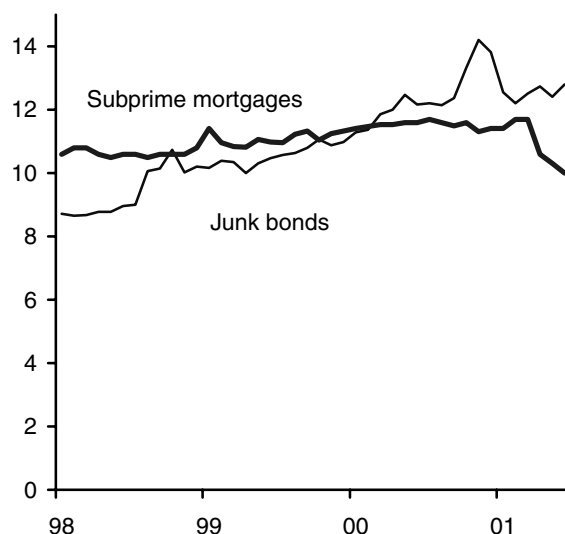
To this end, Figure 2 shows the subprime interest rate and the average interest rate on below investment grade corporate bonds ("junk" bonds). Changes in the junk bond rate appear to lead changes in the subprime rate by about one quarter, but, otherwise, the two series appear more closely related than do the subprime rate and the Treasury note rate. Certainly, the levels of the two interest rates are more comparable. The absolute value of the difference between the subprime rate and the junk bond rate averages 1 percentage point over the period shown. Movements in the two interest rates also are more tied together, though some of the turning points are not perfectly synchronized. Once this slightly offset timing is taken into account, the correlation coefficient between the two series is 0.6.

It is likely that the subprime market is somewhat more closely linked to the broader capital markets than even this suggests. The junk bond rate displays an upward trend throughout the period that is much steeper than that seen in the subprime rate, and this reduces the correlation between the two series. But the differences in the trends likely reflect somewhat special circumstances, in particular, a lack of liquidity in the bond market following the Russian debt crisis in 1998 and, more recently, growing credit quality concerns, especially in the telecommunications and technology sectors (see Kwan 2001). It would not be surprising if these deviations have had a slightly different effect on the junk bond market than on a consumer credit market such as subprime lending.

### Conclusion

Following the passage of the DIDMCA and the Tax Reform Act in the 1980s, subprime mortgage

**Figure 2**  
**High-risk interest rates**  
Percent



lending grew rapidly in the 1990s to become an important segment of both the home purchase and home equity mortgage markets. Evidence pertaining to securitization and pricing of subprime mortgages also suggests that the subprime market has become well linked with the broader capital markets, an important first step in the development of a fully competitive environment.

**Elizabeth Laderman**  
Economist

### Reference

Kwan, Simon. 2001. "Rising Junk Bond Yields: Liquidity or Credit Concerns?" *FRBSF Economic Letter* 2001-33 (November 16). <http://www.frbsf.org/publications/economics/letter/2001/el2001-33.html>.

Research Department  
Federal Reserve  
Bank of  
San Francisco

PRESORTED  
STANDARD MAIL  
U.S. POSTAGE  
PAID  
PERMIT NO. 752  
San Francisco, Calif.

P.O. Box 7702  
San Francisco, CA 94120  
Address Service Requested

Printed on recycled paper  
with soybean inks



**Index to Recent Issues of *FRBSF Economic Letter***

<b>DATE</b>	<b>NUMBER</b>	<b>TITLE</b>	<b>AUTHOR</b>
5/11	01-14	The Future of the New Economy	Jones
5/18	01-15	Japan's New Prime Minister and the Postal Savings System	Cargill/Yoshino
5/25	01-16	Monetary Policy and Exchange Rates in Small Open Economies	Dennis
6/1	01-17	The Stock Market: What a Difference a Year Makes	Kwan
6/15	01-18	Asset Prices, Exchange Rates, and Monetary Policy	Rudebusch
7/6	01-19	Update on the Economy	Parry
7/13	01-20	Fiscal Policy and Inflation	Daniel
7/20	01-21	Capital Controls and Exchange Rate Stability in Developing Countries	Glick/Hutchison
7/27	01-22	Productivity in Banking	Furlong
8/10	01-23	Federal Reserve Banks' Imputed Cost of Equity Capital	Lopez
8/24	01-24	Recent Research on Sticky Prices	Trehan
8/31	01-25	Capital Controls and Emerging Markets	Moreno
9/7	01-26	Transparency in Monetary Policy	Walsh
10/5	01-27	Natural Vacancy Rates in Commercial Real Estate Markets	Krainer
10/12	01-28	Unemployment and Productivity	Trehan
10/19	01-29	Has a Recession Already Started?	Rudebusch
10/26	01-30	Banking and the Business Cycle	Krainer
11/2	01-31	Quantitative Easing by the Bank of Japan	Spiegel
11/9	01-32	Information Technology and Growth in the Twelfth District	Daly
11/16	01-33	Rising Junk Bond Yields: Liquidity or Credit Concerns?	Kwan
11/23	01-34	Financial Instruments for Mitigating Credit Risk	Lopez
12/7	01-35	The U.S. Economy after September 11	Parry
12/14	01-36	The Economic Return to Health Expenditures	Jones
12/21	01-37	Financial Modernization and Banking Theories	Kwan