

Brazilian Real CDI Swaps

19 IRS Currencies Now Available for Clearing at CME

Q4 2015

BRL-CDI Interest Rate Swaps



Product Overview

Currency	BRL
Product Type	Zero Coupon Swap
Maximum Maturity	10 Years
Floating Rate Index	BRL-CDI*
Settlement Currency	USD
Price Alignment Interest	Fed Funds Overnight Rate
Variation Margin	USD
Coupons and Fees	USD
Holiday Calendar	Brazil Business Day**
<p>*Refers to the Overnight Brazilian Interbank Deposit Rate Annualized as the average of the DI-OVER-EXTRA Grupo as published by CETIP **A business day in any of San Paulo, Rio de Janeiro or Brasilia not otherwise declared as a financial market holiday by the BM&F</p>	

BRL Product Specifications



CME will clear BRL-CDI IRS with the following details:

Cash Flows	All cash flows (VM, PAI, Coupons, Fees) will be in USD
PAI	The rate used for PAI will be based on the Fed Funds overnight rate –the same rate used for USD
Settlement Convention	USD will be settled on a next day (T+1) basis
Business Day Convention	Default will be Business / 252
Future Value Notional	Calculated by equation: $Notional\ Amount * (1 + Fixed\ Rate)^{\left(\frac{BUS}{252}\right)}$
FX Rate	<p>The below FX rate will be used to convert BRL coupon payments to USD:</p> <p>“ask” price reported on Bloomberg Page BZFXPTAX at approximately 1:15 p.m. Sao Paulo time, on the relevant date</p>

Brazilian Market Overview



Largest financial market in Latin America and one of the most developed in emerging markets

Non-Deliverable Currency

- Tax on foreign capital flow.
- On/off spread.

Interbank Deposit (ID) Futures

- Listed on the BM&F exchange – the most liquid interest rate instrument in the Brazilian market.
- Underlying Index: ID rate, the average one-day interbank deposit rate.
- Regarded as fixed-date zero coupon swap.

BRL Curve Bootstrapping Procedure



BRL is treated as an offshore dual-curve currency

BRL offshore discount curve

- Input: USD/BRL FX offshore NDF.
- To accommodate offshore funding cost, a USD Fed-Funds curve is the prerequisite and treated as the foreign discount curve.

BRL offshore forecast curve

- Input: BM&F DI future + DI on/offshore spread.
- DI Contract Months: First four consecutive months, then quarterly contracts.
- Bootstrap offshore future prices to generate the forecast curve.

BRL IRS Cash Flows

Upfront Fees	<ul style="list-style-type: none">• Fees must be USD-denominated<ul style="list-style-type: none">- Fee settlement can occur any business day from T+1 through maturity date
Future Value Notional	<ul style="list-style-type: none">• Required on all trade submissions• Calculated by the equation:$FVN = Notional \times (1 + Fixed\ Rate)^{Bus/252}$<p><i>Bus</i> = number of business days from effective to valuation date</p>
Holiday Calendars	<ul style="list-style-type: none">• Brazil Business Days and US New York calendars are required for all payments• Fixed leg accruals will not be adjusted for unscheduled holidays• Float leg accruals will be adjusted for unscheduled holidays
Coupons	<ul style="list-style-type: none">• Coupons are settled in USD• FX conversion uses the BRL-PTAX spot rate

BRL IRS Coupon Payment

Product	BRL ZCS	Fixed Rate	12.00000%
Start Date	6/20/2013	Party	Pay Fixed
End Date	4/1/2015	Cleared Date	6/20/2013
PV Notional	\$ 244,926,975.10	Coupon Date	4/2/2015
FV Notional	\$ 300,000,000.00	Valuation Date	3/31/2015

$Net\ Cash\ Flow = VM + PAI + Upfront\ Fee + Coupons$

$VM = (Adj\ NPV / ON\ FX\ Rate) - (Prev\ Adj\ NPV / Prev\ ON\ FX\ Rate)$

- VM and PAI are settled on T+1, converted to USD amounts using the overnight FX rate.
- Coupons are known on the Maturity Date and paid the following business day. They are converted to USD using the PTAX spot FX rate, captured on Valuation Date.
- The VM and PAI calculated on the Maturity Date will net with the coupon payment. The net amount is paid on the Coupon Date resulting in a smooth final cash flow.

Calculation Date	Banking Date	USD					BRL				ON FX Rate (VM)	PTAX FX Rate (Coupons only)
		Net Cashflow	Fixed Coupon	Float Coupon	PAI	VM	Adjusted NPV	Prev Adj NPV	Fixed Coupon	Float Coupon		
Mon Mar 30	Tue Mar 31	\$2,703.65	-	-	(\$6.00)	\$2,709.66	2,815,705.33	2,787,548.28	-	-	3.2223	
Tue Mar 31	Wed Apr 01	\$35,572.29			(\$6.55)	\$35,578.84	2,899,886.21	2,815,705.33	-	-	3.1888	3.186
Wed Apr 01	Thu Apr 02	\$1,703.48	(\$17,251,366.07)	\$18,162,473.73	(\$6.85)	(\$909,397.33)	0.00	2,899,886.21	(\$4,962,852.30)	57,865,641.30	3.1572	-
Thu Apr 02	Fri Apr 03	\$0.00			\$0.00	\$0.00	0.00	0.00			3.0827	

Valuation Date

Maturity

Coupon Date

Coupon is shown on EOD reports the previous business day and the net coupon amount is banked on the coupon date. Coupon is converted using the PTAX FX rate.

FX rate used for VM and PAI

FX rate used for coupons.

Calculation Date

- 3/30/2015: $VM = (2,815,705.33 / 3.2223) - (2,787,548.28 / 3.2) = \$2,709.66$
- 3/31/2015: $VM = (2,899,886.21 / 3.1888) - (2,815,705.33 / 3.2223) = \$35,578.84$
- 4/1/2015: $VM = (0 / 3.1572) - (2,899,886.21 / 3.1888) = (\$909,397.33)$
 $Fixed\ Coupon = (54,962,852.30) / 3.186 = (\$17,251,366.07)$
 $Float\ Coupon = 57,865,641.30 / 3.186 = \$18,162,473.73$

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