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Credit Risk: The Role of Market and Accounting Information-Evidence from U.S. Firms and a FAVAR Model

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Abstract

This paper examines the capability of both accounting and market information in explaining the cross-sectional variation of five-year credit default swap spreads. The paper proposes a panel FAVAR methodological approach to combine the additional predictions from a long list of accounting and market fundamental variables, while controlling the macroeconomic environment of the firms. A comprehensive analysis based on 171 U.S. manufacturing spanning the period 2003 (January)-2011 (October) shows that impulse response functions and variance decompositions support the dominance of the market environment over the accounting environment in providing information to the credit markets, while they display a minor role for the macroeconomic variables employed.

***Keywords*: accounting information; market information; CDS spreads; panel FAVAR model; U.S. manufacturing firms**

1. Introduction

A firm considered in default when it is unable to service its financial liabilities. Investigating the probability of a firm being capable of repaying its financial obligations is crucial for capital providers, academics, market participants and regulators. To determine the amount of credit risk involved in a certain firm, the literature has examined a number of credit default models. These scoring models, i.e. Altman's (1968) Z-score, Ohlson's (1980) and Merton's (1974) are the beginning attempts to determine relevant default probabilities. However, models that have employed data coming directly from accounting information have been criticized on the grounds that exclude certain crucial sources of information coming from the market (Hillegeist *et al.*, 2002). In this manner, models that additionally include information from the market seem more efficient in assessing a firm's credit risk. The goal of this study is to evaluate how information coming from both the accounting environment and the market environment is capable of pricing the risks of default by examining credit default swaps (CDS) spreads on a U.S. manufacturing firms' dataset. These CDSs are financial securities that provide insurance against a firm's default. These financial securities are classified as credit derivatives whose payoffs

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are tied to the issuer's credit quality and they allow the trading of default risk separately from other sources of uncertainty (Ericsson *et al.*, 2009). We should also point out that the reference firm (the one with a non-zero probability of defaulting on its liabilities) is not a party to the contract and is neither obliged to pay anything nor it is necessary for the buyer or seller to obtain the firm's consent to enter a CDS contract, while the buyer pays a periodic premium, i.e. the CDS spread, to the seller for a predetermined amount of time. In a case that a default event occurs, the seller is obliged to compensate the buyer. Without the presence of such a default event, the buyer continues to pay annuity premia until the end of maturity (Callen *et al.*, 2009). The novelties of this study are: i) it combines both accounting and market information to explain credit risk, ii) unlike other studies, it uses CDS data, since the employment of actual default observations may not be reliable, because some default events are strategic decisions and, thus, may not correspond to economic defaults, while some financially distressed firms may not be capable of negotiating debt restructuring to avoid default and certain informal resolutions are difficult to identify (Duffie *et al.*, 2007) or the employment of implied default probability from the Merton (1974) model could not be confounded by the oversimplified assumptions behind that model, iii) it makes use of a U.S. sample that allows the employment of a large sample, and, finally, iv) it makes use of a new methodological approach, i.e. the factor augmented vector autoregressive (FAVAR) model (Bernanke et al., 2005), that although it uses a rather wide list of fundamental (both accounting and market) variables, it economizes on its estimation procedure by reducing them to a small number of factors. In other words, we gear our estimation toward exploiting the information on the common components of accounting and market variables' movements in a large cross section of time series. To this end, we employ the FAVAR techniques. Therefore, we are able to derive results for the variation in responses of a large variety of variables to the identified shocks.

The rest of the paper is structured as follows. Section 2 presents the literature on default prediction, on credit risk (CDSs) determinants as well as on the role of macroeconomic environment. Section 3 discusses the hypotheses tested, while Section 4 describes the data sources and sample construction details, while Section 5 presents the empirical analysis and discusses the findings. Finally, Section 6 concludes.

2. Literature

2.1. Literature on Default Prediction

The majority of the relevant literature so far has tested either models that use actual bankruptcies (Altman, 1968; Ohlson, 1980; Hillegeist *et al.*, 2002) or models that attempt to explain corporate bond yields (Collin-Dufresne *et al.*, 2001; Wu and Zhang, 2004; Huang and Kong, 2005; Longstaff and Rajan, 2008). However, the latter approach has been criticized by Blanco *et al.* (2003) on the grounds that any changes in credit quality of a firm tends to be reflected more quickly on its CDS spreads than on its bond yield spreads. Moreover, default probabilities estimated from bond yield spreads are significantly higher than corresponding historical default probabilities (Amato and Remolona, 2003). At the same time, Hull (2005) argues that default probabilities rates calculated from bond spreads are estimates in a risk neutral world. However, as investors are risk averse, credit spreads should compensate investors for the expected losses on credit risky bonds and, thus, these spreads should include risk premia to reward investors for accepting the risk to assume higher than expected losses. We follow the CDS approach than the bond yield approach in this study. The number of studies that examine the role of accounting information for credit risk is not that extensive (Demirovic and Thomas, 2007; Das *et al.*, 2009). These studies investigate the relationship between accounting information and credit ratings, while Huang and Kong (2005) and Longstaff and Rajan (2008) examine the association between accounting information and bond spreads. Only Das *et al.* (2009) investigate the relationship between accounting information and CDS spreads and that between market fundamentals and