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Information efficiency of the U.S. credit default swap market: Evidence from earnings surprises

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ABSTRACT

The credit default swap (CDS) market attracted much debate during the 2008 financial crisis. Opponents of CDS argue that CDS could lead to financial instability as it allows speculators to bet against companies and make the crisis worse. Proponents of CDS believe that CDS could increase market competition and benefit hedging activities. Moreover, an efficient CDS market can serve as a barometer to regulators and investors regarding the credit health of the underlying reference entity. We investigate information efficiency of the U.S. CDS market using evidence from earnings surprises. Our findings confirm that negative earnings surprises are well anticipated in the CDS market in the month prior to the announcement, with both economically and statistically stronger reactions for speculative-grade firms than for investment-grade firms. On the announcement day, for both positive and negative earnings surprises, the CDS spread for speculative-grade firms presents abnormal changes. Moreover, there is no post-earnings announcement drift in the CDS market, which is in direct contrast to the well-documented post-earnings drift in the stock market. Our evidence supports the efficiency of the CDS market.

1. Introduction

A credit default swap (CDS) is a credit derivative contract where the buyer makes periodic payments (CDS spread) in exchange for protection against default or other credit events of the underlying corporate or sovereign entity specified in the contract. The CDS market started to grow in the late 1990s, more than doubled in size each year, and, by the end of 2007, the CDS market had a notional value of $62.2 trillion (ISDA, 2010). However, the CDS market attracted considerable concern from regulators after the collapse of several large financial institutions during the 2008 financial crisis.

Opponents of CDS argue that CDS could lead to financial instability as it allows speculators to bet against companies or countries and may make the crisis worse.[2] For example, CDS was blamed as a cause of Bear Stearns' collapse as the surge in its CDS spread indicated the weakness of the bank thereby restricting its access to the wholesale capital market, leading to its forced sale to JP Morgan in March 2008. The rescue of Fannie Mae and Freddie Mac in September 2008 and the bankruptcy of Lehman Brothers triggered billions of dollars of payables to the buyers of the CDS protection, leading to huge losses by insurance companies who sold CDS contracts on these financial institutions. In particular, the insurance giant, American International Group (AIG), had been excessively selling CDS protection, exposing itself to potential losses over $100 billion. The federal bailout of AIG made regulators concerned about the role of CDS in financial stability. They began to consider ways to reduce the risk involved in CDS transactions.

Alternatively, proponents of CDS believe that CDS could increase market competition and benefit hedging activities, while helping banks to reduce the concentration of credit risk. For example, during the 2000–2001 market crash, U.S. banks suffered limited damage from the burst of the dotcom bubble and telecommunication bubble since credit risk was diversified to the insurance industry in Europe and America.[3] The CDS contract per se should not be blamed for the financial crisis. The major problem for large financial institutions was that they underestimated the risk

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[2] For example, see George Soros (March 24, 2009), "Opinion: One Way to Stop Bear Raids", Wall Street Journal, and Stevenson Jacobs (March 10, 2010), "Greek Debt Crisis Is At The Center Of The Credit Default Swap Debate", Huffington Post.

[3] Wagner and Marsh (2006) find that the incentive of banks to transfer credit risk is aligned with the regulatory objective of improving financial stability. As such, the development of credit derivative instruments should be welcomed. They also find the transfer of credit risk from banks to non-banks to be more beneficial than credit risk transfer within the banking sector.

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exposure of operating in the CDS market where illiquidity, counterparty risk, and systemic risks could be substantial. For example, AIG underestimated the default probabilities of the reference entities that it sold extensively to collect CDS premiums. In addition, the minimum Basel capital ratio was not required for banks operating in the credit derivatives market due to its off balance nature. Greater regulation should increase capitalization requirements and market transparency in order to reduce potential risk of the credit derivatives market.[4]

Moreover, proponents of CDS hold that an efficient CDS market can serve as a barometer to regulators and investors regarding the credit health of a company.[5] In the case of Bear Stearns, the widening of their CDS spread was a symptom rather than a cause of its collapse as investors sought to hedge their exposure to the bank or speculate on its collapse.

Indeed, anecdotal evidence suggests that the CDS demonstrates dramatic spread widening in anticipation of adverse credit events in the years prior to the 2008 financial crisis.[6] The changing CDS spread reflects the dynamic risk profile of the underlying entity and its debt instrument. Existing studies find that CDS spread plays a leading role in responding to changes in credit conditions, such as future rating events (Hull et al., 2004; Norden and Weber, 2004), and adverse credit events such as M&A, SEC probe or accounting irregularities, and leverage buyouts (Zhang, 2009). The leading role of the CDS market may be due to the absence of funding and short-sale restrictions in the derivatives market and large institutional investors with privileged information (Acharya and Johnson, 2007).

In this paper, we provide further evidence regarding the information efficiency of the U.S. CDS market around earnings news. An earnings announcement is the most fundamental news regarding a firm's value. We conduct a systematic study on whether the U.S. CDS market could incorporate earnings announcements in a timely fashion. Specifically, does the CDS market anticipate subsequent earnings surprises? Does the market response vary across firms with different credit risks and vary across positive and negative earnings? Is there post-earnings drift in the credit market, as in the equity market?

First, should earnings news be incorporated in CDS prices? If so, what type of earnings news elicits stronger market reactions? What type of firm is more likely to be affected? Analogous to bond yield spread, CDS spread is a function of the debt-to-firm value ratio, or leverage, term to maturity and volatility. An unexpected change in earnings will result in an unexpected change in future cash flow and, as such, the firm value, leading to a change in the leverage ratio. Therefore, we would expect the CDS spread to increase in the case of negative earnings surprises and to decrease for positive earnings news. Given limited upside potential, but substantial downside risk for bondholders, negative earnings surprises should have a stronger effect on the CDS spread than positive ones. Moreover, simulation results from Merton (1974) indicate that there is a convex relation between risk premium and leverage ratio.[7] Given a monotonic correlation between leverage and credit ratings (Standard and Poor's, 2003), we expect that speculative-grade firms are more severely affected by earnings surprises than investment-grade firms.

Additionally, can the CDS market anticipate earnings surprises? The CDS market is an unregulated OTC market for institutional investors and dominated by large banks, insurance companies, and hedge funds. They usually have information advantages due to greater research resources or simply by possessing insider information. Given informed market participants, embedded leverage, and its market opacity, the CDS market may be a preferred channel for informed trading. Since banks and other sophisticated investors may have information advantages with respect to earnings numbers, CDS spreads may respond ahead of actual earnings announcements, particularly in the case of negative earnings surprises and for speculative-grade firms.

Moreover, if the CDS market is efficient, we should not observe post-earnings drift. It has been well documented that stock market reactions drift post earnings announcement (Ball and Brown, 1968). One explanation is that this is largely driven by noisy trading by uninformed investors. Different from the stock market where there are both informed and uninformed investors, the CDS market is dominated by informed investors who may interpret information more accurately. Thus, post-earnings drift is less likely to exist in the CDS market.

Using a sample of 6236 earnings surprises observations on 633 firms from the IBES database. We find an asymmetric impact of earnings surprises on CDS spreads. Specifically, there is a significant impact on CDS spreads in the [−1, 1] event window for speculative-grade firms, but not for investment-grade firms. For speculative-grade firms, CDS spreads increase by 2.5 basis points (bp) for negative earnings surprises and decline by 2.6 bp for positive surprises around earnings announcements. The results suggest that the credit market views earnings surprises as an important element in the pricing of speculative-grade firms, which are closer to the default boundary, but not for investment-grade firms.

Additionally, we find that the CDS market only anticipates one type of earnings surprises, the negative ones. Specifically, negative earnings surprises are associated with a dramatic 10.5 bp widening of the CDS spread in the one-month window of (−30, −2) leading up to the announcement day, but no significant CDS spread change is detected for positive earnings surprises before the earnings announcement. The pre-event asymmetric response is consistent with the finding in Acharya and Johnson (2007) that information leakage (likely due to insider trading) in the CDS market happens to negative credit news only.

More importantly, we find there is no post-earnings announcement drift for the full sample in the CDS market, supporting the efficiency of the CDS market. This is in direct contrast to the well documented post-announcement drift in the stock market. We attribute this finding to the fact that the players in this market are sophisticated financial institutions with an information advantage.

Furthermore, we examine how CDS spreads are related to earnings surprises after controlling for market, firm, and

[4] See "E.U. Derivatives Ban Won't Work, U.S. Says", New York Times. March 17, 2010. Duca et al. (2010) argue that lessons from the crisis include recognizing the importance of financial innovation and improving regulation. Cukierman (2011) suggests that one of the major problems leading to the current financial crisis is the growth of a poorly regulated shadow financial system. The Dodd–Frank Act that was passed in 2010 pointed out two problems encountered in the 2007–2009 crises with the credit derivative market. The first is that the regulatory capital requirements for banks did not reflect the risk exposure of operating in the credit derivatives. Another problem was the opacity of exposure in OTC derivatives. It was proposed that credit derivative should be traded in centralized trading platforms where margin and transparency requirements would be imposed by the platforms (Krainer, forthcoming).

[5] Litan, Robert E. (April 7, 2010), "The Derivatives Dealers' Club and Derivatives Markets Reform: A Guide for Policy Makers, Citizens and Other Interested Parties", (PDF) Brookings Institution.

[6] For example, the CDS price for First Data mysteriously rose by 62% in two weeks just before its board announced that the firm was acquired by KKR on April 2, 2007 (Scheer, 2007). The Wall Street Journal (WSJ) article (October 4, 2006), "Trading in Harrah's Contracts Surges Before LBO Disclosure", reported that CDS spreads of Harrah experienced a dramatic spike two days prior to the announcement, whereas the stock market was much slower to respond.

[7] As demonstrated in Table 1 and Figure 1 in Merton (1974), on the far right end, when debt-to-firm-value ratio d rises to an extremely high level, the curve turns concave. However, it is likely the case when firms go bankrupt and, as such, not empirically observable.