

Counterparty Credit Risk Workshop

CQF Fitch Learning
London Sep 2015

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ALONSO PENA

*SDA Professor of Banking and
Insurance*



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Academic:

SDA Professor – Banking and Insurance Department

Industry:

Quantitative Analyst, Thomson Reuters, Unicredit Group (London, Milan)

Education:

PhD University of Cambridge, UK

The Word “Credit”

The Word “Credit”

Credit, noun, the facility of being able to obtain goods or services before payment, based on the trust that payment will be made in the future.

From the latin *creditum*, from *credere*, to believe.

Oxford English Dictionary (2014)



Musée du Louvre, Paris



Code of Hammurabi 1754 BC

First regulations in history about interest, forgiveness of debt and extension of credit

Payments through a local banker or by written draft against deposit

Law 117: Collateral

"If any one fail to meet a claim for debt, and sell himself, his wife, his son, and daughter for money or give them away to forced labor: they shall work for three years in the house of the man who bought them and in the fourth year they shall be set free."



March 24, 1989

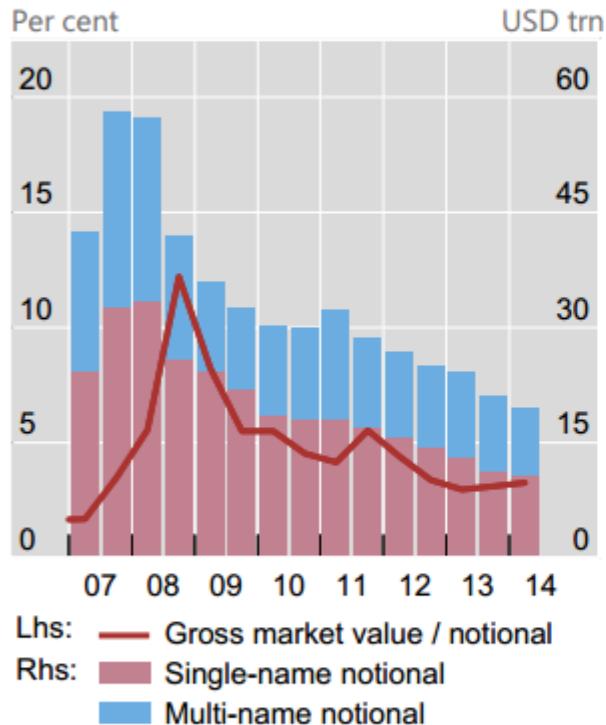
The Exxon Valdez was an oil tanker that gained notoriety after running aground in Prince William Sound spilling hundreds of thousands of barrels of crude oil in Alaska.

In 1994 J.P. Morgan extended a \$4.8 billion credit line to Exxon, which faced the threat of \$5 billion in punitive damages for the Exxon Valdez oil spill. A team of J.P. Morgan bankers led by Blythe Masters then sold the credit risk from the credit line to the European Bank of Reconstruction and Development in order to cut the reserves that J.P. Morgan was required to hold against Exxon's default, thus improving its own balance sheet.

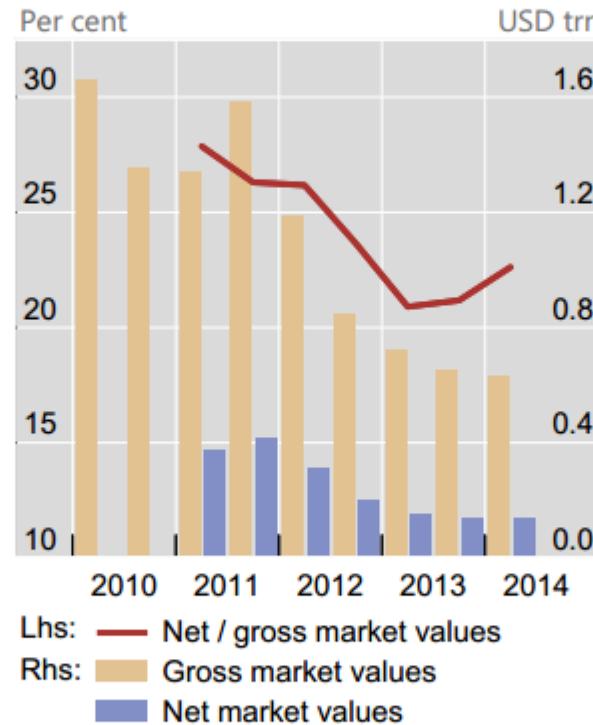


Credit default swaps¹

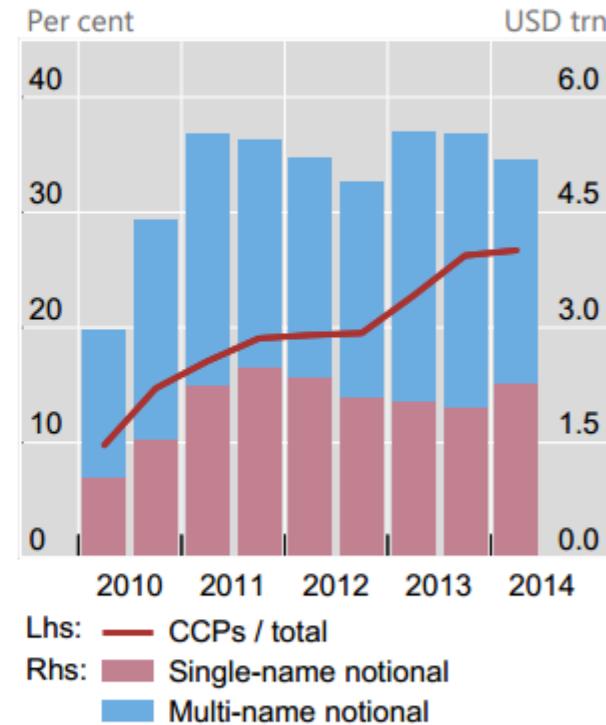
Outstanding positions



Impact of netting



Notional amounts with CCPs



¹ For definitions, see the explanatory notes in Section 3.

Source: BIS OTC derivatives statistics.

http://www.bis.org/publ/otc_hy1411.pdf

Credit default swaps are important risk transfer instruments in today's global economy. ISDA CDS MarketplaceSM brings together information, data and statistics to help you better understand the CDS business.

About CDS

A credit default swap (CDS) is a bilateral agreement designed to transfer risk from one party to another. A growing number of firms rely on these instruments to efficiently manage their risks.

[Learn More →](#)

Daily Prices

How is the CDS market trading? Daily price changes for a range of industry indices and single name reference entities are provided here to enable readers to see and understand current trends in the CDS business.

[Learn More →](#)

Exposures & Activity

Which reference entities were most actively traded during the past week, in terms of number of contracts and notional exposures? And which reference entities have the highest level of protection sold on them?

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Market Overview

How large is the CDS market? ISDA, along with other institutions such as the Bank for International Settlements, periodically survey this global business to measure its growth and size.

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RECENT HIGHLIGHTS

**Markit reports Q2 2014 financial results**

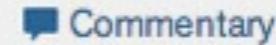
Highlights include a \$26.3m increase in revenue, driven by growth across all three divisions: Information, Processing and Solutions.

**2014 ISDA Credit Derivatives Definitions**

See what these new terms mean for Markit's Pricing and Reference Data, Indices and Trade Processing Services.

**Markit Magazine - Issue 24**

The Summer issue of Markit magazine is now available. Get the latest news, data and features on current global market trends.

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SOVEREIGN CREDIT-DEFAULT SWAPS

Symbol	Price	Change	%Change
* AUT CDS 5YR	23.60	▼ -1.10	-4.45%
* BEL CDS 5YR	42.975	▲ 0.975	2.32%
* CHN CDS 5YR	138.00	▲ 16.00	13.11%
* DEN CDS 5YR	22.50	▼ -1.00	-4.26%
* DUBAI CDS 5YR	155.01	— UNCH	0%
* EGY CDS 5YR	265.075	— UNCH	0%
* FIN CDS 5YR	25.32	▼ -1.18	-4.45%
* FRA CDS 5YR	40.95	▼ -0.05	-0.12%



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ISDA CDS Standard ModelSM

ISDA CDS Standard Model

The ISDA CDS Standard Model is a source code for CDS calculations and can be downloaded freely through this website.

The source code is copyright of ISDA and available under an Open Source license.

Background

As the CDS market evolves to trade single name contracts with a fixed coupon and upfront payment, it is critical for CDS investors to match the upfront payment amounts and to be able to translate upfront quotations to spread quotations and vice versa in a standardized manner.

One of the primary goals in making the code available is to enhance transparency and to optimize use of standard technology for CDS pricing. Implementing the ISDA CDS Standard Model and using the agreed standard input parameters will allow CDS market participants to tie out calculations and thus improve consistency and reduce operational differences downstream.

Download

[Source Code and Excel add-in](#)

Related Links

- [Documentation](#)
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Why CDSClear?

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WHAT'S NEW

- [CDSClear Publishes Whitepaper on 2014 ISDA Credit Derivative Definitions](#)



CVA

expected loss ...

$$CVA = E[L]$$

$$L = \boxed{\text{AMOUNT LOST}} \times \boxed{\text{PROBABILITY OF DEFAULT}} \times \boxed{\text{DISCOUNT FACTOR}}$$

present
value of
probable
loss...

future
value that
could be
lost ...

with some
amount of
probability...

discounted
to the
present ...

$$L(\tau) = (1 - R) EE(\tau) \times PD(\tau) \times DF(\tau)$$

expected loss ...

$$CVA = E[L]$$



$$L(\tau) = (1 - R)EE(\tau) \times PD(\tau) \times DF(\tau)$$

In consequence ...

$$L(\tau) = E[(1 - R)EE(\tau) \times PD(\tau) \times DF(\tau)]$$

And to compute the expectation we integrate ...

$$CVA = \int_0^T (1 - R) EE(t) \times DF(t) \times dPD(t)$$

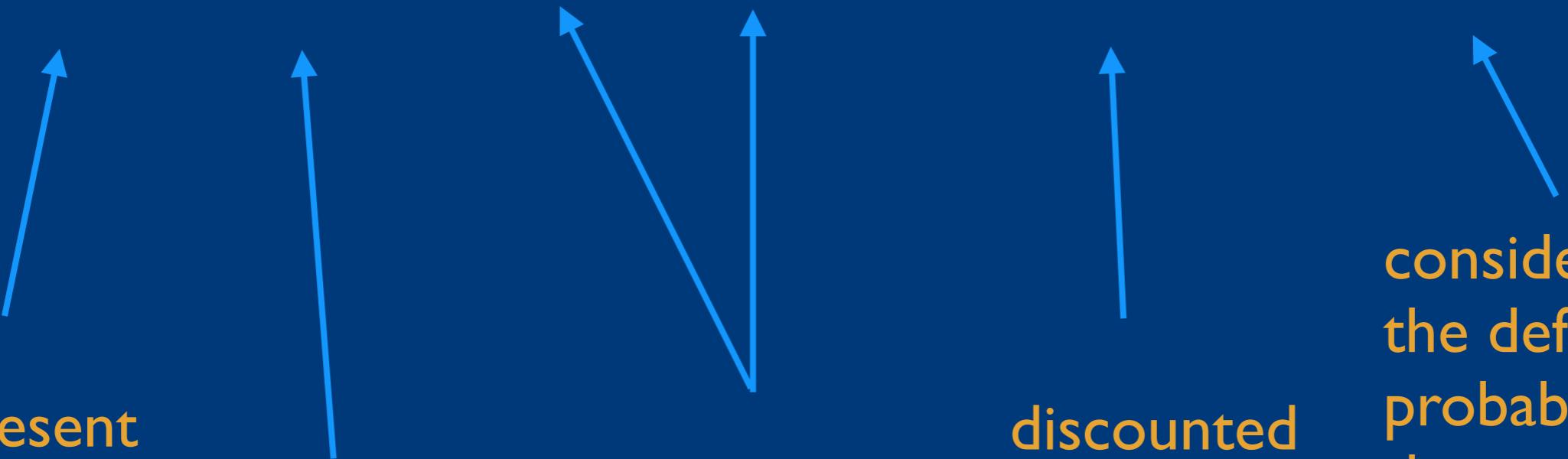
the present
value of the
monetary
adjustment...

averaged
over the life
of the
instrument
...

of the
potential
losses,
considering
exposure and
recovery...

discounted
to the
present ...

considering
the default
probability of
the
counterparty



Essential Bibliography:

- *Jon Gregory, Counterparty Credit Risk and Credit Value Adjustment:A Continuing Challenge for Global Financial Markets, 2nd Edition,Wiley, 2012.
- *Zhu, Steven H. and Pykhtin, Michael,A Guide to Modeling Counterparty Credit Risk. GARP Risk Review, July/August 2007. Available at SSRN: <http://ssrn.com/abstract=1032522>
- *Damiano Brigo, Massimo Morini,Andrea Pallavicini, Counterparty Credit Risk, Collateral and Funding:With Pricing Cases For All Asset Classes,Wiley 2013.
- *Cesari G et al, Modelling, Pricing, and Hedging Counterparty Credit Exposure,A Technical Guide, Springer Finance, 2010.