



---

## The subprime credit crisis and contagion in financial markets ☆

[Francis A. Longstaff](#)

[Show more](#) ✓

Share Cite

---

<https://doi.org/10.1016/j.jfineco.2010.01.002> ↗

[Get rights and content](#) ↗

---

### Abstract

I conduct an empirical investigation into the pricing of subprime asset-backed collateralized debt obligations (CDOs) and their contagion effects on other markets. Using data for the ABX subprime indexes, I find strong evidence of contagion in the financial markets. The results support the hypothesis that financial contagion was propagated primarily through liquidity and risk-premium channels, rather than through a correlated-information channel. Surprisingly, ABX index returns forecast stock returns and Treasury and corporate bond yield changes by as much as three weeks ahead during the subprime crisis. This challenges the popular view that the market prices of these “toxic assets” were unreliable; the results suggest that significant price discovery did in fact occur in the subprime market during the crisis.

---

### Introduction

During the past three years, financial markets have suffered catastrophic losses. These were originally triggered by the threat of massive defaults by subprime borrowers in the mortgage markets. The resulting subprime crisis of 2007 led rapidly to massive declines in the market values of large portfolios of highly rated asset-backed securities (ABS) held by many financial institutions. In addition, the subprime crisis brought about an almost complete halt to the fledgling structured-credit market, a serious credit crunch for both individuals and financial institutions, and a major decline in the liquidity of debt securities in virtually every market.

In 2008, the subprime crisis spilled over and became the catalyst for a much broader global financial crisis. During the year, the markets reeled from the collapse or forced mergers/bailouts of Bear Stearns, AIG, Fannie Mae, Freddie Mac, Lehman Brothers, IndyMac Bank, Merrill Lynch, Wachovia, Washington Mutual, and many others. Concerns about the long-term financial viability of the U.S. Treasury, which has provided an unprecedented amount of liquidity, capital, and financial guarantees to the market, has resulted in credit default swaps on the U.S. Treasury trading at spreads as high as 100 basis points. Much of the intervention

by the Treasury and the Federal Reserve in the financial markets has been motivated by the objective of avoiding broader contagion and spillovers to other markets and sectors of the economy.

Understanding the nature of contagion in financial markets is of fundamental importance and there is an extensive literature addressing its causes and effects. Important recent papers on contagion include Allen and Gale (2000), Kyle and Xiong (2001), Kodres and Pritsker (2002), Kiyotaki and Moore (2002), Kaminsky, Reinhart, and Vegh (2003), Allen and Gale (2004), Brunnermeier and Pedersen, 2005, Brunnermeier and Pedersen, 2009, and many others. From a research perspective, the crisis in the subprime asset-backed market provides a near-ideal “laboratory” for studying the role that contagion may play in financial markets when an asset class becomes severely distressed.<sup>1</sup>

The contagion literature identifies at least three possible mechanisms by which shocks in one market may spill over into other markets. First, Kiyotaki and Moore (2002), Kaminsky, Reinhart, and Vegh (2003), and others describe mechanisms in which negative shocks in one market represent the arrival of economic news that directly affects the collateral values or cash flows associated with securities in other markets. In this mechanism, contagion can be viewed as the transmission of information from more-liquid markets or markets with more rapid price discovery to other markets. Second, Allen and Gale (2000), Brunnermeier and Pedersen (2009), and others show how investors who suffer losses in one market may find their ability to obtain funding impaired, potentially leading to a downward spiral in overall market liquidity and other asset prices via a “flight to quality.” In this mechanism, contagion occurs through a liquidity shock across all markets. Third, Vayanos (2004), Acharya and Pedersen (2005), Longstaff (2008), and others imply that a severe negative shock in one market may be associated with an increase in the risk premium in other markets. In this mechanism, contagion occurs as negative returns in the distressed market affect subsequent returns in other markets via a time-varying risk premium.

The objective of this paper is to shed some light on the mechanisms involved in financial contagion by studying the subprime asset-backed collateralized debt obligation (CDO) market during the 2006–2008 period and exploring how negative shocks affected other markets as the subprime crisis of 2007 unfolded and then evolved into the global financial crisis of 2008. The study is based on an extensive data set of prices for the ABX indexes of subprime mortgage-related asset-backed CDOs. Using a vector autoregression (VAR) framework, I examine the extent to which ABX returns are related to returns in other financial markets as well as to market leverage and trading activity measures.

Several key results emerge from this analysis. First, despite the lower liquidity of the asset-backed CDO market, I find that ABX index returns developed significant predictive ability (Granger causality) for subsequent stock market returns, Treasury yield changes, corporate bond spread changes, and changes in the VIX volatility index as the 2007 subprime crisis unfolded. In fact, ABX returns have significant forecast power for stock returns, Treasury yield changes, corporate yield spread changes, and changes in the VIX as far as three weeks ahead. Treasury bond prices increase in response to negative shocks to asset-backed CDO values, consistent with a flight-to-quality pattern. This effect, however, is much stronger for short-term Treasury bonds than for longer-term Treasury bonds. In contrast, negative shocks to the ABX indexes map into significant subsequent negative returns for the Standard and Poors (S&P) 500 index as well as for the subset of financial firms in the S&P 500. Thus, I find strong evidence of contagion in the financial markets during the 2007 subprime crisis.

Second, I find that this forecast ability dissipates during 2008 as the subprime crisis gave way to the broader global financial crisis. Thus, contagion appeared to spread from the ABX market at the beginning of the crisis when subprime losses were the primary concern. After concerns about a meltdown of the general financial

markets and the potential for a global depression became widespread in 2008, however, the ABX market no longer functioned as a vector of contagion (and no longer Granger-caused returns) in other markets. Intuitively, this is consistent with the usual view of contagion as a major shock or event in which there is a significant but temporary increase in the linkages between different financial markets.

Taken together, these results provide a number of important insights about the nature of the mechanisms driving contagion across markets in the present crisis. For example, finding that shocks tended to be transmitted with a lag from the less-liquid ABX index market to the highly liquid stock and Treasury bond markets argues against a correlated-information view of financial contagion. We would expect price effects to be contemporaneous in the highly liquid stock and Treasury bond markets if contagion was due to correlated information. Thus, the results (which, of course, are limited to the specific episode studied) appear to be more consistent with either the liquidity-induced contagion mechanisms presented by Allen and Gale (2000), Kodres and Pritsker (2002), and Brunnermeier and Pedersen (2005), or the risk-premium contagion mechanisms implied by Vayanos (2004), Acharya and Pedersen (2005), and Longstaff (2008).

To explore this latter implication in more depth, I again use a VAR framework to explore the relation between ABX index returns and various measures of market activity, liquidity, and funding availability. I find that shocks in the ABX market have significant predictive power for trading activity in financial stocks, trading disruptions in the fixed-income markets, and the availability of short-term asset-backed financing during the crisis. These results reinforce the view that market- and funding-liquidity effects were a major factor in the transmission of contagion during the subprime crisis.

The remainder of this paper is organized as follows. Section 2 briefly reviews the literature on contagion in financial markets. Section 3 provides an introduction to the asset-backed CDO market. Section 4 describes the ABX indexes and the other data used in the study. Section 5 presents the empirical test for contagion. Section 6 examines the implications of the subprime crisis for market liquidity. Section 7 summarizes the results and presents concluding remarks.

---

## Section snippets

### Contagion in financial markets

The literature on contagion in financial markets is far too extensive to review fully here. Kindleberger (1978), Dornbusch et al., 2000, Kaminsky et al., 2003, however, provide excellent surveys. Generally, this literature has focused on contagion effects across countries. Contagion, however, is possible in virtually any set of financial markets. In this section, I will simply summarize some of the key implications of the contagion literature for the behavior of security prices during periods...

### The subprime asset-backed CDO market

In the current crisis, tranches or CDOs based on the cash flows of portfolios of subprime home-equity loans were originally the major source of credit losses for many financial institutions. Accordingly, I focus primarily on these securities throughout this study. This section provides a brief introduction to the asset-backed CDO market.

Large quantities of subprime asset-backed CDOs were issued during the past several years and were widely viewed as one of the most important financial...

## The ABX indexes

To measure the returns on subprime CDOs, I use market quotations for the widely known ABX indexes maintained by Markit Group Ltd. These indexes consist of daily closing values obtained from market dealers for subprime home-equity-related CDOs of various credit ratings.<sup>7</sup>...

## Testing for contagion

In studying the nature of contagion in financial markets, it is helpful to have two key elements. First, I must be able to identify an event window for the distress event. Second, I must be able to identify a vector of contagion which can then be used to test for changes in linkages across markets associated with the distress event. The subprime crisis of 2007 provides a nearly textbook example of a potential contagion event in which both of these elements are present. In particular, the...

## Was there liquidity contagion?

To explore the effects of the subprime crisis on market/funding liquidity, I again use the VAR framework introduced in the previous section. Rather than using asset returns or yields as the dependent variables in the VARs, however, I use a number of measures that attempt to capture weekly changes in the trading patterns or liquidity profiles of key financial markets....

## Conclusion

The 2007 subprime crisis provides an ideal opportunity for studying the effects of contagion in financial markets. I use data for the ABX indexes of subprime asset-backed CDOs to examine whether contagion occurred across markets as the crisis developed. Motivated by the frequently adopted definition of contagion in the literature as a significant temporary increase in cross-market linkages after a major distress event, I use a VAR framework to test for changes in the relation between the ABX...

---

## References (36)

K. John *et al.*

### [Asset sales and increase in focus](#)

Journal of Financial Economics (1995)

V. Acharya *et al.*

### [Asset pricing with liquidity risk](#)

Journal of Financial Economics (2005)

F. Allen *et al.*

### [Financial contagion](#)

Journal of Political Economy (2000)

F. Allen *et al.*

## Financial intermediaries and markets

Econometrica (2004)

G. Andrade *et al.*

## How costly is financial (not economic) distress? evidence from highly leveraged transactions that became distressed

Journal of Finance (1998)

Aragon, G., Strahan, P., 2009. Hedge funds as liquidity providers: evidence from the Lehman bankruptcy. Unpublished...

P. Asquith *et al.*

## Anatomy of financial distress: an examination of junk-bond issuers

Quarterly Journal of Economics (1994)

K. Bae *et al.*

## A new approach to measuring financial market contagion

Review of Financial Studies (2003)

Benmelech, E., Dlugosz, J., 2009. The credit rating crisis. In: Acemoglu, D., Rogoff, K., Woodford, M., NBER...

V. Bhansali *et al.*

## Systemic credit risk: what is the market telling us?

Financial Analysts Journal (2008)



View more references

---

Cited by (385)

### Oil price bubbles: The role of network centrality on idiosyncratic sovereign risk

2023, Resources Policy

Show abstract

### Corporate bond liquidity and yield spreads: A review

2023, Research in International Business and Finance

Show abstract

### Is controlling shareholders' credit risk contagious to firms? – Evidence from China

2023, Pacific Basin Finance Journal

Show abstract

### Responses of US equity market sectors to the Silicon Valley Bank implosion

2023, Finance Research Letters

Show abstract 

## Static and dynamic liquidity spillovers in the Eurozone: The role of financial contagion and the Covid-19 pandemic

2022, International Review of Financial Analysis

*Citation Excerpt :*

...These dynamics also underpinned the GFC of 2007–2009, in which liquidity shocks generated declines in the amounts of funding available to leveraged individuals in other markets (Brunnermeier & Pedersen, 2009). Longstaff (2010) reports evidence of contagion primarily propagated through liquidity and risk-premium channels during the GFC, while Eross et al. (2016) show spillover effects in the interbank market between bond and swap spreads. We build on this solid theoretical foundation to further analyse the liquidity channel in relation to transmission of shocks within the Eurozone. ...

Show abstract 

## Executive stock options and systemic risk

2022, Journal of Financial Economics

Show abstract 



View all citing articles on Scopus

---

## Recommended articles (6)

Research article

### Putting the “C” into crisis: Contagion, correlations and copulas on EMU bond markets

Journal of International Financial Markets, Institutions and Money, Volume 27, 2013, pp. 161-176

Show abstract 

Research article

### Modeling financial contagion using mutually exciting jump processes

Journal of Financial Economics, Volume 117, Issue 3, 2015, pp. 585-606

Show abstract 

Research article

### Transmission channels of systemic risk and contagion in the European financial network

Journal of Banking & Finance, Volume 61, Supplement 1, 2015, pp. S36-S52

Show abstract 

Research article

### Assessing risk contagion among the Brent crude oil market, London gold market and stock markets: Evidence based on a new wavelet decomposition approach

[Show abstract](#) 

Research article

## On financial contagion and implied market volatility

International Review of Financial Analysis, Volume 34, 2014, pp. 21-30

[Show abstract](#) 

Research article

## Volatility spillovers and determinants of contagion: Exchange rate and equity markets during crises

Economic Modelling, Volume 61, 2017, pp. 169-180

[Show abstract](#) 

- 
- ★ I am very grateful for helpful discussions with Joshua Anderson, Vineer Bhansali, Bruce Carlin, Richard Clarida, Rajna Gibson, Robert Gingrich, Anil Kayshup, Hanno Lustig, Alfred Murata, Steve Schulist, and Jiang Wang, and for the comments of seminar participants at Barclays Global Investors, the CFA Institute Conference, Claremont McKenna College, New York University, PIMCO, the University of Colorado, and UCLA. I am particularly grateful for the comments and suggestions of the editor Bill Schwert and two anonymous referees. All errors are my responsibility.

[View full text](#)

Copyright © 2010 Elsevier B.V. All rights reserved.



Copyright © 2023 Elsevier B.V. or its licensors or contributors.  
ScienceDirect® is a registered trademark of Elsevier B.V.

 RELX™