

Exploring the informational role of inflated credit ratings*



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Recent theoretical models show that inflated credit ratings can have both negative and positive real effects due to the feedback effect between capital markets and the real economy. This feedback effect occurs because ratings not only reflect firms' creditworthiness but can also affect it by influencing firms' access to credit. However, testing the real effects of inflated ratings is empirically challenging. Therefore, this paper proposes a laboratory experiment to examine how inflated credit ratings influence investment decisions in bond markets. By comparing markets with and without a credit rating agency, we find that ratings significantly impact investor behaviour and capital allocation to firms. Our research highlights that the primary mechanism behind these effects is a shift in investors' beliefs about their peers' behaviour rather than firms' underlying fundamentals. Overall, our experimental results indicate that inflated credit ratings act as a strong coordination mechanism, resulting in enhanced market outcomes, with the positive impact likely prevailing in the presence of feedback effects.

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1. Rating inflation

Credit ratings play a crucial role in the investment process by conveying valuable insights regarding a company's risk of default. This valuable information enables investors to make well-informed choices when allocating their capital. Yet, numerous empirical studies have raised concerns about rating inflation, that is, an overestimation of a firm's creditworthiness (Jiang *et al.*, 2012; Alp, 2013; Cornaggia and Cornaggia, 2013; White, 2013; Griffin *et al.*, 2013; Fulghieri *et al.*, 2014). Inflated ratings were at the centre of major financial failures such as Enron and WorldCom in 2002 and during the Global Financial Crisis, when the Financial Crisis Inquiry Report concluded that "the failures of credit rating agencies were essential cogs in the wheel of financial destruction" (FCIR 2011, page 25). Consequently, major credit rating agencies, such as Moody's and Standard & Poor's, paid more than \$1 billion in legal settlements to resolve allegations arising from their role in providing inflated ratings to mortgage-related securities in the run-up to the financial crisis.

The main culprit for credit inflation is the conflict of interest caused by the "issuer-pays" business model, where the credit ratings agencies (CRAs) are paid by the issuers they assess. Beyond the desire to maintain a good relationship with an issuer (Mählmann, 2011; He *et al.*, 2012; Strobl and Xia, 2012; Frenkel, 2015), other factors can lead to credit inflation, such as (lax) regulation (Opp *et al.*, 2013; Bae *et al.*, 2015), the pressure to retain market share (Becker and Milbourn, 2011; Bolton *et al.*, 2012; Baghai and Becker, 2020), or ratings-shopping (Skreta, 2009; White, 2010; Bongaerts *et al.*, 2012).

The potential consequences of inflated credit ratings can be significant. They promote capital misallocation, distort market prices, and create a false sense of security among investors. Investors may be lured into taking on more risk than they can handle, while issuers may be able to access cheaper funding than they deserve. Inflated credit ratings can also lead to moral hazard problems with adverse real economic effects, where issuers take on more risk than they otherwise would. However, inflated ratings can also foster market liquidity and facilitate firms' access to credit markets, which can benefit economic growth, particularly when improved financing conditions enable efficient investments.

2. Informational role of inflated ratings

Understanding the role of inflated ratings in shaping investors' behaviour and decision-making is empirically challenging, in particular establishing the causal impact of ratings on investors' or firms' decisions. The literature documenting a strong correlation between credit ratings and securities prices (see Cornaggia *et al.*, 2018, and references within) often faces an endogeneity problem, as it is difficult to determine whether investors respond directly to credit ratings or if they and CRAs merely observe and react to the same information about issuer fundamentals. Moreover, this literature cannot assess the informational role of inflated ratings, as it is hard to empirically observe which ratings are inflated. In a new working paper (Bayona *et al.*, 2023), we overcome this empirical challenge by using a theory-based laboratory experiment that allows us to study the informational channels through which rating inflation can affect investors' decisions and market outcomes.

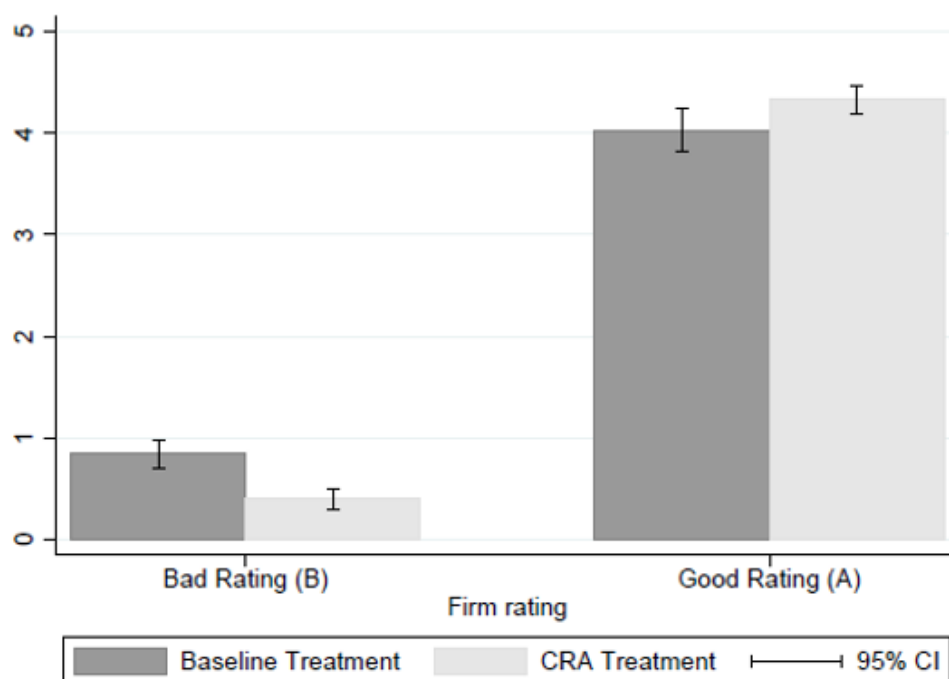
We present a parsimonious theoretical model which builds on Goldstein and Huang's (2020) and features a feedback effect between credit ratings and firm investment decisions. This feedback loop is central to understanding the impact of ratings on the real economy, as the information conveyed by the rating not only reflects the firm's creditworthiness but can also influence it. Indeed, the CRAs are forward-looking when assigning their ratings. For example, in explaining its rating process Moody's states that it takes into account "the effect of the rating action on the issuer, including the possible effect on issuer's market access or conditional obligations." In our model, a firm can invest in two types of risky projects: low-risk or high-risk. To undertake a

project, the firm uses two sources of financing: internal funds from ongoing activities and external financing from the bond market. Low-risk projects have higher expected returns but require a larger investment due to their scarcity and associated cost of screening. If the firm cannot secure enough funds to undertake the efficient, low-risk project, it can either invest in a high-risk project or default. The firm raises external financing from investors who observe noisy private signals about the firm's internal funds and potentially a public credit rating. A CRA perfectly observes the firm's fundamentals, assesses its creditworthiness and assigns it a good (potentially inflated) or a bad rating. The inflated rating pools high- and low-risk firms together, but it still provides positive information about a firm because it implies that the firm is less likely to default. This encourages more investors to purchase bonds, leading to more external financing and indirectly affecting the firm's project choice. However, higher availability of external funding can have opposing effects. On the positive side, firms that would have otherwise invested in high-risk projects can secure enough financing to undertake an efficient low-risk project. On the negative side, firms that would have defaulted without the inflated rating can gamble for resurrection by undertaking an inefficient high-risk project.

3. Inflated ratings and investments

We design a laboratory experiment that allows us to evaluate these two opposing effects while controlling for investors' information sets and firm fundamentals. In the experiment, participants are investors who decide whether to finance the firm or not. They play a coordination game for 15 independent rounds in groups of five with random matching between rounds. The payoff from investing depends on the firm's action (i.e., invest in a low- or high-risk project or default), which is computerized based on the theoretical model's parametrization. Before making their investment decision, participants receive a private signal about the firm's fundamentals (i.e., internal funds), and we elicit their beliefs about fundamentals and the behaviour of others. We consider two treatments in a between-subject design: (i) a Baseline treatment, where subjects only receive the private signal, and (ii) a CRA treatment, where subjects observe a public credit rating about the firm's ability to repay its creditors in addition to the private signal.

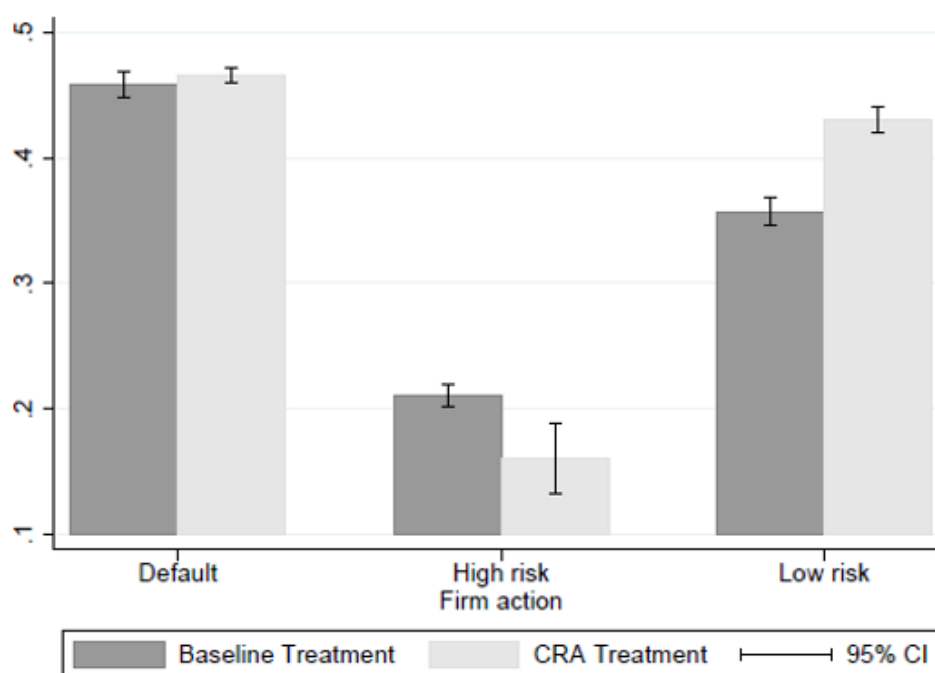
Figure 1: Average number of investors and ratings



Notes: The figure shows the average number of investors for values of the fundamentals below (above) the threshold corresponding to Bad rating B (Good rating A) in the CRA Treatment. The sample size is 690 groups (with 5 investors per group) across two treatments. Whiskers mark the 95% confidence interval.

The firm's access to external finance differs significantly across the two treatments conditional on firm fundamentals and the observed rating. First, as shown in Figure 1, firms in the CRA treatment with sufficiently high (low) fundamentals to receive a good (bad) rating obtain substantially more (less) external financing than firms in the Baseline treatment with similar fundamentals. Second, there is more investment in the CRA treatment conditional on investors observing a good (potentially inflated) rating and less investment conditional on the observation of a bad rating. Finally, the increased availability of external financing in the CRA treatment leads to significantly more firm investment in the efficient, low-risk project than in the Baseline treatment (43% vs. 36%) (see Figure 2). At the same time, we observe significantly fewer firms investing in a high-risk project in the CRA treatment (16% vs. 21%). These results point to an overall positive effect of inflated ratings leading to a more efficient allocation of capital and enhanced market outcomes.

Figure 2: Firms' actions across treatments



Notes: The figure shows the proportion of firms across two treatments conditional on their actions. The sample size is 690 firm outcomes (groups of investors). Whiskers mark the 95% confidence interval.

To uncover the mechanisms that drive our results we analyze the effects of credit ratings on investors' actions and beliefs. Our results suggest that ratings act as strong coordination devices. Investors in the CRA treatment who observe a good (bad) rating are more (less) likely to buy the firm's bonds than investors in the Baseline treatment. We document that the main channel through which the real effects materialize in the presence of feedback effects between credit ratings and firms' actions is not through the updating of investors' beliefs about the firm's fundamentals, but rather through the updating of beliefs about other investors' behaviour. On the one hand, investors in the CRA treatment who observe a good (bad) rating are much more (less) likely to believe that the other investors will (will not) buy the firm's bonds. Moreover, a bad rating has a stronger impact on expectations about the behaviour of other investors than a good rating. On the other hand, beliefs about firm fundamentals are unaffected by ratings. These results emphasize the importance of credit ratings even if they have a limited impact on beliefs about firms' fundamentals. The reason is that observed ratings help in reducing strategic uncertainty about the actions of others and thus have a strong coordinating effect.

4. Policy implications

Our findings imply that, from a policy standpoint, the interdependence between credit ratings and the actions of investors and firms is paramount. Inflated credit ratings can increase economic efficiency when this feedback loop is present. In a market with credit rating agencies, ratings (even when potentially inflated) provide valuable information that enhances the allocation of resources compared to markets without public ratings. Future research may explore efficiency and whether accurate credit ratings (that reflect a firm's credit risk as closely as possible) impact economic efficiency more than inflated ratings. ■

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