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Syndication and Secondary Loan Sales*

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Abstract

Secondary loan sales give originating banks the opportunity to diversify part of their credit risk by selling loans to other market participants. However, as originating banks are less exposed to risk after secondary loan sales, their incentives to monitor borrowers diminish. Secondary loan sales therefore involve a trade-off between diversification benefits and sub-optimal monitoring. We explore this trade-off within a theoretical model. The results show that in equilibrium loans trade at a discount because monitoring effort is sub-optimally low. We illustrate how this inefficiency is related to lack of transparency in the secondary loan market, and provide policy implications to address this problem.

Keywords: Secondary Loan Sales, Syndication, Monitoring, Incentives, Transparency

1. Introduction

The literature on financial intermediation (Diamond [1,2], Ramakrishnan and Thakor [3], Fama [4], Boyd and Prescott [5]) shows that asymmetric information may induce borrowers to misreport their quality to lenders at loan origination and, after receiving loans, to expropriate wealth from lenders. Financial intermediaries, and comercial banks in particular, can overcome these problems due to their ability to screen borrowers ex-ante (adverse selection), monitor them at interim (moral hazard), and verify outcomes expost (costly state verification) (Leland and Pyle [6], Allen [7], Kashyap, Rajan and Stein [8], Diamond and Rajan [9,10], Coleman, Esho and Sharpe [11], Lee and Sharpe [12]).

This literature also suggests that banks must be given incentives to perform these expensive monitoring activities. Incentives are maximized when banks retain full ownership of the loans that they originate. However, during the last two decades, the increased popularity of loan syndication, secondary loan sales and securitization has led to a growing separation between loan originators and loan investors. Loan originators, often commercial banks, arrange loans by forming a syndicate of investors, each of which purchases a portion of the loan. After syndication, some of these loans are traded in active secondary markets (Drucker and Puri [13]). The process of syndication and subsequent loan trading has the effect of reducing the exposure of originating banks to the risks of the loans, thus reducing their incentives to monitor. [1]

The empirical literature has offered support to the idea that loan sales carry a negative premium: for instance Dahiya, Puri and Saunders [15] find that firms are negatively affected by loan sales on the secondary loan market, and that the long-term performance of firms whose loans are sold is significantly poorer than that of matching firms. Along the same lines, Berndt and Gupta [16] report a 9% per year under-performance of borrowers whose loans are sold in the secondary market over the three-year period following the initial loan sale. Drucker and Puri [13] provide evidence that loans sold in the secondary market carry more restrictive covenants, precisely to alleviate the drop in a bank's monitoring effort.

If loan sales reduce the value of the borrower by increasing agency costs, why do we observe a widespread use of them? One possible explanation is that retaining loans on the balance sheet is costly for originating banks. Pennacchi [17] and Gorton and Pennacchi [18] suggest that intermediaries sell loans when the cost of internal financing is sufficiently high, possibly due to capital requirements. Han, Park and Pennacchi [19] show that loan securitization is another way for banks to increase lever-

[1]Keys, Mukherjee, Seru and Vig [14] show that this mechanism applies also to the market of sub-prime mortgages, whereby achieving full insurance via securitization reduces the issuer's incentives to monitor the mortgages.

age beyond standard capital restrictions imposed by the regulator. In this way, securitizing banks can benefit from larger tax shields.

The novelty of this paper is that we provide a formalization of loan sales as a *risk sharing* device. Our basic premise is the observation that banks are concerned about the credit risk in their loan portfolio: most banks do indeed engage in active risk management programs to control their exposure to risk. The recent financial crisis reinvigorated the debate on the adoption of new rules for the global banking system, which clearly certifies the concern that both regulators and practitioners share in keeping banks' risk exposure under control. Keeping this concern into account, we show that banks resort to loan sales as they have an interest in reducing the risk of their loan portfolio. Our argument therefore provides a rationale for the findings in Pavel and Phillis [20]: they identify risk (proxied by the degree of diversification of a bank portfolio) as one primary factor affecting loan sales by commercial banks.

In order to endogenize a bank's concern with risk management, we assume that the bank is risk-averse. Froot and Stein [21] provide the theoretical justification for our assumption: banks face increasing costs to raising external funds due to information and/or agency problems and, as a results, they behave in a risk averse fashion. In our model, a risk-averse bank owns a risky loan, the future returns of which depend on the monitoring effort of the bank (moral hazard). A risk-neutral market exists for the loan (the *syndication market*). The bank's risk aversion leads to the sale of contractual rights over the loan to the market. In equilibrium, the market purchases a fraction of the loan which is strictly smaller than one. The rationale of this outcome is that by exposing the bank to some risk, incentives are preserved.

In the model, the syndication process reflects the standard practice of underwritten deals, in which the leading commercial or investment bank guarantees the entire commitment and then syndicates the loan (Miller [22]). Often the arranger willingly retains a share of the loan (Dennis and Mullineaux [23]); in other cases, it does so unwillingly because it cannot fully subscribe the loan, and is then forced to absorb the difference.

Typically, the arranging bank tries to sell part of the loan at a later time (the *secondary market*). Consequently, we incorporate in our model the possibility of a second sale taking place after syndication. Suppose that this sale occurs, and that the residual part of the loan is purchased by market participants that were not part of the initial syndicate. Suppose further that the initial syndicate participants do not know whether the second sale occurs or not. This is a realistic assumption, considering that many syndicated loans are not traded in public markets. In other words, we assume here that the syndication market and the secondary market are segmented. Then, due to risk aversion the bank will want to sell the rest of the loan in the secondary market and thus obtain complete insurance.

At what price will the secondary market buy the loan? The value of the loan in the secondary market will be lower than in the syndication market, as a suboptimal level of monitoring is priced in. If the syndication market did not anticipate the secondary sale, syndicate participants would overpay for the asset. Instead, as the secondary sale is anticipated by the syndication market in equilibrium, the loan trades in the syndication market at a lower price. This finding provides an explanation for the negative price reaction that Dahiya, Puri and Saunders [15] document upon the announcement of a loan sale.

How can efficiency be restored in the syndication market? First, borrowers and syndicate arrangers can employ contractual provisions that restrict loan resalability. Consistent with this prediction Pyles and Mullineax [24] find that in the syndicated loan market, two types of constraints on loan resalability are common: 1) prior consent constraints implemented by the borrower or the syndicate's lead arranger and 2) a minimum denomination requirement for loan resales. Second, transparency in the secondary market can be increased, for example by requiring loans to be publicly traded. Third, regulators can introduce upper limits on loan resales. Unfortunately, each of these measures comes at a cost: 1) contractual restrictions on resalability imply lower liquidity which translates in higher spreads and larger collateral (Pyles and Mullineax [24], Drucker and Puri [13]); 2) opening up of the loan market to the public can be perceived negatively among issuers, lenders, and regulators as private information migrates into public hands with the risk of breaching confidentiality agreements between lenders and issuers (Miller [22]); 3) the consequences of setting the wrong limit to the maximum amount of loan resale may completely offset the benefits of such policy.

The rest of the paper is structured as follows: in Section 2 we introduce the framework of our model which resembles the fixed investment model of Holmstrom and Tirole [25]. In Section 2.1 we examine the optimal sale of loans during syndication and show that an incomplete sale of the loan occurs in equilibrium. In Section 2.2, we consider the effect of a secondary market and how this leads to the sale of any residual share by the originating bank. In Sections 2.3 and 2.4 we show that the secondary sale is strictly inefficient because it reduces the value of the loan in the syndication market, which prices the loan accordingly, as if no monitoring occurred. Finally, Section 3 provides a discussion of our results and draws some policy implications.

2. The Model

Consider a setting in which a bank issues a loan L that generates returns $\widetilde{R} \in \{0, R\}$. The bank's monitoring effort over the loan is $\mathrm{e} \in \{0,1\}$ and the cost of effort is $\psi(\mathrm{e}) \in \{0, \psi\}$. Define $\pi_1 = \Pr\left(\widetilde{R} = R \mid \mathrm{e} = 1\right)$ and $\pi_0 = \Pr\left(\widetilde{R} = R \mid \mathrm{e} = 0\right)$. Monitoring affects the returns of the loan with probability π_{e} as follows:

$$\pi_1 = \pi_0 + \Delta\pi > \pi_0 , \tag{1}$$

where $\pi_1, \pi_0, \Delta\pi > 0$ and $\pi_1 < 1$ Once the bank has issued the loan, it may choose to sell (part of) it to other market participants (hereafter referred to as "the syndication market"). We refer to such sale as loan syndication. Indicate with α and A respectively the percentage of the loan that is syndicated and the price at which it is sold to the market. The timing of contracting is as follows: the bank issues the loan (t_0); it then syndicates (possibly part) of it (t_1); it chooses whether to monitor the loan (t_2); finally, returns are cashed in (t_2).

We make the following assumptions:

A.1. (Bank): the bank's preferences are quasi-linear in effort, $u_L(x, \mathrm{e}) = u(x) - \psi(\mathrm{e})$, and the utility function u displays risk-aversion, *i.e.* $u' > 0$ and $u'' < 0$. Effort e is unobservable (and therefore uncontractible) and the reservation utility of the bank is nil, $u(0) = 0$.

A.2. (Syndication market): the syndication market is risk neutral and has all the bargaining power.

Following assumptions 1 and 2, the bank's expected utility is

$$\begin{aligned} U_L(\alpha, A, \mathrm{e}) = {} & \pi_{\mathrm{e}} u\left(A + (1-\alpha) R - L\right) \\ & + (1 - \pi_{\mathrm{e}}) u(A - L) - \psi(\mathrm{e}), \end{aligned} \tag{2}$$

while that of the syndication market is

$$U_M(\alpha, A, \mathrm{e}) = \alpha \pi_{\mathrm{e}} R - A . \tag{3}$$

As the latter utility function shows, the expected cash flows of the syndication market are proportional to the share of the loan that is syndicated.

Moreover, we impose the following assumptions on the model parameters:

A.3. The loan has positive NPV irrespective of effort:

$$\pi_1 R - L - \psi \geq \pi_0 R - L \geq 0 ; \tag{4}$$

A.4. Both the loan return and cost are sufficiently large with respect to the cost of effort:

$$R > u^{-1}\left(\frac{(1-\pi_0)\psi}{\Delta\pi}\right) - u^{-1}\left(-\frac{\pi_0 \psi}{\Delta\pi}\right) = \widehat{R} , \tag{5}$$

$$L \geq -u^{-1}\left(-\frac{\pi_0 \psi}{\Delta\pi}\right), \tag{6}$$

where u^{-1} denotes the inverse of the bank's utility function.

2.1. Equilibrium Characterization

The financial contract (α, A) is chosen to maximize the syndication market's expected utility. Since we are interested in contracts where the bank acquires the loan and monitors it, we include the following conditions in the syndication market's program:

$$U_L(\alpha, A, 1) \geq U_L(\alpha, A, 0) \tag{IC}$$

$$U_L(\alpha, A, 1) \geq 0 \tag{PC}$$

which describe respectively the incentive compatibility (*IC*) and participation (*PC*) constraints of the bank. The optimal financial contract (α^*, A^*) is then obtained by solving the following program:

$$(\alpha^*, A^*) \in \arg\max_{\alpha, A} \alpha \pi_1 R - A \tag{7}$$

subject to

$$\Delta\pi\left[u\left(A + (1-\alpha)R - L\right) - u(A - L)\right] - \psi \geq 0 \tag{8}$$

$$\pi_1 u\left(A + (1-\alpha) R - L\right) + (1 - \pi_1) u(A - L) \geq \psi \tag{9}$$

and $0 \leq \alpha \leq 1$, $A \geq 0$, where we use (2) to explicitly write *IC* and *PC*, and the last two conditions correspond to the feasibility constraints. The solution to program (7-9) is given in the following:

Proposition 1. *The optimal financial contract is given by*:

$$\alpha^* = 1 - \widehat{R}/R \text{ and } A^* = L + u^{-1}\left(-\frac{\pi_0 \psi}{\Delta\pi}\right), \tag{10}$$

which implies that full syndication (sale) never occurs, *i.e.* $\alpha^* < 1$.

Proof. For notational convenience, we define $\overline{u} = u(A + (1-\alpha)R - L)$ and $\underline{u} = u(A - L)$ as the levels of the bank's *ex-post* utility in both states of nature. Assuming interior solutions for (α^*, A^*), the Lagrangian of program (7-9) is given by

$$\begin{aligned} L(\alpha, A; \lambda, \mu) = {} & \alpha \pi_1 R - A + \lambda\left[\Delta\pi\left(\overline{u} - \underline{u}\right) - \psi\right] \\ & + \mu\left[\pi_1 \overline{u} + (1 - \pi_1)\underline{u} - \psi\right] \end{aligned}, \tag{11}$$

with associated FOCs

$$\pi_1 - \lambda \Delta\pi \overline{u}^{*'} - \mu \pi_1 \overline{u}^{*'} = 0 \tag{12}$$

$$\lambda \Delta\pi\left(\overline{u}^{*'} - \underline{u}^{*'}\right) + \mu\left[\pi_1 \overline{u}^{*'} + (1 - \pi_1)\underline{u}^{*'}\right] = 1 \tag{13}$$

where we set $\overline{u}^{*'} = u'\left(A^* + (1 - \alpha^*) R - L\right)$ and

$\underline{u}^{*\prime} = u'\left(A^* - L\right)$. Solving Equation (13) for the multiplier μ gives

$$\mu = \frac{1 - \lambda \Delta\pi\left(\bar{u}^{*\prime} - \underline{u}^{*\prime}\right)}{\pi_1 \bar{u}^{*\prime} + \left(1 - \pi_1\right)\underline{u}^{*\prime}}, \quad (14)$$

which is always positive due concavity of u and $\bar{u}^* \geq \underline{u}^*$ so that *PC* binds. Replacing μ from Equation (14) into Equation (12) and solving for the multiplier λ gives

$$\lambda = \frac{\pi_1\left(1 - \pi_1\right)\left(\underline{u}^{*\prime} - \bar{u}^{*\prime}\right)}{\Delta\pi \bar{u}^{*\prime} \underline{u}^{*\prime}} \quad (15)$$

According to Equation (15), λ is non-negative. In particular, $\lambda = 0$ if and only if $\bar{u}^* = \underline{u}^*$, or equivalently $\alpha^* = 1$. Replacing $\alpha^* = 1$ into the *IC* gives $-\psi \geq 0$ which cannot hold. Thus at the optimum it cannot be that $\alpha^* = 1$. It then follows that $\lambda > 0$, so that *IC* binds. As both *IC* and *PC* bind at the optimum, we can solve them as a system of two equations in $\bar{u}^*$ and $\underline{u}^*$. We get $\bar{u}^* = \left(1 - \pi_0\right)\psi / \Delta\pi$ and $\underline{u}^* = -\pi_0 \psi / \Delta\pi$, or equivalently the optimal contract $\left(\alpha^*, A^*\right)$ in Equation (10). Condition (5) ensures $\alpha^* > 0$, while $u\left(0\right) = 0$ and $u' > 0$ yield $\hat{R} > 0$ so that $\alpha^* < 1$. Finally, condition (6) corresponds to the feasibility condition $A^* > 0$. □

Proposition 1 shows that inducing effort requires the bank to bear some risk, *i.e.* $\alpha^* < 1$. This stems from the fact that the optimal contract $\left(\alpha^*, A^*\right)$ makes both the bank's participation and incentive constraint binding. Furthermore, observe that as *PC* binds at the optimum, the bank receives its reservation utility, while the market makes a profit equal to

$$\pi_1 R - L - \pi_1 u^{-1}\left(\frac{\left(1 - \pi_0\right)\psi}{\Delta\pi}\right) - \left(1 - \pi_1\right)u^{-1}\left(-\frac{\pi_0 \psi}{\Delta\pi}\right), \quad (16)$$

The allocation of bargaining power means that the market fully internalizes the returns of the loan, as well as the cost of financing it, while providing a compensation to the bank for exerting effort.

2.2. Secondary Sale

Suppose now that after syndicating α^* at t_1 and before exerting effort at t_2, the bank sells to a second market whole or part of the residual shares that it still holds (α_S) in exchange for cash (A_S). We refer to the contract (α_S, A_S) as the *secondary sale*. Following Gorton and Pennacchi [18], "these are contracts under which a bank sells a proportional (equity) claim to all or part of the cash flow from an individual loan to a third party buyer. The contract transfers no rights or obligations between the bank and the borrower, so the third party buyer has no legal relationship with the bank's borrower. Furthermore, loan sales involve no type of recourse, credit enhancement, insurance, or guarantee because only then can the originating bank remove the loan from its balance sheet (according to regulatory accounting rules)."[2]

From the previous section, we know that if the share held by the bank falls below α^*, condition *IC* is violated. Therefore, a secondary sale necessarily induces a drop in effort. The secondary market then prices the sale with $e = 0$ and solves the following program:

$$\left(\alpha_S^*, A_S^*\right) \in \arg\max_{\alpha_S, A_S} \alpha_S \pi_0 R - A_S \quad (17)$$

subject to

$$\pi_0 u\left(A^* + A_S + \left(1 - \alpha^* - \alpha_S\right)R - L\right) + \left(1 - \pi_0\right)u\left(A^* + A_S - L\right) \geq 0 \quad (18)$$

and $0 \leq \alpha_S \leq 1 - \alpha^*, A_S \geq 0$, where the first condition describes the interim *PC* of the bank, while the last two conditions correspond to the feasibility constraints. A solution to this program requires that the interim *PC* binds at the optimum, so that the bank is once again left at its reservation utility. Furthermore, given that: 1) the loan has positive *NPV* if $e = 0$, due to assumption A.3. and 2) the bank is risk averse, due to assumption A.1., then complete sale is required at the optimum, *i.e.* $\alpha_S = 1 - \alpha^*$. Complete sale implies a violation of the bank's *IC*, which instead requires the bank to bear some risk. It then follows that a secondary sale induces a drop in effort, *i.e.* $e = 0$. We summarize these results in the following:

Proposition 2. *The optimal secondary sale provides full insurance to the bank*:

$$\alpha_S^* = 1 - \alpha^* \text{and } A_S^* = L - A \quad (19)$$

Proof. Similarly to the proof of Proposition 1, we define

$$\bar{u}_S = u\left(A^* + A_S + \left(1 - \alpha^* - \alpha_S\right)R - L\right) \quad (20)$$

and

$$\underline{u}_S = u\left(A^* + A_S - L\right) \quad (21)$$

as the levels of the bank's ex-post utility in both states of nature after the secondary sale took place. Assuming interior solutions for α^*, the Lagrangian writes

$$L\left(\alpha_S, A_S; \mu\right) = \alpha_S \pi_0 R - A_S + \mu\left[\pi_0 \bar{u}_S + \left(1 - \pi_0\right)\underline{u}_S\right], \quad (22)$$

with associated FOCs

$$1 - \mu \bar{u}_S^{*\prime} = 0, \quad (23)$$

$$\mu\left[\pi_0 \bar{u}_S^{*\prime} + \left(1 - \pi_0\right)\underline{u}_S^{*\prime}\right] = 1, \quad (24)$$

where now

$$\bar{u}^{*\prime} = u'\left(A^* + A_S^* + \left(1 - \alpha^* - \alpha_S^*\right)R - L\right) \quad (25)$$

[2]See also Gorton and Haubrich [26] on this point.

and $\underline{u}^{*'} = u'\left(A^* + A_S^* - L\right)$. From condition (23) we have $\mu = \left(\overline{u}_S^{*'}\right)^{-1} > 0$, so that the interim *PC* binds. Adding up the two FOCs gives

$$\mu\left(1-\pi_0\right)\left(\underline{u}_S^{*'} - \overline{u}_S^{*'}\right) = 0, \tag{26}$$

which implies $\underline{u}_S^{*'} = \overline{u}_S^{*'}$ since $\mu > 0$. Condition $\underline{u}_S^{*'} = \overline{u}_S^{*'}$ is equivalent to full syndication so that the interim *PC* reduces to $u\left(A^* + A_S - L\right) = 0$, thus yielding $A_S^* = L - A$. □

2.3. Insurance and Inefficiency

A secondary sale is profitable for the bank: while the syndication market compensates it for exerting effort, in equilibrium $e = 0$ and the bank saves ψ. In this sense, the bank profits from "fooling" the syndication market. Moreover, lower effort means lower expected returns on the loan. The bank is unaffected, because the secondary sale offers it perfect insurance. On the contrary, the expected utility of the syndication market drops. More formally, when $e = 0$, the return to the syndication market is

$$U_M\left(\alpha^*, A^*, 0\right) = \pi_0 R - L - \left[\begin{array}{l} \pi_1 u^{-1}\left(\dfrac{\left(1-\pi_0\right)\psi}{\Delta\pi}\right) \\ +\left(1-\pi_1\right)u^{-1}\left(-\dfrac{\pi_0\psi}{\Delta\pi}\right)\end{array}\right] \tag{27}$$

and the loss in expected utility equals $\Delta\pi R$. As wealth in the syndication market drops by more than what the bank gains, we conclude that:

Corollary Due to assumption A.3., $\Delta\pi R - \psi > 0$, the reduction in effort associated with a secondary sale is strictly inefficient.

2.4. Restoring Efficiency

The inefficiency of a secondary sale rests on the premise that syndicate participants do not anticipate that a secondary sale will occur. However, in equilibrium the syndiccate market *does* anticipate the effects of a secondary sale on effort. This means that the syndicate market disregards the *IC* of the bank and (7) rewrites as

$$\left(\hat{\alpha}, \hat{A}\right) \in \arg\max_{\alpha, A} \alpha\pi_0 R - A \tag{28}$$

subject to

$$\pi_0 u\left(A + \left(1-\alpha\right)R - L\right) + \left(1-\pi_0\right)u\left(A - L\right) \geq 0 \tag{29}$$

and $0 \leq \alpha \leq 1, A \geq 0$, where $\left(\hat{\alpha}, \hat{A}\right)$ denotes the optimal contract when the syndicate participants correctly foresee that a secondary sale will occur. Solving the maximization we find that $\hat{\alpha} = 1$ and $\hat{A} = L$.[3] This shows that complete syndication now takes place.

3. Discussion and Conclusions

We have shown that the existence of a secondary market leads to complete syndication of the loan and to an inefficient reduction of effort. Therefore, in equilibrium there is too much syndication and too little effort. The suboptimality of these choices leads to inefficient loan pricing (too low) during syndication. As discussed above, this result is consistent with the finding of Dahiya, Puri and Saunders [15] that the announcement of a loan sale produces a negative price reaction for the selling firm.

This inefficiency arises because the bank is unable to commit that it will not undertake a sale after syndication. Can efficiency be restored via some commitment mechanism? This question has important practical scope and policy implications. Consider the following three mechanisms:

3.1. Contractual Provisions

In the syndicated loan market, borrowers and syndicate arrangers sometimes employ contractual restrictions that influence a loan's liquidity. More precisely, Pyles and Mullineax [24] show that the syndicated loans often limit resales by loan owners. The constraints can require prior consent for resale by the borrower and/or arranging bank or establish a minimum amount for secondary market sales. However, there is a drawback to the introduction of these constraints: limiting the owner's capacity to sell reduces the loan's liquidity. Liquidity is a valued characteristic of debt contracts, so there is some cost to constraining loan sales. The authors find that the direct costs are reflected in higher fees or rates on constrained loans, while the indirect costs are captured in stricter loan contract terms on collateral or covenant protection.

3.2. Transparency

If a second sale is observable, first-market participants will require the bank to pay them a fine $F \geq \Delta\pi R$ if it engages in a second sale.[4] By doing so, the bank will refrain from selling its residual share to the second market, thus restoring efficiency. From a policy perspective, this advocates in favor of an increase in market transparency. One way to increase transparency is to require loans to be publicly traded. During the last two decades, important steps have been made in this direction. The

[3]The proof of this result easily follows from the proof of Proposition 2 just replacing the interim *PC* with the time t_0 participation constraint.
[4]Notice that $F \geq \psi$ is not sufficient here to prevent renegotiation.

line between public and private in the loan market has become less clear recently, due to the explosive growth of non-bank investors groups that operate on the public side of the market, including a growing number of mutual funds, hedge funds, and even CLO boutiques; and also because of the growth of the credit default swaps market (Miller [22]). However, almost paradoxically, the opening up of the loan market to the public has been perceived negatively among issuers, lenders, and regulators as this migration of once private information into public hands might breach confidentiality agreements between lenders and issuers.

3.3. Regulation

Suppose there is a regulator whose aim is to maximize welfare so that effort is induced in equilibrium. To do so the regulator may forbid the bank from engaging in a second sale. However, this may prove difficult if the second market is not under the control of the regulator, because for example it is in a foreign country. This suggests that market integration or a "global" regulator may achieve efficiency. An alternative strategy is for the regulator to allow syndication up to a certain limit, *i.e.* α^* in our model. Clearly, this rule is difficult to implement because such limit varies across loans—the investment and return profile in our model, L and R—as well as across bank types—the cost of effort, ψ. The consequences of setting the wrong limit are twofold, depending on whether the threshold is set too high or too low. Suppose the rule states that the maximum level of syndication is equal to the level $\bar{\alpha}$. If a loan requires a $\alpha^* < \bar{\alpha}$, then the bank syndicates α^* in the first market and $\bar{\alpha} - \alpha^*$ in the second market, thus exceeding the incentive compatible share α^*. As a consequence, effort drops to zero and incomplete syndication occurs -a combination that is clearly undesirable. On the other hand, if a loan has $\alpha^* > \bar{\alpha}$, the bank is asked to syndicate less than it would like to. Both cases suggest that a policy of one-size-fits-all may generate inefficiencies that are difficult to quantify.

To sum up, we envisage three different mechanisms that can reduce the inefficiency arising from secondary loan sales. Restrictions on loan resalability can be imposed either by syndicate members via the inclusion of contractual provisions, or by the regulator. Alternatively, efficiency can be restored by increasing the transparency of the secondary loan market. Each of these measures comes at a cost. Contractual provisions that limit loan resalability may result in higher spreads and more stringent collateral requirements. An upper limit on loan resalability imposed by the regulator may generate inefficiencies when banks differ in their attitude towards risk and/or monitoring skills. Finally, opening up the loan market to the public may breach confidentiality agreements between lenders and issuers.

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