Available online at www.sciencedirect.com
SCIENCE DIRECT
ELSEVIER
Emerging Markets Review 6 (2005) 311 – 323
EMERGING MARKETS REVIEW
www.elsevier.com/locate/econbase

An emerging market credit scoring system for corporate bonds

Edward I. Altman *

NYU Stern School of Business, New York, NY 10012, U.S.A

Received 10 February 2005; received in revised form 2 September 2005; accepted 9 September 2005

Abstract

In this article we introduce a scoring system (EMS Model) for Emerging Corporate Bonds. The scoring system provides an empirically based tool for the investor to use in making relative value determinations. The EMS Model is an enhanced version of the statistically proven Z-Score model. Unlike the original Z-Score model, our approach can be applied to nonmanufacturing companies, and manufacturers, and is relevant for privately held and publicly owned firms.The adjusted EMS Model incorporates the particular credit characteristics of emerging markets companies, and is best suited for assessing relative value among emerging markets credits. The model combines fundamental credit analysis and rigorous benchmarks together with analyst-enhanced assessments to reach a modified rating, which can then be compared to agency ratings (if any) and market levels. We have included a summary of Mexican companies for which we have applied the EMS Model. We have included in this a description of Mexican company credits, first from prior to the Mexican crisis (1994) then followed, in some cases, to a more recent date.

JEL classification: G20; G21; G28; G33

Keywords: Credit risk; Corporate bonds; Emerging markets

1. An emerging market credit scoring system for corporates

Most published credit scoring models, including the author's original Z-Score model (Altman, 1968) involve the development and testing of scoring models based, essentially, on U.S. data. While there is no reason why these models cannot be applied to companies throughout the rest of the world, we recognize that each environment has its own peculiarities; hence, "local" models could be expected to perhaps outperform U.S. models, at least in their testing phase. Indeed, in Altman and

* Tel.: +1 212 998 0709; fax: +1 212 995 4220.
E-mail address: ealtman@stern.nyu.edu.

1566-0141/$ - see front matter © 2005 Elsevier B.V. All rights reserved.
doi:10.1016/j.ememar.2005.09.007

Hotchkiss (2005), we present an annotated bibliography and short discussion of numerous models built in over 20 countries throughout the world over the past 30 years. Still, we believe that generic credit risk models are applicable in most environments since the fundamentals of corporate insolvency analysis are relevant everywhere. What does differ is local bankruptcy laws and therefore the expected and unexpected default *loss* function will be impacted (see Altman et al., 2005).

In this article, we explore the application of one of our Z-Score approaches for credit rating purposes in emerging markets. We developed this model first in the mid-1990s (Altman et al., 1995) to provide an analytical framework for the then growing, but still nascent, corporate market for emerging market companies issuing bonds in non-local currency (usually U.S. dollars). Since this Eurobond market was launched in the early 1990s, there was little history and no defaults to facilitate the construction of models based on “local” data.

2. The Emerging Market Score Model (EMS model)

The emerging market scoring model (EMS) for rating emerging market credits is based first on a fundamental financial review derived from a quantitative risk model; and second, on our assessments of specific credit risks in the emerging market in order to arrive at a final *modified rating*. The investor can then utilize this rating after considering the appropriate sovereign yield spread, to assess equivalent bond ratings and intrinsic values. We realize that most of the variation in yields on corporate bonds is explained by sovereign yield variation. Our approach is to analyze the yield differences between emerging market corporate bonds based on firm unique variables, and then add the sovereign spread differential to arrive at a required return determination. An alternative method could be a model which strips out the part of the corporate spread explained by its sovereign affiliation and concentrates on the idiosyncratic spread.

The foundation of the EMS model is an enhancement of our Z″-Score model (see Altman, 1993), resulting in an EM Score and its associated bond rating equivalent (BRE). The EM score’s rating equivalent is then modified based on three critical factors including (1) the firm’s vulnerability to currency devaluation, (2) its industry affiliation, and (3) its competitive position in the industry. Unique features of the specific bond issue should also be considered. These subjective modifications are an important complement to the EM score. The resulting analyst modified rating is compared to the actual bond rating (if any). Where no agency rating exists, our analyst modified rating is a means to assess credit quality and relative value both to credits within a country and to US corporates. The implied yield spread based on the Analyst Modified Rating can be observed from the U.S. Corporate bond market. Steps 1 through 6 (below) will outline the process by which we use the EM score to reach an analyst modified rating. You will note that our analyst modified rating is not constrained in any manner by the so-called “sovereign-ceiling.” A sovereign-ceiling is a standard rating protocol that usually limits an individual corporate issuer to receive an international-rating no higher than the sovereign in which it is located. The reasoning is that the sovereign can usually expropriate resources from the corporation should there be a crisis of some sort. We do advocate, however, in most cases, to factor in the appropriate current sovereign yield spread differential between the emerging market country and comparable-duration U.S. Treasuries, when arriving at a required rate of return on the emerging market corporate.

2.1. Step 1: U.S. Bond rating equivalent

In developing our emerging market system (EMS), we proceeded based on a series of steps. We scored each bond by its EM score and classified it relative to its stand-alone U.S. bond rating