Credit Default Swaps: Financial Markets, Corporate Finance and Regulation

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Outline

- Definition of Credit Default Swaps (CDS)
- Views of policy makers and business leaders
- CDS market structure and regulation
- CDS pricing
- CDS, bond and equity markets
- CDS and corporate finance
- CDs and financial intermediaries
- Sovereign CDS
- CDS indices
Definition of Credit Default Swaps (CDS)

- Credit derivatives: instruments whose payoffs are related to credit events
- Basic product categories: replication, event-triggered and embedded
- CDS: event-triggered similar to insurance contracts
- Definition:
  - The buyer of protection pays a constant premium per year, d bps, until the maturity of the contract OR the occurrence of the default event (whichever comes first)
  - The seller pays
    - if the default event does occur: the difference between the promised (face) value of the underlying issue (100) and the market value of the defaulted bond (Y)
    - if the default event does not occur: zero
Credit Default Swaps: Financial Markets, Corporate Finance and Regulation

- **Protection Buyer**
- **Protection Seller**

$d$ bps p.a

**If credit event: Par**

**If credit event:**
- **Deliverable Obligation**

- **if no default:** only cash flow is premium of $d$ bps p.a
- **if default:** transaction stops and transaction settled either physically or in cash:
  - **physical:** buyer delivers defaulted obligation to seller and seller delivers 100% of nominal to buyer. (Physical is market standard)
  - **cash:** Mechanism to establish (“final price”) and seller delivers notional of transaction x (100 – Final Price) to buyer
Basic Structure

- Bilateral Contract
- One entity pays a fee, usually each period
- One entity makes a payment contingent upon the occurrence of a credit-related event of a third party
- Fee: basis points based on a notional amount
- Contingency:
  - Bankruptcy, insolvency, failure to make a payment when due, restructuring etc.
  - Price decline in a reference security (e.g., bonds of the third party)
- Reference security: bonds issued by sovereigns, agencies, financial institutions, corporations, indices, etc.
- Default event: has to be defined clearly and precisely: ISDA
Definition of Default Event

- Full Restructuring (CR)
- Modified Restructuring (MR) – only obligations with maturities of less than 30 months of event date can be delivered
- Modified-Modified Restructuring (MMR) – only obligations with maturities of less than 30 months of event date can be delivered, but of less than 60 months for restructured obligations
- No Restructuring (XR) – excludes Restructuring as a credit event
Conflicting views on benefits of CDS contracts:
Alan Greenspan, Fed Chairman

“The new instruments of risk dispersion have enabled the largest and most sophisticated banks in their credit-granting role to divest themselves of much credit risk by passing it to institutions with far less leverage. These increasingly complex financial instruments have contributed, especially over the recent stressful period, to the development of a far more flexible, efficient, and hence resilient financial system than existed just a quarter-century ago.”

Conflicting views on benefits of CDS contracts: Warren Buffett, Berkshire Hathaway

“I view derivatives as time bombs, both for the parties that deal in them and the economic system. I believe, however, that the macro picture is dangerous and getting more so. Large amounts of risk, particularly credit risk, have become concentrated in the hands of relatively few derivatives dealers, who in addition trade extensively with one other. The troubles of one could quickly infect the others. In my view, derivatives are financial weapons of mass destruction, carrying dangers that, while now latent, are potentially lethal.”

Warren Buffet in the Berkshire Hathaway annual report for 2002
Importance of CDS:

- Vast academic literature: 600+ papers
- Legal and institutional changes
- Major impact on global economies, e.g., Greece, Argentina, Venezuela etc.
- Important topic for financial market professionals, corporate financial managers, regulators and policy-makers
Road Map

- CDS market structure and regulation
- CDS pricing
- CDS, bond and equity markets
- CDS and corporate finance
- CDS market structure and regulation
- CDs and financial intermediaries
- Sovereign CDS
- CDS indices
CDS Market Structure and Regulation: Timeline
CDS Market Structure and Regulation: Significant Market Developments

- Trade body: International Swaps and Derivatives Association
- CDS growth and liquidity primarily boosted by its standardization through the ISDA “Master Agreement” “ISDA Credit Derivatives Definitions”
- Explosive growth until 2007 and sharp contraction during the crisis:
  - CDS Notional Amount Outstanding in Q1-2001: 631.5 billion USD.
  - CDS Notional Amount Outstanding in Q2-2007: 62.173 trillion USD.
  - CDS Notional Amount Outstanding in Q2-2010: 30.261 trillion USD.
  - CDS Notional Amount Outstanding in Q2-2014: 19.462 trillion USD.
- Institutional changes with CDS Big Bang in the U.S. CDS Small Bang in Europe
- “Naked CDS Ban” implemented by the European Commission in December 2012
- Future landscape will be significantly altered by outcome of Volcker rule and Dodd-Frank Act in the US and EMIR and MiFid II in Europe
CDS Pricing: Concepts and Practical Issues

- Theoretical equivalence of credit spreads and CDS spreads by arguments of no-arbitrage
- CDS spreads similar to a “spread on a floater” (par bond CS), i.e. long FRN and short a default-free bond
- Reasons why the relationship may not hold:
  - Benchmark curve for credit spreads: Swap curve vs. Treasury curve
  - Contract specifications: Restructuring clause and CTD option (inflates CDS)
  - Market Efficiency and Price Discovery
  - Liquidity premia: bonds less liquid than CDS
  - Short sale restrictions on bonds and Repo costs (depresses CS)
  - Specialness and tax effects
  - Differences in counterparty risk
  - Recovery risk may be priced differently in the two markets
My Paper on CDS Pricing:

- Nashikkar, Subrahmanyam and Mahanti (*JFQA 2011*)
- **Objective:** Investigate the interaction between market liquidity and the price of credit risk
- **Key Results:**
  - Bonds with higher latent liquidity are more expensive relative to their CDS contracts (after controlling for other realized measures of liquidity)
  - Highly illiquid bonds of firms with a greater degree of uncertainty are also expensive, consistent with limits to arbitrage between CDS and bond markets, due to the higher costs of “shorting” illiquid bonds
  - Positive effects of liquidity in the CDS market on the CDS-bond basis
  - Several firm- and bond-level variables related to credit risk affect the basis. The CDS spread does not fully capture the credit risk of the bond
CDS, Bond and Equity Markets

- Acharya and Johnson (JFE 2007)
- Debate on whether information flows from equity to CDS market or vice-versa
- CDS returns lead equity returns for lower rated companies, large credit spread moves
- CDS are negatively correlated with future stock returns *only* for the large distressed companies in the sample.
CDS and Corporate Finance

*CDS is a tool for credit risk transfer and allows shorting of credit:*

- Detaches the economic interest from the voting power of creditors
- Has the potential to change the behavior of lenders and borrowers
- Permits the creation of "empty creditors!"
  - Hu and Black (European Financial Management, 2008)
  - Empty creditors: creditors whose exposures are hedged (or even over-hedged) with CDS while nominally they are still lenders (unobservable)
  - Positions and trades unobservable to other agents and borrowers
- Changes the debtor-creditor landscape significantly
  - Affect the monitoring incentive
- Empty creditor: Ex ante commitment benefit; Ex post tougher negotiator
- Empty creditor problem and corporate finance
  - Credit supply
  - Restructuring and bankruptcy
  - Corporate financial policy
Empty Creditors in Debt Takeovers

- Bondholders have voting rights in debt restructuring
- A bondholder can become an “empty creditor” by using CDS to protect cash flow rights
- In a distressed firm, bondholders can displace equity and take its voting power
  - Buy distressed bonds / insure through CDS
  - Refuse to waive covenants; force a default
  - Inherit shares
Case Study of Empty Creditors

- CIT Group got into financial difficulty in 2009
- Bankruptcy recovery rate 68.125%
- Restructuring exchange offer 82.5% in July 2009
- Many creditors voted for restructuring
- Biggest creditor: Bank of America, rumored CDS protection buyer
- Goldman made loan to CIT in June 2008, bought CDS in January 09
- Filed for Chapter 11 in November 2009
My Research on CDS and Corporate Finance

- Subrahmanyam, Tang, and Wang (RFS 2014):
  - “Does the tail wag the dog? The effect of credit default swaps on credit risk”
  - Introduction of CDS increases credit risk
  - Likelihood of downgrading increases
  - Probability of bankruptcy increases from 0.14% to 0.33%
My Research on CDS and Corporate Finance

Subrahmanyam, Tang, and Wang (JFE 2017):

- “Credit default swaps, exacting creditors and corporate liquidity management”
- Firms become more conservative about their liquidity management
- They hold more cash after the introduction of CDS contracts
- Increase is more pronounced for non-dividend paying firms
My Research on CDS and Corporate Finance

- Augustin, Subrahmanyam, Tang, and Wang (FnT 2014):
  - “Credit Default Swaps - A Survey”
  - One chapter deals with the growing literature on the topic

- Augustin, Subrahmanyam, Tang, and Wang (ARFE 2016):
  - “Credit Default Swaps - Future Directions for Research”
  - Provides a list of topics for future research on CDS and corporate finance
My Research on CDS and Corporate Finance

- Bartram, Conrad, Lee and Subrahmanyam (WP 2018):
  - “Credit Default Swaps Around the World”
- Paper on the interplay between law and contract enforcement
- The introduction of CDS affects real decisions within the firm, including those regarding leverage, investment, and the riskiness of the firm’s investments.
- The legal and market environments in which the reference entity operates have an influence on the impact of CDS.
- The effect of CDS is larger in environments where uncertainty regarding CDS obligations is reduced and where CDS mitigate weak property rights.
My Research on CDS and Corporate Finance

- Our results shed light on the incomplete nature of CDS contracts in international capital markets, related to significant legal uncertainty surrounding the interpretation of underlying credit events.
- Strength of creditor protection differs across countries
- Differences affect the determination of the credit event and timing of settlement auctions: insolvency rules are heavily locally driven
Example 1: Abengoa

- Filed for insolvency relief under a provision of Spanish law in 2015
- DC noted that Article 5bis
  - provided relief for only certain Abengoa assets
  - was quite time-limited
  - suspended enforcement of claims but did not suspend payment obligations
- On the basis of the analysis of this specific provision of Spanish insolvency law, the DC determined that no credit event had occurred
Example 2: Portugal Telecom

- Its parent firm in Brazil, Oi, filed for reorganization under Brazilian law in 2016.
- DC considered elements of reorganization law in Brazil in order to assess whether a filing for reorganization in 2016 constituted a credit event.
- Specific elements of the law were deemed similar to a judgment of insolvency or bankruptcy, e.g.,
  - automatic stay
  - payment relief during reorganization
- The DC ruled that a credit event had occurred.
Implications of Examples

- Trigger event uncertainty exists
- Credit events are relatively few, and by their nature, they tend to be very idiosyncratic in nature
- Courts and ISDA DC’s may have different views; DC’s views are relevant for CDS payments
- Voluntary restructurings that do not directly or indirectly result from a deterioration in the creditworthiness of financial condition of the reference entity do not trigger protection payments
Take-away

- Local legal environment matters
- DCs use their judgment in calling a credit event
- Inconsistency between CDS contract definition and local legal environment creates uncertainty in payments on credit obligations
- Key Question: How are the effects of CDS introduction influenced by this uncertainty?
Our Empirical Findings

- CDS are more likely to be introduced on firms that are headquartered in countries with weaker creditor rights, a stronger orientation toward bank financing, and lower levels of ownership concentration.
- CDS introduction affects real decisions within the firm, including leverage, investment, and the risk of the investments taken by the firm.
- The legal and market environment in which the reference entity operates has a significant influence on the impact of CDS.
- The effect of CDS is larger where uncertainty regarding their obligations is reduced, and where they mitigate weak property rights.
CDS and Financial Intermediaries

- Banks use CDS for several purposes:
  - Hedging loan book and risk management
  - Securitization: pooling and trenching
  - Relaxing capital adequacy ratios: regulatory arbitrage
  - Position taking
- Effect of hedging on risk-taking and credit supply
- Private information
- Monitoring
CDS and Financial Intermediaries

- **Insurance companies use CDS for:**
  - Selling/buying protection
  - Improving solvency ratios
  - Regulatory arbitrage

- **Hedge Funds use CDS for:**
  - Leveraging credit positions both long and short
  - Capital structure arbitrage
  - Relaxing collateral constraints
Sovereign CDS Contracts

- Differences with corporate CDS
- Definition of the credit event
- Trading across maturities of contracts
- Currency redenomination risk
- Proxy hedging and the consequent banning of naked positions by the EU
- Capital adequacy and regulatory arbitrage
- Defaults have consequences for the whole economy: Ecuador, Greece and Argentina
- Contagion/spillovers between sovereign and corporate CDS
My Paper on Sovereign CDS

- Augustin, Sokolovski, Tomio and Subrahmanyam (WP 2018)
  - “Why Do Investors Buy Sovereign Default Insurance?”
  - Size of a country’s debt, together with its level of economic activity, explains about 75% of the cross-country variation in net amount outstanding.
  - Net notional amount outstanding amounts of sovereign CDS contracts are mostly driven by local factors, common global factors explain very little.
  - Two economic channels that explain the net trading in sovereign CDS:
    - country-specific credit risk shocks that change banks’ capital requirements based on regulatory rating thresholds, and
    - the issuance of sovereign debt.
CDS Indices

- Loan/bond vs. synthetic index CDS
- iTraxx and CDX – two main corporate CDS indices
- ABX – Mortgage-backed CDS indices – played a role in the global financial crisis
- Pricing of index CDS
- Tail risk in index CDS
- Failure of risk transfer during crisis periods
Conclusions

- Growing CDS market, investors have an opportunity to hedge/speculate on credit risk
- Endogenous nature of payoffs creates economic disincentives among creditors
- Stakeholders of a firm have to carefully take into account CDS feedback effects in analyzing corporate restructuring processes and outcomes
- As credit events are case-specific, legal aspects of CDS contracts have to be further examined and better understood by various market participants
- Regulatory aspects of CDS – corporate, sovereign – need to be considered
- Role of ISDA and its DCs needs to be better understood
- CDS are here to stay, have a role to play, despite their side-effects
“Unfortunately, a large percentage of those bondholders also held credit default swaps...the bondholders had little interest in letting Blackstone and its partner push back the maturities.”

CNNMoney, December 5, 2013
Thank you!