1. INTEREST RATE DERIVATIVES OVERVIEW

This document guides you through the setup and capture of interest rate derivatives trades.

Reference Data Specific to IRD Trading

- Environment properties

Market Data Requirements

Market data requirements for IRD trades are described in "IRD Pricing Recommendations" for each type of trade.

Generally, you will need the following market data (Help is available from all market data windows):

- Discount and Forecast curves - See Main Entry > Market Data > Interest Rate Curves > Zero Yield Curve
- Probability curves - See Main Entry > Market Data > Credit Curves > Probability Curve
- RATE volatility surfaces - See Main Entry > Market Data > Volatilities > Volatility Surface

Market data can be imported from Reuters - Refer to *Calypso Reuters RFA Integration Documentation* for details.

Trade Capture

All types of trades are described below.

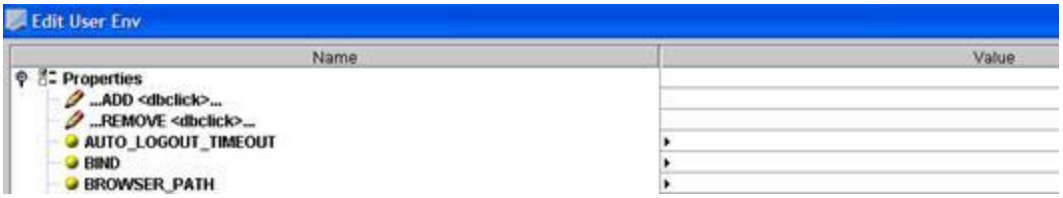
Trade Lifecycle

The following trade lifecycle actions can be applied to IRD trades (Help is available from all trade lifecycle windows):

- Allocation - See Back Office > Allocate in the trade window
- Option exercise - See Main Entry > Trade Lifecycle > Expiration & Exercise > Options Exercise
- Rate reset - See Main Entry > Trade Lifecycle > Reset > Rate Reset
- Termination and partial termination - See Back Office > Terminate in the trade window, or Main Entry > Trade Lifecycle > Termination > Terminate
- Markit Wire trade lifecycle operations - Refer to *Calypso MarkitWire Integration Documentation* for details

2. IRD Environment Properties

This section describes environment properties that impact the back office and trading of IRD trades. We recommend that you review the settings. You can add or modify properties in the User Env or System Env applications.



» Here you can add, edit, and remove environment properties. After making changes to properties, click **Save**.

[**NOTE**: When you modify an environment property, you need to restart the data server in order for the property to take effect. Also, environment properties are case sensitive]

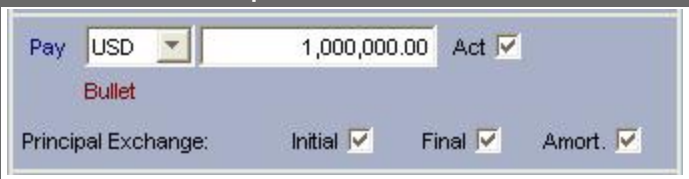
The Y/N value is not case sensitive and can be replaced by Yes/No or True/False.

» Click **Help** for a description of all environment properties.

The following environment properties impact the behavior of IRD trading.

Environment Property	Description - Recommended Value
ADVICE_ON_SETTLEDATE	ADVICE_ON_SETTLEDATE determines when the system generates payment advices. Recommended value is Y, default value. The Message Engine creates message documents on the settle date. You can set a kickoff rule on the message workflow (task PENDING-AUTHORIZE-VERIFIED) to generate the messages N days in advance (kickoff days lag = -N). If N, message documents are created as soon as the Message Engine receives events.
CASH_SETTLEMENT_TRADE	CASH_SETTLEMENT_TRADE allows you to view at the trade level if the trade has cash settlement information (that is, information relating to early terminations or break clauses). Otherwise, you need to check each trade individually by opening the Cash Settlement window(Product Type > Cash Settle Info). If you set this property to Y, when you attach cash settlement information to the trade and click Save, the application displays Cash Settled Trade in the status bar at the bottom of the trade worksheet. If you do not have the status bar already displayed, the application automatically opens it. [**NOTE**: Setting this property to Y may affect loading time and performance] If you set this property to N (default value), you need to open the Cash Settlement window to determine if the trade has cash settlement information attached.
DIFFERENT_RESET_DT_PER_CPN	Y or N. Y to generate the reset dates based on the coupon payment frequency, or N to generate the reset dates based on the index tenor. For a coupon frequency higher than the index frequency, all coupons within an index term can have a different reset date, or the same reset date. For example, LIBOR 3M and coupon frequency = M. If Y, every coupon within the index term will have a different reset date. If N, every coupon within the index term will have the same reset date. You can override this property at the trade level in the Product Details window.

Environment Property	Description - Recommended Value
DISALLOW_TRADE_SAVE_WO_PRICE	DISALLOW_TRADE_SAVE_WO_PRICE specifies whether you can save a trade when you have customized the cashflows, changed the trade (for example, the spread), and have not regenerated the cashflows. If you try to save the trade without regenerating the cashflows, you receive a warning message and cannot save the trade. Recommended value is N You can save a trade without regenerating the cashflows.
ENABLE_TRADE_NOTES	ENABLE_TRADE_NOTES specifies whether you can attach notes to a trade. When you open an existing trade, the note(s) appear in front of the trade. The back office could use this feature to create notes about the SDI. Set this property to Y to enable this feature.
OPTION_FEE_PRECISION	OPTION_FEE_PRECISION specifies whether to input fees for Swaption and Cancellable and Extendible Swap products as an amount or percentage. The recommended value is 2 (default value), which specifies to enter fees as amounts. If you set this property to 5, then you can enter fees as a percentage with five decimal places of precision.
TRADE_VERSION_INC	TRADE_VERSION_INC relates to the audit trail of trades, which you can view in the Trade Audit Viewer window; from trade worksheets, choose Back Office > Audit to open the window.
USE_PARENT_PO	USE_PARENT_PO specifies that in a parent/child relationship between processing organizations, if the child does not have any workflow setup, then the child can use the parent's workflow. Note that if the child has a workflow for a specific product only, it cannot use the parent's workflow for all products, so you can only trade products setup in the child's workflow. Set this property to Y to enable this feature.
WARN_SWAP_LEGS_DIFFERENT	WARN_SWAP_LEGS_DIFFERENT specifies that in Swap, XCCY Swap, and Swaption trades, you receive a warning message when you try to price the trade if any of the following are true: • Pay and Recv notionals are not equal. • Pay and Recv End Dates are not the same. • Pay and Recv Start Dates are not the same. Set this property to Y to enable this feature.
XCCY_SWAP_SHOW_EXCH_PANEL	XCCY_SWAP_SHOW_EXCH_PANEL specifies whether to display the initial, amort, and final checkboxes when you select Actual in the Trade Cross-Currency Swap Window. You can use these options so that you do not have to customize the cashflows. If you set this property to Y (default value), when you select Act (actual) in the Trade Cross-Currency Swap Window, you can specify when the principal will be exchanged: • init Ex — at the beginning of the cross-currency swap. • amort Ex — according to an amortization schedule. • final Ex — at the end of the cross-currency swap. You can select a combination of these options. These apply to both legs of the cross-currency swap.

Environment Property	Description - Recommended Value
	 If you set this property to N, you disable this feature. When you select Act (actual) in the Trade Cross-Currency Swap Window, the options are not available. Selecting Act means that principal is exchanged at the beginning and end of the cross-currency swap. If you want to use any other combinations for the principal exchange, you have to customize the cashflows. 

3. Interest Rate Derivatives Trades

This section describes the various types of IRD products supported by Calypso. Help is available from all trade worksheets - Choose Help > Trade Help in any trade worksheet for complete details.

Functions common to all trade worksheets are described under Calypso Trading Environment documentation: trade functions, trade menus, Details panel, Cashflows Panel, and Fees panel.

Swaps

Product Name	Description	Trade Worksheet
Brazilian Swap	Swap trade with Brazilian conventions.	Trade > Interest Rates > Swap
Cancelable Cross-Currency Swap	Contains an underlying cross-currency swap with the option to cancel it in the future.	Trade > Interest Rates > Swap – Cancelable feature
Cancelable Swap	Contains an underlying interest rate swap with the option to cancel it on one or more cancellation dates.	Trade > Interest Rates > Swap – Cancelable feature
Capped Swap	A swap with a cap floor on the floating leg.	Trade > Interest Rates > Capped Swap
CMS Swap	Constant maturity swap trade.	Trade > Interest Rates > Swap
Credit Contingent Cross-Currency Swap	Contains an underlying i cross-currency swap contingent upon credit events.	Trade > Interest Rates > Swap – Credit Contingent feature
Credit Contingent Swap	Contains an underlying interest rate swap contingent upon credit events.	Trade > Interest Rates > Swap – Credit Contingent feature
Cross-Currency Swap	One party makes periodic payments based on a fixed rate or floating rate index with resets in one currency, and the other party makes payments based on a floating rate index with resets in another currency. Payments are based on the notional amounts of the two currencies.	Trade > Interest Rates > Swap
Exotic Swap	A swap where the structure of coupon and principal payments is customized using Calypso exotic structures. It allows you to define exotic payout formulas on the fly, for example, basis swaps, spread swaps, capped swaps, range accrual swaps, ratchets, snowballs, bonus swaps.	Trade > Interest Rates > Swap – Exotic structure
Extendible Swap	Contains an underlying interest rate swap with the option to extend it.	Trade > Interest Rates > Extendible Swap
Inflation Swap	Inflation swaps are based on inflation indices. Inflation is defined as the percentage increase or decrease in some index of prices.	Trade > Interest Rates > Swap
Non-deliverable Swap	A Non-Deliverable Cross Currency Swap is an agreement between two parties to exchange a stream of interest payments and the notional principal in one major currency for another non-deliverable currency. A Non-Deliverable Interest Rate Swap is where both sides of the swap are in a non-delivery currency whereas the settlement currency is a major currency.	Trade > Interest Rates > Non-Deliverable Swap
OIS Swap	An overnight index swap (OIS) is a fixed-for-floating interest rate swap with a one week to two year duration. The floating-rate period is usually tied to a daily overnight rate rate, although occasionally, a daily fixing rate may be used. On the floating side, interest is calculated on a compound basis.	Trade > Interest Rates > Swap
Quanto Swap	The Quanto Swap is an interest rate swap where the currency of the notional on the floating leg	Trade > Interest Rates > Swap

Product Name	Description	Trade Worksheet
	differs from the currency of the reference index.	
Single Swap Leg	A swap with a single leg.	Trade > Cash Flow Structuring
Vanilla Swap	One party makes periodic payments based on a fixed rate and the other party makes payments based on a floating rate index that is reset periodically. The payments are based on a notional and are in the same currency.	Trade > Interest Rates > Swap

Swaptions

Product Name	Description	Trade Worksheet
Swaption	An option to enter into a swap at a future date.	Trade > Interest Rates > Swaption
Trigger Swaption	An option on a swap that you can exercise on the exercise date if the trigger index rate is above (or below) the trigger rate.	Trade > Interest Rates > Trigger Swaption

Caps and Floors

Product Name	Description	Trade Worksheet
Cancelable Cap Floor	Contains an underlying cap floor with the option to cancel it on one or more cancellation dates.	Trade > Interest Rates > Cap/Floor/Collar– Cancelable feature
Cap Floor	The following types of trades can be captured: Vanilla, Digital, Flexible, Chooser, Ratchet, Sticky and Momentum. For a vanilla cap floor, you can capture the following transactions: • Cap — The borrower and lender agree that the borrower will pay no more than a specified maximum interest rate to the lender with respect to floating interest rate funds. • Floor — The borrower and lender agree that the lender will receive no less than a specified minimum interest rate from the borrower with respect to floating interest rate funds. • Corridor - Combination of two caps, one purchased by a borrower at a set strike and the other sold by the borrower at a higher strike to, in effect, offset part of the premium of the first cap. • Flooridor - combination of two floors where cost of the purchase of a floor is offset by the sale of another floor with a lower, further, out of the money strike. • Collar — A simultaneous purchase of a cap with the sale of a floor, or a simultaneous purchase of a floor with the sale of a cap. • Straddle — A simultaneous purchase or sale of a cap and a floor with the same strike and maturity. • Strangle - Combination of a bought cap and a bought floor with different strikes.	Trade > Interest Rates > Cap/Floor/Collar
CMS Cap Floor	Constant maturity swap trade.	Trade > Interest Rates > Cap/Floor/Collar
Credit Contingent Cap Floor	Contains an underlying cap floor contingent upon credit events.	Trade > Interest Rates > Cap/Floor/Collar– Credit Contingent

Product Name	Description	Trade Worksheet
		feature
Exotic Cap Floor	Allows barriers on caps and floors including: • Up-and-out caps • Up-and-in caps • Down-and-out floors • Down-and-in floors	Trade > Interest Rates > Exotic Cap/Floor
Inflation Cap Floor	Inflation cap floors are based on inflation indices. Inflation is defined as the percentage increase or decrease in some index of prices.	Trade > Interest Rates > Cap/Floor/Collar
Spread Cap Floor	A cap or floor having a floating rate index which is the difference (spread) between two floating indices.	Trade > Interest Rates > Spread Cap/Floor

Spread Locks

Product Name	Description	Trade Worksheet
Spread Lock	Two types of spread locks can be defined: • Rolling — A standard Fixed for Floating swap. • European — The buyer enters into a swap at a fixed spread between the forward price of the swap and the yield of its underlying bond.	Trade > Interest Rates > Spread Lock

Treasury Locks

Product Name	Description	Trade Worksheet
Treasury Lock	A treasury lock is a customized agreement that fixes the yield or price on a specified bond for a specific period.	Trade > Interest Rates > Treasury Lock

Structured Products

Product Name	Description	Trade Worksheet
Structured Products	Multiple products can be combined into a single trade using the Structured Product worksheet.	Trade > Structured Product

Refer to Calypso Structured Product documentation for details.

Generic Options

Product Name	Description	Trade Worksheet
Generic Options	The Generic Option worksheet allows capturing an option trade over any product type.	Trade > Generic Option

Refer to Calypso Generic Options documentation for details.

4. CAPTURING SWAP TRADES

The Swap worksheet allows capturing any type of swap trade through the use of the extended type, and through the configuration of exotic structures.

Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

Swaps Quick Reference

When you open a Swap worksheet, the Trade panel is selected by default.

ENTERING TRADE DETAILS

» You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Or you can enter the trade fields directly. They are described below.

Note that the Trade Date is entered in the Details panel.

» Proceed to the other panels as applicable.

» For defining break clauses, choose Swap > Cash Settle Info

SAVING A TRADE

» Hit F5 to save the trade, or choose Trade > Save.

You can also hit F3 to save the current trade as a new trade, or choose Trade > Save As New.

You can also hit F12 to save the trade using any action available in the workflow, or choose Trade > Save Action. You will be prompted to select an action.

A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

PRICING A TRADE

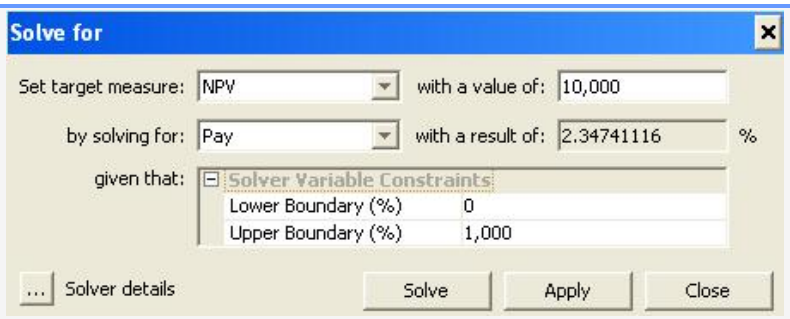
» You can choose Pricing Env > Check to check if all required pricing data are available in the Pricing Environment.

» Click **Price** to price the trade.

You can hit F11 to solve for the break-even rate, and apply it to the fixed leg of the swap.

You can hit F12 to solve for the break-even spread, and apply it to the floating leg of the swap.

» Hit F9 to bring up the solver (or choose Analytics > Solve).



Select a target pricer measure and enter the target value. Then select the value to solve for (pay rate, receive rate, or FX rate), and click **Solve**.

You can click **Apply** to set the value to solve for on the trade. Then click **Price** to obtain the target value.

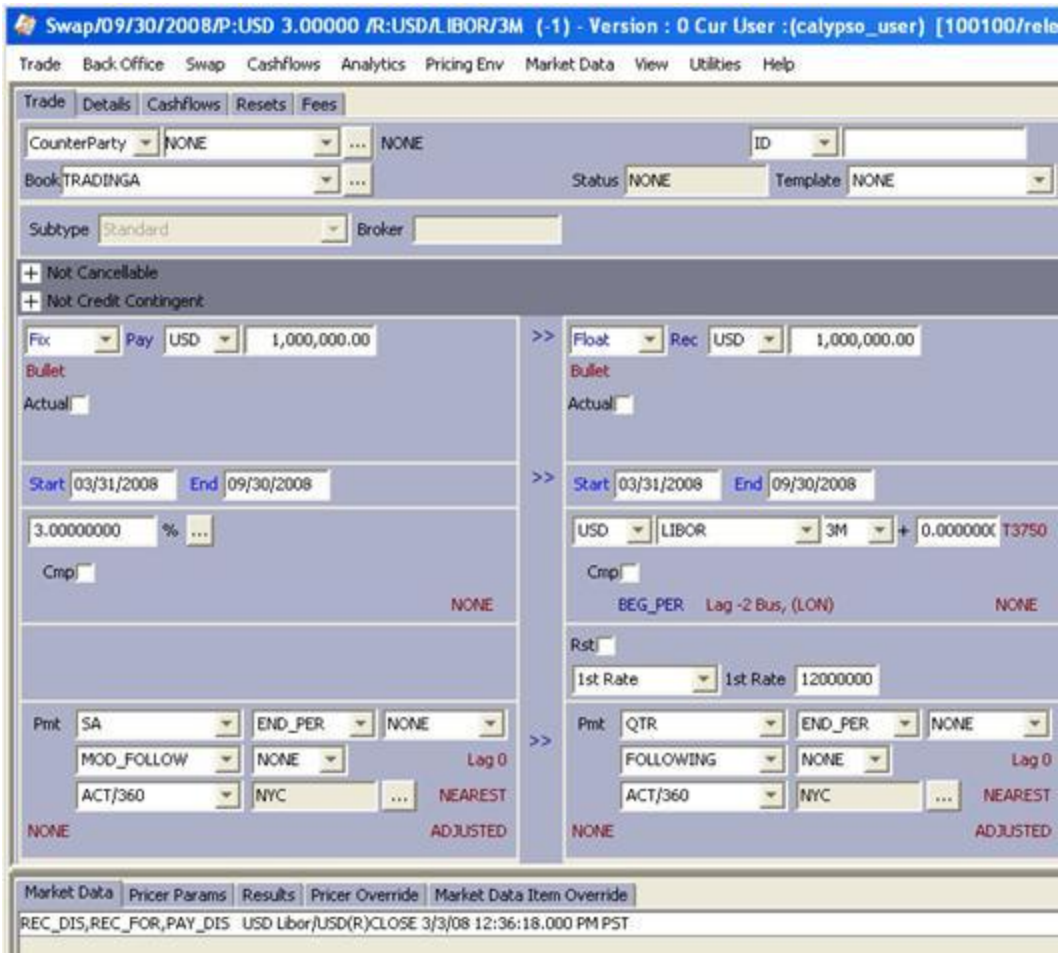
You can modify the solver variables and details as needed.

TRADE LIFECYCLE

» You can terminate a swap using Back Office > Terminate

» You can reset the floating rates of the swap using Main Entry > Trade Lifecycle > Reset > Rate Reset, or using the RATE_RESET scheduled task

4.1 SAMPLE VANILLA SWAP TRADE



This document describes all the fields of the Swap worksheet. You can click the links below for information on capturing specific types of swaps:

- Brazilian Swap Trades
- Cancelable Swap Trades
- Capped Swap Trades
- Chilean Camara Swap Trades
- CMS Swap Trades
- Credit Contingent Swap Trades
- Cross Currency Swap Trades
- Exotic Swap Trades
- Extendible Swap Trades
- In Arrear Swap Trades
- Inflation Swap Trades
- Non Deliverable Swap Trades
- OIS Swap Trades
- Quanto Swap Trades

4.1.1 Field Description

The fields of the standard swap worksheet are defined here.

Trade Details

Fields	Description
Role/Cpty	The first two fields of the worksheet identify the trade counterparty. The first field identifies the trade counterparty's role. The default role is specified using Utilities > Set Default Role. However, you can change it as applicable. You can select a legal entity of specified role from the second field provided you have setup favorite counterparties. You can also type in a character to display the favorite counterparties that start with that character. Favorite counterparties are specified using Utilities > Configure Favorite Counterparties. Otherwise, click ... to select a legal entity of specified role from the Legal Entity Chooser. You can also type [Ctrl-F] to invoke the Legal Entity Chooser, or directly enter a Legal Entity short name.
Book	Trading book to which the trade belongs. Defaults to the book selected in the User Defaults. You can modify as applicable. You can select a book provided you have setup favorite books. Favorite books are specified using Utilities > Configure Favorite Books. Otherwise, click ... to select a book. The owner of the book (a processing organization) identifies your side of the trade.
Id **Ext Ref** **Int Ref**	Unique identification number of the trade. The trade id is automatically assigned by the system when the trade is saved. You can load an existing trade by typing the trade id into this field, and pressing [Enter]. You can also display the internal reference or external reference. The default trade reference to be displayed can be selected in the User Defaults. The internal reference and external reference can be set in the Details panel of the trade worksheet.
Status	Current status of the trade. The status is automatically assigned by the system based on the workflow configuration.

Fields	Description
	The status will change over the lifetime of the trade according to the workflow configuration and the actions performed on the trade.
Template	You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable. If you setup favorite templates, only the favorite templates will be available for selection. You can setup favorite templates using Utilities > Configure Favorite Templates. In some trade window, you can click ... to setup favorite templates.
Subtype	The following subtypes are set by the system based on the type of swap being captured: Arrear, CMS, CMT, Exotic, Standard, RangeFloater. You can set pricers and market data by swap subtype.
Broker	Displays the broker if a broker fee is captured in the Fees panel.

Swap Details

You can begin by entering the trade details in either the left or right panel. Note that as you enter each value, the application copies it to the other leg if applicable. There are three direction signs in the middle of the worksheet. Double-click the signs to toggle between:

- **>>** Copy to the right panel.
- **<<** Copy to the left panel.
- **---** Turn off copying.

Choose Swap > Save Panel Directions to save the settings.

Fields	Description
Fix/Float/Exotic	Select Fix to define a fixed leg, Float to define a floating leg, or Exotic to define a structured swap. You can also select an exotic structure type if you have defined any. See Main Entry > Configuration > Product > Structure Type Creator for details. • For details on defining a fixed leg, see Fixed Leg below. • For details on defining a floating leg, see Floating Leg below. • For details on defining structured swaps, see Capturing Exotic Swap Trades.
Pay/Receive	Direction of the trade from the book's perspective. Double-click the Pay label to change to Rec as applicable.  The adjacent field defaults to the currency selected in the User Defaults. You can select another currency as needed. Enter the principal amount in the adjacent field. You can use shortcuts, for example enter "10m" for 10,000,000.
Actual	Check the Actual checkbox to indicate that the principal amount will be exchanged, otherwise there is no exchange of principal.  » Check the boxes as applicable to exchange the initial principal, the final principal, or the amortized principal.
Bullet	Double-click the Bullet label to define the amortization structure of the principal. It brings up the Swap Detail window. You can set amortization details in the Amortization and Accrual panel - Help is available from that window.
Start **End**	Enter the start and end dates of the swap. The start date defaults to the spot date of the selected currency. You can modify it as needed. You can use shortcuts, for example enter "1y" for one year, [Ctrl+N] for today, etc.

Fields	Description
	Note that the system uses the payment calendar to calculate the spot date. For a fixed leg, it is the payment calendar of the selected currency. For a floating leg, it is the payment calendar of the selected index. You can modify it as needed in the Payment Details area. A date that appears with a red background indicates a non-business day. Hit [+] or [-] to move the date one day forward or backward, respectively.

Fixed Leg

Fields	Description
Rate	Enter the fixed interest rate in percentage. The number of decimals defaults to the rate decimals specified in the User Defaults, up to 8 decimals. You can also click **...** to define a fixed rate schedule, and specify the payment details.  » Select a date rule from the Coupon Date Rule field to generate the schedule using the date rule, or select a frequency from the Frequency field to generate the schedule using a frequency. » Enter start and end dates. » Select date roll information, daycount convention, holiday calendars, and the accrual method. » Then click **Generate Schedule** to generate the schedule and enter the rates. You can also click to add rows to enter specific dates. » Click **Save** to save the schedule. The payment details are updated on the trade worksheet.
Cmp	Check the Cmp checkbox to enable interest compounding.  » Select the compounding frequency from the adjacent field. The compounding frequency must be more frequent than the payment frequency. » Double-click the Flat label to toggle between: – Flat — Flat compounding. – Spread — Does not apply to fixed rates, only to floating rates. – SimpleSpread - Does not apply to fixed rates, only to floating rates. – NoCmp — A cashflow is created at the compounding period without actually compounding the interest. There is no compounding otherwise.
NONE **(payout formula)**	This feature is obsolete. You should create an exotic structure instead.

Floating Leg

Fields	Description
Reference Index	Select the reference index. The reference index is defined by a currency, rate index, tenor and source. The currency and rate index default to the currency and default index selected in User Defaults. The tenor and source default to the first tenor and source available for that rate index. Rate indices are created using Main Entry > Configuration > Interest Rates > Rate Index Definitions. You can modify the default values as needed. You can enter a spread over the rate value in the field adjacent to the tenor. If you double-click the source label (T3750 in this example), it brings up the Product Detail window. You can define a spread schedule in the Index and Resets panel. Help is available from that window.
Cmp	Check the Cmp checkbox to enable interest compounding.  » Select the compounding frequency from the adjacent field. The compounding frequency must be more frequent than the payment frequency. When you select a DLY compounding frequency for a rate index that is not setup for daily compounding, the DailyCompound calculator is used. See Capturing OIS Trades for details on daily compounding. Difference between LUN and LUN(R), BIWK and BIWK(R), WK and WK(R). For a 3M swap paying MONTHLY compounding WEEKLY: – Original method splits the 90 days into periods of 7 days and puts the remaining as STUB. – Regular (R) method splits the 90 days into 3 periods of 30 days each, and then splits the 30 day periods into periods of 7 days thus leaving stubs on each coupon period. » Double-click the Flat label to toggle between: – Flat - Flat compounding - The spread is added after the compounding is computed if any. Current period interest is calculated using floating rate plus spread. But compound interest is calculated using floating rate only (and the spread is not added). – Spread - The interest compounds at the rate value plus spread. Double-click the spread value to enter it. It brings up the Product Detail window. You can set the spread value in the Index and Resets panel. It can be a fixed value or a spread schedule. Help is available from that window. – SimpleSpread - This involves compounding the Floating Rate but treating the spread as simple interest. In other words,the floating rate interest is earned at the end of a period but not the spread (only the floating rate is added back into principal). The spread is then calculated on the principal for the entire calculation period without compounding. – NoCmp - A cashflow is created at the compounding period without actually compounding the interest. The daily rate resets for the floating rate are used

Fields	Description
	to calculate the simple interest everyday and summed to find the total interest for the period. There is no compounding otherwise.
BEG_PER/END_PER	Double-click the BEG_PER label to switch to END_PER as needed: • BEG_PER indicates that the reset occurs at the beginning of the reset period. • END_PER indicates that the reset occurs at the end of the reset period – The trade becomes "in arrear", and the subtype is set to "Arrear".
Lag	Double-click the Lag label to define the lag between the actual reset date and the beginning or end of the reset period. It brings up the Product Detail window. You can set lag details in the Index and Resets panel. Help is available from that window.
NONE **(payout formula)**	This feature is obsolete. You should create an exotic structure instead.

Exotic Leg Details

For details on defining structured swaps, see Capturing Exotic Swap Trades.

Fields	Description
Formula	Click **Structured Window** to define the coupon formula and / or notional formula. Help is available from that window. When the formula is applied, it is displayed in the exotic leg.

Rate Reset Details

Fields	Description
Rst	Check the Rst checkbox to sample resets at a frequency different from the payment frequency. Otherwise, the resets are sampled at the payment frequency.  » Select the sampling frequency from the adjacent field. When the sampling frequency is more frequent that the payment frequency, you can define the weight of the resets, and the duration of the sampling period.

Weight

Double-click the Equal label to toggle between:

- Equal — Resets within the sampling period are equally weighted.
- Weighted — Resets are weighted according to the number of days for which they apply. For example, if a reset occurs on a Monday, the weight is 1 day; if it occurs on a Friday, the weight is 3 days (Friday, Saturday and Sunday).
- Simple — The reset rate is calculated as the mean rate within the sampling period.
- Cutoff Adj. — Calculates weighting up to cutoff date. The cutoff date is set as a number of days from the last sample period's end date. Double-click any red label to set the cutoff lag in the CutOff Lag field of the Index and Resets panel.
- Cutoff Weekly — If you specify a reset cutoff, the last sample period will be "end date – reset cutoff". Double-click any red label to set the cutoff lag in the CutOff Lag field of the Index and Resets panel.

Duration

Double-click the Match label to toggle between:

- Match — Rates are sampled over the entire averaging period. You can double-click the ", , 0" label to define resets' effective day and a cutoff lag. It brings up the Product Detail window. You can set reset details in the Index and Resets panel. Help is available from that window.
- Custom — Rates are sampled over a user-defined period. Double-click the "0, , 0" label to define the number of days of the sampling period, as well as resets'

Fields	Description
	effective day and a cutoff lag. It brings up the Product Detail window. You can set reset details in the Index and Resets panel. Help is available from that window. [NOTE: The effective day of the resets only applies to weekly and monthly sampling (weekly: day of the week, monthly: day of the month)]
NONE / 1st Rate	Select "1st Rate" to set the rate for the first reset period if known.  » Enter the first reset rate in the "1st Rate" field. Otherwise, the rate will be set through the reset process.

Payment Details

The payment details allow generating the cashflows.

[**NOTE**: When you define a fixed rate schedule, the payment details are defined as well, and the fields below are set accordingly. If you modify the fields below, make sure to regenerate the fixed rate schedule]

Fields	Description
Pmt	Select the payment frequency. You can also select a date rule to determine the payment dates and the interest dates. Double-click the "Lag 0" label. It brings up the Product Detail window. You can select payment and coupon date rules in the Date Rules panel. Help is available from that window. You can add custom frequencies to the "frequency" domain in the form of tenors like <number>D, <number>W, <number>M, or <number>Y. The tenor is case sensitive. D, W, M, or Y should be entered using uppercase.
END_PER/BEG_PER Interest Method	Select END_PER if the payment occurs at the end of the payment period, or BEG_PER if the payment occurs at the beginning of the payment period. ***END_PER*** Select EXP or ACC for an exponential interest calculation from the adjacent field, or select NONE otherwise. ACC only appears if the floating rate is an inflation rate. Interest = Notional * ((1 + Rate)^t[n] - 1). • For EXP: t[n] = Current Coupon Period n • For ACC: t[n] = Total Period from Coupon 1 through n. ***BEG_PER*** You can select one of the following discount methods from the adjacent field. • NONE – No discount. • DISC • FWD_DISC - Same as FIX_RATE_DISC for FRAs – Interest at beginning of period = interest amount at end of period /(1 + Fixed Rate * daycount/basis)). • FWD_DISC_FRA – Same as FWD_DISC for FRAs - Discounts the payment/receipt amount from the end date to the start date using the fixing rate.
Date Roll	Select the date roll convention to roll the payment dates when they fall on business days. The payment calendar is used to determine business days. Date roll conventions are described under Main Entry > Help > Date Roll Conventions.
Roll Day	Select a date roll adjustment. • NONE — The date roll convention is not adjusted. • DAY — Enter a fixed day of the month to which the date will be rolled. For example, entering "5" forces the payment date to be on the fifth calendar day of the month. Entering "31" indicates the last day of the month, even for months with fewer than 31 days - The selection changes to EOM.

Fields	Description
	• IMM — Applies the IMM_WED date roll convention. • EOM — The last day of the month, regardless of the number of days in the month.
Lag	Double-click the "Lag 0" label to specify the number of days between the interest date and the payment date. It brings up the Product Detail window. You can set payment lag details in the Date Rules panel. Help is available from that window.
Daycount	Select the day count convention to determine the number of days in the payment periods. Daycount conventions are described under Main Entry > Help > Day-Count Conventions.
Payment Calendar	Click ... to select payment calendars. They are used to determine business days.
NEAREST **(rounding method)**	Double-click the NEAREST label to define the rounding method. It brings up the Product Details window. You can set rounding details in the Rounding panel. Help is available from that window.
NONE **(stub periods)**	Double-click the NONE label to define or override stub period settings. It brings up the Product Details window. You can set stub details in the Stub Periods panel. Help is available from that window. The system automatically creates the stub periods when needed if Product > Automatically Adjusting Stub, or Product > Warn before Adjusting Stub is checked. Otherwise, you can define stub periods manually in this panel.
ADJUSTED **(accrual period)**	Double-click the ADJUSTED label to define how the accrual period is adjusted on non-business days. It brings up the Product Detail window. You can set accrual details in the Amortization and Accrual panel. Help is available from that window.

5. Capturing Brazilian Swap Trades

Brazilian swap trades are swap trades on the Brazilian currency - They require additional setup.

Brazilian Swaps Quick Reference

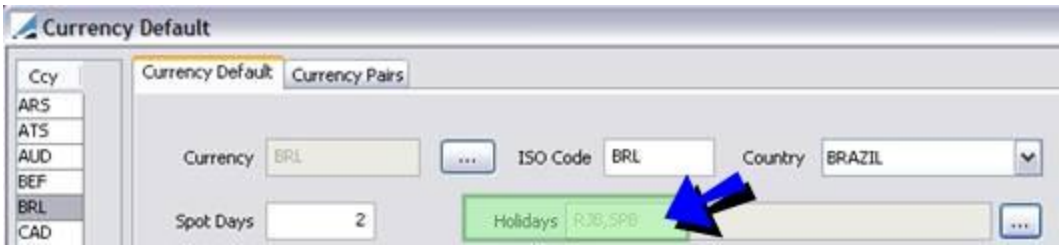
- Make sure that the BRL currency (Brazilian Real) is defined in your system using Main Entry > Configuration > Definitions > Currency Definitions
- Define Brazilian calendars using Main Entry > Configuration > Definitions > Calendar Definitions
- Define the CDI rate index using Main Entry > Configuration > Interest Rates > Rate Index Definitions
- Enter Brazilian swap details in the Trade panel
- Then enter more trade details as described in Capturing Swap Trades

5.1 Defining Brazilian Calendars

Choose Main Entry > Configuration > Definitions > Calendar Definitions, and add the holiday codes RJB and SPB.

Then set the environment property BU252_HOLIDAYS to the list of comma separated calendars to be used in the BU/252 daycount calculation. The BU/252 daycount convention is used in the reference index - See below.

You can now select the holiday calendars on the BRL currency.



5.2 Defining the CDI Rate Index

The CDI rate index is the most significant index in Brazil. The interest calculation associated with this rate index is commonly exponentially compounded unlike most other currencies.

Choose Main Entry > Configuration > Interest Rates > Rate Index Definitions.

The Rate Definition panel is selected by default.

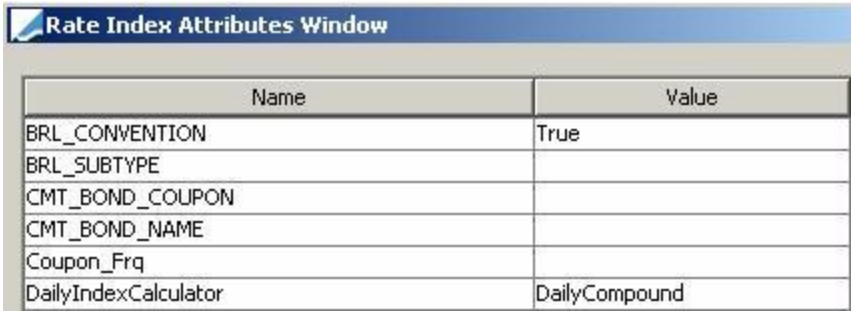
» Select the rate index from the Index field, and enter its details.

You can click **Add** to add it, if it does not exist.

Select the daycount convention BU/252.

» Click **Attributes** and set the following attributes. It brings up the Rate Index Attributes window. You can click ... in the Rate Index Attributes window to add the attribute if it does not exist.

Note that the attributes and their values are case sensitive.



- BRL_CONVENTION = True

  It uses Brazilian conventions for reset, and sets the trade subtype to "BRL". If you do not want to use Brazilian conventions for reset but still set the trade subtype to "BRL", you can set BRL_CONVENTION = False (or not set), and BRL_SUBTYPE = True.
- BRL_SUBTYPE = True (Only needed if BRL_CONVENTION = False and you want to set the trade's subtype to "BRL").
- DailyIndexCalculator = DailyCompound

» Click **Save** to save your changes.

» Then select the Tenors panel to define tenors for the rate index, and click **Save** to save your changes.

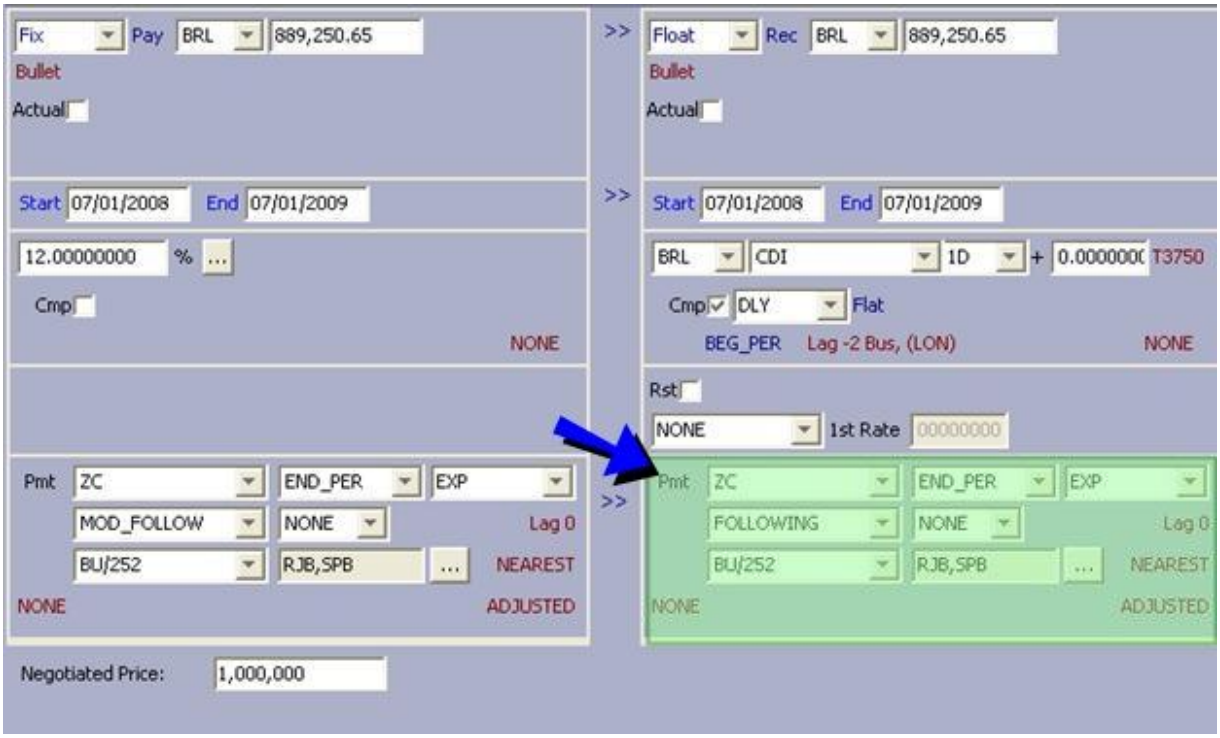
5.2.1 Daycount Convention

Interest accrues using the Business/Business daycount convention BU/252. The daycount fraction is the number of business days in the period divided by 252. The calendars used to determine business days must be set on the environment property BU252_HOLIDAYS, as seen above.

5.3 Capturing Brazilian Swap Trades

Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

A Brazilian swap on the CDI rate index is averaging daily, and has exponential interest calculation.



- Select EXP in the payment details for exponential interest calculation.
- Select the daycount convention BU/252.
- For overnight swap trades on a discount basis, check the menu item Swap > Discount. If the payment frequency is set to ZC, the field Negotiated Price will appear.

  When you enter a value in that field, the principal of the legs will be updated according to the following formulas:

  PV = FV / (1 + Fixed Rate) ^ Period for exponential interest

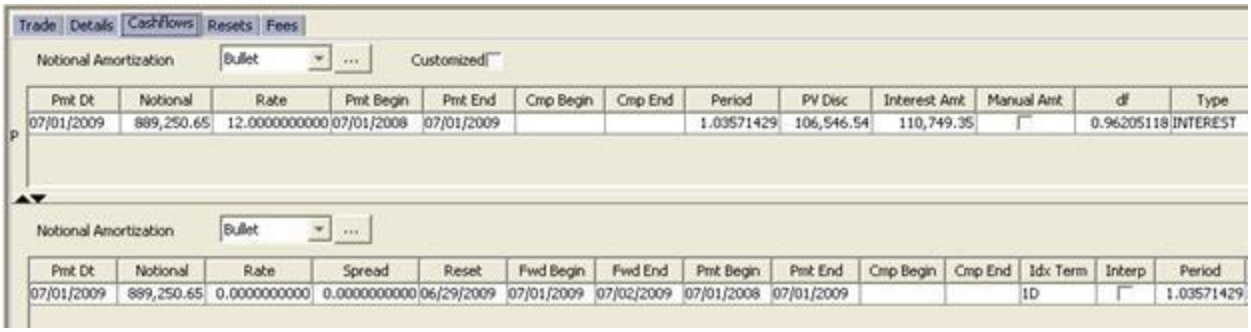
  PV = FV / (1 + Fixed Rate x Period) for simple interest where Period = (Swap Start, Start End, Fixed Leg Pay Daycount)

  i.e. PV + Interest from Fixed Leg Cashflow = FV.

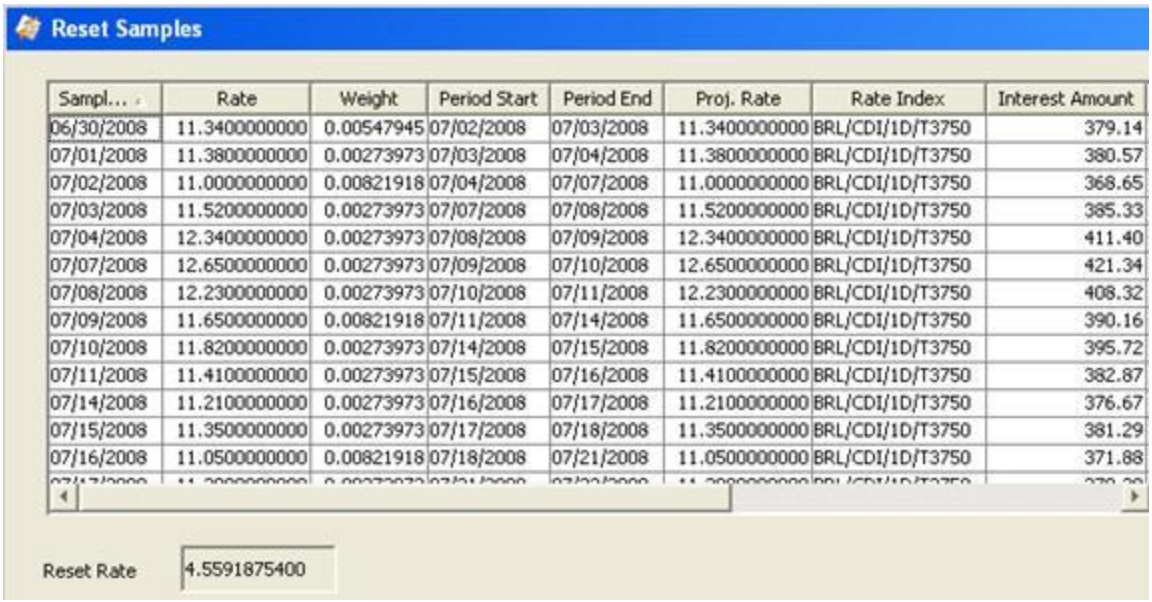
[NOTE: The trade subtype is set to "BRL" if the rate index attribute BRL_CONVENTION = True or the rate index attribute BRL_SUBTYPE = True - The pricer defaults to BRLSwap]

5.4 Displaying the Cashflows

Select the Cashflows panel for displaying the cashflows.



» Right-click a cashflow and choose Sample Dts to display the compounding periods. It brings up the Reset Samples window.

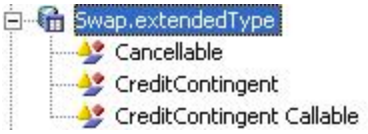


You can click **Apply** to compute the reset rate over the period, and click **Reset** to set the rate on the selected cashflow.

6. CAPTURING CANCELABLE SWAP TRADES

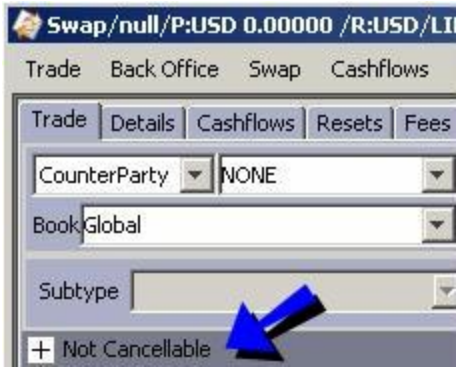
A cancelable swap contains an underlying swap with the option to cancel it in the future.

To enable the Cancelable feature, create the domain "Swap.extendedType" and add the Cancellable value to that domain. Note that domain values are case sensitive.



Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

The Cancellable area is added to the swap worksheet. The trade is marked "Not Cancellable" by default.



Click + to view the Cancelable details.

» Check the Cancellable checkbox to make the trade cancelable, then specify the cancelable details described below.

» Then enter more trade details as described in Capturing Swap Trades.

» You can cancel the trade using Back Office > Exercise, or Main Entry > Trade Lifecycle > Exercise & Expiration > Option Exercise - Help is available from that window.

Cancelable Details

Fields	Description
Cancellable	Check the Cancellable checkbox to indicate that the trade is cancelable, or uncheck otherwise.
BUY/SELL	Select BUY or SELL, the direction of the trade from the book's perspective.
Call Type	Select European, Bermudan, or American. See below for details.

European

The trade can only be canceled on the expiration date.

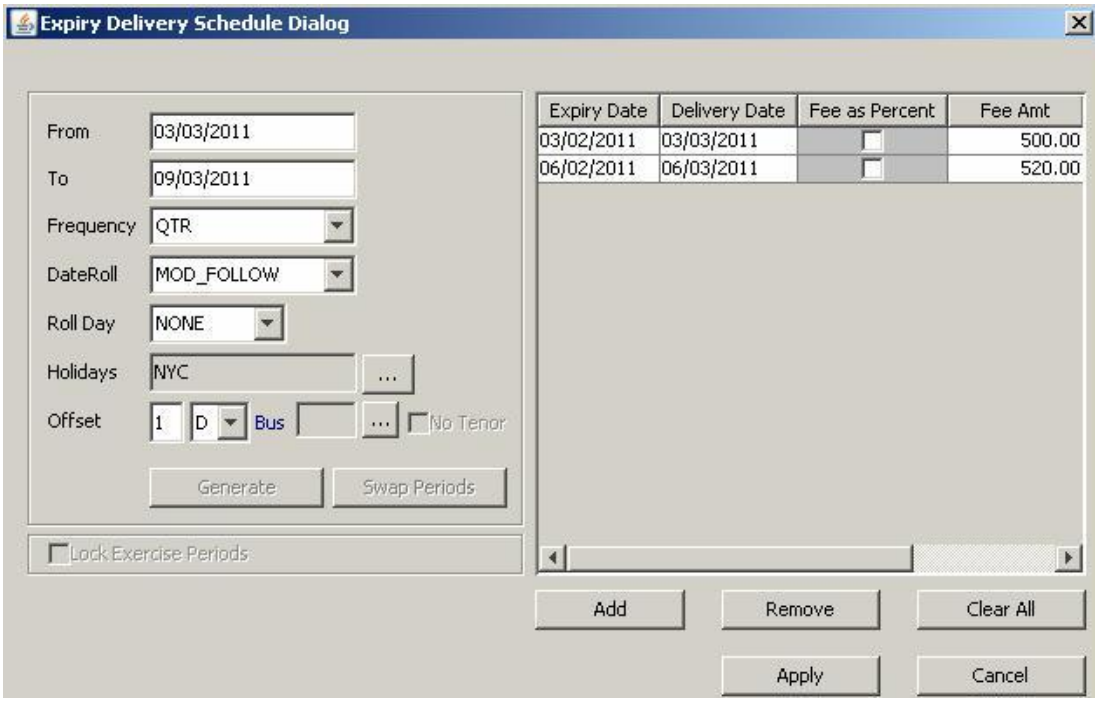
- Enter the expiration date in the Exp Dt field. If you enter a non-business day, it will automatically move to the previous business day.
- Click **Expiry Time** to enter the expiration time, and select the corresponding timezone and holiday calendars.
- The delivery date defaults to the spot date for the selected currency. You can modify as needed. You can also enter the number of lag days in the adjacent field and select whether the lag days are business days or calendar days.
- Enter the fee amount in the Fee field, and select the fee currency from the adjacent field.

  Or you can enter a percentage to compute the fee - Check the "as percent" checkbox, and enter a percentage in the adjacent field.

Bermudan

The trade can be canceled according to a user-defined schedule.

- The Exp Dt and Del Dt fields in the Trade panel are not editable.
- Click **Expiry Time** to enter the expiration time, and select the corresponding timezone and holiday calendars.
- Click **Exp/Del Schedule** to define the cancellation schedule.



Enter From and To dates, select a frequency, a date roll and holiday calendars (for the expiration date and for the delivery date).

Enter a number of lag days to compute the delivery date based on the actual call date. And select Bus if the lag days are business days, or Cal for calendar days.

Then click **Generate** to generate the schedule.

You can also click **Add** to add specific dates.

You can enter the fees in the delivery schedule in percentage or in amounts. The Fee currency is selected in the "Cancellable" area.

Then click **Apply** to save the schedule.

» Select the Fee currency.

American

The trade can be canceled within a date range.

» Enter the expiration date in the Exp Dt field. Enter the expiration time and select the timezone from the adjacent fields.

» Click **Expiry Time** to enter the expiration time, and select the corresponding timezone and holiday calendars.

» Enter the first exercise date in the First Ex Dt field. The trade can be canceled between the first exercise date and the expiration date.

» The delivery date defaults to the spot date for the selected currency. You can modify as needed. You can also enter the number of lag days in the adjacent field and select whether the lag days are business days or calendar days.

» You can click **...** next to the Fee field to define a fee schedule.

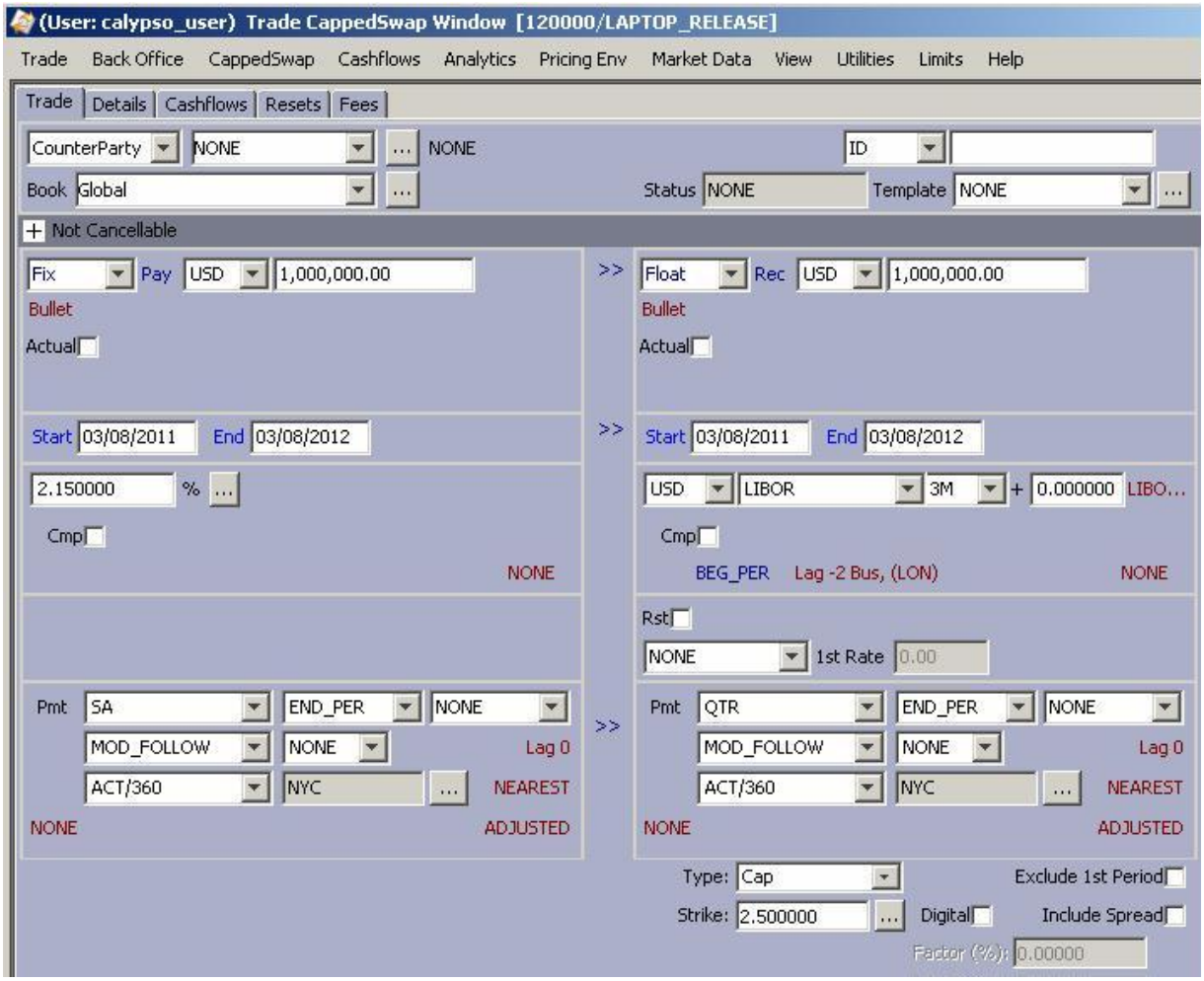
7. CAPTURING CAPPED SWAP TRADES

A Capped Swap is a swap with a cap floor on the floating leg. The trade can be fixed-floating or floating-floating.

Choose Trade > Interest Rates > Capped Swap to open the Capped Swap worksheet, from Main Entry or from the Calypso Workstation.

You can also choose Trade > Interest Rates > Swap to open the Swap worksheet, and define an exotic structure for the cap / floor on the swap.

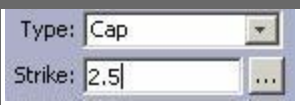
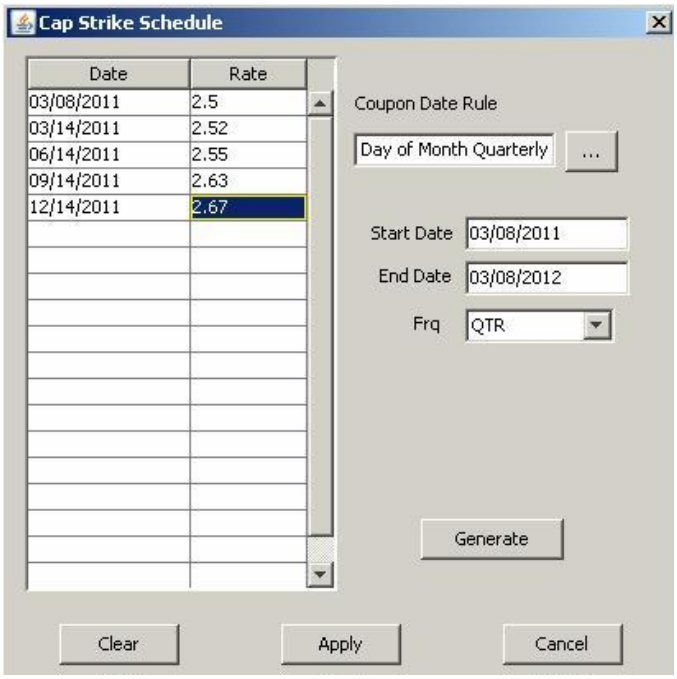
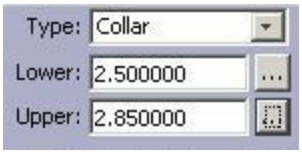
7.1 SAMPLE TRADE

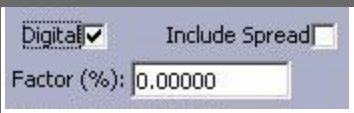


» Enter the fields described below to define the cap / floor.

» Then enter more trade details as described in Capturing Swap Trades.

Fields	Description
Type	Select the type of cap floor: Cap, Floor, Collar, Flooridor, or Strangle.
Exclude 1st Period	Check the "Exclude First" checkbox to exclude the first caplet from the cashflows. When doing a Copy/Paste Cap to Swap: If "Exclude First" is checked, copying the Cap to a Swap will ignore that flag. In order to copy the flag, set the environment property OLD_CAPTOSWAP_PASTE to true.
Strike	Only appears for trade types Cap and Floor.

Fields	Description
	 » Enter the strike rate. You can also click **...** to define a strike schedule.  » Click **...** next to the Coupon Date Rule field to select a date rule. In this case, the date rule will be used to determine the schedule and the frequency will be ignored. Or select the schedule frequency from the Frq field. » Enter the start and end dates for the schedule in the Start Date and End Date fields. » Click **Generate** to generate the schedule. Double-click a rate cell to enter the strike for the corresponding date. » Then click **Apply** to apply to the strike schedule.
Upper **Lower**	Only appears for trade type Collar.  » Enter the lower and upper strike rates. You can also click **...** to define a lower schedule, and an upper schedule.
Digital	This only applies to cap, floor, and collar. You can check the Digital checkbox so that you can specify payoff details.

Fields	Description
	 » Enter a factor percentage for calculating the caplet payoffs. Each payoff uses this factor. However, you can enter variable digital factors for some or all caplets in the trade. In the Cashflows panel, check the Customized checkbox, and edit the Payoff Factor(%) column for each individual caplet. The payoff for a digital caplet will be calculated as follows: If Reset Rate > Strike, payoff = Notional * Period * Factor (Payoff Spread). Otherwise, payoff = Zero. » Check the "Include Spread" checkbox to include the spread in the payoff.

8. Capturing Chilean Camara Swap Trades

Camara swap trades are swap trades on the Chilean ICP rate indices in Chilean Peso and Chilean UF - They require additional setup.

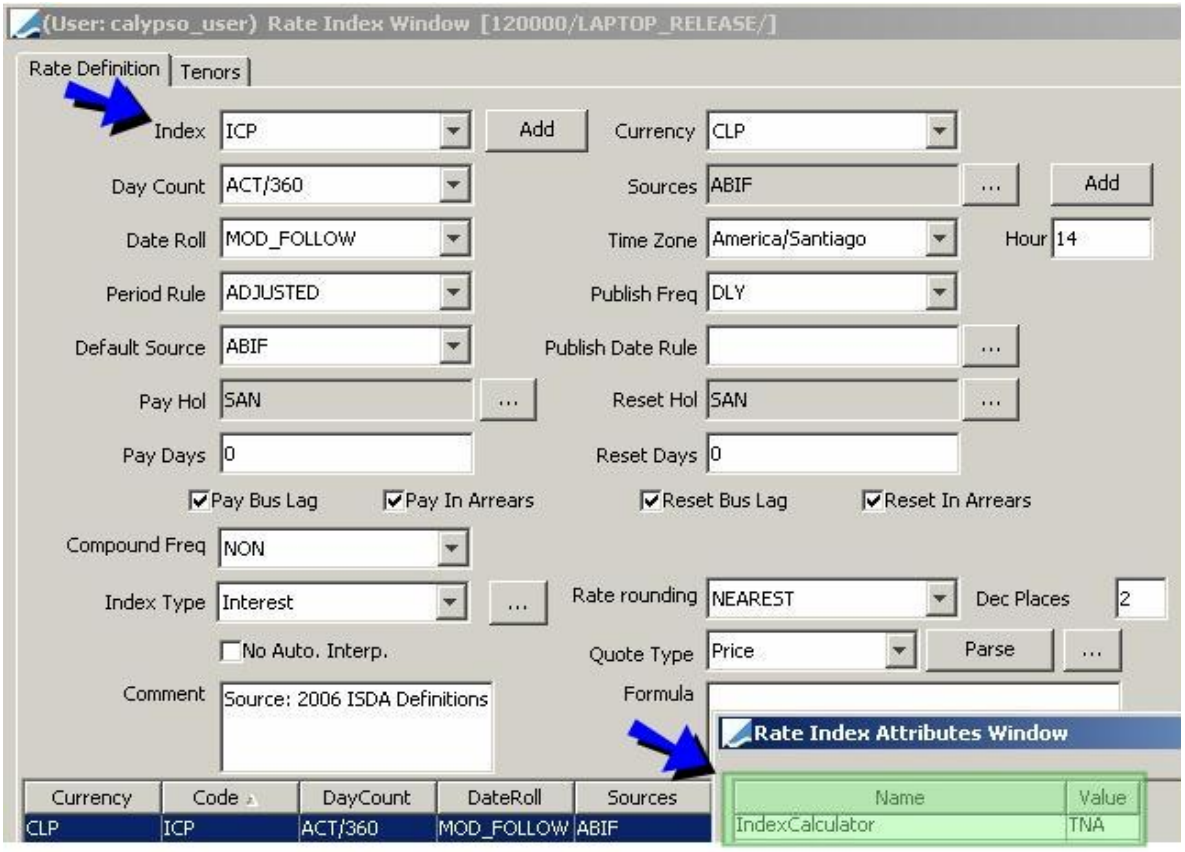
Camara Swaps Quick Reference

- Make sure the CLP currency (Chilean Peso) and CLF currency (Chilean UF) are defined in your system using Main Entry > Configuration > Definitions > Currency Definitions
- Define the ICP rate index on CLP and the ICP rate index on CLF using Main Entry > Configuration > Interest Rates > Rate Index Definitions
- Define underlying swaps for curve generation
- Enter Chilean swap details in the Trade panel
- Then enter more trade details as described in Capturing Swap Trades

8.1 Defining the ICP Rate Indices

Choose Main Entry > Configuration > Interest Rates > Rate Index Definitions.

ICP on CLP Setup



The Rate Definition panel is selected by default.

» Click **Add** to add the index name, ICP for example.

» Click **Attributes** and set the following attribute. It brings up the Rate Index Attributes window. You can click ... in the Rate Index Attributes window to add the attribute if it does not exist.

Note that the attributes and their values are case sensitive.

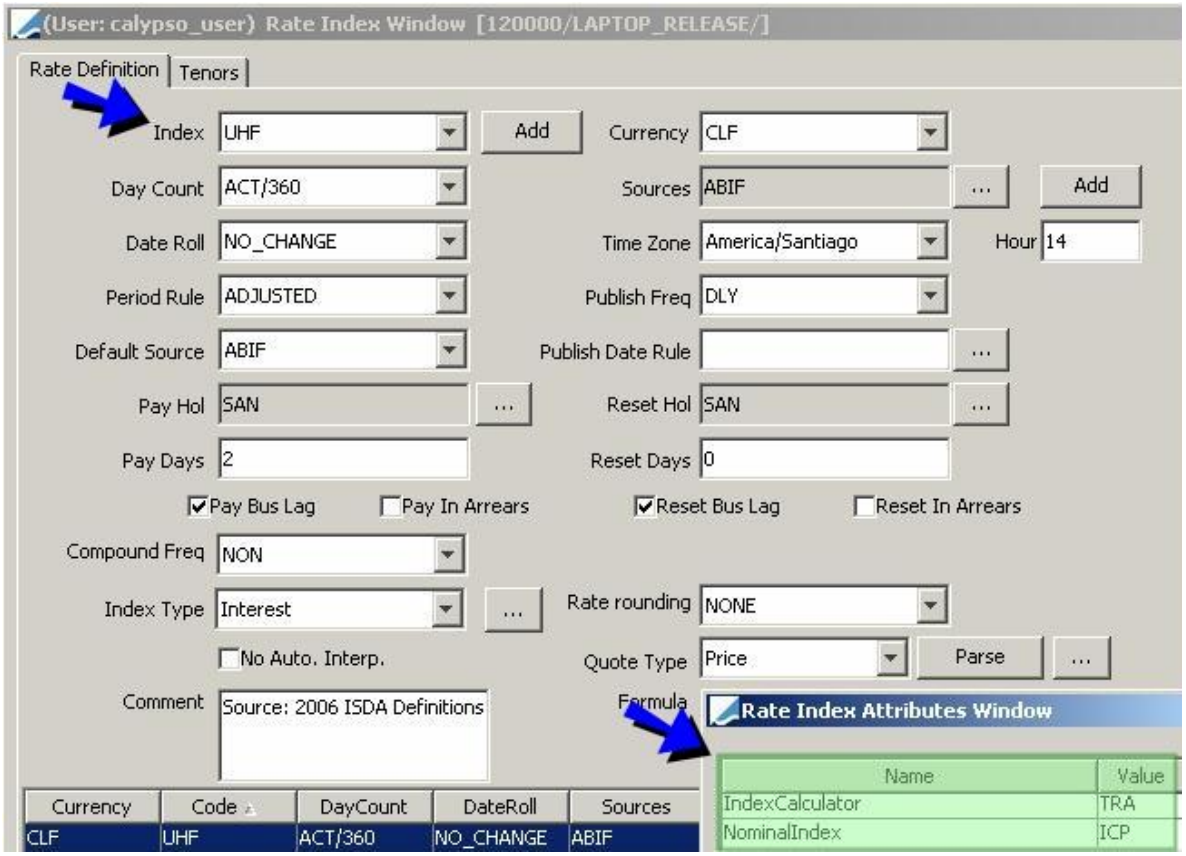
- IndexCalculator = TNA

» Click **Save** to save your changes.

» Then select the Tenors panel to define the 1D tenor for the rate index, and click **Save** to save your changes.

TNA = Round(((ICP1 / ICP0) - 1) * 36000 / (T1-T0);2)
Where ICP1 – value at T1, and ICP0 = value at T0
T1= end calculation period
T0 = start calculation period

ICP on CLF Setup



The Rate Definition panel is selected by default.

» Click **Add** to add the index name, UHF for example.

» Click **Attributes** and set the following attributes. It brings up the Rate Index Attributes window. You can click ... in the Rate Index Attributes window to add the attribute if it does not exist.

Note that the attributes and their values are case sensitive.

- IndexCalculator = TRA

- NominalIndex = Rate index name of the ICP rate index in CLP (TRA is derived from TNA and the CLF/CLP rates) = ICP in this example

» Click **Save** to save your changes.

» Then select the Tenors panel to define the 1D tenor for the rate index, and click **Save** to save your changes.

$$TRA^{**} = \left[\frac{\left(\frac{TNA^{*}(T1-T0)}{36000} - \left(\frac{UF_1}{UF_0} - 1 \right) \right)}{\left(\frac{UF_1}{UF_0} \right)} \right] * \frac{36000}{(T1-T0)}$$

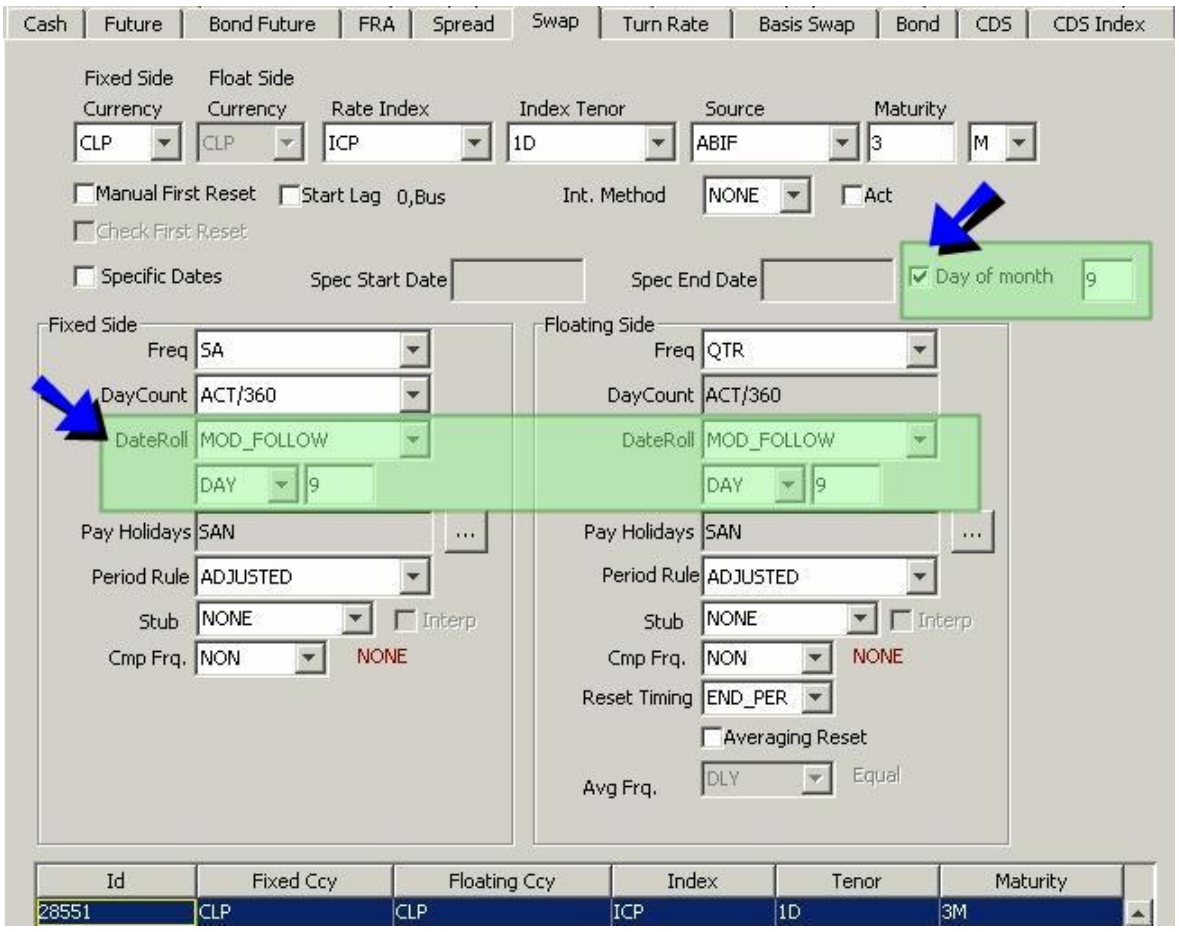
Where UF1=value at T1 and UF0 = value at T0

T1= end calculation period

T0 = start calculation period

8.2 Sample Curve Underlying Swap

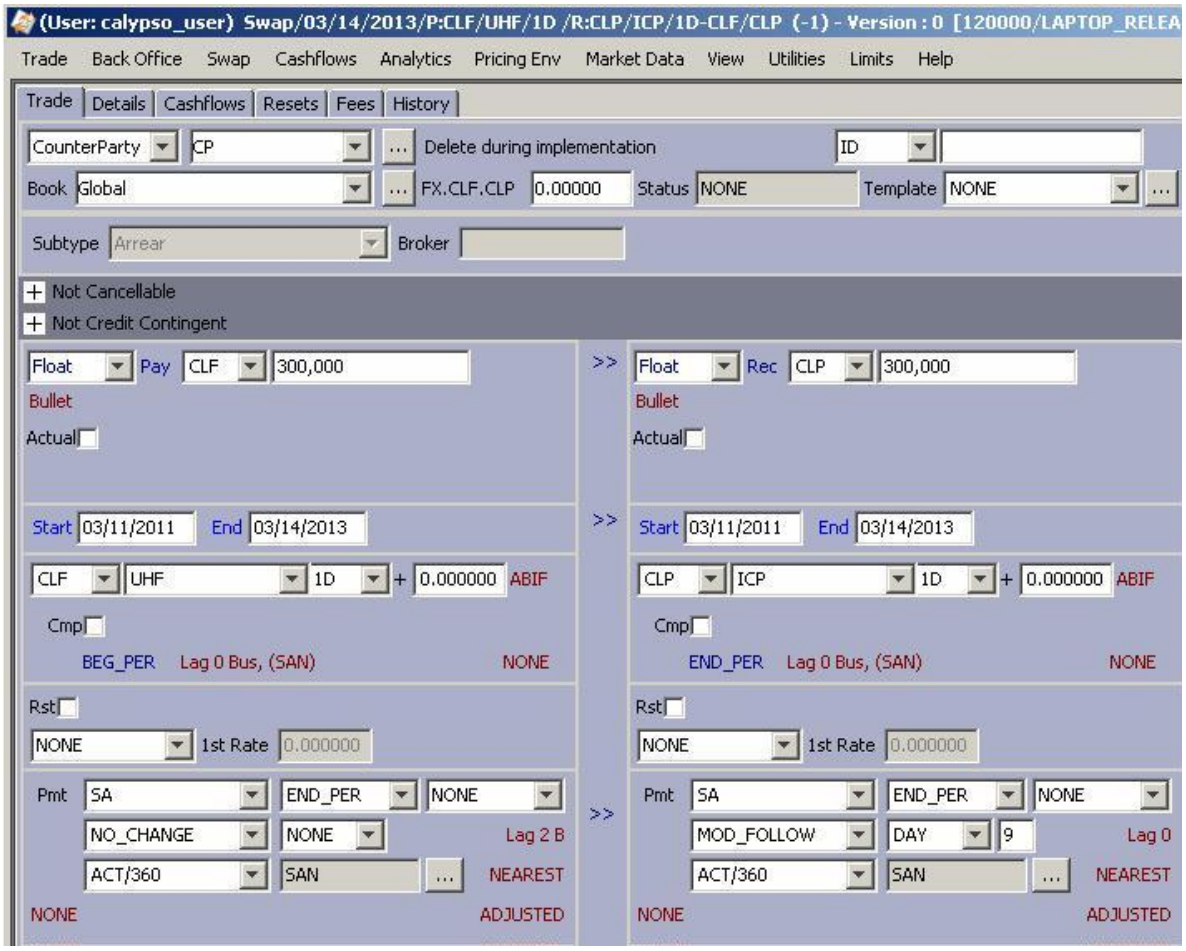
You can define the underlyings from the Zero Curve window.



The swapsare defined with payment on the 9th day, and with termination on the 9th of the termination month.

8.3 CAPTURING CAMARA SWAP TRADES

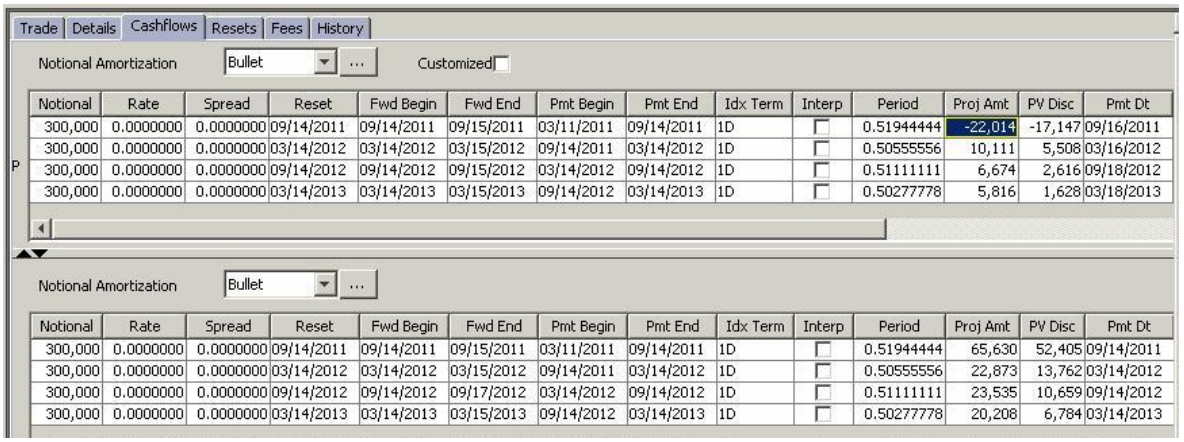
Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.



» Choose the indices, and set up the swap to match the term sheet.

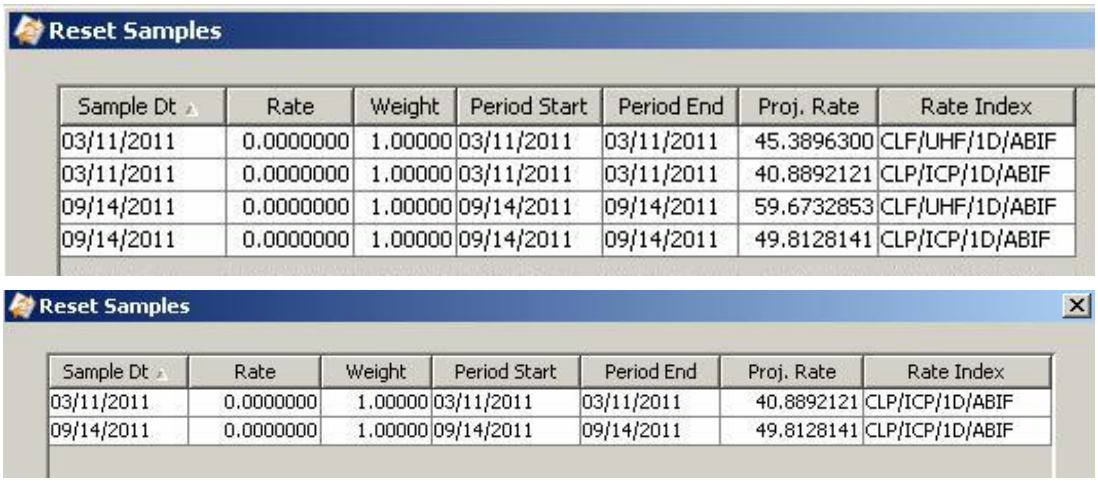
Cashflows

Select the Cashflows panel for displaying the cashflows.



» Right-click a cashflow and choose Sample Dts to display the rates used in the calculations.It brings up the Reset Samples window.

The TRA index will display four values, while the TNA index will display two. Known rates/values are from the quote set. Forecast rates are the one-day forward rates.



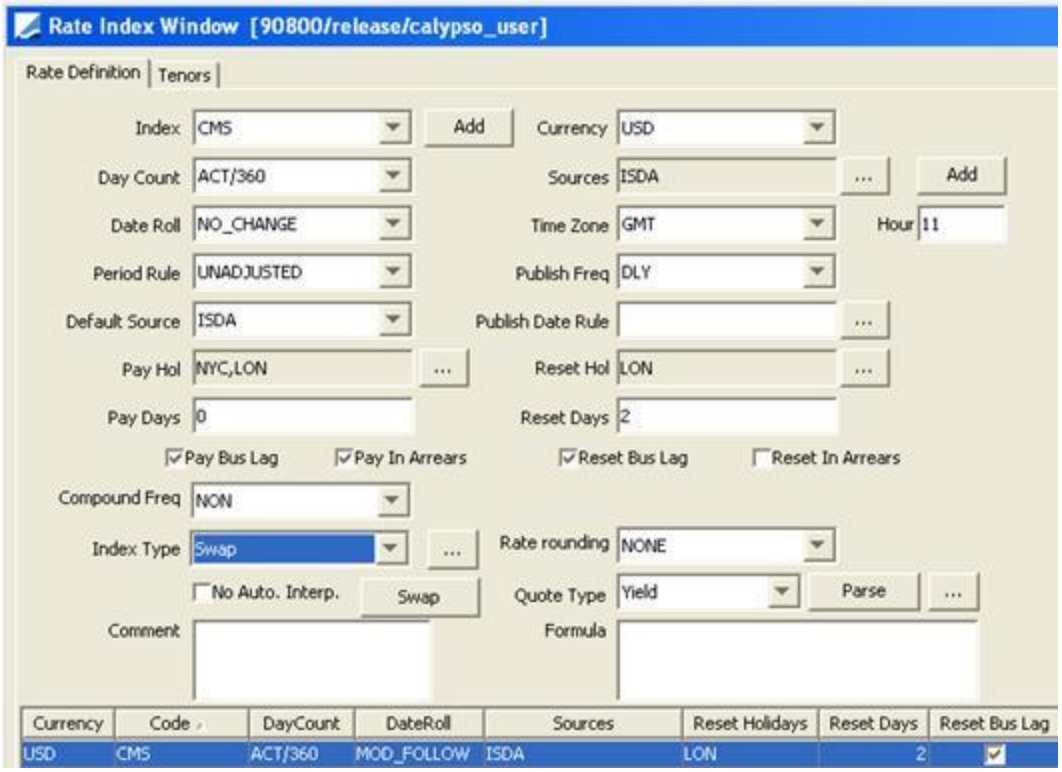
9. CAPTURING CMS (CONSTANT MATURITY SWAP) TRADES

CMS Quick Reference

- Define the CMS rate index using Main Entry > Configuration > Interest Rates > Rate Index Definitions
- Define a generic bond using Main Entry > Configuration > Fixed Income > Default (only if you are using PricerSwap)
- Enter swap details in the Trade panel
- Then enter more trade details as described in Capturing Swap Trades

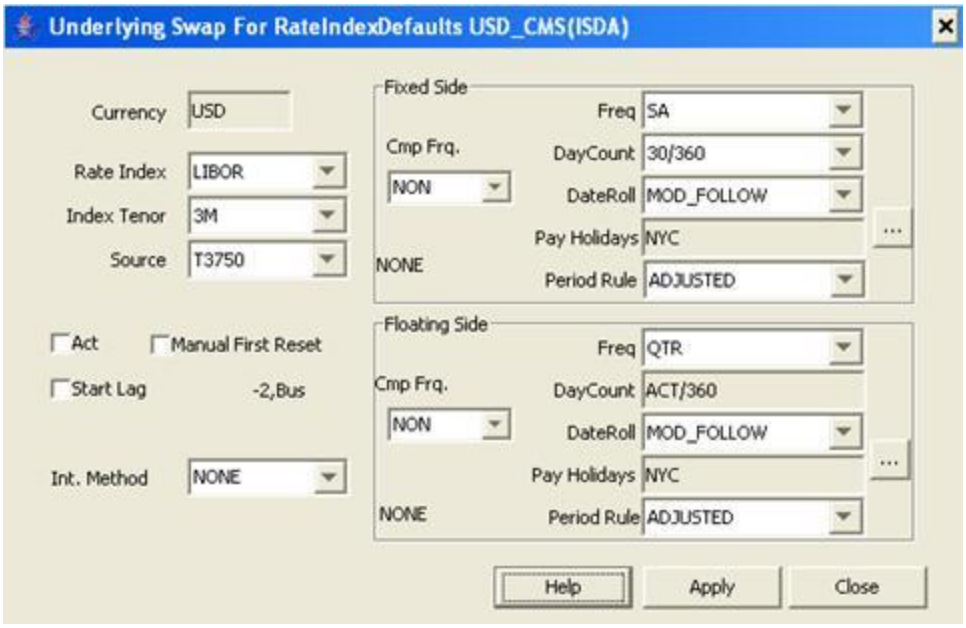
9.1 CMS RATE INDEX

Choose Main Entry > Configuration > Interest Rates > Rate Index Definitions.



The Rate Definition panel is selected by default.

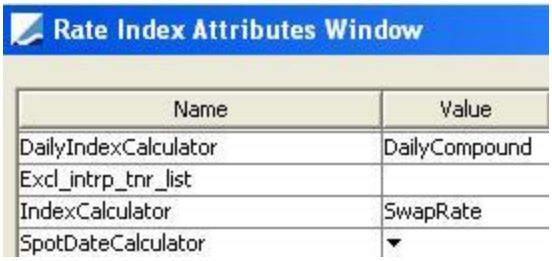
- Select the rate index from the Index field, and enter its details.
- You can click **Add** to add it, if it does not exist.
- Select the Index Type "Swap", and click **Swap** to define the most liquid swap.



Enter the various fields to define the swap and click **Apply**. The coupon frequency, rate index name, and rate index tenor are retrieved from the swap.

» Click **Attributes** and set the following attributes. It brings up the Rate Index Attributes window. You can click ... in the Rate Index Attributes window to add the attributes if they do not exist.

Note that the attributes and their values are case sensitive.



- DailyIndexCalculator = DailyCompound
- IndexCalculator = SwapRate

Click **Apply**.

» Click **Save** to save your changes.

» Then select the Tenors panel to define tenors for the rate index, and click **Save** to save your changes.

9.2 Generic Bond

[NOTE: This setup is only required if you are using PricerSwap]

9.2.1 Bond Defaults

Choose Main Entry > Configuration > Fixed Income > Default.

The CMS calculator uses information from the bond default configuration to calculate the CMS adjustment.

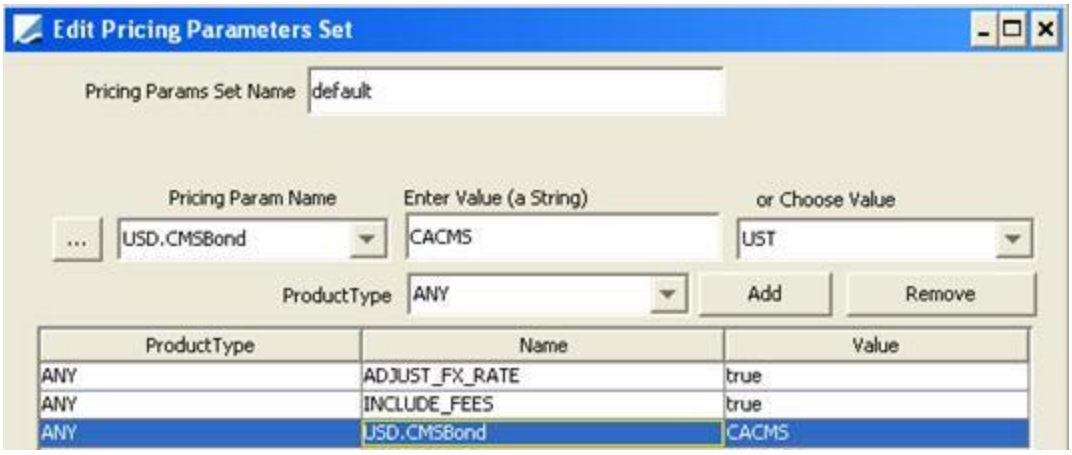
» In the Issue panel, select the Generic sub type, use a face value that is large enough to guarantee the precision required. Different values may be required for different currencies and markets.

» In the Coupon Detail panel, set the Coupon details to match the currency and market conventions.

» Enter a name and click **Save**.

9.2.2 Pricing Parameters

Choose Main Entry > Market Data > Pricing Environment > Pricing Parameter Set, and load your pricing parameter set.



» Select the pricing parameter "<currency>.CMSBond", and set its value to the generic bond that you have defined. This is required for all currencies.

9.3 Sample CMS Swap Trade

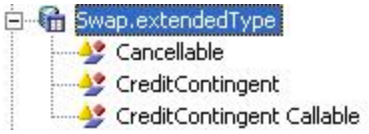
Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

» Select the CMS index that you have created.

10. CAPTURING CREDIT CONTINGENT SWAP TRADES

A Credit Contingent Swap contains an underlying swap contingent upon credit events.

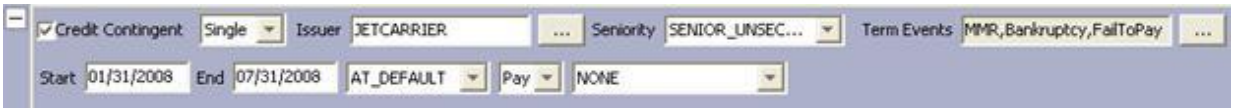
To enable the Credit Contingency feature, create the domain "Swap.extendedType" and add the CreditContingent and "CreditContingent Callable" values to that domain. Note that domain values are case sensitive.



Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

The Credit Contingent area is added to the swap worksheet. The trade is marked "Not Credit Contingent" by default.

Click + to view the Credit Contingent details.



» Check the Credit Contingent checkbox to make the swap sensitive to credit events, then enter the credit details.

The swap is sensitive to credit events between the Start and End dates defined here.

» Then enter more trade details as described in Capturing Swap Trades.

» You can define and apply credit events using Main Entry > Trade Lifecycle > Corporate Action > Credit Events.

Credit Contingent Details

Fields	Description
Credit Contingent	Check the "Credit Contingent" checkbox to indicate that the trade is sensitive to credit events, or uncheck otherwise.
Credit Type	Choose Single or Basket. ***Single***  » Click ... to select the issuer, and select the issuer's seniority. ***Basket***

Fields	Description
	 » Click ... to select a basket and enter the number of defaults. Baskets are created using Main Entry > Configuration > Credit Derivatives > Reference Entity Basket.
Term Events	Click ... to select the credit events to which the trade is sensitive.
Start Date **End Date**	Enter the start and end date of credit contingency. The trade will only be sensitive to credit events between the start and end dates.
Settlement Details	Select whether the settlement is done when a default occurs (AT_DEFAULT) or at maturity (AT_MATURITY). Select the direction of the settlement: Pay or Rec. Select the type of settlement: • PAR • PAR_MINUS_RECOVERY • FIXED_AMOUNT – Enter the amount. • FIXED_PERCENTAGE – Enter the percentage. • NONE • RECOVERY

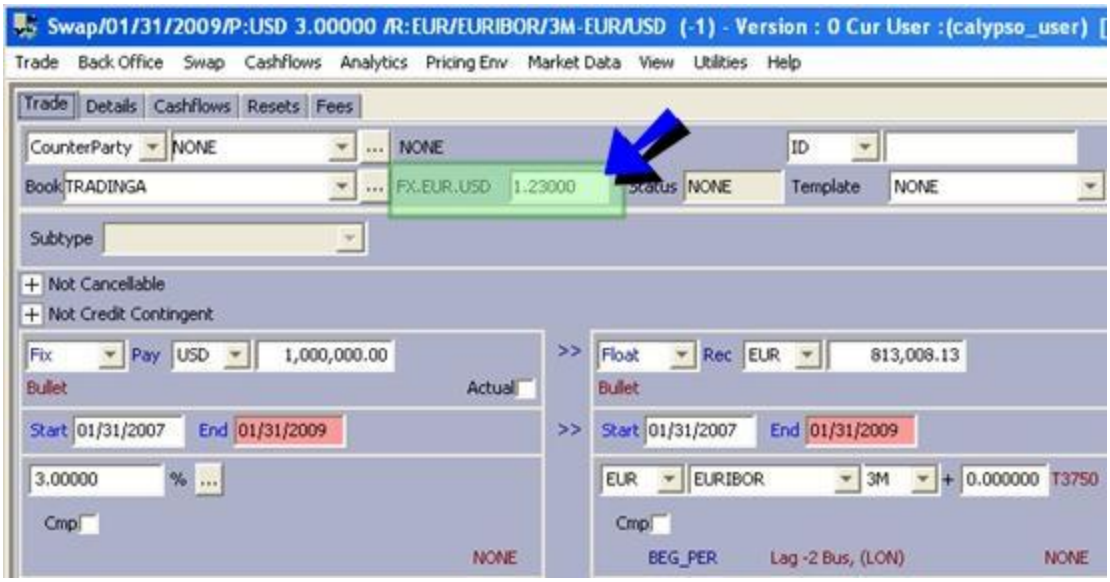
11. Capturing Cross Currency Swap Trades

A cross-currency swap is a swap where each leg is expressed in a different currency.

Choose Trade > Interest Rates > Cross-Currency Swap to open the Cross-Currency Swap worksheet, from Main Entry or from the Calypso Workstation.

You can also choose Trade > Interest Rates > Swap to open the Swap worksheet, and simply select two different currencies.

11.1 Sample Cross-Currency Swap Trade



» Enter the FX rate between both currencies in "FX.<currency>.<currency>".

» Then enter more trade details as described in Capturing Swap Trades.

12. CAPTURING EXOTIC SWAP TRADES

An exotic swap is a swap where the structure of coupon and principal payments is customized using the Calypso eXSPress language. It allows you to define exotic payout formulas on-the-fly. The payout formulas require the definition of exotic variables.

Exotic Swaps Quick Reference

- Define exotic variables using Main Entry > Configuration > Interest Rates > Exotic Variables
- Enter exotic details in the Trade panel
- Then enter more swap details as described in Capturing Swap Trades

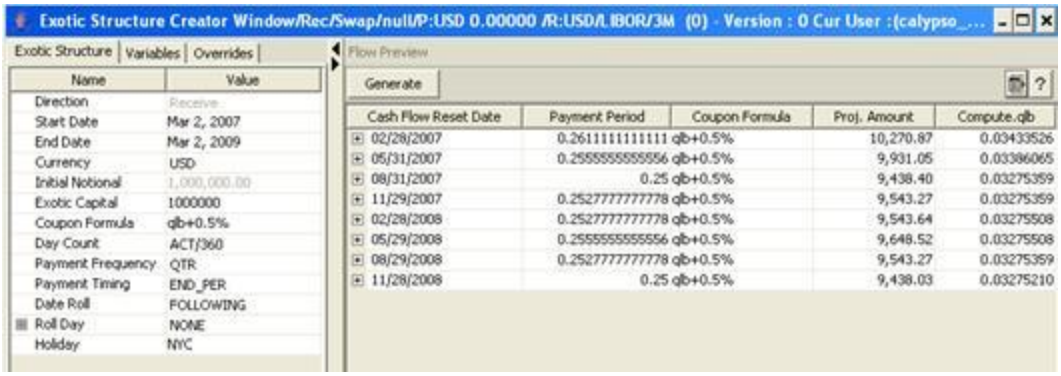
12.1 TRADE DETAILS

Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

- Select the Exotic type of leg. You can also select an exotic structure type if you have defined any. See Main Entry > Configuration > Product > Structure Type Creator for details. Help is available from that window.
- Click **Structured Window** to define the coupon formula and / or notional formula. When the formula is applied, it is displayed in the exotic leg. Click Help in that window for complete details and examples.

12.2 SAMPLE BASIS SWAP TRADE

One party makes periodic payments based on a floating rate index and the other party makes payments based on another floating rate index. Both rates are reset periodically. The payments are based on a notional and are in the same currency.



[**NOTE**: Compounding and averaging are not supported for structured legs]

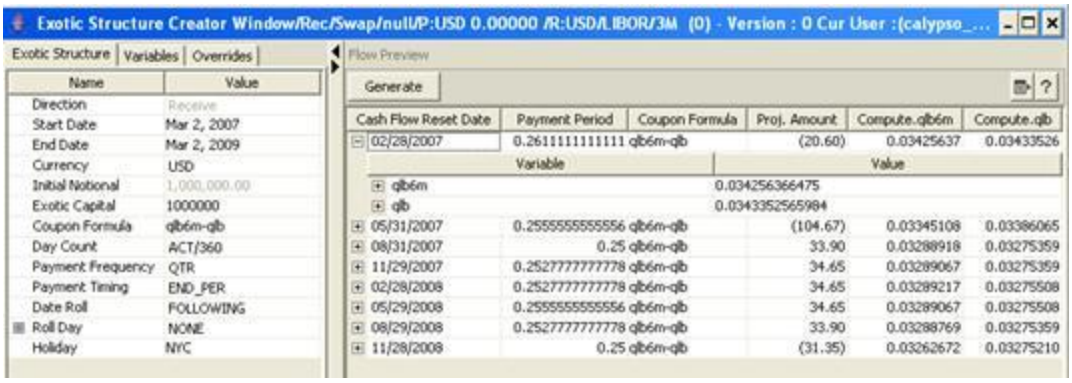
» Set the coupon formula as a floating rate plus 0.5%, and enter the initial notional amount in the Exotic Capital field. The exotic variable qlb6m has been defined as USD LIBOR 6M.

» Click **Generate** to display the results.

» Then click **Save** to return to the Trade worksheet.

The formula will appear as shown below.

12.3 Sample Swap Trade with Cap/Floor



» Set the coupon formula as a spread between two indices (**qlb6m – qlb**, **qlb6m** represents LIBOR 6M and **qlb** represents LIBOR 3M in this example). Also, set the exotic capital formula to the amount of the initial notional.

» Click **Generate**.

» Select the Variables panel and click **+**. You will be prompted to select a type and enter a name.

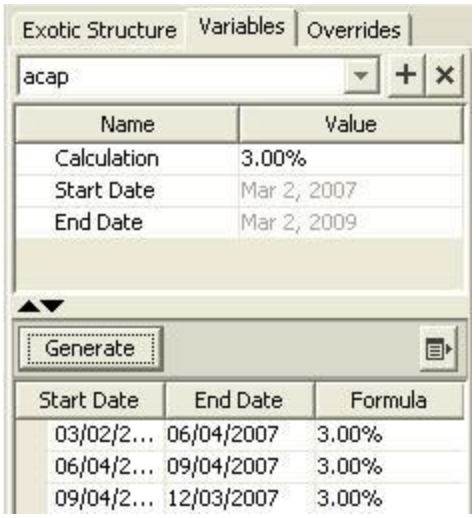
Select Array, and enter **cap** for example. Click **OK**.

Repeat for the **floor**variable.

[**NOTES**: Variable names cannot contain any symbols because these are used as operators or may have special meaning inside Calypso; this includes periods, hyphens and commas – Also, if an Array Variable has more than one formula, it is not typeable (i.e. the structure cannot be saved as a type)]

The system creates the variables **a<name>**, **acap** and **afloor**.

In the Variables panel, select each variable and set its calculation formula. Let's use fixed rates to begin.



You can click **Generate** to view the details of the formula.

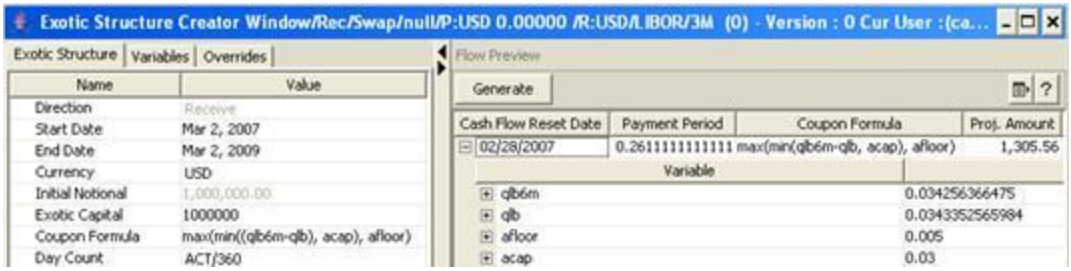
Set **acap** to 3% and **afloor** to 0.5%.

» Now, return to the Exotic Structure panel and modify the coupon formula to incorporate the **acap** and **afloor**variables: **max(min((qlb6m-qlb), acap), afloor)**.

It means:

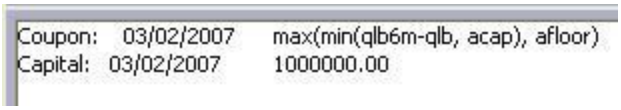
- Find the spread between LIBOR 6M and LIBOR 3M
- Compare spread to the cap rate and take the minimum
- Compare the minimum to the floor rate and take the maximum as the final rate

» Once the coupon formula is modified, make sure to click **Generate** again.



» Then click **Save** to return to the Trade worksheet.

The formula will appear as shown below.



13. CAPTURING EXTENDIBLE SWAP TRADES

An extendible swap contains an underlying swap with the option to extend it.

Choose Trade > Interest Rates > Extendible Swap to open the Extendible Swap worksheet, from Main Entry or from the Calypso Workstation.

13.1 SAMPLE EXTENDIBLE SWAP TRADE

- Enter option and swap details in the Trade panel. Option details are described below.
- Then enter more trade details as described in Capturing Swap Trades.
- You can extend the swap using Back Office > Exercise.

Option Details

Fields	Description
BUY/SELL	Direction of the trade from the PO perspective. Select BUY or SELL.
Extension Type ***European***	Select "European". The swap can only be extended on the expiration date.  - The expiration date defaults to the maturity date. - Enter the delivery date in the Del Dt field. - Double-click the "-2D Bus LON" label to bring up the OptionCalcDialog. See OptionCalcDialog below. - Enter an extension fee amount in the Fee field. - Enter the extension date in the Ext Date field.

Fields	Description
Extension Type ***Bermudan***	Select "Bermudan". The swap can be extended according to a user-defined schedule.  » Select the Option panel to define the extension schedule. See Defining a Bermudan Extension Schedule for details. The Exp Dt and Del Dt fields in the Trade panel are not editable. » Double-click the "-2D Bus LON QTR" label to bring up the OptionCalcDialog. See OptionCalcDialog below. » Enter the extension date in the Ext Date field.
Extension Type ***American***	Select "American". The swap can be extended within a date range.  » Enter the last exercise date in the Exp Dt field, and the first exercise date in the First Ex Dt field. The swap can be extended between those two dates. The background color will change if the date is not a business day. You can double-click the Exp Dt label to roll the date to the previous business day. » Double-click the "-2D Bus LON" label to bring up the OptionCalcDialog. See OptionCalcDialog below. » You can also define an extension schedule for American options. See Defining an American Extension Schedule for details.

OptionCalcDialog

» Select the holiday calendar.

» Enter a number of lag days, months or years in the Offset field.

Days lag "D" can be business days or calendar days. Double-click the Bus label to switch to Cal as needed.

For months lag "M" and years lag "Y", the system uses calendar days only.

The "No Tenor" checkbox only applies to days lag, when you enter more than 31 days. If you check the "No Tenor" checkbox, the offset will not be converted to a tenor, as shown below for 35D.

Otherwise it will be converted to a tenor. Note that the conversion is for display only. The system always stores 35D.

» For Bermudan options, select the frequency of the extension dates.

14. CAPTURING "IN ARREAR" SWAP TRADES

An "In Arrear" swap trade resets at the end of the reset period.

Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

» Double-click the BEG_PER label to change it to END_PER. The subtype is set to "Arrear".

» Then enter more trade details as described in Capturing Swap Trades.

15. CAPTURING INFLATION SWAP TRADES

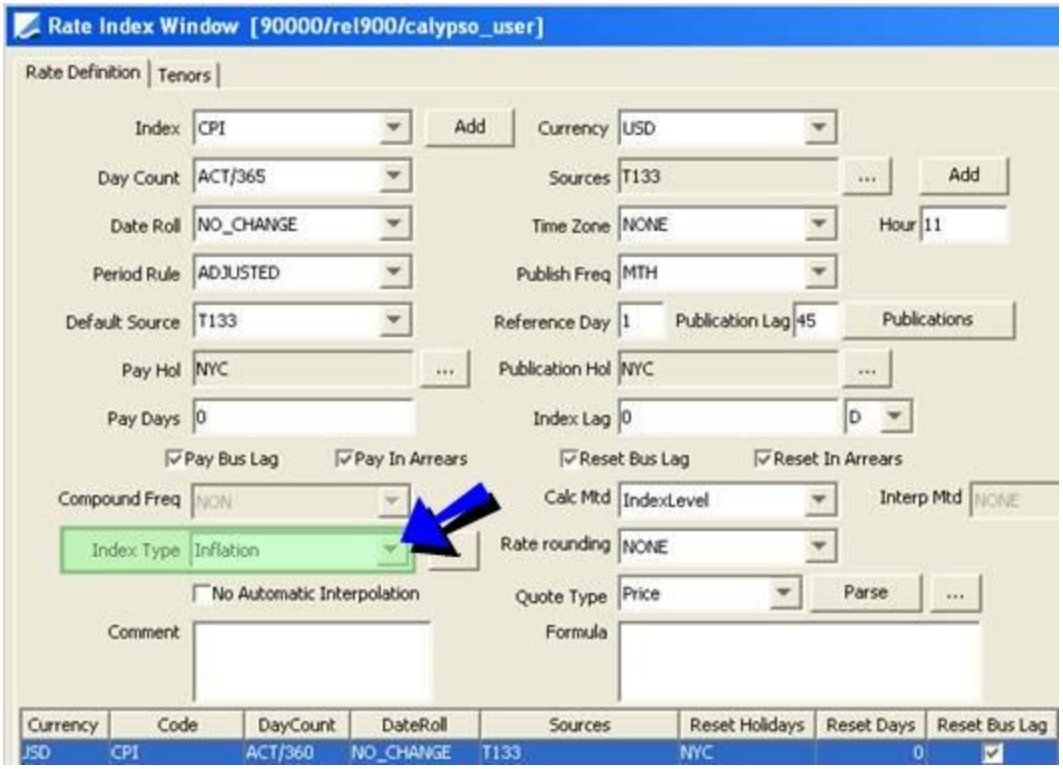
Inflation swaps are based on inflation indices. Inflation is defined as the percentage increase or decrease in some index of prices.

Inflation Swaps Quick Reference

- Define the inflation rate index using Main Entry > Configuration > Interest Rates > Rate Index Definitions
- Enter inflation swap details in the Trade panel
- Then enter more trade details as described in Capturing Swap Trades

15.1 DEFINING INFLATION RATE INDICES

Choose Main Entry > Configuration > Interest Rates > Rate Index Definitions.



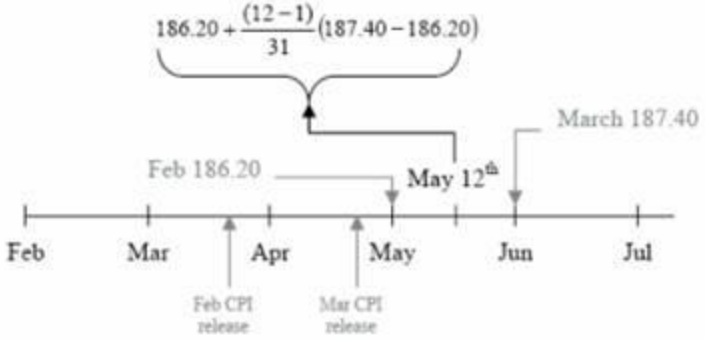
The Rate Definition panel is selected by default.

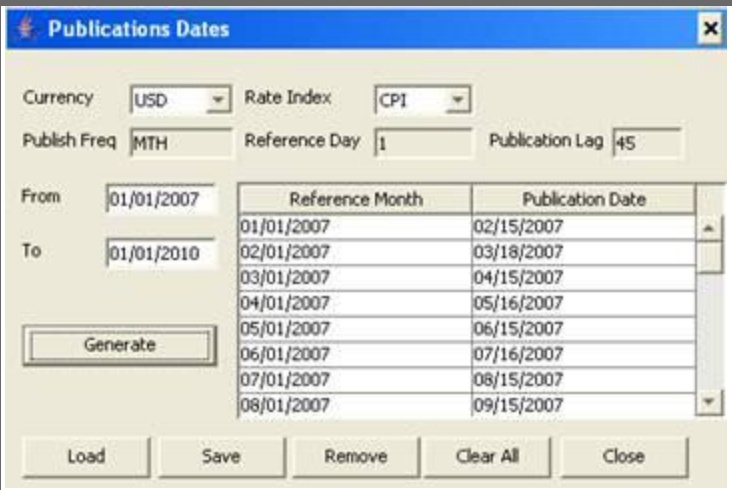
- Select the rate index from the Index field, and enter its details. Select Inflation from the Index Type field. Fields specific to inflation indices are described below.

  You can click **Add** to add it, if it does not exist.

Fields Details

Rate Index	Attributes
Index Type	Select Inflation.
Calc Mtd	Select the calculation method: • IndexLevel – Index levels are not interpolated between publication dates.

Rate Index	Attributes
	• Interpolated – Daily index levels are interpolated between reference dates. Select the interpolation method from the Interp Mtd field.
Interp Mtd	Only appears for the Interpolated calculation method. The only option is "Weighted" - Index levels are interpolated using the following formula: $$I(dd/mm/yy) = I(01/mm/yy) + \frac{dd-1}{DtM}\left[I(01/mm+1/yy) - I(01/mm/yy)\right]$$ where DtM denotes the number of days in the month for all days between the first of January and the first of December. For the days in December we have: $$I(dd/12/yy) = I(01/12/yy) + \frac{dd-1}{DtM}\left[I(01/01/yy+1) - I(01/12/yy)\right]$$ For example, to calculate an interpolated May 12thCPI index level, which has a 3 month lag: 
No Automatic Interpolation	This checkbox is not related to the interpolation method of Inflation rates. When checked, there is no automatic interpolation applied to stub periods, otherwise stub periods are automatically interpolated.
Publish Freq	Select the frequency at which the rate is published. For Inflation indices, select a publication frequency, enter a reference day and a publication lag.  The reference day is the day of the month when the inflation is effective, and the publication lag is the time lag between the effective date of an inflation level and its actual publication. You can click **Publications** and generate the dates to make any modification if needed. Otherwise the reference day and publication lag are used to determine the publication dates.

Rate Index	Attributes
	 » Enter a From and To date and click **Generate**. You can modify the publication dates as needed. » Click **Save** when you are done.
Index Lag	Enter the index lag, usually 3M.

» Click **Attributes** and set the following attribute. You can click **...** to add the attribute if it does not exist.

Note that the attributes and their values are case sensitive.

IndexCalculator = InflationIndex or InflationIndexKerkhof

» Click **Save** to save your changes.

» Then select the Tenors panel to define tenors for the rate index, and click **Save** to save your changes.

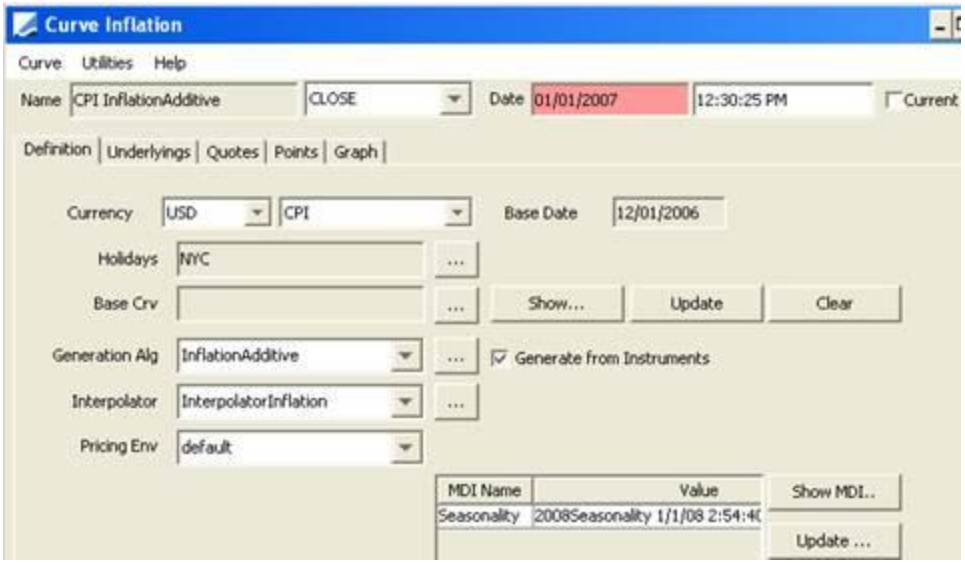
For zero coupon swaps, you can set the tenor to "0D".

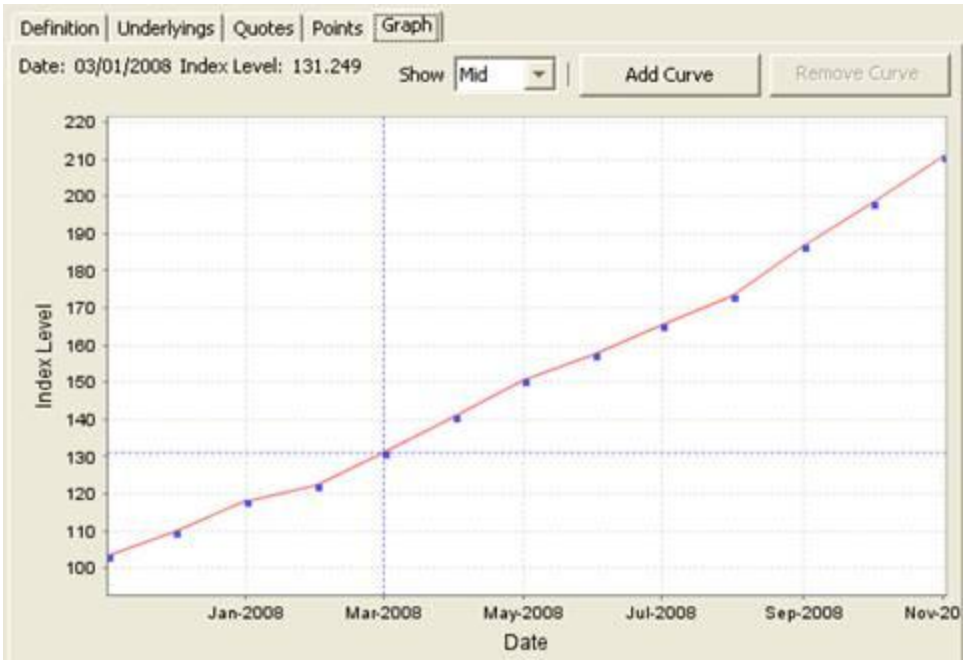
For year on year swaps, the tenor is used to select reference dates for the resets. For example, if the tenor is "1Y", and the rate index setting in advance, the first reset is taken from 1 year before plus lag: Index Start Date = Index End Date – Tenor – Index Lag.

15.2 Defining Market Data

Inflation curves are defined using Main Entry > Market Data > Interest Rate Curves > Inflation Curve. You can create a simple inflation curve from offset points, a basis inflation curve (spread over another inflation curve), or a derived inflation curve from underlying instruments with various methods for applying seasonal adjustments – The seasonal adjustments can be retrieved from a seasonality curve.

Sample Inflation Curve – Definition and Graph



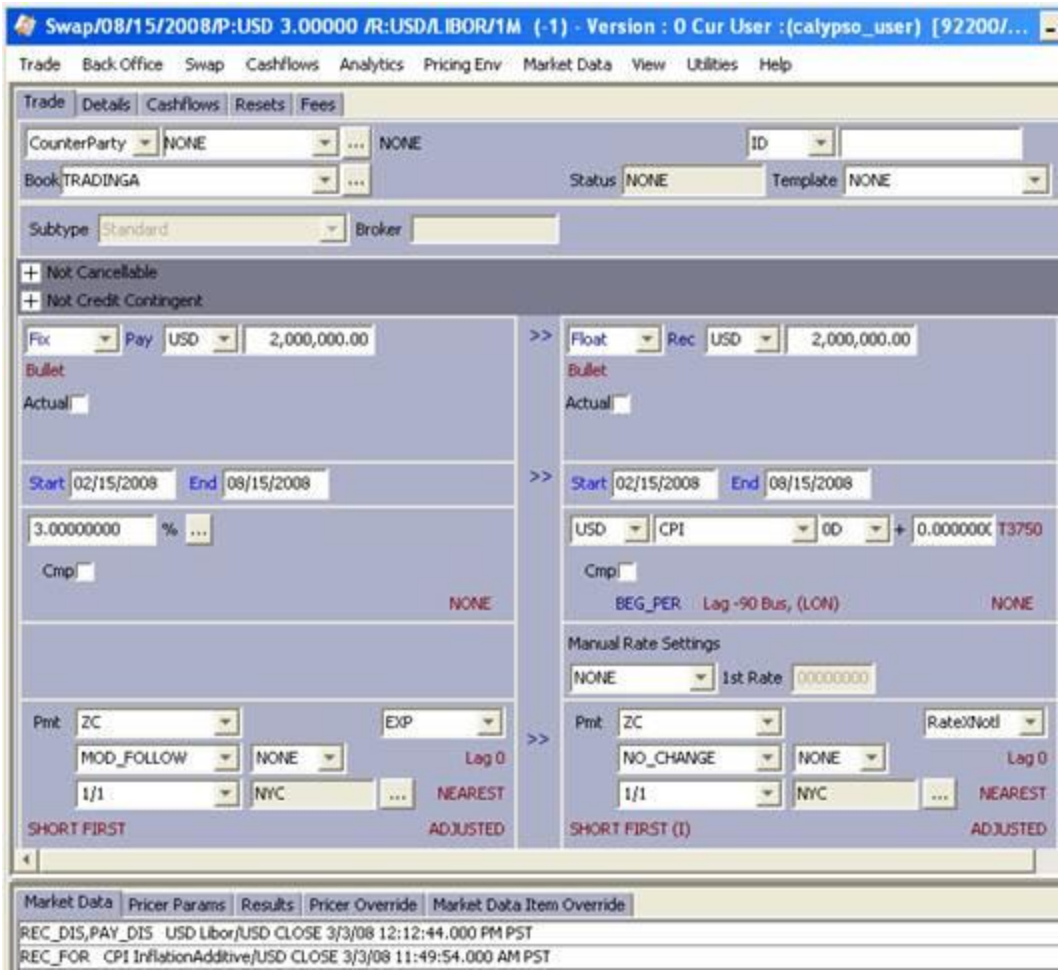


» Choose Help > Inflation Curve Help for complete details.

15.3 Capturing Zero Coupon Swap Trades

In a zero coupon swap, the parties exchange one cashflow—at maturity. A simple example is a swap with a fixed rate leg and an inflation-indexed leg. The fixed leg payer pays notional plus a coupon of the compounded value of the fixed rate. The inflation-indexed leg payer pays notional plus a coupon reflecting the percentage change in the inflation rate.

Sample zero coupon swap trade.



» On the fixed side, set the payment schedule to ZC. If the fixed rate is to be compounded annually, select EXP or ACC from the adjacent field.

Interest = Notional * ((1 + Rate)^t[n] - 1).

- For EXP: t[n] = Current Coupon Period n
- For ACC: t[n] = Total Period from Coupon 1 through n.

» On the floating side, select the inflation index with "0D" tenor. The default lag is as set on the rate index. If the inflation lag payment formula does not use a period, select RateXNotl.

» In the Manual Rate Settings, you can select "Init Level" or "Init Level Date".

- Init Level

  Enter the base index level and initial level date.

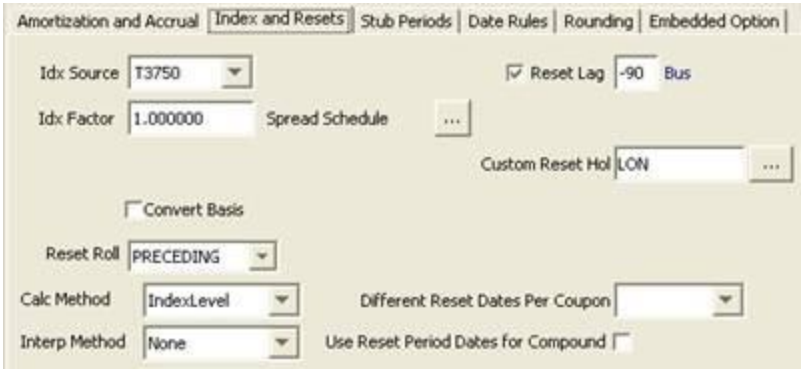
  

  The level date is in the form "MM/DD/YYYY", where DD is the Reference Day specified in the Rate Index Definition.

- Init Level Date

  Enter the level date - It is the publication date corresponding to the first reset (first reset date + publication lag). The system will retrieve the corresponding index level from the quotes if available, or will compute it from the inflation curve.

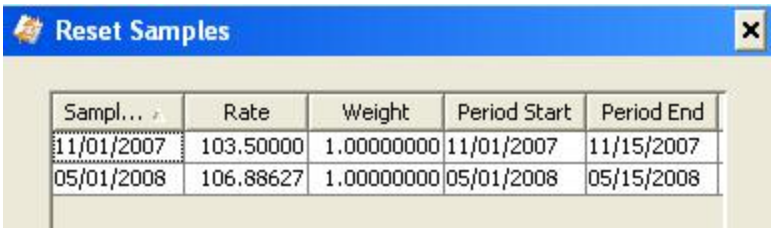
» If you double-click any red label, you can overwrite the index defaults – Then click **Apply**.



» In the cashflows panel, you can view the projected index levels.

Fwd Rate	Init Ref Date	Init Publ Date	Final Ref Date	Final Publ Date	Init Index Level	Final Index Level
3.27175677	11/01/2007	12/16/2007	05/01/2008	06/15/2008	103.50	106.89

Right-click a cashflow and select Sample Dts to view the index levels used to compute the projected rate.



» Choose Help > Trade Help for complete details and additional examples.

Cashflows

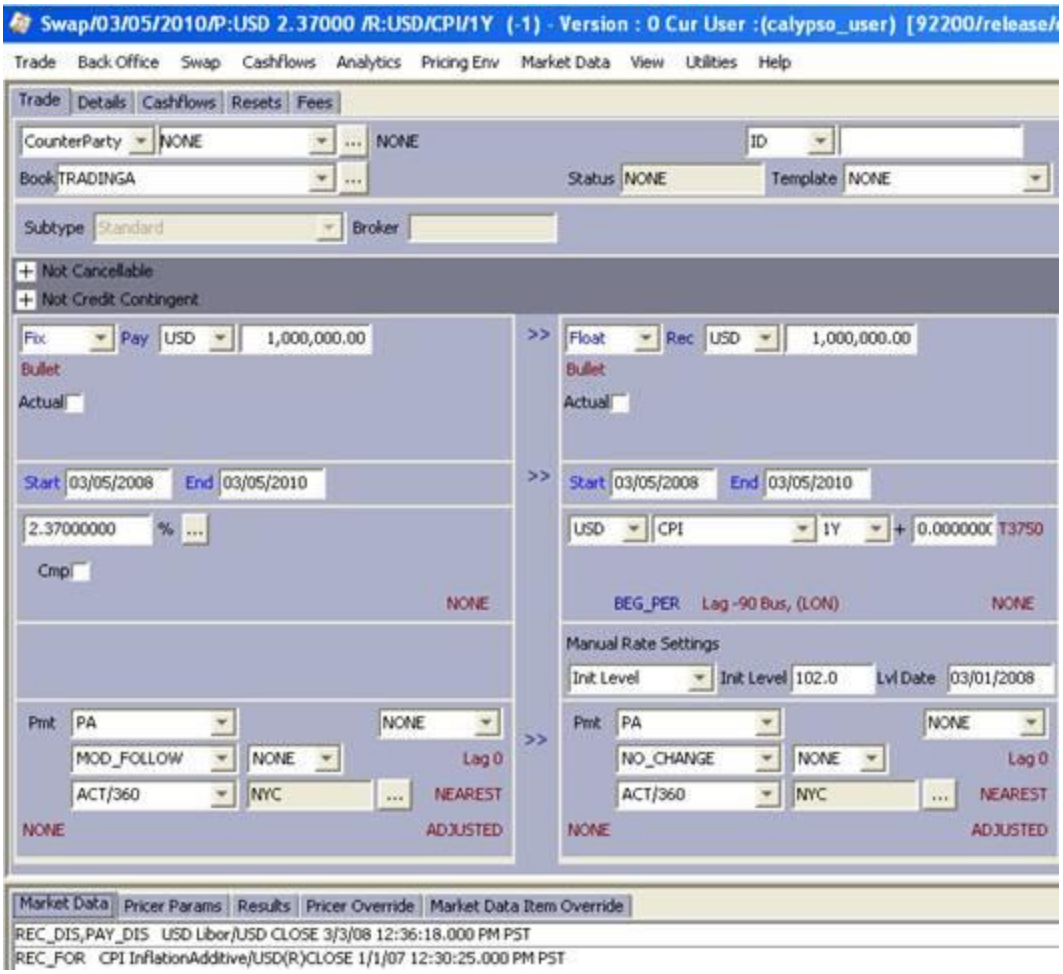
Since the index calculator InflationIndexKerkhof requires a specific reference date to pick up the projected inflation level from the curve, the following columns have been added to the cashflows:

- Initial Reference Number Projection Date
- Final Reference Number Projection Date
- Projected Initial Reference Number
- Projected Final Reference Number

15.4 Capturing Year-on-Year Swap Trades

In a year-on-year inflation swap, payments are made annually. In a simple example, with a fixed rate leg and an inflation-linked leg, the fixed side pays an annual coupon reflecting the fixed rate. The inflation-linked leg pays the change in the inflation rate.

Sample year-on-year swap trade.



» The tenor is used in selecting the reference dates for the resets. For example, if the tenor is 1 Year with setting in advance, the first reset is taken from 1 year prior plus the index lag. The general formula is Index Start Date = Index End - Tenor - Index Lag.

» In the Manual Rate Settings, you can select "Init Level" or "Init Level Date".

- Init Level

  Enter the base index level and initial level date.

  The level date is in the form "MM/DD/YYYY", where DD is the Reference Day specified in the Rate Index Definition.

- Init Level Date

  Enter the level date - It is the publication date corresponding to the first reset (first reset date + publication lag). The system will retrieve the corresponding index level from the quotes if available, or will compute it from the inflation curve.

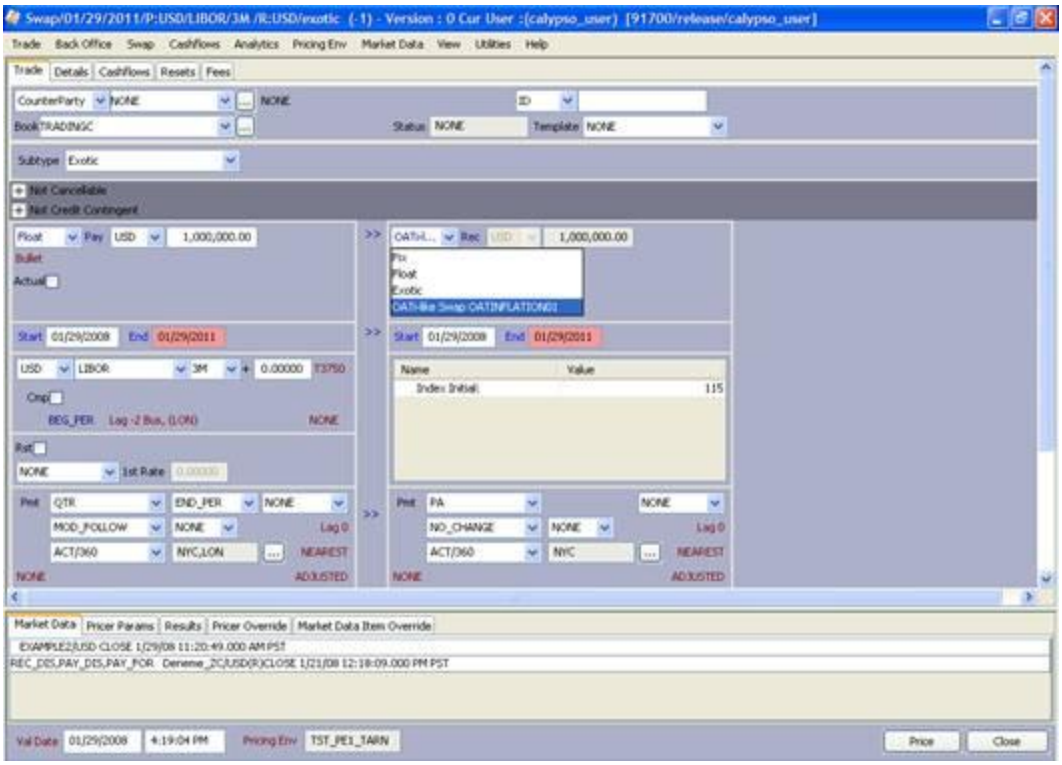
  

15.5 Capturing OATi-like Swap Trades

These types of swaps are captured using exotic structures.

15.5.1 OATi-like Swap Type Setup for a given index where Index Initial is a parameter

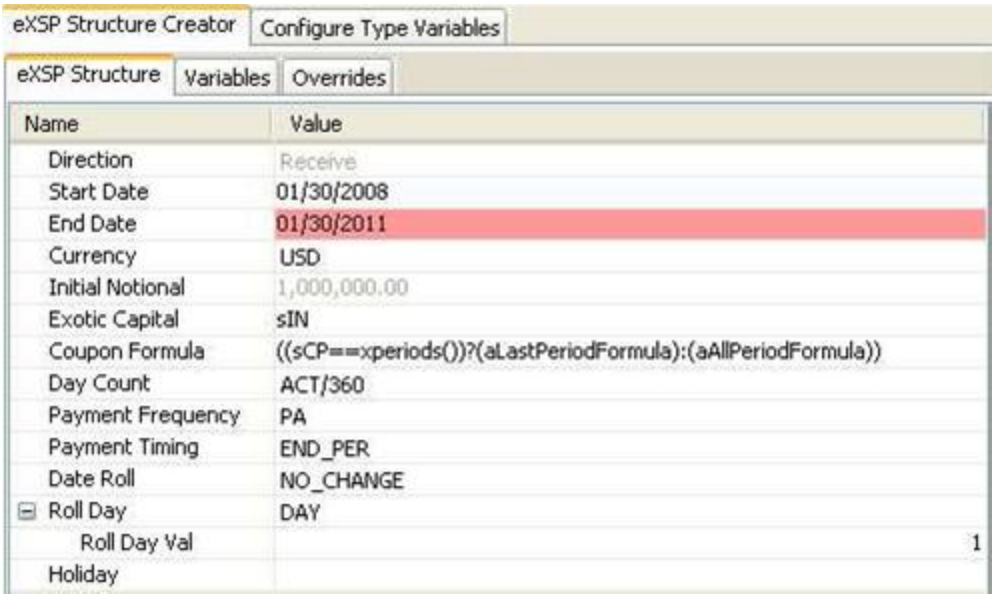
Defining the same structure for different indices (in this example using REUTERS screen name) may be the most convenient setup. In this example the user can enter a constant number for the index initial.



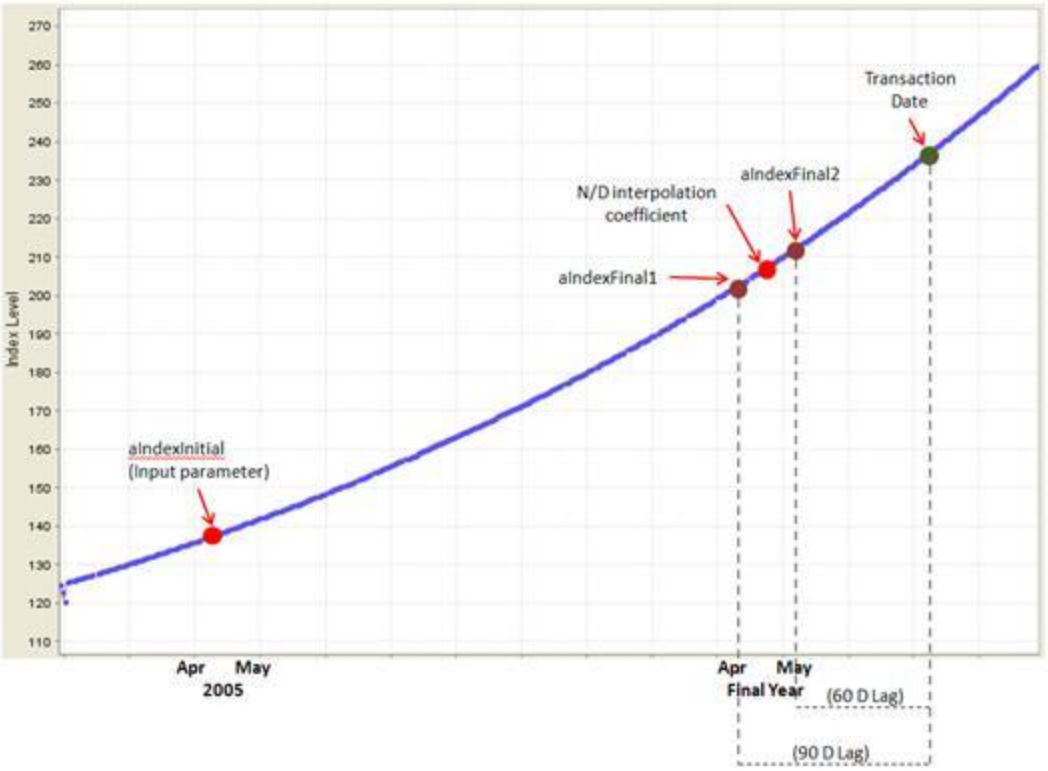
Below please find the details how to capture an exotic Type for OATi-like Swaps. In the structure there are two different formulas. The first formula is applicable to all the periods except the last one and the second formula is applicable to the last period only.

So the coupon formula checks if it is the last period and changes the applicable formula accordingly.

Coupon Formula: ((sCP==xperiods())?(aLastPeriodFormula):(aAllPeriodFormula))



Below graph shows some of the terminology used in variables.

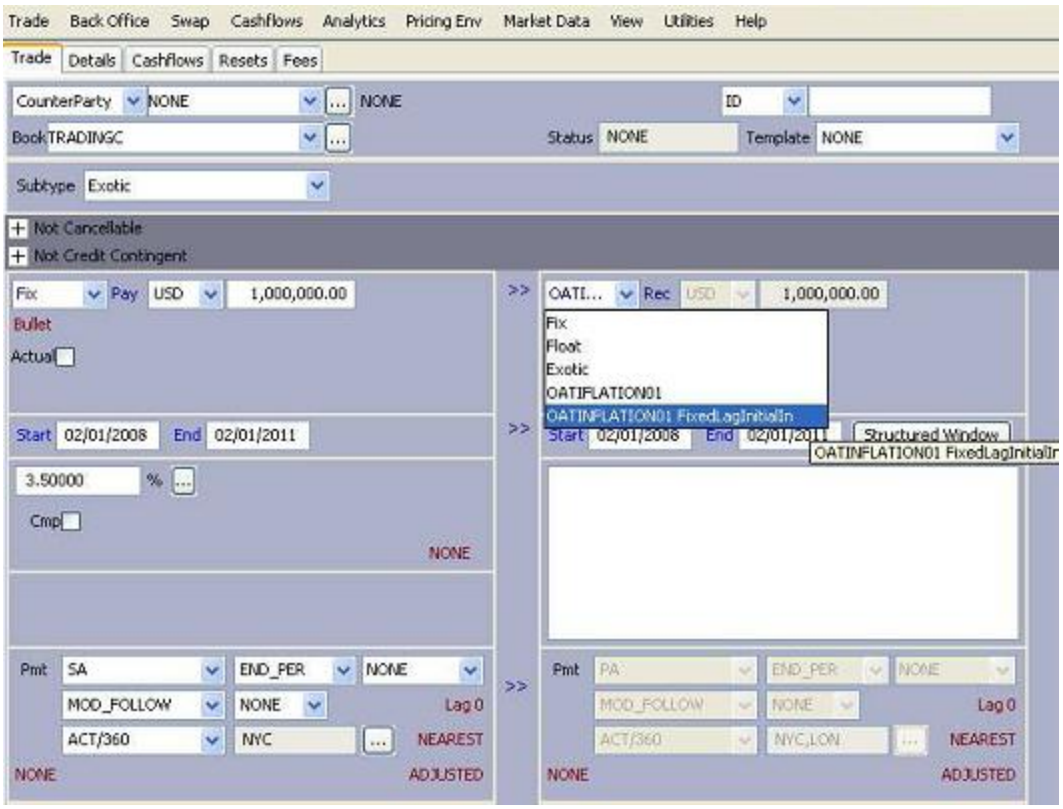


Variable Definition	Formula
aLastPeriodFormula	(((1.00/100.00)*((aIndexFinal1+(aInterpolationCoef*(aIndexFinal2-aIndexFinal1)))/aIndexInitial))+((aIndexFinal1+(aInterpolationCoef*(aIndexFinal2-aIndexFinal1)))/aIndexInitial))-1.00

Variable Definition	Formula
aAllPeriodFormula	(1.00/100.00)*((aIndexFinal1+(aInterpolationCoef*(aIndexFinal2-aIndexFinal1)))/aIndexInitial)
aIndexFinal2	Use an exotic variable: Second Point (60D Lag) of interpolation for the Index Final
aIndexFinal1	Use an exotic variable: First Point (90D Lag) of interpolation for the Index Final
aIndexInitial	Manual input for the Index Initial: This is shown in Type as a parameter
aInterpolationCoef	N/D interpolation coefficient: (xMonthDay(0.00,0.00)-1.00)/xMonthDays()

15.5.2 OATi-like Swap Type Setup for a given index with constant lag of initial index

This type definition assumes a constant lag between the "index initial" date and the first "index final" date. For example if the final index will be calculated using the index of MONTH and MONTH+1 of YEAR and index initial will be calculated using the index of MONTH and MONTH+1of YEAR-2 than this structure type does not require the user to put the initial level but pulls it directly from the appropriate quote.



Below please find the details how to capture a Type for OATi-like Swaps with a constant lag of index initial. In the structure there are two different formulas. The first formula is applicable to all the periods except the last one and the second formula is applicable to the last period only. In this type please note that the index initial is interpolated and fixed using a pair of time series variables and xwavg(TSeries,1,1) functions, so that index initial remains same during the cash flows.

The coupon formula again checks if it is the last period and changes the applicable formula accordingly.

Coupon Formula: ((sCP==xperiods())?(aLastPeriodFormula):(aAllPeriodFormula))

Variable	Definition
aLastPeriodFormula	(((1.00/100.00)*((aIndexFinal1+(aInterpolationCoef*(aIndexFinal2 – aIndexFinal1)))/aIndexInitial))+((aIndexFinal1+(aInterpolationCoef*(aIndexFinal2-aIndexFinal1)))/aIndexInitial))-1.00

Variable	Definition
aAllPeriodFormula	(1.00/100.00)*((aIndexFinal1+(aInterpolationCoef*(aIndexFinal2-aIndexFinal1)))/aIndexInitial)
aIndexFinal2	Use an exotic variable: Second Point (60D Lag) of interpolation for the Index Final
aIndexFinal1	Use an exotic variable: First Point (90D Lag) of interpolation for the Index Final
aIndexInitial	Manual input for the Index Initial: This is shown in Type as a parameter
aInterpolationCoef	N/D interpolation coefficient: (xMonthDay(0.00,0.00)-1.00)/xMonthDays()
aIndexInitial	aIndexInitial1+aInterpolationCoef*(aIndexInitial2-aIndexInitial1)
aIndexInitial1	xwavg(tIndexInitialCONS1,1,1) : Fixing
aIndexInitial2	xwavg(tIndexInitialCONS2,1,1) : Fixing
tIndexInitialCONS1	Use an exotic variable: First Point (450D Lag) of interpolation for the Index Initial
tIndexInitialCONS2	Use an exotic variable: Second Point (420D Lag) of interpolation for the Index

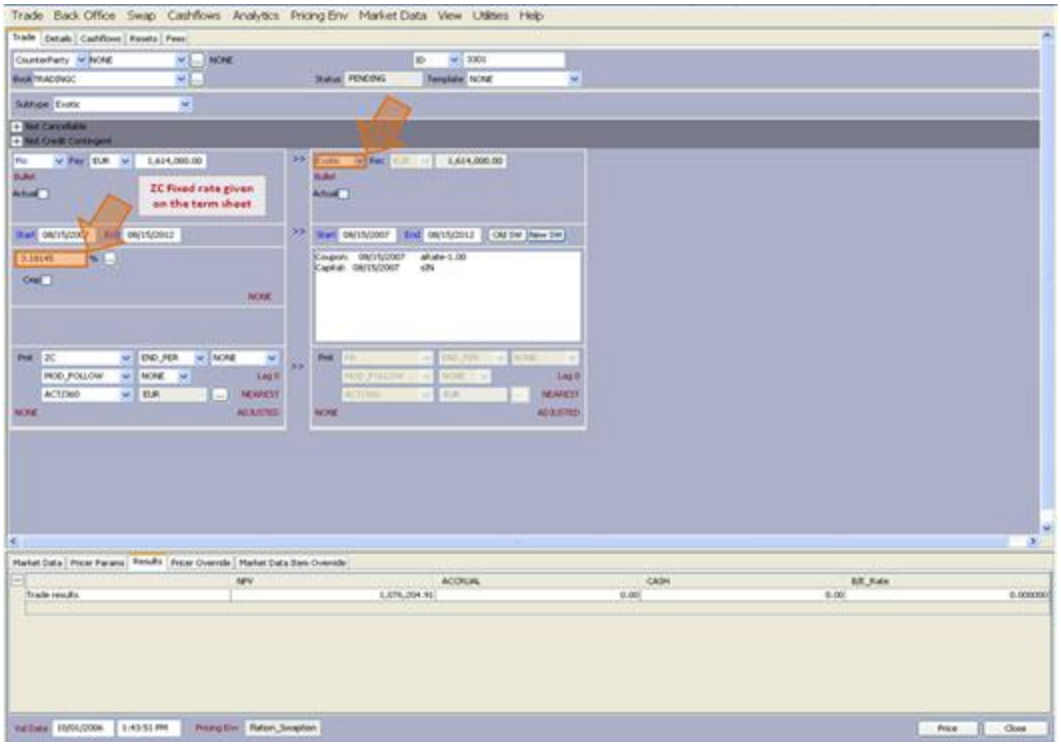
15.6 Capturing UK RPI Swap Calypso Setup

UK RPI Swap is another inflation based trade that can be captured using the eXSP window.

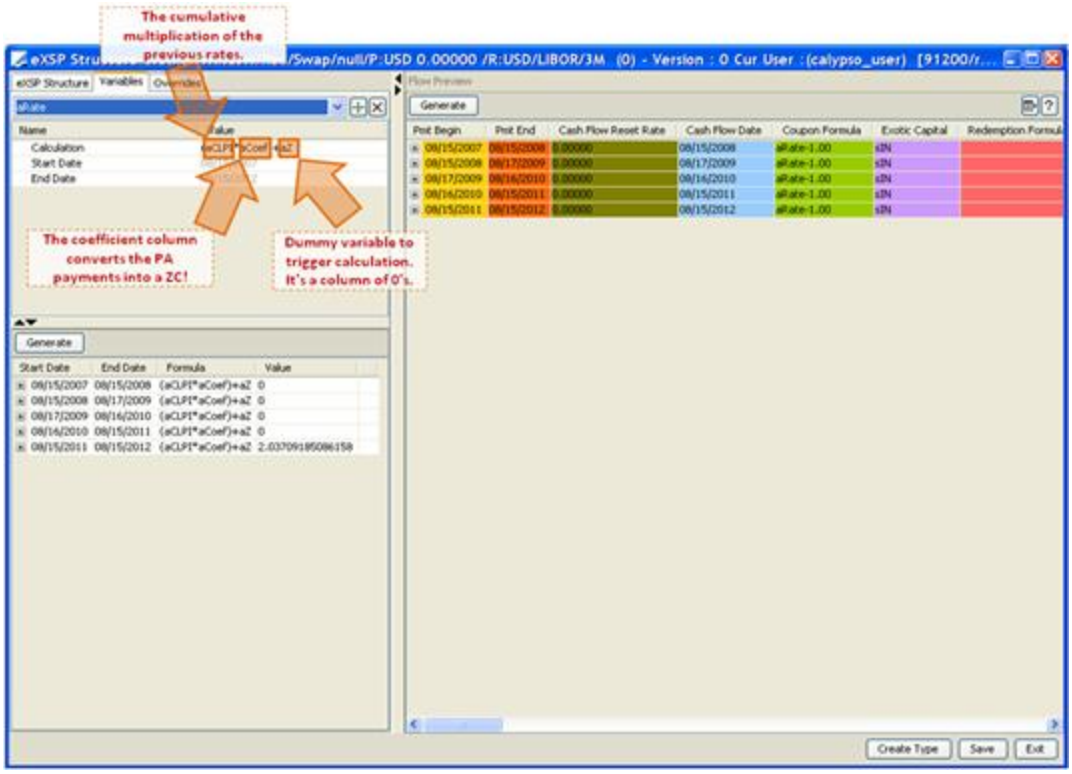
15.6.1 UK RPI Swap with inflation based compounding

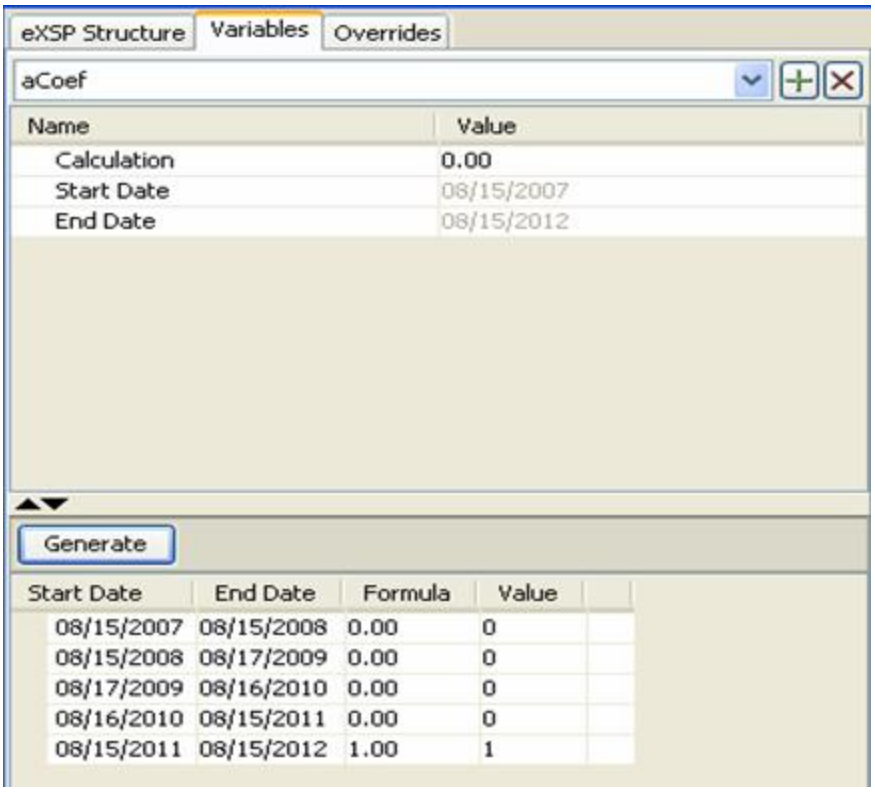
Both legs of the swap are actually zero coupons. However one of the legs should be defined as a recursively growing rate at each period. Therefore this leg will be declared as a periodic coupon pay such as PA. The goal is to create the periodic product of all the rates and return the product as a single rate for the final period. The calculated inflation based rates will be multiplied with a vector where the last entry is 1 and the rest of the entries are 0. (i.e. [0,0,0,…,1]).

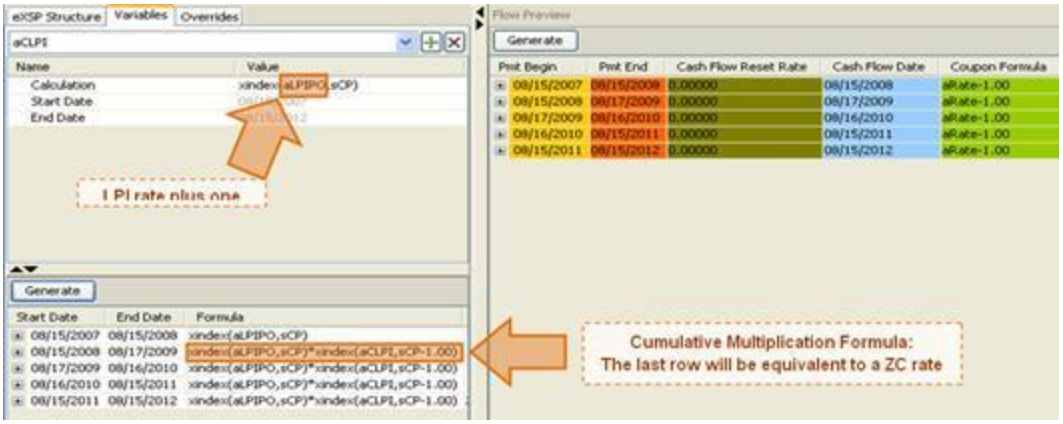
$$ZC = \prod_{y=1}^{n} (1+LPI_y)$$

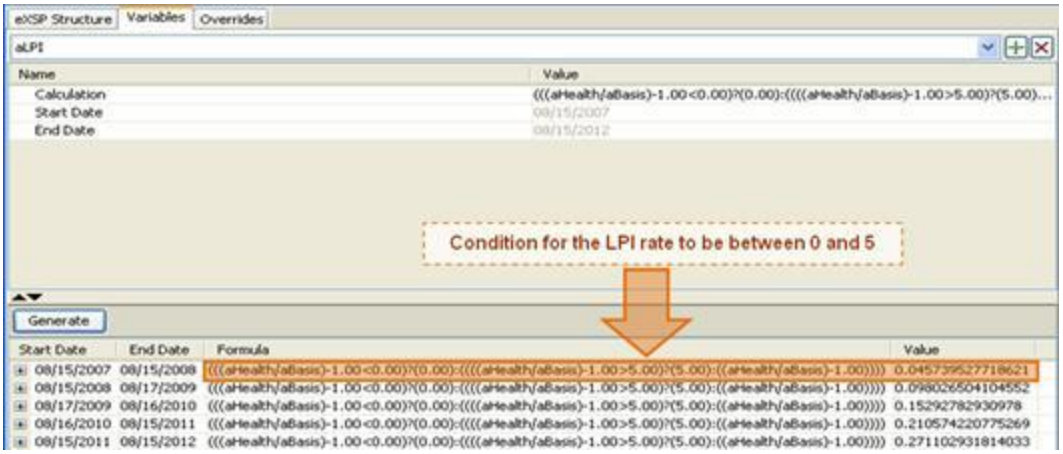


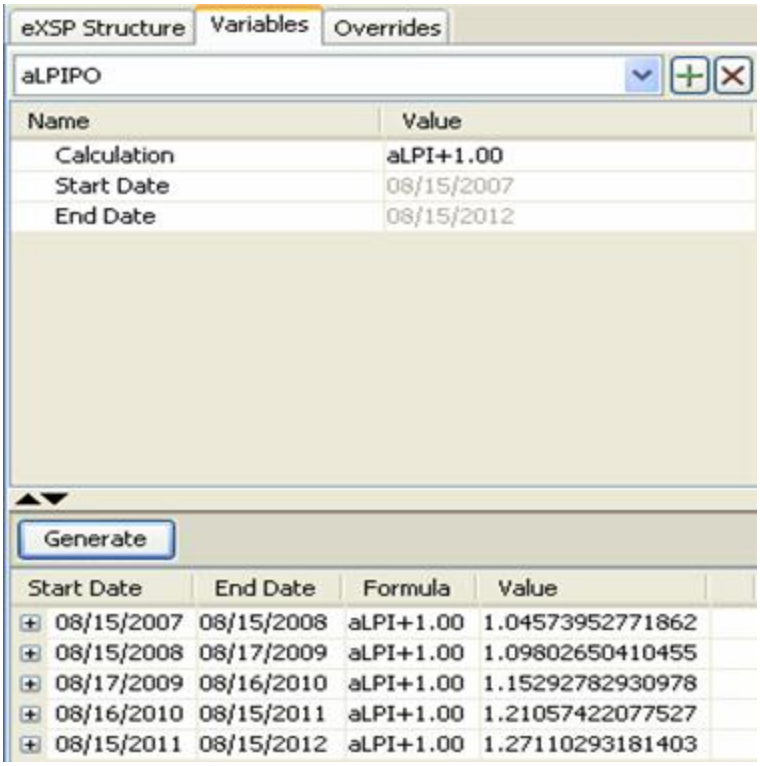
In the snapshot below please note the final rates after the multiplication with the [0,0,0,0,1] vector.

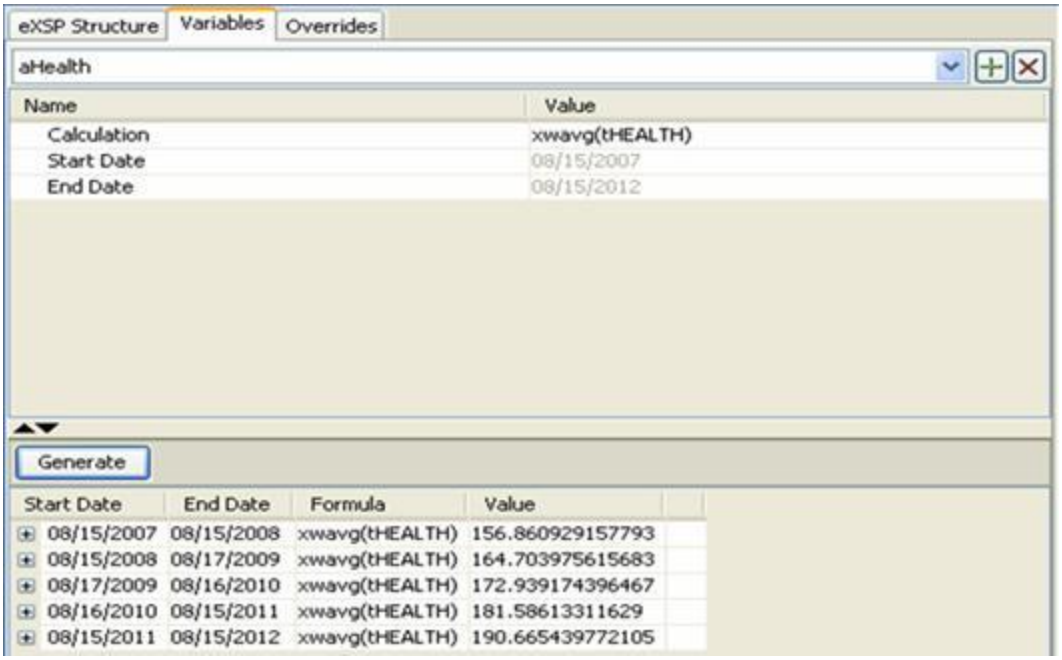


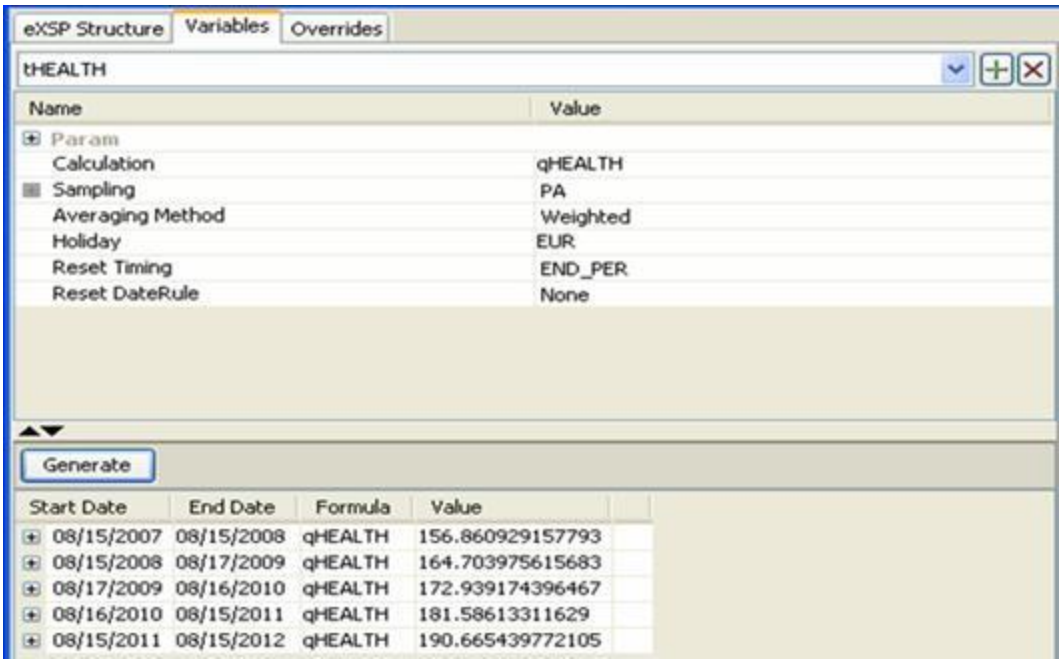


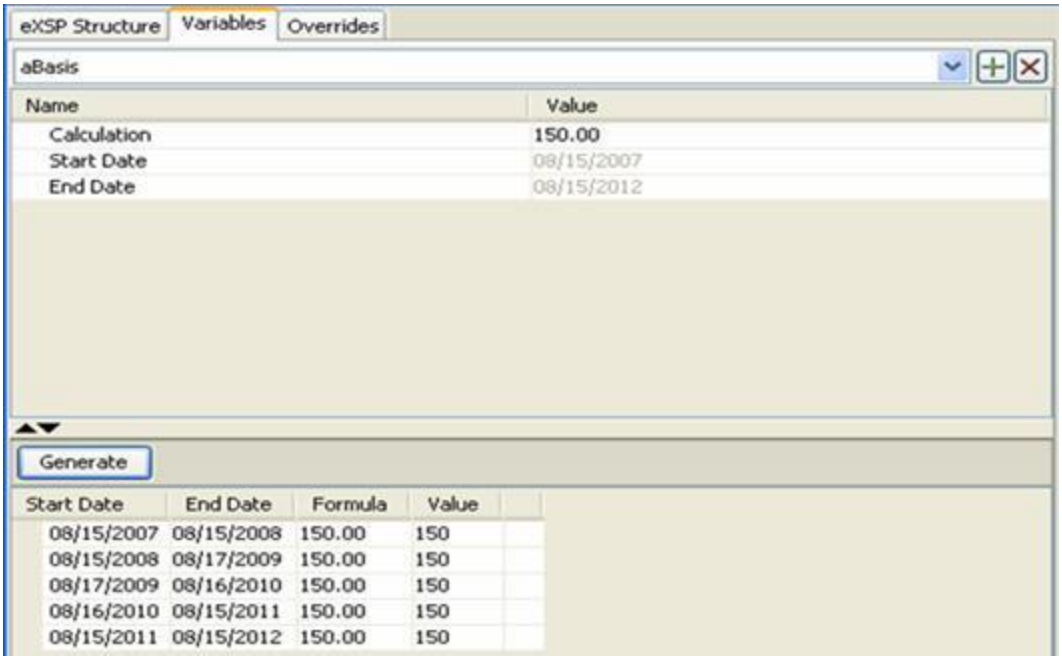

eXSP Structure
Variables
Overrides
aCLPI
Name
Value
Calculation
Start Date
End Date
LPI rate plus one
Generate
Start Date
End Date
Formula
Flow Preview
Generate
Pmt Begin
Pmt End
Cash Flow Reset Rate
Cash Flow Date
Coupon Formula
Cumulative Multiplication Formula:
The last row will be equivalent to a ZC rate


eXSP Structure
Variables
Overrides
aLPI
Name
Value
Calculation
Start Date
End Date
Condition for the LPI rate to be between 0 and 5
Generate
Start Date
End Date
Formula
Value


eXSP Structure
Variables
Overrides
aLPIPO
Name
Value
Calculation
aLPI+1.00
Start Date
08/15/2007
End Date
08/15/2012
Generate
Start Date
End Date
Formula
Value
08/15/2007 08/15/2008 aLPI+1.00 1.04573952771862
08/15/2008 08/17/2009 aLPI+1.00 1.09802650410455
08/17/2009 08/16/2010 aLPI+1.00 1.15292782930978
08/16/2010 08/15/2011 aLPI+1.00 1.21057422077527
08/15/2011 08/15/2012 aLPI+1.00 1.27110293181403







Below table summarizes the rest of the variables used in the structure.

Variable	Formula
aHealth	xwavg(tHEALTH)
tHEALTH	qHEALTH: Exotic Quotable Variable that refers to the related inflation index – Note: You must replace qHEALTH with xinfl(qHEALTH) in all formulas.
aBasis	150 (a preferred constant Index Level for the initial level)

15.7 Interpolation Methods

Below table summarizes the interpolation method and the integration of known / estimated rates into the generated inflation curve. The methods described are valid for all the generators including default, multiplicative and additive.

Case	Interpolation	Seasonality
Only swap underlyings No known / forecasted level	The first point of the curve is collected from the quotes. The monthly levels until the tenor of the first swap underlying are calculated using the yield of this first swap. For the months between two swap underlying tenors, the yield is linearly interpolated and used in the generation formula.	Seasonality applies for all the points except the first point collected from the quotes.
Swap underlyings With a single known / forecasted level	The first point of the curve is collected from the quotes. The monthly levels until the known / forecasted levels are simply linearly interpolated. After this known / forecasted level, inflation levels are calculated using the yield of this first swap. For the months between two swap underlying tenors, the swap rate is interpolated and used in the generation formula.	Seasonality applies to the points after the known / forecasted rate.

Case	Interpolation	Seasonality
Swap underlyings With multiple known / forecasted levels	The first point of the curve is collected from the quotes. The monthly rates until the first known / forecasted are simply linearly interpolated. The points between the known / forecasted levels are also simply linearly interpolated. The points between the last known / forecasted level and the tenor of the first swap underlying are calculated as stated in the generation formula using the first swap underlying yield.	Seasonality applies to the points after the last known / forecasted rate. The linear interpolations between the known / forecasted levels are not subject to seasonality adjustment.

15.8 Assumptions for Entering Seasonality Adjustments

The seasonality adjustments should be entered such that they follow the guidelines below for accurate calculations.

15.8.1 Additive Inflation Curve Generator Assumptions

- User will enter only monthly seasonality adjustments
- The first value that the user enters should be for the reference month
- User will enter adjustment values only in yearly increments (12 months, 24 months, … The user can't enter values for 16 months)
- The sum of the seasonality adjustment entries should be 0

15.8.2 Multiplicative Curve Generator Assumptions

- User will enter only monthly seasonality adjustments
- The first value that the user enters should be for the reference month
- User will enter adjustment values only in yearly increments (12 months, 24 months, … The user can't enter values for 16 months)
- The product of the seasonality adjustment entries should be 1

16. CAPTURING NDS TRADES

A **Non-Deliverable Cross Currency Swap** is an agreement between two parties to exchange a stream of interest payments and the notional principal in one currency for a non-deliverable currency.

A **Non-Deliverable Interest Rate Swap** is where both sides of the swap are in a non-deliverable currency.

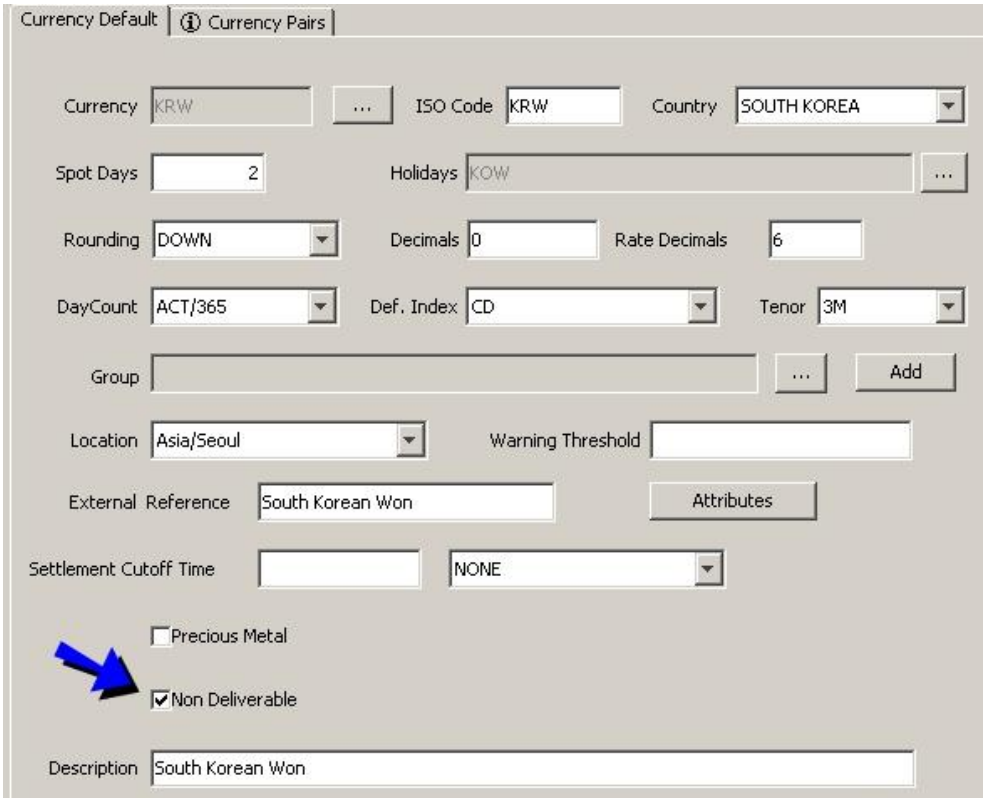
The payments of the non-deliverable currency are made in a user-defined settlement currency based on a fixing between the non-deliverable currency and the settlement currency.

NDS Quick Reference

- Define the non-deliverable currency using Main Entry > Configuration > Definitions > Currency Definition
- Configure an FX Rate Definition using Main Entry > Configuration > Foreign Exchange > FX Rate Definitions
- Enter NDS swap details in the Trade panel
- Then enter more trade details as described in Capturing Swap Trades.
- You can set the fixing between the non-deliverable currency and the reference currency using Main Entry > Trade Lifecycle > Reset > FX Rate Reset

16.1 DEFINING A NON-DELIVERABLE CURRENCY

Choose Main Entry > Configuration > Definitions > Currency Definition to define a non-deliverable currency.



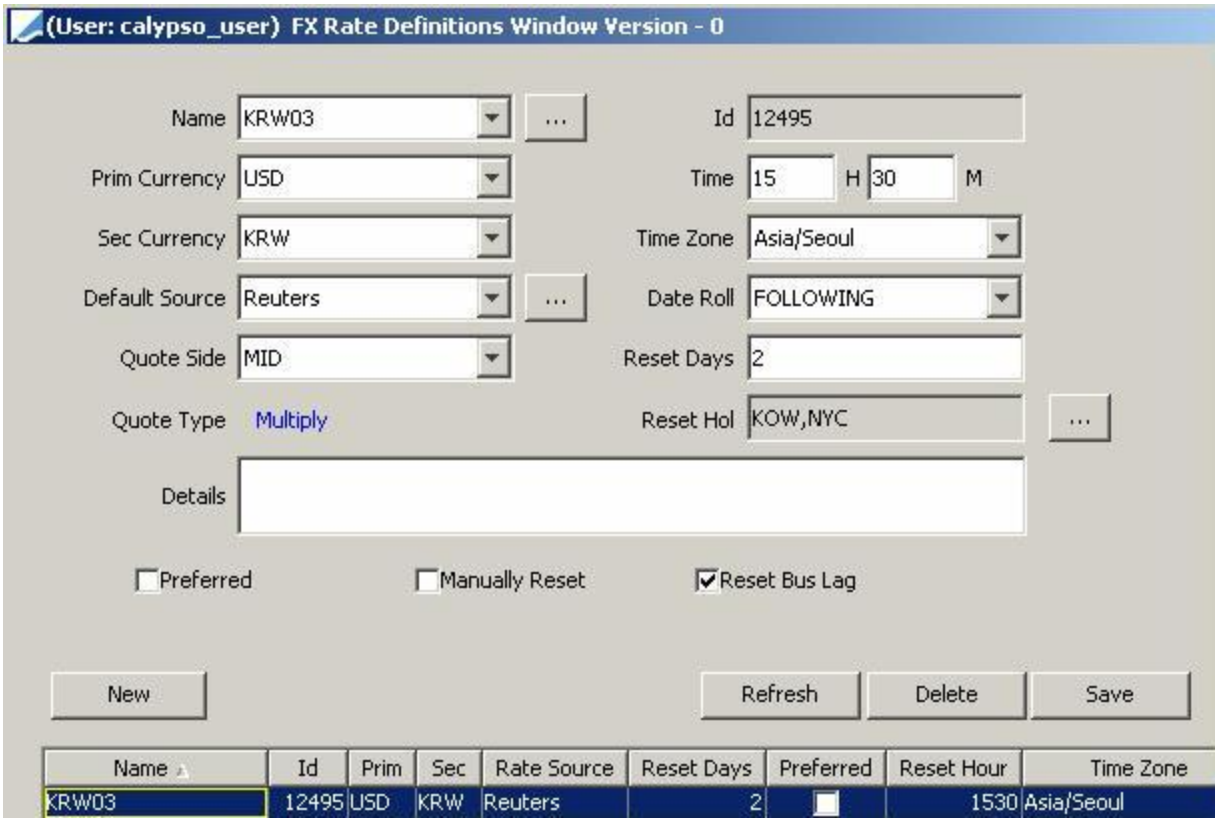
- Select the non-deliverable currency, or create it as needed.
- Check the "Non Deliverable" checkbox, and save.

16.2 Configuring an FX Rate Definition

Choose Main Entry > Configuration > Foreign Exchange > FX Rate Definitions, and define an FX Rate Definition between the non-deliverable currency and each possible settlement currency.

The FX Rate Definition allows fixing the rate between the non-deliverable currency and the settlement currency in order to convert all payment amounts into the settlement currency.

You can also define an FX Rate Definition between two non-deliverable currencies. This will be used to compute intermediary interest amounts between the two currencies.

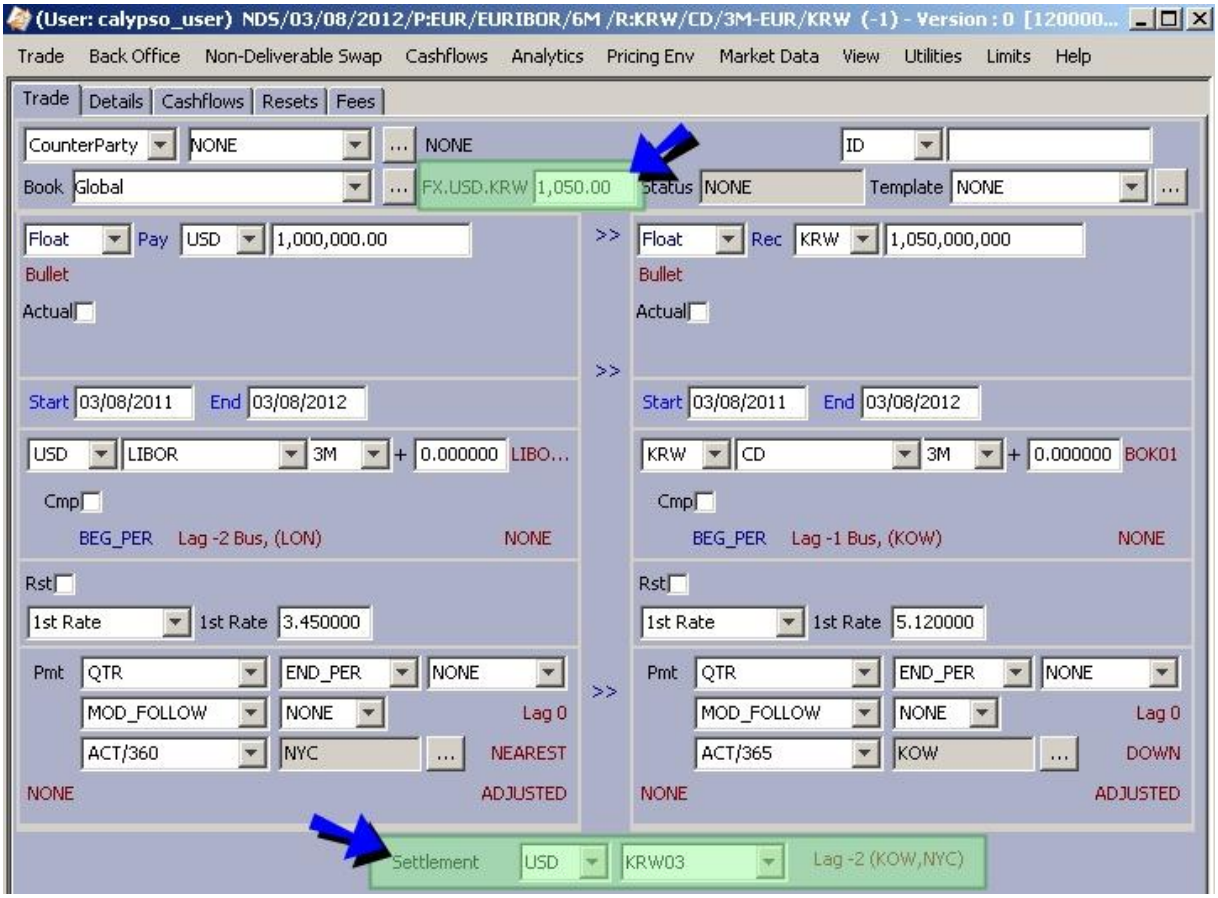


» Click ... next to the Name field and add an FX Rate Definition name, then select it.

» Then enter the information and save the FX Rate Definition - Help is available from that window.

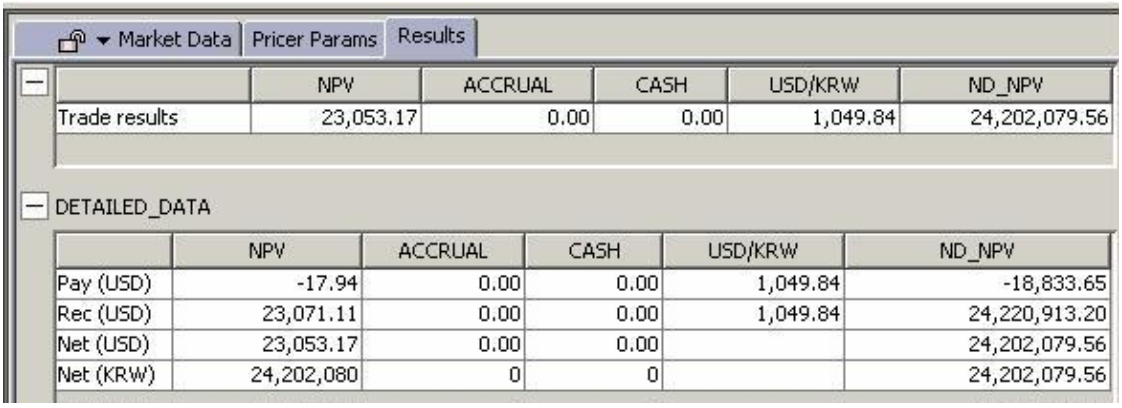
16.3 Capturing NDS Trades

Choose Trade > Interest Rates > NDS to open the NDS Swap worksheet, from Main Entry or from the Calypso Workstation.



» Once you select the settlement currency, the FX Rate Definition will appear. You can double-click the red label to override lag information. See below for details.

» In the results panel, all pricer measures are expressed in the settlement currency, except for ND_NPV.



Market Data | Pricer Params | Results

	NPV	ACCRUAL	CASH	USD/KRW	ND_NPV
Trade results	23,053.17	0.00	0.00	1,049.84	24,202,079.56

DETAILED_DATA

	NPV	ACCRUAL	CASH	USD/KRW	ND_NPV
Pay (USD)	-17.94	0.00	0.00	1,049.84	-18,833.65
Rec (USD)	23,071.11	0.00	0.00	1,049.84	24,220,913.20
Net (USD)	23,053.17	0.00	0.00		24,202,079.56
Net (KRW)	24,202,080	0	0		24,202,079.56

» In the cashflows, additional columns are added to show the amounts in the non-deliverable currency and in the settlement currency.

Known Int Amt USD	Native Currency	Interest Amt KRW	Known Settle FX Rate	Settlement Reset	Settlement FX Description
0.00	KRW	13,550,465	0.000000	06/06/2011	USD.KRW.KRW03.Reuters
0	KRW	3,310,904	0.000000	09/06/2011	USD.KRW.KRW03.Reuters
0	KRW	3,424,353	0.000000	12/06/2011	USD.KRW.KRW03.Reuters
0	KRW	4,092,185	0.000000	03/06/2012	USD.KRW.KRW03.Reuters

You can modify the interest amount in native currency.

Fixed cashflows in native currency are discounted using the discount curve of the native currency.

Floating cashflows in native currency are projected using the forecast curve of the native currency and discounted using the discount curve of the native currency.

Once the FX rate for a flow has been fixed, both fixed and floating flows are converted to the settlement currency and discounted using the discount curve of the settlement currency.

» If the settlement currency is different from the swap currencies, intermediary amounts are computed between the swap currencies provided an FX Rate Definition exists between the two currencies.

Intermediate Amt KRW	Intermediate SEK/KRW	Intermediate FX Rate Def	Intermediate Reset
47,325	3.54	SEK.KRW.SEK01.Reuters	12/23/2010

» You can use Pricing Env > Check Past Resets and Pricing > Check Past FXResets to check if any reset information is missing.

Trade Details

Fields	Description
FX Rate	Enter the FX rate between the selected currencies.

Settlement Details

The settlement details allow selecting the settlement currency and the FX Rate Definition.

Fields	Description
Settlement	Select the settlement currency and the FX Rate Definition to fix rates between the non-deliverable currency and the settlement currency. You can double-click the red label to override lag information. 

17. CAPTURING OIS TRADES

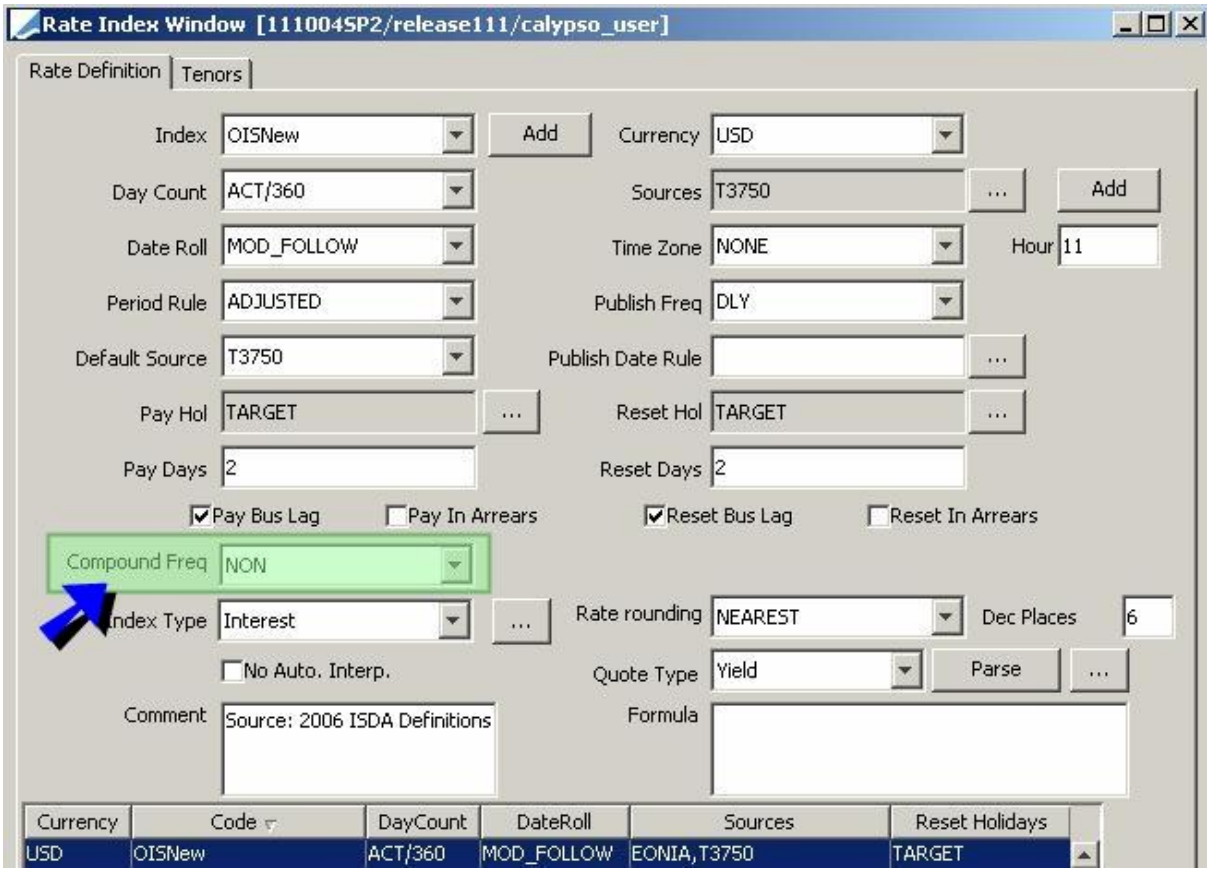
An overnight index swap (OIS) is a fixed-for-floating interest rate swap with a one week to two year duration. The floating-rate period is usually tied to a daily overnight rate, although occasionally, a daily fixing rate may be used. On the floating side, interest is calculated on a compound basis.

OIS Quick Reference

- Define the OIS rate index using Main Entry > Configuration > Interest Rates > Rate Index Definitions
- Enter OIS swap details in the Trade panel
- Then enter more trade details as described in Capturing Swap Trades.

17.1 DEFINING THE OIS RATE INDEX

Choose Main Entry > Configuration > Interest Rates > Rate Index Definitions.



The Rate Definition panel is selected by default.

- Select the rate index from the Index field, and enter its details.

  You can click **Add** to add it, if it does not exist.

- Click **Attributes** and set the following attributes. It brings up the Rate Index Attributes window. You can click **...** in the Rate Index Attributes window to add the attributes if they do not exist.

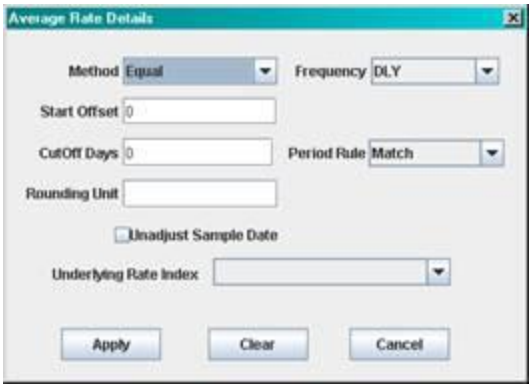
  Note that the attributes and their values are case sensitive.

- IndexCalculator = OISNew
- USE_ARREARS_ADJ = False

Note that other daily compounding calculators are available.

See Note on Daily Compounding for details.

» You can click **Average** to define sampling details, and select the default values.



» Click **Save** to save your changes.

» Then select the Tenors panel to define tenors for the rate index, and click **Save** to save your changes.

17.1.1 Note on Daily Compounding

There are different ways of setting a rate for daily compounding: DailyIndexCalculator = DailyCompound, IndexCalculator = OISNew, or IndexCalculator = OIS.

With OISNew, you can also set USE_ARREARS_ADJ to true to calculate the convexity adjustment. For OIS, it is hard-coded to false.

The main difference between DailyCompound and OIS / OISNew is the following:

- With DailyCompound, you set the compound frequency on the trade.
- With OIS/ OISNew, the compound frequency is hard-coded to DLY (Daily). You cannot select the DLY compounding frequency on the trade but the index calculator takes care of it. The compounding frequency on the rate index must be set to NON.

Note that if you have IndexCalculator = OISNew and OISMethod=OIS, it is the same asIndexCalculator = OIS.

Summary of differences between daily compounding calculators:

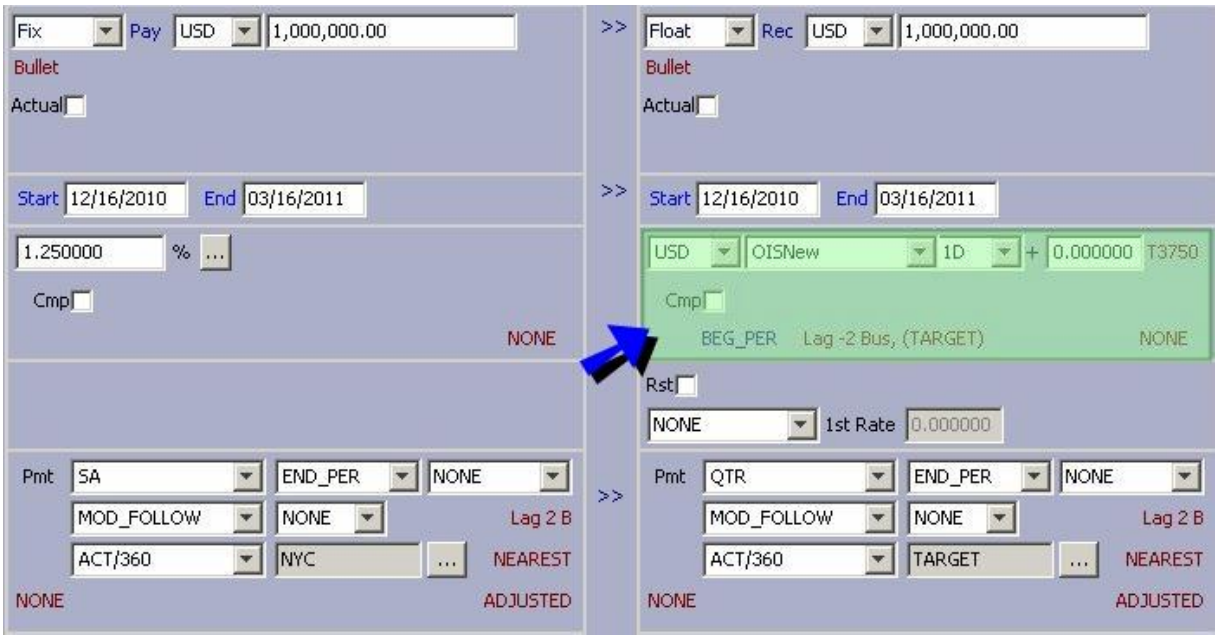
Features	IndexCalculator = OIS	IndexCalculator = OISNew	DailyIndexCalculator = DailyCompound
USE_ARREAR_ADJ	No convexity adjustment.	Can be set to true or false.	No convexity adjustment.
Control over trade compounding frequency	No - DLY compounding is hard-coded.	No - DLY compounding is hard-coded.	Compounding frequency selected on the trade.
Control over trade Reset Lag	No - It comes from the Rate Index.	No - It comes from the Rate Index.	No - It comes from the Rate Index.
Control over Reset Holidays	No - It comes from the Rate Index. Also in finding the final rate in a period it rolls to the next date (it ignores the Period Rule of the Rate Index).	No - It comes from the Rate Index. Also in finding the final rate in a period it rolls to the next date (it ignores the Period Rule of the Rate Index). Ignores Date Roll "NO_ CHANGE".	No - It comes from the Rate Index. The Period Rule of the Rate Index is respected. Respects Date Roll "NO_ CHANGE".

Features	IndexCalculator = OIS	IndexCalculator = OISNew	DailyIndexCalculator = DailyCompound
Rounding	Ignores Rate Index rounding - Can be set on the trade.	Defaults to Rate Index rounding - Can be overridden on the trade.	No rounding.
Reset timing: Beginning or End	Hard-coded to End.	Hard-coded to End.	Hard-coded to End.
Compounding Flat	Not used.	Can be selected on the trade.	Can be selected on the trade.
Compounding Spread	Not used.	Not used.	Can be selected on the trade.
Compounding NoComp	Not used.	Not used.	Can be selected on the trade.
Compounding as in OIS calculator	Yes.	Yes with OISMethod = OIS	No.
Sample Dates Display, with spread	Yes.	Yes.	Yes.
Sample Dates Display, no spread	Yes.	Yes.	Yes.

17.2 Capturing OIS Trades

Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

Here is a sample trade on the OIS rate index.

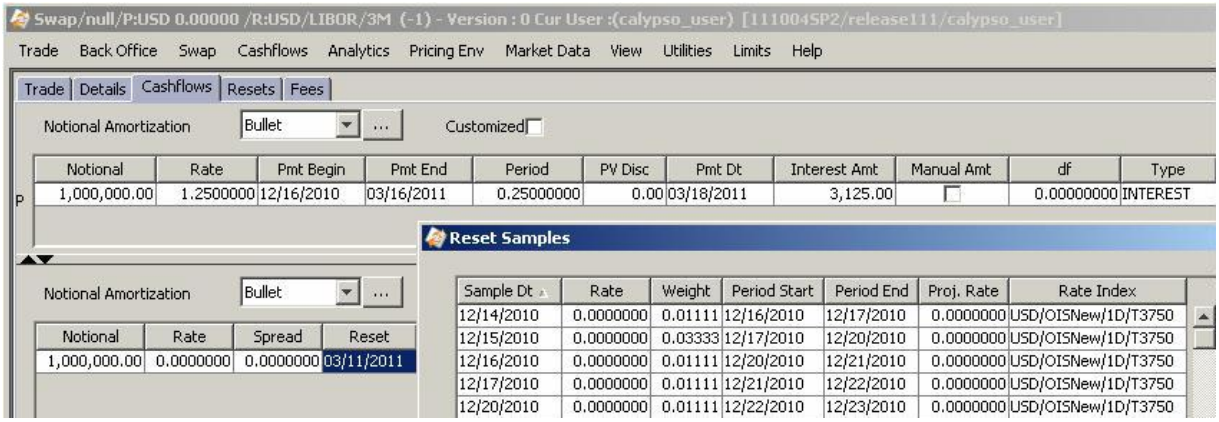


» You don't need to check the "Cmp" checkbox - Daily compounding is hard-coded in the calculator or the Rate Index.

» Alternatively, if you select a DLY compounding frequency for a rate index that is not setup for daily compounding, the DailyCompound calculator is used.

17.3 Displaying the Cashflows

Select the Cashflows panel for displaying the cashflows.



» Right-click a cashflow and choose "Sample Dts" to display the compounding periods. It brings up the Reset Samples window.

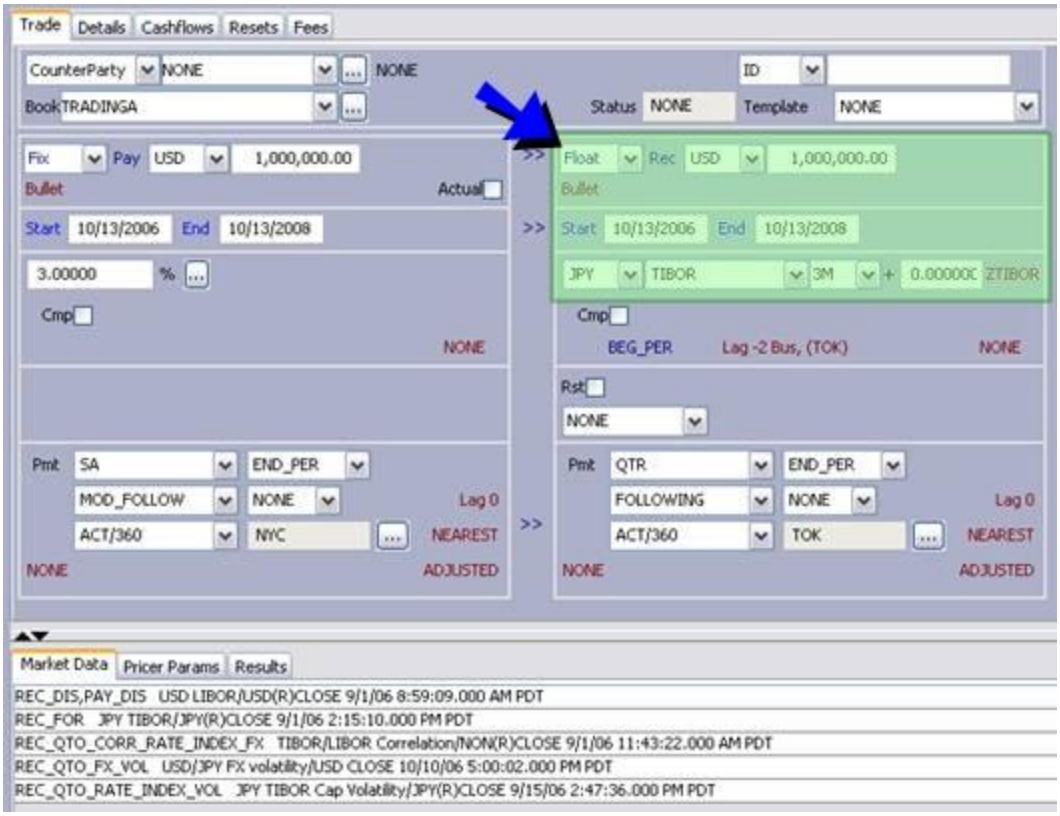
18. Capturing Quanto Swap Trades

A Quanto Swap is an interest rate swap where the currency of the notional on the floating leg differs from the currency of the reference index.

18.1 Sample Quanto Swap Trade

Choose Trade > Interest Rates > Swap to open the Swap worksheet, from Main Entry or from the Calypso Workstation.

The floating leg notional is in USD, and the reference index is in JPY. Payments occur in USD, but using JPY rates.



» Enter swap details in the Trade panel

» Then enter more trade details as described in Capturing Swap Trades.

18.2 Displaying the Cashflows

Select the Cashflows panel for displaying the cashflows.

Select Cashflows > Configure Columns to select columns specific to Quanto Swaps:

- QTO_ADJUSTMENT
- QTO_CORR_RATE_INDEX_FX
- QTO_FX_VOL
- QTO_RATE_INDEX_VOL

Fwd Rate	df	Type	QTO_ADJUSTMENT	QTO_CORR_RATE_INDEX_FX	QTO_FX_VOL	QTO_RATE_INDEX_VOL
4.67019	0.95083937	INTEREST	0.00710	0.82	4.19211	4.42679
4.67163	0.94108400	INTEREST	0.00884	0.82	4.17559	4.42680
4.67335	0.93142872	INTEREST	0.01056	0.82	4.15907	4.42680

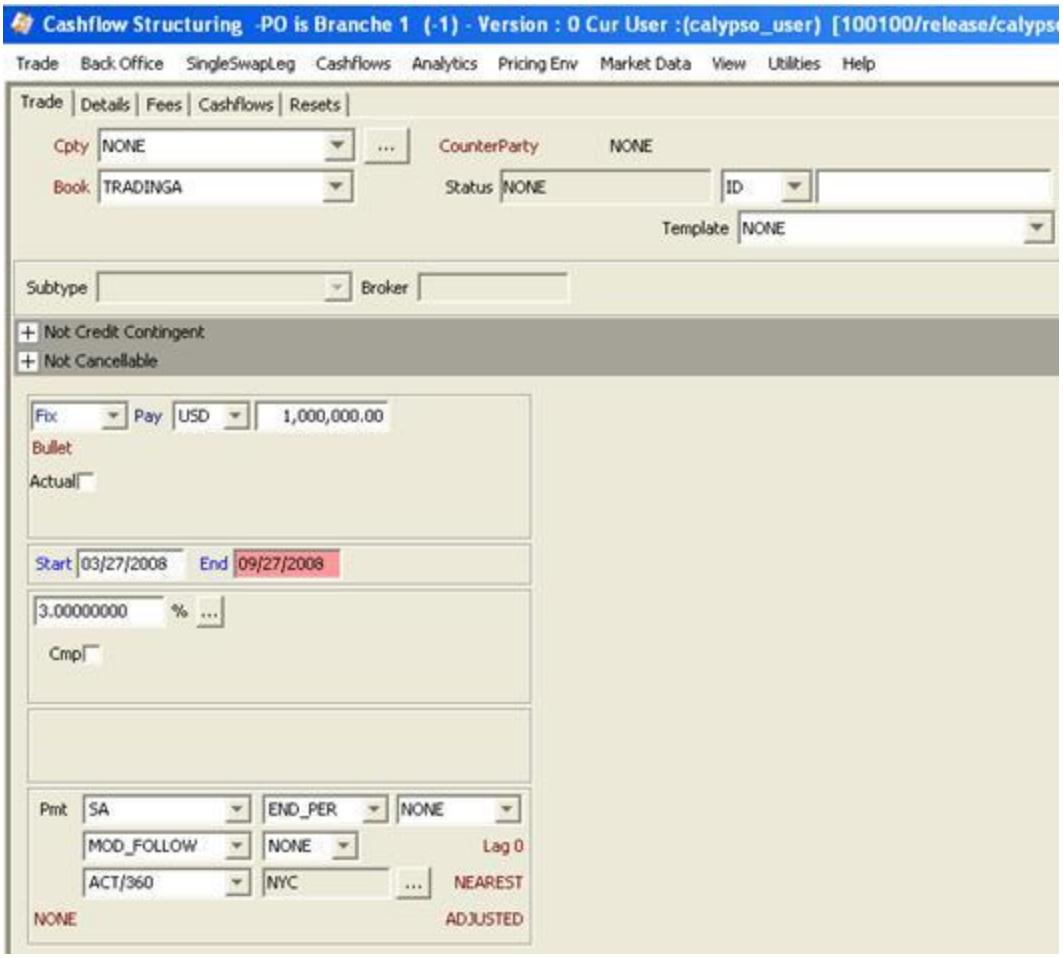
19. CAPTURING SWAP LEG TRADES

A Swap Leg is a swap with a single swap leg.

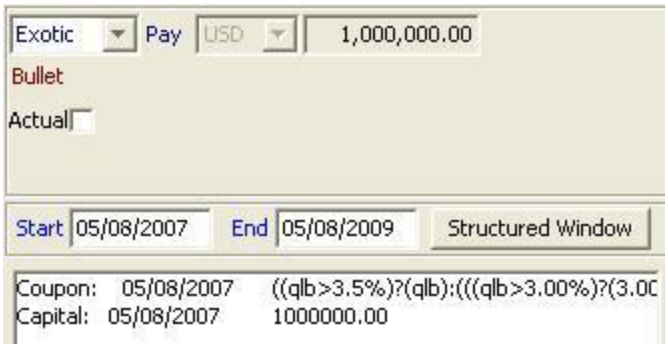
[**NOTE**: The product type SingleSwapLeg may not be available in the domain productType, so you need to add it. Similarly, if you plan to capture exotic single swap legs, you need to add Exotic to the domain "SingleSwapLeg.subtype"]

Choose Trade > Cash Flow Structuring to open the Swap Leg worksheet, from Main Entry or from the Calypso Workstation.

19.1 SAMPLE SWAP LEG TRADE



- Enter swap details in the Trade panel as described in Capturing Swap Trades.
- You can enable the cancelable and credit contingency features using the "SingleSwapLeg.extendedType" domain.
- You can enable the Exotic feature by selecting Exotic from the swap leg details – Then click **Structured Window** to define the exotic structure.



When pricing an exotic single swap, you can examine the coupon payoff using the pricer measure COUPON_PAYOFFS. In the pricing results, double-click the COUPON_PAYOFFS pricer measure to view the coupon payoff.

20. Capturing Swaption Trades

A Swaption is an option to enter into an underlying swap at a future date. The Swaption worksheet allows capturing European, American, and Bermudan swaptions.

Choose Trade > Interest Rates > Swaption to open the Swaption worksheet, from Main Entry or from the Calypso Workstation.

Swaptions Quick Reference

When you open a Swaption worksheet, the Trade panel is selected by default.

Entering Trade Details

» You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Or you can enter the trade fields directly. They are described below.

Note that the Trade Date is entered in the Details panel.

» For cash settled swaptions, enter cash settlement parameters in the Exercise/Settlement panel.

See Defining Cash Settlement Parameters for details.

» For defining the premium fees, choose Swaption > Premium Fee Calculator

» For Bermudan and American swaptions, define the exercise schedule and fees in the Ex Schedule panel

» Proceed to the other panels as applicable.

» For defining break clauses, choose Swaption > Cash Settle Info

Saving a Trade

» Hit F5 to save the trade, or choose Trade > Save.

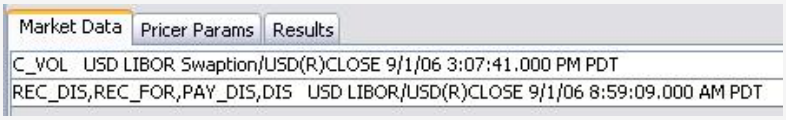
You can also hit F3 to save the current trade as a new trade, or choose Trade > Save As New.

You can also hit F12 to save the trade using any action available in the workflow, or choose Trade > Save Action. You will be prompted to select an action.

A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

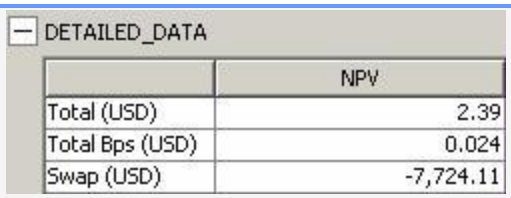
Pricing a Trade

» You can choose Pricing Env > Check to check if all required pricing data are available in the Pricing Environment.



» Click **Price** to price the trade.

The intrinsic value of the swaption (underlying swap NPV) can be viewed using the pricer measure DETAILED_DATA.


DETAILED_DATA

	NPV
Total (USD)	2.39
Total Bps (USD)	0.024
Swap (USD)	-7,724.11

When pricing a Bermudan swaption using PricerSwaptionLGMM, you can examine the following data.

- The calibration results using the pricer measure CALIBRATION_RESULTS. In the pricing results, double-click the pricer measure CALIBRATION_RESULTS.
- The points on volatility surface to which the trade will be sensitive to using the pricer measure VEGA_POINTS.
- The time-dependent Volatility and Mean Reversion using the pricer measure LGM_MODEL. In the pricing results, double-click the pricer measure LGM_MODEL.
- The pricer measure LGMM_BESTFIT_ERR allows plotting the calibration error function and get a sense of where the mean reversion.

  When using the BEST_FIT_LM calibration scheme, the pricer will do an additional calculation, and search in a brute force fashion over a range of mean reversion and sigma values, and display the best-fit error function. Note: The calibration scheme BEST_FIT_LM does not use this brute-force method, the brute-force method is simply for the user to get a feel for the error function and double check the BEST_FIT_LM calibration.

  You can use the pricing parameter LGMM_BEST_FIT_GRAPH_MESH_SIZE to control how fine the mesh used in the brute force search is.
- The pricer measure LGMM_MEANREV_SCEN allows viewing the price by mean reversion.

When pricing a swaption using PricerSwaptionSABR, you can compare the SABR Greeks and the Black Greeks using the SABR_GREEKS pricer measure.

The SABR Greeks can be compared with the individual pricer measures on PricerSwaptionSABR, whilst the Black Greeks can be checked against PricerSwaption.

You can also view details of the model's parameters using the pricer measure SABR_MODEL.

[**NOTE**: When a user enters a value for the pricing parameter SABRIMPLIEDVOL or VOLATILITY, the model switches to the Black model, so VEGA returns the Black Vega, and IMPLIEDVOLATILITY returns the Black equivalent volatility]

When pricing a Bermudan swaption with PricerSwaption, you can view the whole adjusted strike schedule using the EFFECTIVE_STRIKE pricer measure – Note that the pricing parameter ADJUST_FOR_EXERCISE_FEES must be set to true.

» You can hit F11 to solve for the break-even rate, and apply it to the fixed leg of the swap.

» You can hF12 to solve for the break-even spread, and apply it to the floating leg of the swap.

» Hit F9 to bring up the solver (or choose Analytics > Solve).

When pricing with PricerSwaption, you can solve for VOLATILITY or STRIKE.

When pricing with PricerSwaptionCEV, you can solve for CEV_ALPHA or CEV_BETA.

Select a target pricer measure and enter the target value. Then select the value to solve for (pay rate, receive rate, or FX rate), and click **Solve**.

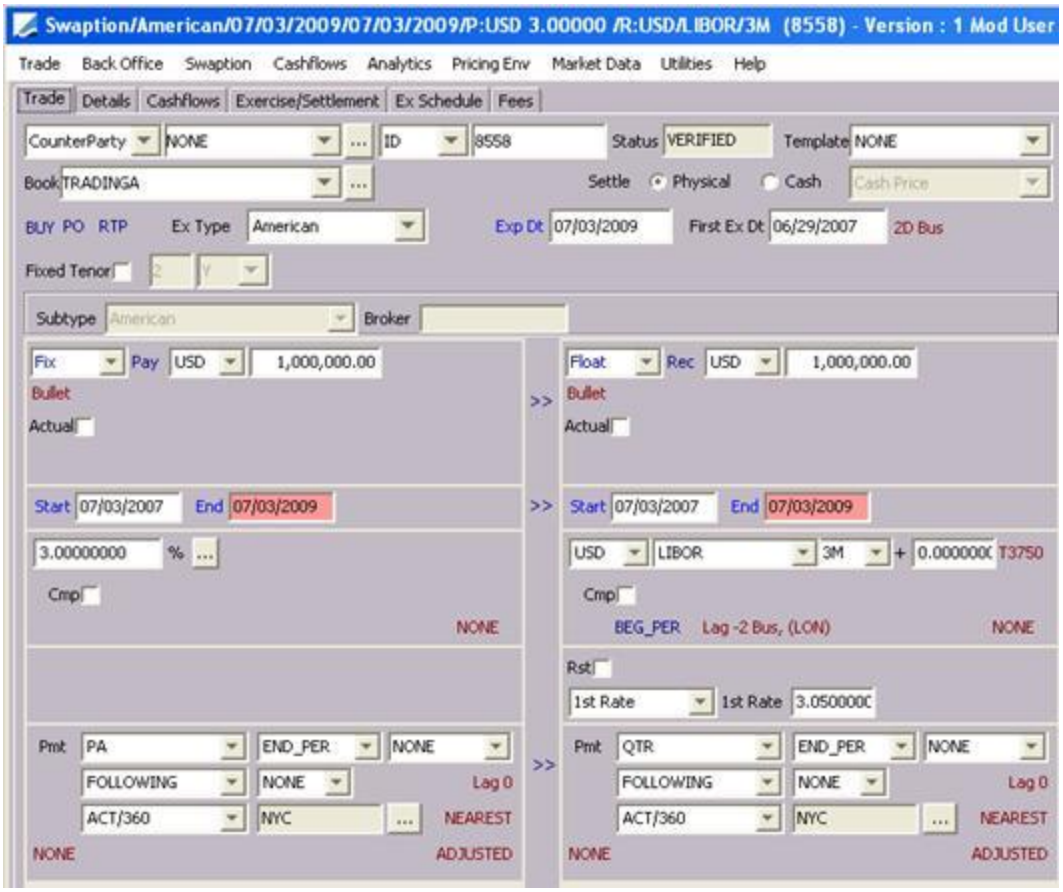
You can click **Apply** to set the value to solve for on the trade. Then click **Price** to obtain the target value.

You can modify the solver variables and details as needed.

TRADE LIFECYCLE

- You can exercise a swaption using Back Office > Exercise, or using the AUTOMATIC_EXERCISE scheduled task
- You can terminate a swaption using Back Office > Terminate
- You can reset the floating rates of the swap using Main Entry > Trade Lifecycle > Reset > Rate Reset, or using the RATE_RESET scheduled task

20.1 SAMPLE VANILLA SWAPTION TRADE



See also:

- Fixed Tenor Swaptions
- Trigger Swaptions

20.1.1 FIELD DESCRIPTION

The fields of the standard swaption worksheet are defined here.

Trade Details

Fields	Description
Role/Cpty	The first two fields of the worksheet identify the trade counterparty. The first field identifies the trade counterparty's role. The default role is specified using Utilities > Set Default Role. However, you can change it as applicable.

Fields	Description
	You can select a legal entity of specified role from the second field provided you have setup favorite counterparties. You can also type in a character to display the favorite counterparties that start with that character. Favorite counterparties are specified using Utilities > Configure Favorite Counterparties. Otherwise, click ... to select a legal entity of specified role from the Legal Entity Chooser. You can also type [Ctrl-F] to invoke the Legal Entity Chooser, or directly enter a Legal Entity short name.
Book	Trading book to which the trade belongs. Defaults to the book selected in the User Defaults. You can modify as applicable. You can select a book provided you have setup favorite books. Favorite books are specified using Utilities > Configure Favorite Books. Otherwise, click ... to select a book. The owner of the book (a processing organization) identifies your side of the trade.
Id **Ext Ref** **Int Ref**	Unique identification number of the trade. The trade id is automatically assigned by the system when the trade is saved. You can load an existing trade by typing the trade id into this field, and pressing [Enter]. You can also display the internal reference or external reference. The default trade reference to be displayed can be selected in the User Defaults. The internal reference and external reference can be set in the Details panel of the trade worksheet.
Status	Current status of the trade. The status is automatically assigned by the system based on the workflow configuration. The status will change over the lifetime of the trade according to the workflow configuration and the actions performed on the trade.
Template	You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable. If you setup favorite templates, only the favorite templates will be available for selection. You can setup favorite templates using Utilities > Configure Favorite Templates. In some trade window, you can click ... to setup favorite templates.
Subtype	The following subtypes are set by the system based on the type of swaption being captured: American, Bermudan, European, Exotic, FT European, FT American and FT Bermudan (FT stands for Fixed Tenor). You can set pricers and market data by swaption subtype.
Broker	Displays the broker if a broker fee is captured in the Fees panel.

Option Details

Fields	Description
Settle	Click Physical or Cash to determine the option's settlement method. If you click Cash, select the calculation method from the adjacent field to compute the settlement amount.  You can define additional parameters in the Exercise/Settlement panel. See Defining Cash Settlement Parameters for details. [**NOTE**: If you have defined cash settlement defaults (CSD), it will pick up the settlement method from the CSD defined for the agreement specified in domain CashSettleDefaultsAgreements / rate index / currency - It is ANY by default. For example, ANY is defined in CashSettleDefaultsAgreements, and you have a CSD defined for ANY / LIBOR / USD. If the trade is LIBOR / USD and settles in Cash, then the

Fields	Description
	settlement method from the CSD will be set on the trade by default]
BUY/SELL	Direction of the trade from the book's perspective. Double-click the BUY label to switch to SELL as applicable.
RTP/RTR/Straddle	Direction of the option. Double-click the RTP label to switch to RTR or Straddle as applicable. • RTP (right to pay fixed leg) • RTR (right to receive fixed leg) • Straddle (a simultaneous RTP and RTR at the same strike and maturity)
Ex Type	Select the exercise type: European, Bermudan, or American. See below for details.

Exercise Type - European

The option can only be exercised on the expiration date.

- Enter the expiration date in the Exp Dt field. The background color will change if the date is not a business day. You can double-click the Exp Dt label to roll the date to the previous business day.
- Enter the delivery date of the underlying swap (start date), or enter a number of days after the expiration date (2D for example).
- Double-click the "2D Bus NYC" label to bring up the OptionCalcDialog. See OptionCalcDialog below.

Exercise Type - Bermudan

The option can be exercised according to a user-defined schedule.

- Select the Ex Schedule panel to define the exercise schedule. The Exp Dt and Del Dt fields in the Trade panel are not editable.

  See Defining a Bermudan Exercise Schedule for details.

- Double-click the "2D Cal NYC-QTR" label to bring up the OptionCalcDialog. See OptionCalcDialog below.

Exercise Type - American

The option can be exercised within a date range.

- Enter the last exercise date in the Last Ex Date field, and the first exercise date in the First Ex Dt field. The option can be exercises between those two dates. The background color will change if the date is not a business day. You can double-click the Last Ex Date label to roll the date to the previous business day.
- Double-click the "2D Bus NYC" label to bring up the OptionCalcDialog. See OptionCalcDialog below.
- You can also define an exercise schedule for American swaptions.

  See Defining an American Exercise Schedule for details.

OptionCalcDialog

» Select the holiday calendar.

» Enter a number of lag days, months or years in the Offset field. This is the offset between the expiration date and the delivery date.

Days lag "D" can be business days or calendar days. Double-click the Bus label to switch to Cal as needed.

For months lag "M" and years lag "Y", the system uses calendar days only.

The "No Tenor" checkbox only applies to days lag, when you enter more than 31 days. If you check the "No Tenor" checkbox, the offset will not be converted to a tenor, as shown below for 35D.

Otherwise it will be converted to a tenor. Note that the conversion is for display only. The system always stores 35D.

» Select the date roll convention in the Adjustment field.

» For European options only, enter the exercise fee.

For American and Bermudan options, you can enter the exercise fee in the Ex Schedule panel.

For Bermudan options, select the frequency of the exercise dates.

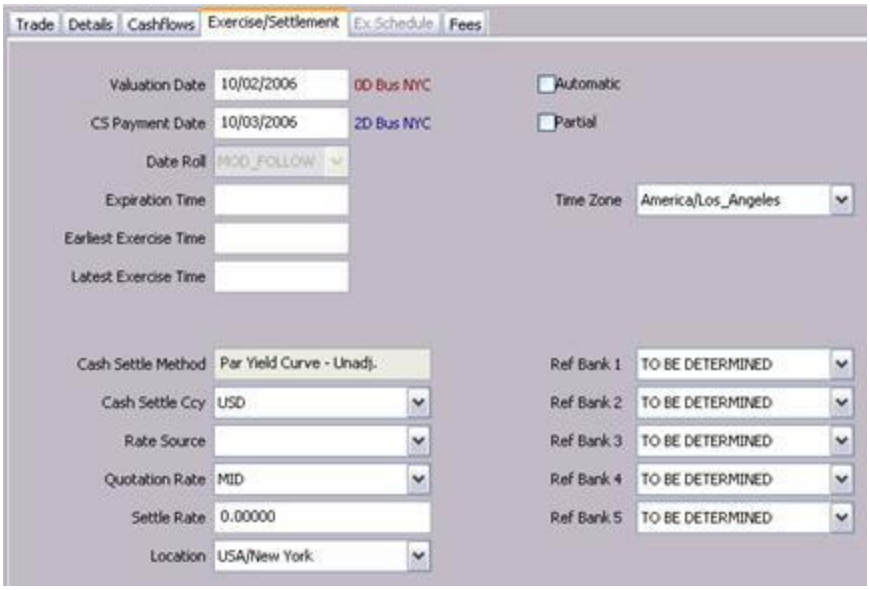
Swap Details

See Capturing Swap Trades for details.

20.2 Defining Cash Settlement Parameters

For cash settled options, select the Exercise/Settlement panel to define the parameters for computing the settlement amount.

The fields in this window default from Cash Settlement Defaults defined for the agreement specified in domain CashSettleDefaultsAgreements / rate index / currency - It is ANY by default.



» The valuation date and payment date default to the dates entered in the Trade panel (Expiration Date and Delivery Date) +/- the number of valuations days / payment days defined in Cash Settlement Defaults if any. Double-click the adjacent label to modify the dates as needed. It will bring up the OptionCalDialog previously described.

» The cash settlement method is selected in the Trade panel.

» Enter the fields described below as needed.

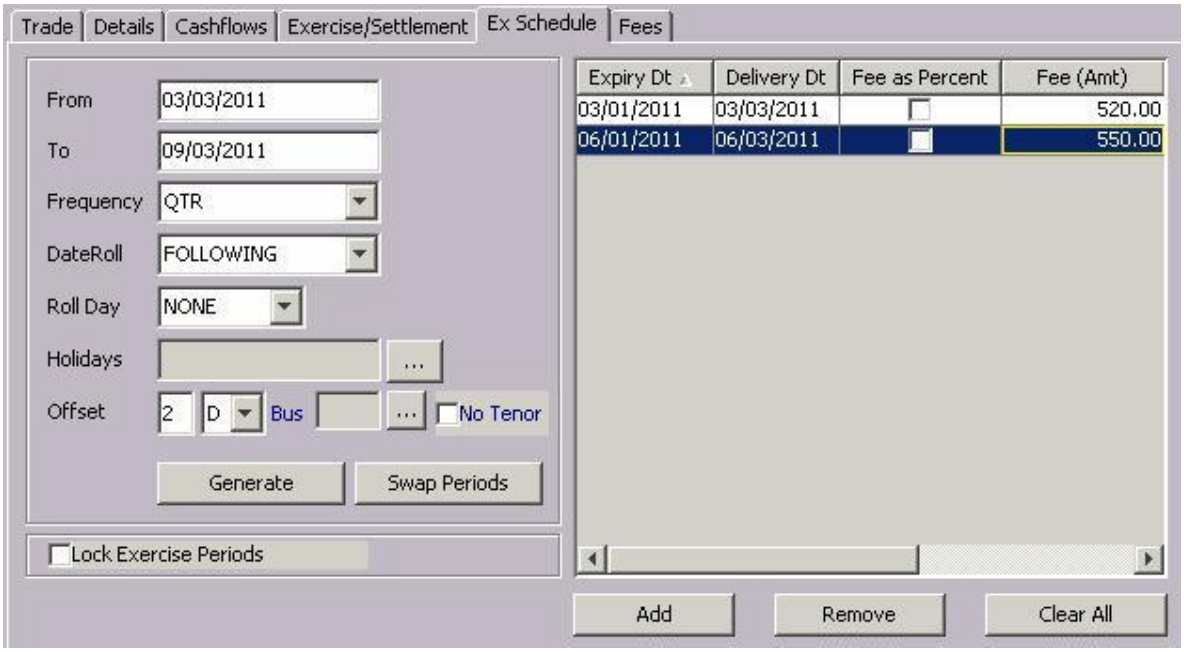
Settlement Details

Fields	Description
Expiration Time	Enter the time at which the option expires, in the selected timezone. Defaults to Cash Settlement Defaults if any.
Earliest Exercise Time	Enter the earliest time when the option can be exercised, in the selected timezone. Defaults to Cash Settlement Defaults if any.
Latest Exercise Time	Enter the latest time when the option can be exercised, in the selected timezone.
Time Zone	Select the timezone for expiration time, and exercise times. Defaults to Cash Settlement Defaults if any.
Automatic	Check the Automatic checkbox to allow automatic exercise. Defaults to Cash Settlement Defaults if any. Swaptions can be automatically exercised using the AUTOMATIC_EXERCISE scheduled task, provided they are in-the-money.  » You can specify a threshold in percentage to trigger the automatic exercise. Otherwise, choose Back Office > Exercise to exercise the option. Help is provided from that window.
Partial	Only appears for European options. Check the Partial checkbox to allow partial exercise. 

Fields	Description
	» You can specify the minimum and maximum notional that can be partially exercised.
Multiple	Only appears for American and Bermudan options. Check the Multiple checkbox to allow multiple exercises.  » You can specify the minimum and maximum notional that can be partially exercised.
Cash Settle Ccy	Select the currency of the settlement amount. Defaults to Cash Settlement Defaults if any.
Rate Source	You can select a rate source or none (empty). Rate sources are defined in the RateSource domain. If you select none, you have to select a set of reference banks.  » You can select a legal entity of role ReferenceBank. If you select OTHER_SOURCE, you need to select a rate index from the Rate Index field. 
Quotation Rate	Select the instance of the quotation rate that you want to use: MID, BID, or ASK. Defaults to Cash Settlement Defaults if any.
Settle Rate	Displays the settlement rate used to compute the settlement amount for the cash settlement methods "Par Yield Curve - Adj." and "Par Yield Curve - Unadj.". In the Option Exercise Window, there is a Settlement Rate field. You can get the value from the pricing environment by clicking **Price**, or you can enter a value. If you enter a rate, it will be displayed here.
Location	Select the ISDA location. Defaults to Cash Settlement Defaults if any, or to the location of the selected currency otherwise.

20.3 Defining a Bermudan Exercise Schedule

Select the Ex Schedule panel.



You can generate a schedule from Swap Periods or a Custom Schedule.

Schedule from Swap Periods

» Click **Swap Periods** to generate the exercise schedule based on the cashflows of the underlying swap.

You can enter the fees for each period in percentage or in amounts.

You can check / uncheck the Include checkbox to include / exclude the corresponding period.

Note that the column Ex Choice is not currently used.

Custom Schedule

» Enter From and To dates, select a frequency, a date roll and holiday calendars (for the expiration date and for the delivery date).

» Enter a number of lag days to compute the delivery date based on the actual call date. And select Bus if the lag days are business days, or Cal for calendar days.

» Then click **Generate** to generate the schedule.

You can also click **Add** to add specific dates.

You can enter the fees for each period in percentage or in amounts.

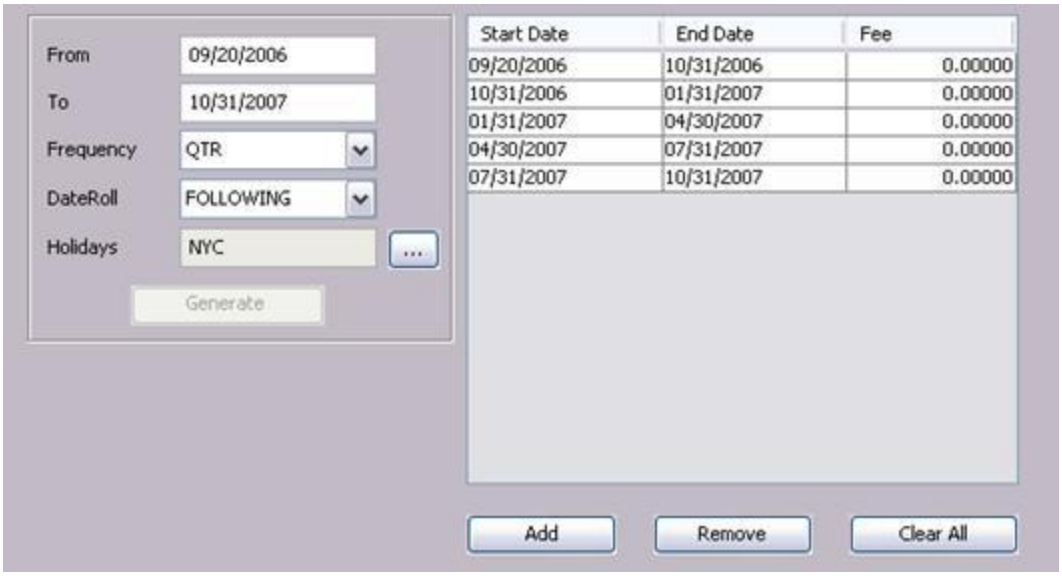
You can check / uncheck the Include checkbox to include / exclude the corresponding period.

Note that the column Ex Choice is not currently used.

You can check "Lock Exercise Periods" to prevent the system from regenerating custom schedules.

20.4 Defining an American Exercise Schedule

Select the Ex Schedule panel.



» Enter the schedule details, and click **Generate** to define a custom schedule.

You can enter the exercise fee amount for each period.

21. CAPTURING FIXED TENOR SWAPTION TRADES

Choose Trade > Interest Rates > Swaption to open the Swaption worksheet, from Main Entry or from the Calypso Workstation.

» Check the "Fixed Tenor" checkbox, and enter the tenor in the adjacent fields. See below for details.

» Then enter more trade details as described in Capturing Swaption Trades.

Options Details

Fields	Description
Fixed Tenor	Check the Fixed Tenor checkbox to set the swaption as fixed tenor. You can set the tenor in the adjacent fields.  The start and end date of the underlying swap are disabled – It starts on the option's delivery date and ends on the option's delivery date + fixed tenor. The system currently only supports the pricing of European fixed tenor swaptions.

22. CAPTURING TRIGGER SWAPTION TRADES

A Trigger Swaption is an option on a swap that you can exercise on the exercise date if the trigger index rate is above (or below) the trigger rate. There are two types:

- Right to Pay (RTP) — a swap where the buyer pays a fixed interest rate when the trigger index rate exceeds the exercise price.
- Right to Receive (RTR) — a swap where the buyer receives a fixed interest rate when the trigger index rate declines below the exercise price.

Choose Trade > Interest Rates > Trigger Swaption to open the Trigger Swaption worksheet, from Main Entry or from the Calypso Workstation.

22.1 SAMPLE TRIGGER SWAPTION TRADE

» Enter trigger details as described below.

» Then enter more trade details as described in Capturing Swaption Trades.

Trigger Details

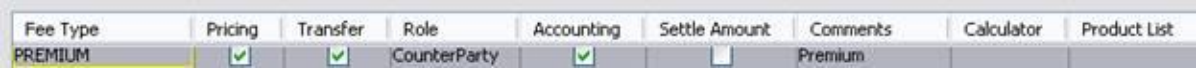
Fields	Description
ATM Payoff	Check if the swaption should be exercised, if on the exercise date the index rate is equal to the trigger rate. Uncheck otherwise.
Index	Enter the index used on the exercise date to compare with the trigger rate. Note that it may be different from the floating index on the underlying swap. The rate index details include the currency, index name, tenor, spread, and source.
Rate	Enter the trigger rate.
Reset Lag	Double-click the red lag details to enter the offset and holidays.
Exercise Labels	The trade worksheet displays the type of exercise according to the following criteria: • When the underlying swap pay side rate is fixed (RTP), it displays Up and In. • When the underlying swap receive side rate is fixed (RTR), it displays Down and In.

23. PREMIUM CALCULATOR

This document describes the settings of the Premium Calculator window.

When the trade is priced, the premium fee is automatically calculated according to the cashflow schedule. You can modify the premium fee to be a single fee, or to be calculated according to a custom schedule.

The premium fee is a fee of type PREMIUM. Such a fee needs to be defined in Main Entry > Configuration > Fees, Haircuts, & Margins > Fee Definition.



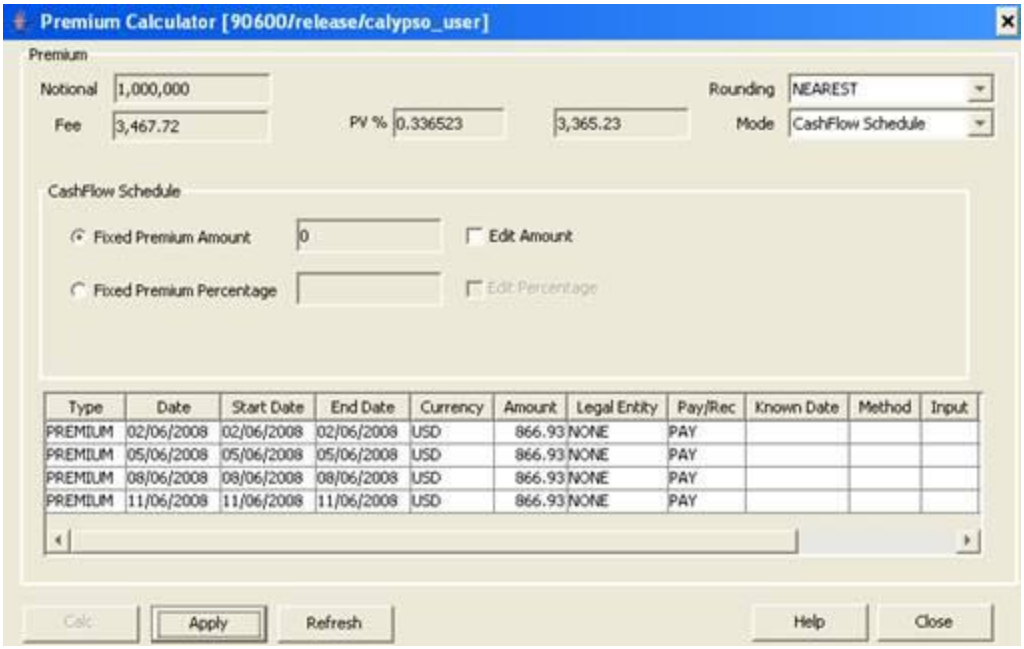
Once you apply the premium fee to the trade, it is displayed in the Fees panel.

The premium fee can be defined as follows:

- Defining a Premium Fee According to the Cashflow Schedule
- Defining a Single Premium Fee
- Defining a Premium Fee According to a Custom Schedule

23.1 DEFINING A PREMIUM FEE ACCORDING TO THE CASHFLOW SCHEDULE

This is the default calculation when the trade is priced.

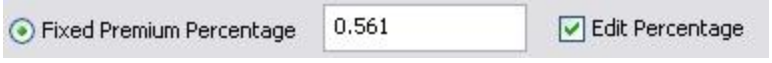


» You can modify the rounding convention from the Rounding field.

» You can modify the fee amount as needed.

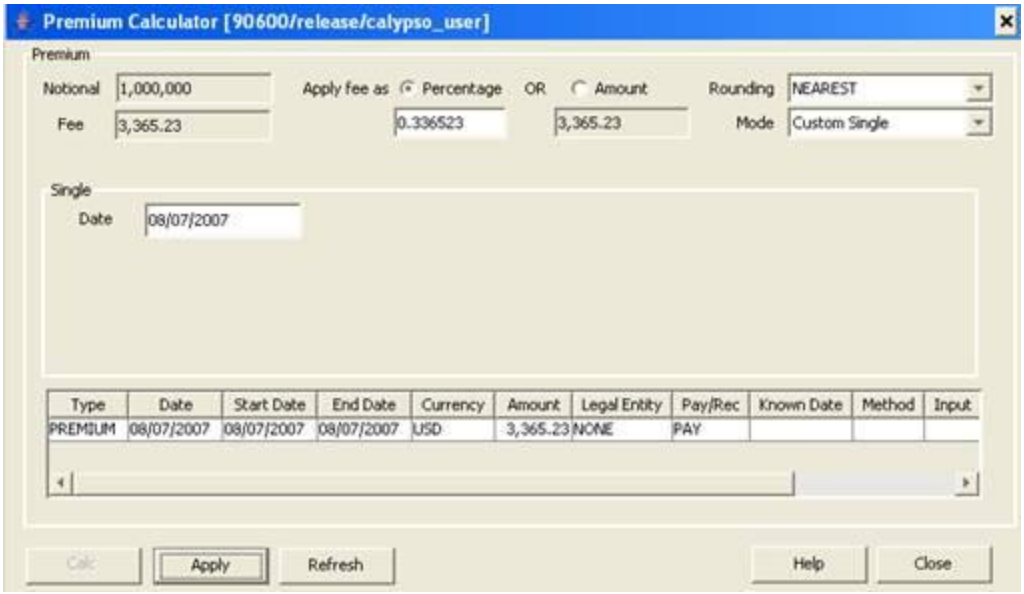
- Click "Fixed Premium Amount" and check the "Edit Amount" checkbox to modify the fee amount for each fee period.

- Or click "Fixed Premium Percentage" and check the "Edit Amount" checkbox to modify the fee percentage.



» Then click **Calc** to recalculate the fee, and click **Apply** to save the fees. You can view the generated fees in the Fees panel.

23.2 Defining a Single Premium Fee



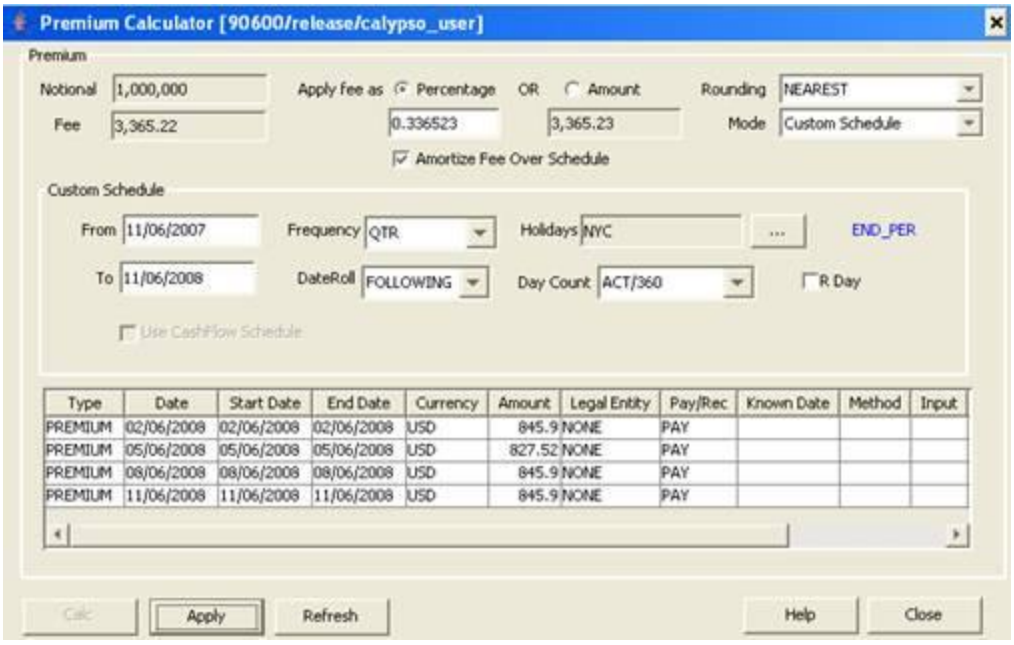
» Select "Custom Single" from the Mode field.

» Click Percentage to enter the fee as a percentage of the notional, or Amount to enter a fee amount.

» Select the rounding convention from the Rounding field, and enter the fee date in the Date field.

» Then click **Calc** to calculate the fee, and click **Apply** to save the fee. You can view the generated fee in the Fees panel.

23.3 Defining a Premium Fee According to a Custom Schedule



» Select "Custom Schedule" from the Mode field.

» Click Percentage to enter the fee as a percentage of the notional, or Amount to enter a fee amount. This is the total amount that will be broken down according to the schedule.

» Select the rounding convention from the Rounding field.

» Check "Amortize Fee Over Schedule" to assign the total premium by percentage or amount to each period, or uncheck to assign the same amount to each period.

» Enter the criteria to define the custom schedule: From and To dates, frequency, payment calendars, date roll convention, day count, payment date, and roll day adjustment.

Fields	Description
Frequency	Select the payment frequency.
Holidays	Click ... to select payment calendars. They are used to determine business days.
END_PER/BEG_PER	Double-click the END_PER label to switch to BEG_PER as needed. • END_PER if the payment occurs at the end of the payment period. • BEG_PER if the payment occurs at the beginning of the payment period.
DateRoll	Select the date roll convention to roll the payment dates when they fall on business days. The payment calendar is used to determine business days. Date roll conventions are described under Main Entry > Help > Date Roll Conventions.
Daycount	Select the day count convention to determine the number of days in the payment periods. Daycount conventions are described under Main Entry > Help > Day-Count Conventions.
R Day	Check the "R Day" checkbox to enter a fixed day of the month to which the date will be rolled. For example, entering "5" forces the payment date to be on the fifth calendar day of the month.
Use Cashflow Schedule	Only applies if the trade has stub periods. When checked, if your trade has stub periods, all the correct dates will have been generated for the trade. Then you can overlay the settings of frequency, date roll, beg/end, etc. on top of that. Ensure that the frequency is less than or equal to the frequency of the cashflows. This is similar to the way Bermudan exercise dates generation works.

» Then click **Calc** to calculate the fee, and click **Apply** to save the fees. You can view the generated fees in the Fees panel.

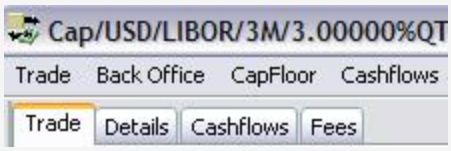
Type	Date	Start Date	End Date	Currency	Amount	Legal Entity	Pay/Rec
PREMIUM	02/06/2008	02/06/2008	02/06/2008	USD	845.9	NONE	PAY
PREMIUM	05/06/2008	05/06/2008	05/06/2008	USD	827.52	NONE	PAY
PREMIUM	08/06/2008	08/06/2008	08/06/2008	USD	845.9	NONE	PAY
PREMIUM	11/06/2008	11/06/2008	11/06/2008	USD	845.9	NONE	PAY

24. Capturing Cap Floor Trades

The following types of trades can be captured in the Cap Floor worksheet: Vanilla, Digital, Flexible, Chooser, Ratchet, Sticky and Momentum.

Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

Caps & Floors Quick Reference



When you open a Swap worksheet, the Trade panel is selected by default.

Entering Trade Details

» You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Or you can enter the trade fields directly. They are described below.

Note that the Trade Date is entered in the Details panel.

» For defining the premium fees, choose Cap Floor > Premium Fee Calculator

» Proceed to the other panels as applicable.

» For defining break clauses, choose Cap Floor > Cash Settle Info

Saving a Trade

» Hit F5 to save the trade, or choose Trade > Save.

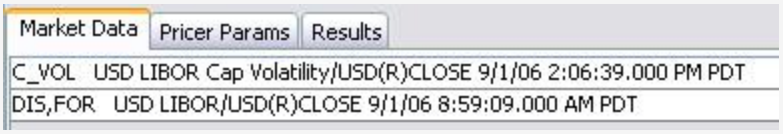
You can also hit F3 to save the current trade as a new trade, or choose Trade > Save As New.

You can also hit F12 to save the trade using any action available in the workflow, or choose Trade > Save Action. You will be prompted to select an action.

A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

Pricing a Trade

» You can choose Pricing Env > Check to check if all required pricing data are available in the Pricing Environment.

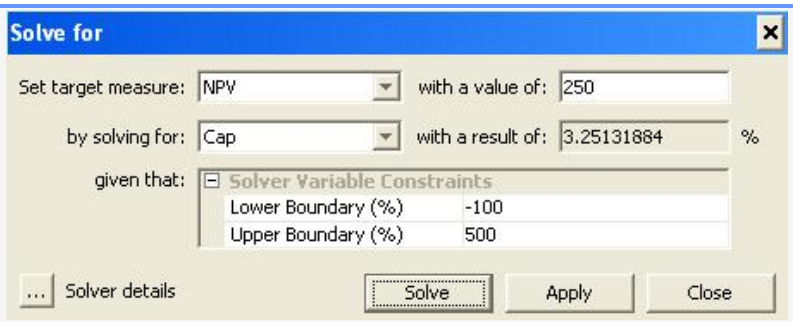


» Click **Price** to price the trade.

You can hit F11 to solve for the break-even rate, and apply it to the fixed leg of the swap.

You can hit F12 to solve for the break-even spread, and apply it to the floating leg of the swap.

» Hit F9 to bring up the solver (or choose Analytics > Solve).



Select a target pricer measure and enter the target value. Then select the value to solve for (pay rate, receive rate, or FX rate), and click **Solve**.

You can click **Apply** to set the value to solve for on the trade. Then click **Price** to obtain the target value.

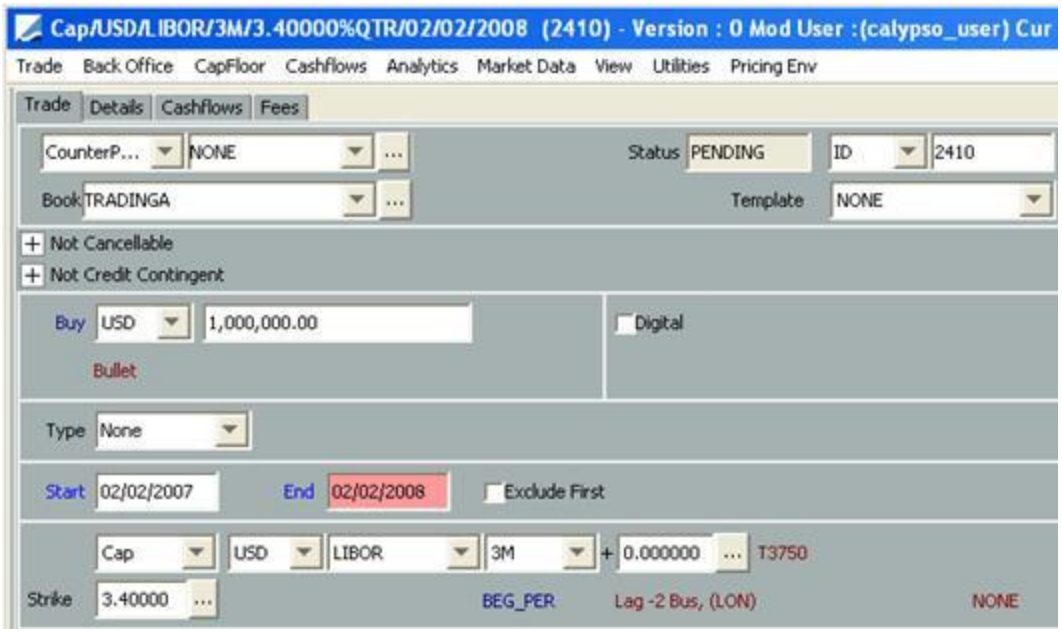
You can modify the solver variables and details as needed.

TRADE LIFECYCLE

» You can terminate a cap floor using Back Office > Terminate

» You can reset the floating rates of the cap floor using Main Entry > Trade Lifecycle > Reset > Rate Reset, or using the RATE_RESET scheduled task

24.1 SAMPLE VANILLA CAP FLOOR TRADE



This document describes all the fields of the Cap Floor worksheet. You can click the links below for information on capturing specific types of caps and floors:

- Cancelable Caps and Floors
- Chooser Caps and Floors
- CMS Caps and Floors
- Credit Contingent Caps and Floors
- Digital Caps and Floors
- Exotic Caps and Floors

- Flexible Caps and Floors
- In Arrear Caps and Floors
- Inflation Caps and Floors
- Momentum Caps and Floors
- Ratchet Caps and Floors
- Spread Caps and Floors
- Sticky Caps and Floors

24.1.1 Trade Panel - Fields Description

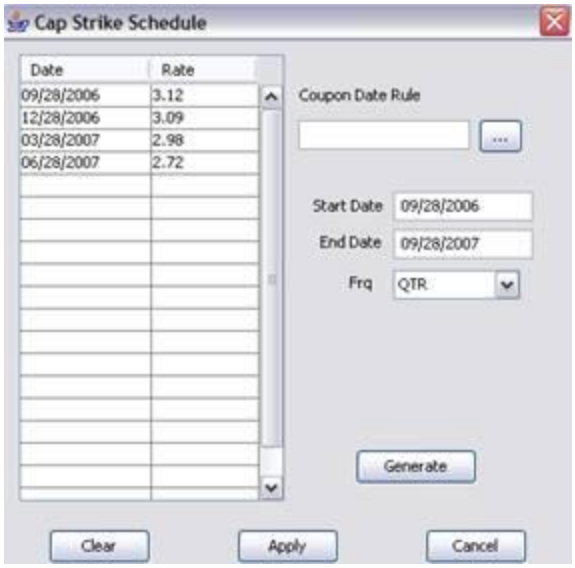
The fields of the standard cap floor worksheet are defined here.

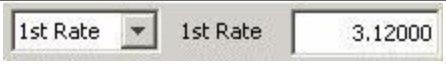
Trade Details

Fields	Description
Role/Cpty	The first two fields of the worksheet identify the trade counterparty. The first field identifies the trade counterparty's role. The default role is specified using Utilities > Set Default Role. However, you can change it as applicable. You can select a legal entity of specified role from the second field provided you have setup favorite counterparties. You can also type in a character to display the favorite counterparties that start with that character. Favorite counterparties are specified using Utilities > Configure Favorite Counterparties. Otherwise, click ... to select a legal entity of specified role from the Legal Entity Chooser. You can also type [Ctrl-F] to invoke the Legal Entity Chooser, or directly enter a Legal Entity short name.
Book	Trading book to which the trade belongs. Defaults to the book selected in the User Defaults. You can modify as applicable. You can select a book provided you have setup favorite books. Favorite books are specified using Utilities > Configure Favorite Books. Otherwise, click ... to select a book. The owner of the book (a processing organization) identifies your side of the trade.
Id **Ext Ref** **Int Ref**	Unique identification number of the trade. The trade id is automatically assigned by the system when the trade is saved. You can load an existing trade by typing the trade id into this field, and pressing [Enter]. You can also display the internal reference or external reference. The default trade reference to be displayed can be selected in the User Defaults. The internal reference and external reference can be set in the Details panel of the trade worksheet.
Status	Current status of the trade. The status is automatically assigned by the system based on the workflow configuration. The status will change over the lifetime of the trade according to the workflow configuration and the actions performed on the trade.
Template	You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable. If you setup favorite templates, only the favorite templates will be available for selection. You can setup favorite templates using Utilities > Configure Favorite Templates. In some trade window, you can click ... to setup favorite templates.

Cap Floor Details

Fields	Description
Buy/Sell	Direction of the trade from the book's perspective. Double-click the Buy label to switch to Sell as applicable.  Select the currency from the adjacent field. It defaults to the currency in the User Defaults. Enter the principal amount in the adjacent field. You can use shortcuts, for example enter "10m" for 10,000,000.
Bullet	Double-click the Bullet label to define the amortization structure of the principal. It brings up the Product Detail window. You can set amortization details in the Amortization and Accrual panel. Help is available from that window.
Type	Choose None for a vanilla cap floor. The other types are described in their own topic. You can click the links below for details. Chooser Caps and Floors Flexible Caps and Floors Momentum Caps and Floors Ratchet Caps and Floors Sticky Caps and Floors
Start/End	Enter the start and end dates of the cap floor. The start date defaults to the spot date of the selected currency. You can modify it as needed. You can use shortcuts, for example enter "1y" for one year, [Ctrl+N] for today, etc. Note that the system uses the payment calendar to calculate the spot date. A date that appears with a red background indicates a non-business day. Hit [+] or [-] to move the date one day forward or backward, respectively.
Exclude First	Check the "Exclude First" checkbox to exclude the first caplet from the cashflows. When doing a Copy/Paste Cap to Swap: If "Exclude First" is checked, copying the Cap to a Swap will ignore that flag. In order to copy the flag, set the environment property OLD_CAPTOSWAP_PASTE to true.
Cap Floor Type	Select the type of cap floor: Cap, Floor, Collar, Corridor, Flooridor, Straddle, or Strangle. The selection may be limited based on the Type field. • Corridor - Combination of two caps, one purchased by a borrower at a set strike and the other sold by the borrower at a higher strike to, in effect, offset part of the premium of the first cap. • Flooridor - combination of two floors where cost of the purchase of a floor is offset by the sale of another floor with a lower, further, out of the money strike. • Collar - Combined Cap and Floor. A collar is created by purchasing a cap or floor and selling the other. The premium due for the cap (floor) is partially offset by the premium received for the floor (cap), making the collar an effective way to hedge rate risk at low cost. • Straddle - Combination of a bought cap and a bought floor with the same strike; sold straddle is same combo but sold. • Strangle - Combination of a bought cap and a bought floor with different strikes.
Reference Index	Select the reference index. The reference index is defined by a currency, rate index, tenor and source.  The currency and rate index default to the currency and default index selected in User Defaults. The tenor and source default to the first tenor and source available for that rate index. Rate indices are created using Main Entry > Configuration > Interest Rates > Rate Index Definitions.

Fields	Description
	You can modify the default values as needed. You can enter a spread over the rate value in the field adjacent to the tenor. If you double-click the source label (T3750 in this example), it brings up the Product Detail window. You can define a spread schedule in the Index and Resets panel. Help is available from that window.
Strike	Only appears for trade types Cap, Floor and Straddle.  Enter the strike rate. You can also click ...to define a strike schedule.  » Click ... next to the Coupon Date Rule field to select a date rule. In this case, the date rule will be used to determine the schedule and the frequency will be ignored. Or select the schedule frequency from the Frq field. » Enter the start and end dates for the schedule in the Start Date and End Date fields. » Click **Generate** to generate the schedule. Double-click a rate cell to enter the strike for the corresponding date. » Then click **Apply** to apply to the strike schedule.
Upper **Lower**	Only appears for trade types: Collar, Corridor, Flooridor, and Strangle.  You can also click ...to define a lower schedule, and an upper schedule.
BEG_PER/END_PER	Double-click the BEG_PER label to switch to END_PER as needed: • BEG_PER indicates that the reset occurs at the beginning of the reset period. • END_PER indicates that the reset occurs at the end of the reset period – The trade becomes "in arrear".
Lag	Double-click the Lag label to define the lag between the actual reset date and the beginning or end of the reset period. It brings up the Product Detail window. You can set lag details in the Index and Resets panel. Help is available from that window.
NONE **(payout formula)**	Double-click the NONE label to associate a payout formula with the trade. It brings up the Payout Formula window. Default is NONE. Out-of-the-box, the RangeFloater formula is available. It allows defining an embedded

Fields	Description
	option.
Avg	Check the Avg checkbox to sample resets at a frequency different from the payment frequency. Otherwise, the resets are sampled at the payment frequency.  » Select the sampling frequency from the adjacent field. When the sampling frequency is more frequent that the payment frequency, you can define the weight of the resets, and the duration of the sampling period. ***Weight*** Double-click the Equal label to toggle between: • Equal — Resets within the sampling period are equally weighted. • Weighted — Resets are weighted according to the number of days for which they apply. For example, if a reset occurs on a Monday, the weight is 1 day; if it occurs on a Friday, the weight is 3 days (Friday, Saturday and Sunday). • Simple — The reset rate is calculated as the mean rate within the sampling period. • Cutoff Adj. — Calculates weighting up to cutoff date. The cutoff date is set as a number of days from the last sample period's end date. Double-click any red label to set the cutoff lag in the CutOff Lag field of the Index and Resets panel. ***Duration*** Double-click the Match label to toggle between: • Match — Rates are sampled over the entire averaging period. You can double-click the ", , 0" label to define resets' effective day and a cutoff lag. It brings up the Product Detail window. You can set reset details in the Index and Resets panel. Help is available from that window. • Custom — Rates are sampled over a user-defined period. Double-click the "0, , 0" label to define the number of days of the sampling period, as well as resets' effective day and a cutoff lag. It brings up the Cap Floor Detail window. You can set reset details in the Index and Resets panel. Help is available from that window. [NOTE: The effective day of the resets only applies to weekly and monthly sampling (weekly: day of the week, monthly: day of the month)]
First Reset	 » Select "1st Rate" to set the rate for the first reset period if known. Enter the first reset rate in the "1st Rate" field. Otherwise, the rate will be set through the reset process.

Payment Details

The payment details allow generating the cashflows.

[**NOTE**: When you define a fixed rate schedule, the payment details are defined as well, and the fields below are set accordingly. If you modify the fields below, make sure to regenerate the fixed rate schedule]

Fields	Description
Pmt	Select the payment frequency. You can also select a date rule to determine the payment dates and the interest dates. Double-click the "Lag 0" label. It brings up the Product Detail window. You can select payment and coupon date rules in the Date Rules panel. Help is available from that window. You can add custom frequencies to the "frequency" domain in the form of tenors like

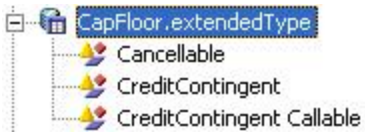
Fields	Description
	<number>D, <number>W, <number>M, or <number>Y. The tenor is case sensitive. D, W, M, or Y should be entered using uppercase.
END_PER/BEG_PER Interest Method	Select END_PER if the payment occurs at the end of the payment period, or BEG_PER if the payment occurs at the beginning of the payment period. ***END_PER*** Select EXP or ACC for an exponential interest calculation from the adjacent field, or select NONE otherwise. ACC only appears if the floating rate is an inflation rate. Interest = Notional * ((1 + Rate)^t[n] - 1). • For EXP: t[n] = Current Coupon Period n • For ACC: t[n] = Total Period from Coupon 1 through n. ***BEG_PER*** You can select one of the following discount methods from the adjacent field. • NONE – No discount. • DISC • FWD_DISC - Same as FIX_RATE_DISC for FRAs – Interest at beginning of period = interest amount at end of period /(1 + Fixed Rate * daycount/basis)). • FWD_DISC_FRA – Same as FWD_DISC for FRAs - Discounts the payment/receipt amount from the end date to the start date using the fixing rate.
Date Roll	Select the date roll convention to roll the payment dates when they fall on business days. The payment calendar is used to determine business days. Date roll conventions are described under Main Entry > Help > Date Roll Conventions.
Roll Day	Select a date roll adjustment. • NONE — The date roll convention is not adjusted. • DAY — Enter a fixed day of the month to which the date will be rolled. For example, entering "5" forces the payment date to be on the fifth calendar day of the month. Entering "31" indicates the last day of the month, even for months with fewer than 31 days - The selection changes to EOM. • IMM — Applies the IMM_WED date roll convention. • EOM — The last day of the month, regardless of the number of days in the month.
Lag	Double-click the "Lag 0" label to specify the number of days between the interest date and the payment date. It brings up the Product Detail window. You can set payment lag details in the Date Rules panel. Help is available from that window.
Daycount	Select the day count convention to determine the number of days in the payment periods. Daycount conventions are described under Main Entry > Help > Day-Count Conventions.
Payment Calendar	Click ... to select payment calendars. They are used to determine business days.
NEAREST (rounding method)	Double-click the NEAREST label to define the rounding method. It brings up the Product Details window. You can set rounding details in the Rounding panel. Help is available from that window.
NONE (stub periods)	Double-click the NONE label to define or override stub period settings. It brings up the Product Details window. You can set stub details in the Stub Periods panel. Help is available from that window. The system automatically creates the stub periods when needed if Product > Automatically Adjusting Stub, or Product > Warn before Adjusting Stub is checked. Otherwise, you can define stub periods manually in this panel.
ADJUSTED (accrual period)	Double-click the ADJUSTED label to define how the accrual period is adjusted on non-business days. It brings up the Product Detail window. You can set accrual details in the Amortization and Accrual panel. Help is available from that window.

Broker	Displays the broker if a broker fee is captured in the Fees panel.

25. CAPTURING CANCELABLE CAP FLOOR TRADES

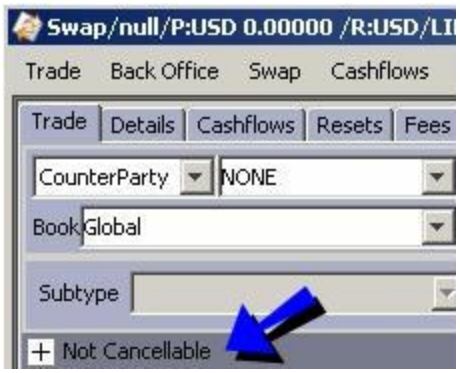
A cancelable cap floor contains an underlying cap floor with the option to cancel it in the future.

To enable the Cancelable feature, create the domain "CapFloor.extendedType" and add the Cancellable value to that domain. Note that domain values are case sensitive.



Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

The Cancellable area is added to the cap floor worksheet. The trade is marked "Not Cancellable" by default.



Click + to view the Cancelable details.

» Check the Cancellable checkbox to make the trade cancelable, then specify the cancelable details described below.

» Then enter more trade details as described in Capturing Cap Floor Trades.

» You can cancel the trade using Back Office > Exercise, or Main Entry > Trade Lifecycle > Exercise & Expiration > Option Exercise - Help is available from that window.

Cancelable Details

Fields	Description
Cancellable	Check the Cancellable checkbox to indicate that the trade is cancelable, or uncheck otherwise.
BUY/SELL	Select BUY or SELL, the direction of the trade from the book's perspective.
Call Type	Select European, Bermudan, or American. See below for details.

European

The trade can only be canceled on the expiration date.

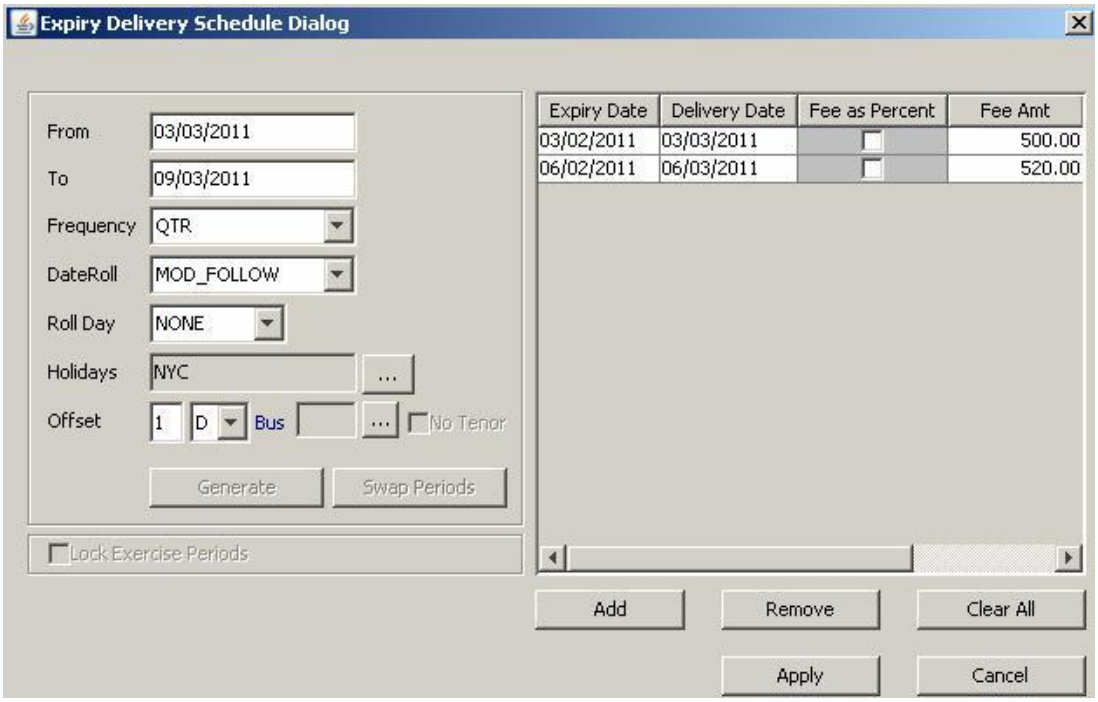
- Enter the expiration date in the Exp Dt field. If you enter a non-business day, it will automatically move to the previous business day.
- Click **Expiry Time** to enter the expiration time, and select the corresponding timezone and holiday calendars.
- The delivery date defaults to the spot date for the selected currency. You can modify as needed. You can also enter the number of lag days in the adjacent field and select whether the lag days are business days or calendar days.
- Enter the fee amount in the Fee field, and select the fee currency from the adjacent field.

  Or you can enter a percentage to compute the fee - Check the "as percent" checkbox, and enter a percentage in the adjacent field.

Bermudan

The trade can be canceled according to a user-defined schedule.

- The Exp Dt and Del Dt fields in the Trade panel are not editable.
- Click **Expiry Time** to enter the expiration time, and select the corresponding timezone and holiday calendars.
- Click **Exp/Del Schedule** to define the cancellation schedule.



Enter From and To dates, select a frequency, a date roll and holiday calendars (for the expiration date and for the delivery date).

Enter a number of lag days to compute the delivery date based on the actual call date. And select Bus if the lag days are business days, or Cal for calendar days.

Then click **Generate** to generate the schedule.

You can also click **Add** to add specific dates.

You can enter the fees in the delivery schedule in percentage or in amounts. The Fee currency is selected in the "Cancellable" area.

Then click **Apply** to save the schedule.

» Select the Fee currency.

American

The trade can be canceled within a date range.

» Enter the expiration date in the Exp Dt field. Enter the expiration time and select the timezone from the adjacent fields.

» Click **Expiry Time** to enter the expiration time, and select the corresponding timezone and holiday calendars.

» Enter the first exercise date in the First Ex Dt field. The trade can be canceled between the first exercise date and the expiration date.

» The delivery date defaults to the spot date for the selected currency. You can modify as needed. You can also enter the number of lag days in the adjacent field and select whether the lag days are business days or calendar days.

» You can click **...** next to the Fee field to define a fee schedule.

26. Capturing Chooser Cap Floor Trades

The cap floor can only be used for a number of reset periods (the user decides to use or not a cap floor when the reset rate is above the strike for a cap, or below the strike for a floor). The last time the cap floor is used, the cap floor trade is automatically terminated.

26.1 Sample Chooser Cap Floor Trade

Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

» Choose the Chooser type.

» Enter the number of usable reset periods in the "# of uses" field.

The number of available usable reset periods is updated after each used reset.

» Then enter more trade details as described in Capturing Cap Floor Trades.

27. CAPTURING CMS CAP FLOOR TRADES

See Capturing CMS Trades for details on setting up market data. The pricer is PricerCapFloorHagan.

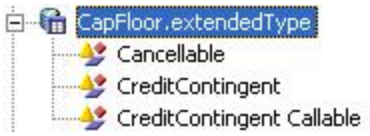
Digital caps are priced by the call spread method. In this case two further pricing parameters are needed, namely the spread and the direction of the spread.

- STRIKE_SPREAD_EPSILON - Enter the size of the spread between the strikes of the call spread in basis points. For example, 5 to 10 bp.
- STRIKE_SPREAD_DIRECTION - Select the direction of the spread relative to the strike. Denote the strike of the digital as *K*, and the spread as *eps*. Default is CENTRAL.
  - SUPER – strikes at K and K+eps
  - CENTRAL – strikes at K-0.5*eps, K+0.5*eps
  - SUB – strikes at K-eps and K

28. Capturing Credit Contingent Cap Floor Trades

A Credit Contingent Cap Floor contains an underlying cap floor contingent upon credit events.

To enable the Credit Contingency feature, create the domain "CapFloor.extendedType" and add the CreditContingent and "CreditContingent Callable" values to that domain. Note that domain values are case sensitive.



Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

The Credit Contingent area is added to the cap floor worksheet. The trade is marked "Not Credit Contingent" by default.

Click + to view the Credit Contingent details.

» Check the Credit Contingent checkbox to make the trade sensitive to credit events, then enter the credit details.

The cap floor is sensitive to credit events between the Start and End dates defined here.

» Then enter more trade details as described in Capturing Cap Floor Trades.

» You can define and apply credit events using Main Entry > Trade Lifecycle > Corporate Action > Credit Events.

Credit Contingent Details

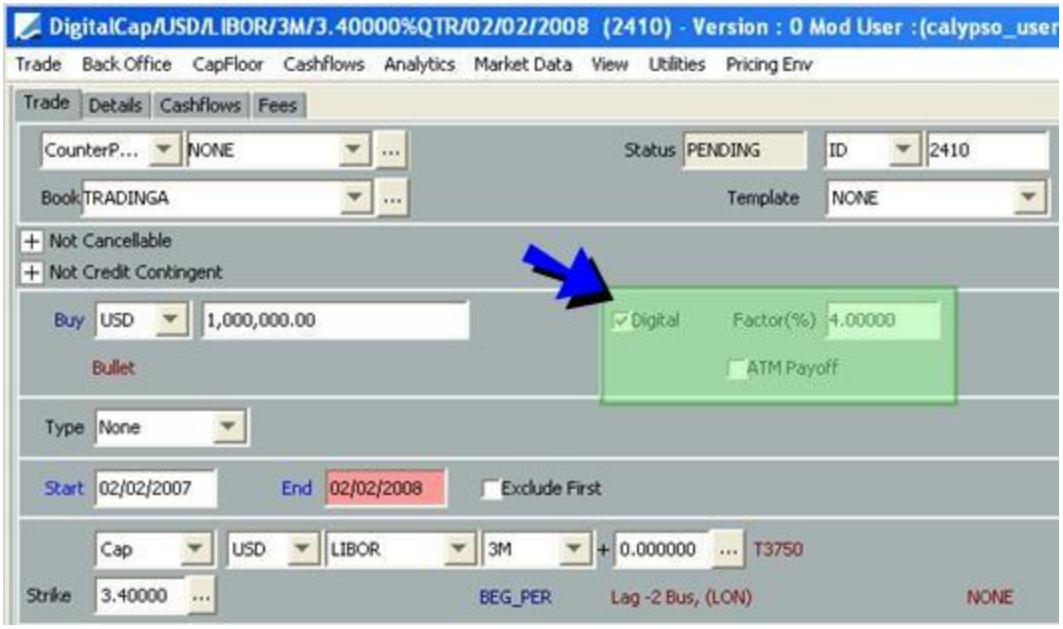
Fields	Description
Credit Contingent	Check the "Credit Contingent" checkbox to indicate that the trade is sensitive to credit events, or uncheck otherwise.
Credit Type	Choose Single or Basket. ***Single***  » Click ... to select the issuer, and select the issuer's seniority. ***Basket***

Fields	Description
	 » Click ... to select a basket and enter the number of defaults. Baskets are created using Main Entry > Configuration > Credit Derivatives > Reference Entity Basket.
Term Events	Click ... to select the credit events to which the trade is sensitive.
Start Date **End Date**	Enter the start and end date of credit contingency. The trade will only be sensitive to credit events between the start and end dates.
Settlement Details	Select whether the settlement is done when a default occurs (AT_DEFAULT) or at maturity (AT_MATURITY). Select the direction of the settlement: Pay or Rec. Select the type of settlement: • PAR • PAR_MINUS_RECOVERY • FIXED_AMOUNT – Enter the amount. • FIXED_PERCENTAGE – Enter the percentage. • NONE • RECOVERY

29. Capturing Digital Cap Floor Trades

Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

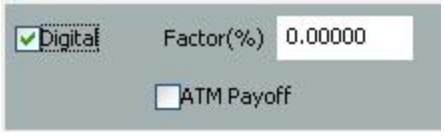
29.1 Sample Digital Cap Floor Trade



» Check the Digital checkbox and enter the digital details described below.

» Then enter more trade details as described in Capturing Cap Floor Trades.

Digital Details

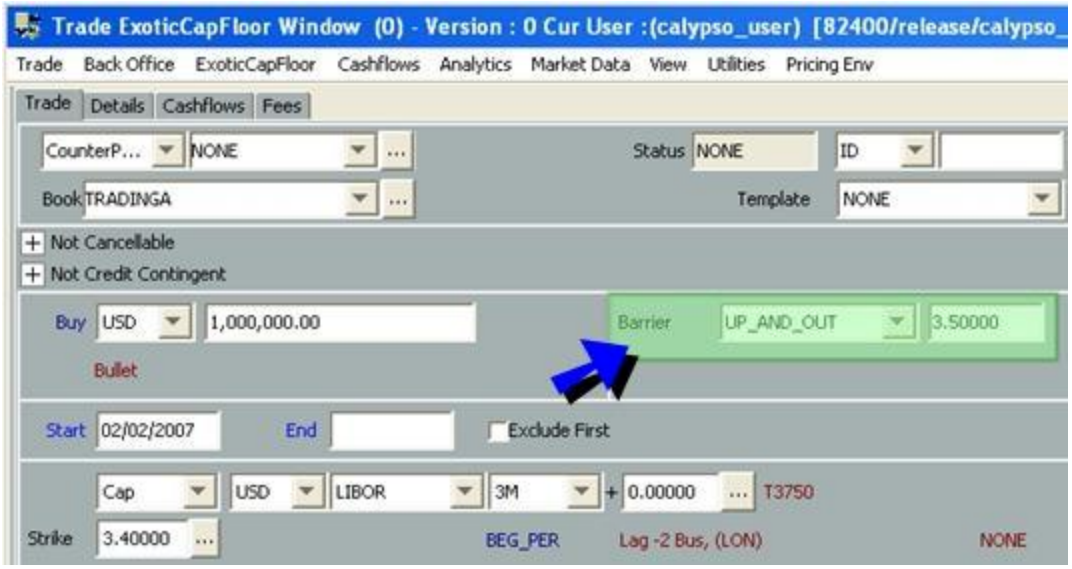
Fields	Description
Digital	Check the Digital checkbox to specify payoff details.  » Enter a factor percentage for calculating the caplet payoffs. Each payoff uses this factor. However, you can enter variable digital factors for some or all caplets in the trade. In the Cashflows panel, check the Customized checkbox, and edit the Payoff Factor(%) column for each individual caplet. The payoff for a digital caplet will be calculated as follows: If Reset Rate > Strike, payoff = Notional * Period * Factor (Payoff Spread). Otherwise, payoff = Zero. » Check the "ATM Payoff" checkbox to generate a payoff when the reset rate plus spread is equal to the strike rate (at-the-money).

30. Capturing Exotic Cap Floor Trades

The Exotic Cap Floor product allows barriers on caps and floors.

Choose Trade > Interest Rates > Exotic Cap/Floor to open the Exotic Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

30.1 Sample Exotic Cap Floor Trade



- Enter barrier details as described below.
- Then enter more trade details as described in Capturing Cap Floor Trades.
- You can enable the cancelable and credit contingency features using the "ExoticCapFloor.extendedType" domain.

Barrier Details

Fields	Description
Barrier	Select the type of barrier based on the type of cap floor, then enter the barrier in the adjacent field.  ***Cap*** Select one of the following barrier types for Caps: • UP_AND_OUT — The price increases as the rate increases from the strike level to the barrier level. When the rate equals the barrier level, the price is zero. • UP_AND_IN — The price is zero until the rate equals the barrier level. ***Floor, Collar, Straddle, Corridor*** Select one of the following barrier types for Floors: • DOWN_AND_OUT — The price increases as the rate decreases from the strike level to the barrier level. When the rate equals the barrier level, the price is zero. • DOWN_AND_IN — The price is zero until the rate equals the barrier level.

31. Capturing Flexible Cap Floor Trades

The cap floor can only be used for a number of reset periods (the cap floor is used when the reset rate is above the strike for a cap, or below the strike for a floor). The last time the cap floor is used, the cap floor trade is automatically terminated.

31.1 Sample Flexible Cap Floor Trade

Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

» Choose the Flexible type.

» Enter the number of usable reset periods in the "# of uses" field.

The number of available usable reset periods is updated after each used reset.

» Then enter more trade details as described in Capturing Cap Floor Trades.

32. Capturing In Arrear Cap Floor Trades

An "In Arrear" cap floor trade resets at the end of the reset period.

Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

» Double-click the BEG_PER label to change it to END_PER. The subtype is set to Arrear.

Trade Id	Product Description	Sub Type	Trade Date	Trade Settle Date
1238	Cap/USD/LIBOR/3M/2.35000%QTR/06/18/2009	Arrear	Mar 16, 2009 08:17 PM	03/18/2009

» Then enter more trade details as described in Capturing Cap Floor Trades.

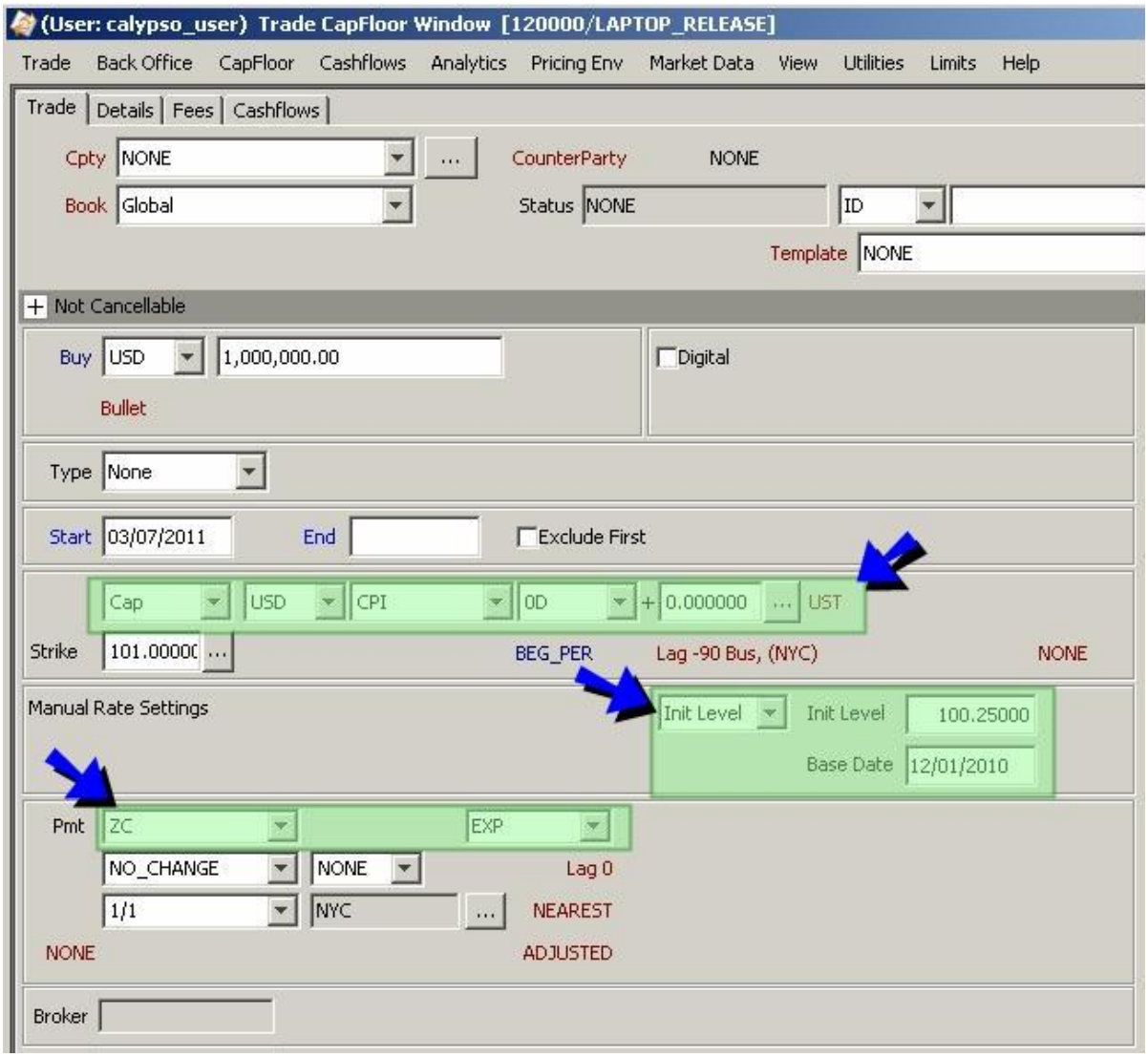
33. CAPTURING INFLATION CAP FLOOR TRADES

Inflation caps & floors are based on inflation indices. Inflation is defined as the percentage increase or decrease in some index of prices.

Inflation Caps & Floors Quick Reference

- Define the inflation rate index using Main Entry > Configuration > Interest Rates > Rate Index Definitions
  - See Capturing Swap Trades for a sample inflation rate.
- Enter inflation cap & floors details in the Trade panel
- Then enter more trade details as described in Capturing Cap Floor Trades

33.1 SAMPLE TRADE



» Select the inflation index with “0D” tenor for zero-coupon trade and ZC payment frequency, or "1Y" tenor for year-on-year trade.

» In the Manual Rate Settings, you can select “Init Level”, and enter the initial index level and base date.

The base date is in the form “MM/DD/YYYY”, where DD is the Reference Day specified in the Rate Index Definition.

» You can select one of the following calculation methods:

- "Exp" - It is used to capture zero-coupon inflation cap/floors and has a payout of:

  Notional * max{ Inflation(final)/Inflation(initial) - (1+K%)^period, 0 } : Cap

  Notional * max{ (1+K%)^period - Inflation(final)/Inflation(initial), 0 } : Floor

- "RateXNotl" - It is used to capture period-on-period (or year-on-year) inflation cap/floors and has a payout of:

  Notional * max{ Inflation(final)/Inflation(initial) - K%, 0 } : Cap

  Notional * max{(K% - Inflation(final)/Inflation(initial), 0 } : Floor

- "NONE" - Same as "RateXNotl" with the period applied to the payout.

34. Capturing Momentum Cap Floor Trades

When the difference between the reset rate and the previous reset rate is above a user defined target change, the strike for the next period is set to reset rate of the previous period + user-defined amount, up to a limit.

If reset rate(i) – reset rate (i-1) > target amount, Strike(i+1) = reset rate(i-1) + increment amount.

34.1 Sample Momentum Cap Floor Trade

Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

- Choose the Momentum type.
- Enter the maximum strike in the Limit(%) field, enter the target change in rate in the Target(bp) field, and enter the increment amount in the Incr(bp) field.
- You can also click **Schedule** to define a target and increment schedule.
- Then enter more trade details as described in Capturing Cap Floor Trades.

Example, the first strike is 3.4, and the first reset is 3.2. The next strike does change.

The second reset is 3.45 (3.45 – 3.2 > 20bps), the next strike is set to 3.2 + 50bps = 3.7.

Notional	Rate *	Spread	Strike-upper
1,000,000.00	3.20000	0.00000	3.40000
1,000,000.00	3.45000	0.00000	3.70000
1,000,000.00	0.00000	0.00000	3.70000

35. Capturing Ratchet Cap Floor Trades

The strike for the next period is set to reset rate + user-defined amount up to a limit.
Strike(i+1) = reset rate(i) + increment amount.
If Strike(i+1) > limit, Strike(i+1) = limit.

35.1 Sample Ratchet Cap Floor Trade

Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

- Choose the Ratchet type.
- Enter the maximum strike in the Limit(%) field, and enter the increment amount in the Incr(bp) field.
- You can also click **Schedule** to define an increment schedule.
- Then enter more trade details as described in Capturing Cap Floor Trades.

Example, the first strike is 3.4, and the first reset is 3.42, the next strike is set to 3.42 + 50bps = 3.92.
The second reset is 3.2, the next strike is set to 3.2 + 50bps = 3.7. The maximum strike is not reached.

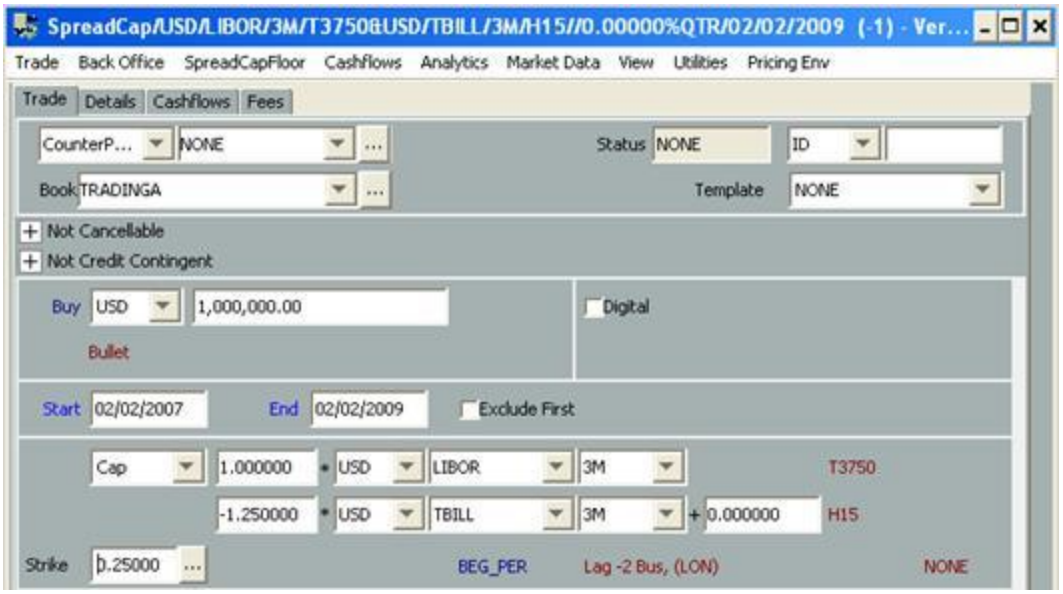
Notional	Rate *	Spread	Strike-upper
1,000,000.00	3.42000	0.00000	3.40000
1,000,000.00	3.20000	0.00000	3.92000
1,000,000.00	0.00000	0.00000	3.70000

36. Capturing Spread Cap Floor Trades

A Spread Cap/Floor is a cap or floor having a floating rate index which is the difference (spread) between two floating indices.

Choose Trade > Interest Rates > Spread Cap/Floor to open the Spread Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

36.1 Sample Spread Cap Floor Trade



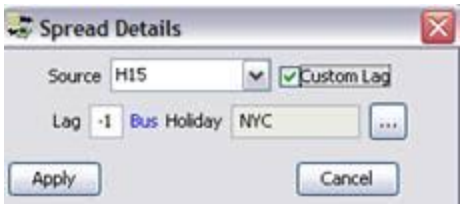
» Enter spread details as described below.

» Then enter more trade details as described in Capturing Cap Floor Trades.

» You can enable the cancelable and credit contingency features using the "SpreadCapFloor.extendedType" domain.

Spread Details

Fields	Description
Reference Indices	Select the reference indices that compute the spread. A reference index is defined by a currency, rate index, tenor and source.  The currency and rate index default to the currency and default index selected in User Defaults. The tenor and source default to the first tenor and source available for that rate index. Rate indices are created using Main Entry > Configuration > Interest Rates > Rate Index Definitions. You can modify the default values as needed. ***First Index*** The first field is a factor. It defaults to 1.

Fields	Description
	If you double-click the source label (T3750 in this example), it brings up the Swap Detail window. You can define a spread schedule in the Index and Resets panel. Help is available from that window. ***Second Index*** The first field is the operator between both rate indices. It defaults to -1. You can enter a spread over the rate value in the field adjacent to the tenor. If you double-click the source label (H15 in this example), it brings up the Spread Details window.  » You can modify the source, and specify a custom reset lag as needed.

37. Capturing Sticky Cap Floor Trades

The strike for the next period is set to min(reset rate, strike) + user-defined amount up to a limit.
Strike(i+1) = min(reset rate(i), strike(i)) + increment amount.
If Strike(i+1) > limit, Strike(i+1) = limit.

37.1 Sample Sticky Cap Floor Trade

Choose Trade > Interest Rates > Cap Floor to open the Cap Floor worksheet, from Main Entry or from the Calypso Workstation.

- Choose the Sticky type.
- Enter the maximum strike in the Limit(%) field, and enter the increment amount in the Incr(bp) field.
- You can also click **Schedule** to define an increment schedule.
- Then enter more trade details as described in Capturing Cap Floor Trades.

Example, the first strike is 3.4, and the first reset is 3.2, the next strike is set to min(3.4, 3.2) 3.2 + 50bps = 3.7.
The second reset is 3.8, the next strike is set to (min 3.8, 3.7) 3.7 + 50bps = 4.2 (above limit) = 4.0.

Notional	Rate *	Spread	Strike-upper
1,000,000.00	3.20000	0.00000	3.40000
1,000,000.00	3.80000	0.00000	3.70000
1,000,000.00	0.00000	0.00000	4.00000

38. Capturing Spread Lock Trades

Two types of spread locks can be defined:

- Rolling — A standard Fixed for Floating swap.
- European — The buyer enters into a swap at a fixed spread between the forward price of the swap and the yield of its underlying bond.

Choose Trade > Interest Rates > Spread Lock to open the Spread Lock worksheet, from Main Entry or from the Calypso Workstation.

Spread Locks Quick Reference

When you open a Spread Lock worksheet, the Trade panel is selected by default.

Defining Bond Products

» To create bond products, choose Main Entry > Configuration > Fixed Income > Bond Product Definition

Entering Trade Details

» You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Or you can enter the trade fields directly. They are described below.

Note that the Trade Date is entered in the Details panel.

» Proceed to the other panels as applicable.

» For defining break clauses, choose Spread Lock > Cash Settle Info

Saving a Trade

» Hit F5 to save the trade, or choose Trade > Save.

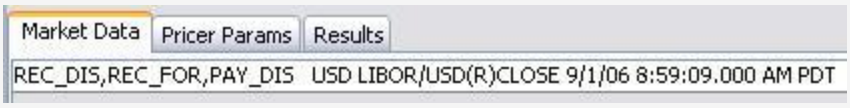
You can also hit F3 to save the current trade as a new trade, or choose Trade > Save As New.

You can also hit F12 to save the trade using any action available in the workflow, or choose Trade > Save Action. You will be prompted to select an action.

A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

Pricing a Trade

» You can choose Pricing Env > Check to check if all required pricing data are available in the Pricing Environment.

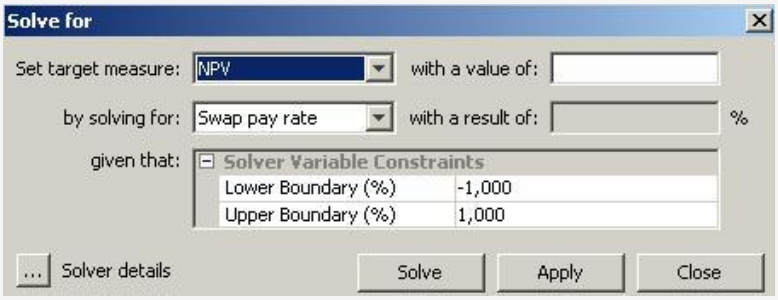


» Click **Price** to price the trade.

You can hit F11 to solve for the break-even rate, and apply it to the fixed leg of the swap.

You can hit F12 to solve for the break-even spread, and apply it to the floating leg of the swap.

» Hit F9 to bring up the solver (or choose Analytics > Solve).



Select a target pricer measure and enter the target value. Then select the value to solve for (Swap pay rate, Swap receive rate, or FX rate), and click **Solve**.

You can click **Apply** to set the value to solve for on the trade. Then click **Price** to obtain the target value.

You can modify the solver variables and details as needed.

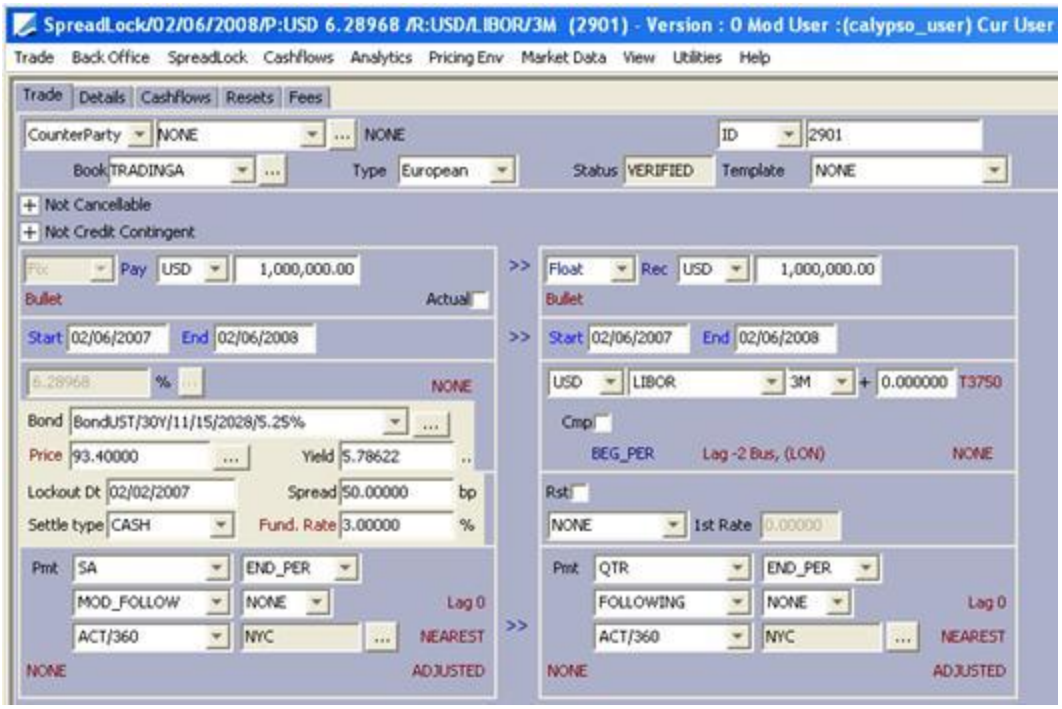
TRADE LIFECYCLE

» You can lock the trade using Spread Lock > Exercise Window - See Locking the Rate for details

» You can terminate the trade using Back Office > Terminate

» You can reset the floating rates of the trade using Main Entry > Trade Lifecycle > Reset > Rate Reset, or using the RATE_RESET scheduled task

38.1 SAMPLE EUROPEAN SPREAD LOCK TRADE



» Choose Help > Trade Help for complete details.

Spread Lock Details

You can begin by entering the trade details in either the left or right panel. Note that as you enter each value, the application copies it to the other leg if applicable. There are three direction signs in the middle of the worksheet. Double-click the signs to toggle between:

- >> Copy to the right panel.
- << Copy to the left panel.
- --- Turn off copying.

Choose Spread Lock > Save Panel Directions to save the settings.

Fields	Description
Fix/Float	Select Fix to define a fixed leg, or Float to define a floating leg. • For details on defining a fixed leg, see Fixed Leg below. • For details on defining a floating leg, see Floating Leg below.
Pay/Receive	Direction of the trade from the book's perspective. Double-click the Pay label to change to Rec as applicable.  The adjacent field defaults to the currency selected in the User Defaults. You can select another currency as needed. Enter the principal amount in the adjacent field. You can use shortcuts, for example enter "10m" for 10,000,000.
Actual	Check the Actual checkbox to indicate that the principal amount will be exchanged, otherwise there is no exchange of principal.  » Check the boxes as applicable to exchange the initial principal, the final principal, or the amortized principal.
Bullet	Double-click the Bullet label to define the amortization structure of the principal. It brings up the Swap Detail window. You can set amortization details in the Amortization and Accrual panel - Help is available from that window.
Start **End**	Enter the start and end dates of the swap. The start date defaults to the spot date of the selected currency. You can modify it as needed. You can use shortcuts, for example enter "1y" for one year, [Ctrl+N] for today, etc. Note that the system uses the payment calendar to calculate the spot date. For a fixed leg, it is the payment calendar of the selected currency. For a floating leg, it is the payment calendar of the selected index. You can modify it as needed in the Payment Details area. A date that appears with a red background indicates a non-business day. Hit [+] or [-] to move the date one day forward or backward, respectively.

Bond Details

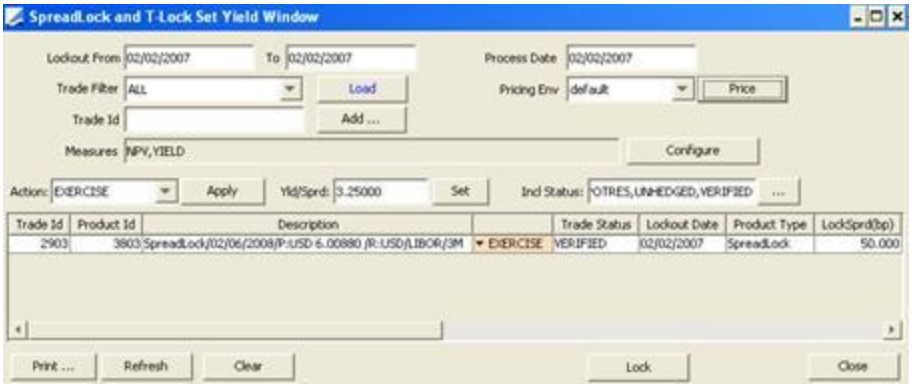
Bond details are only required for a European spread lock.

Fields	Description
Bond	Click ... to select a bond product. Bond products are created using Main Entry > Configuration > Fixed Income > Bond Product Definition.
Price	Displays the bond's price. Modify as needed. If you want to save the price in the Quote set, click ... to set it.
Yield	Displays the yield based on the price. You can also enter the yield and the price will be computed accordingly.
Lockout Dt	Enter the lockout date.
Spread	Enter the fixed spread in basis points.

Fields	Description
	The SPREADLOCK_FIXED_RATE pricer measure displays the fixed spread.
Settle type	Select the settlement type: CASH or PHYSICAL.
Fund. Rate	Enter the funding rate.

38.1.1 Locking the Rate

Choose Spread Lock > Exercise Window to lock the rate.



- Enter selection criteria and click **Load** to load the spread lock trades.
- Enter a Process Date and click **Price** to price the trades as of the process date.
- Select a trade, enter the yield, and click **Set**.
- Verify the lock information and click **Lock** to generate the transfers as applicable. The trade will move to EXERCISED status.

39. Capturing Treasury Lock Trades

A treasury lock is a customized agreement that fixes the yield or price on a specified bond for a specific period.

Choose Trade > Interest Rates > Treasury Lock to open the Treasury Lock worksheet, from Main Entry or from the Calypso Workstation.

Treasury Locks Quick Reference

When you open a Treasury Lock worksheet, the Trade panel is selected by default.

Defining Bond Products

» To create bond products, choose Main Entry > Configuration > Fixed Income > Bond Product Definition

Entering Trade Details

» You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Or you can enter the trade fields directly. They are described below.

Note that the Trade Date is entered in the Details panel.

» Proceed to the other panels as applicable.

Saving a Trade

» Hit F5 to save the trade, or choose Trade > Save.

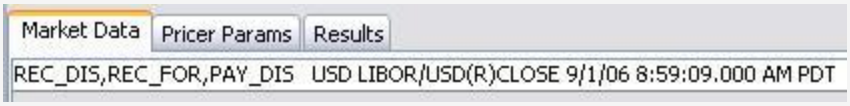
You can also hit F3 to save the current trade as a new trade, or choose Trade > Save As New.

You can also hit F12 to save the trade using any action available in the workflow, or choose Trade > Save Action. You will be prompted to select an action.

A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

Pricing a Trade

» You can choose Pricing Env > Check to check if all required pricing data are available in the Pricing Environment.



» Click **Price** to price the trade.

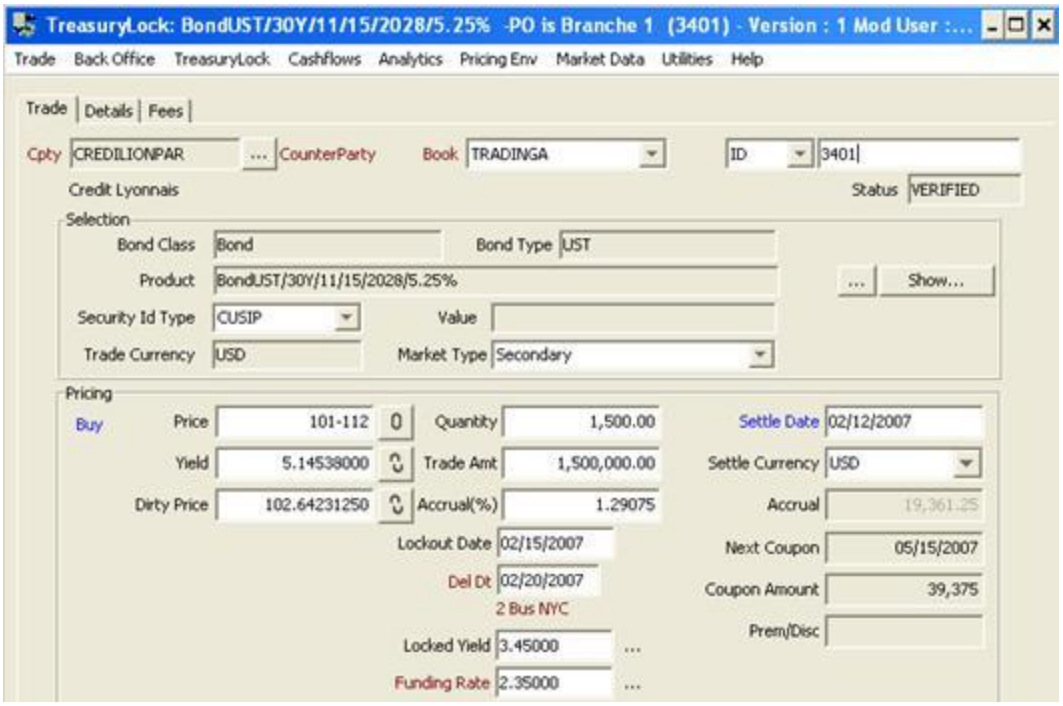
Trade Lifecycle

» You can lock the trade using Treasury Lock > Exercise Window - See Locking the Rate for details

» You can terminate the trade using Back Office > Terminate

» You can reset the floating rates of the trade using Main Entry > Trade Lifecycle > Reset > Rate Reset, or using the RATE_RESET scheduled task

39.1 SAMPLE TREASURY LOCK TRADE



» Choose Help > Trade Help for complete details.

Bond Details

Fields	Description
Bond Class	Displays the bond class of the selected product.
Bond Type	Displays the bond type of the selected product.
Product	Click ... to select a bond product. Bond products are created using Main Entry > Configuration > Fixed Income > Bond Product Definition. You can click **Show** to display the bond's details.
Security Id Type **Value**	Defaults to the product code selected in the user defaults, and displays its value. You can select another product code as applicable. Product codes are set on the bond product.
Trade Currency	Defaults to the bond's currency. You can select another currency as applicable.
Market Type	Defaults to the market type selected in the user defaults. You can select another market type as applicable.

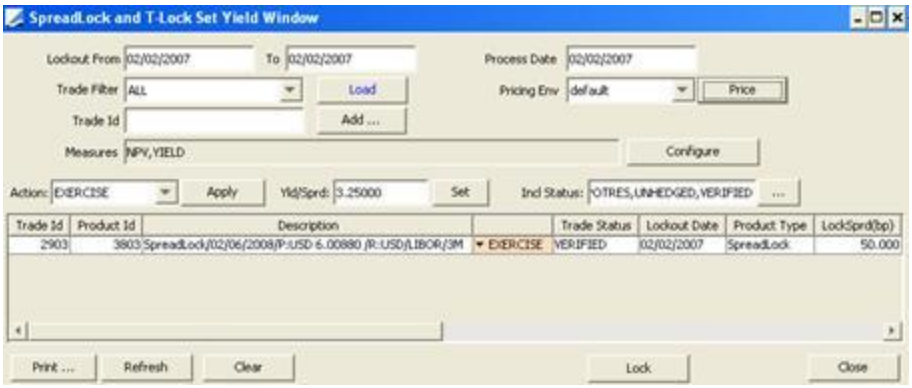
Price Details

Fields	Description
Buy/Sell	Direction of the trade from the book's perspective. Double-click the Buy label to change to Sell as applicable.

Fields	Description
Clean Price **Yield** **Dirty Price**	Enter the clean price, yield, or dirty price, and the other fields will be calculated accordingly. The dirty price is clean price + unit accrual. For bonds quoted using Price32, you can enter the trade's price with two, three, or four digits after the dash. The first two digits represent the number of thirty-seconds (between 1 and 31). If the price contains 3 digits, the third digit represents the number of eighths of a thirty second (or 1/256, between 1 and 7). A bond price entered as "99-022" will be read as [99 + 2/32 + 2/8(1/32)], or 99.0703125. The third digit can also be +, indicating 4/8 of a thirty second. If the price contains 4 digits, the last two digits represent the number of sixteenths of a thirty second (or 1/512, between 1 and 15). Note that the four-digit logic only applies to bonds with the tick size 512.
Quantity	Enter the quantity that is traded. The system will automatically compute the Trade Amount as quantity * face value of the bond.
Trade Amount	The trade amount is calculated based on the quantity. You can modify the trade amount as applicable and the quantity will be modified accordingly.
Accrual (%)	Accrued interest in percentage as of the trade date.
Lockout Dt	Enter the lockout date which identifies the end of the lockout period. In order to calculate the bond's price at the end of the lockout period, choose Treasury Lock > Exercise window.
Del Dt	Double-click the Del Dt label to calculate the delivery date corresponding to the lockout date. You can double-click the "2 Bus NYC" label below the Del Dt field to specify the delivery offset as shown below.  » Enter the number of offset days in the Offset field. » The Bus label indicates that the offset is a number of business days (Bus). Double-click the Bus label to change to Cal (calendar days) as applicable. » Click ... next to the Hol field to select the holiday calendar. » Then click **Apply**.
Locked Yield	Enter the yield for the locked period.
Funding Rate	Enter the funding rate.
Settle Date	The settlement date defaults to the trade date + the number of settle days specified in the bond product. The settlement date uses the holiday calendar of the bond product to identify business days. If you change the trade date in the Details panel, double-click the Settle Date label to update the settlement date accordingly.
Settle Currency	Defaults to the trade currency. You can select another settlement currency as applicable.
Accrual	Displays the accrual amount based on the accrual (%) and the quantity after pricing.
Next Coupon	Displays the date of the next coupon retrieved from the coupon schedule.
Prem/Disc	Displays the total premium / discount after pricing.

39.1.1 LOCKING THE RATE

Choose Treasury Lock > Exercise Window to lock the rate.



- Enter selection criteria and click **Load** to load the treasury lock trades.
- Enter a Process Date and click **Price** to price the trades as of the process date.
- Select a trade, enter the yield, and click **Set**.
- Verify the lock information and click **Lock** to generate the transfers as applicable. The trade will move to EXERCISED status.