

Lending, leverage, options and the credit crisis 10 years later

By **BRUCE I. JACOBS**

On Sept. 15, 2008, the 158-year-old investment bank Lehman Brothers Holdings Inc. filed for bankruptcy, marking the point at which problems in the U.S. credit market morphed into systemic risk that threatened the economy. In the ensuing deep recession, \$15 trillion of wealth disappeared in the United States, and 9 million people fell into poverty.

Ten years later, after a dramatic government rescue of financial institutions, and with various reforms put in place, the U.S. economy continues on an upswing. But as the credit collapse recedes into the past, it is important to understand just how and why an explosive cocktail of heavily leveraged mortgage products brought it about. While the high-risk mortgage securities at the heart of the crisis have largely been purged from the system, the underlying combustible characteristics — including opacity and complexity, leverage, the potential for sharp swings in value, and the enticing promise of high returns and low risk — are likely to re-emerge in some form.

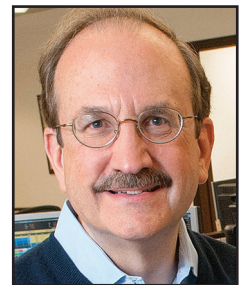
It started out so promisingly, as periods of financial innovation often do. U.S. house prices had increased steadily from 1997 into 2006, fueling consumer spending as homeowners borrowed against the rising values of their homes. By 2001, however, prices of the least expensive homes had begun to rise at a faster rate than those of the most expensive homes. This growth was supported by

a marked increase in subprime lending, which helped to keep the housing bubble inflated. Such risky loans would not have been made in the absence of securitization.

Securitization pools mortgage loans and sells the principal and interest payments as residential mortgage-backed securities and collateralized debt obligations. Those securities incorporating subprime loans offered high returns while seemingly reducing risk. RMBS and CDOs diversified default risk across hundreds or thousands of mortgages. In addition, the mortgage pools were divided into tranches offering differing levels of risk and return. Tranches with the lowest risk were invariably given an AAA rating by the credit-rating agencies; higher-risk tranches with lower credit ratings were supposed to absorb most, if not all, of the risk of default.

Securitization seemed to offer numerous benefits to lenders. It appeared to transform illiquid mortgage investments into liquid assets that could be sold, often at a profit, providing more funds for investment. Securitization passed the risk of default to the buyers of the securities from the lenders. It allowed commercial banks to move mortgage assets off their balance sheets, reducing their leverage and freeing up capital for more investment; and mortgage securities themselves provided investment banks with highly rated securities they could use as collateral for borrowing.

Subprime mortgage-backed products seemed to offer a free lunch — increased return at reduced risk. Free-lunch products hold obvious appeal for investors and can attract



Bruce I. Jacobs



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substantial investment. They might grow large enough to affect the markets in which they trade, reinforcing and amplifying price movements. This was true of subprime mortgage-backed securities, which helped to enlarge the housing bubble beginning in 2001.

The risk of mortgage-backed securities is essentially the risk of default by mortgage borrowers. This can become a systematic risk when large numbers of borrowers default across a broad geographic range. Systematic risk cannot be diversified away, but it can be shifted to those who will accept it in exchange for a compensatory return. However, as the demand for these products increases, the level of risk that must be shifted increases. Eventually, the availability of willing counterparties diminishes. Liquidity begins to dry up, giving rise to a systemic risk.

In 2006, U.S. housing prices started to decline and defaults, especially on subprime loans, increased more quickly than expected. By 2007, many subprime loans were defaulting within a year or two of issuance. As the risk of default became apparent, investors were unwilling to take on that risk. Banks, stuck with billions of dollars in deteriorating mortgage assets, became increasingly unwilling to lend.

The rise and fall of mortgage products was abetted by their opacity and complexity, which made it difficult to discern the real risk of the underlying mortgages. Creating tranches was supposed to transform innately risky subprime loans into securities worthy of AAA ratings. Their safety, however, ultimately depended on the ability of borrowers to make their monthly mortgage payments; in many cases, these were borrowers with little ability to do so, who had paid small or sometimes no down payments. Somehow, this reality was lost in the complex chain of RMBS and CDO production.

Homeowners collectively held a massive put option on the housing market. Mortgages contain an implicit put: Borrowers may default if their property's value declines below the principal owed on the loan. Mortgage lenders are short the put; they must take on any shortfall in mortgage principal owed and absorb the loss if homeowners exercise their puts. In the years leading up to the crisis, lenders had transferred their short put positions — that is, they shifted the risk — to the buyers of mortgage-backed securities.

With options, relatively small changes in the price of the underlying asset can lead to large changes in the value of the option. Falling home prices beginning in 2006 made homeowners' put options more valuable and many, especially subprime borrowers, defaulted. The value of mortgage securities, even those rated AAA, plunged.

Leverage compounded the problem. Securitization had encouraged the piling on of leverage. Securities based largely on prospective interest and principal payments from shaky borrowers were used in turn as collateral for further borrowing. Leverage helped to expand the market for mortgage-backed products, thus amplifying the housing boom. But deleveraging can trigger a precipitous fall in asset prices. When homeowners started defaulting in large numbers, the riskiness of mortgage-backed securities became apparent. Lenders that held such securities as collateral called in their loans or demanded payments to compensate for the added risk. Borrowers were forced to sell assets into a falling market, exacerbating losses.

As the growth in subprime mortgage lending had helped to fuel the housing bubble, the collapse in value of mortgage-backed securities helped to deflate it. The decline in banks' willingness to lend led to a decline in economic activity. This caused further declines in house prices, more defaults, further deterioration in value for mortgage-backed securities and further tightening of the credit market.

Free-lunch products, with their promise of low risk and high returns, are hard to resist. But the ability to shift risks to other investors is often based on an illusion of liquidity. Investors' willingness to take on risk vanishes quickly when hope turns into fear and fear into panic. The result can be large-scale liquidations of leveraged assets at fire-sale prices — conditions ripe for a crash. It then becomes apparent that the lower risk promised by supposedly safe, free-lunch products was merely an illusion. Despite the experiences of the past, illusions such as these endure.

Bruce I. Jacobs is co-founder and principal at Jacobs Levy Equity Management, Florham Park, N.J., and the author of "Too Smart for Our Own Good: Ingenious Investment Strategies, Illusions of Safety, and Market Crashes."