



CLAR
II CONGRESO
LATINOAMERICANO DE
RIESGOS

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Riesgo de Contraparte e los nuevos Ajustes en el mercado





Dada la importancia que está teniendo el CVA cada día en la gestión de riesgo de contrapartida en los portafolios, serán presentados en esta sesión los lineamientos generales en la evaluación y gestión CVA y su cobertura.

Agenda

Riesgo de Crédito: 4,000 años de Historia

Porqué CVA?

El camino para el CVA y su reto analítico

Impactos Obvios en el Negocio

Impactos no tan obvios



Riesgo de Crédito: 4,000 años de Historia



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Riesgo de Crédito y el código de Hammurabi (1754 BC)

Ley 48

Si uno se ha obligado por una obligación que produce intereses y la tormenta (Hadad) ha inundado su campo y llevado la cosecha o si faltó de agua el trigo no se ha levantado sobre el campo, este año no dará trigo a su acreedor, empapará su tableta y no dará el interés de este año.



Riesgo de Crédito y el código de Hammurabi (1754 BC)

Ley 117

Si una deuda ha tomado una persona y si el deudor había tomado el dinero y dado a su esposa, su hijo y su hija, estos trabajarán durante 3 años para la casa de su comprador y del acreedor; al cuarto años esta casa los pondrá en libertad.

BACK TO THE FUTURE



3,700 años
después...



Grandes pierdas de crédito no
solamente cuando hay bancarrotas. |

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Porqué CVA?

Mientras el acuerdo de Basilea II cubre el riesgo de bancarrota de una contrapartita, el mismo no especifica el riesgo de CVA, que durante la crisis financiera de 2008 causó pérdidas más grandes que aquellas causadas por las bancarrotas.



Porqué CVA?

Durante la crisis de 2007/2008

Basilea 2.0

Riesgos asociados a las pérdidas debido a la **probabilidad de bancarrota (PD)** de contrapartidas.



Basilea 3.0

Riesgos asociados a las pérdidas asociadas al **deterioro de la calidad de crédito** de las contrapartidas

Porqué CVA?

Categorisation by product type/asset class	TB (\$bn)	BB (\$bn)	Total (\$bn)
Super Senior CDOs with ABS underliers	53	34	87
CVA counterparty losses on monoline insurers	28	9	37
ABS assets (failed securitisations, SIVs, conduits etc)	16	35	51
Leveraged loans	4	14	18
Corporate credit derivatives (index and bespoke)	11		11
Counterparty defaults	6	2	8
Other CVA losses (incl. Credit Derivative Product Companies)	6		6
Equity derivatives	4	1	5
Hedge Fund derivatives and financing	3		3
IR derivatives	3		3
Vanilla credit derivatives	3		3
Emerging markets	2		2
Corporate bond trading	2		2
FX trading	1		1
Government bond trading	0.5	0.5	1
Commodities trading	0.5		0.5
Total	144	96	240

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Source: <https://goo.gl/Ew9h4Q>

Porqué CVA?

CCR de Basileía 3.0

=

Riesgo de Bancarrota + Riesgo de CVA

VaR de
Crédito

VaR del la componente de
precio del riesgo de
Contrapartida

Before CVA...

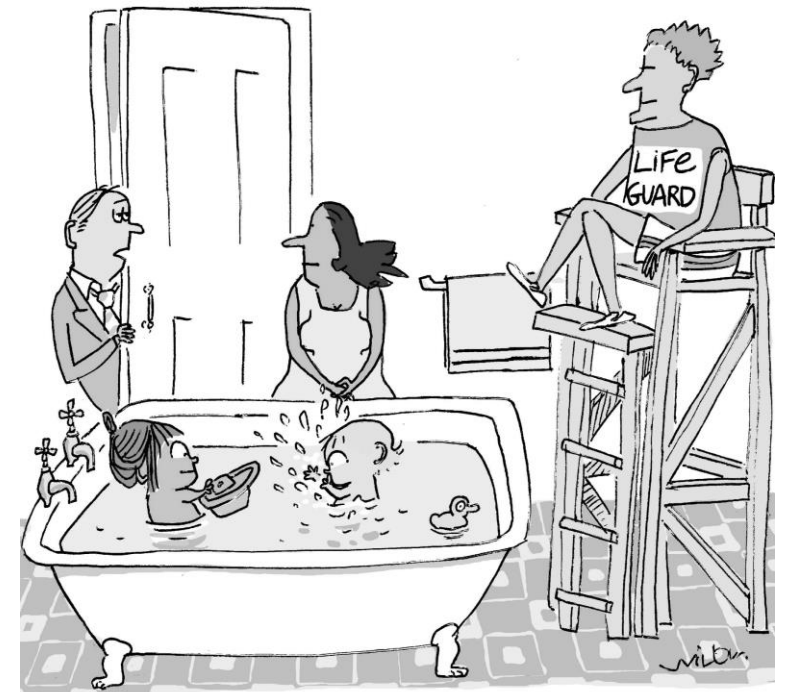
Before the Crisis



During the Crisis



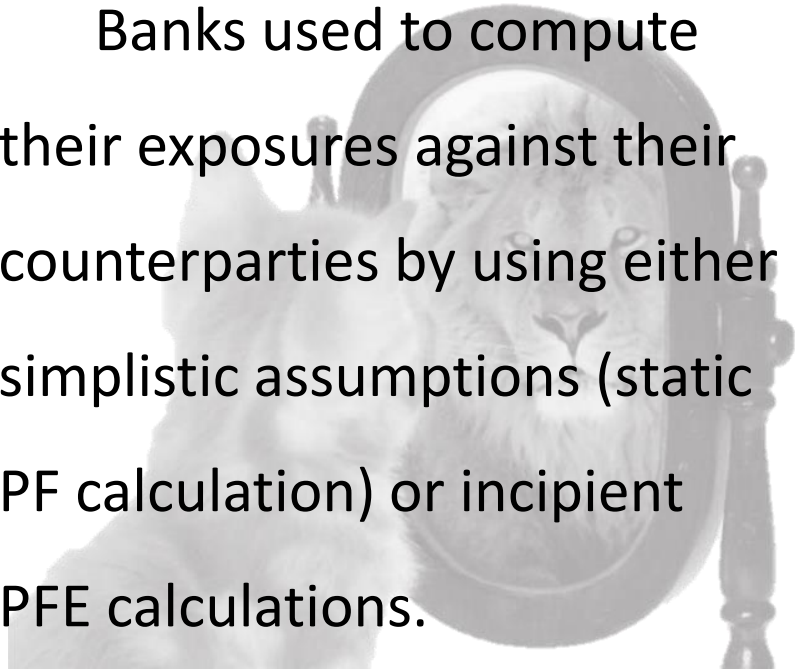
After the Crisis



Before CVA...

Before the Crisis

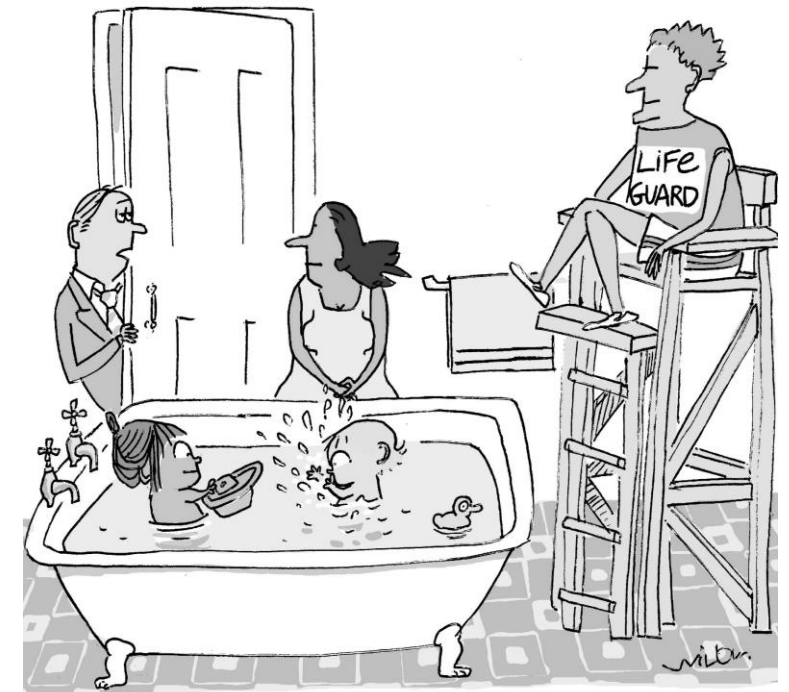
Banks used to compute their exposures against their counterparties by using either simplistic assumptions (static PF calculation) or incipient PFE calculations.



During the Crisis



After the Crisis



Before CVA...

Before the Crisis

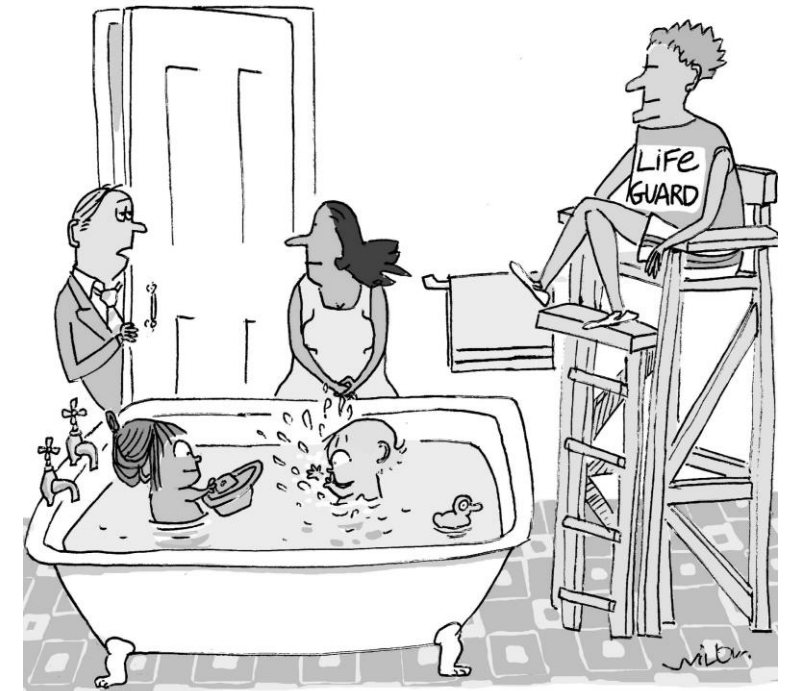


During the Crisis

Big banks started calculating simplistic approaches to CVA.

No regulatory pressure at all.

After the Crisis



Before CVA...

Before the Crisis



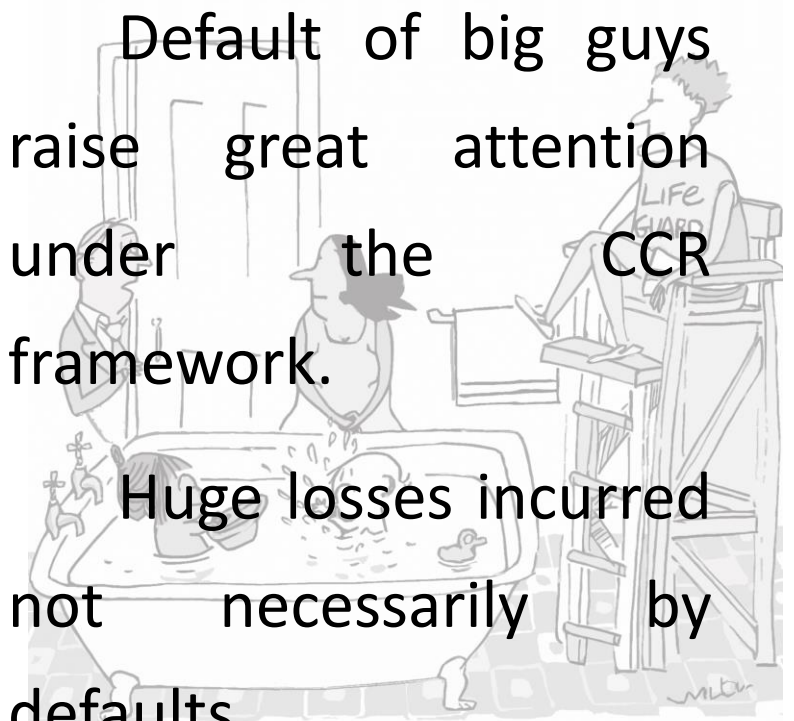
During the Crisis



After the Crisis

Default of big guys
raise great attention
under the CCR
framework.

Huge losses incurred
not necessarily by
defaults...



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El camino para el CVA y su reto analítico

The Building Blocks

CVA como un ajuste en el precio debido a la pérdida esperada de una contrapartida.

$$CVA = E[L]$$

$$L(t) = (1 - R) \cdot E(t) \cdot PD(t) \cdot DF(t)$$

Future Value of the
Amount that can be
lost

Probabilit
y of
Default

Discount
Factor

El camino para el CVA y su reto analítico

Exposición $V(t;s_t)$ – Valor de una transacción (portfolio) en una determinada fecha t dado un determinado estado s_t

El vector de estado (factor de riesgo) és un input crítico para la valuación.

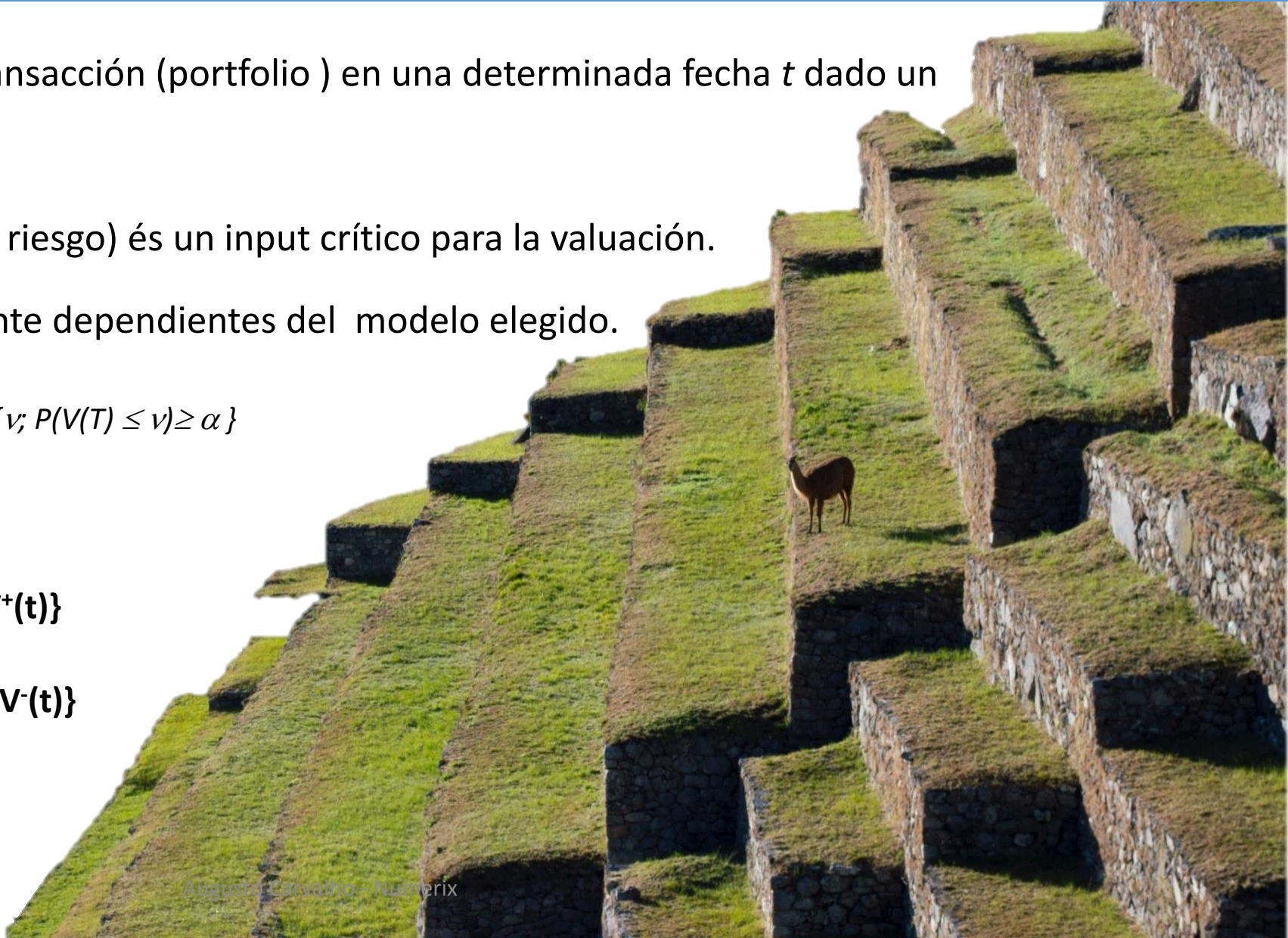
Los estados son completamente dependientes del modelo elegido.

Exposición Potencial Futura (PFE) = $\inf \{v; P(V(T) \leq v) \geq \alpha \}$

Exposición Esperada (EE) = $E\{ V(t) \}$

Expected Positive Exposure (EPE) = $E\{ V^+(t) \}$


Expected Negative Exposure (ENE) = $E\{ V^-(t) \}$



El camino para el CVA y su reto analítico

Ejemplos reales

Numerix Benchmark Papers



Counterparty Credit Exposure Profile Benchmarks
October 2013

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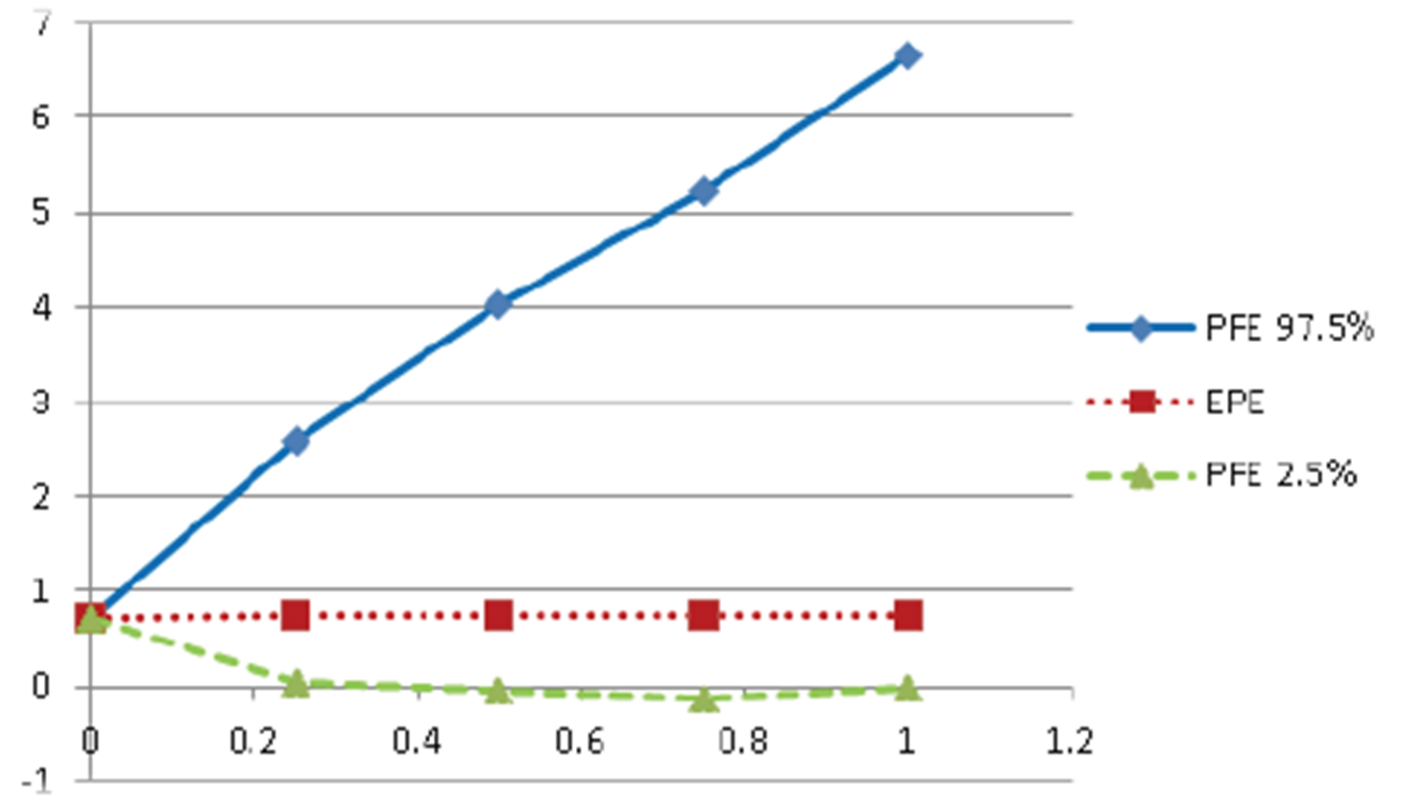
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This paper benchmarks counterparty credit exposure profiles calculated with the Numerix algorithmic exposure method. We compare exposure profiles computed using the Numerix method with similar profiles from the foundational work of Cesari et al. We also compare the Numerix method to the classical brute-force Monte Carlo approach and conclude that the results agree with high accuracy, while the algorithmic exposure method is significantly faster than the brute-force Monte Carlo method.



El camino para el CVA y su reto analítico

Ejemplos reales

2.1 IR Swap Vanilla: Fixed Floating Swap

Model Parameters

Spot Date: 9/18/2012

Yield Curve Stripping: Cubic interpolation to USD instruments (cash, FRA, swaps)

Model : HW2F with $\lambda_1 = 30\%$, $\lambda_2 = 5\%$, $\rho = -50\%$ and volatilities calibrated to swaptions

Method: Backward MC kernel pricing method with 500 time steps and 1000 paths

Instrument Parameters

Instrument Type: 10-year USD Swap

Paying rate: Fixed, 6m

Receiving rate: Floating, quarterly indexed to 3m Libor

El camino para el CVA y su reto analítico

Ejemplos reales

2.1 IR Swap Vanilla: Fixed Floating Swap

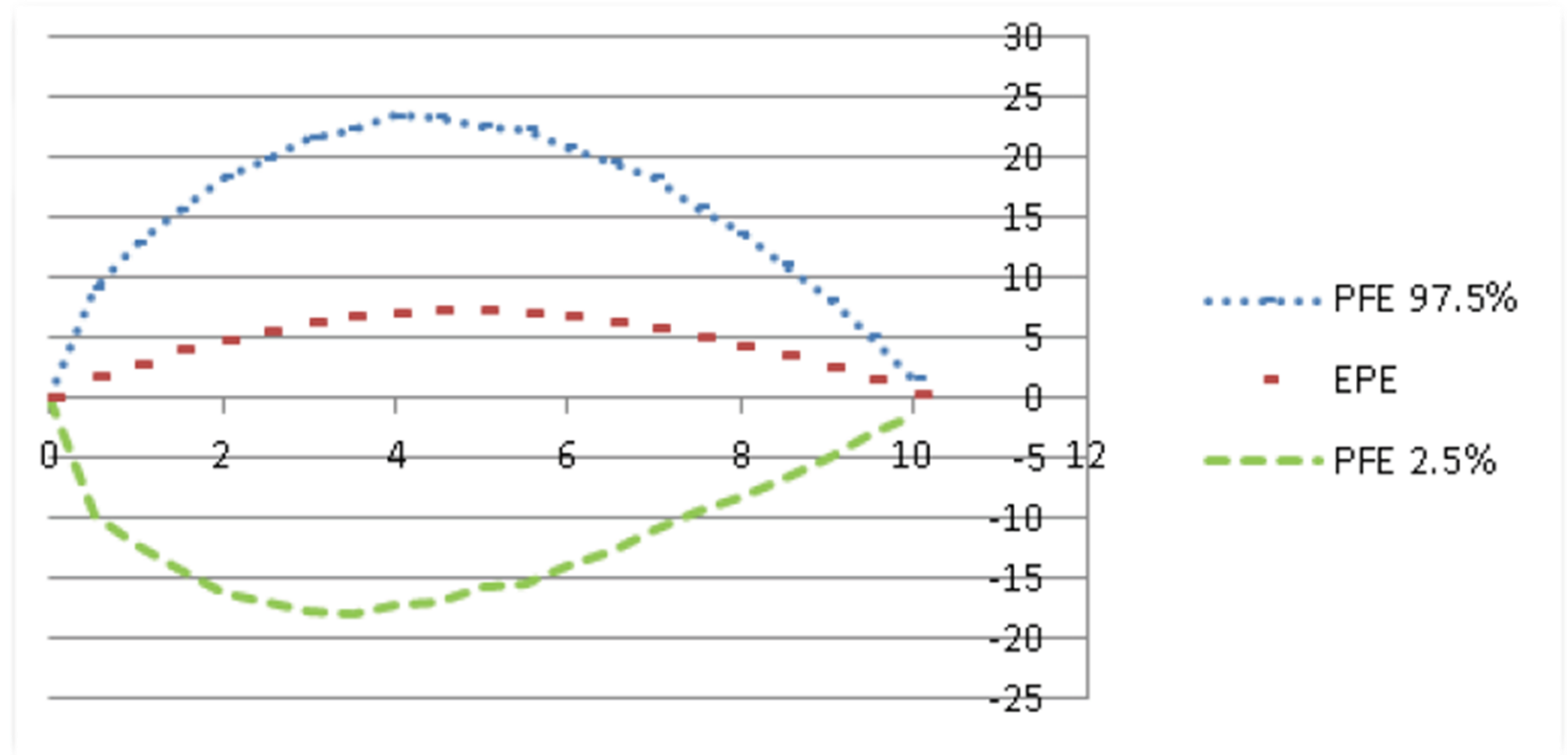
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Instrument Parameters

Instrument Type: 10-year USD Swap
Paying rate: Fixed, 6m
Receiving rate: Floating, quarterly indexed to 3m Libor



El camino para el CVA y su reto analítico

Ejemplos reales

2.6 IR Swap: Cross-Currency Swap, USD

Model Parameters

Model: Hybrid HW1F/BS/HW1F with EUR Libor modeled with HW1F ($\lambda = 3\%$, $\sigma = 2\%$) and FX (dollars for Euro) is modeled with Black ($\sigma_1 = 8\%$, spot = $1/0.6 = 1.66$).

The correlation matrix is given below. The subscript D is for domestic model factor, F for foreign model factor, and X for FX.

$$\begin{pmatrix} \rho_{DD} & \rho_{DF} & \rho_{DX} \\ \rho_{FD} & \rho_{FF} & \rho_{FX} \\ \rho_{XD} & \rho_{XF} & \rho_{XX} \end{pmatrix} = \begin{pmatrix} 1 & 0.8 & 0.8 \\ 0.8 & 1 & 0.6 \\ 0.8 & 0.6 & 1 \end{pmatrix}$$

Instrument Parameters

Instrument Type: 10-year cross-currency swap

Paying Rate: Fixed 1.895% USD

Receiving Rate: Three-month EUR LIBOR

Payments: Semiannual

Domestic Notional: 100 USD

Foreign Notional: 60 EUR

$$r_t = x_t + \alpha(t)$$

$$dx_t = -\lambda(t)x_t dt + \sigma(t)dW_t$$

El camino para el CVA y su reto analítico

Ejemplos reales

2.6 IR Swap: Cross-Currency Swap, USD

Model Parameters

Model: Hybrid HW1F/BS/HW1F with EUR Libor modeled with HW1F ($\lambda = 3\%$, $\sigma = 2\%$) and FX (dollars for Euro) is modeled with Black ($\sigma_1 = 8\%$, $\text{spot} = 1/0.6 = 1.60$).

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Instrument Parameters

Instrument Type: 10-year cross-currency swap

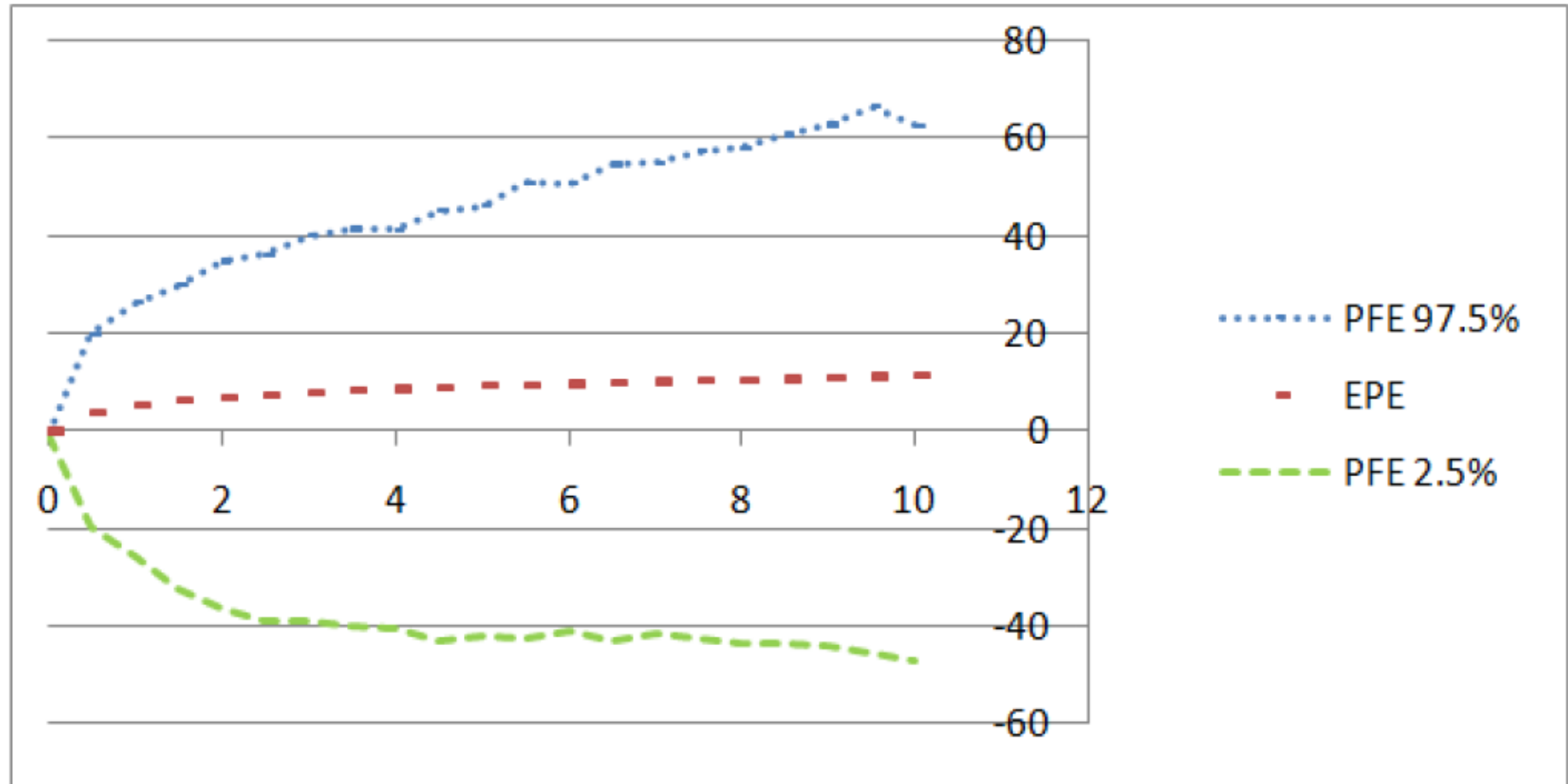
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Payments: Semiannual

Domestic Notional: 100 USD

Foreign Notional: 60 EUR



El camino para el CVA y su reto analítico

Ejemplos reales

2.10 FX Forward

Model Parameters

Model: Hybrid cross-currency model

Domestic IR Model: HW1F with $\lambda_1 = 3\%$, $\sigma_1 = 2\%$

Foreign IR Model: HW1F with $\lambda_1 = 5\%$, $\sigma_1 = 1\%$

FX Model: Black model with $\sigma_1 = 10\%$, spot = 0.65

Correlation: Identity matrix between the three factors

Method: Backward MC kernel pricing with 500 time steps and 1000 paths

Instrument Parameters

Instrument Type: FX forward

Domestic Currency: EUR

Foreign Currency: USD

Tenor: 1 year

Strike: 0.65

Notional: 100%

El camino para el CVA y su reto analítico

Ejemplos reales

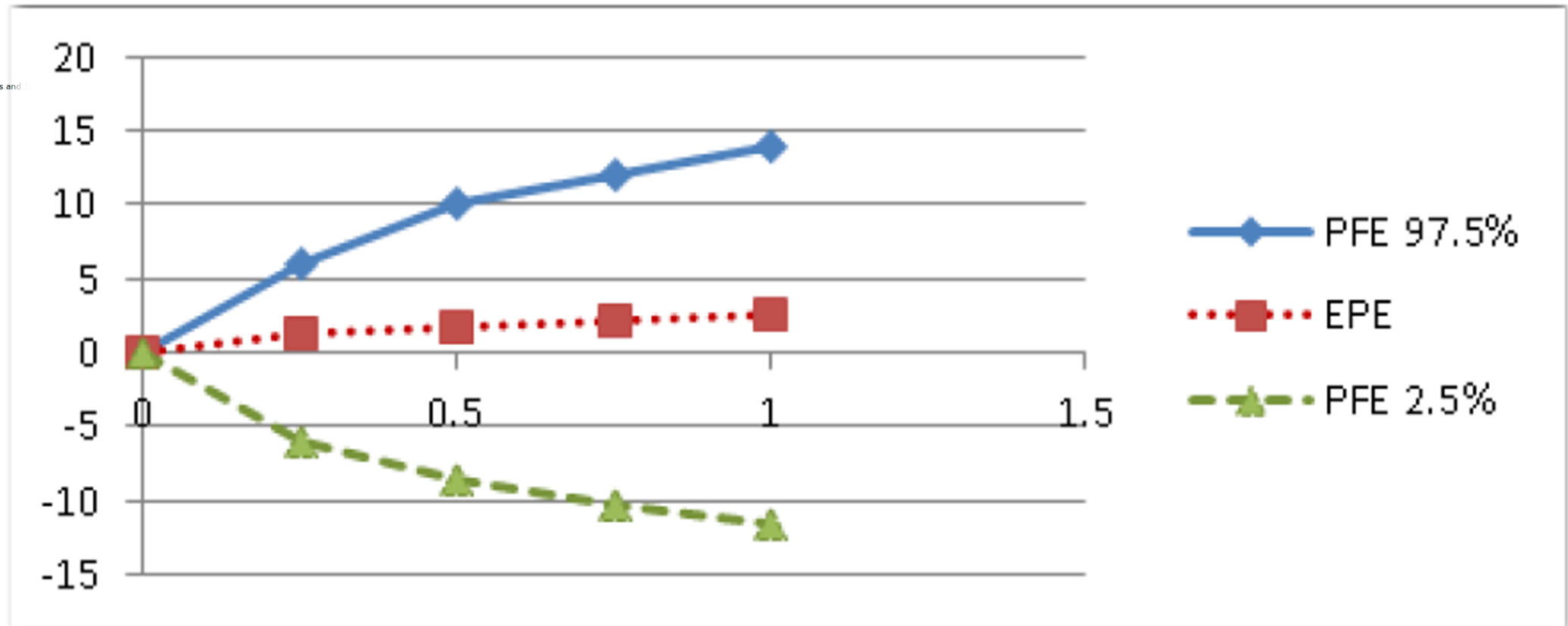
2.10 FX Forward

Model Parameters

Model: Hybrid cross-currency model
Domestic IR Model: HW1F with $\lambda_1 = 3\%$, $\sigma_1 = 2\%$
Foreign IR Model: HW1F with $\lambda_1 = 5\%$, $\sigma_1 = 1\%$
FX Model: Black model with $\sigma_1 = 10\%$, spot = 0.65
Correlation: Identity matrix between the three factors
Method: Backward MC kernel pricing with 500 time steps and 1000000 paths

Instrument Parameters

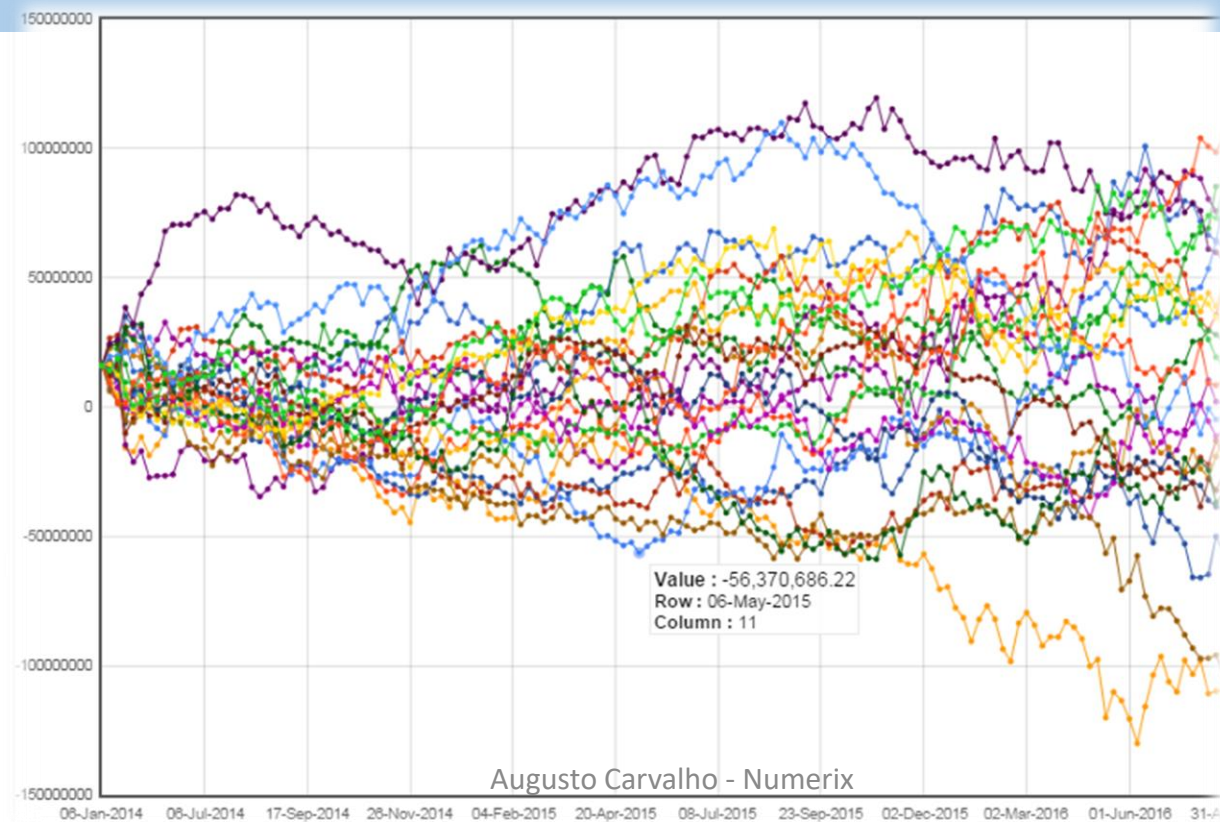
Instrument Type: FX forward
Domestic Currency: EUR
Foreign Currency: USD
Tenor: 1 year
Strike: 0.65
Notional: 100%



El camino para el CVA y su reto analítico

En la práctica

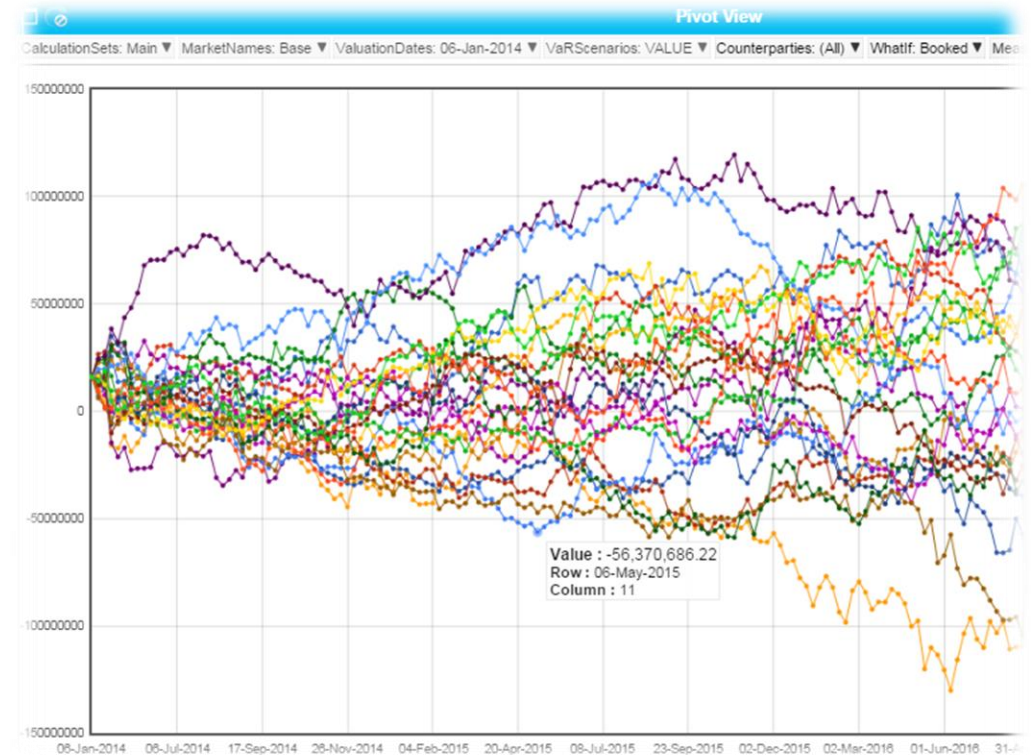
Simulando las exposiciones



El camino para el CVA y su reto analítico

En la práctica

	Full Netted Exposure.RPT			
Time Step	1	2	3	4
Jan-10-2014	-9,680,895.38	-9,680,895.38	-9,680,895.38	-9,680,895.38
Jan-17-2014	-6,366,339.00	-9,080,772.24	-10,361,434.72	-13,042,025.44
Jan-24-2014	-9,094,793.25	-2,258,594.18	-12,480,769.29	-11,590,167.80
Apr-10-2014	1,893,694.56	-1,431,669.28	992,710.69	-29,181,009.32
Apr-17-2014	-1,665,408.58	-4,015,586.97	1,017,246.40	-28,068,129.37
Apr-24-2014	1,501,143.96	-14,088,293.69	-8,636,315.74	-27,075,830.09
May-21-2014	-9,215,414.04	-5,367,235.32	-12,142,723.12	-30,233,659.80
May-28-2014	-11,291,754.83	-8,741,550.52	-1,924,642.52	-39,068,058.00
Jun-04-2014	-4,440,200.82	-2,650,549.57	1,559,748.53	-43,482,224.76



Simulando las exposiciones

El camino para el CVA y su reto analítico

En la práctica

Risk **Trades** **Market Data** **Static Data** **Calculations** **Scheduled Tasks**

What-If Analysis Re-Run Daily Calculation

History Dashboard Pivot View Bookmark Global Filters Wizard Administrator

Bookmark

- Pre-Margin Negative Exposure
- Pre-Margin Positive Exposure
- Self Hazard Rates
- PFE
 - Post-Margin PFE by Counterparty D
 - Average PFE EPE ENE EE by Coun
 - Effective PFE EPE ENE EE by Coun
 - Initial Margin by Counterparty
 - Negative PFE ENE Time Profile by C
 - Positive PFE EPE Time Profile by Cc
 - Post-Margin Incremental PFE
 - Post-Margin PFE by Counterparty**
 - Pre-Margin PFE by Counterparty
- Sensitivities

Post-Margin PFE by Counterparty x +

RT Epoch LATEST VaR % Scale % Currency EUR PnL To:

Calculation Sets: Main Market Names: Base Valuation Dates: 10-Jan-2014 Scenarios: VALUE VaR Scenarios: VALUE Counterparties: (All) What-If: Booked

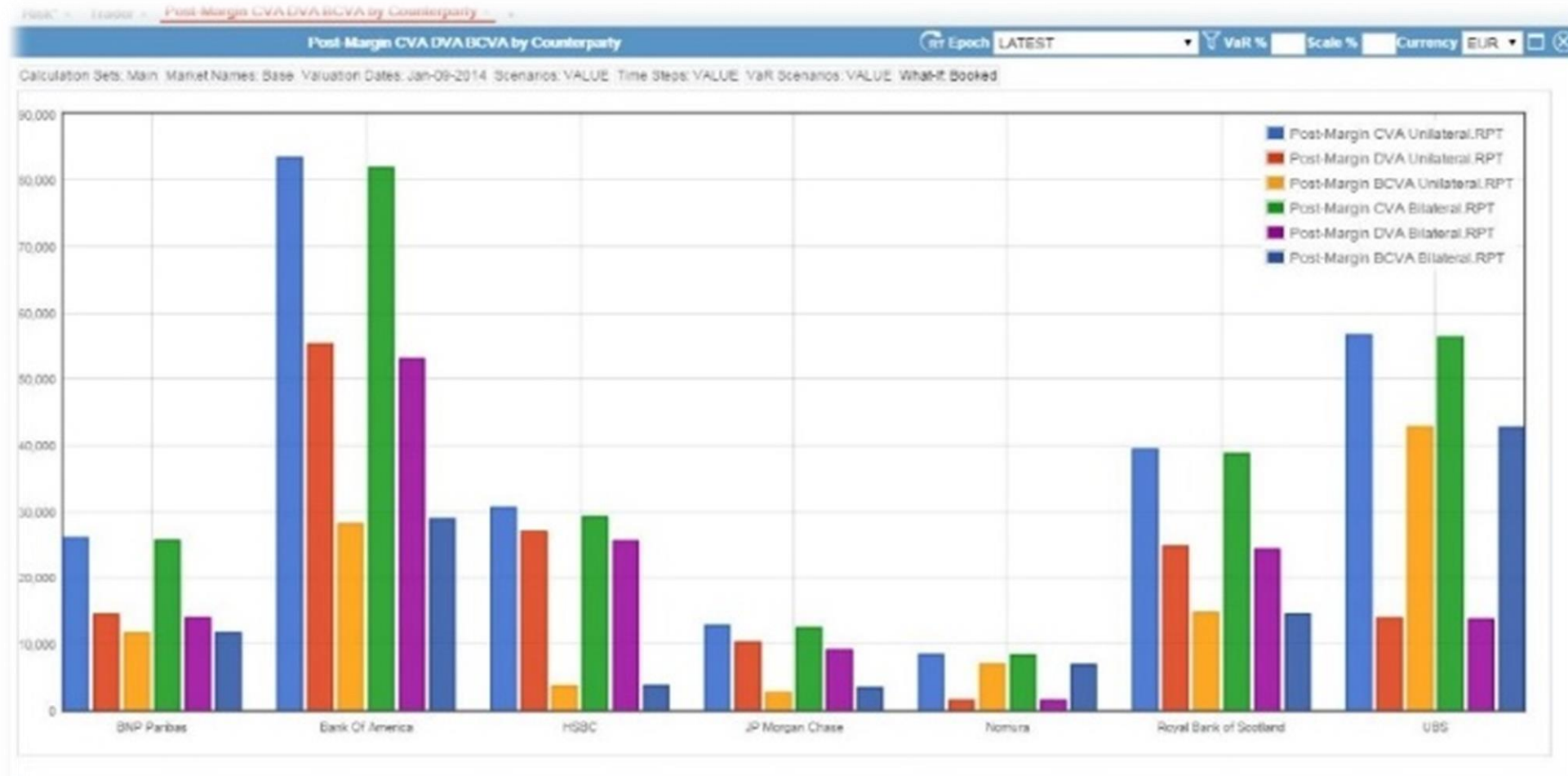
Measures Counterparty

Time Step	Post-Margin Positive PFE.RPT			Post-Margin Negative PFE.RPT			Post-Margin EPE.RPT		
	Bank Of America	HSBC	Nomura	Bank Of America	HSBC	Nomura	Bank Of America	HSBC	Nomura
Jan-10-2014	.00	14,594,974.25	68,992.74	-98,765.37	-11,618,179.59	-23,807.27	.00	12,872,569.22	62,715.91
Apr-10-2014	.00	21,631,534.38	84,330.66	-87,451.38	.00	-11,159.57	.00	14,023,035.87	62,773.05
Jul-10-2014	17,922.80	11,414,334.93	8,736.35	.00	-107,404.80	.00	6,659.57	2,937,856.34	3,609.61
Oct-10-2014	14,539.16	13,069,798.33	8,620.69	.00	-125,253.36	-41.06	6,210.67	3,430,910.04	3,540.36
Jan-10-2015	.00	14,062,363.94	9,328.07	-44,324.70	-255,183.19	-180.50	.00	3,764,188.23	4,209.02
Apr-10-2015	17,527.68	11,962,102.51	11,568.47	.00	-156,495.00	-12.95	6,520.61	4,005,054.45	4,512.51
Jul-10-2015	18,230.45	13,132,013.53	10,204.67	.00	-25,811.28	-3.06	7,059.24	4,096,223.07	4,062.59
Oct-10-2015	20,213.56	14,702,793.30	9,606.76	.00	-143,145.68	.00	6,900.44	4,317,756.14	4,169.37

Calculando las exposiciones en el nivel de las contrapartidas

El camino para el CVA y su reto analítico

En la práctica



Agenda

Riesgo de Crédito: 4,000 años de Historia

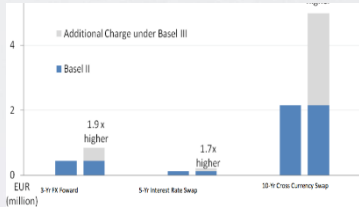
Porqué CVA?

El camino para el CVA y su reto analítico

Impactos Obvios en el Negocio

Impactos no tan obvios

Impactos Obvios en el Negocio



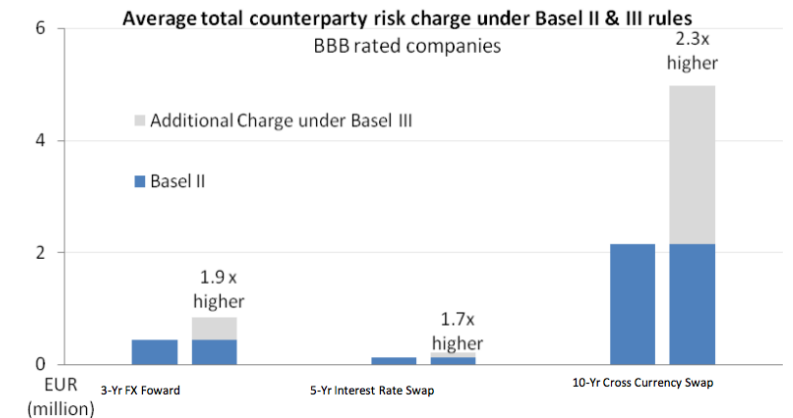
Cargos de CCR más grandes

Mayor uso de colaterales

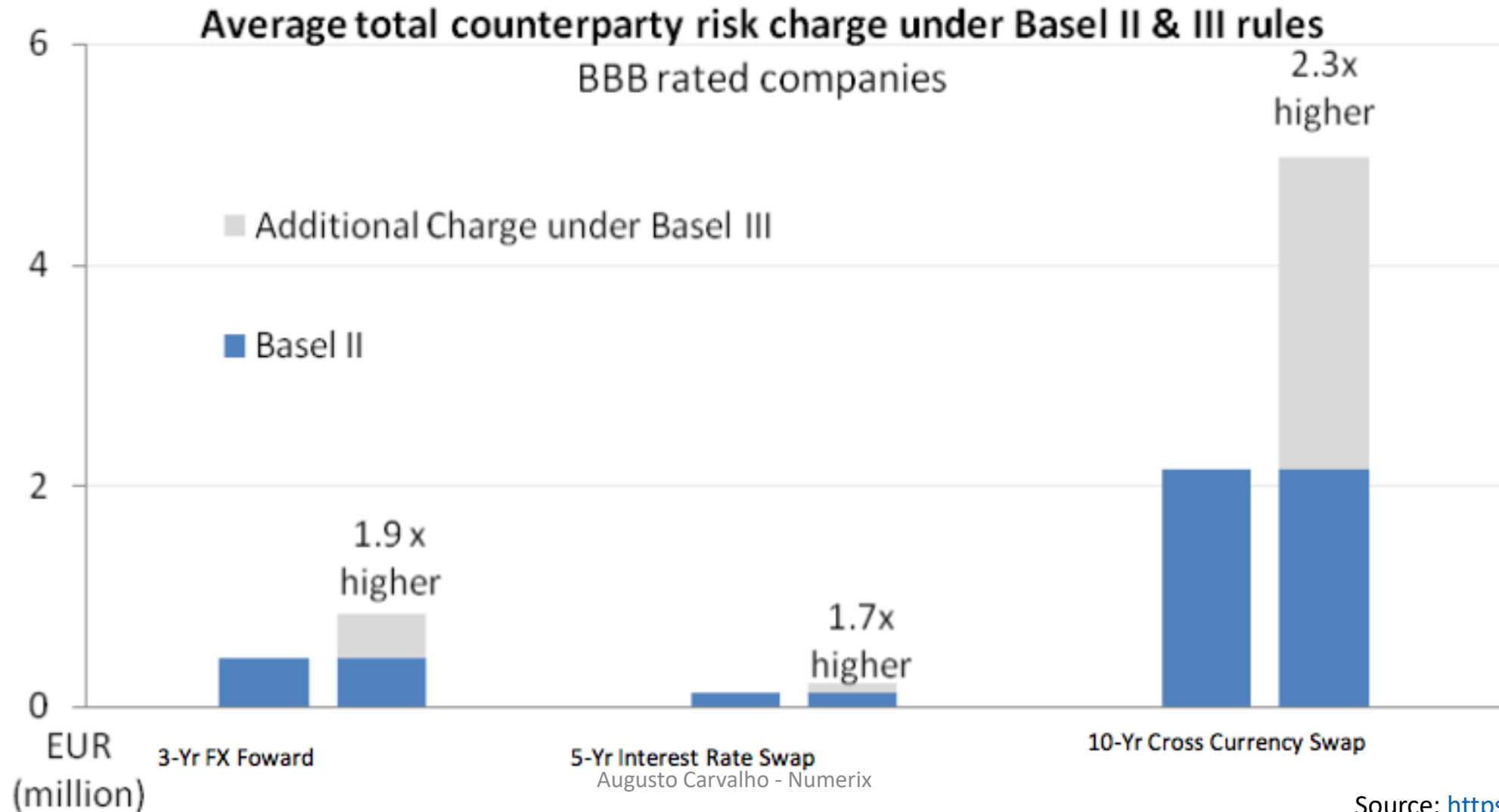
Mayores costos de negociación

Cargos de CCR más grandes

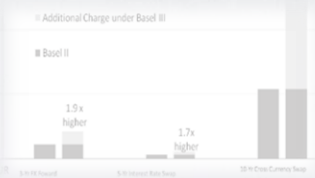
Banks will be subject to a **capital charge** for potential **mark-to-market losses** (i.e. credit valuation adjustment – **CVA** – risk) associated with a deterioration in the credit worthiness of a counterparty.



Cargos de CCR más grandes



Impactos Obvios en el Negocio



Cargos de CCR más grandes



Mayor uso de colateral



Mayores costos de negociación

Mayor uso de colateral

Aumento de la eficiencia de los acuerdos de colateral;

Reconocer mas efectos mitigadores para las medidas de exposición regulatorias;

Re-negociación de las condiciones de los acuerdos de colateral actuales;

Los bancos pueden costear su necesidades de colaterales a través de préstamos de corto-plazo.

Impactos Obvios en el Negocio



Cargos de CCR más grandes



Mayor uso de colateral



Mayores costos de negociación

Mayores costos de negociación

Consecuencias obvias caso no hayacambios en los acuerdos de colateral.

Desplazamiento de los costos de riesgo de contrapartida desde el departamento de riesgo hacia el Front-office.

No todos los bancos en América Latina tienen sus *front-offices* consiente de tal responsabilidad.

Agenda

Riesgo de Crédito: 4,000 años de Historia

Porqué CVA?

El camino para el CVA y su reto analítico

Impactos Obvios en el Negocio

Impactos no tan obvios



CVA y sus impactos Impactos no tan obvios

Augusto Carvalho - Numerix



CVA y sus impactos Impactos no tan obvios



Cultura de los Modelos



Gestión de Colaterales



Datos de mercado alternativos

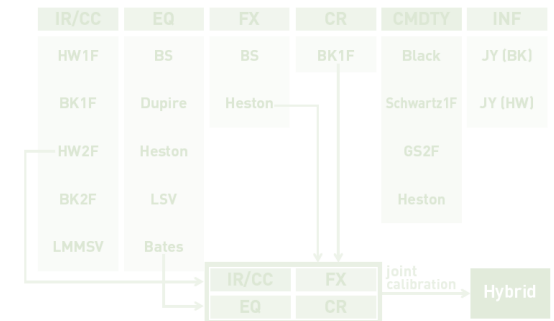
CVA y sus impactos no tan obvios

Transformación de la cultura de modelaje

CVA es medido con respecto al portafolio.

CVA requiere una modelaje robusta para tratar diferentes tipos de clases de activos.

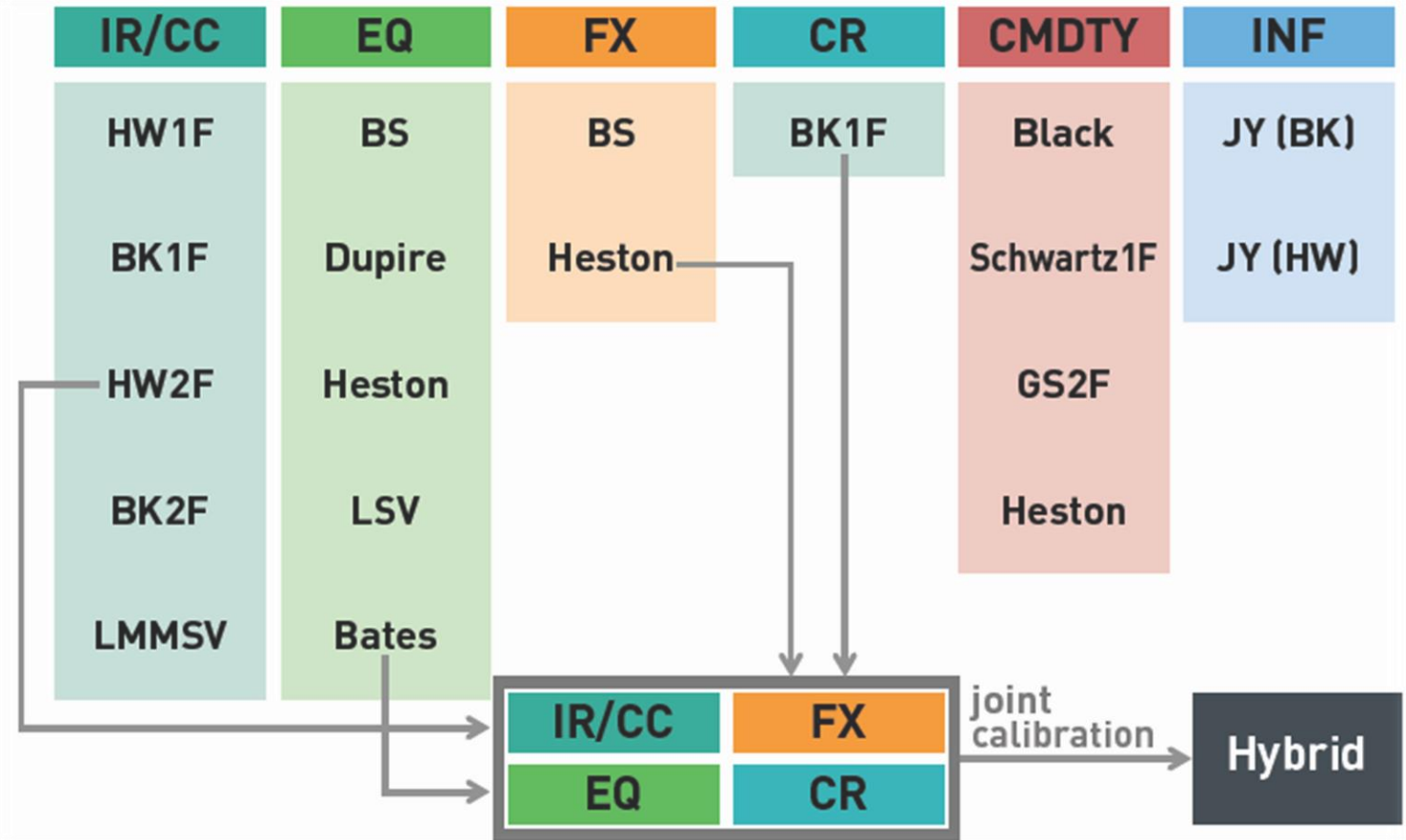
Exposiciones tienen que manejar la estructura de correlación.



Transformación de la cultura de modelaje

Universal Hybrid Model

Framework across multi-asset classes/models with generic n-factor fast Monte Carlo (See Antonov and Issakov and Mechkov 2011)



Transformación de la cultura de modelaje

Instrument	Pricing	VaR, PFE	CVA	BCVA
IRS	Det	IR	IR + CR	IR + CR + CR_self
FX Fwd	Det	FX	FX + CR	FX + CR + CR_self
IRS + FX Fwd	Det	IR + FX	IR + FX + CR	IR + FX + CR + CR_self



Cultura de los Modelos



Gestión de Colaterales



Datos de mercado alternativos

CVA y sus impactos no tan obvios

Gestión de Colaterales

CVA y sus impactos Impactos no tan obvios

Netting Sets:

Exposure with Netting

$$V(t) = \sum V_i(t)$$

Exposure without Netting

$$V(t) = \sum \max\{V_i(t), 0\}$$

The effectiveness of netting depends on the number of trades, correlations and volatilities

Perfect CSAs

Under perfect CSA: Collateral $C(t) = V(t)$ at all times

Collateral fully removes CP risk

Often understood as:

- Daily collateral calls

- Zero threshold

- Zero margins

- No settlement risk

- No close-out risk

Gestión de Colaterales

CVA y sus impactos Impactos no tan obvios

Risk Trades Market Data Static Data Calculations Scheduled Tasks

Counterparties Market Reports Calendars Conventions Currencies Currency Pairs Time Zones Hybrid Model Rules

Edit Counterparty

Save Cancel

Name: * BNP Paribas
Recovery Rate: * 0.4
Credit Key (Type to look up): * CR.EUR-BNP-SNRFOR-M
Collateral Asset: * EUR
Curves: * CollateralRate=IR.EUR-EC
Basis: * 30/360
Rating: * A
Funding Proportion: * 0.5
Capital Rate: * 0.07
XVA Script: [Click to Edit](#)
Collateral  [Click to Edit](#)

Legal Entity:
BNP Paribas SA

+ Add - Delete


Margin Set:
Margin Set 1
Margin Set 2

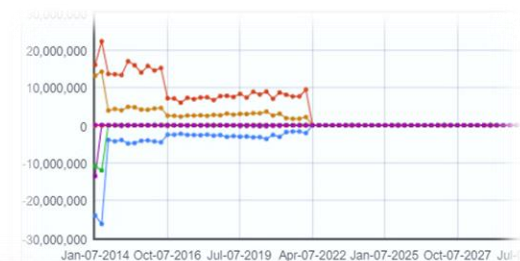
+ Add - Delete

Netting Set:
Netting Set 1
Netting Set 2

+ Add - Delete

Netting Set Properties:

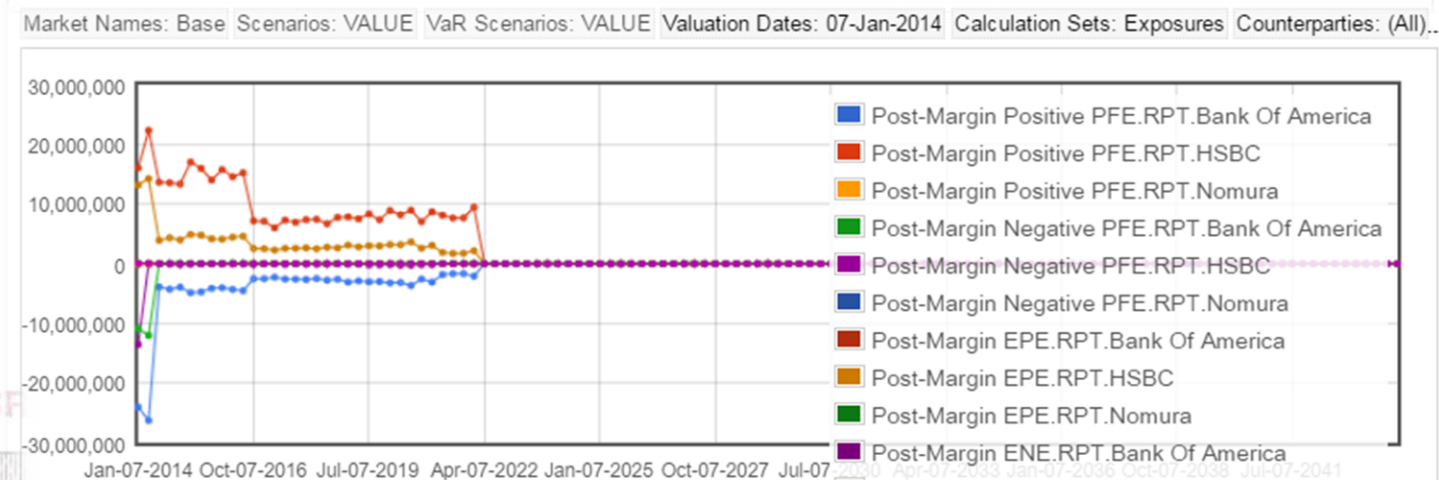
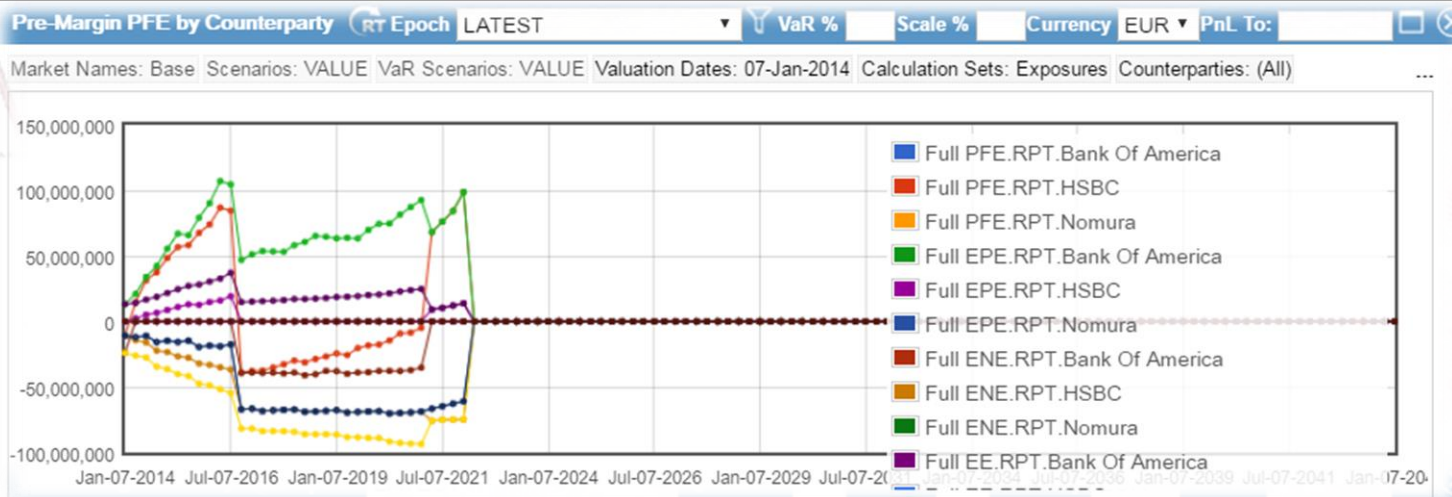
XVA Calculation Method: Use Standard Calculation 
XVA Script: [Click to Edit](#)



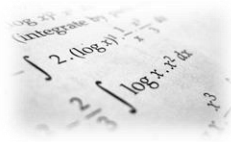
Personalizando el CSA

Gestión de Colaterales

CVA y sus impactos Impactos no tan obvios



Probando la efectividad del CSA: Pre y Post-Margine



Cultura de los Modelos



Gestión de Colaterales

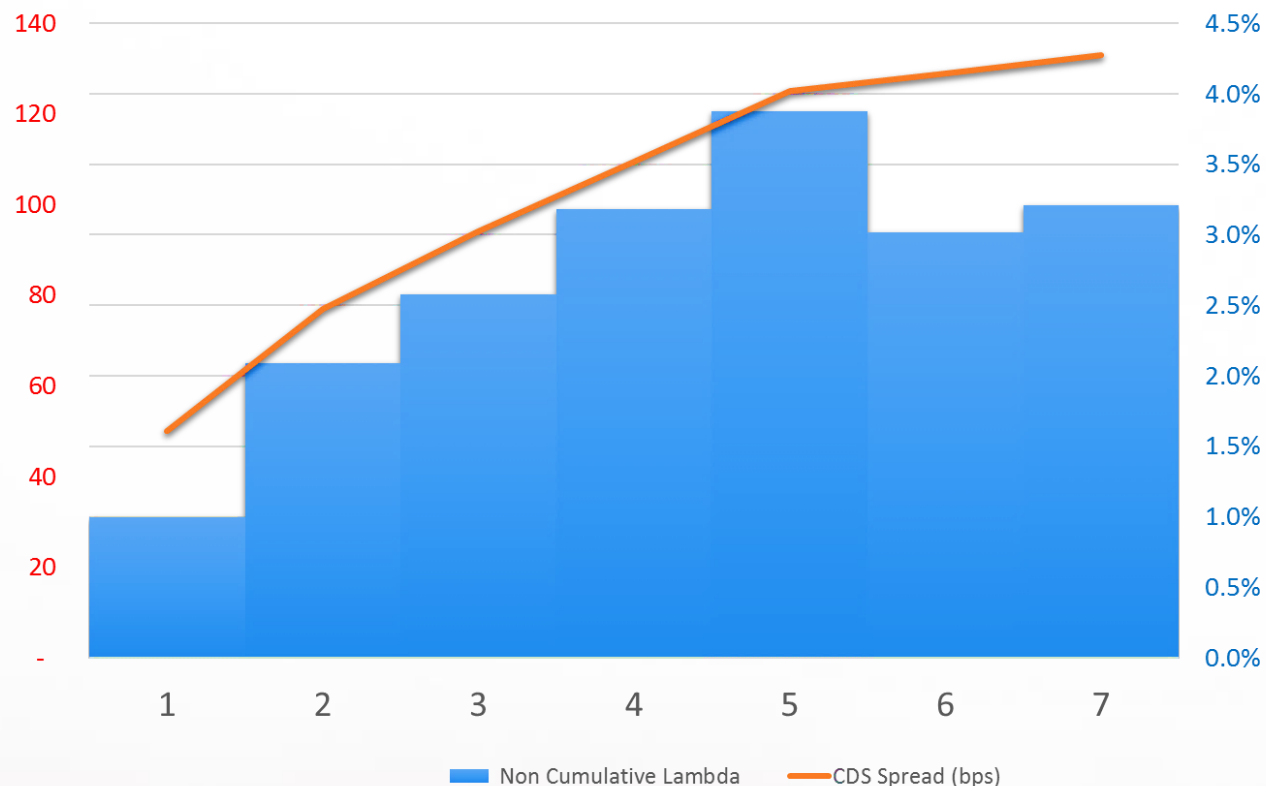


Datos de mercado alternativos

CVA y sus impactos no tan obvios

Datos de mercado alternativos

o nuevos retos en el modelaje?



Bootstrapping de las Probabilidades de Default a partir de las curvas de CDS no es siempre posible debido a el gap de liquidez (incluso la inexistencia) en los mercados de LatAm.



Datos de mercado alternativos

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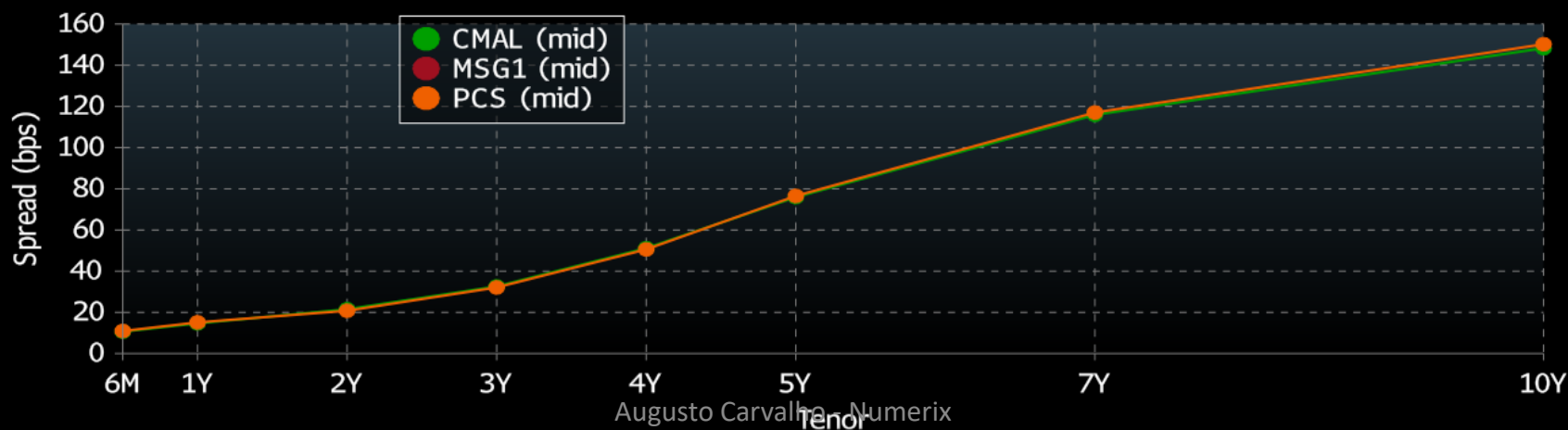
PERU CDS USD SR 10Y D14 **150.214** **-1.415** 145.367 / 155.060
 At 14:16 Source CBIN

1) Pricing Sources

CDS Curve Screen

Republic of Peru - PERU CDS USD SR

		MSG Quotes			CMAL			My PCS (Pricing Sources)			
Tenor	Name	Bid	Ask	Time	Bid	Ask	Time	Bid	Ask	Time	Source
1) Curve	PERU CDS USD SR CRV										
2) 6 Mo	PERU CDS USD SR 6M D14				7.75	13.51	11:30:00	7.96	13.91	08/11/17	CMAN
3) 1 Yr	PERU CDS USD SR 1Y D14				10.64	18.67	11:30:00	10.91	19.35	12:24:13	CBIN
4) 2 Yr	PERU CDS USD SR 2Y D14				17.43	25.55	11:30:00	17.36	24.21	14:16:13	CBIN
5) 3 Yr	PERU CDS USD SR 3Y D14				29.15	36.01	11:30:00	28.64	35.53	14:16:13	CBIN
6) 4 Yr	PERU CDS USD SR 4Y D14				48.74	53.55	11:30:00	47.83	53.30	14:16:13	CBIN
7) 5 Yr	PERU CDS USD SR 5Y D14				74.12	77.75	11:30:00	74.03	79.03	14:16:26	CBIN
8) 7 Yr	PERU CDS USD SR 7Y D14				107.37	124.43	11:30:00	112.14	121.95	14:16:13	CBIN
9) 10 Yr	PERU CDS USD SR 10Y D14				138.65	157.93	11:30:00	145.37	155.06	14:16:13	CBIN



Datos de mercado alternativos

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Que tipo de modelo debemos elegido?

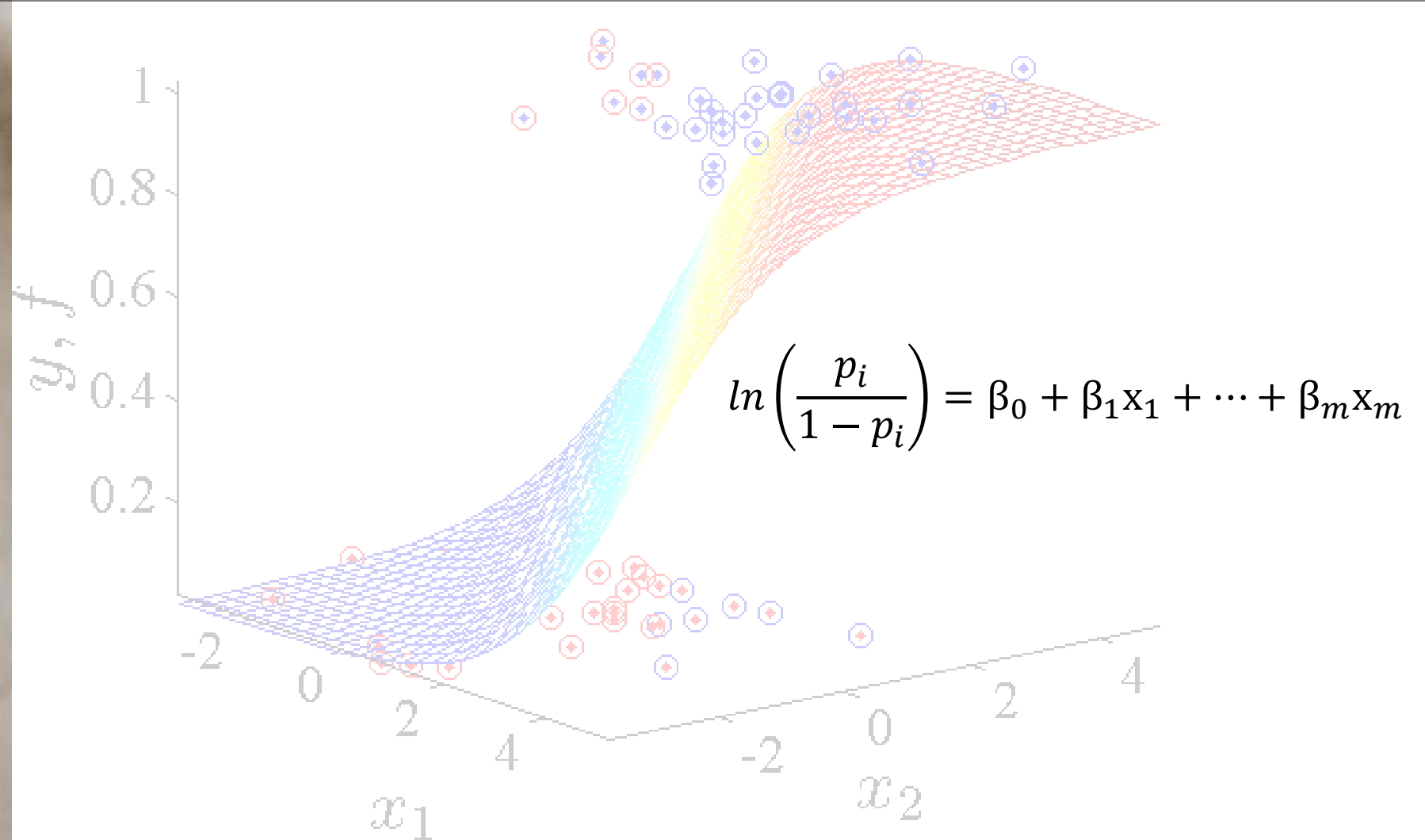
Data requirements	Advantages	Disadvantages
CDS curve (own or counterparty)	<ul style="list-style-type: none">▶ Market observable▶ Information is current (for counterparties with adequate CDS trading volume)▶ Easy to source from third party data providers▶ Exposure-specific data available for most banking counterparties	<ul style="list-style-type: none">▶ Not available for many entities▶ May not be representative of all the assets of the entity▶ May have liquidity issues due to low trading volumes, resulting in higher-than-expected spreads and additional volatility in calculations▶ CDS quotes may be indicative quotes, not necessarily reflective of actual trades
Current debt credit spread	<ul style="list-style-type: none">▶ Market observable▶ Available for some publicly traded debt instruments▶ Easy to source from third party data providers	<ul style="list-style-type: none">▶ May require an adjustment for illiquidity▶ May require a judgemental adjustment due to maturity mismatch and amount of security of debt issuance and derivative to be valued
Sector-specific CDS Index or competitor CDS Curve	<ul style="list-style-type: none">▶ Market-observable▶ Information is current▶ Easy to source from third party data providers▶ Proxy CDS curve mapping is possible for almost all entities	<ul style="list-style-type: none">▶ Not exposure-specific; may require judgemental adjustments to reflect differences between proxy and entity (e.g., size, credit rating, etc.)▶ Index CDS curves can be influenced by macro-economic factors, which do not affect entity or affect entity to a lesser or greater extent
Debt issuance credit spread	<ul style="list-style-type: none">▶ Market observable▶ Information can be current, in case a recent issuance can be referenced (or where pricing terms are available ahead of debt issuance)▶ Easy to source from third party data providers and/or from treasurer, through communications with the banks	<ul style="list-style-type: none">▶ Information can be outdated and may require an adjustment for illiquidity▶ As it is not always possible to reference a recent issuance, a judgemental adjustment may be required to bridge gap between debt issue date and derivative valuation date (i.e., financial reporting date)▶ May require a judgemental adjustment due to maturity mismatch of debt issuance and derivative to be valued
Credit rating /historical default information (e.g. Moody's publication of Historic Probability of Default)	<ul style="list-style-type: none">▶ Rating agency data available for most entities▶ Easy to source from third party data providers	<ul style="list-style-type: none">▶ Information can be outdated▶ Conversion to PD may be based on historical information▶ May require an adjustment from long-term average measure to a 'point-in-time' measure▶ Not associated with a specific maturity; ratings are generally long term average estimates of creditworthiness, which may not be appropriate for short term derivatives
Internal credit risk analysis	<ul style="list-style-type: none">▶ May be applied by most entities▶ Ability to customise internal models	<ul style="list-style-type: none">▶ Based on unobservable information▶ Information can be outdated▶ May not be consistent with what other market participants would use

Datos de mercado alternativos

o nuevos retos en el modelaje?



El modelo mas conocido en el mundo de crédito minorista



Datos de mercado alternativos

o nuevos retos en el modelaje?



Diferencia entre las fuentes de datos de crédito.

A. Historical- and market-implied PDs compared

Moody's grade	Five-year PD (%)	Selected credits	CDS-implied five-year PD (%)
Aaa	0.0029	Exxon Mobil	0.40
		Johnson & Johnson	1.77
		Microsoft	0.35
Aa3	0.142	3M	0.18
		Coca-Cola	1.34
		Colgate-Palmolive	2.20
A2	0.467	Anheuser-Busch InBev	6.41
		Boeing	3.26
		BP	8.15
Baa1	1.10	21st Century Fox	3.39
		AbbVie	6.95
		Lockheed Martin	2.30

Source: Markit, Moody's Investors Service

Source: <http://www.risk.net/derivatives/2450880/traders-shocked-712m-cva-loss-stanchart>

Agenda

Riesgo de Crédito: 4,000 años de Historia

Porqué CVA?

El camino para el CVA y su reto analítico

Impactos Obvios en el Negocio

Impactos no tan obvios

Market Risk
(MR)

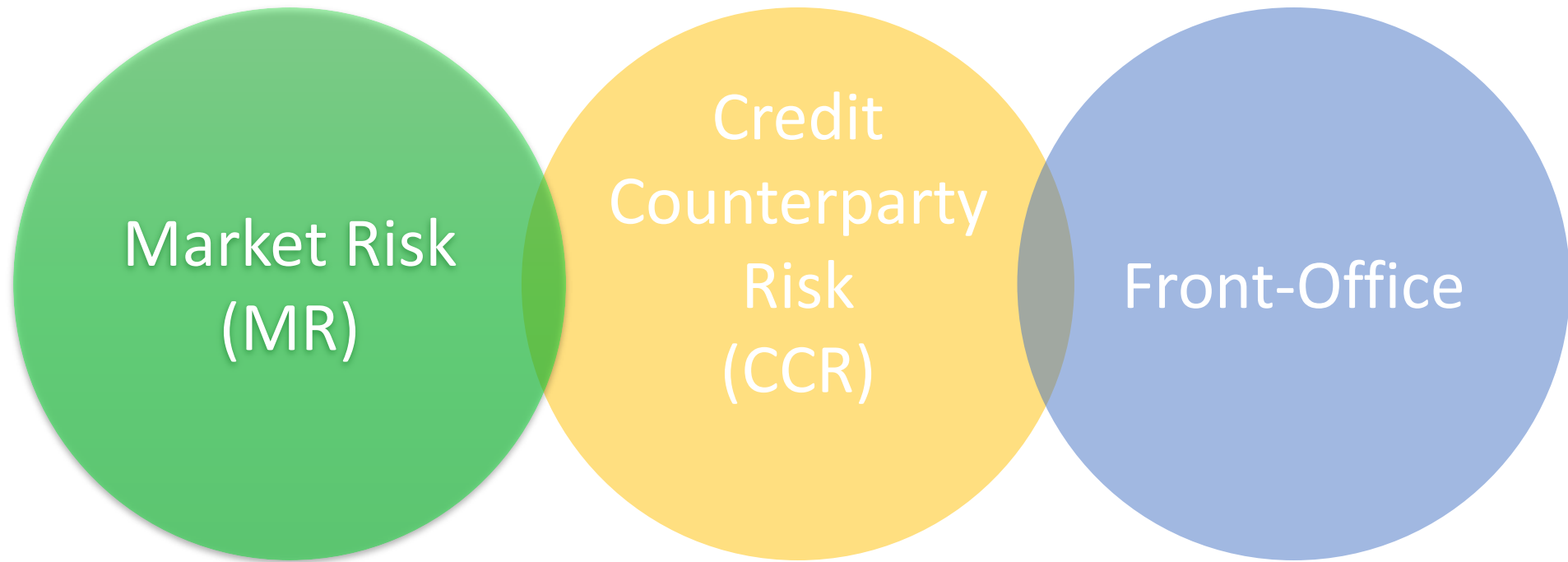
Credit
Counterparty
Risk
(CCR)

Front-Office



Consistencia entre los escenarios generados por los departamentos de riesgo de Mercado y contrapartida: **Motor de modelos centralizado.**

Consistencia entre los modelos de PD cuando hay una baja liquidez (o inexistencia) en el mercado de CDS.



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Motor de Riesgos robusto para análisis *pre-trading* (What-if): PFE, VaR, XVAs.

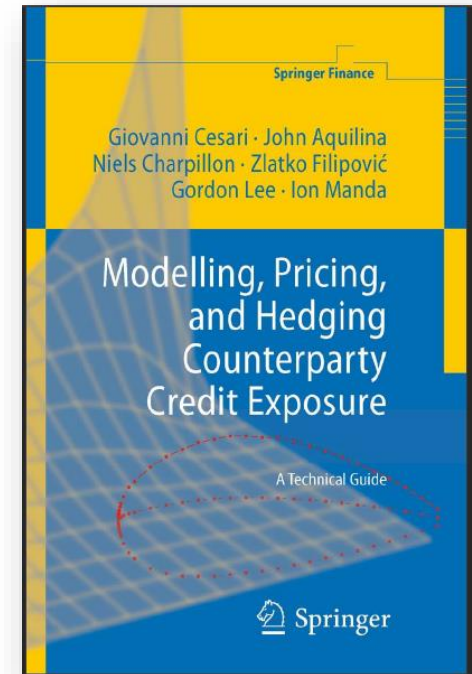
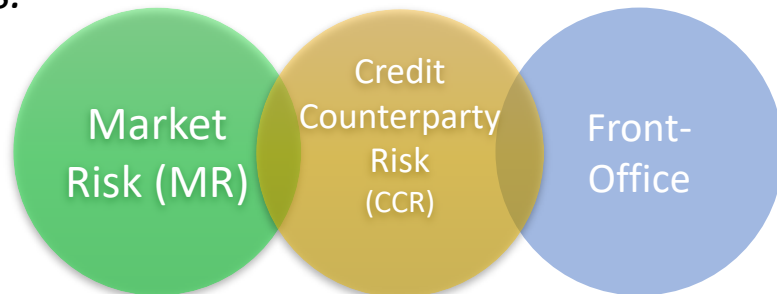
Capacidad de analizar medidas de riesgo de contrapartida Pre y Post-margines .

Mensaje final

“The scenarios have to be consistent across systems to build a counterparty view. This is a requirement which is much more stringent than what is generally specified in the design of a Front Office system used for pricing or a Risk system used to monitor the Profit and Loss (P&L) of a bank....

Basically what we need here is the same underlying models, or the same family of models, for all types of products. ...

This consistency can be difficult to achieve , as often large financial companies have different systems to book and value, for example, interest-rate, equity, or FX products.”



Mensaje final

Counterparties

Counterparty	Legal Entity	Netting Set	Margin Set
▼ Bank Of America			
<input type="checkbox"/> Bank Of America	Bank Of America US	Netting Set 1	Margin Set 1
<input type="checkbox"/> Bank Of America	Bank Of America US	Netting Set 1	Margin Set 2
<input type="checkbox"/> Bank Of America	Bank Of America US	Netting Set 2	Margin Set 1
<input type="checkbox"/> Bank Of America	Bank Of America US	Netting Set 2	Margin Set 2
▼ HSBC			
<input type="checkbox"/> HSBC	HSBC Bank PLC	Netting Set 1	Margin Set 1
<input type="checkbox"/> HSBC	HSBC Bank PLC	Netting Set 1	Margin Set 2
<input type="checkbox"/> HSBC	HSBC Bank PLC	Netting Set 2	Margin Set 1
<input type="checkbox"/> HSBC	HSBC Bank PLC	Netting Set 2	Margin Set 2
▶ Nomura			

Clear Selected

← Back Submit

Trade T&C

Pricing Parameters Position Conventions Underlying Conventions Additional Fields

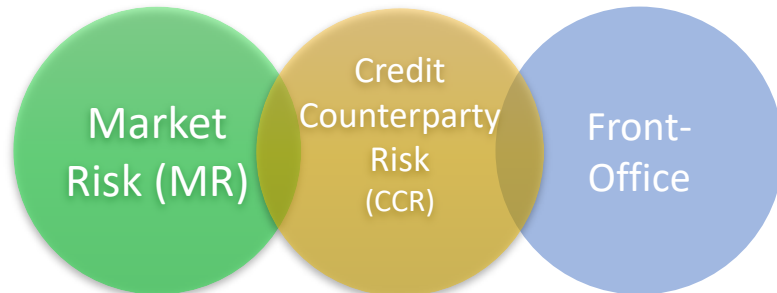
Description: * ? EQ_EQAmerican_USD_D[

Effective Date: ? 16-Apr-14 ...

Maturity: * ? 16-Apr-15 ... Date ▼

Number of Shares: * ? 37000

Currency: * ? USD



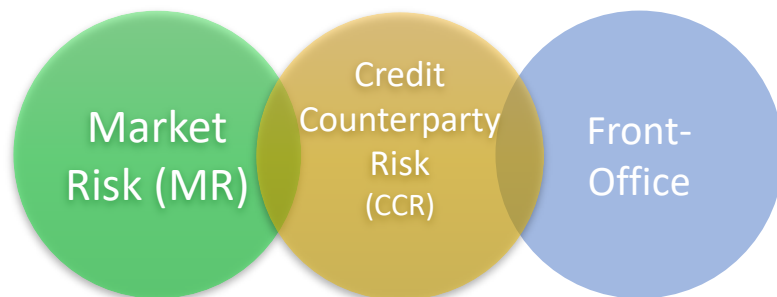
Mensaje final

Pivot View RT Epoch LATEST VaR % Scale % Currency EUR PnL To:

Calculation Sets: Main Market Names: Base Scenarios: VALUE Time Steps: VALUE VaR Scenarios: VALUE Valuation Dates: 06-Jan-2014 Trade IDs: (All) What-If: (All)

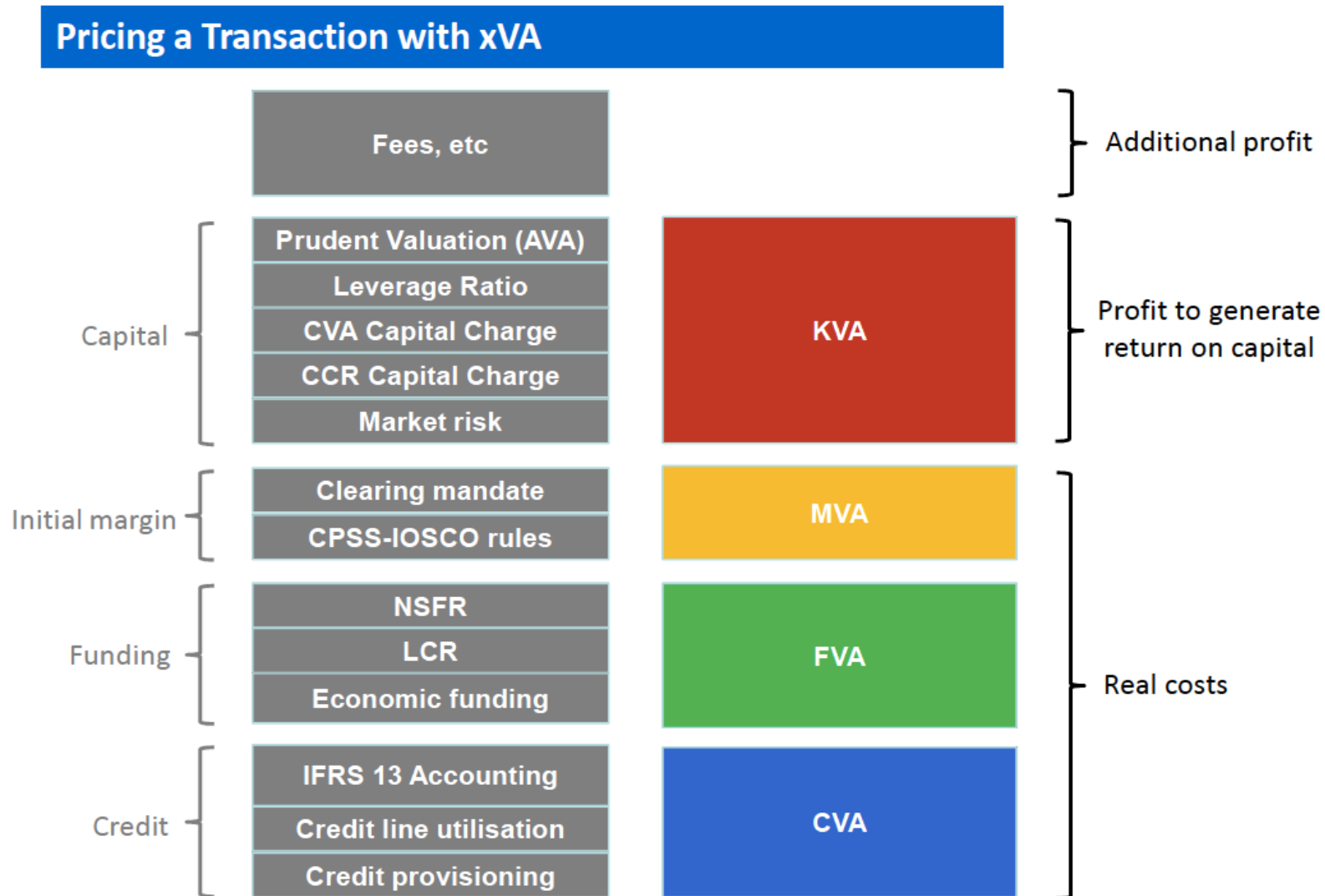
Measures

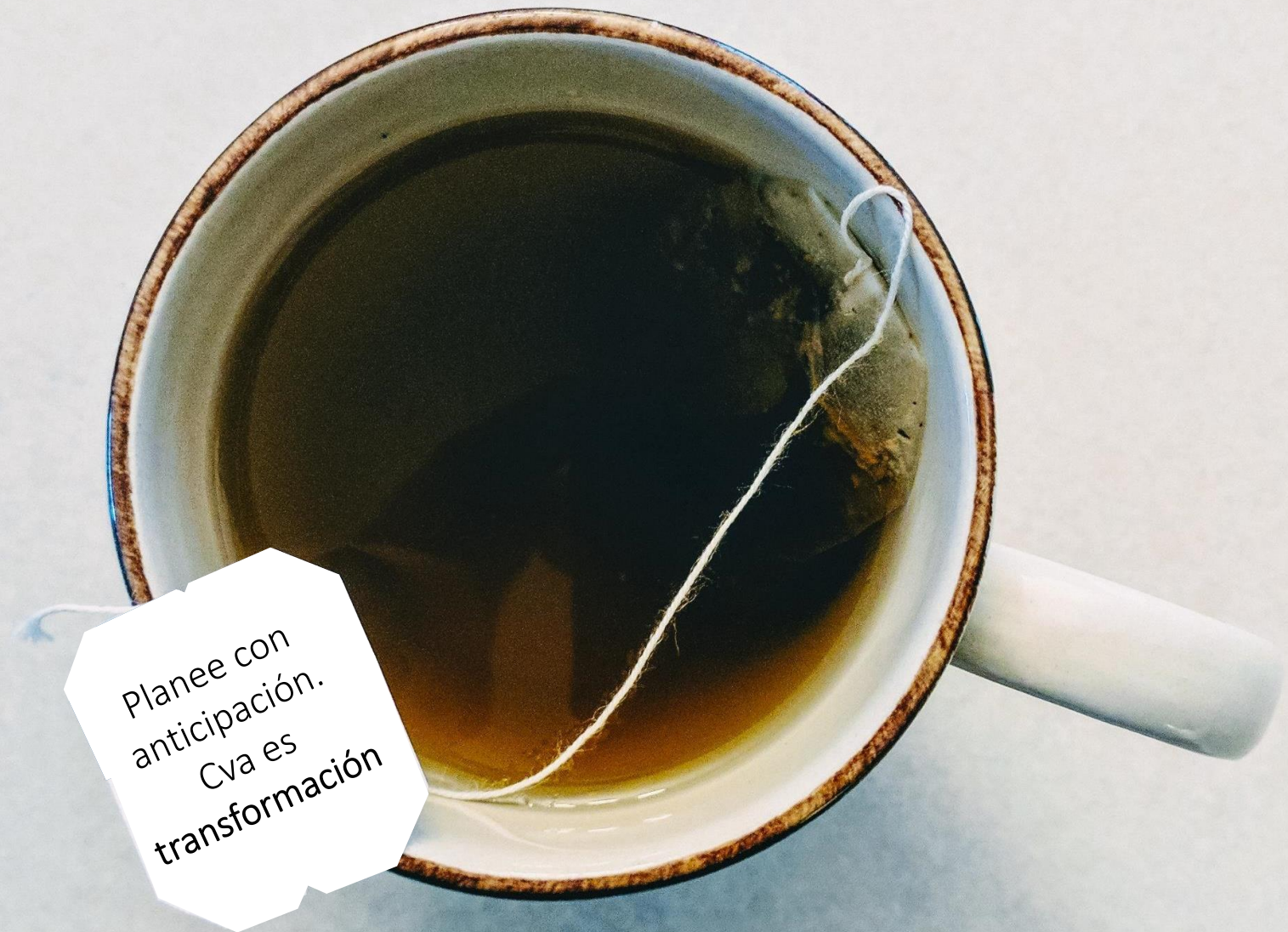
Trade ID	Counterparty	Legal Entity	Margin Set	Netting Set	Counterparty Post-Margin CVA Bilateral.RPT	Post-Margin CVA Bilateral.RPT	Post-Margin CVA Bilateral Contribution.RPT
1	Bank Of America	Bank Of America US	Margin Set 1	Netting Set 2	-525.41	-388.16	-388.16
6	HSBC	HSBC Bank PLC	Margin Set 1	Netting Set 1	-178,397.51	-26,560.44	-13,743.04
7	HSBC	HSBC Bank PLC	Margin Set 1	Netting Set 1	-178,397.51	-106,896.26	-94,078.86
8	HSBC	HSBC Bank PLC	Margin Set 1	Netting Set 2	-178,397.51	-57,758.21	-57,758.21
9	UBS	UBS AG	Margin Set 1	Netting Set 1	-8,920.38	-1,849.10	-3,044.75
10	UBS	UBS AG	Margin Set 1	Netting Set 1	-8,920.38	-5,875.63	-7,071.29
205	Bank Of America	Bank Of America US	Margin Set 2	Netting Set 1	-525.41	-137.25	-137.25



Eso es todo?

No, XVA will become the standard for derivative pricing





Planee con
anticipación.
Cva es
transformación



References

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- ✓ Evolving Regulatory Landscape, from IACPM (International Association of Credit Portfolio Managers). <https://goo.gl/GHIFjr>
- ✓ Cesari, G., Aquilina, J., Charpillon, N., Filipovic, Z., Lee, G., Manda, I., Modelling, Pricing, and Hedging Counterparty Credit Exposure: A Technical Guide.
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- ✓ Risk Magazine Quant of the year: Alexandre Antonov Numerix quant revolutionizes negative rates modelling, available at <http://www.risk.net/risk-magazine/analysis/2442477/quant-of-the-year-alexandre-antonov>
- ✓ Aite Impact Report: XVA and Risk Transformation: Establishing the Data Fundamentals, available at: <http://www.numerix.com/impact-report-xva-and-risk-transformation-establishing-data-fundamentals>
- ✓ Are Negative Res Having a 'Negative' Impact on Your Derivative Pricing and Modelling?, available at <http://www.numerix.com/info-graphic/negative-rates-trends-continue-2016#>
- ✓ John Gregory, XVA Theory 2016 CQF Lecture Notes