

Confidence Banking and Strategic Default[☆]

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Abstract

Securitization relies on confidence. As securities are tied to a particular asset (or pool of assets), and investors lose when the asset defaults, the security issuer usually provides further coverage by promising to use the proceedings from other, non-securitized, assets. Although these promises are difficult to enforce, the issuer may still have incentives to strategically avoid default in order to build a reputation of holding high-quality assets. Confidence makes securitization more dependent on the issuer's reputation than other forms of financing and more volatile to forces behind reputation concerns, such as expectations about future profits.

Keywords: reputation, securitization, strategic default, confidence.

1. Introduction

Securitization is the process of transforming a non-security asset into a security, usually a bond. This innovative form of financing was the most important element behind the exponential growth of the financial architecture that suddenly collapsed during the recent crisis of 2007-09.² As the non-security asset is completely removed from the issuer's balance sheet, its default affects the payments received by the bondholder, but it has no direct financial effect on the issuer. Principally for this reason both the growth and collapse of securitization usually are attributed to regulatory arbitrage (see, for example, Acharya et al. (2013) and Ordonez (2018)). The recent experience, however, was not unique. Securitization (and other closely related financing instruments) has historically

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²The collapse happened first with a run on a SPV in August 2007 and shortly thereafter with a run on repo markets. See Gorton (2010) and Gorton and Metrick (2010).

also expanded to the brink of collapse in environments with no regulation, both in Europe and in the US.

How can securitization grow so rapidly with and without regulatory constraints? Given that, by construction, securities do not pose the collective action considerations that rationalize bank runs (the collateral is given by rights to specific assets and not to the whole bank portfolio), what makes them simultaneously so fragile? I argue that securitization relies heavily on confidence that financial counterparties will behave as expected, even in the absence of contractual provisions or regulatory restrictions. Thus, the growth and collapse of securitization critically depends on the growth and collapse of the conditions that determine confidence in the system.

More specifically, securitization is *confidence banking*, and it finds a rich environment to emerge and expand when investors are confident that an issuer of a security is willing to guarantee it, stepping in and covering assets in distress, even when it is not contractually or legally bound to do so. While *traditional banking* relies on costly bankruptcy procedures to implement such guarantees, confidence banking is composed of security issuers that are self-disciplined because of their *reputation concerns* – that is, their concerns that the market develops a strong perception of their good quality and behavior. When reputation concerns are strong, confidence banking arises as an alternative to traditional banking, offering the same services but saving on bankruptcy procedures.

Both the disciplining potential and the fragility of reputation concerns follow from two premises. First, the value of reputation critically depends on expected economic conditions. If business opportunities in the future are not very promising, having a good reputation is not very valuable. Second, reputation formation creates complementarities across security issuers. If investors believe that “good” firms cover securities in distress under certain conditions, a single firm that allows the security to default generates a signal that leads investors to believe that the firm is not good. In contrast, if investors believe that even “good” firms leave securities to default, a security defaulting hardly provides enough information to sever the reputation of the issuer. These two properties create a novel collective action problem through reputation formation: Reputation sustains confidence in securitization only when it is a concern that many issuers share simultaneously. Consequently, complementarity makes reputation concerns a fragile disciplining device.

In the model, each (financial) firm in the economy runs a project and needs a loan to run a new one. There are two types of firms. Good firms run valuable ongoing projects, which, if successful, generate enough cash flows to cover the loan should the new project fail. Bad firms, in contrast, run useless ongoing projects and have no cash flows to cover a failing loan. We call *reputation* the probability assigned by the market that a given firm is good. We compare two financing alternatives: *Securitization* without explicit guarantees and *Debt*.

Debt is on-balance sheet, which implies that the firm is subject to costly bankruptcy procedures in the case of default. This generates incentives for firms to avoid bankruptcy whenever possible – good firms repay with cash flows from both ongoing and new projects and bad firms only repay with cash flows from

new projects because their ongoing projects are useless. In contrast, securities are off-balance sheet, which implies that the proceedings of new projects are effectively sold to outside investors. For expositional simplicity the model focuses on securities channeled through SPVs. By construction these are *bankruptcy remote* – they can default, but no bankruptcy is involved – and they grant *privileged information* – investors have privileged access to information about the proceedings of the securities that comprise the SPV. A SPV is considered in trouble (or distress) when cash flows from securitized projects are insufficient to cover the loan.

When acquiring SPVs without guarantees, investors effectively do not have rights over a firm’s ongoing projects. Because bad firms cannot cover SPVs in trouble with ongoing projects, good firms have a chance to send a signal to future investors that they manage valuable projects and improve their reputation by channeling funds from successful ongoing projects to cover SPVs that are in trouble. This incentive, however, exists only as long as the expected gains from reputation are of sufficiently large. When these incentives are small and investors believe good firms will not cover SPVs in trouble, they do not expect good firms to behave differently than bad firms. In this case repayment is not compensated with a reputation improvement and good firms do not have incentives to cover securities in distress.

This complementarity between firms’ actions and investors’ beliefs about firms’ actions leads to multiplicity: in some equilibria reputation provides self-discipline, in other it does not. When refining the set of equilibria by assuming imperfect information about future economic conditions that determine reputation gains (global games selection techniques), the unique equilibrium displays fragility. Promising economic perspectives improve reputation incentives, and good firms prefer to cover securities in distress without relying on costly contractual bankruptcy provisions. The arrival of bad news about economic perspectives degrades reputation incentives and has the potential to create a sudden collapse of self-discipline and a sudden migration away from securitization and towards debt or other more traditional financing options.

For given expected economic conditions I characterize the financing decisions of firms. Firms that have high reputations tend to issue securities. Because investors are confident that these firms hold high-quality assets and want to maintain a high reputation, they are willing to buy securities at a high price, and, consequently, firms would rather issue securities than debt. In contrast, firms that have a relatively lower reputation prefer to issue *debt* because they would rather pay the cost of bankruptcy in case of default than issue securities that investors are only willing to buy at a low price. As economic perspectives improve, reputation incentives increase for all firms, and this allows confidence banking to spread throughout the economy. When this happens, less reputable firms, too, issue securities.

Historical evidence suggests that securitization is an old phenomenon, always characterized by a large expansion during periods of optimism about economic activity and sudden collapses in the wake of bad news about future economic prospects. The evidence also shows that reputable firms have always been at

the forefront of the inception of securitization waves. Furthermore, regulatory
105 restrictions were not present in many of these securitization waves, which sug-
gests that although relevant in certain circumstances, regulatory arbitrage is
not a prerequisite for the rise of securitization.

This novel rationale is then relevant to the identification of the forces that
lie behind the success and the failure of securitization beyond regulatory arbi-
110 trage, and it is relevant to the design of optimal regulation in financial markets.
Securitization is desirable because it leverages costless reputation concerns to
induce efficient allocations, but it faces the possibility of a sudden and costly
collapse when bad news about future economic perspectives arises, even when
those news do not affect current payoffs. Confidence is a cheap but fragile way
115 to enforce contracts. Any policy intervention that tries to take advantage of,
and that at the same time maintains, confidence must stabilize its roots, which
are the reputation concerns that underlie confidence in the market.

A non-trivial way to achieve this stabilizing goal is to subsidize firms that
have good reputations and tax firms that have poor reputations, while maintain-
120 ing a balanced budget. Subsidies to firms that have good reputations have two
effects. First, they enhance the incentives to improve and maintain reputations,
making confidence more robust to changes in expected economic conditions.
Second, they widen the range of firms that self-select into securitization. These
subsidies can be financed by imposing taxes on firms that have poor reputations.
125 These taxes would not affect their financing decisions or reduce their incentives
to repay because they do not use securities in the first place, and, thus, they
are still subject to the incentives and costs that bankruptcy procedures involve.

Related literature: This paper contributes to the recent literature on secu-
ritization, including studies of its expansion and its demise. Gennaioli et al.
130 (2013), for instance, claim that securitization expands as a response to an in-
crease in investors' wealth. In their model banks become interconnected and
more exposed to systemic risks, but the system is stable and welfare-improving
under rational expectations. The possibility of crises arises only from neglected
risks. In my paper securitization expands less mechanically and is driven by
135 a blossoming confidence in financial markets that can collapse under rational
expectations when the forces that sustain confidence disappear. This difference
is critical for a constructive discussion of how to regulate securitization.

This paper focuses on securities that are *not explicitly guaranteed* by spon-
soring issuers, such as those channeled through SPVs or SIVs, and that are
140 generated to avoid costly bankruptcy procedures. These non-guaranteed secu-
rities were an important part of the so-called shadow banking during the years
that led to the great recession. Acharya et al. (2013) show that extendible asset-
backed commercial paper and SIVs, which were barely guaranteed, represented
10% of all outstanding asset-backed commercial paper held by commercial banks
145 in 2007. This figure reached 50% for structured finance companies and almost
75% for mortgage originators. This focus contrasts with that of Ordonez (2018),
who shows how financial firms can issue *guaranteed securities* to avoid blunt reg-
ulations that prevent them from using superior information about projects.

This difference in focus is critical to demonstrate that regulatory arbitrage is not a prerequisite for securitization to arise and prosper. Moreover, Ordóñez (2018) focuses on the *optimal design* of taxes and subsidies that maximize the use of information in the economy; in contrast, the focus here is on the confidence that sustains the *optimum in equilibrium*, but that can suddenly evaporate.

Gorton and Souleles (2006) also propose that securitization arises to save on bankruptcy costs as an implicit collusion between firms and investors. In their work, however, there is no discussion of how the system sustains such collusion or how this collusion can collapse. In this paper securitization is modeled as a change of regime, which provides a deeper structure to identify the elements that sustain securitization, that can lead to its collapse, and that regulators should strive to stabilize.

This paper also contributes more generally to the interpretation of confidence and runs in financial markets. In contrast to Morris and Shin (2012), who define confidence as approximate common knowledge of an upper bound on expected losses, here confidence is defined as the beliefs about the self-disciplining effects of reputation concerns that the participants in financial markets hold. While they show how small shocks to adverse selection can lead to a large breakdown in the trade of assets, here small news shocks can lead to a large migration away from securitization.

This paper also advances a different interpretation of a “run” or “fly” from securitization to debt. He and Xiong (2012), for example, conclude that runs on non-bank financial institutions, such as SPVs, are triggered by a dynamic coordination problem in which the rollover decision of a creditor depends on his or her beliefs regarding the rollover decisions of other creditors: the coordination that creates fragility exists among creditors. In this paper creditors are concerned about the behavior of financial institutions, and this behavior is determined by creditors’ beliefs about how those institutions will actually behave: the coordination that creates fragility exists between creditors and debtors.

The importance of using financing choices to signal and/or to screen borrowers’ types has been highlighted previously in the literature; by Ross (1977) in a static setting where firms use the level of debt to signal their type and by Ordóñez et al. (2018) in a dynamic setting where firms use the dynamics of rollover and repayment to signal their type. In this paper firms use different financing instruments to signal their type and these insights are used to rationalize the volatility of securitization and its dependence on reputation concerns in addition to regulatory arbitrage.

The next section introduces a model that compares debt and securitization and highlights the fact that securities provide a cheaper, but fragile, alternative to debt. The discussion focuses on how firms choose on the basis of their reputation between these two financing alternatives. Section 3, which examines the consistency of the model’s testable implications with historical evidence about securitization, shows that regulatory arbitrage is not a necessary precondition for its expansion. Section 4 concludes. An Online Appendix contains all formal proofs.

2. Model

195 This section describes an environment with financing needs and compares the use of (contract-based) debt and (reputation-based) securitization, describing for which firms and under what conditions securitization expands and collapses.

2.1. Environment.

200 Assume an economy with a continuum of firms that live for two periods. In period 1 each firm manages an *ongoing* project (or owns an asset) that could generate cash flows in period 2. There are two types of firms: Good (G) firms that have ongoing projects that are successful with probability p (i.i.d. across firms), in which case they pay z in period 2, or nothing otherwise; and Bad (B) firms that have ongoing projects that always fail and that do not pay anything
205 in period 2.

All of these firms have the potential to manage an additional, *new* indivisible project, which requires \$1 to operate in period 1, paying y in period 2, also with probability p (independent of the probability of success of the ongoing project), and 0 otherwise. Since firms have ongoing projects but no liquid funds in period
210 1, they need to finance these new projects by borrowing at an (endogenous) rate R from infinitely many short-lived, risk-neutral, and perfectly competitive lenders, whose outside option is normalized at a 0 risk-free interest rate. While the firm knows its own type in period 1 and can freely observe its own projects' cash flows in period 2, lenders can never observe the firm's type in period 1 and can only observe the projects' cash flows in period 2 at a cost. *Reputation* ϕ is
215 defined as the probability that lenders assign that a particular firm is of type G . Firms then differ only in their true type and in the market's perception of their type.

Finally, firms obtain a non-negative continuation value $V(\phi, \theta)$ at the end of
220 period 2, after projects pay off, which is an exogenous function that monotonically increases both in reputation ϕ and in a unidimensional aggregate fundamental θ .³ The fundamental θ is drawn from a normal distribution with known mean μ and variance $\frac{1}{\gamma_\theta}$ (i.e., precision γ_θ), and represents total demand, economic conditions, or any other variable that positively affects the expected
225 prospects of the firms after period 2.

With respect to projects' cash flows, $py > 1$ (new projects have positive expected net present values), $y > R$ (successful new projects are enough to repay loans, where R is endogenous but is expressed in terms of primitives) and

³Reputation concerns intrinsically rely on a potentially long repeated game wherein the continuation value is determined endogenously by the solution of the game in future periods. In a two-period setting, $V(\phi, \theta)$ summarizes such solution and for expositional reasons it is assumed exogenous. It is, however, easy to show that continuation values are a positive function of ϕ in a full-fledged repeated game (because endogenous interest rates decrease with ϕ) and that they are non-negative under limited liability. These extensions are cumbersome and are not needed to illustrate the main point of the paper. For an analysis of how to endogenize value functions in a similar full repeated reputational game setting, and to derive these properties, see Ordonez (2013).

230 $z > R$ (successful ongoing projects also are enough to repay loans). Since the goal of the paper is to study the evolution of securitization, firms are allowed to finance new projects in only two ways, which are described next.

2.1.1. Financing Possibilities.

235 In the first possibility a firm finances a new project using *debt (on-balance-sheet)*. As our setting displays costly state verification (i.e., lenders can observe the projects' cash flows at a cost), in the presence of lenders' commitment the optimal static contract is a "standard debt contract" – the firm goes bankrupt in the case of default.⁴ When there is a bankruptcy procedure, lenders seize the cash flows of all the projects that the defaulting firm runs, at a cost C . This amount is estimated to be quite large because it includes not only the mere
240 bureaucratic cost of determining the value of the firm and seizing its assets, it also includes the costs of liquidating the firm.⁵

In the second possibility the firm finances the new project using *securitization (off-balance-sheet)*. More precisely, firms can sponsor a special purpose vehicle (SPV) that sells rights to the cash flows of the new project, which is not
245 subject to bankruptcy procedures in case of default (*bankruptcy remote*) and that provides preferential information about the performance of those projects to investors (*privileged information*). Even though the failure of new projects can be observed by investors holding SPVs, other agents in the economy can only observe whether a given SPV ends up defaulting or not. The institutional
250 details of SPVs that give rise to these two properties are discussed in an Online Appendix.

In essence, the choice between using debt or securitization boils down to a decision between giving the investor the legal right to monitor and seize the value of all firms assets (which in this model is the ongoing project) at a cost
255 or just implicitly promising investors to use those assets to repay loans, even when the firm is not legally required to do so. As the focus is on the incentives that firms have to use the proceedings of assets not directly involved on a loan to cover loans in distress, I restrict attention to securities that are not explicitly guaranteed by assets held in the firm's portfolio.⁶

⁴For a comprehensive survey of the extensive literature on costly state verification and the role of commitment see Attar and Campioni (2003).

⁵Altman (1984) estimated bankruptcy costs to be 20% of total asset value, including indirect costs (such as lost sales and lost profits). Alderson and Betker (1995) compared the value of the firm as a going concern with the liquidation value of the firm, raising the estimation to approximately 36%. Djankov et al. (2008) estimated the costs of debt enforcement proceedings for a representative firm in distress, called Mirage, that are borne by all parties and include court/bankruptcy authority costs, attorney fees, bankruptcy administrator fees, accountant fees, notification and publication fees, assessor or inspector fees, asset storage and preservation costs, auctioneer fees, government levies, and other associated insolvency costs. Their estimations are quite heterogeneous across countries, ranging from 5% to 30% of total assets.

⁶For an analysis of the effects of explicit guarantees and regulatory arbitrage see Ordóñez (2018).

260 Finally, regardless of the financing choice, the continuation value from defaulting is zero. This can be interpreted in the repeated game as the firm being unable to re-enter credit markets, at which point it disappears. This assumption, which seems extreme, is simply a normalization that simplifies the exposition.

265 A final remark concerns the interpretation of firms as banks. This setting applies both to financial and non-financial firms. For instance, firms can be interpreted as banks that hold previously originated mortgages (“ongoing projects”) and that want to extend new mortgages (“new projects”). Banks can then raise funds from depositors who can “take the bank to bankruptcy” in case of default, or they can raise funds from outside investors by sponsoring
 270 a SPV that sells mortgages as securities. Then banks must decide whether to finance new mortgages (or other loans requests) by raising deposits (debt) or by selling securities (SPV).

2.1.2. Timing.

The timing in each period is as follows.

275 In period 1, all agents know the distribution $\theta \sim \mathcal{N}(\mu, \frac{1}{\gamma\sigma})$ of fundamentals. A firm of type $i \in \{B, G\}$ and reputation ϕ finances the new project by issuing debt or securities (*confidence banking*).

In period 2, the fundamental θ is realized. Ongoing and new projects fail or succeed. Based on this information, a firm of type $i \in \{B, G\}$ and reputation ϕ
 280 decides whether to repay the loan should the ongoing project succeeds (*strategic default*). If the firm does not repay, it disappears, and its continuation value becomes 0. If the firm repays, it continues, its reputation is updated from ϕ to ϕ' according to Bayes’ rule and it obtains a continuation value $V(\phi', \theta)$.

In what follows, I first characterize separately the payoffs accruing from debt
 285 and from securities for a firm of a given type $i \in \{B, G\}$ and reputation ϕ . Then I characterize the optimal financing decision of firms that have different types and reputations.

2.2. Debt

290 Given the assumption of costly state verification, the standard debt contract is optimal in a static setting. Standard debt specifies that the firm repays a given amount R_D or it defaults. In the case of default, lenders take the firm to bankruptcy, seize all assets, and pay a cost C . In our setting this implies that the firm always repays when at least one of its projects succeeds because it earns $y - R$ if the new project succeeds or $z - R$ if the ongoing project succeeds
 295 instead of the alternative of defaulting and earning nothing.⁷

Since lenders are competitive and the risk-free rate is zero, interest rates R_D equalize the expected repayment (net of expected bankruptcy costs in the

⁷Naturally, this requires that lenders commit to the contract and still take the firm to bankruptcy in the case of default, which only occurs in equilibrium if both assets fail.

case of default) with the size of the individual loan, 1. Hence, interest rates R_D depend on the firm's reputation ϕ and on bankruptcy costs C as follows

$$R_D(\phi) = \frac{1 + [1 - (\phi\alpha_G + (1 - \phi)\alpha_B)]C}{\phi\alpha_G + (1 - \phi)\alpha_B}, \quad (1)$$

300 where $\alpha_G = p + p(1 - p)$ is the probability that firms of type G repay the loan (when either ongoing or new projects succeed) and $\alpha_B = p^2 + p(1 - p) = p < \alpha_G$ is the probability that firms of type B repay the loan (only when new projects succeed). The face value of debt (in this case it is also the interest rate) is the loan plus the expected bankruptcy costs, effectively covered by firms, divided
 305 by the expected probability of repayment. In this case firms have the incentive to repay whenever they can; otherwise default triggers a costly bankruptcy.

Interest rates are decreasing in ϕ because the expected probability of repayment is increasing in ϕ and the expected bankruptcy costs are decreasing in ϕ . Although interest rates depend on reputation, default decisions do not because
 310 firms repay whenever at least one project succeeds, independent of their true type.

Repayment is an informative signal about a firm's type, and so firms of type G are more likely to repay than firms of type B . When repayment occurs, reputation is updated from ϕ to ϕ' , which determines the continuation value $V(\phi'(\phi), \theta)$ of the firm. This updating follows Bayes' rule

$$\phi'(\phi) = \frac{\alpha_G \phi}{\alpha_G \phi + \alpha_B (1 - \phi)} > \phi. \quad (2)$$

2.3. Securitization

Securities are financial instruments that avoid bankruptcy costs. When a security defaults its issuer or originator is not legally required to file for
 315 bankruptcy; the issuer decides whether to use or not on-balance-sheet assets to repay. In this setting reputation serves as a disciplining device that borrowers use to pay securities that are not subject to bankruptcy requirements. Hence, securitization constitutes a form of implicit collusion between lenders and borrowers that allows them to elude bankruptcy costs.

320 When investors buy a security, they obtain the rights of privileged information about the securitized asset (in this case the new projects). Then the firm necessarily has to use the proceedings from the successful assets that bank the security to repay. In contrast, because investors cannot observe the cash flows from successful ongoing projects, and the firm does not have a legal obligation
 325 to disclose them upon default of the security, the firm can decide strategically not to use ongoing projects to cover a failing security.

The price of a security depends on the belief that good firms will cover it in case of distress – in other words, the beliefs that a firm of type G is willing to use the proceedings from a successful ongoing project to cover the security when a
 330 new project fails. More formally, $\hat{\alpha}_G(\hat{\tau}) = p + p(1 - p)\hat{\tau}$ is the believed probability that a firm of type G will repay a security, where the strategy $\tau \in [0, 1]$ is the probability that a firm of type G uses cash flows from a successful ongoing

project to repay a security in distress and $\hat{\tau}$ is the investor's belief about the firm's strategy. Hence $\hat{\alpha}_G(\hat{\tau} = 1) = \alpha_G > \hat{\alpha}_G(\hat{\tau} = 0) = \alpha_B$. Given that a
 335 firm of type B only repays a security if the new project succeeds, the believed probability that a firm of type B repays the security is $\hat{\alpha}_B = \alpha_B = p$.

This analysis implies that the price of a security depends both on the reputation of the issuer and on the expected behavior of good firms. This price can be expressed as an "interest rate" as

$$R_S(\phi|\hat{\tau}) = \frac{1}{\phi\hat{\alpha}_G(\hat{\tau}) + (1-\phi)\alpha_B}. \quad (3)$$

If, for example, lenders are confident that firms of type G will cover securities in distress with the proceedings of a successful ongoing project (i.e., $\hat{\tau} = 1$),

$$R_S(\phi|\hat{\tau} = 1) = R_D(\phi) - \frac{[1 - \phi\alpha_G - (1 - \phi)\alpha_B]C}{\phi\alpha_G + (1 - \phi)\alpha_B} < R_D(\phi), \quad (4)$$

and it is cheaper for the firm to raise funds by issuing a security than by issuing debt.

Reputation updating also depends on beliefs $\hat{\tau}$. Using Bayes' rule,

$$\phi'(\phi|\hat{\tau}) = \frac{\hat{\alpha}_G(\hat{\tau})\phi}{\hat{\alpha}_G(\hat{\tau})\phi + \alpha_B(1 - \phi)}. \quad (5)$$

As shown in Figure 1, $\phi'(\phi|\hat{\tau})$ increases with $\hat{\tau}$ for a given ϕ . Intuitively,
 340 if lenders believe that firms of type G will cover securities in distress with a successful ongoing project, they expect those firms to be more likely to repay than firms of type B . Given these beliefs, lenders will revise the reputation upwards when they observe a firm repaying the security. In contrast, if lenders expect firms of type G to not cover securities in distress, then they expect that
 345 those firms are equally likely to repay as firms of type B , and they will not revise the reputation when they observe repayment of a security.

We can now express the expected profits for good firms with reputation ϕ when the fundamental is θ and the firm follows a strategy τ , conditional on lenders believing that good firms with reputation ϕ follow strategy $\hat{\tau}$, as

$$U_G^S(\phi, \theta, \tau|\hat{\tau}) = p(y + z) + \hat{\alpha}_G(\hat{\tau}) [\beta V(\phi'(\phi|\hat{\tau}), \theta) - R_S(\phi|\hat{\tau})]. \quad (6)$$

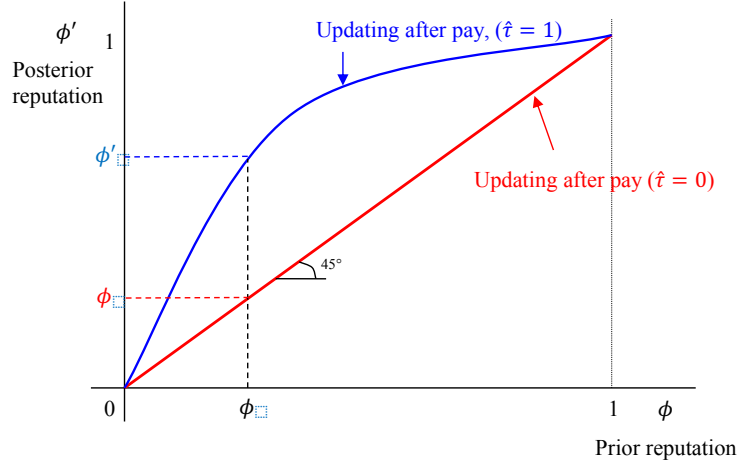
Good firms cover securities in distress with the proceedings from ongoing successful projects ($\tau = 1$) whenever, given beliefs $\hat{\tau}$,

$$\Delta(\phi, \theta|\hat{\tau}) = U_G^S(\phi, \theta, \tau = 1|\hat{\tau}) - U_G^S(\phi, \theta, \tau = 0|\hat{\tau}) > 0, \quad (7)$$

which can be rewritten as

$$\Delta(\phi, \theta|\hat{\tau}) = p(1 - p) \left[\underbrace{\beta V(\phi'|\hat{\tau}, \theta)}_{\text{Repayment Bfts}} - \underbrace{R_S(\phi|\hat{\tau})}_{\text{Repayment Costs}} \right] > 0. \quad (8)$$

Figure 1: Reputation Updating



Definition 1. A reputation equilibrium is one in which good firms cover securities in distress with proceedings from successful ongoing projects and beliefs are consistent, $\tau = \hat{\tau} = 1$.

The sufficient condition for a reputation equilibrium, in which $\tau = \hat{\tau} = 1$, is

$$\beta V(\phi' | \hat{\tau} = 1, \theta) \geq R_S(\phi | \hat{\tau} = 1). \quad (9)$$

In contrast, the condition for a non-reputation equilibrium, in which $\tau = \hat{\tau} = 0$, is

$$\beta V(\phi' | \hat{\tau} = 0, \theta) \leq R_S(\phi | \hat{\tau} = 0). \quad (10)$$

350 In what follows I describe a potential multiplicity of equilibria and refine those equilibria using global games techniques developed in Ordonez (2013). The following sections, using such unique equilibrium, characterize the financing decisions of firms that have different reputation levels as a function of expected economic conditions and discuss conditions for securitization crises that lead to
 355 sudden changes in credit markets.

2.3.1. Multiplicity with complete information

Since continuation values are monotonically increasing in posteriors ϕ' , which are monotonically increasing in $\hat{\tau}$, then $V(\phi' | \hat{\tau} = 1, \theta) > V(\phi' | \hat{\tau} = 0, \theta)$. Also, since $\hat{\alpha}_G(\hat{\tau} = 1) > \hat{\alpha}_G(\hat{\tau} = 0)$, then $R_S(\phi | \hat{\tau} = 1) < R_S(\phi | \hat{\tau} = 0)$. Combining
 360 these inequalities with equilibrium conditions (9) and (10), there are values θ under which reputation and non-reputation equilibria coexist.

Good firms cover securities in distress only when the expected gains from reputation are sufficiently large. Since these gains increase monotonically with

fundamentals θ , we focus on cutoff strategies,

$$\tau(\phi, \theta) = \begin{cases} 1 & \text{if } \theta > \theta^*(\phi) \\ 0 & \text{if } \theta < \theta^*(\phi) \end{cases}. \quad (11)$$

365 The previous construction was based on a belief $\hat{\tau}$ for all θ . Given that these strategies follow a cutoff rule, however, we need to redefine good firms' ex-ante (in period 1, before knowing θ) repayment probabilities as $\hat{\alpha}_G(\hat{\theta}^*) = p + p(1 - p)(1 - \mathcal{N}(\hat{\theta}^*))$, where $\hat{\theta}^*$ is the cutoff that lenders believe firms will follow and $\mathcal{N}(\hat{\theta}^*)$ is the ex-ante probability that $\theta < \hat{\theta}^*(\phi)$. Then,

$$R_S(\phi|\hat{\theta}^*) = \frac{1}{\phi\hat{\alpha}_G(\hat{\theta}^*) + (1 - \phi)\alpha_B}. \quad (12)$$

370 If $\hat{\theta}^* = -\infty$, $\mathcal{N}(\hat{\theta}^*) = 0$, $\hat{\alpha}_G(\hat{\theta}^*) = \alpha_G$ and $R_S(\phi|\hat{\theta}^* = -\infty) = \frac{1}{\phi\alpha_G + (1 - \phi)\alpha_B} < R_D(\phi)$. That is, if lenders believe that good firms will always cover securities in distress, they think that the probability of default of a security is the same as that of debt, but without the extra cost of bankruptcy. In contrast, if $\hat{\theta}^* = \infty$, $\mathcal{N}(\hat{\theta}^*) = 1$, $\hat{\alpha}_G(\hat{\theta}^*) = \alpha_B$, then $R_S(\phi|\hat{\theta}^* = \infty) = \frac{1}{\alpha_B}$. In other words, if lenders
375 believe that good firms will never cover securities in distress, they think that the default probability is the same as that for bad firms, and interest rates will be comparable to those that would occur if firms were bad with certainty.

In this setting there are two possible sources of multiplicity. First, interest rates can possibly generate a finite number of equilibria. When rates are high
380 default probabilities are also high, which rationalizes high rates. In contrast, when rates are low default probabilities are also low, which rationalizes low rates. This is well-known and easy to refine. If there are two rates in equilibrium, for example, and investors coordinate in the high rate, a single lender has incentives to deviate by offering the lower rate from the other equilibrium, attract firms
385 and still break even. This refinement, proposed by Stiglitz and Weiss (1981), exploits Bertrand competition and rationalizes as the unique equilibrium the one with the lowest rate.

The more interesting second source of multiplicity comes from reputation formation and induces a continuum of multiple equilibria. In this case the
390 refinement from Stiglitz and Weiss (1981) only works if the lenders who update reputation beliefs are always the same as those who will provide loans in the future. If this is not the case, and because current lenders cannot select the beliefs that future lenders will use to update reputation, competition cannot be used to coordinate on a single equilibrium. This is most likely to be the case in
395 dynamic and complex financial markets.

In what follows the assumption of complete information about θ is relaxed, such that global game tools developed in Ordonez (2013) for reputation environments can be used to select a unique equilibrium that is robust to small perturbations of information about θ .

400 The reader uninterested in the details of selecting a unique equilibrium using global game techniques in reputational environments can skip the next section,

knowing that when information about fundamentals is sufficiently precise but not perfect, there is a unique threshold θ^* , which depends on expected fundamentals μ . Above that threshold good firms cover securities in distress with the proceedings of successful ongoing projects, while under that threshold they default on those securities. Furthermore θ^* monotonically decreases with μ .⁸

2.3.2. Uniqueness with incomplete information

To select a unique equilibrium we assume that each firm i and each lender j observes an informative signal of the fundamental, $s_i = \theta + \epsilon_i$ and $s_j = \theta + \epsilon_j$, where both ϵ_i and ϵ_j are distributed $N(0, \frac{1}{\gamma^s})$.

Besides incomplete information we need to impose two additional assumptions. The first is single crossing.

Assumption 1. *Single Crossing*

Fix a belief $\hat{\tau}$ for all θ . There is a unique cutoff fundamental θ^* at which firms are indifferent to covering securities in distress, such that

$$\beta V(\phi, \theta^* | \hat{\tau}) = R_S(\phi | \theta^*). \quad (13)$$

This assumption is fulfilled, for example, when the variance of fundamentals is relatively low, such that the ex-ante probability of default, $\mathcal{N}(\theta^*)$, and, hence, interest rates R_S , do not change abruptly with changes in cutoffs θ^* .

The second assumption is dominance regions. Intuitively, there is a range of fundamentals for which, regardless of other firms' actions, a firm covers securities in distress and a range for which, regardless of other firms' actions, a firm does not.

Assumption 2. *Dominance Regions*

There are fundamental levels $\underline{\theta}(\phi)$ under which $\beta V(\phi, \underline{\theta} | \hat{\tau} = 1) < R_S(\phi | \underline{\theta})$ and $\bar{\theta}(\phi)$ above which $\beta V(\phi, \bar{\theta} | \hat{\tau} = 0) > R_S(\phi | \bar{\theta})$.

For all fundamentals $\theta < \underline{\theta}$ firms prefer not to cover securities in distress even if lenders believe $\hat{\tau} = 1$ and reputation suffers a lot from not doing this. Similarly, for all fundamentals $\theta > \bar{\theta}$ firms prefer to cover securities in distress even if lenders believe $\hat{\tau} = 0$ and reputation does not improve when this action is taken. Naturally, $\underline{\theta}(\phi) < \bar{\theta}(\phi)$ because $\beta V(\phi, \theta^* | \hat{\tau} = 1) - R_S(\phi | \theta^*) > \beta V(\phi, \hat{\theta}^* | \hat{\tau} = 0) - R_S(\phi | \hat{\theta}^*)$ for all ϕ and all $\hat{\theta}^*$. For all $\hat{\theta}^* \in [\underline{\theta}(\phi), \bar{\theta}(\phi)]$, reputation and non-reputation equilibria coexist. Hence, a fundamental $\hat{\theta}^*$ can be defined as an equilibrium cutoff if there exists a $\hat{\tau}(\phi, \hat{\theta}^*) \in [0, 1]$ such that

$$\beta V(\phi, \hat{\theta}^* | \hat{\tau}(\hat{\theta}^*)) = R_S(\phi | \hat{\theta}^*). \quad (14)$$

As a firm i observes a signal s_i , it follows cutoff strategies,

$$\tau(\phi, s_i) = \begin{cases} 1 & \text{if } s_i > s^*(\phi) \\ 0 & \text{if } s_i < s^*(\phi) \end{cases}. \quad (15)$$

⁸The details of the proof rely on Ordóñez (2013) and are not the contribution of this paper.

425 The differential gains that are made by covering securities in distress are computed by taking expectations about θ , conditional on the prior μ and the signal s_i , such that

$$E_{\theta|s_i} [\Delta(\phi, \theta|\hat{\tau}(s_i))] = p(1-p) [\beta E_{\theta|s_i} [V(\phi, \theta|\hat{\tau}(s_i))] - R(\phi|\hat{s}^*)], \quad (16)$$

where \hat{s}^* is the cutoff that investors believe firms follow. In this situation interest rates are computed on the basis of an ex-ante probability that fundamen-
430 tals are smaller than $\hat{s}^* = s^*$, such that default probability is $\mathcal{N}(s^*)$.

Proposition 1. *Unique Equilibrium with incomplete information.*

For sufficiently precise signals (this is, $\gamma_s \rightarrow \infty$), there is a unique equilibrium in which every good firm with a reputation ϕ decides to cover securities in distress if and only if $s_i > s^*(\phi)$, where s^* is given by the following indifference condition

$$\beta E_{\theta|s^*} \left[V \left(\phi, \theta|\hat{\tau}(s^*) = \frac{1}{2} \right) \right] = R(\phi|s^*). \quad (17)$$

Intuitively, the only cutoff in equilibrium is the signal at which a good firm is indifferent to cover securities in distress given that it thinks that 50% of lenders will believe that a good firm covers securities in distress and 50% of lenders will
435 believe that a good firm does not cover securities in distress.⁹ This refinement of equilibria highlights the fragility of reputation. A firm with reputation ϕ would decide to cover securities in distress based on a cutoff $s^*(\phi)$; around this cutoff the firm's default strategy changes dramatically.

Under this refinement, how does a deterioration of expected economic conditions, captured by lower μ , affect the likelihood of default in the economy? I
440 show that bad news about the future has the potential to increase the contemporaneous default rate of securities. There are two effects from a reduction in μ . The first effect is mechanical. A lower μ reduces the ex-ante probability that firms will cover securities in trouble for a given cutoff $s^*(\phi)$, reducing the price
445 of securities. The second effect is strategic. A lower μ leads to a higher cutoff $s^*(\phi)$, which makes the firms less willing to cover securities at any θ . The first effect is obvious and the formal proof of the second is in the Online Appendix. These two forces lead to the next proposition.

Proposition 2. *The cutoff $s^*(\phi)$ decreases monotonically with μ .*

Intuitively, a decline in μ increases $R(\phi|s^*)$ for a given s^* (because it is more
450 likely that the fundamental is below s^* and there is default). This requires a larger s^* to raise $E_{\theta|s^*} [V(\phi, \theta|\hat{\tau}(s^*) = \frac{1}{2})]$ and fulfill equation (17). This direct effect increases s^* . Furthermore, this increase in s^* implies a further increase in $R(\phi|s^*)$, which reinforces the direct effect generated by lower μ .

⁹Laplacian beliefs arise endogenously from the convergence to a uniform prior when $\gamma_s \rightarrow \infty$.

455 This result highlights the effect that news and rumors have on the use of
 securitization. To induce a collapse of securitization it is not critical that the
 economy experiences a real reduction in μ . Just bad news about future economic
 conditions can introduce a wave of pessimism that induces strategic default, even
 460 though nothing fundamental changes in the economy other than more aggressive
 and less confident (although fully rational) investors.

2.4. Debt or Securitization? Financing Decisions

The previous subsection characterizes the unique strategic default choices
 of firms that securitize as a function of fundamentals θ . Because investors
 internalize these solutions when setting the price of debt and security, we can
 465 now study whether a firm prefers to issue debt or securities as a function of
 expected fundamentals $\mu = E(\theta)$.

Assume $\mu \in [\underline{\mu}, \bar{\mu}]$ such that, for all ϕ , $\underline{\mu}$ is low enough and $\mathcal{N}(s^*(\phi, \underline{\mu})) \rightarrow 1$
 while $\bar{\mu}$ is high enough and $\mathcal{N}(s^*(\phi, \bar{\mu})) \rightarrow 0$. In words, assume that under
 the worst expectations of fundamentals a firm with reputation ϕ almost surely
 470 will default strategically on its securities and, similarly, that under the best
 expectations of fundamentals a firm with reputation ϕ almost surely will use
 successful ongoing projects to cover securities in distress.

The next proposition shows that when future economic prospects are bright
 and reputation incentives are strong, confidence prevails, and securitization pro-
 475 vides a cheap financing option that is exploited by the most reputable firms.
 For completeness, securitization also could arise when reputation concerns are
 so weak that good firms would rather sell securities at very low prices, insulating
 the cash flow from ongoing projects, than make those ongoing projects subject
 to bankruptcy in case a new project fails.

480 **Proposition 3.** *Optimal Financing Decisions*

When $\gamma_s \rightarrow \infty$, there is always a cutoff $\mu_H^*(\phi)$ such that firms with reputation
 ϕ issue securities for all $\mu > \mu_H^*(\phi)$. If $\underline{\mu}$ is such that $\alpha_G R_D(\phi) - 1 > \beta(\alpha_G -$
 $p)E_{\theta|\underline{\mu}}V(\phi, \theta)$, then there is also a cutoff $\mu_L^*(\phi)$ such that firms with reputation
 ϕ issue securities for all $\mu < \mu_L^*(\phi)$.

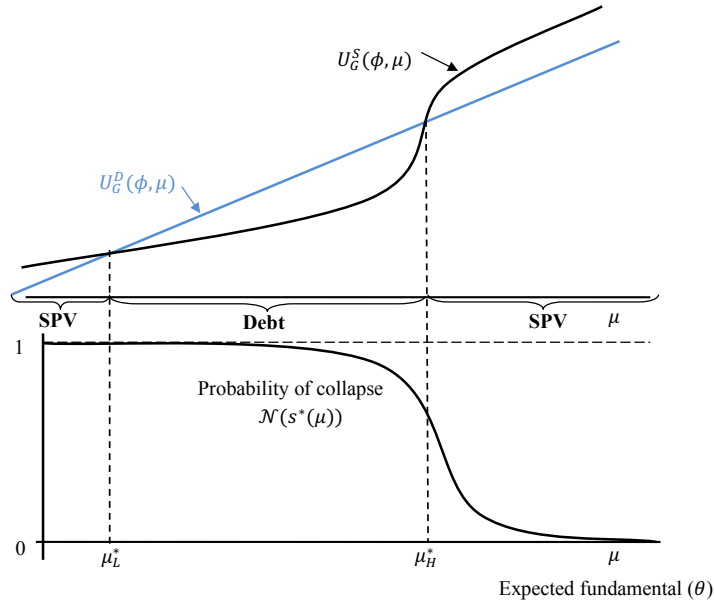
485 The formal proof is an Online Appendix, but Figure 2 illustrates these two
 key thresholds, $\mu_L^*(\phi)$ and $\mu_H^*(\phi)$ for a given ϕ . These thresholds define regions
 for which debt or securities are preferred for the simple case of a value function
 $V(\phi, \theta)$ that is linear in θ . Intuitively, at the one extreme, when good firms with
 reputation ϕ are optimistic about future fundamentals (that is, $\mu > \mu_H^*(\phi)$),
 490 they value reputation and prefer to cover securities in distress, even if they are
 not forced to do so by bankruptcy procedures. This reaction creates confidence
 that repayment will occur, and investors are willing to buy the security at a
 high price.

At the other extreme, when good firms are pessimistic about future funda-
 495 mentals (that is, $\mu < \mu_L^*(\phi)$), they do not value reputation and they do not
 have incentives to use their own proceedings from ongoing projects to cover se-
 curities in distress. Knowing this, investors are willing to buy the security only

at a low price. Nonetheless, because using debt implies that good firms always repay with successful ongoing projects, repaying debt always generates a gain in reputation. When reputation is not very valuable this benefit of debt can be so low that firms prefer to issue securities at low prices rather than put at risk cash flows from ongoing projects.

For all intermediate levels of expected fundamentals μ (that is, $\mu_L^*(\phi) < \mu < \mu_H^*(\phi)$), reputation is somewhat valuable and good firms prefer to finance the new project by issuing debt. This region naturally disappears as bankruptcy costs get larger and debt becomes relatively more expensive.

Figure 2: Debt or SPV?



These are the decisions faced by good firms that have valuable ongoing projects. However, bad firms also must decide whether to finance through debt or securitization. Because this is a free choice, they always pool with good firms; otherwise bad firms immediately reveal to be bad, which implies to borrow at the highest possible interest rate $\frac{1}{\alpha_B}$ and to survive with the lowest possible reputation $\phi' = 0$ forever in the future.

Now we consider how $\mu_L(\phi)$ and $\mu_H(\phi)$ vary for different reputation levels $\phi \in [0, 1]$. This comparison leads us to an understanding of how the fragility of the financial system is endogenous to the distribution of reputation levels in the economy.

Proposition 4. *Both thresholds $\mu_H^*(\phi)$ and $\mu_L^*(\phi)$ decrease with reputation ϕ .*

Combining Propositions 3 and 4, for a given μ , high reputation firms are more likely to finance new projects by issuing securities at a high price, intermediate

520 reputation firms are more likely to do so by issuing debt and low reputation firms to finance by issuing securities at a low price.

Figure 2 also depicts the expected probability that a good firm with reputation ϕ strategically defaults on its securities, which is denoted as “security probability of collapse.” For each μ there is a corresponding $s^*(\mu)$ such that the firm will default on the security when the realized fundamental is $\theta < s^*(\mu)$. Hence, $\mathcal{N}(s^*(\mu))$ shows the ex-ante probability of strategic security default.

When μ is very low, it is very likely that θ is low and below the equilibrium threshold $s^*(\mu)$, under which a good firm that has reputation ϕ strategically defaults on its security. In contrast, when μ is very high, it is very unlikely that θ is realized below the equilibrium threshold $s^*(\mu)$, and then it is almost certain that good firms that have reputation ϕ will not default strategically. The nonlinearity of the probability of collapse of a security – its fragility – comes from combining this mechanical effect of expectations with Proposition 2, under which investors become more aggressive in their strategic default behavior as μ declines. Securitization is volatile because it is subject to wild changes in default behavior due to the relevance of coordination.

This analysis shows that securitization is a fragile endeavor. Expected fundamentals, μ , can be large enough to allow many firms in the economy to use securitization. However, if the realized fundamental, θ , ends up being lower than expected (specifically lower than $s^*(\mu)$) there will be a wave of strategic security defaults. In other words, it is possible both to rationalize widespread securitization followed by a wave of security defaults (high μ and low θ) and to rationalize a collapse in the use of securitization by firms in the economy (a reduction on μ).

545 *2.5. Intervening to Enhance Reputation Concerns*

Can a government intervene to manage confidence in order to maintain the benefits of securitization while reducing its fragility? Assume no aggregate shocks (a unique possible μ) and focus on a particular intervention based on imposing transfers T to modify value functions ($\widehat{V}(\phi, \theta) = V(\phi, \theta)T$) and make them less sensitive to θ realizations. Can the government stabilize value functions to preserve reputation concerns for all values of economic prospects without trivially resorting to transfers that condition on θ or without giving net-positive transfers even in the worst case of θ ? In what follows we focus on self-financed transfers that reallocate funds across reputation levels, or $T(\phi)$.

555 Assume that a planner could transfer resources from low-reputation firms to high-reputation firms, such that this policy does not involve the use of external funds (budget balance). The Online Appendix contains the formal proof that this planner can stabilize securitization by using such transfers. Intuitively, this cross-subsidization scheme just affects the behavior of firms that securitize in equilibrium (those that have a relatively high reputation); it does not affect firms that use debt (those that have a relatively low reputation), which are still subject to bankruptcy procedures. This potential intervention hinges on stabilizing reputation concerns of firms using securities while not distorting the

565 repayment incentives of firms using debt. In a sense, good firms would self-regulate under more circumstances if lenders were not confusing them with bad firms. Given that bad firms on average have lower reputation levels than good firms, taxing low reputation would make bad firms compensate the externality they impose on the financing of good firms.¹⁰

570 This discussion highlights only the important forces that help make securitization more stable. It is clear, however, that the implementation and political feasibility of the policy presents serious challenges. Usually reputation is strongly correlated with firm size (because more reputable firms can attract a larger clientele) and firm profits (because more reputable firms can charge a larger premium for their services, which are perceived to be of higher quality).
575 But subsidizing large and profitable firms by taxing small and unprofitable firms can directly conflict with other concerns, such as avoiding market power and concentration in the industry.

3. Securitization in Historical Context

Two distinct implications follow from this setting. First, securitization is
580 more volatile than debt (Propositions 1 and 2). Although any economic environment in which agents have high expectations about future economic opportunities is fertile ground for the expansion of finance, it is particularly fecund for the rise of securitization because it induces market discipline through reputation concerns. Similarly securitization is more prone than debt to disappear
585 as optimism about future economic activity declines. The second implication is that firms that first self-select into issuing securities and lead securitization processes are those that have relatively high reputations (Propositions 3 and 4).

In what follows we discuss how these implications are consistent with historical evidence from five large waves of securitization in the world. In all
590 these experiences, securitization explosions have been marked by periods of fast economic growth and new investment opportunities, and their demise by recessions and poor economic performance, after which securitization virtually disappeared for long periods. Another common feature of these episodes, which was a precondition for security issuance, was the well-recognized reputation of
595 the institutions initially involved.

3.1. *Securitization wave of the 18th century in Europe.*

Buchanan (2014), based on Rouwenhorst (2005) and Riley (1980), identified plantation negotiates in the 1700s as perhaps the earliest examples of mortgage-backed securities.¹¹ Proceeds from bonds issued in the Dutch market

¹⁰This result is consistent with Atkeson et al. (2015). Although in their case cross-subsidization works by affecting entry into an industry, here it works by affecting the endogenous selection of financing.

¹¹Another early related example of securitization is the Danish mortgage and covered bond market that became mainstream in the European market during the 1800s.

600 were used to finance mortgages to plantation owners abroad, particularly in the West Indies. This process grew exponentially from 1753 to 1776, fueled by the large increase experienced by the West Indian trade and the ensuing investment opportunities. It came to a halt late 1790s, after large declines in stock and commodity prices. This process was mostly performed by two well-known
605 investment houses, Deutz and Co. and Dutch Hope Company. Because these securities involved foreign loans and were backed by plantation properties whose quality was hard to evaluate (particularly considering they included slaves and equipment), the reputation of the firms issuing the security played a key role in facilitating this type of finance.

610 This paper highlights the importance of the reputation of the issuer in explaining the expansion of securitization. An additional element explored by Gorton and Ordonez (2014) – the information opacity of the assets backing up the securities – is also consistent with the fact that it was difficult to evaluate plantations because of the distance and communication costs at the time.

615 3.2. *First securitization wave of the 19th century in the US.*

Snowden (1995) describes exhaustively the development of private mortgage securitization in the United States during the 1800s. As in Europe, securitization in the United States was largely motivated to facilitate interregional transfers of funds across heterogeneous and distant investment opportunities, mostly
620 with flows from the northeast towards the western and southern regions. This early financial system developed during a period of scarce regulation, spurred with news of large and profitable investment opportunities in the West that came to an end in 1874, when the United States experienced a large recession. This experience is consistent with the implication that securitization has always
625 been sensitive to economic conditions. It also is consistent with the main message that regulatory restrictions do not seem to be necessary conditions for the expansion of securitization.

Brewer (1976) discusses the governance structure of two early entrants to this market that were prominent issuers of securities: the Mercantile Trust Company
630 and the USA Mortgage Company. Buchanan (2014) argued that the existence and functioning of these companies were possible “due to the reputation of the(ir) American board and familiarity with the securities process (from the previous experiences in Europe)”.¹²

3.3. *Second securitization wave of the 19th century in the US.*

635 In 1880 there was a second wave of securitization in the United States that was boosted by a land boom and came to a halt by the mid-1880s, when early signals of an 1893 agricultural depression led to a bust in land prices. This experience was also led by highly reputable companies at the time. In 1881, the Iowa Loan and Trust Company became the first firm to issue debenture

¹²The clarification in parenthesis is my own.

640 bonds secured by mortgages. Lombard Investment Company of Kansas also
made loans and financed ventures in 18 states, selling the mortgage-backed
products both in the USA and Europe. In a more systematic analysis, Snowden
(2010) uses a sample of ninety-nine of the largest western mortgage companies
that had established debenture programs by 1890 and issued securities most
645 intensively. He finds that the costs of funding loans with debentures fell with
the size, financial strength, and reputation of the mortgage company, which is
consistent with our second main implication.

3.4. *First securitization wave of the 20th century in the US.*

The first wave of American securitization in the twentieth century rose dur-
650 ing the 1920s, led by the real estate optimism that ended a decade later during
the Great Depression. A new form of security, known as the “Straus bond,” was
developed. These securities were characterized by a senior claim on a building
that was sold to the public in small denominations. These single-property bonds
were used to finance the real estate development of large urban centers, such as
655 New York and Chicago. According to Buchanan (2014), although by 1925 the
real estate bond issuance accounted for 23% of all corporate debt issuance in
the United States, by 1934 this figure collapsed to 0.1%. His study and findings
are consistent with our implication that securities tend to be extremely volatile
and sensitive to changes in economic conditions.

660 Reputation was critical for the development of Straus bonds. As explained
by White (2009), “to protect the buyers, companies were required by law (New
York regulators) to maintain a reserve fund, expressed as a percentage of their
capital..... They were thus constrained more by their reputation than regulation
to set aside sufficient reserves.....According to Snowden (1995), New York reg-
665 ulators were overwhelmed and did not examine whether the loan to value ratio
was the legal 50 percent; they simply accepted the claimed value. Yet, investors
purchased these bonds reassured by their reputation, insurance, approval of the
regulators, and favorable assessments by the rating agencies.”

Buchanan (2014) also discussed how the success of these securities relied
670 heavily on the reputation of Simon Straus. A famous 1922 advertisement in
The Atlantic Monthly showed how the company relied heavily on its reputation
and past performance to raise funds: “The standard first mortgage real estate
bonds underwritten by S. W. Straus & CO offer you real safety and the best
interest return consistent with safety because they are backed by our record of
675 40 years without loss to any investor.”

3.5. *Second securitization wave of the 20th century in the US.*

The most recent wave of securitization in the United States is the one that
has captured the most attention and received the most careful analysis, both
because of the volume of assets involved and because securitization was at the
680 forefront of the financial architecture, (in particular the so-called “shadow bank-
ing”) that collapsed at the wake of the 2007-2009 financial crisis in the United
States.

During the last decade of the last century, securitization grew disproportionately. During this period banks faced both burdensome regulation and problems
685 financing the growing demand for housing. First dominated by government-sponsored institutions, such as Fannie Mae and Freddie Mac, the private issuance of non-agency securities increased in relevance after 2003, while housing prices were booming. Then in 2008, after news that house prices had fallen, those prices suddenly collapsed, which led to the Great Recession.

690 Also during this most recent wave of securitization, reputation was a critical determinant of who issued securities. Gorton and Souleles (2006) use credit card asset-backed securities (ABS) during the sample period 1991-2000 to show that low-rating sponsors and high-rating sponsors securitized more than sponsors that had intermediate ratings (consistent with our Proposition 3). They
695 also show that, controlling for the quality of securities, the cost of financing monotonically decreases with the reputation (or credit rating) of the sponsor (consistent with our Proposition 4).

Cetorelli and Peristiani (2012) study the characteristics of issuers in the recent securitization wave and show that issuance was performed mostly by a few
700 large companies. In particular, “MBS issuances are moderately concentrated, with a 38.4 percent HHI (Herfindahl-Hirschman Index), dominated by a small group of financial institutions led by Countrywide, Lehman Brothers, and Morgan Stanley, which collectively accounted for 25 percent of the overall volume.”

The usual narrative about this recent rise of securitization, and its subsequent demise, relies on regulatory arbitrage. According to this view, securitization was used to avoid regulatory constraints that were in place to guarantee
705 the stability of financial institutions, and then they put the system in a fragile position. Based on this narrative, the Dodd-Frank reform passed in 2010 reacted to securitization by imposing rules that require issuers to retain part (no
710 less than a 5%) of the credit risk of assets sold as securities.¹³ In addition to the risk-retention requirement, Dodd-Frank also requires more transparency about the securitization process and disclosure of asset-level data.¹⁴

As highlighted by Acharya and Richardson (2009), Acharya et al. (2013),
715 Ordonez (2018), and others, regulatory arbitrage probably played an important role in the recent rise of securitization and its aftermath, but it was hardly its principal cause. As discussed above, the issuance of securities to raise funds can be tracked to periods in history when financial markets operated without regulatory constraints.

3.6. *Relevance of this evidence for policy*

720 Indeed, the two implications in our setting that seem consistent with evidence of securitization waves over history could not be generated by a standard setting in which securitization is merely the result of regulation arbitrage. First,

¹³Section 941 of the Securities Exchange Act provides a broad framework to guide and limit agency discretion in establishing regulation for credit risk retention.

¹⁴Section 942 of the Act.

securitization would expand only during periods when regulation becomes more stringent, which is at odds with the evidence that securitization existed prior to regulation. It also is at odds with evidence that securitization grows more
725 when there is optimism about the future, usually during periods in which regulations tend to be more relaxed. Second, if securitization were the result of escaping regulations, then it would be a sign of the weakness of a bank (and not a strength), and it would be difficult to accommodate the evidence that the issuance of securities has been historically led by reputable and solid institutions.
730

Taking into account the lessons that the historical evolution of securitization provide is crucial and justifies this paper. Any proposed reform that aims to improve the functioning of securitization needs to rest on an understand of how security markets are formed, how they operate and why they fail. This paper
735 argues that economic expectations and reputation concerns also are important elements that policy makers need to consider when proposing regulations and interventions of securities.

4. Conclusions

This paper argues that the rise, growth, and collapse of securitization is
740 consistent with the dynamics of confidence in financial markets sustained by financial institutions that are concerned about reputation. If good times are expected, gains from having a good reputation are large, which introduces incentives for good behavior (such as coverage of securities in trouble). These incentives create cheap, but fragile, methods of finance that are based on implicit promises. When bad news about future prospects arises, reputation gains
745 become weaker and may fail to provide incentives for good behavior. Incentives can collapse suddenly, leading to a fast destruction of confidence banking. In contrast, more traditional financing methods are more stable, but they also are more costly because they rely on costly contractual provisions (such as monitoring and bankruptcy procedures). The goal of this paper is to highlight this
750 trade-off between confidence-based and contract-based financing alternatives, and to argue that regulatory arbitrage is not a precondition to observe an expansion of securitization. As such this paper casts a warning that efforts to asphyxiate securitization may be ill conceived.

The paper can be extended in several directions. First, reputation gains can be determined endogenously, as in Ordonez (2013). Second, the forces in this paper can be accommodated to study other financial institutions and instruments, such as repo, money markets, investment banks, etc.. Third, the model can be used to study confidence relations when transactions include collateral of
760 unknown quality, wherein prices also depend on aggregate economic conditions. Finally, reputation concerns probably also play an important role in sustaining securitization that tries to avoid costly regulations, such as capital requirements, as in Ordonez (2018).

All these extensions would make the model richer and more realistic, but they
765 would not change this main insight: That reputation concerns induce confidence and create an alternative method of finance that is based on implicit promises.

Although this alternative based on confidence is cheaper and more efficient, it also is fragile and prone to collapses. Whether it is desirable to have a system based on confidence depends on the trade-off between these benefits and costs.
770 Hence, the challenge for regulation is not to eliminate confidence but to make it more robust.

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