Use of Derivatives and Probabilistic Methods in Bankruptcy, Workouts and Insolvency Matters

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Agenda

- Introduction of Panel
- History of Derivatives
- Role of Derivatives in Bankruptcy and Restructuring
- Derivatives and Probabilistic Method Use in Litigation

Derivatives – What are They?

- A financial instrument whose value depends on (or derives from) the values of other, more basic, underlying variables.
- A “promise” whose market value depends on:
  - The strength of the promisor's ability to perform
  - The value of an underlying asset or variable
- Examples
  - Futures
  - Forwards
  - Options
  - Warrants
  - Total Return Swaps
  - Credit Default Swaps

Sources:
Hull, John C. *Options, Futures, and Other Derivatives,* 2015
Swan, Edward J. *Building the Global Market: A 4000 Year History of Derivatives,* 2000

A Global History of Derivatives

- 2000 BC: Earliest known derivatives appeared in Mesopotamia as contracts for future delivery of goods.
- 400 AD: Byzantine Roman emperors developed laws which allowed contracts to be traded.
- 1600 AD: Cash-settled contracts (or “contracts for difference”) emerged in Amsterdam and allowed differences to be settled in cash rather than delivery of commodities.
  - Tulips were traded in Amsterdam using contracts for difference, a market which crashed in 1637.
  - These derivatives were private arrangements; the economic fallout was largely limited to merchants and craftsmen.
- 1800-1900 AD: Derivative trading of government bonds flourished in Paris and promoted the spread of derivatives into central Europe and beyond.

History of Derivatives in the United States

- 1848: The Chicago Board of Trade was established and created “Hedge-To-Arrive” contracts for grains.
- 1865: Standardization of forwards contracts.
- 1925: The first futures clearinghouse is formed.
- 1972: International Monetary Market (IMM) is created to trade currency futures.
- 1973: Chicago Board Options Exchange (CBOE) is formed
- Mid-70’s: U.S. regional stock exchanges start trading options
- 1980’s: Additional products enter market and volumes increase dramatically

Derivatives in the U.S.

- 1990's: Credit Derivatives (including credit default swaps) began trading in over-the-counter markets. JPM became the first large issuer of Collateralized Debt Obligations.
- 2000's:
  - Anyone could purchase CDS, even without holding the loan instrument and having no direct insurable interest in the loan ("Naked" CDS).
  - CDS trading grows dramatically from mid 1990's start to an approximate $60 trillion notional market in 2007
  - Global financial crisis drives legislators to push for structural changes to financial markets, including CDS, and contract volume declines, particularly in single-name CDS

Derivatives in the U.S.

Today:

- September 2015: a $1.9 billion settlement by a dozen global banks to resolve allegations around a conspiracy to limit competition in the CDS market
- CDS volume traded through clearinghouses (vs. OTC) is now a third of total volume up from less than 10% in 2010
- Disagreement between U.S. and European regulatory authorities around clearing regulations for swaps are potentially limiting trading
- Trading volumes in CDS have declined by approximately 75% since the 2008 financial crisis due to increased regulations and costs and changes in market dynamics

Outstanding Notional Value of Global Derivatives Markets

(In Billions)	Dec-09	Dec-10	Dec-11	Dec-12	Dec-13	Dec-14	Jun-15
Foreign exchange contracts	$49,181	$57,796	$63,381	$67,358	$70,553	$75,879	$74,519
Interest rate contracts	449,875	465,260	504,117	489,706	584,364	505,454	434,740
Equity-linked contracts	5,937	5,635	5,982	6,251	6,560	6,968	7,545
Commodity contracts	2,944	2,922	3,091	2,587	2,204	1,869	1,671
Credit default swaps	32,693	29,898	28,626	25,068	21,020	16,399	14,596
Single-name instruments	21,917	18,145	16,865	14,309	11,324	9,041	8,205
Multi-name instruments	10,776	11,753	11,761	10,760	9,696	7,358	6,391
Unallocated	63,270	39,536	$42,613	$41,611	25,496	22,573	19,837
Total	**$603,900**	**$601,047**	**$647,810**	**$632,581**	**$710,197**	**$629,142**	**$552,908**

Source: Bank for International Settlements

Gross Market Value of Global OTC Derivatives

(In Billions)	Dec-09	Dec-10	Dec-11	Dec-12	Dec-13	Dec-14	Jun-15
Foreign exchange contracts	$2,070	$2,482	$2,592	$2,313	$2,284	$2,944	$2,547
Interest rate contracts	14,020	14,746	20,001	18,833	14,200	15,608	11,081
Equity-linked contracts	708	648	673	600	700	612	606
Commodity contracts	545	526	466	347	264	318	237
Credit default swaps	1,801	1,351	1,586	848	653	593	453
Single-name instruments	1,243	884	958	527	369	366	278
Multi-name instruments	558	466	628	321	284	227	175
Unallocated	2,398	1,543	1,978	1,792	724	803	597
Total	**$21,542**	**$21,296**	**$27,296**	**$24,733**	**$18,825**	**$20,878**	**$15,521**

Source: Bank for International Settlements

Mortgage and Interest Rate Derivatives in the U.S.

- 1934: National Housing Act created the Federal Housing Administration (FHA), which in turn creates the fixed-rate mortgage.
- 1968: The Government National Mortgage Association (GNMA) guaranteed first mortgage pass-through (Mortgage Backed Security).
- 1977: First private-label mortgages issued by Bank of America.
- 1983: Freddie Mac issued first Collateralized Mortgage Obligation.
- Subprime mortgages amounted to $35 billion (5% of originations) in 1994 and $600 billion (20%) in 2006
- 2011: The Financial Crisis Inquiry Commission places the losses from fraud on mortgage loans made between 2005 and 2007 at $112 billion

Derivatives in a Distressed and Bankruptcy Context

- Leveraged credit, stressed, distressed and default situations
  - CDS and total return swaps as a hedge or trading vehicle for an investment thesis or speculative purposes

- Out-of-court workout or Plan of Reorganization negotiations
  - Out of the money warrants as deal currency
    - Warrants can be private or public

- Post-reorganization or emergence
  - Stock options as part of a management incentive program

Derivative Use is Universal

Nearly Every Fortune 55 Company Uses Derivatives to Identify, Unbundle and Transfer Risk

- 94% of Companies in the S&P 500 utilize derivatives to manage risks associated with:
  - Interest rate fluctuation
  - Currency volatility
  - Commodity pricing swings
  - Equity pricing risks
  - Counterparty and customer credit risk
- Companies and asset managers also use derivatives in pure investment activities:
  - Increase leverage and maximize risk with regard to a given investment thesis
  - Allow for utmost flexibility with respect to investment exposure and arbitrage opportunities

Bankruptcy Provisions Related to Derivatives

As a general matter, on and after the Petition Date, the Debtor:

- is protected from creditors and other parties in interest from taking actions against it or its property or terminating its contracts (§ 362)
- has the ability to avoid certain pre-petition transfers of its assets and avoid certain unperfected security interests (§§ 547, 548, 549, 553)
- may assume favorable executory contracts and reject unfavorable executory contracts (§ 365)

These statutory protections, and others, offer the Debtor a “breathing spell” so that it can determine the best manner to restructure and help ensure that creditors are treated fairly by prohibiting creditors from dismantling the Debtors piece by piece

- Congress has expressed an interest in fostering the reorganization of a distressed but viable business enterprise

Bankruptcy Provisions Related to Derivatives

ISDA and market participants have been very successful in lobbying certain changes that erode some of the Debtor's protections that would otherwise apply to derivative contracts

Congress determined that stability in the derivatives industry is vital and that ripple effects from a bankruptcy filing by a major participant in the financial markets requires enhanced protections for derivative participants to avoid systemic risk

The Bankruptcy Code provides several well-known "safe harbor provisions" for derivative counterparties involved in a bankruptcy

- Sections 555-560: *Ipso Facto* provisions in derivative contracts involving protected counterparties are enforceable; thus counterparties can terminate or accelerate derivative contracts with the Debtor including ISDA Master Agreements
- Section 362(b)(6): Counterparties are permitted to setoff mutual debts and claims under or in connection with derivatives contracts notwithstanding the application of the automatic stay or the Debtor's assumption/assignment rights
- Section 546: Except in cases of actual fraud, counterparties under derivatives contracts are exempt from avoidance of any prepetition payments made to the counterparty by the Debtor
- Section 105 cannot stay the enforcement of any of these rights

Lehman Bros: Testing the Safe Harbor Provisions

Lehman Brothers had 6,120 outstanding master derivative contracts and 930,000 overall derivative contracts which involved more than $36 billion in funds owed by or to Lehman

Within 3 months, 3,453 master derivative contracts were terminated by the Lehman counterparties with $14.3 billion payable to Lehman and $11 billion owed by Lehman

By early 2009, the number of overall derivative contracts had shrunk to less than 30,000 and, shortly thereafter, only 12,000 remained

While novel or unsettled issues were litigated in Lehman regarding the safe harbor provisions, the provisions generally created the result sought by Congress:

- Derivative transactions were terminated
- Close out amounts were calculated
- Collateral was liquidated
- Proceeds of the liquidation were applied in accordance with the contract

Credit Default Swaps - Definition

(Protection Buyer)

Premium

Contingent Payment

(Protection Seller)

Credit Event

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Credit Default Swaps (CDS)

A CDS transaction is an “over the counter” contract entered into under a standard master agreement developed by ISDA and entered into by a buyer and seller of default protection

- Commentators believe that CDS was developed in 1994 by JP Morgan to address bank capital restrictions on Exxon indebtedness thereby reducing bank capital required to be held on balance sheet

Similar to home or auto insurance, the default protection buyer pays an upfront fee as well as periodic fees to the default protection seller

The reference entity (i.e. the Borrower) rarely has any idea that the credit default swap transaction even exists

The protection seller takes on the Borrower’s default risk during the (typical short) term of the swap

CDS allowed lenders to transfer or assume the economic rights and risk under a credit instrument as a hedging mechanism

What Do CDS Spreads Tell Us?

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- Netting
- Risk-neutral default probability v. actual default probability
- Liquidity
- Price discovery

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Valuation of CDS

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Value of CDS to protection buyer =

Expected PV of contingent leg (Present value of the sum of all payments, taking into account the survival probability, received from protection seller)

Minus

Expected PV of fixed leg (Present value of all expected accrued payments made to protection seller)

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CDS Spread And Probability of Default

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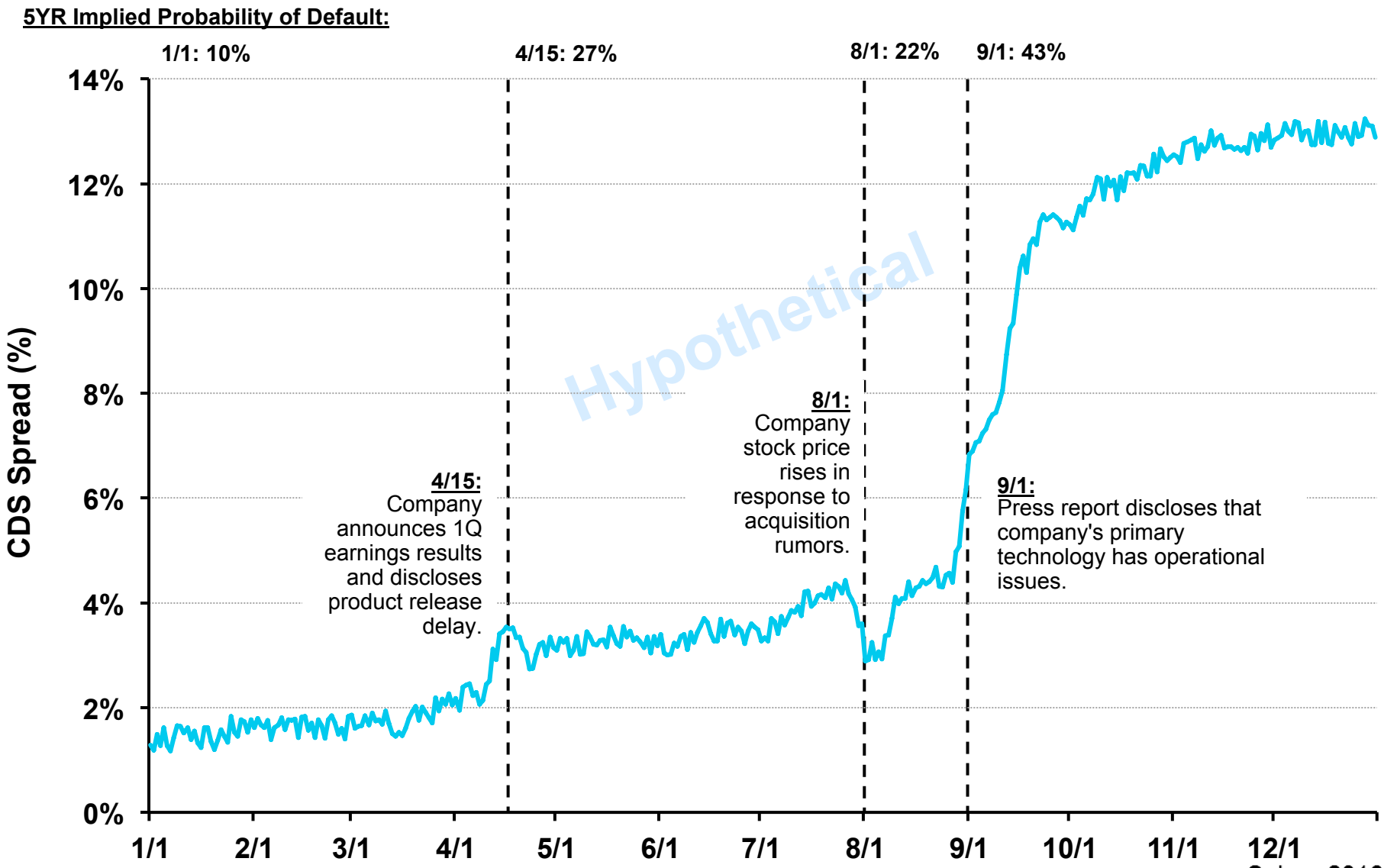
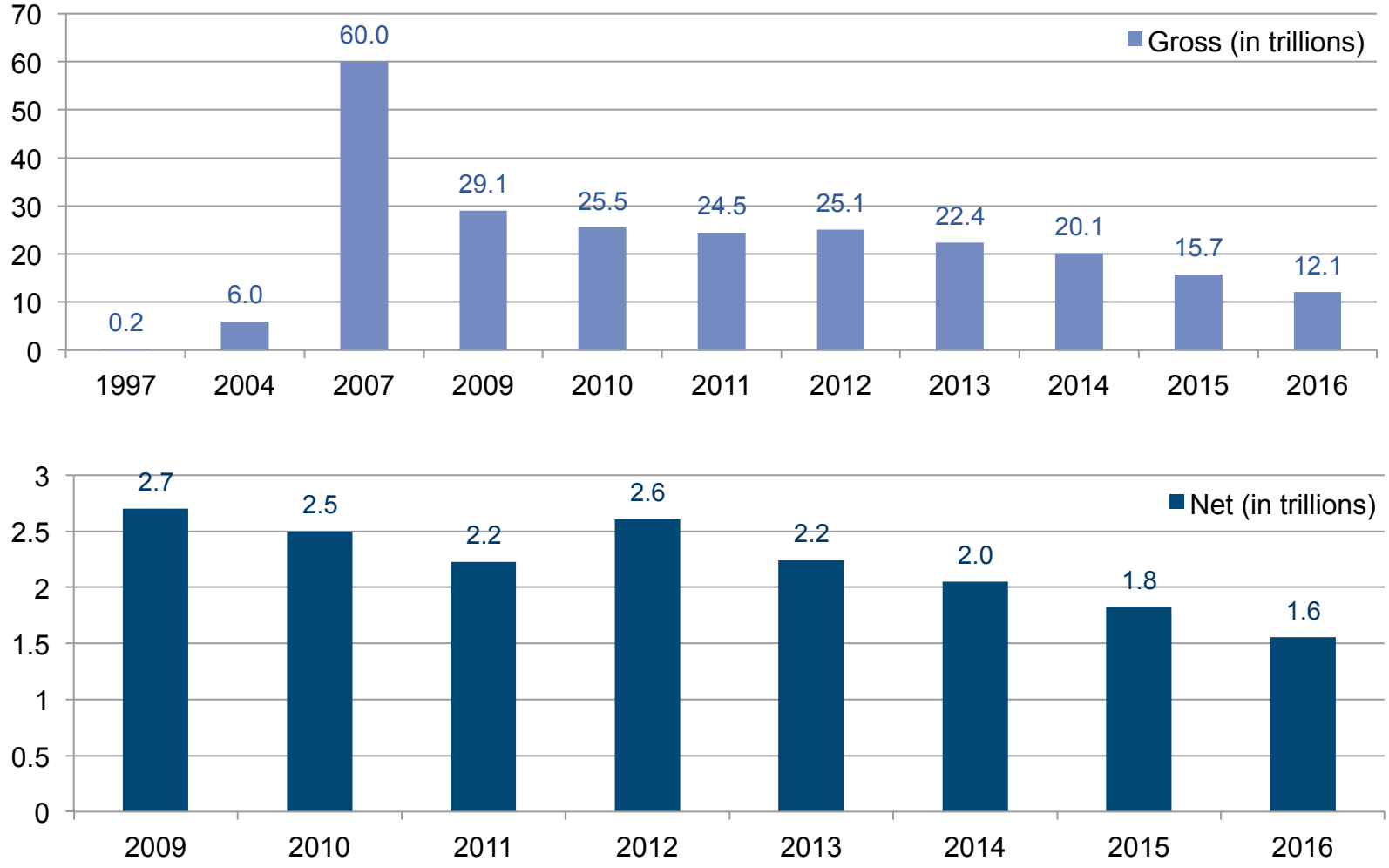


Gross and Net CDS Issuance



Source: ISDA SwapsInfo (swapsinfo.org)

CDS – Economic De-Coupling

Lenders historically have invested with expectation of a fixed return on capital (i.e. economic rights and risk) as well as covenant and default protection and certain voting rights under the applicable contract, state statute or Bankruptcy Code

Generally, the use of CDS to hedge credit risk has been viewed as a useful innovation that protects the financial system and makes credit safer and more available

Lenders continue to retain voting control but have reduced economic risk and capital requirements

- Economic de-coupling is not a new concept (e.g. trustees, administrative agents, sureties, guarantees, participation interests) but CDS has fundamental differences
- By de-coupling economic risk from ownership interest and legal rights, the influence of CDS on restructuring transactions could be profound

Has CDS Changed Lender Behavior?

Has lender behavior changed as CDS has increased?

- CDS versus the loan syndication model

The use of CDS as a pure investment mechanism increased as hedge fund participation in the secondary loan/debt markets became more prevalent

Commentators express concern that the CDS will be detrimental to restructurings

- Continued deterioration in the borrower/lender relationship and lack of creditor coordination
- Transparency issues – who are the real stakeholders
- Lender inattention or indifference – the “empty creditor” - no need to pay attention when you have no risk
- Difficulty in achieving consensus as risk becomes more mobile and the number of parties increase
- Creation of artificial time-lines (e.g. expiration of swap protection)
- De-coupled creditors may be willing to undertake riskier turnaround plans

Anecdotal evidence of shift in restructuring negotiations due to CDS

How Conflicts May Arise?

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- A bondholder who sold a CDS position may benefit from an out-of-court agreement that avoids bankruptcy
- A different bondholder who purchased a large CDS position may benefit from bankruptcy
- Similar conflicts may arise over the timing of bankruptcy

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Bankruptcies Allegedly Affected

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- Caesar's Operating (2015)
- Radio Shack (2015)
- General Motors (2009)
- Six Flags (2009)
- AbitibiBowater (2009)
- CIT Group (2009)
- Delphi (2005)

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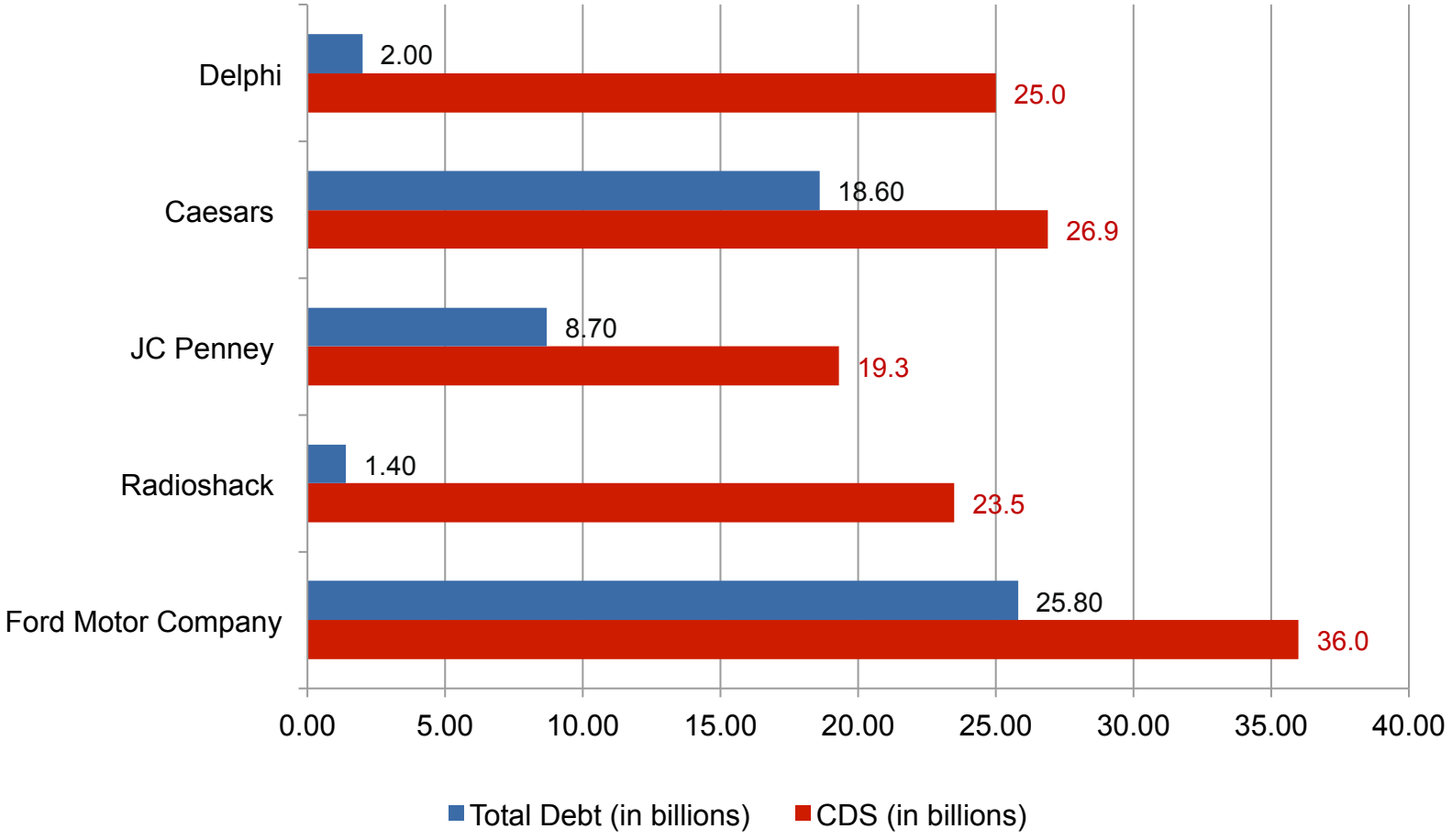
Prevalence of CDS in Large Credits



The Empty Creditor

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The “Negative Interest Creditor”

A “negative interest creditor” is a legal creditor of the borrower who has such significant credit default protection that it would profit more from a default than a successful turnaround

Particularly problematic given the increasing presence of hedge funds in restructuring situations given such actor’s ability to purchase other claims or securities to precipitate a default

Buyers of “naked” CDS protection need not own indebtedness in the reference entity (i.e. the borrower) and therefore CDS can significant magnify the risk/reward

Critics say that negative interest creditors:

- Weaken the financial system because creditors no longer have an interest in maximizing enterprise value and will make less economically efficient decisions
- Contravene the express purposes and policies of the Bankruptcy Code including the preservation of viable enterprises (and the jobs related thereto)
- May lead to systemic risk as relationships among borrowers and lenders become more fragile
- Could have adverse affects on market liquidity in underlying bond and loan markets

The “Negative Interest Creditor” (cont.)

While much commentary has been written on the potential impact of “empty creditors” and “negative interest creditors” there is scant empirical evidence to support the hypothesis that such parties adversely affect restructurings

- Unclear whether creditors that are fully hedged or use CDS are less attentive and further unclear whether hedged creditors act in a manner that is detrimental to the borrower or worsen restructuring prospects for borrower
- It must be noted that CDS contracts are bi-lateral contracts and do not trade on an exchange; a counterparty must be available to take the other side of every hedge and CDS pricing and timing of payment (up front) may deter potential negative interest creditors
- These risks may be offset by benefits of derivatives in spreading risk and lowering capital costs and may be addressed through market-based solutions
- Little non-anecdotal evidence exists:
  - that this practice is prevalent in restructuring transactions or merely episodic
  - that this practice, by itself, has adversely affected certainty and predictability in restructuring transactions

Does CDS Exposure Affect Participation Rates?

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Dependent Variable	Participation rate of bondholders
Statistically Significant Independent Variables	
If CDS traded on the bond	Average participation rate drops 29%
If the bond is secured	Average participation rate increases 18%
Other Control Variables	Maturity; Amount outstanding; Trading activity; Senior debt; Issuances; Total assets; Leverage
Adjusted R-Squared	0.27
Number of Distressed Exchange Offers	189

See, Andras Danis, "Do Empty Creditors Matter? Evidence from Distressed Exchange Offers," Forthcoming in Management Science, Working Paper dated, September 14, 2014.

The Codere Case Study

Codere SA is a Spanish gaming operator that underwent a restructuring transaction in 2013

As reported by Bloomberg and the WSJ, GSO, a unit of Blackstone, held credit default swaps for protection against a Codere default

GSO then purchased Codere's revolving facility from Barclays and held outstanding loans of Codere in the amount of approximately $122 million

GSO conditioned its renewal of the revolving loan on Codere's agreement to delay the payment of certain interest payments by 2 days in order to trigger the CDS protection

On September 18, 2013, Codere delayed the interest payment by 2 days (after a 30 day grace period) causing a default event under the CDS contracts

The ISDA ruled that there was a failure to pay credit event resulting in a $197 million payment to swap holders including $13.7 million to GSO

Codere then went on to negotiate a restructuring of its existing indebtedness

The RadioShack Case Study

RadioShack, the long-ailing electronics retailer, recently completed its restructuring by selling certain stores to Sprint

The WSJ reported that certain of those shareholders/lenders had previously sold CDS protection on RadioShack bonds betting that RadioShack would not file before December 20, 2014

The Official Committee of Unsecured Creditors and the WSJ claim that shareholders and lenders to RadioShack agreed to provide a revolving loan facility to RadioShack in an effort to avoid losses on their CDS position that expired on December 20, 2014, and pocket the upfront payments made by their CDS counterparties

RadioShack filed for bankruptcy protection on February 2, 2015

The Committee requested 2004 examinations of the relevant parties including to examine the sale of CDS and the alleged manipulation of the borrower and the CDS market and has filed a lawsuit

Are Bankruptcy Protections Needed to Address CDS?

The Bankruptcy Code does not contemplate the existence of an "empty creditor" or a "negative interest creditor"

Disclosure-Related Issues:

- Proofs of Claim – Rule 3001
- Rule 2019 and Ad Hoc Committees – Judge Drain letter
  - Courts want to know the motivations of parties working in concert
  - Unclear why only groups are implicated
  - Revised Rule implicates both direct and derivative claims
  - Future application
- Committee Appointments / Adequate Protection in DIP Orders
  - WorldCom/Blue River
- Rule 2004 – "any matter which may affect the administration of the estate"
- Rule 1007(i) – produce list of "security holders"

Are Bankruptcy Protections Needed to Address CDS?

- Section 105(a) – equitable power of the Bankruptcy Court

Voting-related issues:

- Net voting or gross voting?
- Voting designation/disqualification – ulterior motives and § 1126(e)
- Equitable subordination arguments - §510(c)

Other liability

- Bankruptcy fraud – “knowingly or fraudulently makes a false oath or account”
- Section 10(b)(5)

Practice pointers

- Claims-related language
- Filing under seal
- Impounding lists (Rule 1007(j))

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Analysis of CDS Spreads & Simulations in Bankruptcy Litigation

CDS for Company & Peers

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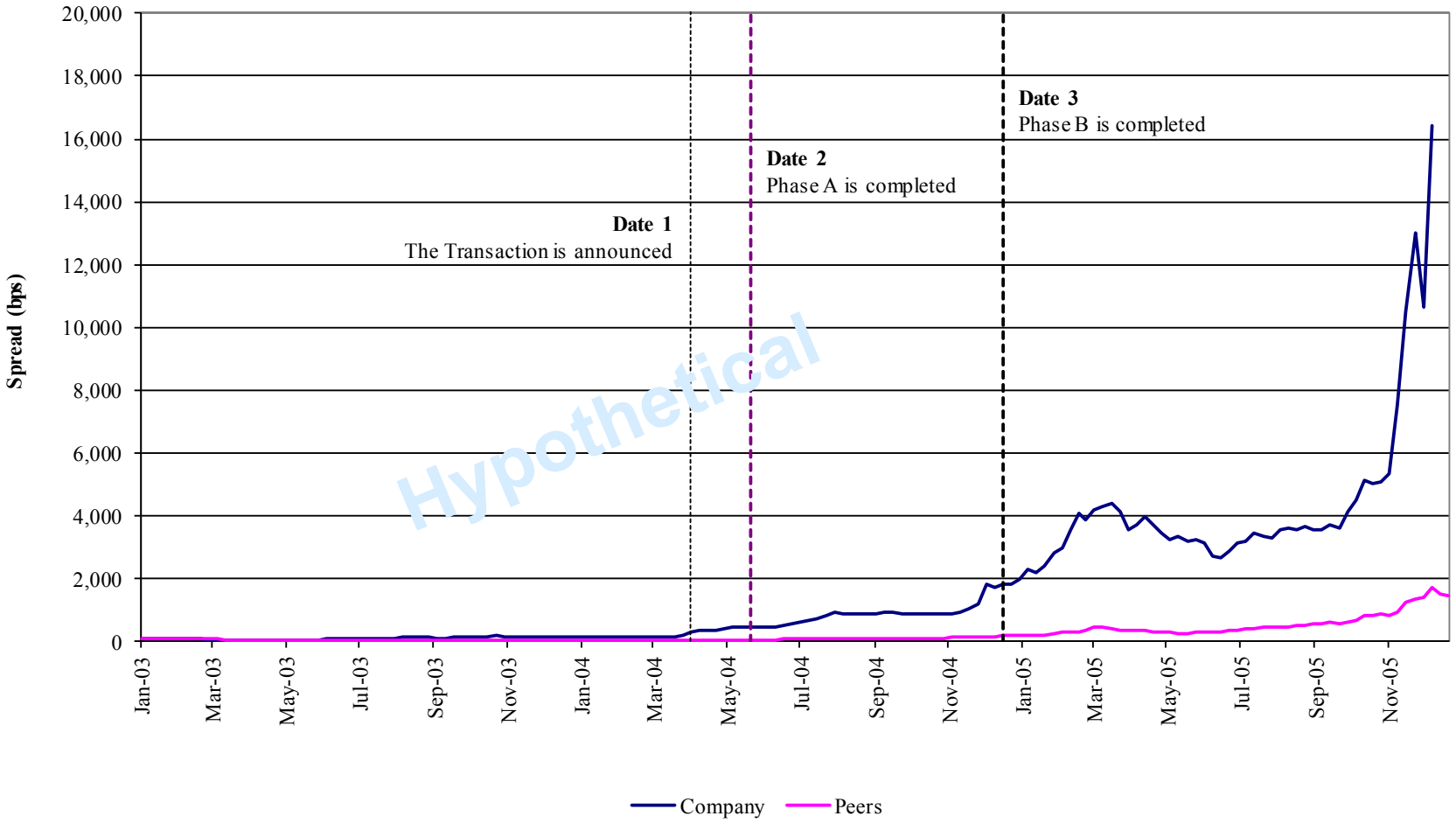
Weekly Average 5-Year Credit Default Swap Spreads for Company & Peers
January 2003 to December 2005



Source: Data obtained from Bloomberg LP.

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Analysis of CDS Spreads

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- Mean-adjusted Model
- Market Model

$$\Delta S_{i,\tau} = \alpha_i + \beta_i \Delta S_{index,\tau} + \epsilon_{i,\tau}$$
$$E\left[\epsilon_{i,\tau}\right] = 0 \quad VAR[[\epsilon_{i,\tau}] = \sigma^2_{\epsilon_i}$$

- Matching Portfolios
- CDS Factor

Hull et al. (2004), Callen (2009), Ericsson et al. (2009).

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Actual & Predicted CDS Spreads

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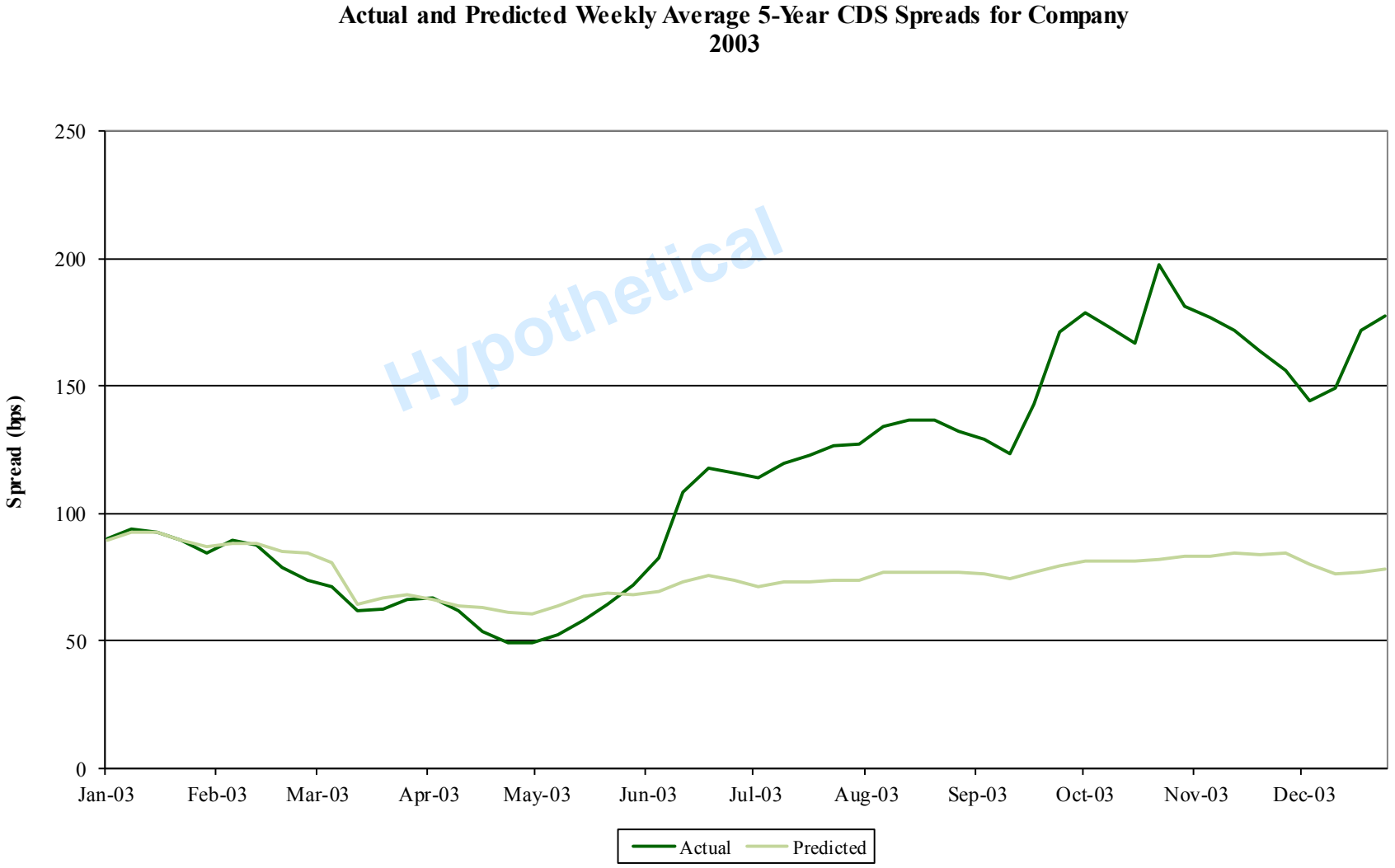

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Differences in Actual & Predicted CDS Spreads in 2003

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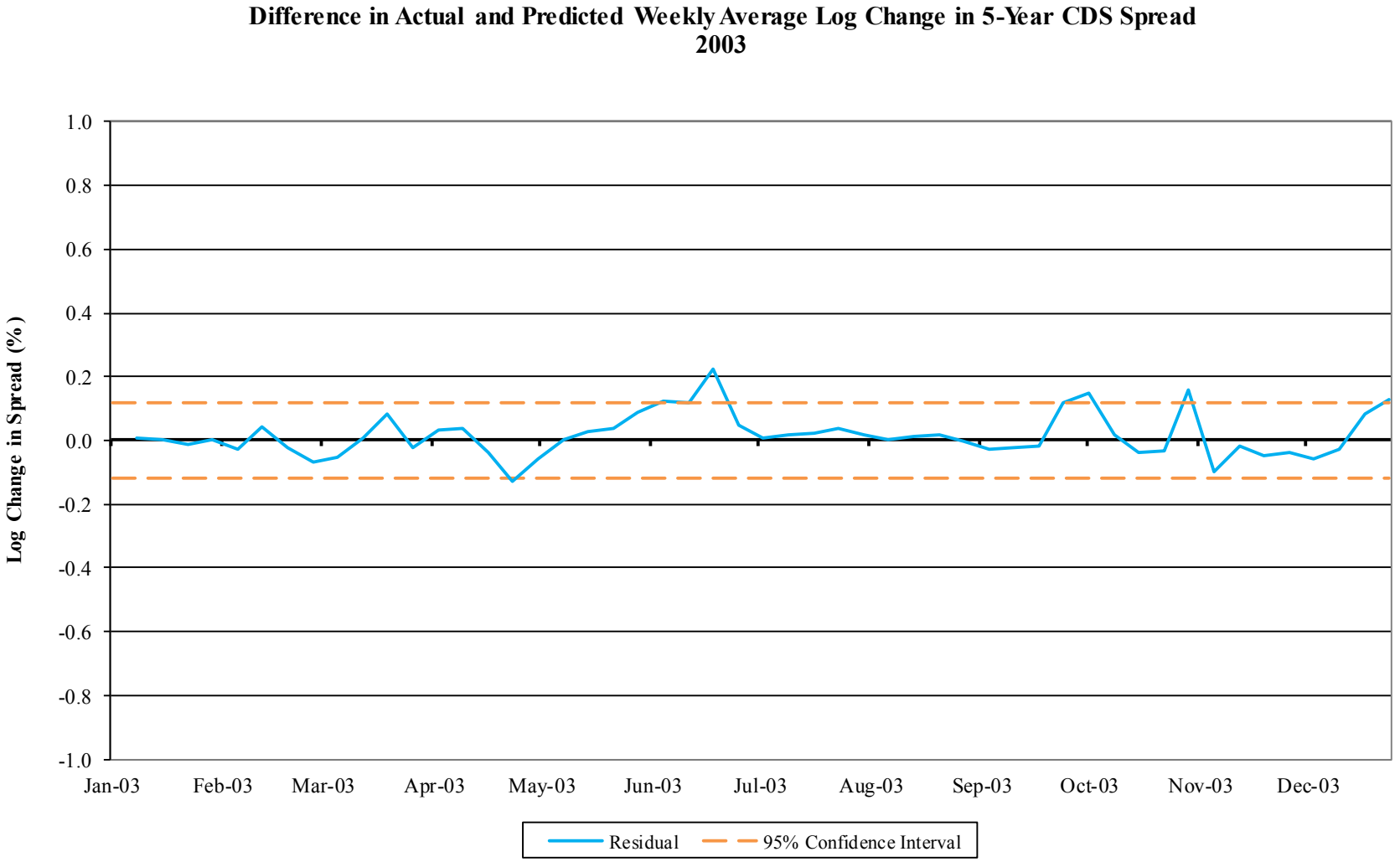

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Differences in Actual & Predicted CDS Spreads in 2004

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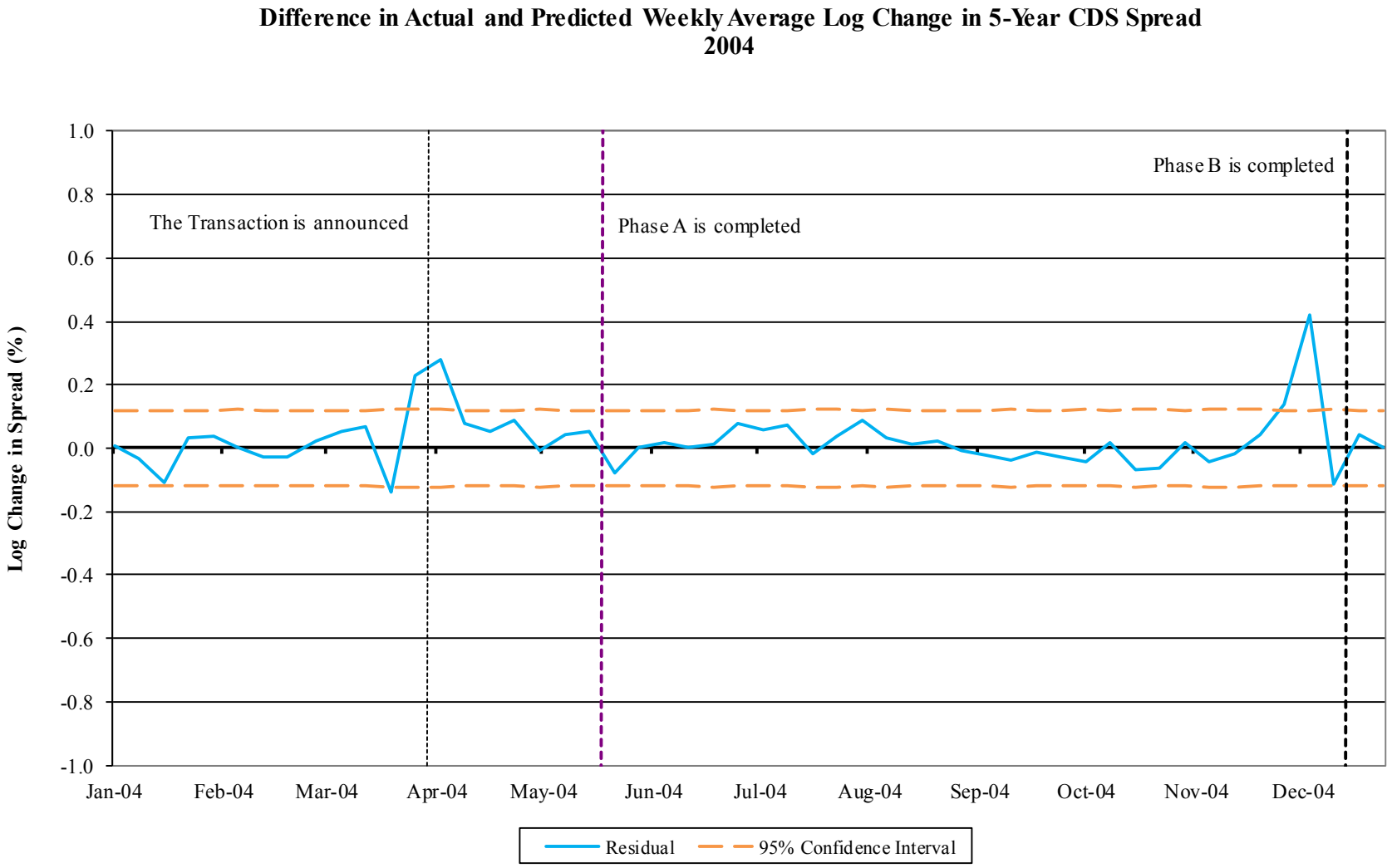

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Comparison of Hypothetical Projections to Analyst Estimates

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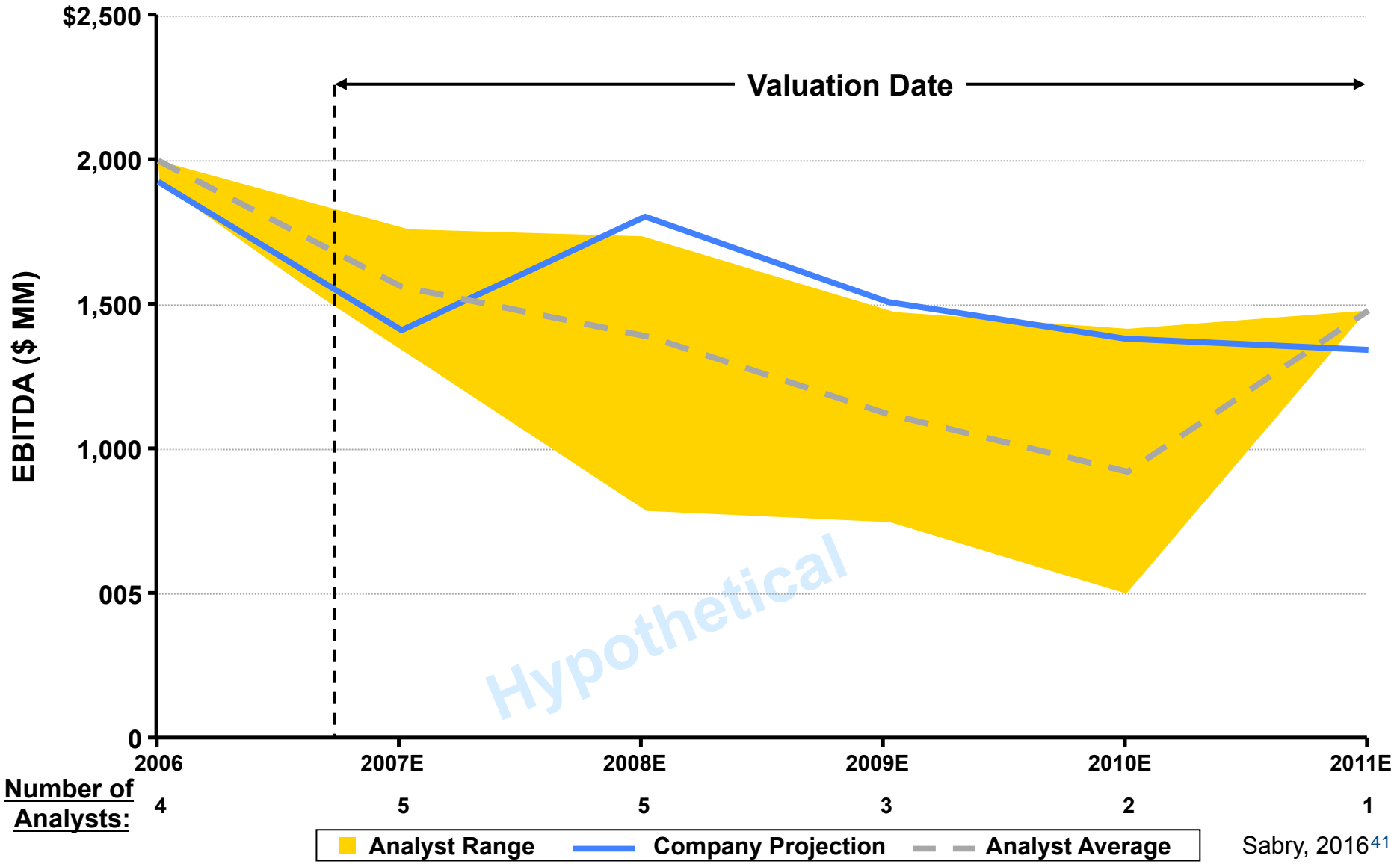

The Redemption Option Value – Hypothetical

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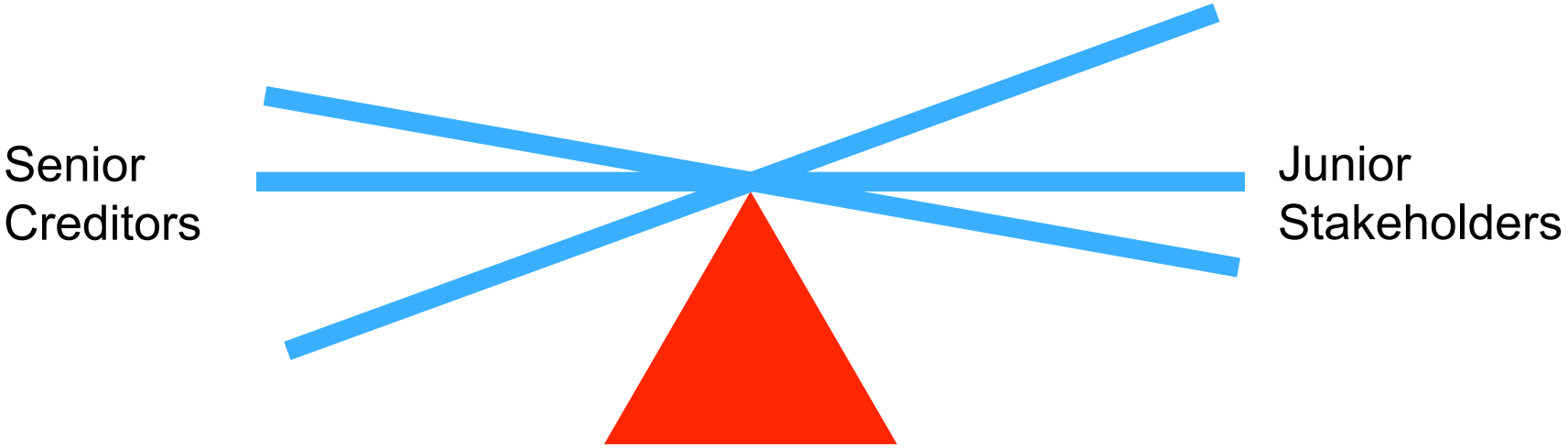
Firm value: $125 million



	Senior Debt	Unsecured Creditors	Subordinated Debt	Equity
Claim	$50 million	$100 million	$25 million	$0
Current Recovery	$50 million	$75 million	$0	$0
Proposed Recovery	$50 million	$75 million - ROV	ROV	$0

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Challenges Include:

- Estimation of volatility
- Implementation for complex capital structures

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