



# Rating deflation versus inflation: On procyclical credit ratings



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## ABSTRACT

This article provides a theoretical analysis to reconcile the controversy between rating deflation versus inflation. In our model, the credit rating agency trades off between the current incomes paid by the issuer upon receiving a favorable rating and the future reputation costs. We show that both rating deflation and rating inflation can occur in equilibrium. Furthermore, credit ratings are procyclical since the probability of default is higher and thus the reputation costs are higher during recessions than during booms.

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*Nobody establishes a rating agency in order to help anybody.*

[The Polish prime minister, Donald Tusk.<sup>1</sup>]

## 1. Introduction

The “Big Three” credit rating agencies (CRAs), Standard and Poor’s, Moody’s, and Fitch, have played a critical role in the capital markets by assessing and spreading information about default likelihoods and recovery rates of securities. The quality of credit ratings is essential for the effective operation of the financial market, and huge losses could arise if rating agencies fail to provide accurate and timely ratings. However, there exist two opposing arguments on how they have actually performed (Bae et al., 2010). The first, inspired by recent global financial crisis, is the rating inflation view: CRAs are accused of being too cozy with the companies and the financial products they rate and bearing a responsibility for the subprime crisis. The

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<sup>1</sup> “EU leaders blame the euro crisis on American credit rating agencies” by Daniel Hannan, The Telegraph, July 7th, 2011.

second is the rating deflation view: CRAs are blamed of being too focused on a company's or a country's bottom lines, rating or downgrading them too harsh.

Is it possible that the CRAs engage in both rating inflation and deflation? Are their rating standards related to business cycles? If so, are they procyclical or countercyclical? In this article, we provide an analysis toward answering these questions, and, in doing so, reconcile the aforementioned two seemingly inconsistent views on CRAs. In a two-period reputation model, we show that (i) both rating inflation and rating deflation can occur in equilibrium, and the agency's behavior can be distorted due to either excessive or insufficient reputation concerns; and (ii) credit ratings are procyclical: rating inflation is more likely to occur in a boom, while rating deflation is more likely to occur in a recession.

In our model, a CRA can be either an honest or an opportunistic type; an investor can be either sophisticated or naive; and a security can be either good or bad. The CRA receives a noisy signal about the quality of the security and issues a good or a bad rating upon the request of the issuer. The issuer will pay for and publish the good rating, but not the bad one. The honest CRA always reports the true signal, while the opportunistic CRA chooses the rating to maximize its expected payoffs. The sophisticated investors update their beliefs rationally, while the naive investors take the ratings at face value.

The opportunistic CRA faces the trade-off between the current benefit, which is the rating fees paid by the issuer upon receiving a favorable rating, and the future reputation costs. If the reputation costs are sufficiently small, the CRA will inflate the rating; if the reputation costs are sufficiently large, the CRA will deflate the rating in order to preserve the reputation; only when the reputation costs are in the intermediate range, the CRA will rate truthfully. We then relate the result to business cycles. During the boom, the default probability of the security is low, thus the reputation loss of lying is low, and the opportunistic CRA tends to inflate the rating. During the recession, the default probability of the security is high, thus the reputation costs are high when a good-rating security fails, and the CRA more likely deflates the rating to preserve its reputation.

Our paper complements the existing literature in two ways. First, besides rating inflation, we characterize the rating-deflation result. Scrutiny on CRAs during the recent financial crisis has generated many new studies. Most of them focus on the issue of rating inflation. Bolton et al. (2012) combine three sources for rating inflation: CRAs understating risk to attract business, issuers' rating shopping behavior, and the existence of trusting investors. Mathis et al. (2009) argue that reputation concerns are not sufficient to discipline rating agencies. When rating structured finance product becomes the major profit source, the CRA always inflates the rating with a positive probability. Skreta and Veldkamp (2009) attribute the reasons for rating inflation to rating shopping and security complexity. Rating shopping allows the issuer to disclose only the most favorable one, and increases in the complexity of the financial assets can create a systematic bias in disclosed ratings, despite that the CRAs produce unbiased estimate ratings.<sup>2</sup> Complementary to this literature, we find that in addition to rating inflation, rating deflation is also possible in equilibrium; excessive reputation concern can also distort the agency's behavior, just like insufficient reputation concern, albeit toward the opposite direction.

Second, we show that rating inflation is more likely to happen in a boom, while rating deflation is more likely to happen in a recession. In other words, the credit rating is procyclical. Bolton et al. (2012) also show that rating inflation is more likely during booms. This happens in their model because investors are more optimistic, while our reason is that the default probability of the security is lower during booms than during recessions. Bar-Isaac and Shapiro (2013) and Fulghieri et al. (2014) also discuss credit ratings over business cycles. Both of them demonstrate that rating quality is countercyclical: a CRA is more likely to issue more accurate ratings in a recession than in a boom. In other words, the rating quality can be better in a recession than in a boom. We show, however, that the rating quality can be biased in both states: it is upward-biased in a boom and downward-biased in a recession.

Our procyclical rating result is consistent with empirical works. Several papers have documented evidences that ratings inflation is more likely to happen during booms. Ashcraft et al. (2010) point out the issuance volume of MBS went up sharply between 2005–2007 while rating accuracy decreased, and later rating downgrades for the 2005–2007 cohorts were significantly larger than for the previous one. Auh (2013) finds that rating standards are procyclical. Firms receive overly pessimistic ratings in a recession, compared to during a boom. Benmelech and Dlugosz (2009) show that there were massive pre-crisis upgrading compared to the massive downgrading during the subprime crisis. Ferri et al. (1999) demonstrate that during the East Asian financial crisis, CRAs' ratings were procyclical. Having failed to predict the emergence of the crisis, CRAs became excessively conservative. They downgraded East Asian crisis countries more than these countries' economic fundamentals would justify.

The rest of the paper is organized as follows. Section 2 presents a model of a monopolistic CRA. Section 3 shows how both rating inflation and rating deflation may occur in equilibrium. Section 4 introduces economic states to the model and demonstrates that ratings are procyclical. Section 5 concludes.

## 2. Model

Consider a model that builds on Bolton et al. (2012). There are three kinds of risk-neutral agents: a CRA, issuers, and a unit mass of investors. Issuers seek external funding by selling securities to investors. There are two types of securities: good

<sup>2</sup> There are other related theoretical works. Mariano (2012) shows that ratings might not reflect private information or even contradict public information when CRAs attempt to minimize reputation costs. Opp et al. (2013) predict variation in rating quality across asset classes. They address the reason why rating standard were getting more lenient for structured products, whereas the rating of corporate bonds seemed to stay conservative. See also Bar-Isaac and Shapiro (2011), Cohn et al., 2013, Frenkel (2015), Goel and Thakor (2011), and Manso (2013).

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