

Comments by Rafael Repullo on

**CMBS Subordination, Ratings Inflation,
and Regulatory Capital Arbitrage**

Richard Stanton and Nancy Wallace

XIII Madrid Finance Workshop

IESE, 26 November 2012

Starting point

- Change in capital requirements of CMBS bonds
 - Significant reduction for highly rated bonds

	Before Jan 2002	After Jan 2002
AAA & AA	8.0%	1.6%
A	8.0%	4.0%
BBB	8.0%	8.0%
BB	8.0%	16.0%

Purpose of paper

- Relate this reduction in capital requirements to
 - Reduction in yields of highly rated CMBS bonds
 - Upgrading of lower rated CMBS bonds

Main results of paper

- Significant reduction in spreads
 - between highly rated CMBS and corporate bonds
 - mainly in 2002-2003
- Significant increase in likelihood of upgrade
 - of CMBS bonds (relative to RMBS) to AA or AAA
 - mainly in 2001-2002

Structure of paper

- Description of regulatory change
- Evidence on spreads and upgrades of CMBS bonds
- Robustness tests
 - Credit quality of underlying loans: no change
 - Mix of different property types in pools: no change
 - Pricing of underlying loans: no change until 2005

Outline of discussion

- Understanding the empirical results
 - Pricing of CMBS bonds by banks: Comment 1
 - Behavior of credit rating agencies: Comment 2
- Other comments on empirical results: Comments 3-5
- Is this about regulatory capital arbitrage?

Part 1

Loan pricing with capital requirements

A simple model

- Competitive risk-neutral bank holding a risky loan of unit value
 - Let p denote the probability of default (PD)
 - Let λ denote the loss given default (LGD)
- Bank funded with
 - Uninsured deposits that require zero return (normalization)
 - Capital that requires return $\delta > 0$ (tax distortions, etc.)
- Bank is subject to capital requirement k
 - Capital requirement will be binding
 - Bank will raise $1 - k$ uninsured deposits

Deposit and loan rates

- Determination of deposit rate b

→ Participation constraint of uninsured depositors

$$(1 - p)(1 - k)(1 + b) + p(1 - \lambda) = 1 - k$$

- Determination of loan rate r

→ Zero profit condition of bank shareholders

$$(1 - p)[1 + r - (1 - k)(1 + b)] = k(1 + \delta)$$

Loan pricing equation

- Participation constraint implies

$$(1-p)(1-k)(1+b) = 1 - k - p(1-\lambda)$$

- Substituting this into zero profit condition

$$\begin{aligned} k(1+\delta) &= (1-p)[1+r - (1-k)(1+b)] \\ &= (1-p)(1+r) - (1-k) + p(1-\lambda) \end{aligned}$$

→ which implies the following pricing equation

$$\underbrace{(1-p)r - p\lambda}_{\text{expected net payoff of investment}} = \underbrace{\delta k}_{\text{excess cost of capital}}$$

A generalization

- Same result obtains when
 - Bank has portfolio of loans with same PD and LGD
 - Defaults are correlated (e.g., single risk factor model)
 - See Repullo and Suarez (JFI 2004)

Changes in capital requirements

- When the PD is small (for highly rated loans)

→ Pricing equation simplifies to

$$r = \delta k$$

→ which implies

$$\Delta r = \delta \Delta k$$

A (relevant) numerical example

- Cost of capital $\delta = 6\%$ (Tier 1 + Tier 2)
- Change in capital requirements

$$\Delta k = k_1 - k_0 = 0.016 - 0.08 = -0.064$$

→ Effect on loan rates

$$\Delta r = \delta \Delta k = 0.06 \times (-0.064) = -0.0038 = -38\text{bp}$$

Comment 1: Effect on spreads

- Figure 2 shows that spread between CMBS and corporate bond yields for AAA and AA ratings
 - Gradually goes down in 2002 by about 100bp
 - Goes up in 2013 by about 50bp and disappears in 2015
- What accounts for these changes?
 - Capital requirements remained constant since 2002!
- Why gradual reduction in spreads in 2002?
 - Impact on spreads should be much quicker!

Part 2

Explaining upgrades in ratings

Opp, Opp & Harris (2012)

- Continuum of firms and monopolistic rating agency
- Agency has access to noisy information acquisition technology
- Endogenous precision of information and disclosure
- Reduced-form modeling of regulatory use of ratings
 - Relax investors' participation constraint
- Main result: an increase in regulatory advantage of high ratings
 - May shift equilibrium from full disclosure to no disclosure
 - With all firms receiving top rating

Comment 2: Effect on upgrades

- Table 3 shows a significant increase in upgrades of CMBS (relative to RMBS) in 2001 and 2002
 - This is claimed to be consistent with model
- However, model is about ratings at issue, not upgrades!
- Moreover, the effect persists until 2006
 - All regulatory-induced upgrades should have happened!
- Finally, effect starts in prior to regulatory change (Jan 2002)
 - Fine, except that it does not coincide with pricing effect

Part 3

Other comments on empirical results

Comment 3: Which spreads?

- Figure 2 shows spreads between CMBS and corporate bond yields for various ratings
- Movements may be driven by CMBS yields or by corporate bond yields (or both)
 - Why not look at spreads relative to Treasuries?

Comment 4: Loan spreads at origination

- Table 5 shows results of estimating determinants of spreads relative to Treasuries of commercial mortgages
- Why are the year dummies all negative?
 - Presumably spreads are all positive
 - What is the omitted year?

Comment 5: Loan spreads in 2005-2007

- Table 5 and Figure 4 show that loan spreads were lowest in the years immediately before the crisis
- Consistent with my favorite interpretation of “search for yield”
 - It’s not that **rates** were too low (blame Greenspan or China)
 - It is that **spreads** were too low
 - Lower charter values & greater incentives to take risk

Part 4

What about regulatory capital arbitrage?

Regulatory capital arbitrage (RCA)

- Definition by Basel Committee (1999)

“The ability of banks to arbitrage their regulatory capital and exploit differences between true economic risk and risk measured under the [Basel]Accord.”

- Main motivation behind Basel II
 - Avoiding RCA becomes priority of regulators
 - Risk-sensitive capital requirements

Avoiding RCA: an example

- Change in capital requirements of CMBS bonds

	Before Jan 2002	After Jan 2002
AAA & AA	8.0%	1.6%
A	8.0%	4.0%
BBB	8.0%	8.0%
BB	8.0%	16.0%

→ To reduce differences between true economic risk and measures of risk implicit in regulatory capital standards

RCA in the paper

“In the years prior to the crisis there were significant regulatory changes in the CMBS market, which greatly increased incentives for institutions to hold highly rated CMBS; this provides a perfect **experimental setting in which to test for the effects of RCA.**”

- Paper is not “testing” the effects of RCA
 - Documents pricing (and ratings) effects of regulation
 - Shows implications of changes designed to avoid RCA

What's wrong with RCA?

- RCA has become mantra of regulators
 - Anything can be justified by invoking RCA
- The cost-benefit analysis of RCA still needs to be done
 - Very relevant in light of proposals for simpler regulation
 - Replace Basel II and III by (much tighter) leverage ratio
 - Admati et al. (2011)

A few tentative ideas on RCA

- If an asset has several regulatory treatments
 - It will tend to be held by institution with lowest charges
 - Under Basel II safer assets held by IRB banks
- Pricing (loan rate) effects would probably be small
 - For reasonable values of cost of capital
- Other effects might be more significant
 - Shifting assets to institutions with lower monitoring ability
- The homework needs to be done!

Concluding remarks

Concluding remarks

- Paper presents new evidence on effect of regulatory changes
 - Results on spreads have a number of gaps
 - Results on ratings upgrades need more suitable model
- Reference to regulatory capital arbitrage (RCA) is misleading
 - Paper is not about RCA
 - It's about implications of changes designed to avoid RCA
- Paper points to need to further our understanding of RCA
 - Promising area for new research