RVPortfolio Risk and P&L

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OVERVIEW

RiskVal's RVPortfolio is a front and middle office platform that combines real-time P&L and Risk with the ability to forecast and manage risk well into the future. By using risk analysis tools, including but not limited to risk factor sensitivities, P&L Explanation, Historical Analysis, Scenario Analysis, and Value-at-Risk, RVPortfolio allows portfolio and risk managers to break down P&L and Risk from portfolio to trade level.

Our platform eliminates the tedious work required to identify risk factors and gives managers an intuitive tool that helps them make better decisions. RVPortfolio is built on RiskVal's pre-trade analytics* engine trusted by more than 100+ top-tier buy and sell-side firms. It assists traders and portfolio managers to interpret results in an actionable way, allowing them to minimize risk and maximize returns within a single platform.

*Click to view RiskVal pre-trade analytics brochure

BENEFITS

Expertise

Stress Tested - Tested and vetted by top buy and sell side traders and portfolio managers through various fixed income market cycles over the last 19 years

Risk Committee - A risk committee that brings expertise from across the industry to identify and address emerging issues in risk management

Award Winning - Numerous prestigious industry awards won, including Waters Technology and RiskTech 100

Analytics

Multiple Risk Measures - RVPortfolio risk metrics includes present value, hedge ratio, Value-at-Risk, P&L explanation, P&L scenarios, DV01 bucket risk, counterparty exposure and more

Customizable View - Users can aggregate risk from the most granular trade level up to the portfolio level

Highly Interactive - Ability to define liabilities as projected benefit obligations, accumulated benefit obligations or economic liabilities

Comprehensive Analysis - Bucket risk and non-parallel yield curve shifts empower users match assets to plan liabilities more effectively

Integration

SaaS - A software-as-a-service that can be deployed on site for maximum security or hosted to reduce the cost of hardware and maintenance

Seamless Connections - Position details updated daily using custodian or prime broker feeds

Real-time Market Data - Integrated pricing feeds or handlers that support numerous third-party vendors

Support

24/5 Support - Dedicated support team

Easy Access - Global support requests raised through Bloomberg chat, phone or email

Continuously Evolving - Frequent updates ensure cutting edge features and quick bug resolutions

BUCKET RISK

RVPortfolio's Bucket Risk enables enterprise-wide real-time spot and forward bucket risk analysis, as well as real-time P&L for each bucket. The spot bucket risk bumps the swap curve for P&L prediction and explanation. The forward bucket risk uses a combination of Euro Dollar strips and forward swap buckets. These tools provide insight into the curve sensitivities of the portfolio.

Methodology:

Bucket Risk measures present-value sensitivity to interest rates. The buckets correspond to the fitting points for the Libor curve build. To calculate the DV01 partials in RVPortfolio, RiskVal bootstraps the user-specified yield curve. Each point on the curve is shocked by -1 basis point. RiskVal then rebuilds the curve to reprice the portfolio and the resultant difference between the original and repriced PV is the rate exposure and risk for that bucket.
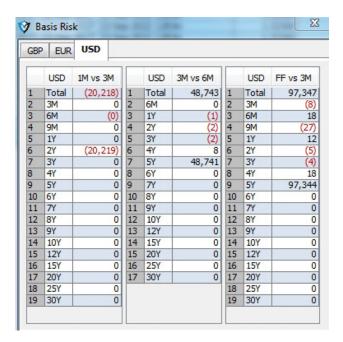
	Total	Treasury	TIPS	Strip S	Strip SP	BondFut
Total	(129,794)	372,183	12,468	33,734	(28,550)	(578,685)
Total ex-stub	(131,163)	372,158	12,368	33,765	(28,555)	(578,965)
Stub	1,370	25	100	(30)	6	279
17-Sep	2,033	2,757	7,488	(17)	(6)	(269)
17-Dec	7,779	(516)	6,368	(39)	1	59
18-Mar	(4,527)	(1,113)	5,608	(35)	0	(31)
18-Jun	4,829	(967)	4,964	(37)	0	4
18-Sep	4,999	(804)	5,033	(37)	0	(14)
18-Dec	9,558	(838)	4,797	(38)	0	71
19-Mar	2,232	503	2,746	(38)	0	(64)
19-Jun	6,424	1,422	1,782	(25)	0	24
3 year	8,641	(53,789)	38,858	3	16	49
4 year	(83,802)	(7,572)	36,519	(268)	118	(68,254)
5 year	84,151	(7,419)	30,502	(59)	1,707	(69,271)
6 year	(152,047)	480	(8,779)	955	488	11,305
7 year	109,489	4,669	(14,949)	1,336	110	74,149
8 year	30,489	408	(6,338)	505	82	(178)
9 year	38,279	(5,421)	(27,540)	(103)	639	(23,326)
10 year	(120,991)	41,759	(43,541)	1,155	395	(58,489)
12 year	18,777	(14,813)	10,439	5,165	1,602	(146)
15 year	(52,096)	(8,100)	994	17,815	1,138	(35,196)
20 year	(106,819)	(16,563)	(1,585)	3,273	3,134	(104,989)
25 year	212,858	237,560	132,033	3,004	(968)	(220,648)
30 year	(151,422)	200,519	(173,032)	1,248	(37,011)	(83,751)
40 year	0	0	0	0	0	0
50 year	0	0	0	0	0	0

BASIS RISK

RVPortfolio's Basis Risk enables the portfolio manager to see the risk distribution among different basis spreads.

Methodology:

Basis Risk measures present-value sensitivity to basis spreads. The buckets correspond to the fitting points from basis curve building. To calculate the partials in RVPortfolio, RiskVal bootstrap the user-specified yield curve. Each point on the curve is shocked by -1 basis point. RiskVal then rebuilds the curve to re-price the portfolio and the resultant difference between the original and repriced PV is the rate exposure and risk for that bucket.

Basis Risk — GBP | EUR | **USD**

#	USD 1M vs 3M		#	USD 3M vs 6M		#	USD FF vs 3M	
1	Total	(20,218)	1	Total	48,743	1	Total	97,347
2	3M	0	2	6M	0	2	3M	(8)
3	6M	(0)	3	1Y	(1)	3	6M	18
4	9M	0	4	2Y	(2)	4	9M	(27)
5	1Y	0	5	3Y	(2)	5	1Y	12
6	2Y	(20,219)	6	4Y	8	6	2Y	(5)
7	3Y	0	7	5Y	48,741	7	3Y	(4)
8	4Y	0	8	6Y	0	8	4Y	18
9	5Y	0	9	7Y	0	9	5Y	97,344
10	6Y	0	10	8Y	0	10	6Y	0
11	7Y	0	11	9Y	0	11	7Y	0
12	8Y	0	12	10Y	0	12	8Y	0
13	9Y	0	13	12Y	0	13	9Y	0
14	10Y	0	14	15Y	0	14	10Y	0
15	12Y	0	15	20Y	0	15	12Y	0
16	15Y	0	16	25Y	0	16	15Y	0
17	20Y	0	17	30Y	0	17	20Y	0
18	25Y	0				18	25Y	0
19	30Y	0				19	30Y	0

Forward Basis Risk

#	USD 1M vs 3M		#	USD 3M vs 6M		#	USD FF vs 3M	
1	Total	19,316	1	Total	41,163	1	Total	(91,914)
2	STUB	1,629	2	STUB	8	2	STUB	(4,885)
3	ED1	2,519	3	ED1	8	3	ED1	(4,989)
4	ED2	2,543	4	ED2	2,482	4	ED2	(5,056)
5	ED3	2,519	5	ED3	2,500	5	ED3	(4,952)
6	ED4	2,518	6	ED4	2,447	6	ED4	(4,954)
7	ED5	2,475	7	ED5	2,418	7	ED5	(4,890)
8	ED6	2,508	8	ED6	2,550	8	ED6	(4,947)
9	ED7	2,508	9	ED7	2,457	9	ED7	(4,888)
10	ED8	99	10	ED8	2,438	10	ED8	(4,861)
11	ED9	0	11	ED9	2,408	11	ED9	(4,791)
12	ED10	0	12	ED10	2,400	12	ED10	(4,809)
13	ED12	0	13	ED12	2,414	13	ED12	(4,766)
14	ED13	0	14	ED13	2,363	14	ED13	(4,700)
15	ED14	0	15	ED14	2,388	15	ED14	(4,760)
16	ED15	0	16	ED15	2,390	16	ED15	(4,753)
17	ED16	0	17	ED16	2,484	17	ED16	(4,980)
18	ED17	0	18	ED17	2,312	18	ED17	(4,628)
19	ED18	0	19	ED18	2,335	19	ED18	(4,606)
20	ED19	0	20	ED19	2,337	20	ED19	(4,700)
21	ED20	0	21	ED20	24	21	ED20	0
22	5YX1Y	0	22	5YX1Y	0	22	5YX1Y	0
23	6YX1Y	0	23	6YX1Y	0	23	6YX1Y	0
24	7YX1Y	0	24	7YX1Y	0	24	7YX1Y	0
25	8YX1Y	0	25	8YX1Y	0	25	8YX1Y	0
26	9YX1Y	0	26	9YX1Y	0	26	9YX1Y	0
27	10YX2Y	0	27	10YX2Y	0	27	10YX2Y	0
28	12YX3Y	0	28	12YX3Y	0	28	12YX3Y	0
29	15YX5Y	0	29	15YX5Y	0	29	15YX5Y	0
30	20YX5Y	0	30	20YX5Y	0	30	20YX5Y	0
31	30YX5Y	0	31	30YX5Y	0	31	30YX5Y	0
32	35YX5Y	0	32	35YX5Y	0	32	35YX5Y	0
33	40YX5Y	0	33	40YX5Y	0	33	40YX5Y	0
34	45YX5Y	0	34	45YX5Y	0	34	45YX5Y	0

STRIP RISK

RVPortfolio's Strip Risk enables portfolio managers to see the risk distribution among different forward buckets (FOMC, ED Futures and forward swaps).

Methodology:

Strip Risk measures present-value sensitivity to forward buckets. The buckets correspond to the fitting points from FOMC, ED Futures, and forward swaps. To calculate the strip partials in RVPortfolio, RiskVal bootstraps the user-specified yield curve that is shocked by -1 basis point and rebuilds the curve to reprice the portfolio. The difference between the original and repriced PV is used to capture the rate exposure per fitting point.

	Total	Treasury	TIPS	Strip S	Strip SP	BondFut	BondFutOpt
Total	(90,939)	383,066	18,867	33,734	(28,550)	(564,551)	(19,837)
Total ex-stub	(92,271)	382,935	18,358	33,644	(28,524)	(562,640)	(19,732)
Stub	1,332	131	509	91	(25)	(1,911)	(105)
20-Sep (FOMC)	(6,966)	1,274	2,625	238	(66)	(5,008)	(275)
01-Nov (FOMC)	(3,797)	269	4,142	398	(111)	(6,871)	(459)
13-Dec (FOMC)	(410)	480	3,801	357	(99)	(6,743)	(411)
31-Jan (FOMC)	4,017	(80)	4,305	356	(98)	(6,687)	(408)
21-Mar (FOMC)	5,984	(68)	3,894	304	(83)	(5,676)	(349)
02-May (FOMC)	(14,260)	(49)	4,192	304	(84)	(5,829)	(349)
13-Jun (FOMC)	7,355	(73)	4,860	355	(98)	(6,633)	(407)
01-Aug (FOMC)	(6,478)	(17)	4,695	344	(95)	(6,577)	(396)
18-Sep	2,308	(115)	9,043	648	(179)	(12,279)	(748)
18-Dec	6,111	(155)	8,645	639	(176)	(12,045)	(737)
19-Mar	(863)	1,166	6,800	647	(178)	(12,336)	(748)
19-Jun	3,569	2,330	5,842	651	(175)	(12,096)	(737)
19-Sep	526	532	5,777	671	(173)	(12,034)	(733)
19-Dec	2,599	491	5,592	655	(169)	(11,801)	(715)
20-Mar	(4,149)	285	3,101	671	(173)	(11,962)	(734)
20-Jun	(11,113)	1,660	1,546	659	(170)	(11,839)	(721)
20-Sep	6,004	4,772	1,331	658	(169)	(11,804)	(721)
20-Dec	277	4,643	1,277	646	(166)	(11,635)	(709)
21-Mar	(5,230)	4,579	910	653	(168)	(11,743)	(717)
21-Jun	(16,568)	4,570	119	653	(171)	(11,727)	(717)
21-Sep	5,762	5,046	(177)	692	(183)	(12,316)	(754)
21-Dec	(6,830)	5,229	(116)	650	(169)	(9,756)	(694)
22-Mar	(3,085)	4,745	(1,452)	657	(170)	(4,632)	(702)
22-Jun	8,502	4,687	(2,217)	660	(173)	(4,639)	(706)
5Y x 1Y	(8,852)	20,442	(9,157)	2,511	(979)	(17,642)	(2,694)
6Y x 1Y	(9,476)	20,018	(7,435)	2,292	(1,009)	(19,458)	(2,390)
7Y x 1Y	(2,932)	18,570	(5,418)	2,080	(1,002)	(28,369)	0
8Y x 1Y	(8,165)	18,091	(5,212)	1,979	(985)	(27,694)	0
9Y x 1Y	(12,783)	19,200	(2,831)	1,943	(1,024)	(24,673)	0
10Y x 2Y	(6,634)	30,383	(142)	3,586	(2,053)	(38,498)	0
12Y x 3Y	(11,658)	45,617	(2,341)	3,937	(3,213)	(53,884)	0
15Y x 5Y	(4,918)	71,473	(3,795)	1,376	(5,171)	(72,639)	0
20Y x 5Y	15,088	66,540	(3,059)	626	(5,174)	(45,332)	0
25Y x 5Y	(15,208)	26,399	(20,788)	149	(4,418)	(9,785)	0
30Y x 5Y	0	0	0	0	0	0	0
35Y x 5Y	0	0	0	0	0	0	0
40Y x 5Y	0	0	0	0	0	0	0
45Y x 5Y	0	0	0	0	0	0	0

CREDIT RISK

RVPortfolio's Credit Risk enables portfolio managers to see the risk distribution among different credit default swap spread factors.

Methodology:

To capture the Credit Curve Exposure in RVPortfolio, RiskVal uses the user-specified credit spread to price the portfolio and calculate the PV. The credit spread is then shocked by one basis point and the PV on the new spread-adjusted curve is calculated. The difference between the original and repriced PV is the risk exposure of each product to its associated credit curve.

Description	CS01	CS01 6M	CS01 1Y	CS01 2Y
US53944YAA10 LLOYDS 4.5% 11/4/24	101	0	0	1
US20826FAG19 COP 3.35% 5/15/25	(4)	0	0	0
US00287YAX76 ABBV 2.85% 5/14/23	137	0	0	0
US00206RCS94 T 3.6% 2/17/23	(7)	0	0	0
US24422ETL38 DE 2.65% 1/6/22	11	0	0	0
US478160BT00 JNJ 2.05% 3/1/23	8	0	0	0
US341099CP25 DUK 3.1% 8/15/21	(2)	0	0	0
US58013MEM29 MCD 2.625% 1/15/22	82	0	0	0
US037833AK68 AAPL 2.4% 5/3/23	(7,082)	(1)	(2)	(2)
US4428236BV43 HPQ 4.65% 12/9/21	17	0	0	0
US110122AA65 BMY 7.15% 6/15/23	(46)	0	0	(1)
US654740AL38 NSANY 2.0% 3/8/19	6	0	2	4
US38141EC493 GS 2.04556% 12/15/17	(3)	(3)	0	0
EDH2 COMDTY	0	0	0	0
US00206RBM34 T 1.4% 12/1/17	2	2	0	0
US57772KAB70 MXIM 3.375% 3/15/23	12	0	0	0
US594918AW47 MSFT 3.625% 12/15/23	28	0	0	0
US7171081DH33 PFE 3.0% 6/15/23	294	0	0	1
US883556BC51 TMO 3.15% 1/15/23	33	0	0	0
US68389XBL82 ORCL 2.4% 9/15/23	47	0	0	0
US478160BH61 JNJ 3.375% 12/5/23	14	0	0	0
US592343VBR42 VZ 5.15% 9/15/23	4,165	2	14	39
US38145GAJ94 GS 2.3% 12/13/19	(1)	0	0	(1)
US91324PCR10 UNH 4.75% 7/15/45	(1,950)	0	(2)	(4)
US36962G2T02 GE 5.55% 5/4/20	(28)	0	0	(4)
US05565QDC96 BPLN 1.676% 5/3/19	(11)	0	(1)	(9)
US38148LAA44 GS 2.6% 4/23/20	(1)	0	0	0
US38141EA661 GS 6.0% 6/15/20	(8)	0	0	0
US594974BGM63 WFC 2.6% 7/22/20	17	0	0	0
US594974BGA26 WFC 3.3% 9/9/24	176	0	0	1
US36164QMS48 GE 2.342% 11/15/20	(6)	0	0	0
US577081AZ57 MAT 2.35% 5/6/19	(4)	0	(1)	(4)
US00507UAN19 AGN 2.30811% 3/12/18	(2)	(1)	(1)	0
US666807BE14 NOC 3.5% 3/15/21	(2)	0	0	0
US592343VDZ40 VZ 1.86472% 5/22/20	45	0	0	4
US38141EA588 GS 5.375% 3/15/20	(1)	0	0	0
US172967FF30 C 5.375% 8/9/20	8	0	0	0

VEGA RISK

RVPortfolio's Vega Risk further decomposes the conventional option Greek's Vega risk into an interest rate volatility grid (expiry x tenor). This gives portfolio managers a more precise and granular understanding of their volatility risk.

Methodology:
Vega Risk measures the present value sensitivity to ATM Normal Vol surface. For each cell in the Vol grid - for example, 1Y expiry and 5Y tenor - we calculate the present value of the selected portfolio (based on the books included) with market implied ATM Normal Vol surface. We then bump this surface by 1bp at the 1Yx5Y point only. The difference between the original and repriced PV is the present value sensitivity to the 1Yx5Y ATM Normal Vol.

	1Y	2Y	3Y	4Y	5Y	6Y	7Y	8Y	9Y	10Y	15Y	20Y	25Y	30Y	Total
Total	(5,875)	(8,834)	(4,186)	(1,878)	(1,002)	(1,289)	(1,322)	(4,584)	(5,888)	(8,824)	(14,423)	(20,175)	(2,888)	(32)	(81,201)
1M	291	(1,005)	1,000	773	419	5	56	(13)	(10)	(75)	(21)	0	(1)	(1)	1,418
3M	(54)	(792)	(450)	(145)	550	0	(1)	(42)	(14)	(181)	(42)	0	(1)	(2)	(1,174)
6M	(219)	(919)	(1,207)	(870)	(197)	(2)	(1)	(73)	(1)	(193)	(32)	(1)	(1)	(2)	(3,720)
1Y	(810)	(2,407)	(1,276)	(452)	(19)	(44)	(83)	(47)	(3)	(295)	(18)	(4)	(3)	(3)	(5,465)
2Y	(2,023)	(1,251)	(491)	(39)	(80)	(185)	(49)	(2)	(748)	(1,537)	(1,139)	(499)	(87)	(2)	(8,133)
3Y	(669)	(238)	(24)	(48)	(105)	(32)	(2)	(305)	(384)	(260)	(346)	(235)	(2)	0	(2,650)
4Y	(771)	(83)	(34)	(74)	(26)	(86)	(346)	(363)	(218)	(2,036)	(2,708)	(5,328)	(703)	0	(12,775)
5Y	(896)	(127)	(316)	(161)	(62)	(166)	(164)	(110)	(343)	(265)	(902)	(2,903)	(169)	(2)	(6,586)
7Y	(388)	(589)	(374)	(324)	(239)	(238)	(262)	(490)	(95)	(834)	(5,117)	(6,842)	(1,808)	(1)	(17,599)
10Y	(259)	(333)	(204)	(208)	(265)	(47)	(152)	(2,266)	(2,776)	(1,806)	(4,050)	(4,363)	(102)	0	(16,830)
15Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20Y	(77)	(1,091)	(810)	(328)	(979)	(494)	(317)	(872)	(1,296)	(1,344)	(48)	(1)	(11)	(19)	(7,688)

GAMMA RISK

RVPortfolio's Gamma Risk enables the portfolio managers to see the gamma bucket risk distribution for each scenario and product type, allowing them to see how the total interest rate risk behaves under different scenarios.

Methodology:

RiskVal calculates Portfolio level Gamma Risk to project the risk changes w.r.t large market moves. RVPortfolio calculates 10 gamma scenarios: -100, -50, -25, -10, -1, 0, 1, 10, 25, 50, 100 bps move.

	-100	-50	-25	-10	-1	0	1	10	25	50	100
Total	(4,533)	(4,118)	(1,128)	948	398	(0)	(362)	(6,377)	(33,046)	(114,716)	(177,325)
Stub	76	64	43	19	2	(0)	(2)	(20)	(46)	(81)	(127)
17-Sep	720	559	324	139	8	(0)	(27)	(228)	(587)	(1,055)	(1,656)
17-Dec	(242)	(334)	(252)	(104)	(6)	0	0	13	(131)	(478)	(1,002)
18-Mar	(307)	(352)	(259)	(117)	(4)	(0)	(2)	67	55	(166)	(627)
18-Jun	(249)	(270)	(197)	(93)	(11)	(0)	5	67	94	(10)	(346)
18-Sep	38	94	173	168	28	0	(37)	(528)	(2,400)	(7,753)	(12,166)
18-Dec	(182)	(158)	(110)	(54)	(8)	0	2	46	94	135	62
2 year	(1,460)	(1,279)	(595)	(7)	28	(0)	(80)	(1,193)	(6,793)	(23,157)	(36,208)
3 year	(3,156)	(2,759)	(1,452)	(324)	72	(0)	(34)	(825)	(5,839)	(22,324)	(33,741)
4 year	0	0	0	0	0	0	0	0	0	0	0
5 year	4,731	3,033	2,637	1,880	327	(0)	(291)	(4,244)	(18,226)	(60,562)	(95,511)
6 year	0	0	0	0	0	0	0	0	0	0	0
7 year	783	435	270	154	23	(0)	(8)	(303)	(1,262)	(3,312)	(4,234)
8 year	0	0	0	0	0	0	0	0	0	0	0
9 year	0	0	0	0	0	0	0	0	0	0	0
10 year	1,546	679	312	120	13	(0)	0	(108)	(252)	(507)	(960)
12 year	(1,348)	(746)	(402)	(168)	(16)	(0)	27	178	446	853	1,677
15 year	(1,715)	(894)	(450)	(182)	(13)	(0)	23	184	459	916	1,729
20 year	(1,808)	(1,025)	(536)	(221)	(20)	(0)	30	234	595	1,216	2,432
25 year	(1,338)	(816)	(447)	(189)	(19)	(0)	22	206	544	1,144	2,472
30 year	(383)	(243)	(134)	(56)	(5)	(0)	7	59	156	330	712
40 year	(128)	(58)	(28)	(11)	(1)	(0)	1	10	25	49	89
50 year	(110)	(50)	(24)	(9)	(1)	(0)	1	9	23	44	82

VAR: HISTORICAL SIMULATION

RVPortfolio's Value at Risk (VaR) estimates a threshold loss value for a given probability for a given time horizon (such as one day). VaR is typically used by firms and regulators to gauge the amount of assets needed to cover possible losses. It summarizes the market risk exposure of all financial instruments in a portfolio into a single number.

Historical simulation is one way of calculating VaR. RiskVal's Historical Simulation estimates the hypothetical time series of returns on a given portfolio by running the portfolio through actual historical data and computing the P&L change that would have occurred in each period.

Total | AUD | CAD | EUR | GBP | USD

PnL Summary

	Date	Factors PnL USD	Rate Risk PnL USD	OIS Risk PnL USD	Basis Risk PnL USD	Swap Spread Risk PnL USD	CMT Spread Risk PnL USD	Gross Basis Risk PnL USD
1	07-Sep-2017	1,864,842	(2,018,782)	80,691	519,990	2,776,238	303,683	203,023
2	06-Sep-2017	775,421	(300,069)	353,254	(310,536)	255,854	(758,187)	1,535,104
3	05-Sep-2017	129,581	(656,897)	(184,606)	(321,285)	(538,973)	1,088,815	742,527
4	04-Sep-2017	(784,815)	(801,849)	206,855	(145,220)	360,182	(756,760)	351,976
5	01-Sep-2017	571,866	(991,922)	(29,599)	(5,743)	1,206,017	(439,946)	833,059
6	31-Aug-2017	(359,511)	(924,914)	(370,594)	231,060	(76,798)	227,652	554,082
7	30-Aug-2017	149,306	(540,695)	496,896	15,137	340,826	(476,353)	313,494
8	29-Aug-2017	363,616	45,912	(259,452)	(128,657)	(265,827)	815,716	155,923
9	28-Aug-2017	(545,303)	74,410	(41,262)	5,035	(163,780)	(913,188)	493,482
10	25-Aug-2017	142,157	531,752	44,436	(672,408)	(1,108,365)	1,315,467	31,275
11	24-Aug-2017	259,335	81,719	(33,872)	234,162	(244,101)	(117,397)	338,824
12	23-Aug-2017	1,542,348	508,486	156,050	(201,372)	(100,899)	799,589	380,495
13	22-Aug-2017	2,580,953	(576,136)	205,999	204,639	1,285,419	90,039	1,371,003
14	21-Aug-2017	(456,948)	1,186,475	(100,336)	(229,932)	(820,921)	(783,877)	291,644
15	18-Aug-2017	1,374,466	(2,411,512)	435,897	342,573	1,905,399	743,772	358,337
16	17-Aug-2017	1,481,781	(227,635)	584,068	(33,032)	(799,249)	376,532	1,581,098
17	16-Aug-2017	182,569	(788,371)	(194,849)	(549,507)	636,613	123,699	954,983
18	15-Aug-2017	1,472,610	529,460	215,586	(30,241)	(686,816)	(37,136)	1,481,757
19	14-Aug-2017	1,614,343	350,596	(124,399)	475,359	591,287	(805,655)	1,127,155
20	11-Aug-2017	319,430	(532,307)	(43,734)	(271,097)	715,056	684,513	(233,001)
21	10-Aug-2017	2,020,275	91,954	(157,805)	(463,987)	342,382	666,737	1,540,994
22	09-Aug-2017	278,543	(1,636,107)	(67,001)	(114,377)	852,191	1,038,972	204,865
23	08-Aug-2017	386,785	674,337	8,769	(62,794)	(1,208,376)	(52,753)	1,027,602
24	07-Aug-2017	363,900	(286,878)	(80,387)	(444,509)	410,767	171,616	593,291
25	04-Aug-2017	1,410,174	1,282,834	210,055	177,958	(21,983)	(915,552)	676,861
26	03-Aug-2017	717,231	(1,211,447)	(84,810)	(202,367)	(832,864)	1,401,761	1,646,958
27	02-Aug-2017	(73,989)	(21,599)	(442,426)	330,987	284,345	(93,157)	(132,139)
28	01-Aug-2017	1,353,585	(1,439,315)	298,701	369,805	1,566,090	(916,963)	1,475,267
29	31-Jul-2017	(2,830,568)	540,242	(324,118)	(233,682)	(1,021,744)	(634,488)	(1,156,778)
30	28-Jul-2017	1,906,311	(123,069)	(344,686)	236,485	928,944	11,567	1,197,071
31	27-Jul-2017	1,607,901	(1,096,712)	11,811	189,092	948,978	610,670	944,060
32	26-Jul-2017	1,886,157	1,979,654	(9,833)	(580,778)	(1,842,245)	594,191	1,745,168

As some financial instruments such as futures and newly issued treasuries have limited historical data, getting the data may prove challenging. RiskVal leverages its 20 years of proprietary historical data to calculate the historical market price for each financial instrument.

Runtime computation for sophisticated portfolios also takes a long time. RiskVal employs state of the art processing machines and servers to deliver the quickest performance and turnaround time.

To accommodate the needs of the middle office, we leverage our understanding of market risks and calculate the risk exposure to each market factor for each financial instrument. We then use the Taylor expansion (delta-gamma approach) to estimate the historical market price for each financial instrument. From this, we estimate the time series of returns over 20 years for each portfolio. From the distribution of returns, we estimate VaR.

Methodology:
Given an analysis date and look back period, the VaR report will calculate the Value at Risk (VaR) based on historical daily market data changes. We then add the series of daily market changes to current market data, reprice the portfolio to obtain a series of P&L. The VaR and Vol are then calculated based on this series.

Vol Statistic

	Local Ccy	USD
Vol	0	4,422,514
90d Vol	0	2,199,714
1y Vol	0	2,125,103
Max	0	37,284,653
Min	0	(28,117,933)
Average	0	849,815
Median	0	676,436
21d Max Drawdown	0	(72,262,084)
Worst 10d rolling	0	(59,318,674)
%Up Days	0%	61%
%Down Days	0%	39%

Daily

	Local Ccy	USD	
95% VaR	0	(6,216,117)	
99% VaR	0	(13,029,206)	

Horizon

Weekly ▼

	Local Ccy	USD	
95% VaR	0	(13,899,660)	
99% VaR	0	(29,134,190)	

SCENARIO ANALYSIS

RVPortfolio's Scenario Analysis estimates the expected value of a portfolio given a point in time or a period of time, and assumes specific changes in the value of certain securities or key factors, such as a change in interest rates. Based on mathematical and statistical principals, scenario analysis provides a process to estimate shifts in the value of a portfolio, based on different scenarios, following the principals of a "what if" analysis.

RVPortfolio allows managers to stress numerous underlying risk factors, including yield curves, swap spreads, volatility and more. The results of each scenario are easily compared to current mark-to-markets of the portfolio to see the impact of market movement on portfolio value.

RiskVal's Scenario Analysis includes, but is not limited to, one or any combination of the following scenarios:

- Interest Rate moves (for example, interest rate parallel rally 100bps; Bull/Flattener)
- Interest Rate Volatility moves (for example, ATM Vol increase 10%)
- Time changes (Horizontal Analysis)
- Swap Spread moves
- Credit Spread moves
- FX rate & volatility moves and more

	Type	Rate	Swap Spread	Credit Spread	Curve	Vol Skew
1		+5bps	+5bps	+5bps	Bear steepener 2y +25bps, 30y +125bps	+10%
2	Bond	17,170,765	0	0	142,193,987	0
3	IR Swap	3,985,853	3,985,853	(0)	(11,210,453)	(0)
4	Generic Option	0	0	0	(13,443,754)	33,730
5	Future	(20,928,666)	119,892	0	(156,069,951)	0
6	IR Basis Swap	(1,256,197)	(1,256,197)	(0)	(112,780)	(0)
7	Cross Currency Swap	28,840	28,840	(0)	(70,141)	0
8	FRA	186,594	186,594	(0)	(315,409)	0
9	Swaption	0	0	0	0	0
10	Total	(812,811)	3,064,982	(0)	(39,028,501)	33,730

Portfolio Viewer | Bucket Risk USD | Vega Risk USD | SABR Risk USD | Stress Test | PNL Scenario Analysis

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Hierarchy | >M5