Credit Risk Transfer Practices in US Commercial Banks

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Motivation

CRT instruments and the financial crisis:

- Originate-To-Distribute model at the origin of the crisis?
- Role of Credit Derivatives?
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Our (empirical) research questions:

- Do we know which banks have been using CRT tools in practice?
- Do we understand the motivations behind the usage of Loan Sales, Securitization, and Credit Derivatives?
- Can we associate certain bank characteristics with the preference expressed for a particular CRT instrument over the others?

Related Research

Most contributions on individual CRT tools taken in isolation (Berger and Udell, 1993; Demsetz, 2000; Vickery, 2007; Minton, Stulz and Williamson, 2009).

Theoretical models on what drives the choice among different instruments:

- Duffee and Zhou (2001): credit derivatives can help alleviate asymmetric information issues in the loan sales market;
- Thompson (2007): credit derivatives for well capitalized banks, loan sales and securitization for poorly capitalized ones;
- Parlour and Winton (2008): loan sales dominate when credit risk is high and monitoring is crucial.

Methodological Steps

1. Take the sample of all US Commercial banks with total assets greater than 1 billion USD over the period 2002-2008 (source: Call Reports).

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1. Take the sample of all US Commercial banks with total assets greater than 1 billion USD over the period 2002-2008 (source: Call Reports).
2. Measure their activity in CRT tools:
   - outstanding principal balance of *loans sold* (with recourse);
   - outstanding principal balance of *loans sold and securitized* (with credit enhancements);
   - protection purchased via *credit derivatives* (N.B.: a bank is classified as net protection buyer when the protection bought is at least twice as much as the protection sold).

CRT Usage by Bank Size (year-end 2007)

	All banks	$1-5$ bln	$5-20$ bln	$20-100$ bln	>100 bln
Non users	63.89%	74.73%	48.84%	14.71%	0.00%
Users					
Loan sales	27.38%	22.01%	32.56%	47.06%	81.25%
Securitization	11.71%	2.72%	20.93%	52.94%	81.25%
Credit Derivatives	7.54%	1.36%	6.98%	35.29%	93.75%
Net protection buyers	*39.47%*	*40.00%*	*33.33%*	*41.67%*	*40.00%*
Net protection sellers	*34.21%*	*60.00%*	*66.67%*	*41.67%*	*6.67%*
Dealers	*26.32%*	*0.00%*	*0.00%*	*16.67%*	*53.33%*
Users of all three	2.78%	0.00%	0.00%	8.82%	68.75%
% Number banks	100.00%	73.02%	17.06%	6.75%	3.17%
% Total assets	100.00%	7.47%	8.36%	16.65%	67.52%

Methodological Steps - cont'd

3. Assess which bank features are associated with the usage of different CRT tools using:
   - A univariate approach;
   - A multinomial logit.

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3. Assess which bank features are associated with the usage of different CRT tools using:
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4. Identify the main drivers behind the intensification in the usage of CRT instruments via a dynamic panel test.

Bank Characteristics

- Asset and liability liquidity (*funding motivation*)
- Capitalization (*capital relief motivation*)
- Lending opportunities (*comparative advantage motivation*)
- Size and reputation
- Lending quality, profitability, loan portfolio composition (*credit risk management motivation*).

T-tests on Mean Values

	Loan sales / sec. vs. CD (Large banks)		Loan Sales vs Loan Securitization (Small / Medium)		(Large)	
	Loan sales / Securitization	CD net buyers	LS only	Sec. only	LS only	Sec. only
Capitalization (%)						
Tier1 risk-adjusted	**9.98**	**12.66**	**10.67**	**12.64**	9.67	10.36
Tier1	8.17	8.88	**8.02**	**9.98**	9.00	8.77
Capital ratio	**10.51**	**12.18**	**12.16**	**14.40**	12.19	13.10
Loan composition (%)						
Secured real estate	**47.59**	**36.10**	**71.79**	**51.70**	**70.62**	**30.21**
C&I total	**14.17**	**30.17**	**16.28**	**16.96**	14.78	13.02
Retail	**30.98**	**7.65**	**7.47**	**24.99**	**9.63**	**45.63**
Small businesses	**8.16**	**4.52**	**18.72**	**10.63**	**8.97**	**5.79**
Medium term	**8.78**	**4.45**	**13.48**	**8.87**	**17.91**	**4.93**
Long term	**7.68**	**3.05**	**9.83**	**8.26**	**14.16**	**5.27**
Asset Quality (%)						
Net charge-off ratio	**0.92**	**0.17**	**0.20**	**1.09**	**0.17**	**1.40**
RWA ratio	81.22	76.89	76.19	78.37	**71.03**	**87.02**
Size / reputation						
Log(TA)	**17.48**	**17.95**	**14.81**	**15.48**	17.51	17.69
Net standby letter credit (%)	**3.53**	**5.3**	**1.34**	**1.03**	2.23	2.81

T-tests on Mean Values - cont'd

	Loan sales / sec. vs. CD (Large banks)		**Loan Sales vs Loan Securitization** (Small / Medium)		(Large)	
	Loan sales / Securitization	CD net buyers	LS only	Sec. only	LS only	Sec. only
Liquidity / Funding						
Liquid asset ratio (%)	**9.77**	**22.11**	14.06	15.59	10.74	10.71
Interbank ratio (%)	5.77	6.36	2.88	4.72	3.99	5.80
Overall deposit ratio (%)	52.00	48.01	**73.25**	**64.07**	57.70	53.11
Core deposit ratio (%)	41.47	43.22	**60.59**	**50.76**	**50.97**	**38.13**
Loan / Deposits	**1.77**	**0.98**	**0.95**	**2.62**	1.29	1.42
Loan / Core deposits	**4.56**	**1.34**	**2.03**	**5.04**	**1.50**	**6.35**
Other borrowing ratio (%)	**26.03**	**15.45**	**15.01**	**19.49**	22.02	20.49
Cost of funding (%)	**2.48**	**3.39**	2.36	2.53	2.35	2.63
Profitability (%)						
Loan profitability	**6.69**	**4.84**	**6.55**	**7.20**	5.84	6.42
Net interest income	**3.79**	**2.14**	**3.47**	**3.86**	**2.93**	**4.12**
Non interest income	**4.01**	**2.81**	**1.30**	**4.69**	**1.61**	**6.12**
ROA	**1.76**	**1.18**	**1.15**	**1.75**	**1.26**	**2.12**
ROE	16.41	13.38	12.52	14.71	**12.62**	**18.62**
Intermediation (%)						
Trading asset ratio	**1.55**	**5.77**	0.16	0.33	**0.34**	**1.30**
Loan ratio	**68.30**	**45.62**	**68.67**	**61.97**	64.98	66.80
N. Observations	148	51	416	158	50	62

Multinomial Logit Approach

	Loan Sales / / Securitization (a) Large Banks		Securitization (b) Small-Medium Banks		Securitization (b) Large Banks	
LogTA(-1)	-1.6127	(0.38)*	0.9466	(0.10)*	0.5488	(0.25)*
% Loans Real estate / Retail (-1)	11.0386	(1.99)*	-	-	-	-
% Loans Real estate (-1)	-	-	-0.2166	(0.44)	-11.8025	(1.90)*
Net charge-off (-1)	773.2694	(231.45)*	16.6475	(25.76)	-30.0341	(31.14)
Liquid Assets (-1)	1.5122	(2.23)	-0.7459	(0.69)	-9.2570	(1.86)*
Loan / Deposit ratio (-1)	0.4938	(0.71)	0.0005	(6E-06)	-1.2161	(0.72)
Interbank ratio (-1)	8.2976	(4.06)*	-0.3445	(0.77)	-6.4053	(5.57)
Cost of funding (-1)	-78.3378	(69.59)	54.1720	(16.25)*	-65.1720	(44.11)
Non-interest income (-1)	-20.9358	(33.08)	10.8491	(3.72)*	20.759	(3.87)*
Tier1 RA (-1)	-25.7784	(9.18)*	3.4347	(1.87)**	2.6890	(9.03)
Constant	23.5674	(6.67)*	-17.3155	(3.71)*	0.4655	(5.06)
N. Observations	242		278		110	
Pseudo R^2	42.09%		10.30%		32.72%	

* and ** denote significance at 90% and 95% confidence level, respectively.
Robust standard errors in brackets.
(a) Variables' effect on the probability of belonging to group (a) relative to net protection buyers.
(b) Variables' effect on the probability of belonging to group (b) relative to loan sellers.

CRT Tools and Bank Characteristics

Credit Derivatives vs. Loan Sales / Securitization

CD net protection buyers are larger, better capitalized, less constrained on the funding side and hold a larger proportion of commercial and industrial loans.

Internal Securitization vs. Outright Loan Sale

Securitization users are larger, better capitalized, more constrained on the funding side and more profitable than loan sellers.

Dynamic Panel Test

	Δ Loan Sales / / Securitization Small-Medium Banks		Large Banks		Δ Credit Derivatives Large Banks	
Δ LogTA(-1)	0.1015	(0.03)*	-0.0013	(0.07)	0.0733	(0.05)
Δ % Real estate and Retail (-1)	0.0260	(0.07)	-0.1685	(0.18)	-	-
Δ % C&I (-1)	-	-	-	-	0.0905	(0.08)
Δ Net charge-off (-1)	0.2680	(0.63)	-3.3127	(3.93)	-5.7146	(4.67)
Δ Liquid Assets (-1)	0.0148	(0.04)	-0.2003	(0.20)	-0.0548	(0.07)
Δ Loan / Deposit ratio (-1)	0.0002	(1E-04)*	0.00003	(1E-05)*	-0.0009	(4E-03)
Δ Interbank ratio (-1)	-0.1603	(0.07)*	0.1740	(0.17)	0.2995	(0.10)*
Δ Cost of funding (-1)	2.3342	(1.21)*	6.1220	(3.05)*	-0.3461	(1.38)
Δ Non-interest income (-1)	0.4392	(0.41)	-5.4135	(1.62)*	0.3075	(0.64)
Δ Tier1 RA (-1)	-0.1342	(0.17)	-0.2648	(0.48)	-0.3241	(0.15)*
Δ Dependent var. (-1)	0.0019	(0.04)	0.0022	(0.05)	-0.3970	(0.14)*
Constant	-0.0127	(6E-03)*	0.0110	(0.02)	0.0251	(0.01)*
N. Observations	772		358		78	

* and ** denote significance at 90% and 95% confidence level, respectively.
Robust standard errors in brackets.

Concluding Remarks

Main theoretical predictions on how to choose among different CRT tools are empirically verified.

Traditional CRT instruments are mainly used as funding tools to finance new lending opportunities.

- Stability issues when both interbank and securitization markets are frozen.

Credit derivative hedging typically driven by capital shocks.

- Impact of capital requirements to be verified.