Insurance companies and the growth of corporate loans' securitization

Fulvia Fringuellotti[1] João A. C. Santos[1,2]

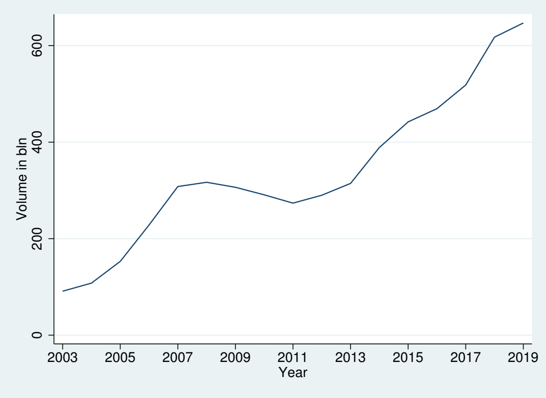
[1] Federal Reserve Bank of New York
[2] Nova School of Business and Economics

Conference on "Banking, Insurance and Financial Stability"

December 6, 2024

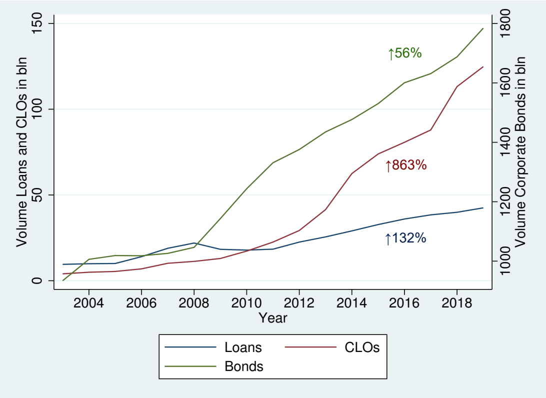
A Spectacular Growth of the Market for CLOs

Figure: U.S. CLOs Outstanding (billions of dollars)



Between 2009 and 2019, insurance companies’ investments in corporate bonds and loans increased by 56% and 132%, respectively. During the same time period, CLO investments increased by 863%. That growth was characterized by a preference for mezzanine tranches rated Aa, A or Baa.

Figure: Insurance Companies’ Investments in Corporate Loans, CLOs, and Corporate Bonds



Overview

Objective of the paper

Investigate the role that insurance companies have played in the growth of corporate loans' securitization, the key factors behind this role, and the implications for the primary credit market.

Data

- Insurance companies' investments in fixed-income securities at the security-company-year level from the financial statement filings submitted to the NAIC from 2003 to 2019.
- Matching and textual analysis to identify CLO and corporate bond holdings.
- Information on offering amount, outstanding balance, and credit rating of CLOs and corporate bonds from Moody's and Mergent FISD.
- Syndicated loans from the Shared National Credit Program matched with Moodys, Intex, Capital IQ and Fed NIC to identify loan investors.

Main findings

1. Insurance companies search for yield:
   - Conditional on the asset type and capital requirement, they invest more in CLOs and corporate bonds offering higher yields.
   - Incentives to search for yield stem from
     - the capital adequacy regulation's coarse definition of risk
     - the similar treatment of corporate bonds and CLOs.
   - Search for yield is more prevalent within CLO investments.

Overview III

2. This search for yield behavior translated into a preference for CLO over corporate bond investments.
    - Conditional on credit rating, insurance companies tend to
        - purchase a higher portion of CLOs compared to corporate bonds
        - allocate a larger share of their portfolio to CLOs the larger is the difference in yields carried by the two asset classes.
    - Insurers' market share of corporate bonds decreased somewhat during 2003-2019, whereas that of CLOs increased by a factor of five. That increase was driven by mezzanine tranches rated investment grade, whose market share went from 5% in 2009 to 44% in 2019.
    - The demand for mezzanine tranches plays a critical role in the origination of CLOs.

Overview IV

3. Insurance companies' proclivity towards CLOs, especially mezzanine tranches, has important implications for the design of CLO deals and the returns on CLO tranches:
   - CLO deals with higher insurers' investments:
     - have a larger share of mezzanine tranches rated investment grade
     - invest in riskier loans
     - are characterized by higher abnormal returns for CLO equity holders.
   - Exploit the 2010 reform on the capital treatment of insurers' investments in CLOs to shed light on the direction of causation.

Overview

4. Insurance companies growing investments in CLOs affect the supply of credit in the primary market for syndicated loans
   - Borrowers whose loans are acquired by CLOs in which insurers invest have higher access to bank credit.
   - This effect is stronger for riskier borrowers.
   - Banks that attract larger investments in the loans they arrange from CLOs held by insurance companies are able to issue a larger volume of syndicated loans.

Insurance Companies' Capital Regulation

Search for yield is fostered by three features of capital regulation:

1. A coarse definition of risk for capital charges on assets with different credit qualities (Becker and Ivashina, JF 2015).
2. A similar treatment of different asset classes, such as CLOs and corporate bonds (in contrast to banking regulation).

   The risk-based capital charge is determined according to a mapping from credit ratings.

Table: Risk-Based Capital Requirements for Asset Risk

	RBC charge (%)			
NAIC Designation	Life (pre-tax)	Life (post-tax)	P&C and Health	Credit Rating
1	0.40%	0.30%	0.30%	Aaa, Aa, A
2	1.30%	0.96%	1.00%	Baa
3	4.60%	3.39%	2.00%	Ba
4	10.00%	7.38%	4.50%	B
5	23.00%	16.96%	10.00%	Caa
6	30.00%	19.50%	30.00%	Ca, C

3. The 2010-2018 regulatory reform allowed insurers to report some CLOs in a lower NAIC designation than what implied by the mapping.

Insurance Companies Have a Preference for the Riskiest CLO Tranches within a NAIC Designation

$$\frac{Holdings_{sct} \times 100}{Outstanding\ amount_{st}} = \alpha + \beta_1 Yield_{sct} + \beta_2 Time\ to\ maturity_{sct} + \beta_3 Outstanding\ amount_{st} + \mu_{d(s),t} + \mu_{c,t} + \mu_{a(s)} + \mu_{I(c)} + \varepsilon$$

	(1)	(2)	(3)
Dependent variable	New holding as percentage of total volume outstanding		
Yield (%)	0.067**	0.003	-0.011
	(0.02)	(0.01)	(0.01)
dummy CLO		4.680***	6.641**
		(0.86)	(2.59)
dummy CLO x Yield		1.114***	0.598**
		(0.22)	(0.26)
dummy Reform x Yield			0.024*
			(0.01)
dummy Reform x dummy CLO			-2.567
			(2.58)
dummy Reform x dummy CLO x Yield			0.708**
			(0.33)
Capitalization x Yield			
Asset controls	Yes	Yes	Yes
NAIC designation x Year FE	Yes	Yes	Yes
Security type (CLO or bond) FE	Yes	No	No
Type insurer FE	Yes	Yes	Yes
Insurer x Year FE	Yes	Yes	Yes
Two-way clustering	Insurer, Year	Insurer, Year	Insurer, Year
N	1691393	1691393	1691393
R^2	0.292	0.299	0.300
F-stat	25.318***	32.32***	25.199***

CLOs Are More Attractive than Corporate Bonds

Insurers' preference for CLOs over corporate bonds is strictly related to the yields differential between the two asset classes.

	(1)	(2)
Sample		Assets with Aaa, Aa, A and Baa rating
Dependent variable	Yield (%)	New holding as percentage of total volume outstanding
dummy CLO		-0.684
		(3.73)
Rating=Aaa x dummy CLO	0.238	
	(0.27)	
Rating=Aa x dummy CLO	0.473***	
	(0.11)	
Rating=A x dummy CLO	0.927***	
	(0.11)	
Rating=Baa x dummy CLO	1.556***	
	(0.14)	
Yield CLO/Yield Bond ratio		0.563
		(0.39)
dummy CLO x Yield CLO/Yield Bond ratio		7.909**
		(2.87)
Asset controls	Yes	Yes
Rating	-	
Type insurer FE	Yes	Yes
Insurer x Year FE	Yes	Yes
Two-way clustering	Insurer, Year	Insurer, Year
N	1275763	1276043
R^2	0.682	0.310
F-stat	38.091***	31.976***

Insurance Companies Have a Preference for CLOs over Corporate Bonds

Figure: Insurance Companies' Market Shares of CLOs and Corporate Bonds with Aa, A or Baa Rating Normalized to 1 in 2003

Insurance companies account for 70% of the increase in the outstanding volume of CLO mezzanine tranches rated investment grade between 2011 and 2019

Implications for the design of CLO deals

CLO deals in which insurance companies hold larger investments have a larger share of mezzanine tranches rated investment grade.

$$\frac{\textit{Tranches issue amount}_{rdmt} \times 100}{\textit{Deal issue amount}_{dmt}} = \alpha + \beta_1 \frac{\textit{Insurers holdings}_{dmt} \times 100}{\textit{Deal issue amount}_{dmt}} + \mu_{mt} + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
			Tranches as % of CLO		
Dependent variable	Aaa	Aa-A-Baa		Ba-B-Caa-Ca-C	Equity
% of CLO held by ICs	-0.298**	0.355**	0.000	-0.029***	-0.012
	(0.12)	(0.17)	(0.00)	(0.01)	(0.03)
dummy Reform x % of CLO held by ICs			0.365*		
			(0.18)		
Manager x Issuance Year FE	Yes	Yes	Yes	Yes	Yes
Two-way clustering	Manager, Year	Manager, Year	Manager, Year	Manager, Year	Manager, Year
N	1703	1703	1703	1703	1703
R^2	0.624	0.521	0.531	0.634	0.636
F-stat	6.005**	4.572**	2.849*	8.870***	0.126

Implications for the CLO Market

CLO deals in which insurance companies hold larger investments have a riskier pool of collateral loans and are characterized by higher returns on CLO equity tranches.

	(1)	(2)	(3)	(4)	(5)
Sample	Collateral pool of CLO deals	Debt tranches of CLO deals			Equity tranche of CLO deals
		Aaa	Aa-A-Baa	Ba-B-Caa-Ca-C	Matured and Terminated CLO deals
Dependent variable	Weighted Average Spread Loans	Weighted Average Spread (%)			PME
% of CLO held by ICs	0.006**	-0.002*	-0.012**	-0.005	0.002***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
constant	3.556***	1.145***	2.346***	5.694***	1.359***
	(0.04)	(0.01)	(0.06)	(0.08)	(0.00)
Manager x Issuance Year FE	Yes	Yes	Yes	Yes	Yes
Two-way clustering	Manager, Year	Manager, Year	Manager, Year	Manager, Year	Manager, Year
N	1051	1555	1558	1374	460
R^2	0.874	0.941	0.780	0.728	0.824
F-stat	6.152**	4.081*	7.673**	0.832	16.114***

Implications for the CLO Market II

Equityholders of CLO deals with higher insurers' investments earn higher returns on a risk-adjusted basis.

	(1)	(2)	(3)	(4)
Sample	CLO deals with high insurance investments		CLO deals with low insurance investments	
CLO deal issuance year	N	GPME	N	GPME
2003-2004	21	0.126*** [0.000]	21	-0.182*** [0.001]
2005-2006	106	0.842*** [0.000]	106	0.819*** [0.000]
2007-2008	78	1.095*** [0.000]	89	0.906*** [0.000]
2010-2011	15	0.608*** [0.000]	16	-0.120 [0.387]
2012-2013	75	0.033 [0.650]	76	-0.021 [0.880]
2014-2016	64	0.184*** [0.000]	65	0.142*** [0.008]

Implications for the primary market for bank credit

Insurance companies' CLO investments have a positive impact on the primary market for syndicated loans.

	(1)	(2)	(3)	(4)
Dependent variable		log(Loan amount)		
Ins-CLOsh	1.426***	1.365***	0.626	0.226
	(5.57)	(8.91)	(1.19)	(0.64)
NIns-CLOsh	-0.077	0.061	0.695**	0.145
	(-0.39)	(0.33)	(2.50)	(0.58)
Ins-CLOsh x dummy Reform			1.044*	
			(1.89)	
NIns-CLOsh x dummy Reform			-1.483***	
			(-4.81)	
Ins-CLOsh x dummy post Reform			0.927	
			(1.71)	
NIns-CLOsh x dummy post Reform			-1.465***	
			(-4.02)	
Riskyloan				-0.078
				(-1.67)
Ins-CLOsh x Riskyloan				0.845***
				(2.95)
NIns-CLOsh x Riskyloan				-0.219
				(-0.66)
Loan controls	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes
Syndicate controls	Yes	Yes	Yes	Yes
Borrower FE	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	8937			4772
R^2	0.846			0.847

Concluding Remarks

- Using data on insurers' investments in CLOs and corporate bonds, we document that insurance companies search for yield, that is, conditional on the asset type and capital charge, they invested more in securities offering higher yields.
- This search for yield behavior translated into a preference for CLOs vis-à-vis corporate bonds, and towards mezzanine tranches rated investment grade within the CLO asset class.
- As a result, insurance companies have influenced the issuance and design of CLO deals, returns earned by CLO equity holders, and credit availability in the syndicated loan market.

Composition of CLO Deals

Figure: Composition of CLO Deals over time