Journal of Financial Economics 109 (2013) 535–548

Contents lists available at SciVerse ScienceDirect

Journal of Financial Economics

journal homepage: www.elsevier.com/locate/jfec

Feedback effects of credit ratings ☆

Gustavo Manso

Haas School of Business, University of California at Berkeley, 545 Student Services Building #1900, Berkeley, CA 94720, United States

ARTICLE INFO

Article history:
Received 22 August 2012
Received in revised form
7 November 2012
Accepted 28 December 2012
Available online 3 April 2013

JEL:
G24
G01
G32

Keywords:
Credit rating agencies
Performance-sensitive debt
Financial regulation
Credit-cliff dynamic

ABSTRACT

Rating agencies are often criticized for being biased in favor of borrowers, for being too slow to downgrade following credit quality deterioration, and for being oligopolists. Based on a model that takes into account the feedback effects of credit ratings, I show that: (i) rating agencies should focus not only on the accuracy of their ratings but also on the effects of their ratings on the probability of survival of the borrower; (ii) even when rating agencies pursue an accurate rating policy, multi-notch downgrades or immediate default may occur in response to small shocks to fundamentals; (iii) increased competition between rating agencies can lead to rating downgrades, increasing default frequency and reducing welfare.

© 2013 Published by Elsevier B.V.

1. Introduction

Rating agencies are supposed to provide an independent opinion on the credit quality of issuers. However, if market participants rely on credit ratings for investment decisions, then credit ratings themselves affect the credit quality of issuers. For example, a rating downgrade may lead to higher cost of capital for the borrowing firm because it induces a deterioration in investors' perceptions about the credit quality of the borrowing firm, because of regulations that restrict investors' holdings of lower rated bonds, or because of rating triggers in financial contracts.[1] Rating agencies thus face the problem of setting credit ratings that accurately represent the credit quality of a particular issuer, taking into account the effect of these ratings on the credit quality of the issuer.

Based on a model that incorporates the feedback effects of credit ratings, I show that: (i) rating agencies should focus not only on the accuracy of their ratings but also on the effects of their ratings on the probability of survival of the borrower; (ii) even when rating agencies pursue an accurate rating policy, multi-notch downgrades or immediate default may occur in response to small shocks to fundamentals; (iii) increased competition between rating agencies can lead to rating downgrades, increasing default frequency and reducing welfare. These findings call into question the recent criticism directed at rating agencies for being biased in favor of borrowers, for being too slow to downgrade following credit quality deterioration, and for being oligopolists.

The model is based on the *performance-sensitive-debt* (PSD) model introduced by Manso, Strulovici, and Tchistyi (2010). Cash flows of the firm follow a general diffusion process. The firm has debt in place in the form of a ratings-based PSD obligation, which promises a non-negative interest

---

☆ I thank Nittai Bergman, Hui Chen, Mike Chernov, Doug Diamond, Darrell Duffie, Itay Goldstein, Zhiguo He, Darren Kisgen, and Christian Opp for helpful comments, as well as Yan Ji for outstanding research assistance.

E-mail address: manso@haas.berkeley.edu

[1] Kisgen (2007) describes in more detail the channels through which credit ratings affect the cost of capital for a borrower.

0304-405X/$ - see front matter © 2013 Published by Elsevier B.V.
http://dx.doi.org/10.1016/j.jfineco.2013.03.007

payment rate that decreases with the credit rating of the firm.[2] Equityholders choose the default time that maximizes the equity value of the firm. The rating agency's objective is to set accurate ratings that inform investors about the probability of default over a given time horizon. In this setting, the interaction between the borrowing firm and the rating agency produces feedback effects. With a ratings-based PSD obligation, the rating determines the interest rate, which affects the optimal default decision of the issuer. This, in turn, influences the rating.

The interaction between the rating agency and the borrowing firm is a game of strategic complementarity (Topkis, 1979; Vives, 1990; Milgrom and Roberts, 1990). Typically, games of strategic complementarity exhibit multiple equilibria. In the smallest equilibrium, which I call the *soft-rating-agency equilibrium*, the rating agency assigns high credit ratings, leading to lower interest rates for the borrowing firm, and consequently, a lower default probability. In the largest equilibrium, which I call the *tough-rating-agency equilibrium*, the rating agency assigns low credit ratings, leading to higher interest rates for the borrowing firm, and consequently, a higher default probability. The soft-rating-agency equilibrium is associated with the lowest bankruptcy costs and consequently, the highest welfare among all equilibria.

Given the welfare implications of the different equilibria, it is important to understand how rating agencies set their rating policies in practice. To deal with the feedback effects introduced by rating triggers, rating agencies have proposed the use of stress tests.[3] In such tests, the company with exposure to rating triggers needs to be able to survive stress-case scenarios in which the triggers are set off. When the tough-rating-agency equilibrium involves immediate default, the borrowing firm will fail the stress test, potentially inducing rating agencies to select the tough-rating-agency equilibrium, the worst equilibrium in terms of welfare.

The best equilibrium in terms of welfare is the soft-rating-agency equilibrium, since it is the equilibrium with the lowest probability of default over any given time horizon. To implement such equilibrium, a credit rating agency should be concerned not only with the accuracy of its ratings, but also with the survival of the borrowing firm. One way in which this can be achieved is by having rating agencies collect a small fee from the firms being rated. Under this scheme, rating agencies become interested in the survival of the borrowing firm, inducing them to select the soft-rating-agency equilibrium.

The fact that rating agencies are paid by issuers has received intense criticism. The concern is that this practice may induce bias in favor of issuers. While this is a valid concern, the results of this paper suggest that if the fee is small relative to the reputational concerns of rating agencies, it only introduces small distortions while inducing rating agencies to select the Pareto-preferred soft-rating-agency equilibrium.

Stability of an equilibrium may play an important role in equilibrium selection and in the dynamics of credit ratings. The paper shows that if equilibrium is unique, then it is globally stable, so that small shocks to fundamentals lead to gradual changes in credit ratings. If there are multiple equilibria, however, some of them may be unstable. Small shocks to fundamentals may thus lead to multi-notch downgrades or even immediate default, in what has been called a “credit-cliff dynamic.”

The effect of competition between rating agencies on equilibrium outcomes depends crucially on how credit ratings from different agencies affect interest payments by the borrowing firm. If interest payments depend on the minimum (maximum) of the available ratings, then only the equilibrium with the highest (lowest) probability of default survives.

The above result is a consequence of the feedback effects of credit ratings. When interest payments depend on the minimum of the available ratings, a rating agency can undermine the credit quality of the borrowing firm by reducing its credit rating. Therefore, when a rating agency is concerned about being more accurate than other rating agencies, competition creates downward pressure on ratings that only subsides in the tough-rating-agency equilibrium. Increased competition may thus lead to the selection of the tough-rating-agency equilibrium, reducing welfare.

The model specification is flexible to capture realistic cash-flow processes, potentially allowing rating agencies and other market participants to incorporate the feedback effects of credit ratings into debt valuation and rating policies. Because we have a game of strategic complementarity, we can use iterated best-response to compute the soft-rating-agency equilibrium and the tough-rating-agency equilibrium. To calculate best-responses in the case of a general diffusion process, we need to solve an ordinary differential equation (ODE) and compute the first-passage-time distributions of a diffusion process through a constant threshold. I compute equilibria of the game for the case of mean-reverting cash flows. For the base-case example, the present value of losses due to bankruptcy costs is approximately 10% of asset value under the tough-rating-agency equilibrium and close to zero under the soft-rating-agency equilibrium.

The paper is organized as follows. Section 2 reviews the related literature. Section 3 introduces the model. Section 4 shows existence of equilibrium in Markov strategies. Section 5 discusses equilibrium selection and the role of stress tests and fee structures in the credit rating industry. Section 6 studies equilibrium stability and discusses the “credit-cliff dynamic.” Section 7 studies competition between rating agencies. Section 8 provides some comparative statics results. Section 9 studies the numerical

---

[2] As discussed in Manso, Strulovici, and Tchistyi (2010), PSD obligations can be explicit, as in bank loans with performance pricing provisions. In a survey Moody's conducted in 2002, 87.5% of firms reported exposure to explicit rating triggers in their financial contracts (see “Moody's analysis of US corporate rating triggers heightens need for financial disclosure,” Moody's, July 2002). PSD obligations can also be implicit, as in the rollover of short-term debt. If the firm is performing well and has high credit ratings, it will pay lower interest rates when rolling over its maturing debt. If the firm is performing poorly and has low credit ratings, it will pay higher interests rate when rolling over its maturing debt.

[3] “Moody's analysis of US corporate rating triggers heightens need for increased disclosure,” Moody's, July 2002.

Download English Version:

https://daneshyari.com/en/article/10475792

Download Persian Version:

https://daneshyari.com/article/10475792

Daneshyari.com