

FX MTM Computation

PURPOSE

Marked to market computation for Foreign Exchange and Non-Deliverable Forward Contracts

WHY IS THIS IMPORTANT?

This document shows an example of Foreign Exchange contract's MTM computation and the reporting currency is HKD.

PROCEDURE



The transaction as at 1-Feb-2009.

TDate	VDate	Transaction Buy USD	Contract Rate	Against Ccy Sell SGD	Forward Rate	MTM in Against Ccy
26-Jan-09	31-Mar-09	1,000,000.00	1.4	(1,400,000.00)	1.4109	10,900.00

The system first computes the MTM to the Against Currency. The underlying basis for using the Against Currency is that, in most cases, a company would trade a foreign amount against the base currency for hedging.

The system then converts this MTM to the reporting currency of the user's choice using method 1 or 2 below.

The below explains how the forward rate is computed.

Spot rate at 1-Feb-2009

Spot rates maintained in the system are against the enterprise currency. In this

example, the enterprise currency is SGD. Spot rates are maintained under Prices > Exchange Rate.

USD - > SGD	1.4051
SGD - > HKD	5.5123

Forward points at 1-Feb-2009

Forward points maintained in the system are always against USD. Forward points are maintained under Prices > Swap Points.

SGD Swap Points

Tenor	End Date	Bid	Offer	Mid
60	2-Apr-09	55	65	60

HKD Swap Points

Tenor	End Date	Bid	Offer	Mid
60	2-Apr-09	115	125	120

Computation of Forward Rate

Computation of Forward Points for SGD Ccy

Days Forward = 58 (From 1-Feb-2009 to 31-Mar-2009)

Forward Points = 58 (Mid-Rate / Tenor * Days Forward)

Computation of Forward Rates for SGD Ccy

Spot rate for USD/SGD = 1.4051

Forward Points = 58 / 10000

= 0.0058

Forward Rate = Spot Rate + Forward Points

= 1.4051 + 0.0058

= 1.4109

Computation of Forward Points for HKD Ccy

Days Forward = 58 (From 1-Feb-2009 to 31-Mar-2009)

Forward Points = 116 (Mid-Rate / Tenor * Days Forward)

Computation of Forward Rates for HKD Ccy

Spot rate for USD/HKD = 7.74533273

Implied rate between USD and HKD
based on the spot rates above

Forward Points = 116 / 10000

= 0.0116

Forward Rate = Spot Rate + Forward Points

= 7.74533273 + 0.0116

= 7.75693273

Forward rate for SGD/HKD = 5.49786145722588

= 7.75693273 / 1.4109

Currency Rate Curves

The system will present the forward MTM value based on the currency rate curves maintained in the system.

SGD rate curves at 1-Feb-2009

Days	Rate
7	1.0000%
14	2.0000%
21	3.0000%
28	4.0000%
35	5.0000%
60	6.0000%
58	5.9200%

= 5% + (6% - 5%) / (60 - 35) * (58 - 35)

Discount Rate = 0.990902439463533

$$= 1 / (1 + 5.92\%) ^ (58 / 365)$$

HKD rate curves at 1-Feb-2009

Days	Rate
31	2.0000%
60	5.0000%
58	4.7931%

$$= 2\% + (5\% - 2\%) / (60 - 31) * (58 - 31)$$

Discount Rate = 0.992588067700411

$$= 1 / (1 + 4.7931\%) ^ (58 / 365)$$

Computation of MTM in HKD

The system allows user to choose either of the following methods when reporting MTM for FX forward and NDF contracts.

Method 1: Tranx Ccy PL

SGD MTM	10,900.00
Discount Rate to Present Value	0.990902439463533
Present Value in SGD	10,800.84
Spot to HKD	5.5123
HKD MTM	59,537.47

Method 2: Val Ccy PL

SGD MTM	10,900.00
Forward Rate to HKD	5.49786145722588
Forward Value in HKD	59,926.69
Discount Rate to Present Value	0.992588068
HKD MTM	59,482.52

If the user does not maintain any currency curves, then the discount rate would be 1. The result is illustrated here.

Method 1: Tranx Ccy PL

SGD MTM	10,900.00
Discount Rate to Present Value	1.000000
Present Value in SGD	10,900.00
Spot to HKD	5.5123
HKD MTM	60,084.07

Method 2: Val Ccy PL

SGD MTM	10,900.00
Forward Rate to HKD	5.49786145722588
Forward Value in HKD	59,926.69
Discount Rate to Present Value	1.000000
HKD MTM	59,926.69