Does Retention Regulation Always Work? Incentive of loan screening in securitization under asymmetric information

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Menu

1. Motivation
2. A Model without Retention Regulation
3. Results and Discussion (w/o Retention Regulation)
4. A Model with Retention Regulation
5. Results and Discussion (with Retention Regulation)
6. Concluding Remarks

1. Motivation

Motivation (1)

- Subprime mortgage loan problem (2007~)
- Low credit quality securitized products

  => Sold well without enough effort to improve credit quality of underlying loan pools (by screening.)
- Search for effective regulation

Motivation (2)

- Financial regulation argument:

  If lenders' screening motivation is "too" small, let's fix it by a regulatory measure!

- General idea:

  A mechanism (regulation) to have lenders incur loss will motivate lenders to increase lending standard.

Motivation (3)

- Retention regulation:

  A minimal portion of loan must be kept on balance sheet of loan maker through its maturity.

- *The Dodd-Frank Wall Street Reform and Consumer Protection Act*

"SECURITIZATION

Reducing Risks Posed by Securities

• Skin in the Game: Requires companies that sell products like mortgage-backed securities to retain at least 5% of the credit risk, unless the underlying loans meet standards that reduce riskiness. That way if the investment doesn't pan out, the company that packaged and sold the investment would lose out right along with the people they sold it to."

Motivation (4)

- Retention regulation:
  A minimal portion of loan must be kept on balance sheet of loan maker through its maturity.

- Effect?
  Of course, more motivated to do loan screening.
  Of course, higher quality of securitized products, too.

Is that so simple?

Motivation (5)

- Retention regulation:

Conjecture (*Restoring Financial Stability: How to Repair a Failed System*, Acharya and Richardson (eds) (2009))

"One could compel mortgage originators to hold a fraction of each loan on their balance sheets, thus giving them the proper incentives to screen and monitor borrowers."

Motivation (6)

- Retention regulation:

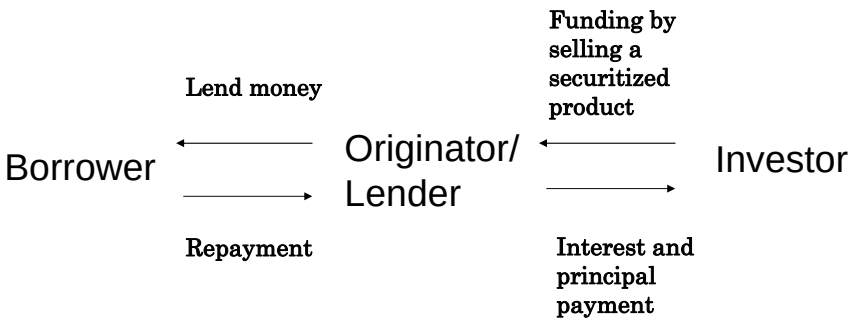
Conjecture (*Balancing the Banks: Global Lessons from the Financial Crisis* , Dewatripont, Rochet and Tirole (2010))

"Implementation of this principle is riddled with pitfalls, however."

"The quality of the securitization process is also relevant. To give a hypothetical example, let us imagine that credit-rating agencies are able (and have an incentive) to perfectly estimate the quality of a securitized portfolio. To require the issuer to retain a minimum percentage of the portfolio on its balance sheet would then result in economic losses, since the issuer will already be held fully accountable by the impact of his decisions on the market price of the securitized portfolio. More generally, the minimum economically justifiable percentage depends on the quality of the rating process, on the reputation of the investment bank carrying out the securitization, and on every other factor of reduction of informational asymmetries between issuers and purchasers."

It may not be so simple.

A Model of Securitization



Some Historical Background

- **Development and expansion of the US MBS (1980~) and ABS market (1990~)**
- **Borrowers' credit quality was well controlled by GNMA, FNMA, and FHLMC.** (=> Belief in the quality of MBS?)
- After (around) 2000,
  - **reduction of interest rate**
  - **increase of house price**

  => increase of loans to low quality borrowers by mortgage banks financed by securitization.

Data: Origination and Issue

Table 1: Origination and Issue of Non-Agency Mortgage Loans

	Sub prime			Alt-A			Jumbo			Agency		
Year	Origination	Issuance	Ratio	Origination	Issuance	Ratio	Origination	Issuance	Ratio	Origination	Issuance	Ratio
2001	$ 190.00	$ 87.10	46%	$ 60.00	$ 11.40	19%	$ 430.00	$ 142.20	33%	$ 1,433.00	$1,087.60	76%
2002	$ 231.00	$ 122.70	53%	$ 68.00	$ 53.50	79%	$ 576.00	$ 171.50	30%	$ 1,898.00	$1,442.60	76%
2003	$ 335.00	$ 195.00	58%	$ 85.00	$ 74.10	87%	$ 655.00	$ 237.50	36%	$ 2,680.00	$2,130.90	79%
2004	$ 540.00	$ 362.63	67%	$ 200.00	$ 158.60	79%	$ 515.00	$ 233.40	45%	$ 1,345.00	$1,018.60	76%
2005	$ 625.00	$ 465.00	74%	$ 360.00	$ 332.30	87%	$ 570.00	$ 200.70	49%	$ 1,180.00	$ 964.80	82%
2006	$ 800.00	$ 448.60	75%	$ 400.00	$ 365.70	91%	$ 480.00	$ 219.00	46%	$ 1,040.00	$ 904.60	87%

Source: Inside Mortgage Finance (2007).
Notes: Jumbo origination includes non-agency prime. Agency origination includes conventional/conforming and FHA/VA loans. Agency issuance GNMA, FHLMC, and FNMA. Figures are in billions of USD.

Ashcraft and Schuermann(2008)

Originators and Issuers

Table 2: Top Subprime Mortgage Originators

		2006		2005	
Rank	**Lender**	**Volume ($b)**	**Share (%)**	**Volume ($b)**	**%Change**
1	HSBC	$52.8	8.8%	$58.6	-9.9%
2	New Century Financial	$51.6	8.6%	$52.7	-2.1%
3	Countrywide	$40.6	6.8%	$44.6	-9.1%
4	CitiGroup	$38.0	6.3%	$20.5	85.5%
5	WMC Mortgage	$33.2	5.5%	$31.8	4.3%
6	Fremont	$32.3	5.4%	$36.2	-10.9%
7	Ameriquest Mortgage	$29.5	4.9%	$75.6	-61.0%
8	Option One	$28.8	4.8%	$40.3	-28.6%
9	Wells Fargo	$27.9	4.6%	$30.3	-8.1%
10	First Franklin	$27.7	4.6%	$29.3	-5.7%
	Top 25	$543.2	90.5%	$604.9	-10.2%
	Total	$600.0	100.0%	$664.0	-9.8%

Source: Inside Mortgage Finance (2007)

Table 3: Top Subprime MBS Issuers

		2006		2005	
Rank	**Lender**	**Volume ($b)**	**Share (%)**	**Volume ($b)**	**%Change**
1	Countrywide	$38.5	8.6%	$38.1	1.1%
2	New Century	$33.9	7.6%	$32.4	4.8%
3	Option One	$31.3	7.0%	$27.2	15.1%
4	Fremont	$29.8	6.6%	$19.4	53.9%
5	Washington Mutual	$28.8	6.4%	$18.5	65.1%
6	First Franklin	$28.3	6.3%	$19.4	45.7%
7	Residential Funding Corp	$25.9	5.8%	$28.7	-9.5%
8	Lehman Brothers	$24.4	5.4%	$35.3	-30.7%
9	WMC Mortgage	$21.6	4.8%	$19.6	10.5%
10	Ameriquest	$21.4	4.8%	$54.2	-60.5%
	Top 25	$427.6	95.3%	$417.6	2.4%
	Total	$448.6	100.0%	$508.0	-11.7%

Source: Inside Mortgage Finance (2007)

Ashcraft and Schuermann(2008)

Casual Observations

- Before the subprime crisis, investors seem to believe that all securitized products manage associated risk well.
- It is difficult for investors to tell the credit quality of underlying loan pools.

=> Asymmetric information between investors and lender/issuer/originator.

Questions

- How does asymmetric information in securities markets affect loan maker's screening motivation and credit quality of securitized products?
- Do retention regulation motivate more screening?
- Welfare implications?

Main Results (1)

An economy with two types of loan makers

good lenders (with **high**-quality lending opportunity)

and

bad lenders (with **low**-quality lending opportunity)

where investors cannot tell good from bad lenders.

=> Equilibrium depends on the proportion of bad lenders.

Main Results (2)

- When the proportion of bad lenders is low, non-screening (pooling) equilibrium realizes.

- In non-screening equilibrium:

  No screening of borrowers by the bad lenders
  Low average credit quality of securitized product

Main Results (3)

- When the proportion of bad lenders is high, screening (separating) equilibrium realizes.

- In screening equilibrium:

  Screening of borrowers by the bad lenders
  High average credit quality of securitized product

Main Results (4)

- Different type of welfare loss exists in different type of equilibrium.
- Welfare in screening equilibrium is not necessarily larger than non-screening equilibrium.

Main Results (5)

- Increasing minimum retention may make the economy more prone to non-screening equilibrium.
- Retention regulation can change equilibrium from non-screening one to screening one.
- Retention regulation can change equilibrium from screening one to non-screening one, too.
- Retention regulation may not be welfare-improving.

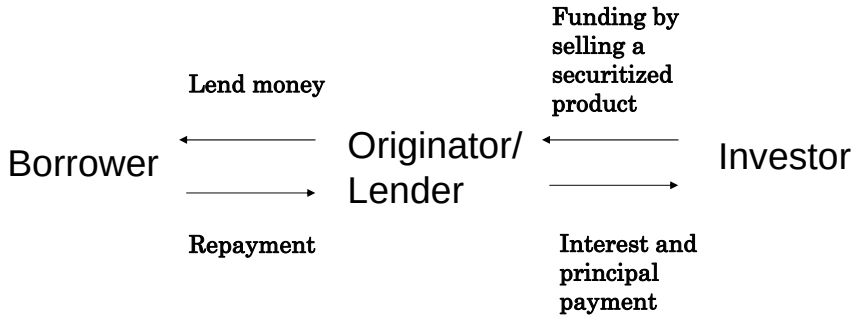
Related Works (1)

- Ashcraft and Schuermann (2008)
- Dell'ariccia et al (2008)
- Jimenez and Saurina (2006)
- Berger and Udell (2004)
- Rajan(1994)
- Holmstrom and Tirole (1997)
- Gorton and Pennacchi (1995)
- Allen and Gale (1988)
- DeMarzo and Duffie (1999), DeMarzo (2005)
- Keys et al (2009)
- *Restoring Financial Stability* (2009)

Related Works (2)

- *Balancing the Banks* (2010)
- Fender and Mitchell (2009)
- Kiff and Kisser (2010)
- Hattori and Ohashi (2009)

Basic Idea Behind the Models



- Lenders/Originators/Issuers can improve credit quality of loan pools by costly screening.
- Investor cannot observe lenders' screening activity.

S: price of securitized product

Y(ScreenCost): payoff of the securitized products

=> S − ScreenCost: Lenders' profit

- No internalization of value-enhancement by lenders
  => No costly screening by lenders
  => No improvement of credit quality

- Retention: one way to internalize value-enhancement

$$(1 - b)S + b\,Y(\text{ScreenCost}) - \text{ScreenCost}$$

Payoff to lenders can be non-proportional to Y(ScreenCost)
e.g.,

$$S(\text{F},\ b) + \text{F}[b, Y(\text{ScreenCost})] - \text{ScreenCost}$$

Fender and Mitchell (2009) and Kiff and Kisser (2010) compare 3 different F's and optimal b(F)'s to investigate incentives of screening by lenders.

- Verification: another way to internalize value-enhancement

$$S(\text{Verification}) - \text{ScreenCost} - \text{VerifyCost}$$

e.g. **S_h: price of high quality product**
S_l: price of low quality product

S_h − ScreenCost − VerifyCost > S_l

=> Improve credit quality by screening

This paper analyze this case with verification while allowing retention plays its role.

・Fender and Mitchell (2009) and Kiff and Kisser (2010) consider the case with one type of lender.

・In reality, there may be different types of lenders
=> Considers the case with
good lenders with good lending opportunities and
bad lenders with bad lending opportunities.

・Investor cannot tell good lenders from bad lenders.
=> Bad lenders may disguise themselves as good lenders and sell their low-quality products at overvalued price.
=> Adverse incentives for costly screening

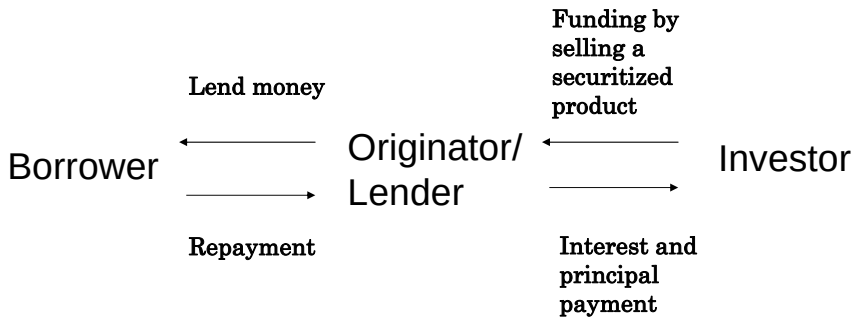
We believe that over-valuation of low-quality securitized products is an important cause of the flood of low-quality products.

Q1: When do lenders have incentives not to do costly screening and to produce low-quality products?

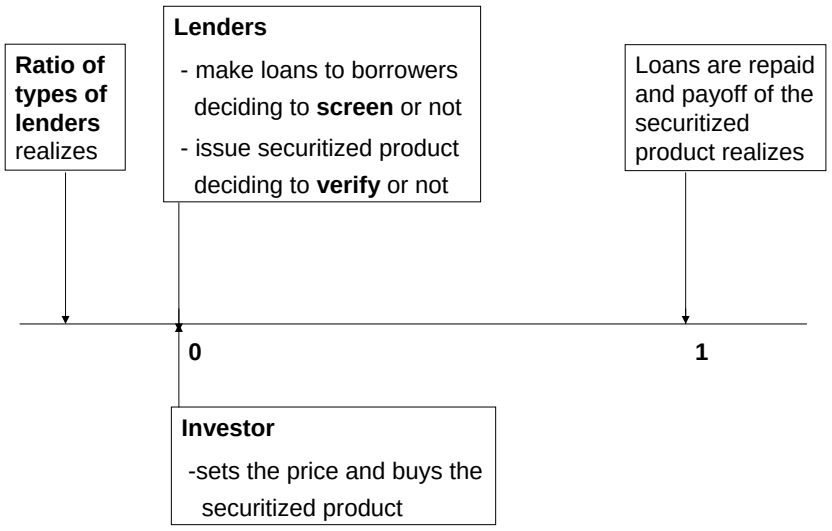
Q2: Does retention regulation work for reducing such incentives?

Q3: What are welfare effects?

2. A Model without Retention Regulation



- **Costly screening** of borrowers.
- **Costly verification** of products' quality.
- Borrower's quality determines products' credit quality.
- Price of the securitized product depends on its credit quality.



Time Period and Type of Lenders

• Two periods: period 0 and period 1.

• Type of lenders (ω):
good ($\omega = G$)(with ratio $1-p$)
bad ($\omega = B$)(with ratio p) ($0 < p < 1$)

➢ good lender: only high quality borrowers

➢ bad lender: two types of borrowers
with *high* credit-quality (ratio $1-\alpha$), and
with *low* credit-quality (ratio α)

Loan Opportunities and Type of Borrowers

- A continuum of borrowers. The borrower borrows $D\ (< 1)$ in period 0 and pays back a certain amount in period 1.
- A borrower gets utility u_B by borrowing.
- Two types of borrowers:
  High quality borrower: pays back 1
  Low quality borrower: pays back

$$1 \text{ with probability } 1-q$$
$$z\ (0 < z < 1) \text{ with probability } q$$

Lender' Problem (1)

- The lender decides whether he does

screening

and/or

verification

and/or

retention

to maximize his profit before he issues securitized product.

Lender's Problem (2)

- Costly screening technology: cost of screening γ_s
- Costly verification technology: cost of verification γ_v
- Retention ratio: b

Lender's Problem (3)

- Each type of lender ($\omega = G$ or B)

$$\max_{r,b} [(1-b)S(\gamma, b, \omega) + \beta b Y(\gamma, b, \omega) - \gamma - D]$$

$$s.t. \quad \gamma = 0, \ \gamma_s, \ \gamma_v, \ or \ \gamma_s + \gamma_v$$

and

$$(1-b)S(\gamma, b, \omega) \geq D \quad \text{(Financing Condition <FC>)}$$

S: the price of securitized product

Y: period 1 expected payoff of the securitized products

Investor

- Risk-neutral
- Purchases the securitized product in period 0 and receives its payoff in period 1.
- Cannot tell the types of lenders.
- Infers the credit quality of securitized products, and price it according to her inference.

Assumptions

Assumption 1 (participation of bad lenders)

$$1 - \gamma_s - \gamma_v \geq D$$

It is profitable for bad lenders to screen borrowers, verify securities quality, and sell the securitized products at high price.

Assumption 2 (value-enhancing screening and verification)

$$1 - \gamma_s - \gamma_v \geq x$$

It is more profitable for bad lenders to screen borrowers, verify securities quality, and sell the securitized products at high price (1) than to do nothing and sell the securitized products at low price (x).

Here x is defined as $S_l = x \equiv (1-q)\,1 + q\,\{(1-\alpha)\,1 + \alpha z\}$.

3. Results and Discussion (w/o Retention Regulation)

Prices of the Securitized Product

Given the information structure in the model,

- Good lender's securitized product with verification

$$S_h = 1$$

- Bad lender's securitized product with screening and verification

$$S_h = 1$$

- Bad lender's securitized product without screening (and verification)

$$S_l = x \equiv (1-q)\,1 + q\left\{(1-\alpha)\,1 + \alpha z\right\}$$

- Securitized product without verification (and screening) by both type of lenders

$$\overline{S} = (1-p)\,S_h + pS_l = (1-p) + px$$

Conditions for Non-Screening Equilibrium

IC condition for good lender (GIC)

$$\max\left((1-b_G)S_h+\beta b_G S_h-\gamma_v\right)\leq \max\left((1-b)\overline{S}+\beta b S_h\right)$$

IC condition for bad lender (BIC)

$$\max\left((1-b_B)S_h+\beta b_B S_h-\gamma_s-\gamma_v\right)\leq \max\left((1-b)\overline{S}+\beta b S_l\right)$$

Financing condition (FC)

$$(1-b)\,\overline{S}\geq D$$

Non-Screening Equilibrium

Proposition 1

If $p\leq\frac{1-\beta}{1-x}$ (i.e., $\overline{S}\geq\beta S_h$) and $p\leq\frac{\gamma_v}{1-x}$ (i.e., $S_h-\gamma_v\leq\overline{S}$), then non-screening equilibrium exists in which bad lenders do not screen borrowers and issue low credit-quality securitized products.

Screening Equilibrium with Verification (Not FC-Binding Case)

Proposition 2

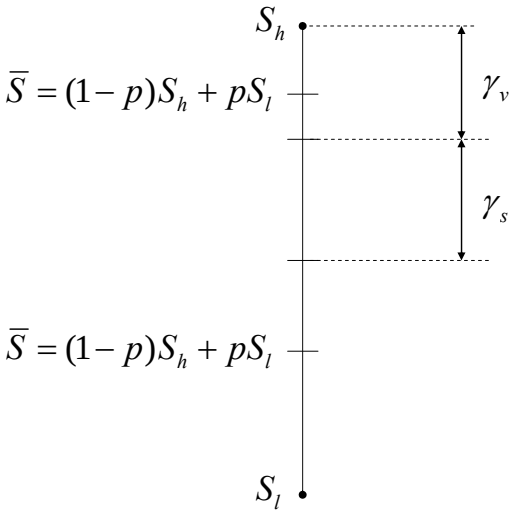
If $p \leq \frac{1-\beta}{1-x}$ (i.e., $\overline{S} \geq \beta S_h$) but $p > \frac{\gamma_v}{1-x}$ (i.e., $S_h - \gamma_v > \overline{S}$), then screening equilibrium with verification exists in which bad lenders screen borrowers, verify quality, issue high credit-quality securitized products, but retain no part of the products.

Intuition

• The price of low quality product in the non-screening (pooling) equilibrium does not correctly reflect, and is higher than, its true value.

=> Increase of revenue by issuing the high quality product is lower in the pooling equilibrium than in the case where the price of low quality product correctly reflected its true (low) value.

=> Bad lenders have less incentive to improve the credit quality of securitized product for getting higher price.



Implication

- The lending standard is lower, when the state of market is better (i.e., p is lower.)

=> Consistent with the empirical results e.g.,
Dell'ariccia et al (2008)
Jimenez and Saurina (2006)

- We would like to interpret such situation of pooling equilibrium to resemble the MBS market from around 2004 to 2007 just before the subprime crisis when the housing markets started peaking out and low quality borrowers crept in.

Screening Equilibrium with Verification or Retention

Proposition 3

Set $b^* = \frac{\overline{S}-(S_h-\gamma_s-\gamma_v)}{\overline{S}-\beta S_l}$ (i.e., $S_h - \gamma_s - \gamma_v = (1-b^*)\overline{S} + \beta b^* S_l$).

If $p > \frac{1-\beta}{1-x}$ (i.e., $\overline{S} < \beta S_h$) and $p \leq \frac{1-D}{1-x}$ (i.e., $\overline{S} \geq D$), then

(1) if $\gamma_v \leq (1-\beta)b^* S_h$, screening equilibrium with verification exists in which good lenders retain no part of securitized products and verify their quality, while bad lenders screen borrowers, verify quality, issue high credit-quality products, and retain no part of the products, and

(2) if $\gamma_v > (1-\beta)b^* S_h$, screening equilibrium with retention exists in which good lenders retain some part of securitized products but does not do verification, while bad lenders screen borrowers, verify quality, issue high credit-quality products, and retain no part of the products.

Screening Equilibrium with Verification (FC-Binding Case)

Proposition 4

If $p > \frac{1-D}{1-x}$ (i.e., $\overline{S} < D$), then screening equilibrium with verification exists in which good lenders retain no part of securitized products and verify their quality, while bad lenders screen borrowers, verify quality, issue high credit-quality products, and retain no part of the products.

Welfare Analysis: Price of the Securitized Product in "Benchmark" Case

- Benchmark case

  The investor knows the type of each lender *but* does not observe the screening activity.

- Price of securitized products

  Good lender's product

  $$S_h = 1$$

  Bad lender's product with screening and verification

  $$S_h = 1$$

Welfare in Benchmark Case

- The economic welfare is determined by the profit of the lender. It is

$$(1-p)(1-D) + p(1-\gamma_s-\gamma_v-D)$$

Welfare in Non-Screening Equilibrium

Welfare

$$(1-p)(\overline{S}-D)+p(\overline{S}-D)$$

Welfare Loss vis-à-vis Benchmark Case

$$p(S_h-\gamma_s-\gamma_v-S_l)$$

Welfare loss comes from bad lenders' NOT improving the credit quality of securitized product by costly screening and verification.

Welfare in Screening Equilibrium with Verification

Welfare

$$(1-p)(S_h-\gamma_v-D)+p(S_h-\gamma_s-\gamma_v-D)$$

Welfare Loss vis-à-vis Benchmark Case

$$(1-p)\gamma_v$$

Welfare loss comes from good lenders' need of verification. (cf. In the benchmark case, there is no need of verification.)

Welfare in Screening Equilibrium with Retention

Welfare

$$(1-p)\left(S_h-(1-\beta)b^*S_h-D\right)+p(S_h-\gamma_s-\gamma_v-D)$$

Welfare Loss vis-à-vis Benchmark Case

$$(1-p)(1-\beta)b^*$$

where

$$b^*=\frac{\overline{S}-(S_h-\gamma_s-\gamma_v)}{\overline{S}-\beta S_l}$$

Welfare loss comes from good lenders' need of retention and (indirectly) cost of verification.

4. A Model with Retention Regulation

Retention Regulation

- Retention regulation:

  A minimal portion of loan must be kept on balance sheet of loan maker through its maturity.

- *The Dodd-Frank Wall Street Reform and Consumer Protection Act*

"SECURITIZATION

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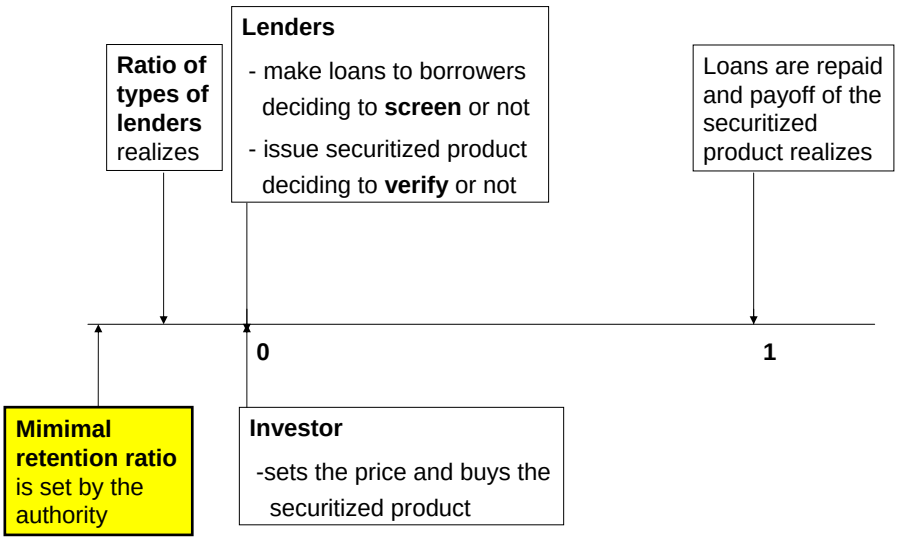
• Skin in the Game: Requires companies that sell products like mortgage-backed securities to retain at least 5% of the credit risk, unless the underlying loans meet standards that reduce riskiness. That way if the investment doesn't pan out, the company that packaged and sold the investment would lose out right along with the people they sold it to."



Model

- $\underline{b}$: Minimal Retention Ratio

- We consider the case where $\overline{S} \geq \beta S_h$ (i.e., $p \leq \frac{1-\beta}{1-x}$)
  => The lenders choose the least retention ratio allowed by the regulator, $\underline{b}$.

- We also consider the case where good lenders choose $\underline{b}$ and bad lenders imitate them by choosing $\underline{b}$.

Conditions for Non-Screening Equilibrium (1)

IC condition for good lender (GIC)

$$(1-\underline{b})S_h + \beta\underline{b}S_h - \gamma_v \leq (1-\underline{b})\overline{S} + \beta\underline{b}S_h$$

IC condition for bad lender (BIC)

$$(1-\underline{b})S_h + \beta\underline{b}S_h - \gamma_s - \gamma_v \leq (1-\underline{b})\overline{S} + \beta\underline{b}S_l$$

Financing condition (FC)

$$(1-\underline{b})\,\overline{S} \geq D$$

Conditions for Non-Screening Equilibrium (2)

IC condition for good lender (GIC)

$$p \leq \frac{\gamma_v}{(1-\underline{b})(1-x)}$$

IC condition for bad lender (BIC)

$$p \leq \frac{\gamma_s + \gamma_v - \underline{b}\beta(1-x)}{(1-\underline{b})(1-x)}$$

Financing condition (FC)

$$p \leq \frac{(1-\underline{b}) - D}{(1-\underline{b})(1-x)}$$

5. Results and Discussion (with Retention Regulation)

Non-Screening Equilibrium

Proposition 4

Suppose that the lenders are required to retain at least $\underline{b}$ of their own securitized products. Then, there exists a non-screening equilibrium in which bad lenders do not screen borrowers if

$$p \leq \frac{1}{1-x} \min \left\{ \frac{\gamma_v}{1-\underline{b}}, 1-\beta, \frac{1-\underline{b}-D}{1-\underline{b}}, \frac{\gamma_s+\gamma_v-\underline{b}(1-x)}{1-\underline{b}} \right\}$$

Case for Analysis

- Under the following conditions, we obtain the figures in the following slides:

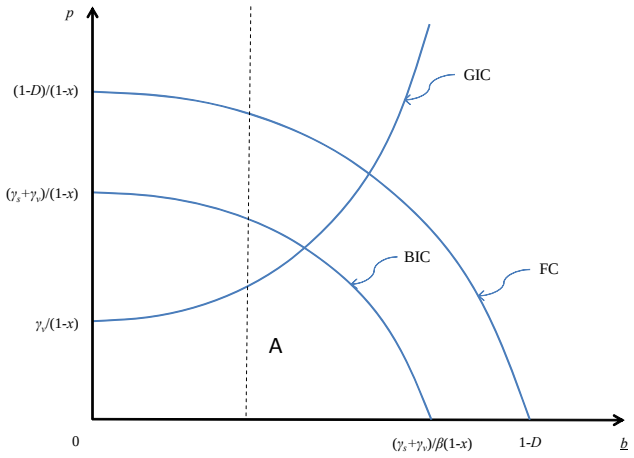
$p \leq \frac{1-\beta}{1-x}$: lenders retain as less as possible ($\overline{S} \geq \beta S_h$)

$\frac{\gamma_s+\gamma_v}{1-x} \leq \beta$: BIC curve is decreasing in $\underline{b}$

$\frac{\gamma_s+\gamma_v}{1-x} \leq 1-D$: no crossing of BIC and FC (FC is always above BIC)

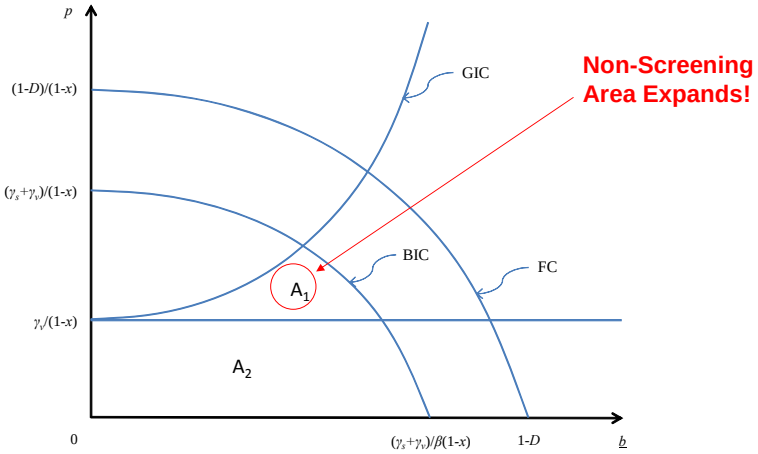
- Note: GIC curve $p \leq \frac{\gamma_v}{(1-\underline{b})(1-x)}$ is always increasing in $\underline{b}$.

Equilibria (1)



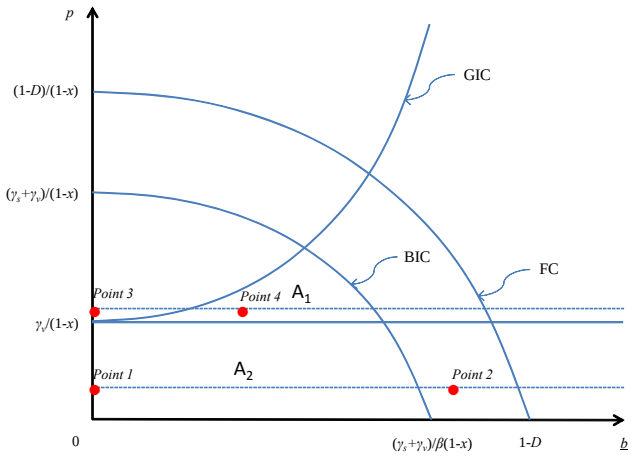
A: non-screening equilibrium area

Equilibria (2)

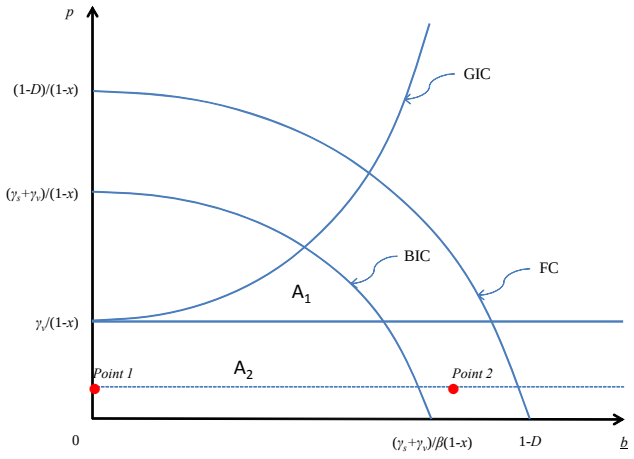


A_1: non-screening equilibrium area expands as the minimal retention rate increases.

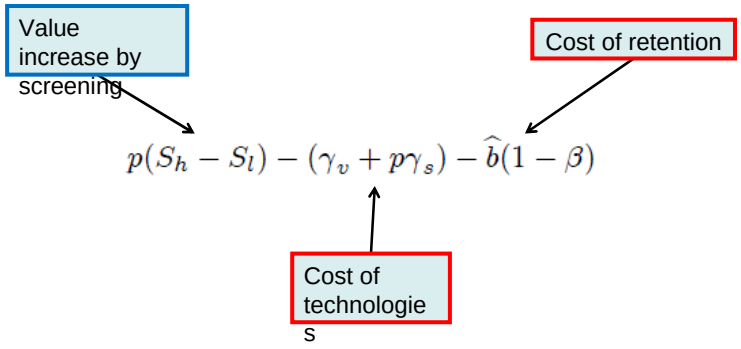
Equilibria (3)



Welfare Comparison (Point 1 → Point 2) (1)



Welfare Comparison (Point 1 → Point 2) (2)



W(Point 2 (Screening)) − W(Point 1 (Non-Screening))

Welfare Comparison (Point 1 → Point 2) (3)

- Welfare reduces, iff

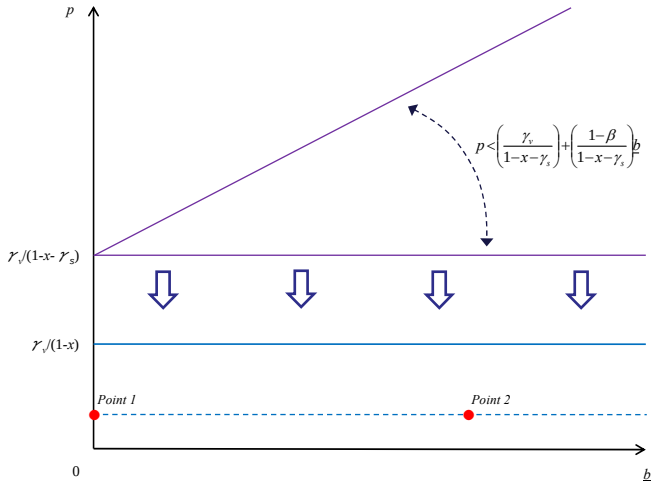
$$p(S_h - S_l) - (\gamma_v + p\gamma_s) - \widehat{b}(1-\beta) < 0$$

- Equivalently,

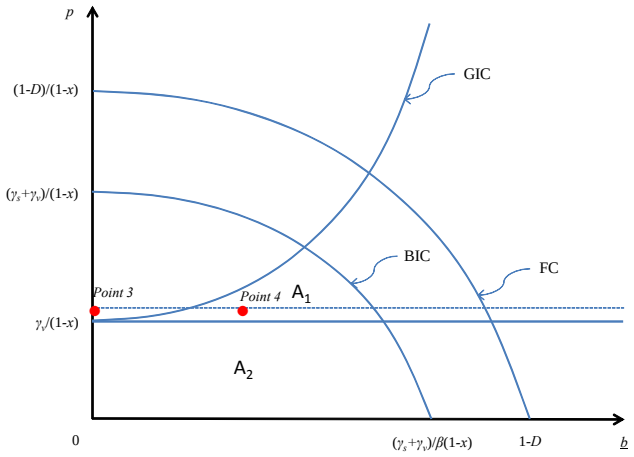
$$p < \left(\frac{\gamma_v}{1-x-\gamma_s}\right) + \left(\frac{1-\beta}{1-x-\gamma_s}\right)\widehat{b}$$

- This implies that the effect is definitely welfare reducing! (See next slide.)

Welfare Comparison (Point 1 → Point 2) (4)



Welfare Comparison (Point 3 → Point 4) (1)



Welfare Comparison (Point 3 → Point 4) (2)

Value increase by screening

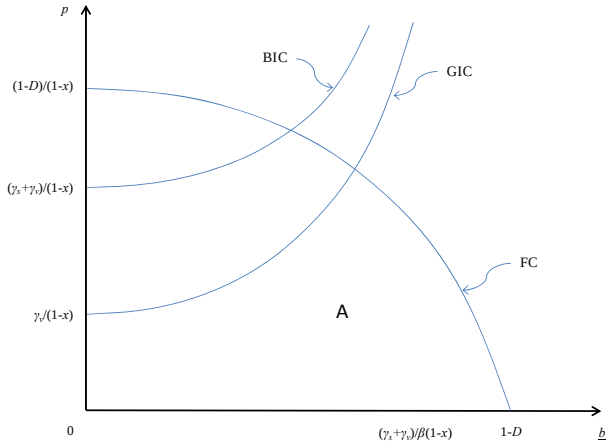
Cost of retention

$$(\gamma_v + p\gamma_s) - p(S_h - S_l) - \hat{b}((1-\beta)(1-p(1-x)))$$

Cost of technologies

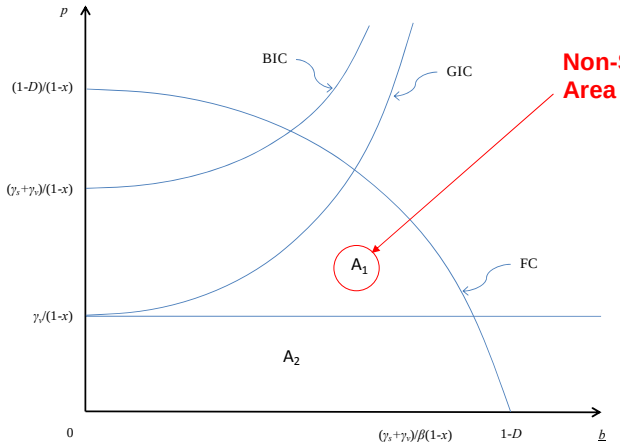
W(Point 4 (Non-Screening)) − W(Point 3 (Screening))

Equilibria with Increasing BIC (1)



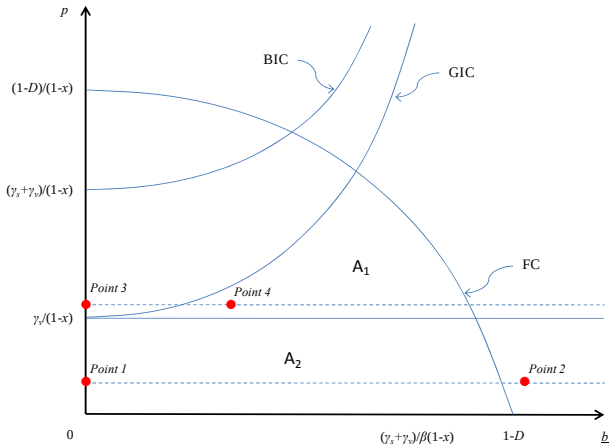
A: non-screening equilibrium area

Equilibria with Increasing BIC (2)



A_1: non-screening equilibrium area expands as the minimal retention rate increases.

Equilibria with Increasing BIC (3)



We can do the same welfare analyses with the same results.

Summing-up (Retention Regulation)

Question 1:

Does increasing mimimal retention ratio give lenders more incentive to screen?

Answer 1:

Not necessarily.

Question 2:

Does increasing mimimal retention ratio improve welfare?

Answer 2:

Not necessarily.

4. Concluding Remarks

Concluding Remarks (Non-Screening)

- Incentive of loan screening and hence credit quality of securitized products depend on the state of economy.
  - Very high ratio of defaultable borrowers.
    => The lender has more incentive to screen and issues the high quality products.
  - Very low ratio of defaultable borrowers.
    => The lender has less incentive to screen and the price of securitized product does not reflect its true value. Even the low quality products is issued.
- Though verification is perfect, non-screening still occurs.

Concluding Remarks (Retention Regulation)

- Increasing minimal retention ratio may reduce lenders' incentive to screen borrowers and hence reduce average credit-quality of securitized products.
- Forcing lenders to screen borrowers by minimal retention requirement can be welfare-reducing.

Concluding Remarks (Future Research)

- Other types of retention requirement?
  (Not just vertical slice.)
- Relation between precision of verification (rating) and retention?

Thank you very much!