BLOOMBERG BFIX

Methodology Overview & Planned Oversight

April 2016



EXECUTIVE SUMMARY

- BFIX is built on our widely-used BGN composite
- BGN is designed to provide bid ask rates
 - From selection of Bloomberg FX price sources
 - Sources have met criteria including consistency frequency and quality
- BFIX is time-weighted average of BGN, with transparent methodology and is easily replicable.
 - Results are published on the terminal to a dedicated screen BFIX<GO>
 - Selected Rates published on the website (ECB Fixes)
- Sensitivity analysis shows that BFIX is robust to changes in
 - 1. Unilateral price skewing
 - 2. Multiple dealers skewing
 - 3. Dealers halting pricing
 - 4. These finding are robust across a variety of currencies.

GENERAL CALCULATION FLOW



Bloomberg

BGN OVERVIEW

• Goals of BGN are :-

- Find consensus
- Be Robust

• Price Inputs are run through a proprietary algorithm

- Algorithm generates a market reflective bid ask price for each currency or metals pair
- Algorithm includes features such as spike detection, age out, crossing prevention
- Price inputs only considered valid if a bid and ask are contributed.

• Coverage & History

- BGN provides very broad coverage of spot and spot cross rates for currencies and metals
- FX forward rates including NDF's.
- BGN has been available as a price source since 2007



BFIX METHODOLOGY

- Time-weighted average of BGN.
- Computed every 30 minutes, provided BGN frequency conditions are met
- Published within 15 seconds of fixing time to Bloomberg.
- Fully automated process from end to end
- TWAP details:
 - Window can be 5, 10 or 15 minutes, and includes a few seconds after the fixing time
 - 10% of the weight is the BGN value at the fixing time
 - The remaining is linearly weighted:
 - Easily replicable



IOSCO COMPLIANCE

- Bloomberg is committed to the Benchmark Business
 - Recently announced Purchase of Barclays Index Business
- Currently manages IOSCO compliant benchmarks
 - Bloomberg Index IN <GO> (FI, Commodity, Currency)
 - FX is an important part of our benchmark ambitions
- BFIX IOSCO compliance process is in advanced stages
 - Compliance affirmation expected end Q2
 - External auditors are engaged.

'Barclays PIc agreed to sell the indexing business built around former Lehman Brothers benchmarks to Bloomberg LP for about 520 million pounds (\$781 million),'

91) Export						Bloom	oerg Index	Browser
1) Fixed Income	2) Commodity	3) Currency						
11) Global Agg	12) USD Agg 13	3) Pan-Euro Agg	14) Asia-Pac Ag	g 15) AusBor	nd 16) Canad	da Agg 17) (Global HY 18) EMG
View	🖩 Returns	Projected	🛦 Tree Cha	rt			As of)4/15/16 🖩
Index Name			Ticker	1D Rtn	MTD Rtn	YTD Rtn	Members	Mkt Val
-Global Agg fam	ily							
Main Indices								
-Global Tsy			BGSV	0.462%	1.039%	8.323%	1,098	24.07T
By Maturity								
-Global Tsy			BGSV13	0.218%	0.649%	4.236%	265	5.62T
-Global Tsy	/ 1-5 Yr		BGSV15	0.251%	0.663%		453	10.26T
-Global Tsy	/ 1-7 Yr		BGSV17	0.276%	0.636%	5.120%	588	13.27T
-Global Tsy	/ 1-10 Yr		BGSV110	0.317%	0.686%	5.830%	749	16.91T
-Global Tsy	/ 3+ Yr		BGSV3	0.537%	1.159%	9.617 %	833	18.44T
-Global Tsy	/ 3-5 Yr		BGSV35	0.290%	0.680%	5.421%		4.6 4T
-Global Tsy	/ 3-7 Yr		BGSV37	0.318%	0.627%	5.763%	323	7.64T
-Global Tsy	/ 3-10 Yr		BGSV310	0.366%		6.627%	484	11.29T
-Global Tsy	/ 5+ Yr		BGSV5	0.620%	1.321%	11.155%	645	13.80T
-Global Tsy			BGSV57		0.544%	6.317%	135	3.00T
-Global Tsy			BGSV510	0.419%	0.720%	7.517%	296	6.65T
-Global Tsy			BGSV7	0.692%	1.539%	12.582%	510	10.80T
-Global Tsy			BGSV710	0.468%	0.866%	8.523%	161	3.65T
-Global Tsy			BGSV10	0.807%	1.886%	14.772%	349	7.15T
By Country								
Global Tsy	y xUS		BGSX	0.570%	1.341%	10.377%	848	17.21T
+Global Corp			BCOR	0.309%	0.544%	5.657%	9,833	7.32T

DELIVERY MECHANISMS

- <u>http://www.bloomberg.com/markets/currencies/fx-fixings</u>
- BFIX <GO>
- Enterprise delivery mechanisms

BFIX: Bloomberg FX Fixings	Currency data to 5 minutes delayed (smes in 51) and based on the Bloomburg Ceneric Composite rate (SCA), See full g	taita ansi diachairmar.								
	United States Dokar (USO) * Euro (ELR) S *** C 1050-0.8755 EUR √lym: (2 dot) 1EUR-11422050 m/j.m. (2 dot)	n -								
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Elite x2	Frankfurt 2:00 PM		Term Spot 🔹	Market Regular	 Points 			• Mid Bid/Ask		
Designed for IT,			EUR/USD Fixings					04/11/2016 💷	Zor	
loved by users	CLERENCY	BPIX RATE	Time	Mid	Time	Mid	Time	Mid	Time	М
Powered by Intel [®] Gore ³ th m ² processor.	USD-DKK	6.5331	1) 00:00	1.1405 13)	06:00	1.1411 25)	12:00	1.1391 37		1.141
Powered by Intel® Core® m7 processor. Intel Inside®, Powerful Solution Outside.	XAU-USD	1247.15	2) 00:30	1.1406 14)	06:30	1.1411 26)	12:30	1.1403 3		1.140
Shop now	USD-MXN	17.7279	3) 01:00	1.1403 15)	07:00	1.1408 27)	13:00	1.1391 3		1.140
Shop now	USD-JPY	108.25	4) 01:30	1.1404 16)	07:30	1.1421 28)	13:30	1.1406 4		1.141
"Intels	USD-CNH	6.4787	5) 02:00	1.1397 17)	08:00	1.1414 29)	14:00	1.1411 41		1.141
	EUR-PHP	- 3.7814	6) 02:30	1.1408 18)	08:30	1.1407 30)	14:30	1.1401 42		1.140
	USD-IL5	3.7814	7) 03:00	1.1413 19)	09:00	1.1377 31)	15:00	1.1441 43		1.140
keep reinventing	EUR-KRW		8) 03:30	1.1412 20)	09:30	1.1394 32)	15:30	1.1435 4		1.140
		1.9685	9) 04:00	1.1412 21)	10:00	1.1393 33)	16:00	1.1441 45		1.140
	USD-SGD EUR-INR	10404	10) 04:30	1.1409 22)	10:30	1.1384 34)	16:30	1.1425 #		1.140
Futures in Focus	EUR-ZAR	16.8195	11) 05:00	1.1412 23)	11:00	1.1382 35)	17:00	1.1412 4		1.140
Watch Now	EUR-CZK	27.017	12) 05:30	1.1417 24)	11:30	1.1392 36)	17:30	1.1417 #) 23:30	1.140
SPONSORED BY	EUR-SEK	9,2826	1.1441 - EUR Mid Price			♦ Track ∠ Annotate Q 2	loom			
	USD-ZAR	14.7656	11401							
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