Liquidity, delistings, and credit risk premium

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A R T I C L E   I N F O

A B S T R A C T

Our study analyzes in detail the results of the credit risk effect by using data from the unique rating environment of Taiwanese stock markets. Even in distinct institutional settings, our empirical results reaffirm the well-known inverse relationship of returns and credit risk, which is robust with regard to cross-sectional and time-series scrutiny. We reveal that the underperformance of low-rated firms around their rating downgrades, when they are subject to both severe illiquidity and short-sale constraints, partially explains the abnormal returns of long–short portfolios, although the returns remain substantial when data associated with downgrades is removed. When targeting delisted firms, we observe that delistings among the lowest-rated firms exhibit extremely poor returns near the time of their downgrades. We find that the abnormal returns become insignificant in the long–short portfolio in the sample, from which delistings are excluded. Our empirical evidence suggests that market mispricing of delisted stocks near the time of their downgrades is a primary cause of the credit risk puzzle.

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1. Introduction

Recent empirical studies have documented a puzzling negative relationship of credit risk and the corresponding compensated return among cross-sectional credit risk premiums. Dichev (1998), Campbell, Hilscher, and Szilagyi (2008a, 2008b), Avramov, Chordia, Jostova, and Philipov (2009a, 2009b), Campbell, Hilscher, and Szilagyi (2011), and Gao, Parsons, and Shen (2013) demonstrate that distressed firms deliver abnormally low returns. Potential explanations of the credit risk puzzle vary among researchers. Dichev and Piotroski (2001) show that low credit-quality firms perform poorly after downgrades and conclude that market under-reaction might account for the anomaly. Griffin and Lemmon (2002) observe that poorly performing high credit risk firms also have low book-to-market ratios and attribute the credit puzzle to mispricing. Campbell et al. (2008a, 2008b) indicate that the distress effect is stronger among small, illiquid stocks. Garlappi, Shu, and Yan (2008) present a non-risk-based explanation and argue that because of violations of the absolute priority rule for bankruptcy claimants, distressed stocks have lower betas and therefore command lower returns. Avramov et al. (2009a, 2009b) observe that, near the time of rating downgrades, low-rated firms experience considerable negative returns amid strong institutional selling. They suggest that the mispricing of the lowest-rated firms triggered by illiquidity and short-sale constraints near downgrades accounts for the credit risk effect. Campbell et al. (2011) observe that the underperformance of distressed stock is more severe for stocks with low analyst coverage and institutional holdings, suggesting that information or arbitrage-related frictions might cause the anomaly. Gao et al. (2013) examine the relationship between financial distress and equity returns in a broad international dataset and reaffirm the asset pricing irregularity in which high default probabilities strongly predict low equity returns. They offer a behavioral explanation for the anomaly based on investor overconfidence that

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agrees with their empirical evidence. No consensus on the credit risk effect has yet been formed; further research is required on related issues.

We clarify the long-standing anomaly by employing a unique market rating setting, the Taiwan Corporate Risk Index (TCRI). As documented in the Basel Committee on Banking Supervision (2000), rating institutions worldwide exhibit a wide disparity and culture orientation. In particular, the Taiwanese government has recently carried out a series of financial reforms[1] specifically to stabilize local financial environments and to enhance the strength and competitiveness of financial institutions in Taiwan. The TCRI is one of the most widely used credit rating services in the Taiwanese financial community; it is produced by the Taiwan Economic Journal (TEJ), a local rating agency with a regional focus. TCRI is mainly used by banks for credit evaluation when dealing with bank loans to stock-listing companies. Distinct from other conventional credit agencies, TCRI focuses only on issuing companies instead of issues because Taiwanese financial systems largely depend on indirect finance, and its subscribers are mainly bankers and stock market investors.

TEJ employs objective financial data as input to a statistical model analyzing the creditworthiness and relative likelihood of default of an obligor, and publishes unsolicited ratings addressing nearly the whole coverage marketplace without large numbers of trained analysts. Although the credit scales in general are based on an alphabetical taxonomy, TCRI adopts an ordinal numerical scale from 1 to 10 in order of descending credit quality. To avoid any connotations of cardinality that might be immediately associated with a numerical rating scale, TCRI interprets the numerical scales in terms of degree of riskiness and type of loan. Specifically, ratings of 1 to 4 are assigned to low-risk firms and correspond to a low level of cash lending. Ratings of 5 and 6 are assigned to medium-risk firms and correspond to a mix of low levels of cash lending and asset lending. Ratings of 7 to 9 are assigned to high-risk firms and with corresponding levels of asset lending. Finally, a 10 rating is reserved for firms deemed in default, caused either by defaulting on loans resulting in negative net values, or by qualified audit opinions.

Several distinct features of the TCRI are worth mentioning in the context of our contribution to the debate. First, the classification of rating portfolios is obtained directly from the TCRI in its original numerical score form, rating credit risk on an ascending scale from 1 to 10. By contrast, most rating portfolios documented in the literature (e.g., Avramov et al., 2009a, 2009b; Gao et al., 2013) are decile portfolios[2] formed using either a default probability calculated from the hazard-related model or alphabetical rating systems offered by rating agencies. Therefore, our credit risk classification displays a bell-shape distribution of the number of rated firms.

Second, the rating frequency has changed from annual ratings (January 1995–December 2001), to semi-annual ratings (January 2002–December 2007), and finally quarterly ratings (January 2008–present). However, most credit rating scores employed in the literature have been exclusively on a monthly basis. This relatively low rating frequency creates the challenge of matching returns with rating announcements. Third, our definition of downgrades signifies deteriorating credit at least one rating class from the original level, which substantially differs from the situation where downgrading firms might still remain in the same credit decile as that reported in previous studies.[3]

We use distinct institutional settings to target the robustness of the credit risk effect and to examine the causes of the related mispricing. The remainder of this paper is organized as follows. Section 2 details the data used in the study. Section 3 presents the empirical results. Section 4 offers concluding remarks.

2. Data

The study covers firms by employing historical records of the TCRI from December 1994 to September 2012, on both the Taiwan Stock Exchange and the GreTai Security Market. Among the 1769 companies, 841 and 639 are listed on the Taiwan Stock Exchange and the GreTai Security Market, respectively, and 289 are delisted firms. The TCRI excludes firms in the banking, insurance, securities, and investing industries, on all of which special regulations are imposed. Financial data for these industries lack sufficient reliability and consistency for credit evaluation.

As mentioned above, the TCRI has evolved through three rating frequencies required by the mandatory financial reporting of Taiwanese markets: annual ratings, then semi-annual, and finally quarterly ratings since January 2008. Therefore, while our data are fundamentally monthly firm observations, the rating class was determined by various rating horizons. For examining the potential influences of credit downgrades, we expand the data to include two years prior to and after downgrades.

We adopt our 10 rating classes directly from the TCRI, which differs from most studies, which usually construct credit rating portfolios by dividing an entire sample into deciles according to descending credit scores. The firm distribution among the 10 credit classes is invariably bell-shaped across the three rating frequencies, and primarily focuses in classes 5 and 6.[4]

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[1] A detailed account of financial reforms in Taiwan and resolve in implementing financial reforms can be found in Ho, Lai, and Lee (2014).

[2] Most previous studies construct credit risk portfolios by uniformly decomposing the entire sample of firms into portfolios with equal designated size according to credit rating scores. For example, Avramov et al. (2009) set up the studied decile portfolios as follows. "In the empirical analysis that follows, we transform the S&P ratings into conventional numerical scores. Specifically, 1 represents a AAA rating and 22 reflects a D rating. Hence, a higher numerical score reflects higher credit risk. Numerical ratings of 10 or below (BBB− or better) are considered investment grade, and ratings of 11 or higher (BB+ or worse) are labeled high-yield or non-investment grade." (p. 469).

[3] The average rating and numerical score for each rating decile in Avramov et al. (2009a, 2009b) are as follows. C1 (AA, 2.53), C2 (A+, 4.62), C3 (A, 5.94), C4 (A−, 7.10), C5 (BBB+, 8.25), C6 (BBB−, 9.59), C7 (BB+, 11.22), C8 (BB−, 12.67), C9 (B+, 13.72), C10 (B−, 16.33) (P. 476.)Accordingly, previous studies (e.g., Avramov et al., 2009a, 2009b) might find a firm downgrades from AAA into AA+, but the firm remains in the first rating decile, C1, before and after the downgrade. In contrast, our definition of downgrades signifies deteriorating at least one credit notch in the TCRI.

[4] Detailed data are not reported here but are available from the authors upon request.