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Information reliability and welfare: A theory of coarse credit ratings ☆

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ABSTRACT

An enduring puzzle is why credit rating agencies (CRAs) use a few categories to describe credit qualities lying in a continuum, even when ratings coarseness reduces welfare. We model a cheap-talk game in which a CRA assigns positive weights to the divergent goals of issuing firms and investors. The CRA wishes to inflate ratings but prefers an unbiased rating to one whose inflation exceeds a threshold. Ratings coarseness arises in equilibrium to preclude excessive rating inflation. We show that competition among CRAs can increase ratings coarseness. We also examine the welfare implications of regulatory initiatives.

1. Introduction

Credit ratings consist of a relatively small number of ratings categories, and the default risks of the debt instruments being rated lie in a continuum. Why is there such a mismatch? There is no technological impediment to having continuous ratings, nor is there any legal barrier. Precise forecasts of future outcomes are not uncommon in financial markets, so coarse ratings are by no means a hard-wired phenomenon. While the benefit of rating coarseness is elusive, the potential costs are easy to conjecture. For example, because a credit rating provides valuable information to investors, coarseness reduces the precision and value of the information being communicated by ratings. If this information is used for real decisions, welfare could be reduced by coarseness. Moreover, to the extent that the fees of rating agencies are increasing in the value of the rating to issuers and investors, coarseness can diminish both the fees of rating agencies and the value generated for market participants. Thus, it remains a puzzle why credit ratings are coarse.

One could propose a simple explanation such as the difficulty for the rating agency in providing point estimates

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of default probabilities or credit qualities. After all, is it not easier to provide a range within which a default likelihood lies than to be more precise? If you pick a point estimate, it is easier to be wrong, to be nit picked, and then you could even be sued for being wrong.

This simple explanation has too many holes, unfortunately. First, there is no reason that investors should use the same standard for judging whether the rating agency is right or wrong when ratings lie in a continuum as they do when ratings lie in coarse categories. That is, the judgment standard should adapt to the degree of coarseness of the ratings, so that the legal or reputational liability of the rating agency does not depend on the degree of coarseness. To see this, suppose a rating from a coarse grid implies a default probability in the (0.001,0.01) range and a reputational or legal risk is associated with the ex post inferred default probability being outside the range. Then the reputational or legal risk of being wrong should be the same if ratings lie in a continuum instead of the coarse grid and the rating agency assigns a rating from within this range that implies a default probability of, say, 0.009. In other words, as long as the ex post inferred default probability is within (0.001,0.01), the rating agency should face no legal or reputational risk in the second regime if it did not do so in the first. Second, rating agencies did not face legal liability for providing ratings (viewed as forward-looking information) until the 2010 passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act. Third, there are many instances of point estimates being drawn from a continuum in other financial market contexts, such as earnings forecasts, initial public offering (IPO) prices set by investment bankers, valuations provided by equity research analysts, etc.

In this paper, we provide a theoretical explanation for ratings coarseness. We develop a model in which a rating agency's objective in setting ratings is to balance the divergent goals of the issuing firm and the investors purchasing the issuing securities. An issuer wants a high rating to minimize the cost of external financing. Investors, by contrast, want as accurate a rating as possible. The rating agency's objective is a weighted average of these two goals. We model the ratings determination process as a cheap-talk game (Crawford and Sobel, 1982), and we show that, in equilibrium, the divergence of interests between issuers and investors leads to the endogenous determination of coarse ratings.

In this model, ratings indicate project or credit quality to both the firm issuing securities to finance a project and the investors purchasing these securities. The issuer's level of investment depends on its assessment of project quality. More precise information about project quality permits more efficient investment, which is valuable to both the issuer and the investors. The rating agency's incentive to inflate ratings stems from the issuer's preference for higher ratings because these are associated with lower costs of debt financing. This incentive prevents the credit rating agency (CRA) from credibly communicating its information about project quality, which leads to a breakdown in the market for credit ratings that lie in a continuum. The market for ratings is resurrected by the rating agency's incentive to report a rating whose inflation lies below an upper bound that is acceptable to the rating agency. Sufficient coarseness in credit ratings forces the rating agency to choose between an accurate (not inflated) rating and one that is inflated beyond its acceptable upper bound, and the scheme is designed to tilt the choice in favor of reporting an uninflated, accurate rating. The ratings coarseness arising in our model does not result in any ratings bias such as ratings inflation. However, this coarseness of credit ratings has a cost because the imprecise quality inferences generated by coarse ratings lead to investment inefficiencies and, thus, reduce welfare.

Our model predicts that a ceteris paribus reduction in the coarseness of credit ratings improves the informativeness of ratings and increases the sensitivity of the investments of borrowers to their credit ratings. Empirical evidence in support of this prediction is provided by Tang (2009). He examines how Moody's 1982 credit rating refinement affected firms' investment policies. Starting April 26, 1982, Moody's reduced the coarseness of its ratings by increasing the number of credit rating categories from nine to nineteen. Consistent with the prediction of our model, firms that were upgraded due to the change exhibited higher capital investments and faster asset growth than downgraded firms.

Competition among rating agencies is no panacea when it comes to reducing ratings coarseness. We show that going from one rating agency to two can actually increase ratings coarseness. Nonetheless, holding the credit rating agency's objective function fixed, welfare increases due to the additional information provided by the second rating. When competition is allowed to alter the credit rating agency's objective function, greater competition is likely to increase welfare when the number of rating agencies is small but decrease welfare when the number of competing rating agencies is large.

Our analysis predicts that initiatives that increase the weight rating agencies attach to the concerns of investors or reduce the weight they attach to the concerns of issuers reduce the coarseness of credit ratings. This implies, for example, that if all issuers of a particular security were required to obtain ratings and disclose all ratings obtained—so that rating agencies would attach smaller weight to the desires of issuers—then coarseness would diminish.

This paper is related to the emerging literature on credit ratings. The early papers of Allen (1990), Millon and Thakor (1985), and Ramakrishnan and Thakor (1984) provide the theoretical foundations for thinking about rating agencies as diversified information producers and sellers. More recently, Boot, Milbourn, and Schmeits (2006) have proposed that a credit rating agency can arise to resolve a specific kind of coordination problem in financial markets (see also Manso, 2013). In particular, they show that two institutional features, credit watch and the reliance on ratings by investors, can allow credit ratings to serve as the focal point and provide incentives for firms to expend the necessary recovery effort to improve their creditworthiness. Bongaerts, Cremers, and Goetzmann (2012) provide evidence about why issuers choose multiple credit rating agencies. They show that their evidence is most consistent with the need for certification with respect to regulatory and rule-based