Fee Cashflow Specification

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Chapter 1

Fee Cashflow

1.1 Properties of Cashflow

A fee cashflow is a transfer of the **amount** of N in **currency** on the **flow date** (FD), as illustrated in Figure 1.1. Premium payment is an example of fee cashflow.

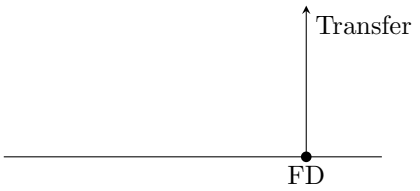

Figure 1.1: Fee cahflow

1.2 Definitions

In this section, we define terms that are specific to fee cashflow.

amount is the amount in **currency** that one has to transfer on the **flow date**.

currency is the currency that the transfer is in.

flow date is the date that the cashflow transfer occurs.

1.3 Cashflow Inputs

A fee cashflow is specified by the mandatory fields in Table 1.1, the optional field in Table 1.2, with their restrictions in Table 1.3.

Field	*Description*	*Data Type*	*Symbol*
PayReceive	The pay/receive direction of the cashflow	string	direction
Currency	The **currency**	string	ccy
FlowDate	The date of the cashflow payment, i.e. the **flow date**	date	FD
Amount	The **amount** of the transfer	double	N

Table 1.1: Mandatory fields for Fee Cashflow

Field	*Description*	*Data Type*	*Symbol*	*Default Value*
DiscountReference	Alternative discounting curve	string		
LegID	The identifier of the leg	string		
Description	The description of the flow	string		

Table 1.2: Optional field for Fee Cashflow

Field	*Restriction*
PayReceive	Pay, Receive, P, R
Amount	$N > 0$

Table 1.3: Field restrictions for Fee Cashflow

1.3.1 Required Curves

The following curves are required by a fee cashflow:

- *Currency FX spot curve*: FX Spot Curve — (FX.PRICE.Currency.BaseCurrency), and
- *Currency discounting curve*: Money Market Zero Curve: (MM.ZERO.SWAP.Currency) [1].

When the optional field DiscountReference is provided, the reference curve is used as the Currency discounting curve.

1.4 Formula

A fee cashflow gives a transfer of N in **currency** on the **flow date**.

If the Valuation Date is less than or equal to the **flow date**, the value of a fee cashflow in Base Currency is

$$N \times E_{\text{ccy}} \times \mathbb{I}_{\text{pr}} \times Df_t,$$

where

- N is the **amount** of the transfer in **currency**,
- E_{ccy} is the spot exchange rate in units of Base Currency per **currency**, from the Currency FX spot curve,
- the discount factor from Valuation Date to **flow date** is

$$Df_t = e^{-r_{\text{ccy}} t},$$

- r_{ccy} is the continuous zero rate of **currency** from Valuation Date to **flow date** in Actual/365 (Fixed) day count convention, from the Currency discounting curve,
- t is the time in years from Valuation Date to **flow date** in Actual/365 (Fixed) day count convention, and
- the indicator for pay or receive direction is

$$\mathbb{I}_{\text{pr}} = \begin{cases} 1, & \text{if direction is 'R',} \\ -1, & \text{if direction is 'P'.} \end{cases}$$

If the Valuation Date is greater than the **flow date**, then the fee flow has expired and thus has a value of zero.

[1] For certain products, e.g. FX Forward or Cross Currency Swap, FX ZERO curve is used for discounting.

1.5 Examples

This section provides some deal examples of fee cashflow.

Example 1.1. A fee cashflow:

- PayReceive: Pay
- Currrency: GBP
- FlowDate: 2013-11-15
- Amount: 60,000,000

On 2013-11-15, there is a payment of $60,000,000 GBP.

Example 1.2. A fee cashflow:

- PayReceive: Receive
- Currrency: AUD
- FlowDate: 2013-11-15
- Amount: 100,000,000

On 2013-11-15, one receives $100,000,000 AUD.

Glossary

Base Currency The currency that the risk engine is configured to return values in.

Valuation Date The date that we value the trades as.