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CDS Proxies For CVA-Related Requirements Under Basel 3 and IFRS 13

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Topics

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- Regulatory (& Accounting) Treatment Of CVA
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- Further Reading

Executive Summary

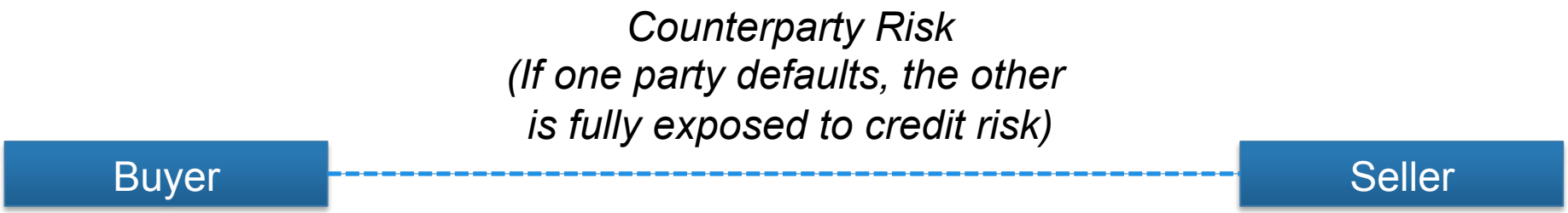
- In the wake of the recent financial crises, **Basel 3, IFRS 13 and GAAP (section 820)** recently introduced specific requirements on Credit Valuation Adjustments (CVA) for OTC Derivatives
- Credit Spreads for counterparties of OTC Derivatives are now explicitly needed to quantify these CVA Capital charges and Accounting requirements
- **However, only few counterparties have CDS traded quotes, with about two thirds of the names of a typical Bank's portfolio requiring a CDS proxy spread**
- **Under the new CVA Capital Charge, Basel 3 mandates the use of proxies when CDS spreads are not available for a specific counterparty**: these requirements are currently in force in Europe, US and in several other jurisdictions
- These new CVA requirements will create additional compliance costs for institutions, due to the new processes, additional IT and staff resources needed to apply the CDS proxy methodology

S&P Capital IQ currently generates daily CDS proxies via the "Standard & Poor's CDS MDS" model, based on Ratings, GICS Industry codes, Currency/Region, and Counterparty document type (historical time series from 2004).

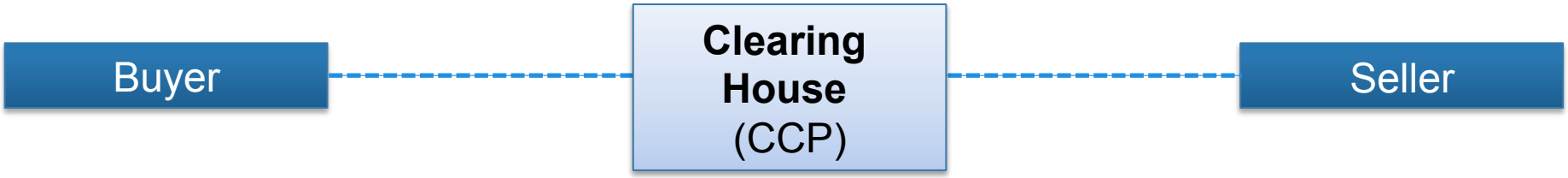
Introductory Concepts

OTC Derivatives And Counterparty Credit Risk

- **BILATERAL TRADES (Both parties exposed to Credit Risk):**



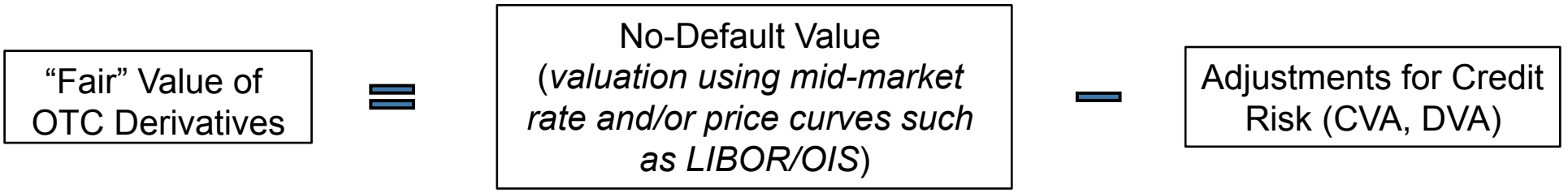
- **CENTRALLY CLEARED TRADES (NO Credit Risk for counterparties)**:



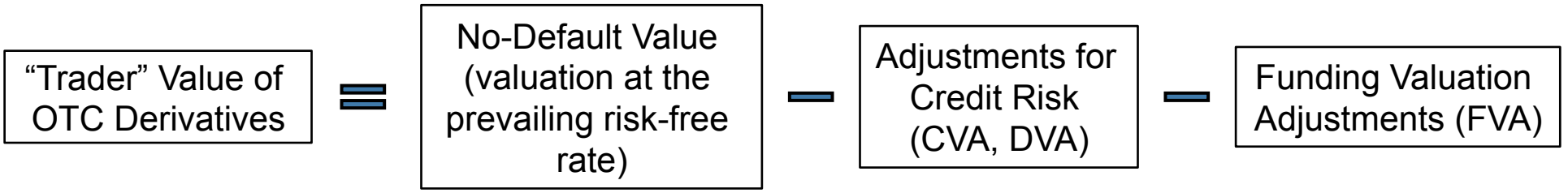
The CCP guarantees both sides of the deal, independent of the counterparties' financial health.

The "Fair" Value Of OTC Derivatives: CVA, DVA, FVA

- **The way OTC Derivatives are valued in the Market**:



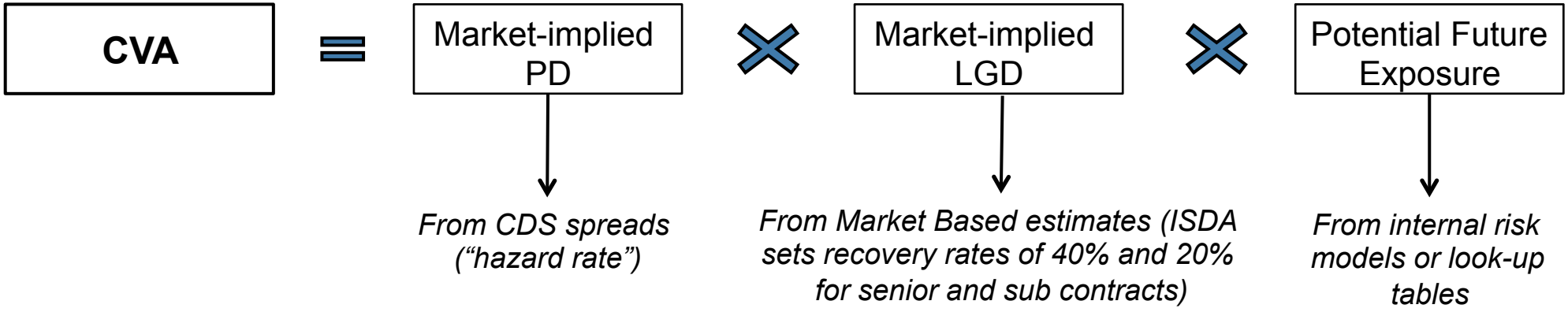
- **The way OTC Derivatives are valued by a Trading Desk**:



Note: **CVA** = Credit Valuation Adjustment (credit risk of the counterparty); **DVA** = Debt Valuation Adjustment (credit risk of the entity itself - i.e., own credit risk)

Let's Focus On "Asset" OTC Derivatives: CVA And CDS Spreads

- **The CVA is the expected loss caused by mark-to-market changes in the credit quality of a counterparty (*market value of counterparty credit risk*)**



- *Any Bilateral OTC derivative instruments are exposed to CVA risk: Interest Rates, FX, Credit, Commodities, and Equities Derivs*
  - *And **CDS spreads** are needed for this quantification*

Regulatory (& Accounting) Treatment Of CVA

CVA Requirements Under Basel 3 And IFRS 13

- **BASEL 3, Capital requirements:**
  - New CVA capital charge for bilateral OTC Derivatives (introduced in January 1, 2014)
  - Two approaches:
    1) Standardised: Closed formula based on external ratings (Europe) or PD bands (US)
    2) Advanced: VaR on a formula proposed by regulators, using CDS spreads as the only risk factor
       - CDS proxies required for counterparties without a traded quote, based on ratings, industry codes, and geographies.
       - Single-name CDS proxies allowed in specific cases

- **IFRS 13, International Accounting standard:**
  - Profit & Loss on CVA to be reported on a regular basis (starting from January 1, 2013)
  - No explicit formula or methodology prescribed, but CDS spreads recommended
  - CDS proxies required for counterparties without a traded quote
  - Single-name CDS proxies allowed in specific cases

Basel 3 And IFRS 13: Common Requirements On CDS Spreads

- **For both CVA capital and CVA accounting requirements, the basis for the calculation of the counterparty's PD is the CDS spread**

- **If a counterparty doesn't have a traded CDS spread, a proxy needs to be used based on the following hierarchy:**
  - Entity CDS spread
  - CDS spread in same rating, industry sector and geography bucket
  - CDS spread of comparable company (Single-name "Proxy")
  - Bond spreads: these are less preferable since the information can be outdated and may require an adjustment for illiquidity (not always possible to reference a recent issuance; gap between debt issue date and derivative valuation date)

- **Historical PDs not accepted by Regulators for CVA purposes, due to the following reasons:**
  - Based on unobservable information (from Internal Rating models)
  - Information can be outdated (infrequent updates)
  - May not be consistent with what other market participants would use

CVA Requirements Under Basel 3: Europe vs US

- **New Capital charge in effect since January 1, 2014 in Europe and the US (and also in 14 other jurisdictions)**

- **CDS Proxies are explicitly contemplated in both regions**

EUROPE

- The European Banking Authority (EBA) defined the technical standards for the determination of the CDS Proxy spreads (Article 383 of the CRR)
- Penalty for Banks unable to generate proper CDS Proxy spreads:

  If Banks are unable to produce appropriate CDS Proxy spreads under the Advanced method, they should apply the Standardised method (more capital conservative)

US

- In the US, the Dodd-Frank Act states that when "a CDS spread is not available, the banking organization must use a proxy spread based on the credit quality, industry and region of the counterparty". However, technical standards are not provided
- Penalty for Banks unable to generate proper CDS Proxy spreads: same as in Europe

CVA Under Basel 3: Do You Recognize The Similarities?

- **BASEL 3 Formula, "Advanced" approach**

Loss-given-default (different from level used for banking book)

Credit spread for counterparty at maturity t_i

Expected exposure of netting set at maturity t_i

$$CVA = (LGD_{MKT}) \cdot \sum_{i=1}^{T} Max\left(0; exp\left(-\frac{s_{i-1} \cdot t_{i-1}}{LGD_{MKT}}\right) - exp\left(-\frac{s_i \cdot t_i}{LGD_{MKT}}\right)\right) \cdot \left(\frac{EE_{i-1} \cdot D_{i-1} + EE_i \cdot D_i}{2}\right)$$

Market-implied probability of default

Average discounted exposure over *i*th sampling period

- **My previous "Simple" CVA formula** (page 7)

CVA	=	Market-implied PD	×	Market-implied LGD	×	Potential Future Exposure

CVA Under Basel 3: The "Advanced" Approach

- Apply the following "valuation formula" (*for Banks with IMM approval and Specific Interest Rate Risk VaR Model approval for Bonds*)

Loss-given-default (different from level used for banking book)

Credit spread for counterparty at maturity t_i

Expected exposure of netting set at maturity t_i

$$CVA = (LGD_{MKT}) \cdot \sum_{i=1}^{T} Max\left(0; exp\left(-\frac{s_{i-1} \cdot t_{i-1}}{LGD_{MKT}}\right) - exp\left(-\frac{s_i \cdot t_i}{LGD_{MKT}}\right)\right) \cdot \left(\frac{EE_{i-1} \cdot D_{i-1} + EE_i \cdot D_i}{2}\right)$$

Market-implied probability of default

Average discounted exposure over *i*th sampling period

- Compute VaR and Stress VaR charges: based on estimates of *EE*, apply standard market risk model, **using counterparty spreads as the only risk factors**
- **If CDS spreads are not directly observable in the market, Banks have to find appropriate Proxies**
- There is also a standardised CVA risk capital charge (based on the Normal Distribution) for less sophisticated Banks

CVA Under Basel 3: EBA Requirements On CDS Proxies (Dec 2013)

- **According to EBA, the CDS Proxy spread has to be determined by considering all the attributes of, Industry and Region of the counterparty**:
  - Rating: hierarchy of sources of external and internal sources. Ratings have to be mapped to credit quality steps → *Use of external ratings allowed*
  - Industry: at least three (3) categories, "Public Sector", "Financials", "Others"
  - Region: at least four (4) categories, "Europe", "North America", "Asia", "Rest of the World"

- **The appropriateness of the Proxy spread is determined with reference to the volatility rather than to the level of the spread** → *CDS spread "Intersection" method not allowed*
  - The EBA allows the use of statistical models, based on the regression of Credit Spreads on a set of variables differentiated by Rating, Industry and Region

- **On LGD (market-based) values**: Banks should use LGD (market-based) values consistent with the fixed LGDs commonly used by market participants for determining implied PDs from those liquid traded CDS spreads (that have been used to determine the CDS proxy spread for the counterparty in question)

CVA Under Basel 3: EBA Requirements On CDS Proxies (Cont'd)

- **According to EBA, Banks are also allowed to use single-name CDS proxies, where this leads to a more appropriate proxy spread**:
  - If a parent and a subsidiary are sufficiently homogeneous having regard to the criteria of rating, industry, region, Banks could use the CDS spread of the parent to proxy that of the subsidiary
  - If there is a close link between a regional government or local authority and the Sovereign, Banks could use the CDS spread of the Sovereign to proxy that of the regional government/local authority

- **That possibility was not contemplated in the first draft of the EBA's Technical Standards in 2012**

- **On February 25, 2015, the EBA published a new report on CVA capital requirements, based on a data collection exercise with European Banks carried out in Q2-Q3 2014**
  - Among other issues, the EBA addressed the risks generated by EU exemptions, that is smaller counterparties exempted from the CVA capital charge (and from Central Clearing)
  - The EBA is proposing a yearly monitoring of the impact of transactions exempted from the CVA risk charge: this is where CDS proxy spreads will be needed

CVA Requirements Under IFRS 13

- Many derivative valuation models assume that the parties to the contract will perform and therefore do not adjust for credit risk

- **IFRS 13 requires that changes in counterparty credit risk (or an entity's own credit standing) must be considered in subsequent fair value measurements**
  - It cannot be assumed that the parties to the derivative contract will perform

- **No prescribed method for CVA under IFRS 13, but entities should incorporate inputs that reflect the assumptions of participants in the current market**
  - In the absence of any direct indicator of creditworthiness, reporting entities may need to estimate credit spreads by comparison to industry peers or an industry benchmark → CDS Proxies
  - Entities should maximise the use of relevant observable inputs and minimise unobservable inputs → Market-based data sources
  - The basis for selecting the proxy or benchmark, including any analysis performed and assumptions made, should be documented → *CDS Proxies methods to be documented*

CVA & The New "Prudent Valuation" Requirements Of Basel 3

- The Capital Requirements Regulation (CRR) implementing Basel 3 in Europe also requires "Prudent Valuation" requirements for all fair-valued positions regardless of whether they are held in the Trading Book or Banking Book

- Banks will have to calculate Additional Valuation Adjustments (AVAs) as the difference between a Prudent Valuation of an Asset and its Fair Value

- AVAs are determined to adjust Common Equity Tier 1 Capital, therefore they are not going to affect the own funds requirements (translated: P&L impact, no implication on the Capital base)

- As mandated by this Regulation, on 23 January 2015 the EBA published the final technical standards related to "Prudent Valuation" adjustments

- **As any adjustment to fair-valued instruments, the accounting CVA will be subject to EBA "Prudent Valuation" requirements**:
  - Therefore, the formula used for CVA accounting purposes (under IFRS 13) will be placed under the review of supervisors, including the CDS proxy input as well (uncertainty from data used in the CVA calculation)

How We Help Banks

The Standard & Poor's CDS Market Derived Signals model

- This model, initially proposed by Standard and Poor's in 2009 and then updated in 2013, estimates several CDS-based signals for Financials, Non-financials, and Sovereigns

- The model is made up of single regression equations (for Non-Financials, Financials and Sovereigns) that can be used in three different ways:

  1) To calculate a proxy spread for each company based on its rating, industry sector, region, and CDS document type (this is exactly in line with the EBA requirements for the proxy CDS spreads under Basel 3)

  2) To calculate a specific expected spread for each firm based on the above factors, in order to compare it with its traded spread to put in place, for example, trading strategies on a specific name

  3) To imply a score related to the observed CDS spread (Market Implied Ratings)

- CDS Proxies are currently available on our "Global Credit Portal" and "Ratings Direct" platforms:
  - **https://www.globalcreditportal.com**
  - **http://www.spcapitaliq.com/**

The S&P's CDS MDS Model: Available Info

Here is an illustration of our Desktop-based delivery channel (Datafeeds also available):

*CDS Data provided by CMA - part of S&P Capital IQ
**S&P Market Derived Signals White Paper

S&P Ratings Data as of 05-Jun-2015 11:06 AM EST
S&P Market Derived Signals Data as of 04-Jun-2015

INDUSTRIAL S: S&P MARKET INDICATORS

CDS | Equity

US Dollars | Exchange Rates

CDS Benchmarks by Rating Level

Ratings	Today	1 Day	7 Days	30 Days	90 Days	365 Days	2 Yrs	3 Yrs
AAA	25.87	25.96	25.41	24.84	26.69	30.41	28.69	46.35
AA+	35.46	35.54	35.31	35.29	36.57	38.34	38.23	57.43
AA	48.61	48.66	49.06	50.12	50.11	48.33	50.93	71.17
AA-	54.38	54.40	54.66	55.49	55.52	54.51	56.77	83.40
A+	60.84	60.83	60.90	61.44	61.52	61.49	63.28	97.74
A	68.07	68.01	67.85	68.02	68.17	69.36	70.54	114.54
A-	85.79	85.65	85.41	85.98	85.87	85.65	88.74	141.02
BBB+	108.14	107.87	107.52	108.66	108.16	105.78	111.63	173.62
BBB	136.30	135.86	135.35	137.34	136.25	130.64	140.43	213.76
BBB-	194.85	193.74	192.67	197.69	196.16	184.78	197.01	298.13
BB+	278.54	276.29	274.27	284.55	282.42	261.35	276.39	415.79
BB	398.17	394.01	390.43	409.57	406.61	369.66	387.75	579.88
BB-	465.75	462.45	459.88	474.29	477.18	422.08	466.57	715.97
B+	544.79	542.77	541.69	549.24	559.99	481.93	561.41	883.99
B	637.25	637.04	638.05	636.02	657.18	550.28	675.54	1,091.44
B-	1,196.39	1,189.78	1,135.89	1,215.57	1,245.17	913.98	893.28	1,545.29
CCC+	2,246.12	2,222.09	2,022.17	2,323.22	2,359.26	1,518.08	1,181.21	2,187.87
CCC	4,216.90	4,150.12	3,599.99	4,440.17	4,470.16	2,521.46	1,561.94	3,097.65

- **All-Sector Benchmarks**: Info available on our platform(s) as of today up to 3 years ago for all sectors (discrete intervals)

CDS Benchmarks by Rating Level and Sector

Ratings	Benchmark	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Information Technology	Materials
AAA	25.87	22.15	19.63	38.78	36.54	20.63	24.32	26.96	23.9
AA+	35.46	30.44	26.98	53.30	48.97	28.35	33.43	37.05	32.8
AA	48.61	41.84	37.08	73.25	65.63	38.96	45.94	50.92	45.1
AA-	54.38	46.93	41.59	82.16	71.77	43.70	51.53	57.11	50.6
A+	60.84	52.63	46.64	92.15	78.49	49.01	57.79	64.06	56.8
A	68.07	59.03	52.32	103.35	85.84	54.97	64.82	71.84	63.7
A-	85.79	74.59	66.11	130.59	105.76	69.46	81.91	90.78	80.5
BBB+	108.14	94.26	83.53	165.02	130.32	87.77	103.50	114.72	101.8
BBB	136.30	119.10	105.56	208.53	160.57	110.90	130.79	144.96	128.6
BBB-	194.85	170.69	151.28	298.85	224.38	158.94	187.44	207.74	184.3
BB+	278.54	244.62	216.80	428.28	313.55	227.78	268.62	297.72	264.2
BB	398.17	350.58	310.70	613.79	438.15	326.44	384.97	426.67	378.6
BB-	465.75	411.11	364.35	719.77	501.01	382.81	451.44	500.35	444.0
B+	544.79	482.10	427.26	844.06	572.87	448.91	529.39	586.75	520.7
B	637.25	565.34	501.04	989.80	655.05	526.42	620.80	688.06	610.6
B-	1,196.39	1,064.07	943.03	1,862.97	1,202.18	990.81	1,168.45	1,295.04	1,149.3
CCC+	2,246.12	2,002.75	1,774.94	3,506.40	2,206.31	1,864.86	2,199.21	2,437.48	2,163.1
CCC	4,216.90	3,769.49	3,340.72	6,599.61	4,049.13	3,509.96	4,139.27	4,587.73	4,071.4

Last updated:04-Jun-2015 05:00 AM GMT

- **Industry Sector Benchmarks**: only "as of today" info available. Historical time series from 2004 available via Datafeeds
  - "As of Today" info sufficient for CVA Accounting purposes (IFRS 13)
  - Historical Time Series (daily basis) needed for CVA capital charge purposes (Basel 3)

Source: **S&P Capital IQ** (data as of June 5th, 2015).

Our Full Offering: CDS Spreads, S&P CDS MDS And CreditModel™

- **Our CDS spreads are a best-in-class market information**: CMA CDS spreads were found to lead the price-discovery process in comparison with other quote sources from Markit, Reuters, GFI, Fenics (European Financial Management, September 2014)

- **The S&P's CDS Market Derived Signal model is Basel 3-compliant**, being in line with the new EBA requirements
  - Through a daily Cross-Section regression between CMA spreads, S&P's ratings, GICS industry codes, currencies, and CDS Terms & Conditions, the model produces statistically significant benchmark spreads that can be used as proxies for counterparties without a traded CDS quote

- Additionally, **our solution can also be extended to companies without (external) ratings, via the use of our CreditModel™** (covering companies with at least $15 million of Revenues): this model mimics S&P's external ratings using financial ratios and industry adjustments
  - This approach guarantees consistency in terms of credit quality, mapping the CreditModel scores to the external ratings of S&P's CDS MDS. When institutions try to map internal to external ratings, there is a risk of an apple-to-orange comparison, due to the different economic meanings of those ratings

Wrap-Up On Our CVA Calculation Offering

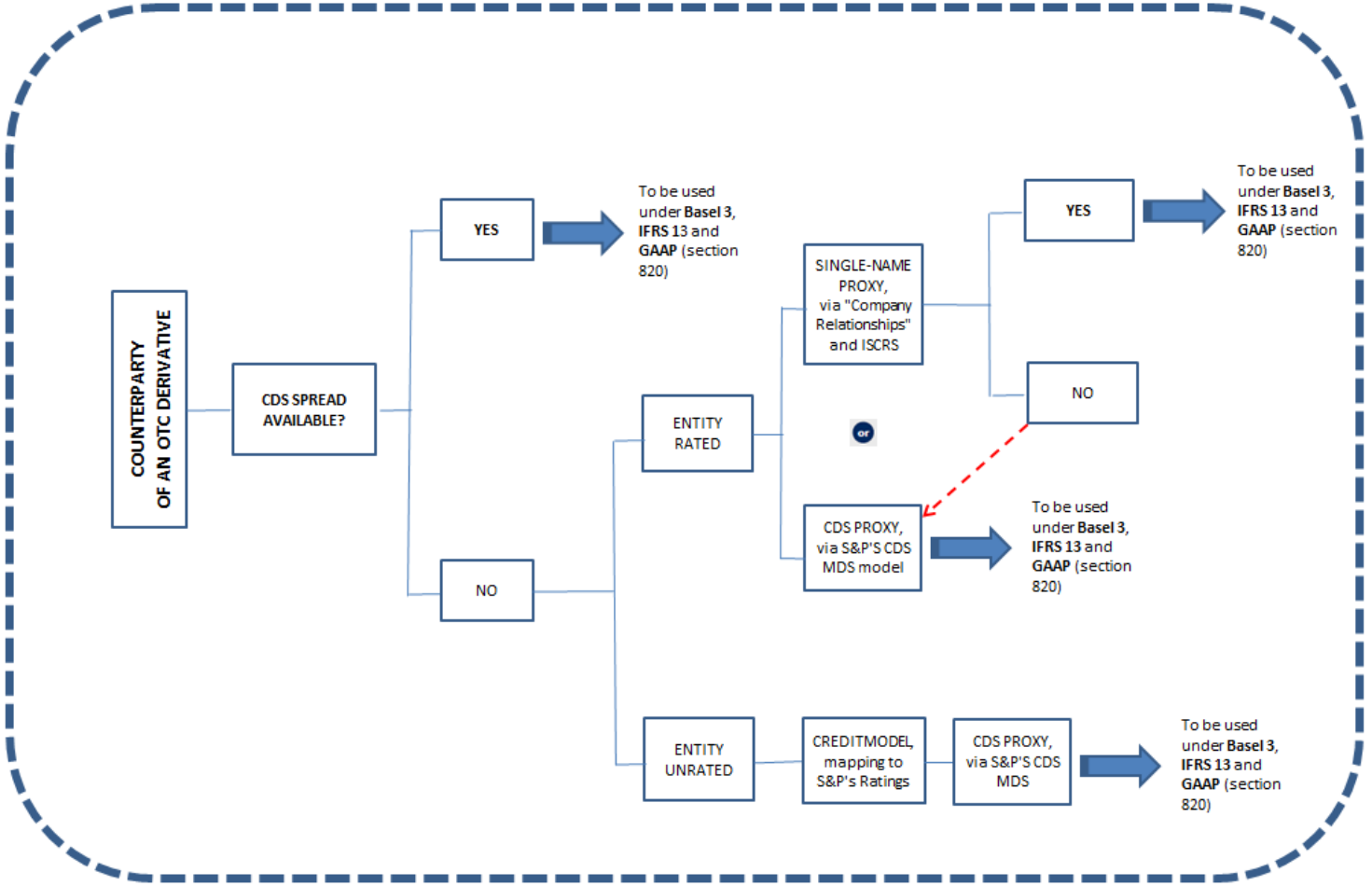
- **CDS spreads and related "Proxies" to calculate CVA requirements for Capital Charge and Accounting purposes**
  - Banks (Basel 3)
  - Financial and Non-Financial Institutions with traded equity and debt (IFRS 13 and "Prudent Valuation" requirements)

- **Our CDS spreads lead the price-discovery process in the market** (European Financial Management, 2014)
  - The first empirical paper on the topic shows our CDS spreads are superior than those of Markit, Reuters, GFI and Fenics

- **We own all the ingredients across CDS Pricing, Ratings, Credit Analytics, Cross-Reference Services**:
  - CDS spreads (for traded counterparties)
  - S&P's CDS MDS
  - S&P Ratings
  - GICS Industry Codes
  - CDS Terms & Conditions
  - CreditModel™ (for mapping unrated companies to S&Ps' ratings)
  - Company Relationships and ISCRS (for Single-name Proxies)

Options Based On Entity's CDS Spread And Rating

- A Solution-based approach using our CDS Spreads (CMA), S&P CDS MDS, Company Relationships, ISCRS, and CreditModel™



Source: Our elaborations on Basel 3, IFRS and GAAP regulations.

Further Reading

- **Basel Committee on Banking Supervision (2011),** *"Basel III: A Global Regulatory Framework for more resilient Banks and Banking Systems"*, June (www.bis.org).
- **European Banking Authority (2015),** *"Report on Credit Valuation Adjustment (CVA) under Article 456(2) of Regulation (EU) No 575/2013 (Capital Requirements Regulation — CRR)"* , February (www.eba.europa.eu).
- **European Banking Authority (2015),** *"Final Draft Regulatory Technical Standards on Prudent Valuation under Article 105(14) of Regulation (EU) No 575/2013 (Capital Requirements Regulation – CRR),* January (www.eba.europa.eu).
- **European Banking Authority (2013),** *"Final Draft Regulatory Technical Standards on Credit Valuation Adjustment Risk for the determination of a Proxy Spread and the specification of a limited number of smaller portfolios under Article 383(7) of Regulation (EU) No 575/2013 (Capital Requirements Regulation – CRR)"*, December (www.eba.europa.eu).
- **Mayordomo, S., Pena, J.I. and Schwartz, E.S. (2014),** "*Are all Credit Default Swap Databases Equal?"*, European Financial Management, Vol. 20, No. 4 (September), 677-713.
- **Standard & Poor's (2013),** *"How Standard & Poor's Arrive At Credit Default Swap Market Derived Signals"*, co-authored by S. Bergman, M. Hampel, J. Wagner, Y. Zhou, and L. Taralli, September (www.spcapitaliq.com).

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