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# Credit Default Swaps: Financial Markets, Corporate Finance and Regulation

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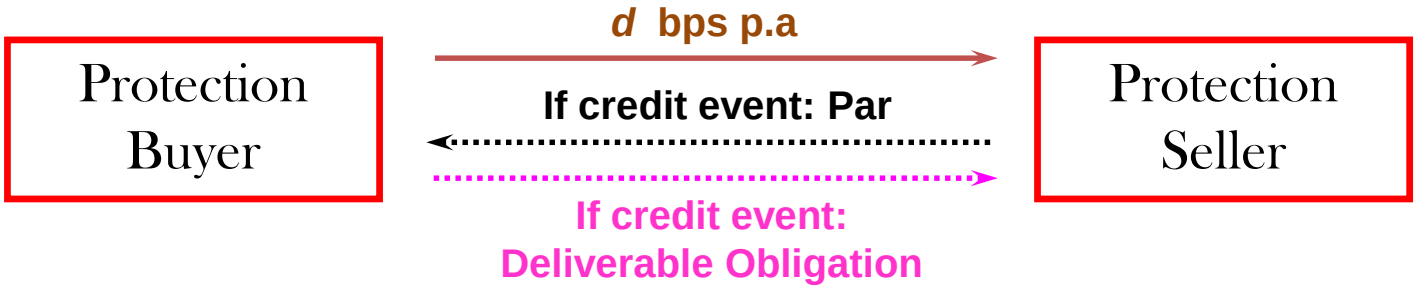
## Outline

- 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




- 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.*"

**Alan Greenspan's speech ``Economic Flexibility" before Her Majesty's Treasury Enterprise Conference (London, 26 January 2004).**

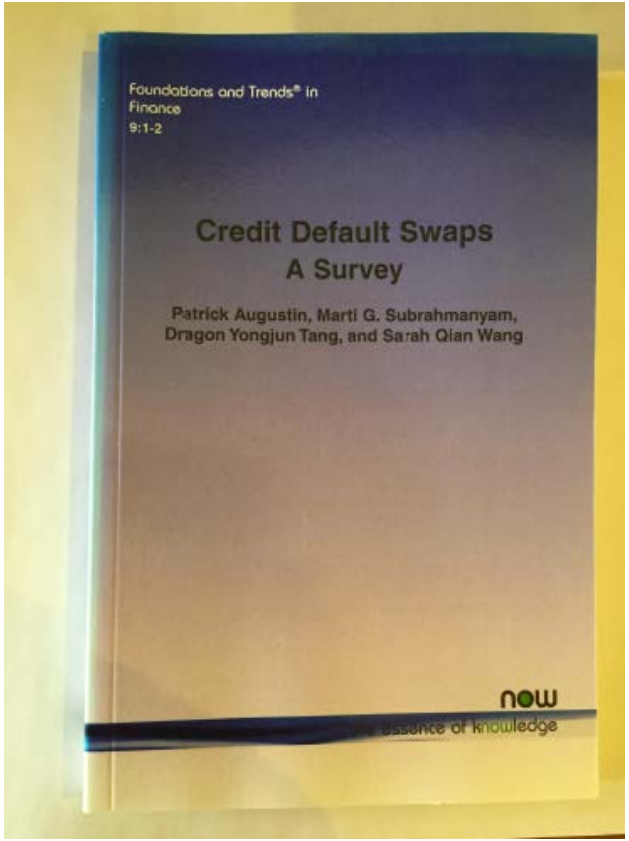
# Conflicting views on benefits of CDS contracts: Warren Buffett, Berkshire Hathaway

"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



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# Road Map

- CDS market structure and regulation
- CDS pricing
- CDS, bond and equity markets
- CDS and corporate finance
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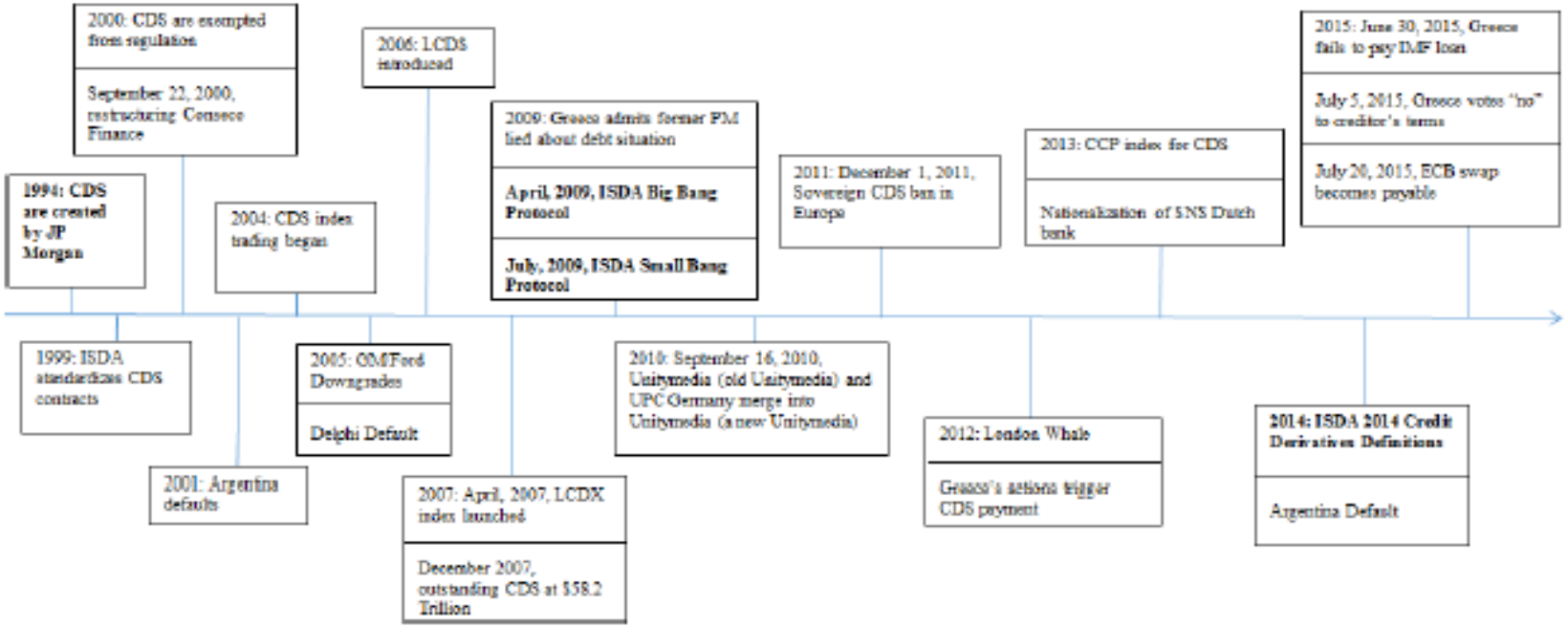
- Sovereign CDS
- CDS indices

# CDS Market Structure and Regulation: Timeline



# CDS Market Structure and Regulation: Significant Market Developments

- CDS invented by JP Morgan in 1992-1994
- 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.

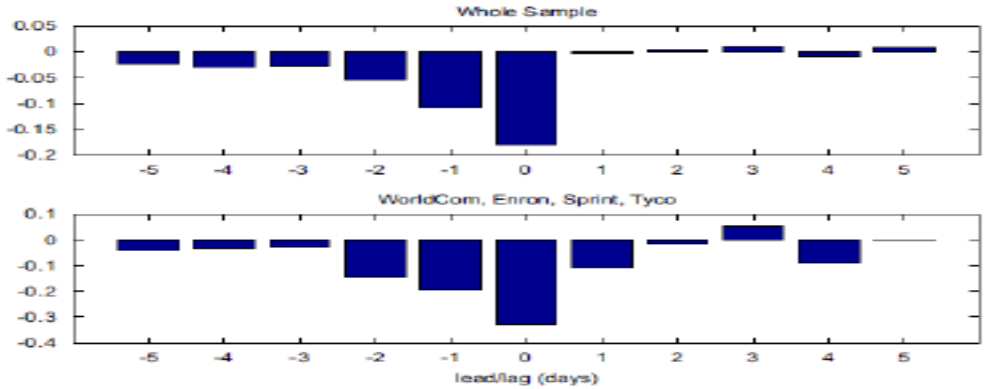



Fig. 1. The figure shows the cross-correlation between percent changes in credit default swap prices at time $t$ and stock returns at time $t + k$ as a function of $k$. The top panel uses all the "benchmark" firms in our sample; the bottom uses only the four companies shown. In each panel the cross-correlations for individual firms are averaged across firms.

# 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

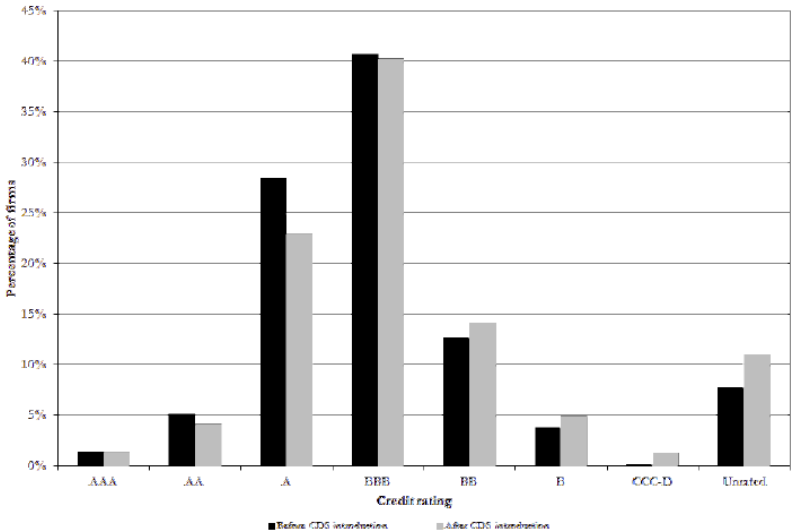
- Bondholders have voting rights in debt restructuring
- A bondholder can become an "empty creditor" by using CDS to protect cash flow rights
- In a distressed firm, bondholders can displace equity and take its voting power
  - Buy distressed bonds / insure through CDS
  - Refuse to waive covenants; 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

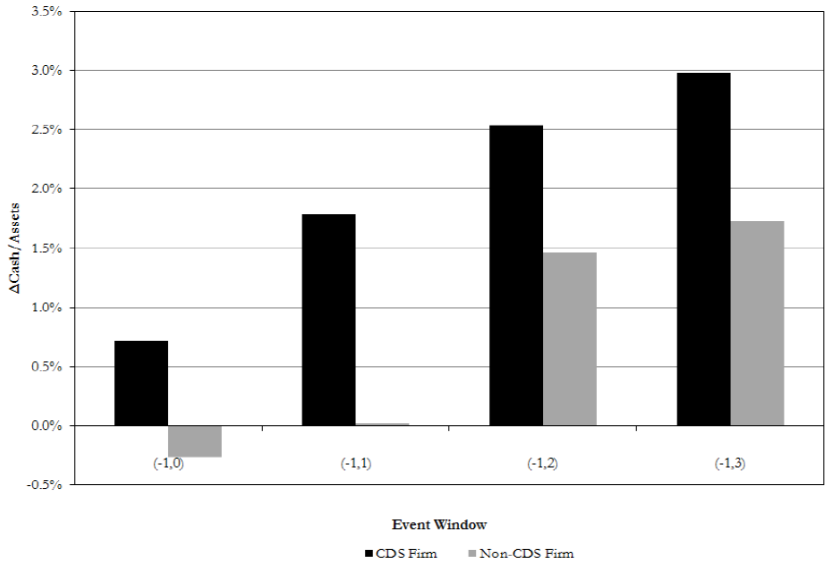
# My Research on CDS and Corporate Finance

- 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 in-vestments.
- 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**

The Daily Show with Jon Stewart


Wednesday December 4, 2013 | Views: 139,179 | Comments: 13

**Blackstone & Codere**

Samantha Bee investigates the shady-yet-totally-legal business dealings of a private equity firm called Blackstone.

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# Thank you!