Swaps types, taxonomy of

The swap market has grown tremendously with various types of swaps:

- Vanilla interest rate swap: receive fixed, pay floating (receiver swap), or the opposite, receive floating pay fixed (payer swap), with same notional often referred to as bullet notional. Possibilities for the first and last coupon to be short or long called to by traders as short or long first or last stub. (see *standard swap*)

- In-arrear swap: swap that pays and resets at the same time. Usually there is a 2 business days delays between the reset and the pay dates. In-arrear swaps are tailored instrument to trade the steepening or flattening of the curve[1] versus the realised short dated money market Libor rates. (see *in-arrear swap*)

- CMT/CMS swap: fixed/floating or floating/floating swap with one leg based on a constant maturity treasury yield (CMT) or a Constant Maturity Swap rate (CMS). Even more leveraged to play the steepening or flattening of the curve, CMS/CMS swaps have been very popular products among investors, as they allow efficient hedging of yield curve and in particular long dated interest rate risk. (see *swap CMS/CMT*)

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[1] Since this impacts the forward Libor rates used for pricing.

- Basis swap: this is a floating/floating swap which can be either between two floating rates of the same currency but with different tenor (like for instance in the case of a 6 month Libor versus CMS 7 year) or between two floating rate in two different currencies. When the currency is different, notionals are exchanged both at the beginning and the end of the life of the swap. Cross currency basis swap is the basic building bloc of cross currency swap as this strips out the currency risk between floating Libor. (see *swap basis swap*)

- General Cross currency swap: a general cross currency swap is simply a swap with two legs denominated in different currencies. The four different version of cross currency swap is fixed/fixed, floating/fixed, fixed/floating and floating/floating. A General cross currency swap can be seen as the combination of a cross currency basis swap and in the case of fixed leg a fixed/floating or the opposite swap with the two legs denominated in the same currency.

- Tailor made pre-agreed notional schedule swap such as
  - amortising: the notional drops like in a loan either linearly or with annual compounding.
  - accreting: the opposite of amortising.
  - and roller coaster notional. Roller coaster notional refers to tailor made notional schedule which originally where going up and down successively like a roller coaster.

- Zero coupon swap where one of the leg include only one payment at maturity. Use mainly to hedge corporate bond with low coupons and subsequently the final notional payment representing most of the debt liability, this swap is less common.

- Index-linked notional swap: a swap whose notional is determined by the fixing of previous rates. For instance in an index amortising rate swap also know as indexed principal swap, at each reset date, the notional is reduced according to the fixing of the Libor rate. The lower the interest rates the greater the reduction in principal. Often, a table for principal reduction is given to specify the percentage of principal reduction. Index amortising rate swaps are mainly used to hedge a pool of mortgages. The principal reduction corresponds to anticipated prepayment.

- Quanto swap also called differential swap or diff swap: Although the two legs are using rates of different denominated currency, all payments are done in one currency. This swap removes the currency exposure. (see *quanto*)

- Leveraged and power swaps: swap with a floating leg paying Libor square or any power of the rate. This leveraged swaps can be substantially more risky as the gearing is amplified by the algebraic power function (see *leveraged options*)

- Asset swap: in an asset swap, one swaps the stream of cashflows of a given asset (often a bond) against a floating rate. The asset swap spread is the spread over the Libor leg to get a zero cost asset swap. (see *asset swap*)

- Equity swap: swap where one pays the equity returns and receives fixed or floating according to the agreement of the contract.

- Credit default swap: in a credit default swap, one pays a spread in exchange for a protection against a credit event (see *credit derivatives* and *credit default swap*)

- CPI (real interest rate) swaps also called inflation swap or inflation-linked swap. This swaps exist in various forms:
  - Zero coupon inflation swap: the inflation leg pays only one payment at maturity equal to the initial notional accreted by the inflation rate over the life of the swap. This is the most common structure.
  - Multi-payment inflation swap: the inflation leg pays the year on year inflation rates.

  Inflation swaps have recently received more and more attention from trading institution as they allow to risk manage growing inflation positions.

- Option Embedded Swaps: these are the extendible and cancellable swaps (callable and putable swaps) also called trigger swap or barrier swap as these swap are activated or inactivated when a specific rate triggers a barrier level. The variation around the basic structure are almost infinite: the barrier level can be single or double, the reference rate used to trigger the swap can be different from the one used to determined the payment of the leg, the barrier can be effective only during a certain time frame, or only if the rate stays in a certain range for a given number of observation (Parisian option case) or be smoothened to provide a soft barrier structure.

- Accrual Swaps: swaps that pays something if a reference rate stays within a certain range. This can be shown to be in fact a series of digital (binary) options.

- Complex exotic swap also called structured swap where one of the legs contains an equity or hybrid option. For instance, a swap paying Libor and receiving a rainbow, himalaya, altiplano or any other exotic equity derivatives coupon. These products often target the retail sector. (see *equity derivatives*)

Entry category: swaps

Scope: types of swaps; (taxonomy of variants and their uses)

Related articles: Interest rate swaps; Cross-currency swaps; Complex swap structures

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