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SA-CCR and XVA

Russia Risk Conference

Bret Simon, Bloomberg LP

30 October 2019

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Regulatory Capital



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Regulatory capital is equity reserve against losses due to

- **Market risk**
- **Counterparty default risk**
- **CVA market risk**
- **Operational and other risks**

Counterparty Credit Risk Capital

- **Capital = 8% (minimum capital requirement) * RWA (risk weighted assets)**
- **RWA = RW * EAD**
 - RW: Risk Weight from standardized table or internal calculation
 - EAD: CEM or IMM
- **Basel III SA-CCR will replace CEM globally**
 - Better handling of netting and collateral

SA-CCR at a glance



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Standardised Approach for measuring Counterparty Credit Risk (SA-CCR)

- **Russian adoption date has been postponed to 1 July 2020**
- **Scope: Local banks with a universal license and assets over 1 bn RUB**
- **SA-CCR formulas aligned with the original Basel III formulas**

SA-CCR un-margined swap portfolio example

Views ▾	View Manager	Actions ▾	Settings ▾	Multi Asset Risk System: XVA							
KVA Swap example [10/22/19 05:02:58 ▾		RUB	No Scenario	Valuation Date	10/21/19	Position Date	10/22/19				
Book Summary > Default XVA Book:SACCR											
Hide Filters <<											
▾ Sector <input type="checkbox"/> Aerospa... 1 ▾ Country <input type="checkbox"/> NL 1	Worksheet	SA-CCR Summary ▾	Group by	Counterparty ▾							
	SA-CCR EAD	SA-CCR RC	MTM	Collateral	Threshold	MTA	SA-CCR PFE	SA-CCR Mult...	SA-CCR Add-On	IR Add-On	FX Add-On
	364,259,527	220,290,675	220,290,675				39,894,701				
	364,259,527	220,290,675	220,290,675				39,894,701	1.0000	39,894,701	14,391,003	25,503,698

Swap portfolio consists of: 20Y xccy swap, 4Y USD swap, 7Y RUB swap

- **$EAD = 1.4 * (RC + PFE)$** Exposure At Default
- **$RC = \max(MTM - C, 0)$** Replacement Cost (un-margined)
- **$PFE = Multiplier * Add-On$** Potential Future Exposure

Add-On aggregates Hedging Sets and Asset Classes

Views ▾		View Manager		Actions ▾		Settings ▾		Multi Asset Risk System: XVA			
KVA Swap example		[10/22/19 05:02:58 ▾]		RUB		No Scenario		Valuation Date 10/21/19		Position Date 10/22/19 🔍	
Book Summary > Default XVA Book:SACCR > IR Add-On											
Hedging Set	Maturity Bucket Effective Notional			Hedging Set Effective Notional	Supervisory Factor	Add-On					
	<1 Year	1-5 Years	>5 Years								
RUB	0	0	-587,672,036	587,672,036	0.005	2,938,360					
USD	0	-2,290,528,594	0	2,290,528,594	0.005	11,452,643					

- **Offsetting allowed within same Hedging Set, but not between Hedging Sets**
- **Interest Rate products split into Hedging Sets by currency: RUB, EUR, USD, etc.**
- **Interest Rate Hedging Set further split into maturity buckets:**
 - [0, 1Y), [1Y, 5Y), [5Y, ∞)

Risk Weights

	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Sovereigns	0%	20%	50%	100%	150%	100%
Bank	20%	30%	50%	100%	150%	
Corporates	20%	50%	75%	100%	150%	100%

Source: "Basel III: Finalising post-crisis reforms" (2017), *Bank for International Settlements*

Capital requirements for one counterparty default

- **RWA = (Counterparty Risk Weight) * (SA-CCR EAD)**
 - EAD = 364,259,257 RUB from SA-CCR example
 - RW for BB Corporate = 100%
 - 364,259,527 RUB = 100% * 364,259,527 RUB
- **Capital (K) = (minimum capital requirement, e.g. 8%) * RWA**
 - 29,140,762 RUB = 8% * 364,259,527 RUB
- **Portfolio PV = 220,290,675**
 - 29,140,762 = 13% equity financing
 - 191,149,913 = 87% debt financing

XVAs implications



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KVA: Price of target return on equity capital

Additional upfront charge needed to achieve REO target (12%)

Views ▾ View Manager Actions ▾ Settings ▾ Multi Asset Risk System: XVA

KVA Swap example [10/25/19 03:52:15] RUB No Scenario Valuation Date 10/21/19 Position Date 10/25/19

Book Summary > Default XVA Book > AIRBUS MA

Counterparty: AIRBUS Netting Set: AIRBUS MA Credit Curve: AIRFP EUR SR CSA ⓘ

Future Exposure Positions

Batch Results What-if Results

Netting Set	FCVA	FCVA Chg	FVA	FVA Chg	MVA	MVA Chg	KVA	KVA Chg	Total Shareh...	Total Shareh...
AIRBUS MA	-31,814,019		-48,968,394		0		-66,463,078		-147,245,490	

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Show Chart

Profile Date	MTM	EPE(pv)	Positive PFE(95%)	UFR	SA-CCR Capital	VM	Principal IM	Counterparty ...Pri
10/21/2019	220,290,675	220,290,675	220,290,675	220,290,675	29,140,762	0	0	0
10/28/2019	220,525,188	220,525,188	234,276,615	220,525,188	29,217,605	0	0	0
11/04/2019	220,524,910	220,524,910	241,926,126	220,524,910	29,256,279	0	0	0
11/11/2019	220,530,929	220,530,929	247,537,597	220,530,929	29,292,541	0	0	0
11/18/2019	220,519,865	220,519,865	252,798,116	220,519,865	29,331,415	0	0	0
12/04/2019	220,529,947	220,529,947	260,667,229	220,529,947	29,418,861	0	0	0
12/16/2019	220,540,011	220,540,011	267,552,482	220,540,011	29,484,253	0	0	0
12/30/2019	220,529,352	220,529,352	274,318,610	220,529,352	29,559,513	0	0	0
01/13/2020	220,532,468	220,532,468	279,416,835	220,532,468	29,638,074	0	0	0
01/27/2020	228,117,622	228,117,622	293,877,604	228,117,622	30,583,268	0	0	0
02/10/2020	228,140,754	228,140,754	300,020,428	228,140,754	30,676,668	0	0	0
02/24/2020	228,122,357	228,122,357	303,636,868	228,122,357	30,760,436	0	0	0
03/09/2020	228,137,409	228,137,409	308,670,346	228,137,409	30,849,330	0	0	0
03/18/2020	228,098,693	228,098,693	313,678,048	228,098,693	30,903,006	0	0	0
04/06/2020	228,102,004	228,102,004	320,153,485	228,102,004	31,023,713	0	0	0
05/06/2020	230,257,181	230,257,181	332,323,101	230,257,181	31,466,780	0	0	0
06/05/2020	230,283,681	230,283,681	342,724,272	230,283,681	31,657,515	0	0	0
07/01/2020	230,284,915	230,284,915	351,319,969	230,284,915	31,811,748	0	0	0

FVA: Price of funding cost / benefit

Additional upfront cost from not receiving collateral

Premium must be paid to acquire derivative, increasing funding needs

Views ▾	View Manager	Actions ▾	Settings ▾	Multi Asset Risk System: XVA					
KVA Swap example [10/25/19 03:52:15]		RUB	No Scenario	Valuation Date	10/21/19	Position Date	10/25/19		
Book Summary > Default XVA Book > AIRBUS MA									
Counterparty: AIRBUS		Netting Set: AIRBUS MA		Credit Curve: AIRFP EUR SR		CSA ⓘ			
Future Exposure		Positions							
Batch Results		What-if Results							
Netting Set	FCVA	FCVA Chg	FVA	FVA Chg	MVA	MVA Chg	KVA	KVA Chg	Total Shareh...
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07/01/2020	230,284,915	230,284,915	351,319,969	230,284,915	31,811,748	0	0	0

FCVA: Price of current default risk of counterparty

Additional upfront charge needed to hedge counterparty risk

Views ▾ View Manager Actions ▾ Settings ▾ Multi Asset Risk System: XVA

KVA Swap example [10/25/19 03:52:15] RUB No Scenario Valuation Date 10/21/19 Position Date 10/25/19

Book Summary > Default XVA Book > AIRBUS MA

Counterparty: AIRBUS Netting Set: AIRBUS MA Credit Curve: AIRFP EUR SR CSA ⓘ

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Conclusions

- **SA-CCR being introduced in 1 July 2020**
- **Capital charge will increase cost of business unless charged through a capital valuation adjustment (KVA)**
- **More costly capital to come in January 2022: Basel III BA-CVA and SA-CVA**
- **The majority of credit losses during the credit crisis came not from actual defaults but from widening of credit spreads across all counterparties (CVA market to market losses)**

Questions?

Assumptions

- **Principal: World Bank USD funding OIS + 60bp, 40% recovery**
- **Counterparty: Airbus credit curve, 40% recovery**
- **Portfolio: 20Y RUB-USD xccy swap, 4Y USD swap, 7Y RUB swap**
- **Risk Weight: 100%**
- **KVA: reserve as debt**
- **ROE target: 12%**

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