Heterogeneity in Credit Default Swaps Coverage

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What are Credit Default Swaps (CDS)?

- **CDS** are fixed income instruments which work like an insurance contract protecting against the loss caused by the credit event of a reference entity
  - CDS are OTC instruments regulated by International Swaps and Derivatives Association (ISDA)
  - Bankruptcy, default of payment, debt restructuring, obligation default etc. are defined as credit events
- The CDS market began in 1994, growing to about $60 trillion by 2007 and declining to $8 trillion by the year 2018

Motivation

- The total long-term liabilities combined for S&P 500 companies has increased three-fold from $1.7 trillion to $5.3 trillion in the past 18 years

- The CDS market has not followed this pattern. Furthermore, 30% of the S&P 500 companies have never had CDS despite having long term debt

- Even after two decades of growth and evolution, only 60% of the S&P 500 companies have CDS contracts on their bonds

- Well known companies like Bed Bath & Beyond Inc., Moody's Corp, Netapp Inc. etc. do not have CDS on their outstanding debt whereas their direct competitors do

What is the cause for this puzzling disparity in CDS coverage?

Motivation

Count of S&P 500 companies with CDS
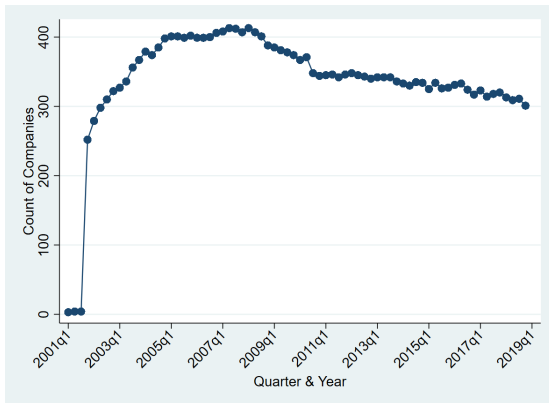
Our Contribution

- We identify the reason for heterogeneity in CDS coverage

- We formulate two opposing hypothesis to explain this puzzling heterogeneity

  - Limited diversification hypothesis
  - Managerial influence hypothesis

- Our analysis show that high numerosity and diversified bond ownership stimulates the demand for CDS

- Our results have important normative implications in the regulation of CDS markets and naked CDS strategies

Literature on CDS

There is a rich literature on CDS with their pricing, relationship with other financial instruments and corporate governance being analysed in depth

- CDS markets have been termed as an alternative marketplace for the underlying bonds. Also, literature suggests that CDS liquidity has explanatory power for bond prices (Nashikkar et al.,2011; H.Zhu, 2006; Oehmke et al. 2016)

- Danis and Gamba (2018) have found that CDS market increases firm value by about 2.9% for a period between 1994-2013

- CDS initiation has been linked to CEO compensation and it has been proved that the presence of CDS increases the proportion of cash pay for the CEO of the reference entity (Banerjee et al. , 2018)

- Banerjee and Kong (2019) show that the market for CDS exists if the creditor's offer price is at least slightly greater than the issuer's reservation price

Theoretical Motivation

In this paper we study the market for corporate CDS. The CDS market comprises of three entities:

- **Seller**- the underwriter of the CDS contracts

- **Buyer**- buyer of the CDS contracts, ideally the creditors of the reference entity

- **Reference entity**- the company/primary borrower on whose debt the CDS contract is written

The main determining factor for a buyer to choose CDS is the perception of their exposure to the risk of the reference entity.

Theoretical Motivation

We argue that the bond ownership structure of a company may explain the observed heterogeneity. We measure bond ownership structure along two dimensions:

- **Breadth**: Number of institutional investors holding the underlying bond

- **Depth**: Concentration of ownership measured using Herfindahl index

$$D = \sum_{i=1}^{n} s_i^2$$

where D is the depth, n is the number of institutional investors and s_i is the percentage of bond holding by an investor

Hypotheses

We formulate two rival hypothesis to explain the demand for CDS

H1(a): Limited diversification hypothesis

- Highly concentrated less fragmented ownership spurs CDS demand due to limited diversification of risk

- On the contrary if the ownership is atomistic and numerosity is high, the bond is widely spread with low concentration reducing the demand for CDS

H1(b): Managerial influence hypothesis

- Concentrated ownership can have more leverage on managers to control owners risk and thus do not have the need to buy insurance like CDS

- On the other hand if the ownership is atomistic and each institution holds a small fraction, the individual owners are too small to influence the governance of the bond issuing firm. This causes an increase in demand for CDS

Methodology

We perform a set of probit regressions to test the hypothesis.

$$CDS = \beta_0 + \beta_1 * Breadth + \beta_2 * Depth + controls$$

- CDS $= 1$ for companies having CDS, 0 otherwise

- Breadth $=$ Number of institutional investors

- Depth $=$ Concentration of bond ownership

- In our regressions we use following vector of control variables measuring firm characteristics : assets, debt, tobin Q, intangible assets and credit rating

Data Collection and Sample

- We collect the quarterly data on CDS between 2001-2018 from IHS Markit

- The data on S&P 500 companies is obtained from Compustat and manually merged with the CDS database

- Compustat is used for company fundamentals

- The bond ownership data between 2006-2008 and first two quarters of 2017 is obtained from Lipper eMAXX

- We are in the process of collecting data on bond ownership for the years not covered

- Our present sample of panel data has about 6000 observations

Descriptive Statistics

This table presents percentage of S&P 500 companies not covered by CDS each year during the sample period between 2001-2018.

Percentage of companies without CDS

Year	Percentage	Year	Percentage
2001	49.60	2010	31.20
2002	35.60	2011	30.80
2003	26.60	2012	32.00
2004	20.40	2013	32.80
2005	19.60	2014	33.20
2006	19.80	2015	34.60
2007	18.60	2016	36.60
2008	22.40	2017	36.00
2009	25.20	2018	39.80
		Total	30.20

Summary Statistics

Statistics of breadth and depth by CDS

Breadth			
CDS	Mean	Std.Dev	Freq
0	61.52	65.43	790
1	134.08	113.77	5158
Total	124.44	111.34	5948

Depth			
CDS	Mean	Std.Dev.	Freq
0	0.18	0.23	790
1	0.08	0.13	5158
Total	0.10	0.15	5948

Impact of bond ownership on CDS coverage

	(1) CDS	(2) CDS	(3) CDS	(4) CDS	(5) CDS
Breadth	0.008***	0.008***	0.009***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Depth	-0.749***	-0.952***	-0.522***	-0.844***	-0.706***
	(0.168)	(0.175)	(0.167)	(0.164)	(0.169)
Assets	0.228***			0.206***	0.177***
	(0.041)			(0.037)	(0.041)
Debt	-0.039				-0.035
	(0.036)				(0.036)
Intangibles		0.046**			
		(0.020)			
TobinQ			-0.119***		-0.072***
			(0.020)		(0.021)
Constant	-0.940***	0.184	0.940***	-0.882***	-0.401
	(0.288)	(0.244)	(0.124)	(0.279)	(0.316)
Time FE	YES	YES	YES	YES	YES
Wald chi2	595.8	564.8	608.5	660.7	607.4
PseudoR2	0.257	0.258	0.250	0.264	0.258

These results confirm the managerial influence hypothesis, i.e. the probability of having CDS is positively correlated to the breadth and negatively to the depth.
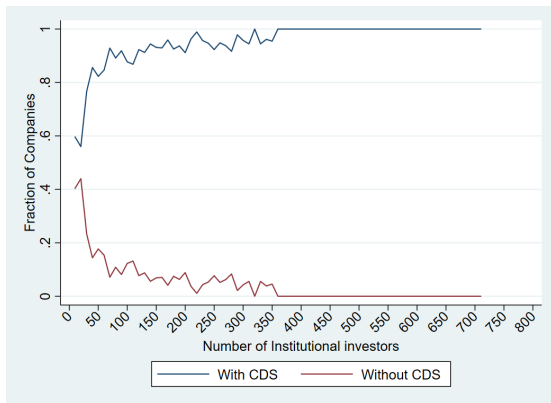
Further Findings

Histogram of companies with and without CDS on breadth
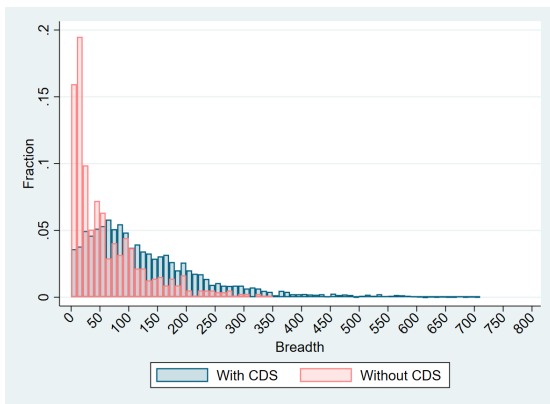
Coordination vs diversification flip at breadth of 60 where the fraction of companies having CDS becomes more than the fraction of companies without CDS.
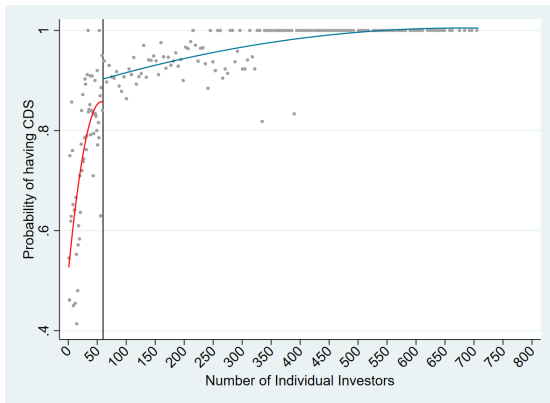
Further Findings

Fraction of Companies by Breadth

Beyond a breadth of 400, all the companies in the sample have CDS

Regression Discontinuity Design (RDD)

RDD at breadth of 60

The solid line represents a jump or discontinuity from blue to red line at breadth of 60

Regression Discontinuity Design

Comparison of groups above and below border discontinuity

	Above Border Observations	Below Border Observations	Two-tailed t-test for equality of means
Basic Characterisitcs			
Ln (Total Assets)	9.22	9.21	0.94
Ln (Total Debt)	7.64	7.59	0.68
Tobin Q	1.38	1.51	0.16
Market Value	9.09	9.14	0.62
Depth	0.08	0.08	0.35
CDS	0.85	0.95	0.00
Observations	157	142	

This table represents border sample for breadth between 55-65.

The results show that the samples above and below breadth of 60 are comparable across all the metrics except in the probability of having CDS, confirming a discontinuity

Robustness Check

- We test the impact of bond ownership on CDS coverage on subsamples divided on quartiles of assets, intangibles and TobinQ individually.

- We interact the bond ownership variables with credit ratings of the company and test the impact on CDS coverage

- We also perform regressions by varying fixed effects and standard errors

We find our results to be **robust** and **consistent** with those presented above.

Conclusion

Our empirical results support the managerial influence hypothesis.

- We find significant results suggesting that high breadth and low depth initiate the need for CDS.

- Highly concentrated bond ownership reduces the need for CDS by providing the investors with the ability to exercise control over the company.

- We identify a discontinuity at breadth of 60. Thus as the number of institutional investors increases beyond 60, the ownership gets small, coordination with the company's management becomes difficult and demand for CDS rises.

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