

Challenges in Banking Research

Session I: Issues in Securitization

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Basel Committee Research Task Force Workshop

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Paper 1

Ingo Fender (BIS) and Janet Mitchell (NBB)

“Incentives and Tranche Retention in Securitization”

Paper 2

John Kreiner (FRBSF) and Elizabeth Laderman (FRBSF)

“Mortgage Loan Securitization and Relative Loan Performance”

Common theme

- Moral hazard aspects of securitization
 - Screening incentives of originators
- Theoretical perspective: Fender and Mitchell
- Empirical perspective: Krainer and Laderman

Discussion on Fender and Mitchell

Issues

- What is the optimal way to securitize a portfolio?
 - Focus on screening incentives of originator
- Three retention mechanisms
 - Equity tranche
 - Mezzanine tranche
 - Vertical slice

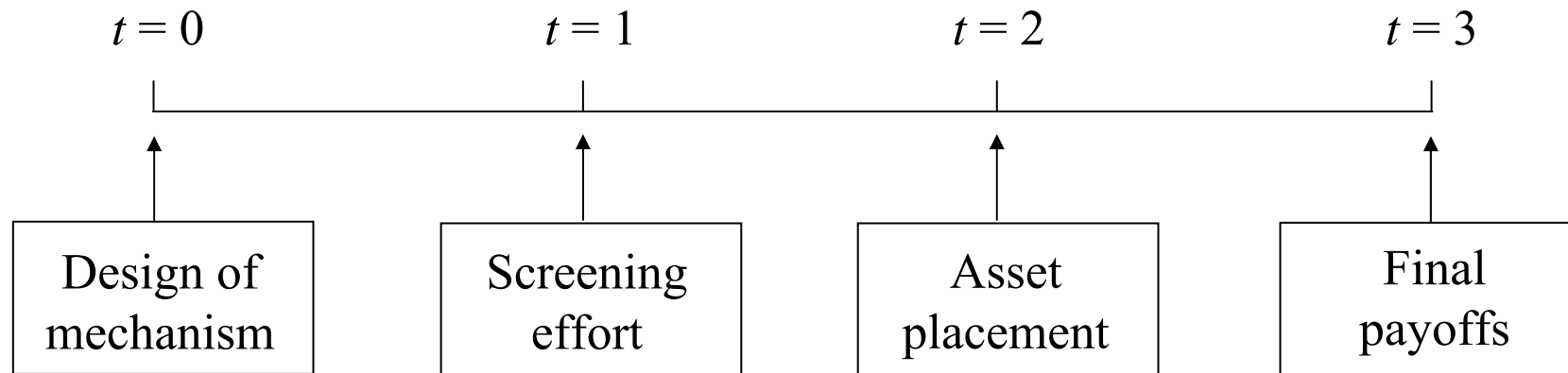
Discussion on Fender and Mitchell

Main results

- There is no optimal mechanism
 - Depends on effect of screening on return distributions
- Retaining equity tranche may be dominated
 - When probability and severity of downturns is high

Discussion on Fender and Mitchell

Time line



Discussion on Fender and Mitchell

Setup

- Unit portfolio of loans with correlated defaults
→ Portfolio return $x \in [0, R]$

- General securitization mechanism

$$z: [0, R] \rightarrow [0, R] \quad \text{with } 0 \leq z(x) \leq x$$

→ $z(x)$ retention of originator

- Screening effort e with cost $c(e)$ and FSD shift in cdf $F(x|e)$

$$\frac{\partial F(x|e)}{\partial e} \leq 0$$

- Securitization benefits $\Omega > 1$

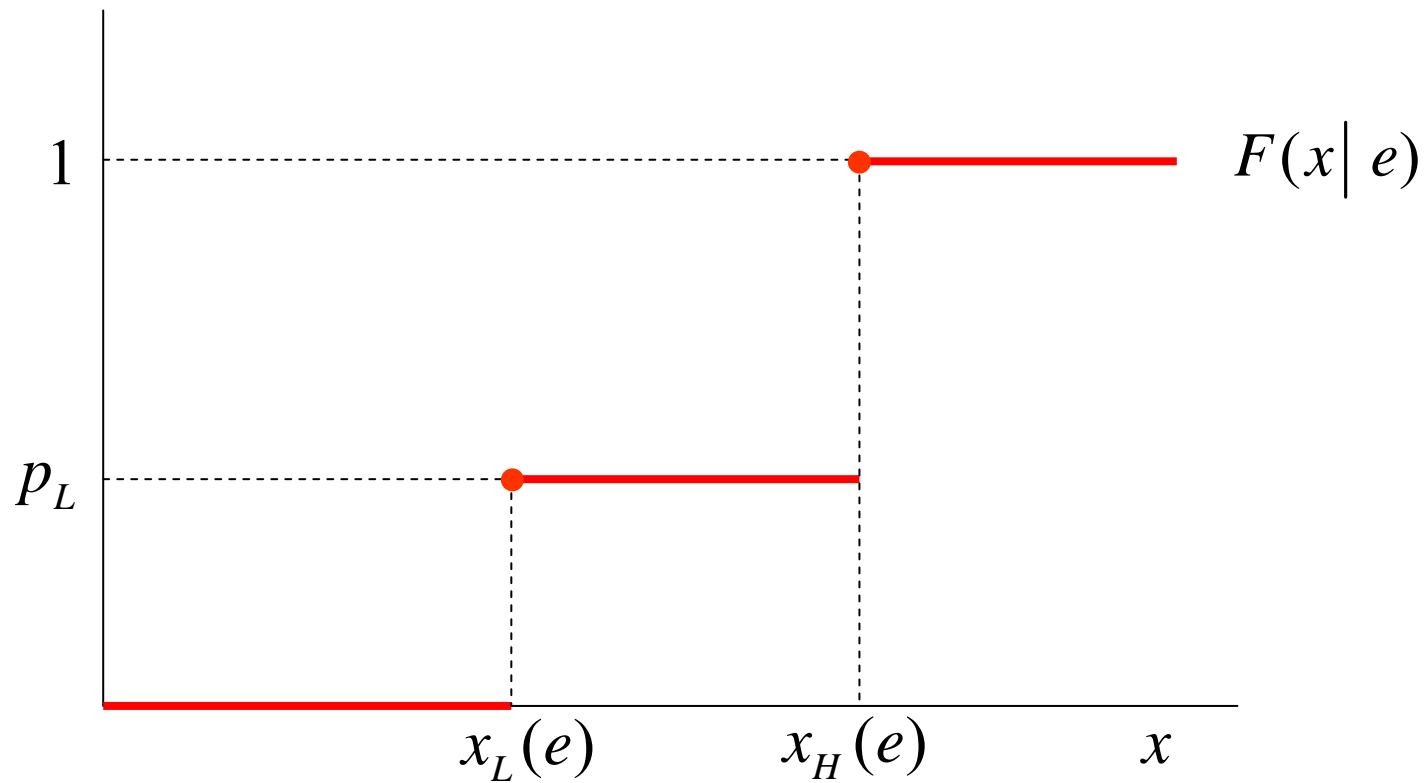
Discussion on Fender and Mitchell

Special retention mechanisms

- Holding entire pool $z(x) = x$
- Securitizing entire pool $z(x) = 0$
- Vertical slice $z(x) = vx$ with $0 < v < 1$
- Equity tranche $z(x) = \max \{x - d_0, 0\}$ with $0 < d_0 < R$
- Mezzanine tranche
 $z(x) = \min \{ \max \{x - d_1, 0\}, d_2 \}$ with $0 < d_1 < d_2 < R$

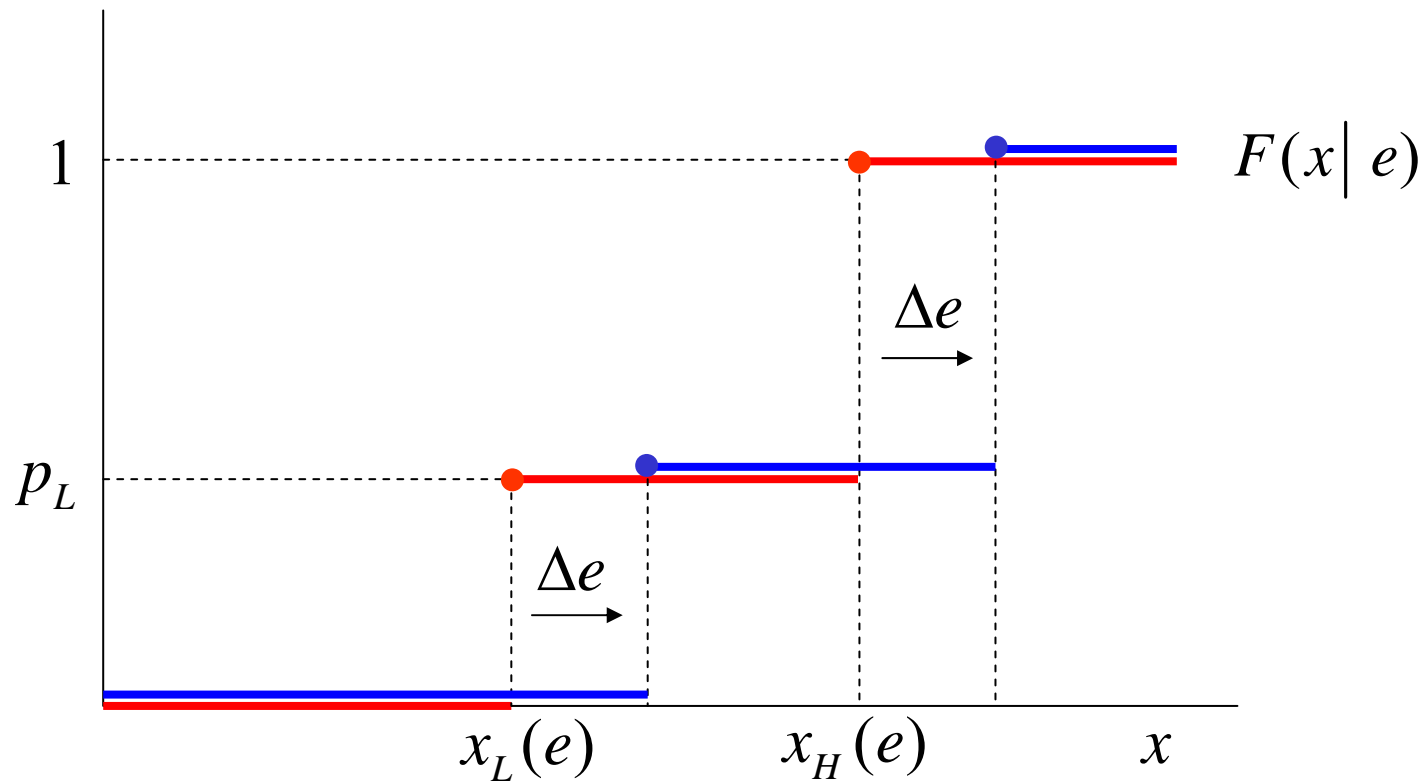
Discussion on Fender and Mitchell

Special return distribution



Discussion on Fender and Mitchell

Special return distribution



Discussion on Fender and Mitchell

Optimal mechanism design

- Choice of effort (for given $z(x)$)

$$\Pi_{z(x)} = \max_e \left[\int_0^R z(x) dF(x|e) - c(e) \right] \rightarrow e_{z(x)}$$

- Buyer's payoff

$$S_{z(x)} = \int_0^R (x - z(x)) dF(x|e_{z(x)})$$

- Choice of mechanism

$$\max_{z(x)} \left[\Pi_{z(x)} + \Omega s_{z(x)} - 1 \right]$$

Discussion on Fender and Mitchell

Trade-offs

- Higher screening effort e (for a given $z(x)$)
 - Higher cost of effort $c(e)$
 - Higher value of securities retained
- Higher securitization of portfolio (lower $z(x)$)
 - Lower incentives to exert effort
 - Higher value of portfolio for originator (since $\Omega > 1$)

Discussion on Fender and Mitchell

Comment 1

- It is very difficult to obtain general results
 - Even if we restrict attention to special securities
- Is there any rationale for the specific return distribution?

Discussion on Fender and Mitchell

Comment 2

- Return distribution implies that e is observable ex post
 - Just invert $x_L(e)$ or $x_H(e)$
- Moral hazard problem could be avoided
 - Write contract contingent on effort

Discussion on Fender and Mitchell

Comment 3

- Is it private or social optimality?
 - What is behind the assumption that $\Omega > 1$?
 - What if it were some form of regulatory arbitrage?
 - Need more discussion on this!

Discussion on Fender and Mitchell

Comment 4

- There is no discussion of differences between
 - Optimal securitization design under moral hazard
 - Optimal financial structure under moral hazard
- Is equity retention optimal under MLRP?
 - Does the result in Innes (1990) apply?
 - Probably yes!

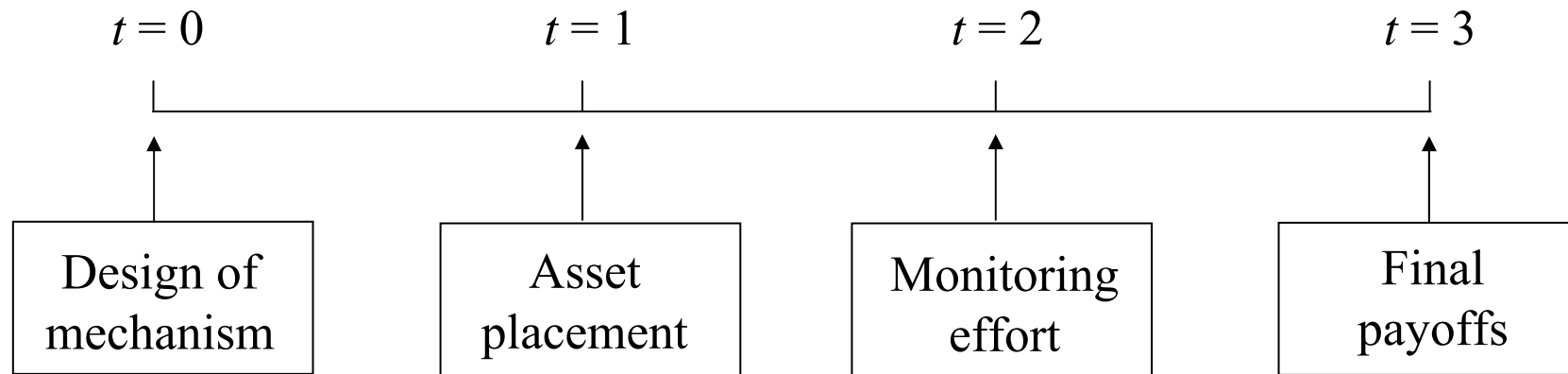
Discussion on Fender and Mitchell

Comment 5

- Is it ex-ante screening or ex-post monitoring?
 - Exactly same results with alternative time line

Discussion on Fender and Mitchell

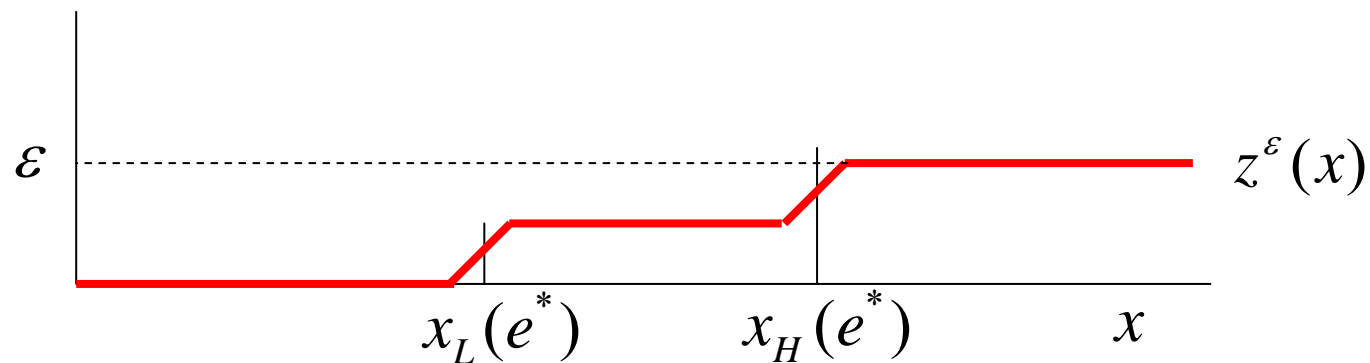
Alternative time line



Discussion on Fender and Mitchell

Comment 6

- For given return distribution
→ Optimal contract can be arbitrarily approximated
- Let e^* denote first-best level of effort
- Define (monotonic) contract $z^\varepsilon(x)$



Discussion on Fender and Mitchell

Summing up

- Topic is very interesting and policy relevant
- Very difficult to get analytical results (except under MLRP)
- Unclear that one can rely on numerical solutions
- Need to think more about private vs. social benefits
- Need to think more about screening vs. monitoring costs

Discussion on Krainer and Laderman

Issues

- Which loans get securitized?
- What relative performance of securitized vs. retained loans?

Discussion on Krainer and Laderman

Data

- Mortgage loans originated in California, 2000-2007
- Observed in October 2008
- Matched with information on borrowers and on lenders
- Both non-agency securitized and retained loans
- Both purchase and refinance loans

Discussion on Krainer and Laderman

Empirical strategy

- Regression discontinuity model to identify
 - Jumps in securitization rate at FICO scores
 - Jumps in delinquency rate at FICO scores
- Probit model to identify
 - Determinants of securitization rate
 - Determinants of delinquency rate (incl. securitization)

Discussion on Krainer and Laderman

Regression discontinuity results

- Focus on purchase loans
- Significant increase in securitization rate at 620 FICO
- Significant increase in delinquency rate at 600 & 620 FICO
 - Only for securitized loans
 - Results consistent with Keys et al. (2010)
 - Less screening for loans more likely to be securitized

Discussion on Krainer and Laderman

Probit results

- Focus on purchase loans
- Securitization is more likely for
 - Large (jumbo) loans → Riskier loans?
 - Fixed rate mortgages → Safer loans?
 - Low loan-to-value (LTV) → Safer loans?
 - Low residual income → Riskier loans?
 - Smaller and less capitalized lenders
- FICO score is not significant

Discussion on Krainer and Laderman

Probit results

- Focus on purchase loans
- Delinquency is more likely for
 - Large (jumbo) and subprime loans
 - Adjustable rate mortgages (ARM)
 - High loan-to-value (LTV)
 - Low residual income
 - Low FICO score
- Securitized dummy is not significant

Discussion on Krainer and Laderman

Comment 1

- Too little information on data
 - Give descriptive statistics
- Distinguish loans by origination date
 - Results may be sensitive to origination date

Discussion on Krainer and Laderman

Comment 2

- Is delinquency status defined at observation date?
 - Time since origination is likely to be important

Discussion on Krainer and Laderman

Comment 3

- Are agency securitized loans excluded from sample?
→ If so, why?

Discussion on Krainer and Laderman

Comment 4

- Determinants of securitization rates
 - Add a 620 FICO score dummy
 - For consistency with regression discontinuity results
- Results on risk characteristics are pretty ambiguous
 - Maybe return characteristics are also important
 - ARM retained because they are more profitable?

Discussion on Krainer and Laderman

Comment 5

- Determinants of delinquency rates
 - Securitized dummy has wrong sign (but insignificant)
 - Theory predicts that it should be positive
 - Less screening (or monitoring) for securitized loans
- But securitized dummy is not exogenous
 - Should be treated as endogenous explanatory variable
 - Use selection model with two endogenous regimes

Discussion on Krainer and Laderman

Summing up

- Very interesting new data
- Somewhat disappointing results
- Queries about data
 - Time since origination
 - Delinquency status
 - Agency securitized loans
- Queries about variables in delinquency regression
 - Securitized dummy should be treated as endogenous