

Two Culprits of the Financial Crisis of 2007-09

- **Lenders:** had no stake in the performance of the loans they originated because they securitized and sold them.
- **CRAs:** had little interest in providing accurate ratings because they were paid when securitization deals went through.
- Survey articles on rating industry: Weber and Darbellay (2008), White (2010). Jeon and Lovo (2012)

- **Rating Inflation:** Stanton and Wallace (2012) report that by 2007 almost 95% of all outstanding Commercial Mortgage Backed Securities were rated AA or above.
- CRAs have been so instrumental in the so-called “originate-to-distribute” lending model that the Financial Crisis Inquiry Commission’s final report (2011) concludes
 - “This crisis could not have happened without the rating agencies.”

- **Dodd-Frank Act of 2010:** Aims to improve the rating standards of CRAs and eliminate conflicts of interests in the securitization process.
 - disclosure of data and assumptions underlying ratings
 - disclosure of conflicts of interest with respect to sales and marketing practices
 - rating standardization
 - review of existing capital regulation rules that rely on ratings
 - CRA compensation and liability rules

Skin in the Game

- Section 15G of Dodd-Frank Act devoted to new "retention requirements" for sellers. The proposed rule requires the sellers (issuers) the retention of a 5% interest in the assets they sell.
- "When the issuers retain a material amount of credit risk in the assets they securitize, they do have "skin in the game", aligning their economic interests with those of investors in asset backed securities." (Section 15G)

Rationales for skin in the game

- seller's retention of a stake can act as an incentive device
 - to exert post-sale effort and improve the asset payoff after origination (Penacchi (1988), Gorton and Penacchi (1995), Plantin (2011));
 - to exert pre-sale screening effort to improve asset quality before loan origination (see Chemla and Hennessy (2013) and Rajan et al (2010)).
- Risk retention can also provide a credible signal of quality when the issuers have private information (see Leland and Pyle (1977), DeMarzo and Duffie (1999), DeMarzo (2005) and Hartman-Glaser (2013)).

- **Focus:** potential impact of retention (skin in the game) regulation on the information acquisition incentives of a CRA involved in the sale.
- Given policy proposals to improve rating performance, it seems important to understand the implications of the skin in the game regulation for the accuracy of a CRA's ratings.
- Also endogenize the skin in the game rule and tie it to the specifics of the rating environment

Overview of Results

- Skin in the game regulation, designed to mitigate moral hazard on the seller's side, can also improve rating accuracy.
- Those factors that increase the accuracy of CRA's ratings, such as lower information acquisition costs and higher liability costs should decrease the skin that the seller is required to retain.
- Interdependence between seller's retention requirement and CRA's rating accuracy.

Contribution of this paper

- **Main Insight:** The seller's skin in the game and the CRA's rating accuracy serve as substitute mechanisms for eliciting effort from the seller.
- **Main contribution:** relating the optimal retention rule to the specifics of the rating environment in the context of a moral hazard problem.
- Policy implications
 - regulation should require higher retention in complex financial products, in contrast to the current "one size fits all" rule.
 - planned introduction of strict liability rules that facilitate the litigation of CRAs should imply a reduction in issuers' skin requirements.

Related Theoretical Literature

- Rating shopping when some investors are "naive". Bolton et al (2012), Skreta and Veldkamp (2009).
- Dynamic reputation: Mathis et al (2009), Bar-Isaac and Shapiro (2013), Frenkel (2015).
- Sangiorgi and Spatt (2013): opacity of CRA's disclosure requirements
- Opp et al (2013), Ozerturk (2014a): regulatory benefits from high ratings
- Kashyap and Kovrijnykh (2014), Ozerturk (2014b): Optimal compensation schemes for CRAs

Overview of the Model

- A seller seeks the sale of a risky asset for liquidity reasons.
- The asset payoff depends on the asset's unknown type and seller's unobservable effort
- To provide effort incentives, there is a "skin in the game" regulation in place.
- The ex ante valuation of investors is such that a sale can proceed only if the seller asks a CRA to produce a rating on the asset's quality.

- **The seller/issuer:** A risk neutral financial institution (seller) owns a risky asset which can be either Good ($\theta = G$) or Bad ($\theta = B$) quality with

$$Pr(\theta = G) = \lambda \in (0, 1)$$

- The seller does not have any private information on asset's type. Ex ante, all agents share the same prior belief on $\tilde{\theta}$.

The Model

- The asset payoff $\tilde{y}(e; \theta)$ depends on $\theta \in \{G, B\}$ and seller's effort $e \in \{0, 1\}$.

$$\begin{aligned} y(e; G) &= 1 - (1 - e)\Delta && \text{for } e \in \{0, 1\}, \\ y(e; B) &= 0 && \text{for } e \in \{0, 1\}. \end{aligned}$$

- If asset is good, seller's effort ($e = 1$) at a cost $c > 0$ yields a final payoff of 1. If seller does not expend effort ($e = 0$), a good asset yields a payoff of $1 - \Delta > 0$. A bad asset always defaults and yields a zero payoff regardless of effort.

Incentives for Sale

- The seller's effort cost c satisfies $\lambda\Delta - c > 0$: efficient to expend effort if the seller were to retain the whole asset.
- Retention is costly. The seller incurs a liquidity cost xL from retaining an asset fraction $x \in [0, 1]$ where $L > 0$.

Incentives for Sale

- Liquidity motivation for sale (Parlour and Plantin (2008)):
The liquidity provided through loan sales enables banks to redeploy capital to other investments and expand their balance sheets without violating regulatory constraints.
- L captures the cost of "originating but not distributing" and serves as a measure of the seller's eagerness to sell.

- **Investors:** competitive risk-neutral investors's valuation of the asset

$$E[\tilde{y}] - v$$

where v is a liquidity cost.

- Investors' valuation depends on their conjecture of the seller's subsequent effort and beliefs on the asset's type. If the seller sells a fraction $(1 - x)$ of the asset, the total revenue is

$$p(x) = (1 - x)E[\tilde{y}(\hat{e}(x) - v)]$$

Room for Regulation

- The seller's motivation for sale is strong enough. Formally,

$$L > \underline{L} \equiv (\lambda\Delta - c). \quad (\text{A1})$$

- Tension between post-sale effort incentives versus immediate liquidity benefits from sale (Gorton and Penacchi (1995) and Plantin (2011)).
 - providing incentives to the seller to improve asset payoff after the sale conflicts with reaping full gains from trade.

- **Regulator:** wants to ensure that the seller retains a sufficient stake and expends effort subsequent to a sale.
- Formally, let $\sigma \in \{0, 1\}$ denote the state which indicates whether a sale is made ($\sigma = 1$) or not ($\sigma = 0$). The regulator sets x such that

$$x(E[\tilde{y}(e = 1) \mid \sigma = 1] - E[\tilde{y}(e = 0) \mid \sigma = 1]) \geq c \quad (\text{R1})$$

- The fraction x defined by (R1): seller's "skin in the game".

Information Production by a CRA

- The ex ante valuation of risk averse investors

$$p_0 \equiv (1 - x)[\lambda - v] < 0.$$

Hence, a sale can only proceed if more information is produced on asset quality by a certification intermediary (CRA).

CRA's technology

- A monopolistic CRA can provide either a good rating ($r = g$) or a bad rating ($r = b$) by generating an information signal $s \in \{g, b\}$ on the asset. Formally,

$$\Pr(s = g \mid \theta = G) = 1 \text{ and } \Pr(s = b \mid \theta = B) = z \in [0, 1].$$

- Refer to z as CRA's rating accuracy. The CRA's cost is $C(z)$.

- **Reputation Cost:** If the asset defaults subsequent to a good rating, the CRA suffers an exogenous monetary loss $\beta > 0$ (Bolton et. al (2012)). CRA's expected reputational cost is

$$R(z) = (1 - \lambda)(1 - z)\beta$$

β can also be interpreted as a liability cost.

Sequence of Events

- *Stage 1:* The regulator sets the seller's skin x .
- *Stage 2:* The seller approaches the CRA who adopts a rating accuracy z and sets a fee π . The seller decides whether to solicit a rating. If a rating is solicited, the CRA observes a signal and provides a rating.
- *Stage 3:* The seller decides whether to pay the CRA π to make the rating public and to sell a fraction $1 - x$ of the asset. The investors value the asset fraction for sale.
- *Stage 4:* The seller chooses costly effort e .
- *Stage 5:* The asset payoff is realized. If the asset defaults subsequent to a good rating, the CRA suffers β .

- **Observation 1:** Investor valuation $p(z)$ is increasing in z .

$$p(z) = (1 - x)(A(z) - v)$$

where

$$A(z) \equiv E[\tilde{y}(e = 1) \mid s = g] = \frac{\lambda}{1 - (1 - \lambda)z}$$

- **Observation 2:** The seller pays the fee π and purchases a rating only if the rating is good and has sufficient accuracy

$$z \geq z_{\min} \equiv \frac{v - \lambda}{1 - \lambda} \in (0, 1).$$

- **Trade-off:** Valuation $p(z)$ is increasing in accuracy. But $\phi(z)$ is decreasing in accuracy.

$$\phi(z) \equiv \Pr(s = g) = 1 - (1 - \lambda)z$$

- The CRA posts a fee π and chooses accuracy z to maximize

$$\Psi(z, \pi) \equiv \left\{ \begin{array}{ll} \pi - C(z) - (1 - \lambda)(1 - z)\beta & \text{for } z \geq z_{\min} \\ 0 & \text{otherwise.} \end{array} \right\}$$

subject to the seller's (IR) constraint for soliciting a rating

$$p(z) - \pi + x(A(z) - L) - c \geq A(z) - L - c$$

- **Proposition 1:** *The CRA's fee schedule $\pi(z)$ is given by*

$$\pi(z) = \left\{ \begin{array}{ll} (1-x)(L-v) & \text{for } z \geq z_{\min} \\ 0 & \text{otherwise.} \end{array} \right\}$$

- **Proposition 2:** *There exists a threshold liquidity cost \bar{L} such that (i) For $L \in (\underline{L}, \bar{L})$, the CRA's optimal accuracy z^* solves*

$$(1 - \lambda) [\beta - (1 - x)(L - v)] = C'(z) \quad (1)$$

- **Corollary 1:** *Suppose $L \in (\underline{L}, \bar{L})$ and $C(z) = kz^2/2$ where $k > 0$. For a given seller's skin in the game x , the CRA's optimal rating accuracy z^* is*
 - *increasing in the seller's skin x .*
 - *increasing in the CRA's reputational cost β .*
 - *decreasing in information acquisition cost k .*
 - *decreasing in the seller's liquidity cost L .*