

# Understanding and Using Ruble Government Bond Futures

MOSCOW EXCHANGE SEMINAR

Date: 19 June 2013  
Venue: Moscow Exchange



**MOSCOW  
EXCHANGE**

**Bloomberg**

**Speakers:**

Moscow Exchange: *Vadim Zakroyschikov*

Bloomberg: *Timothy Murphy*

# Seminar Objectives

- Promote the understanding of Government Bond Futures
- Increase usage and liquidity of Ruble Government Bond Futures
- Improve pricing efficiency across Government and Corporate Bond and Futures Markets
- Highlight potential trade ideas
- Help pre-trade analysis and hedge design
- Assist in the development of Risk Management approaches

# Topics (I)

- Understanding Government Bond Futures

- Types of Contracts
- Contract specifications
- Volume and Open Interest

- Pricing Government Bond Futures

- Defined deliverable Bond Baskets
- Understanding, calculating and using conversion factors
- Understanding Futures Basis and Cheapest to Deliver (CTD)
- Implied Repo and changes in CTD
- Monitoring historical evolution of Basis and Implied Repo rates
- Valuing Serial Futures contracts' spreads.

# Topics (II)

- Hedging Bonds using Government Bond Futures

- Pre-Trade Analysis
- Understanding Bloomberg Futures Risk and Yield Calculations
- Hedging Ratios
- Butterfly Hedge, Barbell Hedge

- Trade Monitor

- Working with Bloomberg's Excel API in Real-Time
- Multi Asset Risk System (MARS) for Bonds and Futures
- Calculating Historical Futures Price Volatility

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**Bloomberg**

## FUNCTIONALITY PRESENTATION

# Contract Codes

Contract	Security Name
2Yr	RFTA
4Yr	RFRA
6Yr	RFPA
10Yr	RFIA
15Yr	OVRA

# Discoverability->SECF<GO>

<Search>		90) Export ▾ Feedback		10 results		Security Finder	
30) All	31) Eqty	32) FI	33) Mtge	34) Cmdty	35) Indx/Stats	36) FX	37) Funds
40) Corp	41) Govt	42) Leane	43) Pfd	44) CDS	45) CDS Idx	46) Muni	47) Futr
48) Optns	49) IRS	50) IRS Vols					

R	Name	Ticker	Source	Curr	Instrument	Quote Type	Open Int	Volume ↑	Last Price	Last Update
				RUB	Active Fu					
1)	RTS 10yr RU Fed Bond Future Active Contract	RFIA	RTS	RUB	Active Fu...	Price	435000	23546	96.50	06/18/13
2)	RTS 6yr RU Fed Bond Fut - OFZ6 Active Co...	RFPA	RTS	RUB	Active Fu...	Price	143896	20330	102.32	06/18/13
3)	RTS 2yr RU Fed Bond Fut - OFZ2 Active Co...	RFTA	RTS	RUB	Active Fu...	Price	154094	12530	100.00	06/18/13
4)	15 Year Ru-Fed Gov Bond Active Contract	OVRA	RTS	RUB	Active Fu...	Price	92598	200	109.00	06/18/13
5)	RTS 4yr RU Fed Bond Fut - OFZ4 Active Co...	RFRA	RTS	RUB	Active Fu...	Price	82668	100	98.50	06/18/13
6)	MosPrime Active Contract	MPAA	RTS	RUB	Active Fu...	Price	4190	1	6.450	06/18/13
7)	3Mo ROISfix Futures Active Contract	ROIA	MCX	RUB	Active Fu...	Price	0	0	N.A.	06/29/13
8)	Medium Term OFZ Govt Bond Active Contract	FDOA	MCX	RUB	Active Fu...	Price	0	0	N.A.	N.A.
9)	Short Term OFZ Govt Bond Active Contract	FDSA	MCX	RUB	Active Fu...	Price	0	0	N.A.	N.A.
10)	MosPRIME Overnight Active Contract	MPOA	RTS	RUB	Active Fu...	Price	0	0	N.A.	N.A.

Alternatively:

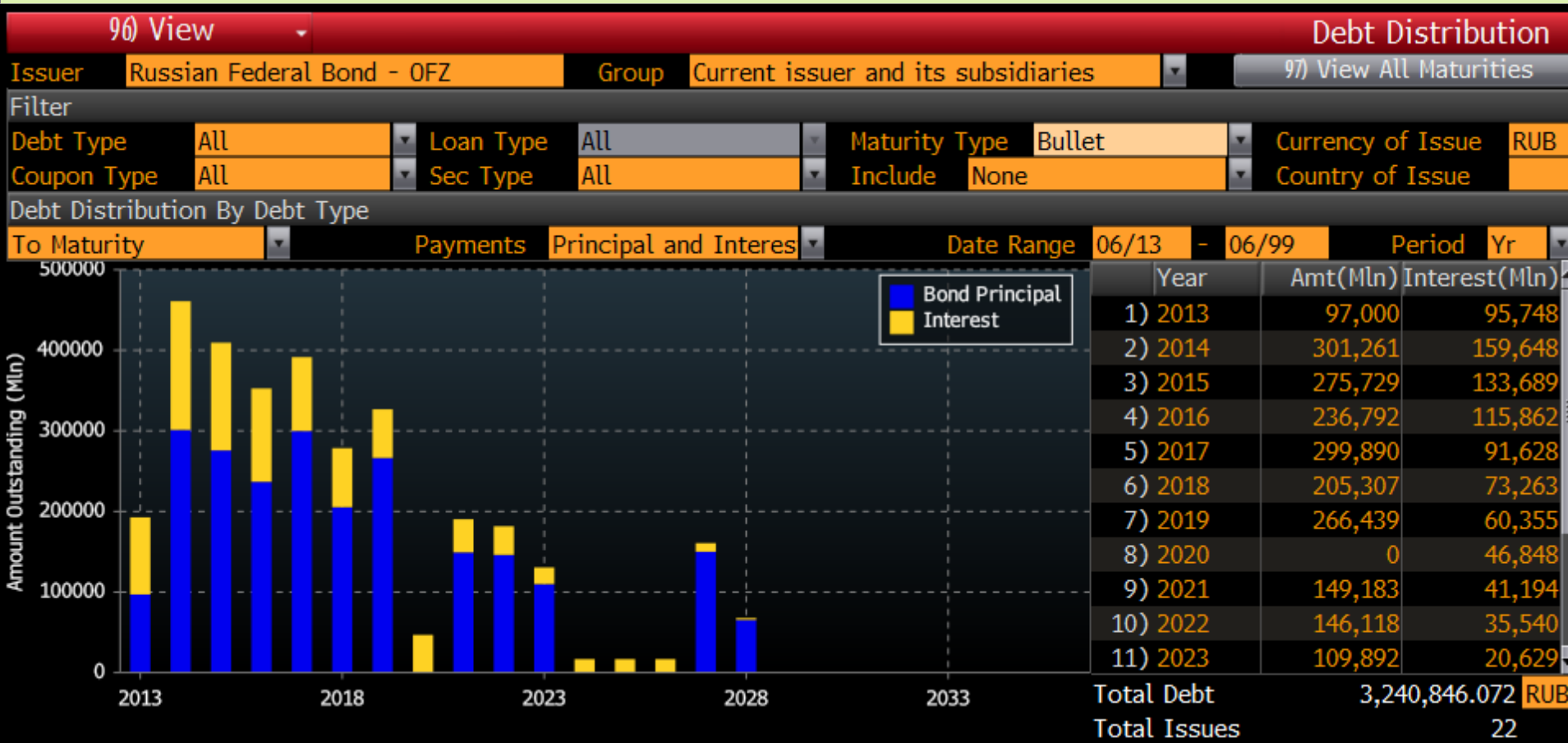
CEM <GO>

“Show” = “Categories”

Select Financial Contracts -> “BOND”

Under “Description” enter “RU” to filter

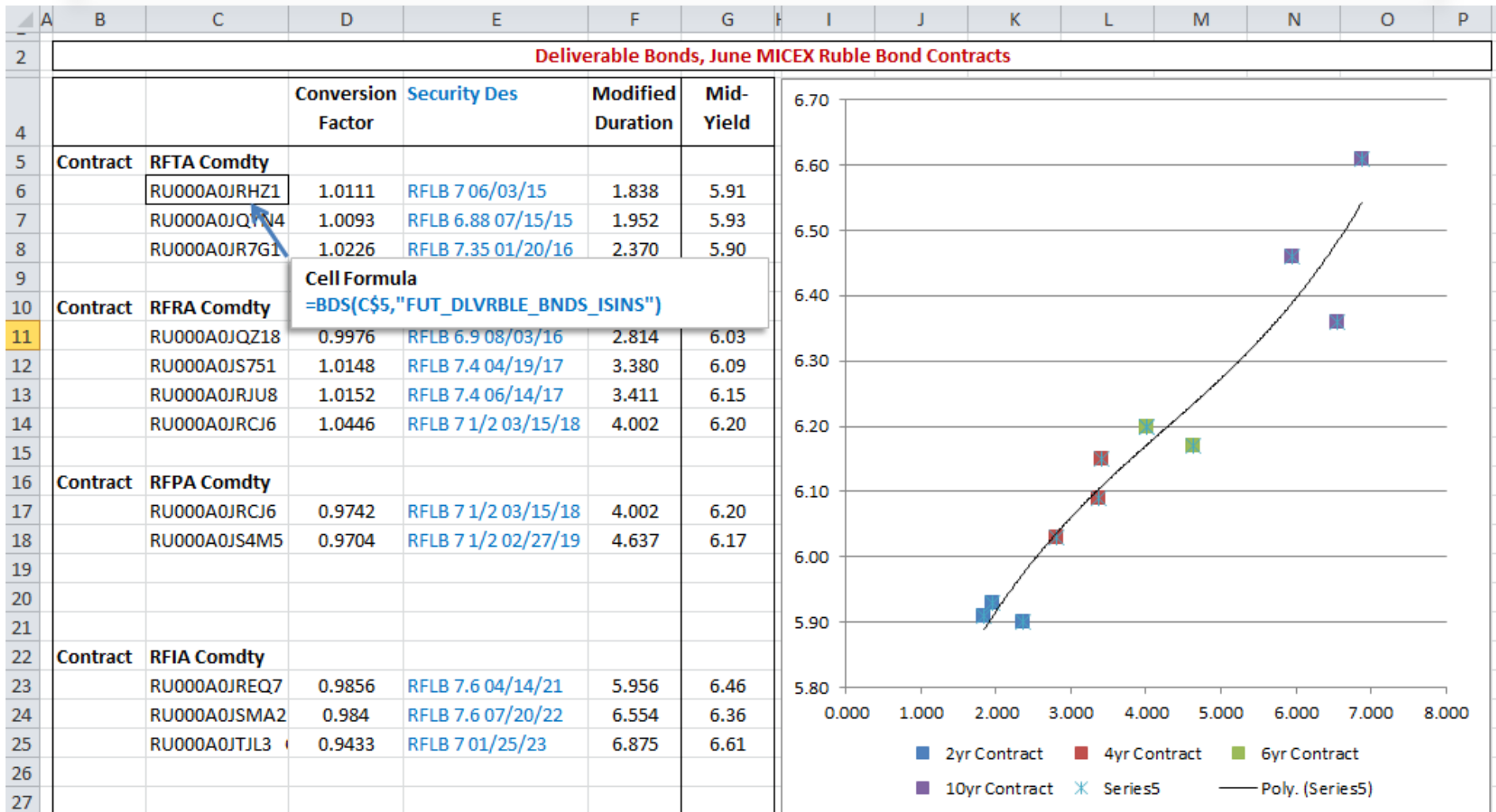
# Debt Distribution DDIS<GO>



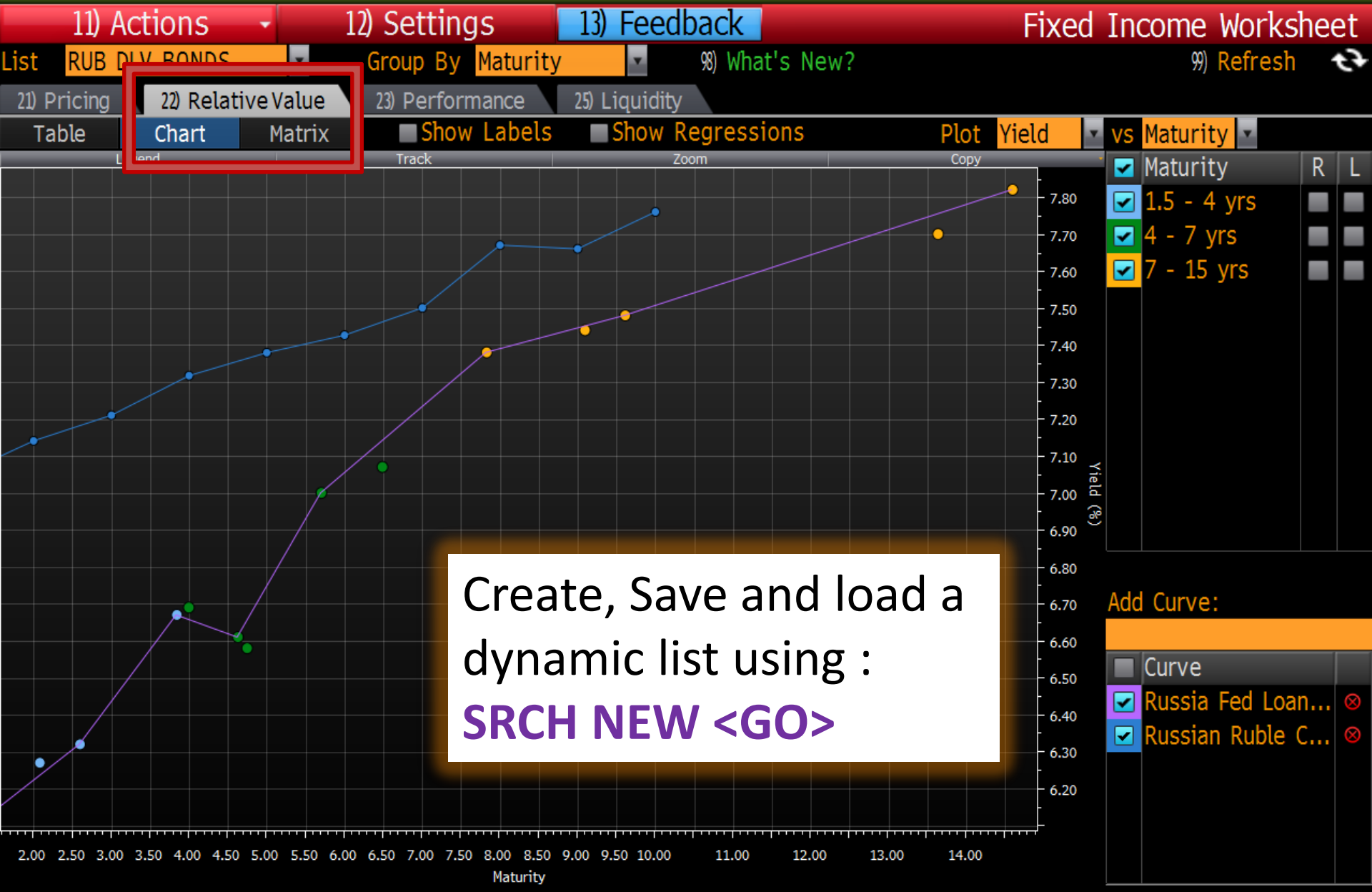
- Load a Ruble Government Bond and run the Debt Distribution function DDIS <GO> to view market supply concentration
- The above screen is for Bullet maturities, choose from **Maturity Type** *All* , *Bullets* or *Sinkable*



# Viewing Deliverables in Excel



# Viewing Deliverables in FIW<GO>



# Viewing Deliverables in FIW<GO>

1) Actions 2) Settings 13) Feedback Fixed Income Worksheet

List RUB DLV BONDS Group By Maturity What's New? Refresh

2) Pricing 22 Relative Value 23 Performance 25 Liquidity

Table Chart Matrix Correlation #SDs Range of Yield over 1M

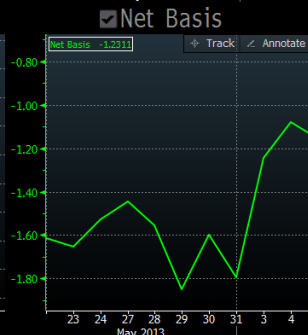
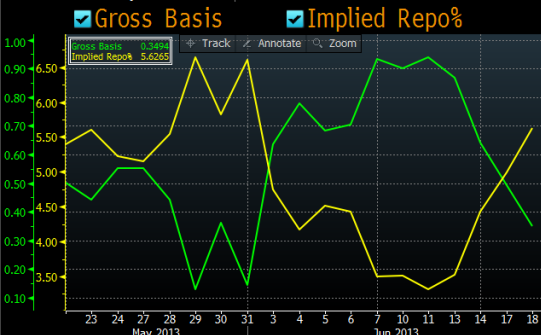
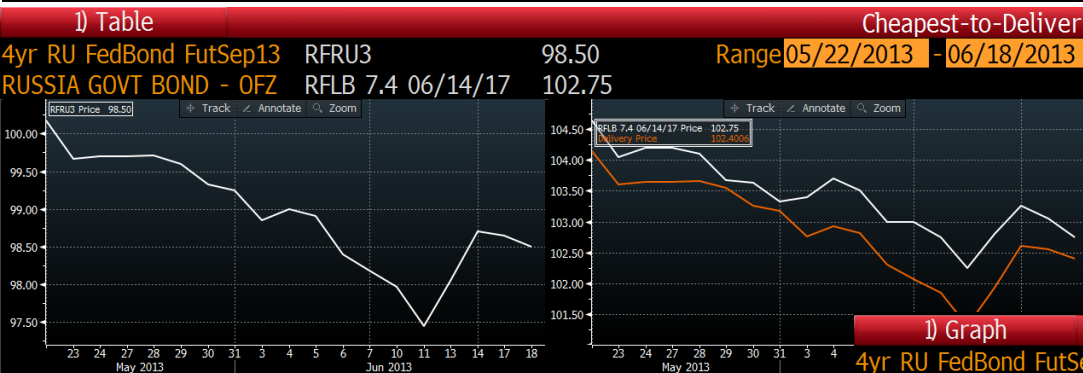
Security	Security		RFLB 7.35 01/20/16	RFLB 6.88 07/15/15	RFLB 7.4 04/19/17	RFLB 7.4 06/14/17	RFLB 6.2 01/31/18	RFLB 7 1/2 03/15/18	RFLB 6.8 12/11/19	RFLB 7 1/2 02/27/19	RFLB 7.6 07/20/22	RFLB 7.6 04/14/21
1.5 - 4 yrs												
<input checked="" type="checkbox"/> RFLB 6.9 08/03/16	RFLB 6.9 08/03/16	<input checked="" type="checkbox"/> <input type="info"/>	-.12	-.83	1.25	1.47	.51	.05	1.04			
<input checked="" type="checkbox"/> RFLB 7 06/03/15	RFLB 7 06/03/15	<input checked="" type="checkbox"/> <input type="info"/>	.75	-.19	1.8	1.8	1.03	.73	1.44			
<input checked="" type="checkbox"/> RFLB 7.35 01/20/16	RFLB 7.35 01/20/16	<input checked="" type="checkbox"/> <input type="info"/>	-	-.66	1.72	2.12	.75	.16	1.2			
<input checked="" type="checkbox"/> RFLB 6.88 07/15/15	RFLB 6.88 07/15/15	<input checked="" type="checkbox"/> <input type="info"/>	.66	-	1.33	1.4	.88	.62	1.16			
<input checked="" type="checkbox"/> RFLB 7.4 04/19/17	RFLB 7.4 04/19/17	<input checked="" type="checkbox"/> <input type="info"/>	-1.72	-1.33	-	.38	-1.16	-2.1	.45			
4 - 7 yrs												
<input checked="" type="checkbox"/> RFLB 7.4 06/14/17	RFLB 7.4 06/14/17	<input checked="" type="checkbox"/> <input type="info"/>	-2.12	-1.4	-.38	-	-1.62	-2.1	.27			
<input checked="" type="checkbox"/> RFLB 7.4 06/14/17	RFLB 6.2 01/31/18	<input checked="" type="checkbox"/> <input type="info"/>	-.75	-.88	1.16	1.62	-	-1.21	1.29			
<input checked="" type="checkbox"/> RFLB 6.2 01/31/18	RFLB 7 1/2 03/15/18	<input checked="" type="checkbox"/> <input type="info"/>	-.16	-.62	2.1	2.1	1.21	-	1.83			
<input checked="" type="checkbox"/> RFLB 7 1/2 03/15/18	RFLB 6.8 12/11/19	<input checked="" type="checkbox"/> <input type="info"/>	-1.2	-1.16	-.45	-.27	-1.29	-1.83	-			
<input checked="" type="checkbox"/> RFLB 6.8 12/11/19	RFLB 7 1/2 02/27/19	<input checked="" type="checkbox"/> <input type="info"/>	-1.2	-1.19	-.8	-.68	-1.31	-1.63	-.84			
<input checked="" type="checkbox"/> RFLB 7 1/2 02/27/19	RFLB 7 01/25/23	<input checked="" type="checkbox"/> <input type="info"/>	-1.14	-1.15	-.6	-.45	-1.14	-1.54	-.57			
7 - 15 yrs												
<input checked="" type="checkbox"/> RFLB 7 01/25/23	RFLB 7.6 07/20/22	<input checked="" type="checkbox"/> <input type="info"/>	-1.12	-1.12	-.75	-.64	-1.13	-1.43	-.78			
<input checked="" type="checkbox"/> RFLB 7.6 07/20/22	RFLB 7.6 04/14/21	<input checked="" type="checkbox"/> <input type="info"/>	-1.01	-1.06	-.54	-.42	-1	-1.33	-.46			
<input checked="" type="checkbox"/> RFLB 7.6 07/20/22		<input checked="" type="checkbox"/> <input type="info"/>	-.83			-.64	-1.87	-2.29	-.67			
<input checked="" type="checkbox"/> RFLB 7.6 04/14/21		<input checked="" type="checkbox"/> <input type="info"/>	-1.2			-1.04	-2.22	-2.67	-1.44			
<input checked="" type="checkbox"/> RFLB 7.05 01/19/28		<input checked="" type="checkbox"/> <input type="info"/>										
<input checked="" type="checkbox"/> RFLB 8.15 02/03/27		<input checked="" type="checkbox"/> <input type="info"/>										

View Correlations and Relative Standard Deviations across Deliverable Bonds using FIW<GO>

#SDs Range -2.5 -2 -1.5 -1 -0.5 0 0.5 1 1.5 2 2.5

# Cheapest to Deliver Monitor

RFRU3 Comdty		91) Settings		Cheapest-to-Deliver						
4yr RU FedBond FutSep13		Price	98.50		Trade	06/18/13		Delivery	09/05/13	
<input checked="" type="checkbox"/> Enable Sort By					Settle	06/18/13		Cheapest IRP	5.626	
Implied Repo		<input type="text" value="Decreasing"/>	<input type="text" value=""/>					Days 79	Act /	<input type="text" value="365"/>
	Cash Security	Price	Source	Conven. Yield	Conver. Factor	Gross Basis	Implied Repo%		Actual Repo%	Net Basis
	Adjust Value									
1)	RFLB 7.4 06/14/17	102.7500	VTBX	6.710	1.039600	0.349	5.626		5.552	-0.017
2)	RFLB 6.2 01/31/18	98.7000	VTBX	6.640	0.999800	0.220	5.195		5.552	0.077
3)	RFLB 7.4 04/19/17	102.7000	VTBX	6.700	1.038200	0.437	5.183		5.552	0.083
4)	RFLB 7 ½ 03/15/18	104.0000	VTBX	6.610	1.050400	0.536	4.747		5.552	0.184



1) Graph							Cheapest-to-Deliver			
4yr RU FedBond FutSep13				RFRU3		98.50		Range 05/22/2013 - 06/18/2013		
RUSSIA GOVT BOND - OFZ				RFLB 7.4 06/14/17		102.75				
Date	Day	Days	Settle	Future	Cash	Delivery	Gro/Bas	Implied Repo%	Net Bas	Act. Repo%
6/18	Tue	79	6/18	98.5000	102.7500	102.40060	0.349	5.626	-1.231	0.092
6/17	Mon	80	6/17	98.6500	103.0500	102.55654	0.493	4.994	-1.108	0.093
6/14	Fri	83	6/14	98.7000	103.2500	102.60852	0.641	4.427	-1.018	0.095
6/13	Thu	84	6/13	98.0500	102.8000	101.93278	0.867	3.528	-0.813	0.095
6/11	Tue	86	6/11	97.4500	102.2500	101.30902	0.941	3.323	-0.779	0.097
6/10	Mon	87	6/10	97.9700	102.7500	101.84961	0.900	3.515	-0.839	0.097
6/7	Fri	90	6/7	98.1800	103.0000	102.06793	0.932	3.503	-0.867	0.099
6/6	Thu	91	6/6	98.4000	103.0000	102.29664	0.703	4.434	-1.116	0.100

# Viewing Fut. Curve Spreads in HSA<GO>

CIX intra-day history generation completed for .RUF10S15 Index

97) Actions ▾ 98) Settings ▾ 99) Feedback											
Historical Spread Analysis											
Mode Custom/Multi-Asset ▾											
1) Curve Strategies 2) Butterfly Strategies 3) Box Strategies 4) All Selected Custom Strategies											
3 Months ▾ Historical Data Range											
Strategy	Spread	Chg	#SDΔ/day	3M Chg	Low	Range	High	Avg	#SD	RSI	
11) Click to add strategy						◆ Avg ● Now					
12) Fr 17s v 18s	27.72	+0.77	0.32	-0.76	22.08		30.46	26.86	0.36	42.8	
13) Fr 19s Hi/Lo Cpn	3.90	+0.00	0.00	0.80	2.90		4.50	3.65	0.57	48.8	
14) Fr 22s Hi/Lo Cpn	11.40	-0.30	-0.52	-1.00	9.80		12.40	11.56	-0.28	53.2	
15) Fr 22s v 23s	9.60	+0.10	0.11	-3.30	9.50		12.90	10.97	-1.57	24.6	
16) RXM - RXU	4.47	+3.96	1.44	6.10	-2.75		9.48	-0.71	1.88	46.5	
17) Rub 10, 15 Futs Spread	12.50	-0.30	-1.02	-0.10	12.20		13.25	12.63	-0.45	--	
18) Rub 2, 10 Futs Spread	-3.50	-0.78	-0.59	-4.31	-4.58		0.81	-2.04	-1.11	33.2	

Details					
Security	Amount	Yield	Price	Risk	DV01
S RFIU3	1000	0.00000	96.50	6.86	6860
B OVRU3	736	0.00000	109.10	9.32	6860

Current Spread

12.60



Risk: Curve Net Fixed Futures Forward Spot

# Viewing Futures Butterflies in HSA<GO>





# Evaluating Hedge Selection FIHG<GO>

SIBNEF 8 1/2 01/26/21 Corp99) FeedbackFixed Income Hedging

101.120/101.6008.170/7.960MICB @ 16:5995) Buy96) Sell97) Settings

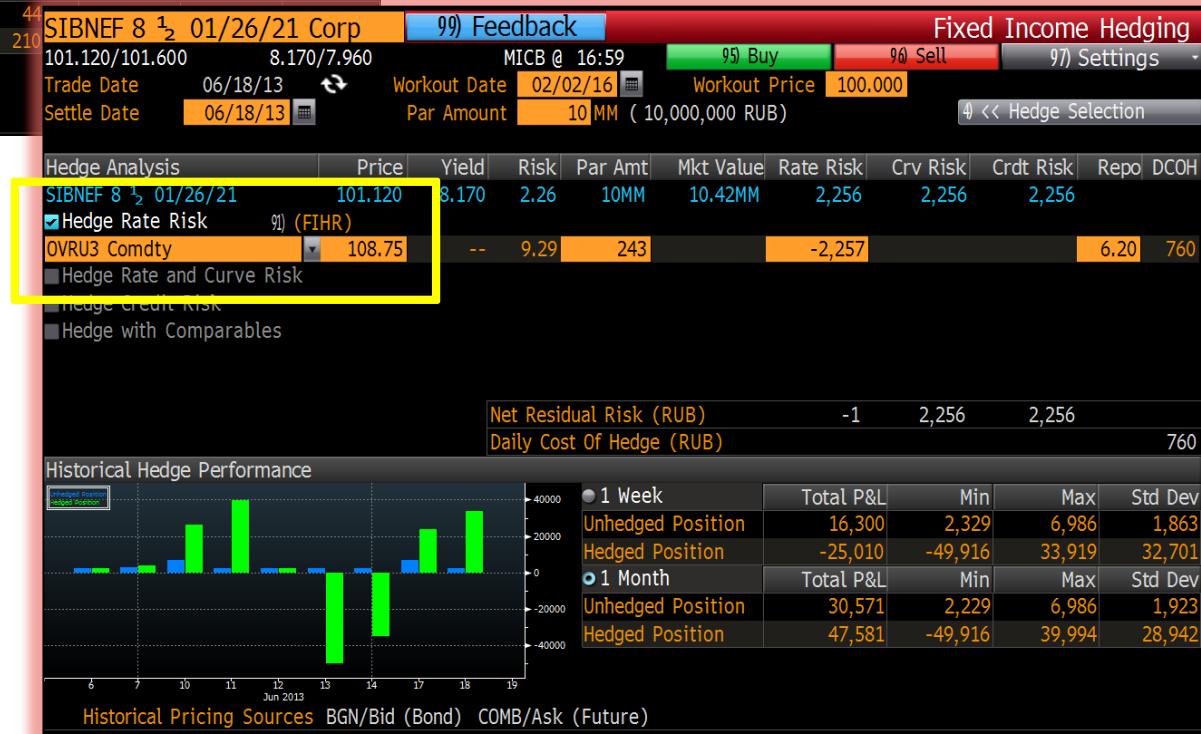
Trade Date06/18/13↺↻Workout Date02/02/16Workout Price100.000

Settle Date06/18/13Par Amount10 MM ( 10,000,000 RUB)3) Hedge Analysis >>

☒ Edit Mode

Hedge Selection	Security	Price	Yield	Risk	BPV	Hdg Ratio	Hedge Amt	Repo	DCOH
	SIBNEF 8 1/2 01/26/21	101.120	8.170	2.26	2,256				
Hedge Rate Risk 91) (FIHR)									
<input type="checkbox"/> Cash	RFLB 7.35 01/20/16	102.550	6.360	2.32	2,255	.97	9.7MM	6.20	-92
<input checked="" type="checkbox"/> Future	RFIU3 Comdty	96.01	--	6.85	2,253	.33	329	6.20	-1M
Hedge Rate and Curve Risk									
<input type="checkbox"/> Cash-Barbell	RFLB 7.35 01/20/16	102.550	6.360	2.32	2,185	.97	9.4MM	6.20	-89
	RFLB 7.4 04/19/17	102.700	6.700	3.29	66	.69	200M	6.20	16
<input type="checkbox"/> Future-Barbell									
<input type="checkbox"/> IRS 92) (SWPM)	Pay Fixed (02/02/16)	--	7.121	2.56	2,249	.88	8.8MM		-89
<input type="checkbox"/> Future Strip 93) (TED)	EDA Comdty	--	1.996			.00	0		
Hedge Credit Risk									
<input type="checkbox"/> CDS 94) (CDSW)									
									Loading...
Hedge with Comparables									
<input type="checkbox"/> Comparable Bond1	RSHB 7.7 06/29/21	99.700	8.010	1.79	2,254	1.26	12.6MM	6.20	6M
<input type="checkbox"/> Comparable Bond2	RUSDEV 9.2 08/11/22	101.800	7.700	1.08	2,259	2.09	20.9MM	6.20	3M

# Comparing Hedge Selection FIHG<GO>







# Portfolio Hedging- MARS <GO>

Portfolio load finished with 30 of 30 securities.

1) Actions 2) Positions 3) View 4) Settings 99) Feedback Multi Asset Risk System

Portfolio (Owned) Micex Corp Bond PF < Add Position > RUB 06/18/13 21) Group By

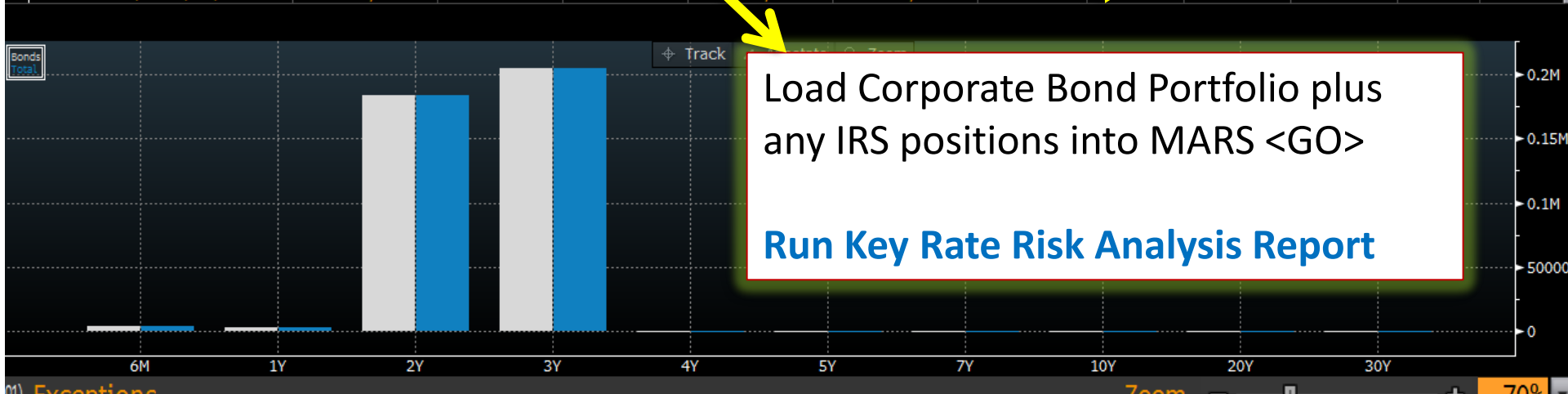
31) Positions 32) Scenarios 33) Risk Analysis 34) Hedging

41) Key Rate Risk 42) Comdty Term Risk 43) Credit Risk 44) IR Vega Bucketing

Show/Select Positions 51) Key Rate Settings 52) Browse Report 9) Run Report

Recent Reports On Demand (06/18/13 08:40:02 PM) Ccy RUB Show Table Asset Class

	Totals	6M	1Y	2Y	3Y	4Y	5Y	7Y	10Y	20Y	30Y
Total	396,593.32	3,971.61	3,220.42	183,776.34	204,874.51	818.07	.37	-41.94	-26.07	.00	.00
Bonds	396,593.32	3,971.61	3,220.42	183,776.34	204,874.51	818.07	.37	-41.94	-26.07	.00	.00
MOBTEL 7 3/4 10/20/15	19,464.08	188.85	-53.47	11,161.54	8,167.16	.00	.00	.00	.00	.00	.00
RURAIL 7.8 11/18/15	6,986.01	12.60	-14.54	3,433.16	3,504.80	.00	.00	.00	.00	.00	.00
SIBNEF 8 1/2 02/02/16	20,429.45	196.38	-14.28	6,135.08	14,112.27	.00	.00	.00	.00	.00	.00
AFKSRU 7.65 03/15/16	6,799.75	515.20	2,260.51	2,911.96	1,112.08	.00	.00	.00	.00	.00	.00
RURAIL 7.9 06/05/17	10,893.80	75.42	-14.47	385.74	10,505.80	-58.69	.00	.00	.00	.00	.00
AIZK 7.49 02/15/17	3,981.19	42.38	207.16	1,765.07	1,001.53	765.06	.00	.00	.00	.00	.00
EUCHEM 8.9 06/26/18	1,739.38	18.29	5.55	1,640.74	74.74	.00	-0.03	.00	.00	.00	.00
FEESRM 8.1 04/19/19	11,310.16	96.04	-19.22	1,429.39	9,822.75	-7.35	-6.30	-5.15	.00	.00	.00
EUCHEM 8 1/4 11/14/18	6,061.09	53.04	-1.75	2,982.87	3,027.39	.03	-0.38	-0.12	.00	.00	.00



# Portfolio Hedging- MARS <GO>

1) Actions 2) Positions 3) View 4) Settings 99) Feedback Multi Asset Risk System

Portfolio (Owned) Micex Corp Bond PF Add Position > RUB 06/18/13 21) Group By

22) Positions 32) Scenarios 33) RiskAnalysis 34) Hedging

41) Interest Rate Risk

	Position	CostPx	MktPx	Deal Ccy	MktVal	P&L	Face Amount	Multiplier	MktVal Port Ccy	P&L Port Ccy
Clear Filters										
[-] Portfolio Totals							2,020,000,180.00		1,967,919,732.71	20,103,466.83
DOMESTIC							2,020,000,180.00		1,967,919,732.71	20,103,466.83
Bonds							2,020,000,180.00		1,967,919,732.71	20,103,466.83
2y - 3y							323,000,180.00		330,661,312.71	12,941,316.83
ALRSRU 8.95 06/1	50k	101.210	102.000	RUB	52,091,000.00	395,000.00	50,000,000.00	10.00	52,091,000.00	395,000.00
RURAIL 7.8 11/18	33k	99.510	100.600	RUB	33,388,410.00	359,700.00	33,000,000.00	10.00	33,388,410.00	359,700.00
MOBTEL 7 3/4 10/	96k	97.710	99.520	RUB	96,680,640.00	1,737,600.00	96,000,000.00	10.00	96,680,640.00	1,737,600.00
SIBNEF 8 1/2 02/	90k	95.000	101.000	RUB	93,687,300.00	5,400,000.00	90,000,000.00	10.00	93,687,300.00	5,400,000.00

≡ ≡ Show/Hide Positions

● Total ● Term Structure Ccy RUB 51) Hedge Settings 52) Book Hedges 9) Run Hedge Analysis

Hedge Calculator

Unhedged Exposure	396,627.48
Hedge Instruments	RFIU3
Contracts/Notional	-57,196
Hedging Details	
Target Exposure	0
Hedge Instrument Price	96.5
Hedge Instrument Exposure	-396,628.21
Residual Exposure	- 73

Total Portfolio Nominal = Rub 2,020 million

This has a BPV 01 Rub 396,627

If we choose the **10 year contract** as our hedging vehicle, we calculate **-57,196** Contracts

Change the Futures Contract in the “Hedge Settings” tab

# Portfolio Hedging- MARS <GO>

1) Actions ▾ 2) Positions ▾ 3) View ▾ 4) Settings ▾ 99) Feedback Multi Asset Risk System

Portfolio (Owned) ▾ Micex Corp Bond PF ▾ < Add Position > RUB 06/18/13 21) Group By ▾

31) Positions 32) Scenario 33) Risk Analysis 34) Hedging

41) Interest Rate Risk

	Position	CostPx	MktPx	Deal Ccy	MktVal	P&L	Face Amount	Multiplier	MktVal Port Ccy	P&L Port Ccy
FEVRAZ 8.4 05/25/13	28k	94.010	96.005	RUB	26,971,560.00	558,600.00	28,000,000.00	10.00	26,971,560.00	558,600.00
RSMB 7.7 06/29/23	300k	97.350	99.800	RUB	309,588,000.00	7,350,000.00	300,000,000.00	10.00	309,588,000.00	7,350,000.00
10y - 15y							156,000,000.00		158,190,320.00	3,627,800.00
AIZK 8 07/15/23	100k	97.010	100.285	RUB	101,688,000.00	3,275,000.00	100,000,000.00	10.00	101,688,000.00	3,275,000.00
13Y 7.7 11/15/13	50k	98.550	100.180	RUB	56,502,320.00	352,800.00	56,000,000.00	10.00	56,502,320.00	352,800.00
Financial commodity							-571,960,000.00		.00	0.00
Bonds							-571,960,000.00		.00	0.00
2m - 3m							-571,960,000.00		.00	0.00
RFIUS Comdty	-57.2k	96.50	96.50	RUB	.00	0.00	-571,960,000.00	100.00	.00	0.00

≡ ≡ Show/Select Positions

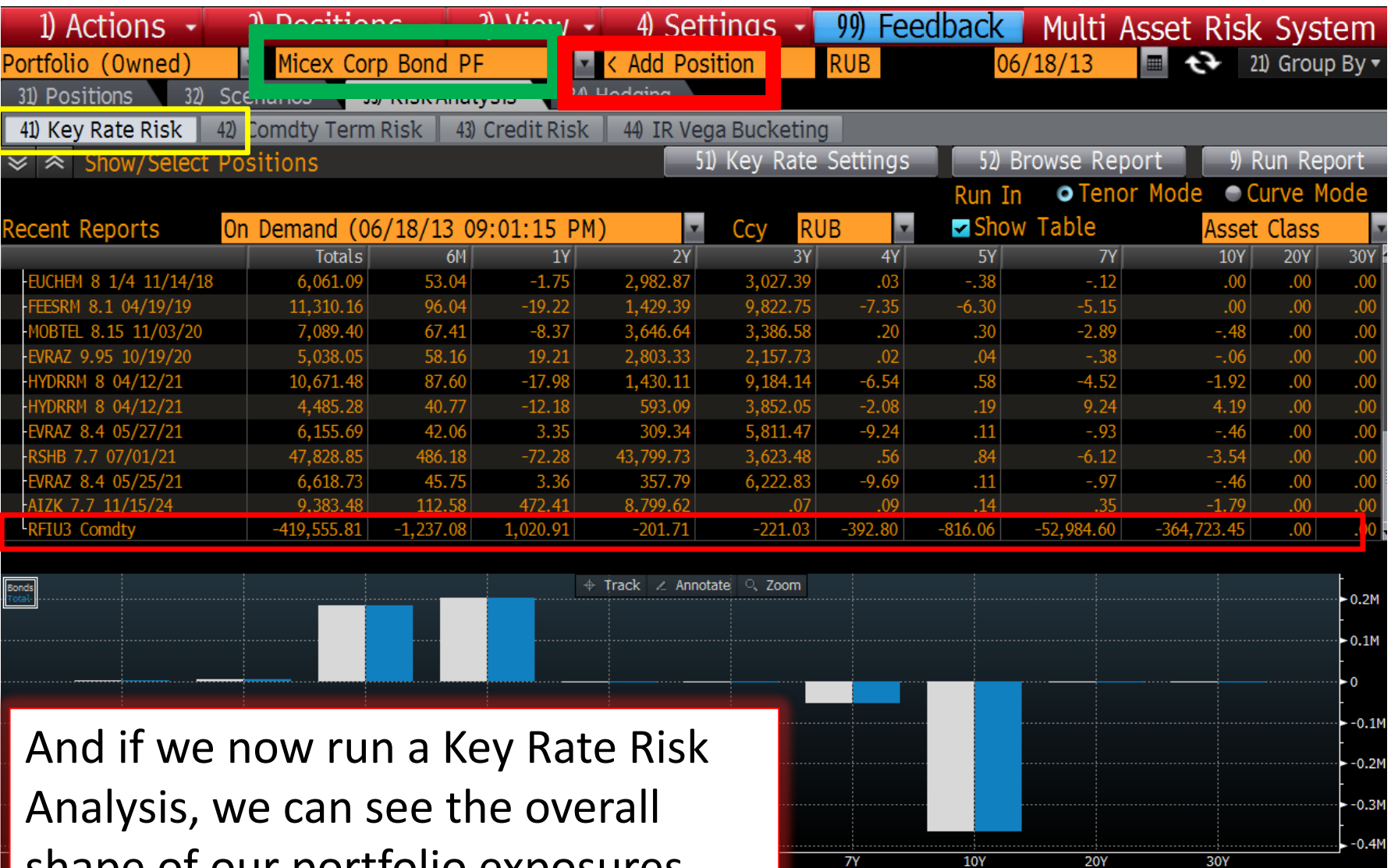
● Total ● Term Structure Ccy RUB 51) Hedge Settings 52) Book Hedges 9) Run Hedge Analysis

Hedge Calculator

	RUB
Unhedged Exposure	-.73
Hedge Instruments	RFIUS
Contracts/Notional	0
Hedging Details	
Target Exposure	0
Hedge Instrument Price	96.5
Hedge Instrument Exposure	0
Residual Exposure	-.73

If we enter the hedge position and re-run the Hedge Analysis, our exposure goes to zero

# Portfolio Hedging- MARS <GO>



And if we now run a Key Rate Risk Analysis, we can see the overall shape of our portfolio exposures..

*ie Curve Steepening*

# Calculating Changes in CTD <GO>

**<HELP>** for explanation, **<MENU>** for similar functions.

Enter all values and hit <Go>.

**VIEW** **B**  
 B-Basis, C-basis Chg  
 H-Horizon bond price  
 V-BPV  
 S-CTD B.P. Spread  
 P-P&L points

## CTD Scenario Analysis

CTD Basis **0.** dec. Stl **6/18/13** Dlv **9/ 5/13**

PARALLEL YIELD SHIFTS (BP)

**-100** **-50** **0** **50** **100**

Price:	101.865	100.272	98.696	96.981	95.230
Chng:	+3.365	+1.772	+.196	-1.519	-3.270
cRisk:	3.14	3.19	3.12	3.54	3.46

**f→U3**

**98.50**

Issue					Price	Src	Yield	Basis	Basis at Contract Horizon				
1)	RFLB	7.4	06/14/17		102.750	VTBX	6.715	.349	.018	.000	.000	.180	.431
2)	RFLB	6.2	01/31/18		98.700	VTBX	6.636	.220	.633	.342	.079	.000	.000
3)	RFLB	7.4	04/19/17		102.700	VTBX	6.698	.437	.000	.042	.099	.334	.638
4)	RFLB7 ½		03/15/18		104.000	VTBX	6.609	.536	.783	.468	.183	.091	.084

For Delivery on 5<sup>th</sup> September  
 With the CTD basis converged at zero  
 See how the cheapest to deliver bond  
 changes (*ceteris paribus*)



# Calculating Changes in CTD: Use CMS <GO>

<HELP> for explanation, <MENU> for similar functions.  
Enter all values and hit <Go>.

VIEW **B** B-Basis, C-basis Chg  
H-Horizon bond price  
V-BPV  
S-CTD B.P. Spread  
P-P&L points

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For Delivery on 5<sup>th</sup> September with the CTD basis converged at zero  
See how the cheapest to deliver bond changes (*ceteris paribus*)

VIEW **R** B-Basis, C-basis Chg  
H-Horizon bond price  
V-BPV, R-IRP  
S-CTD B.P. Spread  
P-P&L points

## CTD Scenario Analysis

CTD IRP **5.63%** Stl **6/18/13** Hor **8/ 5/13**

PARALLEL YIELD SHIFTS (BP)					
	-100	-50	0	50	100
Price:	101.783	100.193	98.621	96.916	95.168
Chng:	+3.283	+1.693	+1.121	-1.584	-3.332
cRisk:	3.21	3.25	3.18	3.60	3.51

**f→U3** **98.50**

Issue	Price	Src	Yield	Basis	Implied repo rate at Horizon				
1) RFLB 7.4 06/14/17	102.750	VTBX	6.715	.349	4.43	5.13	5.63	4.13	1.64
2) RFLB 6.2 01/31/18	98.700	VTBX	6.636	.220	-2.71	1.06	4.61	6.13	6.63
3) RFLB 7.4 04/19/17	102.700	VTBX	6.698	.437	4.63	4.67	4.52	2.39	-.68
4) RFLB7 1/2 03/15/18	104.000	VTBX	6.609	.536	-3.78	-.02	3.53	5.09	5.66

Note that we  
can change  
the horizon to  
a date before  
delivery

# Calculating Changes in CTD: Use CMS <GO>

CTD Scenario Analysis										
VIEW <b>H</b>		CTD IRP <b>5.63%</b> Stl <b>6/18/13</b> Hor <b>8/ 5/13</b>								
B-Basis, C-basis Chg H-Horizon bond price V-BPV, R-IRP S-CTD B.P. Spread P-P&L points		PARALLEL YIELD SHIFTS (BP)								
		-100 -50 0 50 100								
		Price: 101.783 100.193 98.621 96.916 95.168								
		Chng: +3.283 +1.693 +.121 -1.584 -3.332								
		cRisk: 3.21 3.25 3.18 3.60 3.51								
f→U3		98.50								
Issue		Price	Src	Yield	Basis	Bond price at Horizon				
1) RFLB 7.4	06/14/17	102.750	VTBX	6.715	.349	106.04	104.33	102.66	101.02	99.425
2) RFLB 6.2	01/31/18	98.700	VTBX	6.636	.220	102.53	100.61	98.741	96.918	95.140
3) RFLB 7.4	04/19/17	102.700	VTBX	6.698	.437	105.88	104.23	102.62	101.04	99.492
4) RFLB7 1/2	03/15/18	104.000	VTBX	6.609	.536	107.90	105.88	103.91	101.98	100.11

Note that here we can see the bond prices at our horizon date, under different yield changes

CTD Scenario Analysis										
VIEW <b>P</b>		CTD IRP <b>5.63%</b> Stl <b>6/18/13</b> Hor <b>8/ 5/13</b>								
B-Basis, C-basis Chg H-Horizon bond price V-BPV, R-IRP S-CTD B.P. Spread P-P&L points using <b>5.60</b> % repo		PARALLEL YIELD SHIFTS (BP)								
		-100 -50 0 50 100								
		Price: 101.783 100.193 98.621 96.916 95.168								
		Chng: +3.283 +1.693 +.121 -1.584 -3.332								
		cRisk: 3.21 3.25 3.18 3.60 3.51								
f→U3		98.50								
Issue		Price	Src	Yield	Basis	P&L points using 5.60 % repo				
1) RFLB 7.4	06/14/17	102.750	VTBX	6.715	.349	+.092	+.036	-.001	+.137	+.354
2) RFLB 6.2	01/31/18	98.700	VTBX	6.636	.220	+.615	+.288	-.008	-.126	-.157
3) RFLB 7.4	04/19/17	102.700	VTBX	6.698	.437	-.024	-.021	-.001	+.190	+.459
4) RFLB7 1/2	03/15/18	104.000	VTBX	6.609	.536	+.664	+.309	-.012	-.145	-.187

And here we can see the P&L points of being long cash, short futures, financing at the IRP under yield changes



HCA <GO>

## HISTORICAL CHEAPEST ANALYSIS Pg3 of 3

**f 9M3** 10yr RU FedBond FuJun13 109.10

START **2/19/13** END **5/14/13**

DLV 6/ 5/13 PERIOD D/W **D**

Security	Conv. Mod Dur	Number of Times "Cheapest"	Avg. Fut. Prc. When Cheapest	Price Source	Total Obs.
1) RFLB 7.6 04/21	5.78	14	880.83	VTBX	58
2) RFLB7 01/25/23	6.66	44	106.84	VTBX	58
3) RFLB 7.6 07/22	6.36	0	n.a.	VTBX	58

HBT <GO>

Hit {NUMBER} <Go> to view Historical Basis/Repo

## HISTORICAL BASIS TABLE

Pg1 of 1

**f 9** 10yr RU FedBond FuJun13 10910.00

START **4/12/13** END **5/14/13**

DLV 6/ 5/13 PERIOD D/W **D**

Sort Order **DM** (↓ Mty)

						BASIS in dec.				IMPLIED REPO %			
Security	QT	OB	Price	SRC		Curr/	Avg/	Hi	Low	Curr/	Avg/	Hi	Low
1) RFLB7 01/25/23	MC	21	103.450	VTBX		-lge	-485	1.26	-lge	+lge	7615	+lge	-10
2) RFLB 7.6 07/22	MC	21	109.250	VTBX		-lge	-505	1.75	-lge	+lge	7532	+lge	-15
3) RFLB 7.6 04/21	MC	21	107.700	VTBX		-lge	-507	.55	-lge	+lge	7784	+lge	2.13

HCD <GO>

<HELP> for explanation, <MENU> for similar functions.

Enter all values and hit <Go>.

## HISTORICAL CHEAPEST-TO-DELIVER

**F9M3** 10yr RU FedBond FuJun13

Period **D** Daily, Weekly using VTBX cls prices, mid

Trade Date	Price	"Cheapest"			2nd Cheapest		3rd Cheapest	
		Sec	Price	Repo	Sec	Repo	Sec	Repo
5/14/13	10910.0	7.6	04/14/21	107.700	+lge	7	01/25/23	+lge
5/13/13	108.85	7.6	04/14/21	107.550	3.11	7	01/25/23	-5.0
5/10/13	109.50	7.6	04/14/21	108.300	2.13	7	01/25/23	-10
5/ 8/13	109.85	7.6	04/14/21	108.300	6.62	7	01/25/23	-4.8
5/ 7/13	109.75	7.6	04/14/21	108.300	5.49	7	01/25/23	-5.5
5/ 6/13	109.80	7.6	04/14/21	108.350	5.53	7	01/25/23	-4.6
5/ 3/13	109.50	7.6	04/14/21	108.200	4.20	7	01/25/23	-3.9
5/ 2/13	109.45	7.6	04/14/21	108.200	3.78	7	01/25/23	-4.1
4/30/13	109.55	7.6	04/14/21	108.200	4.89	7	01/25/23	-2.6
4/29/13	109.50	7.6	04/14/21	108.150	4.96	7	01/25/23	-.45
4/26/13	109.30	7.6	04/14/21	107.850	6.00	7	01/25/23	3.20
4/25/13	109.15	7.6	04/14/21	107.850	4.81	7	01/25/23	2.94

# Understanding and Using Ruble Government Bond Futures

MOSCOW EXCHANGE SEMINAR

Date: xx June 2013  
Venue: Moscow Exchange



**MOSCOW  
EXCHANGE**

**Bloomberg**

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