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Information risk and credit contagion

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ABSTRACT

This paper demonstrates a positive relationship between information risk and the credit contagion effect. We use abnormal changes in the Credit Default Swaps (CDS) spreads to measure the contagion effect, and the dispersion of analyst forecasts as a proxy for information risk. We find that firms with higher information risk suffer a greater contagion effect that occurs in advance to the credit default events. This finding is robust under controls of key firm-specific characteristics and general condition of stock and credit markets.

1. Introduction

Credit risk management requires robust risk modeling, including the possibility of credit contagion: the process by which a credit event for one institution negatively impacts the risk valuations of its peers. In order to accurately model the possible credit loss distribution of a portfolio, precise measurement of the credit default correlation is needed, and the dynamics of credit contagion must be fully explored.[1] Existing research has studied the credit contagion effect by examining its correlation

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[1] For example, the pricing of Collateralized Debt Obligations (CDO) relies on a specific correlation between the underlying credits. For another instance, the Basel agreements require banks to maintain a level of capital sufficient to prepare for extreme credit loss. The proper level can be accurately estimated only with precise credit correlations.

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with types of default events, industry attributes, or firm-specific characteristics.[2] The present paper extends this line of research, documenting for the first time a link between credit contagion and information risk.

Following Jorion and Zhang (2007, 2009), this study employs the spreads of Credit Default Swaps (CDS) as a direct measurement of corporate credit conditions. We quantify credit contagion as the reaction in a firm's CDS spreads due to downgrades in the credit ratings of its peers. Due to the complexity of credit quality monitoring and pricing, most market participants of credit derivatives are institutional traders. Therefore, information advantage is naturally priced in CDS spreads. Norden and Wagner (2008) show that CDS spreads are strongly related to the spreads on new syndicated loans, suggesting that not only do banks play an active role in CDS markets, but any information possessed by the banks relevant to lending decisions is also incorporated in CDS prices. Acharya and Johnson (2007) show that the magnitude of information flow from credit derivatives to the equity market is positively related to the underlying entity's number of bank relationships. This relationship is particularly strong for information from negative credit shocks.

When a major credit default occurs, CDS market participants naturally use this event and their private information to adjust their credit evaluations of other firms, and trade CDS to improve the outlook of their portfolios. The participants often have precise knowledge regarding the credit conditions of some firms, but ambiguous information for others. Therefore, the effects of credit contagion should vary across firms with different levels of information risk. Specifically, we expect the magnitude of credit contagion to be positively correlated with information ambiguity. In addition, the informed participants should take actions prior to public announcements of the default events, and that would lead to an *anticipated* contagion effect. This intuition is formalized in following hypothesis.

Hypothesis. The anticipated credit contagion effect should be stronger for firms with higher information risk, i.e., greater ambiguity of the information possessed by market participants.

Prior studies have used several financial indicators as proxies for information uncertainty such as firm size, stock return volatility, book-to-market ratio, and leverage ratio; see Zhang (2006) for an example. Most of the indicators, however, are generated using the firm's stock prices, whose dynamics are largely affected by herding investors with little or no valuable information of the firms. Instead, this research adopts the analyst forecast dispersion (*AFD*) as the primary proxy of information ambiguity. *AFD* is computed as the standard deviation in analyst EPS forecasts for the next quarter. This proxy, which is composed only with judgments of financial analysts, should provide a better idea of the firm's information risk, from the point of view of institutional participants in the CDS market.

Detailed descriptions of our methodology and data are provided in Section 2. Section 3 presents empirical results, and Section 4 concludes the paper.

2. Data and methodology

Our sample consists of daily corporate CDS spreads (five-year contracts) in the U.S. between January 1, 2004 and December 31, 2010. More than 400 corporate CDS series covering the entire period are extracted from Thomson DataStream. Stock return series are extracted from CRSP, firm-specific characteristics are obtained from Compustat, and analyst reports and forecasts are obtained from I/B/E/S. We collect all corporate downgrade announcements during the sample period, omitting cases that overlap with other downgrades within a 5-day window to avoid contamination. We are left with

[2] Jorion and Zhang (2007) demonstrate that the bankruptcy of a firm leads to either credit contagion or competitive effect of its industry peers, depending on the type of default. The authors also show that the contagion effects are significantly correlated with several firm characteristics including size, leverage ratio, and the closeness of stock returns between the bankrupt firm and its peers. Huang et al. (2012) show that the contagion effect dominates the competitive effect during the late period of the 2008–2009 financial crisis, because public confidence is generally destroyed by unexpected major defaults.