Exercise 3: Index-Linked Asset Swaps

Compare the relative values of the following two bonds.

	Nominal Bond	Index-Linked Bond
Price (dirty inc. inflation)	102.11	102.23
Coupon	4%	1.6% index-linked
Maturity	10 years	10 years

You can do this on an asset swap basis by converting the bond cashflows to Libor plus a spread.

In converting the nominal bond's cashflows to floating plus a spread you will use the nominal swap curve. With the index linked bond you will have to use inflation swaps to strip out the inflation component of the fixed cashflows before finding a spread over or under Libor that gives equivalent value.

Once both bond coupons have been converted to Libor plus a spread they can be compared on a like for like basis. Do the initial comparison using par asset swaps. If there is time you can also try proceeds asset swaps.

- Swap curve discount factors are given in the template spreadsheet and zero coupon inflation swap rates are as follows:

Zero Coupon Inflation Swaps

Maturity	Bid	Ask	Maturity	Bid	Ask
1Y	2.18%	2.28%	6Y	2.37%	2.47%
2Y	2.27%	2.37%	7Y	2.38%	2.48%
3Y	2.31%	2.41%	8Y	2.37%	2.47%
4Y	2.35%	2.45%	9Y	2.38%	2.48%
5Y	2.36%	2.46%	10Y	2.40%	2.50%

To illustrate how the index linked asset swap works the template spreadsheet will guide you through the following steps:

- Work out the indexation coefficients and bond cashflows for a constant inflation rate over the life of the bond (say 2%).
- Convert the index-linked bond cashflows to fixed payments by using a series of zero coupon inflation swaps at the rates given. The swap principals will need to be equal to the bond's nominal coupon payments and par payment at maturity.
- Check to see that the position is hedged against inflation changes and that there is no alteration in the net cashflow (bond plus swap) for different levels of inflation.
- Convert the fixed cashflow stream to Libor plus a spread by discounting both sets of cashflows and setting the spread so that the total NPV is zero. Remember to include the difference between the bond's dirty price and par as an initial payment.

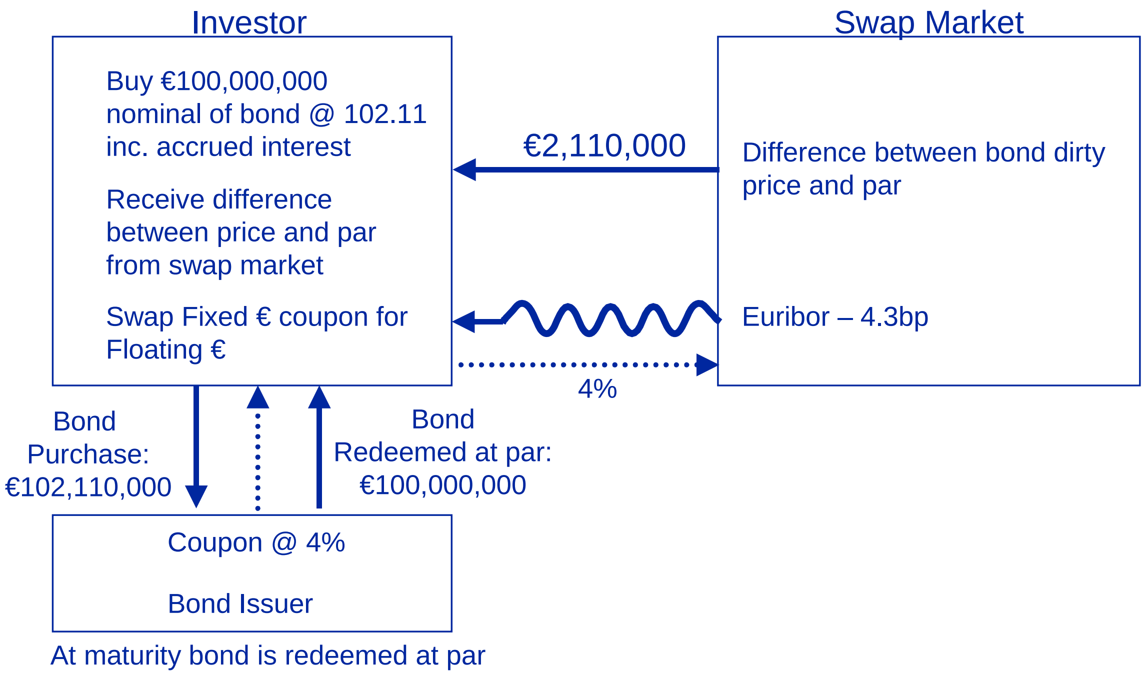
- The relevant CPI for today is 110.

Starting Point: Inflation Asset Swaps Template.XLS
Answer: Inflation Asset Swaps Answer.XLS

Exercise 3: Index-Linked Asset Swaps

Notes to the answer spreadsheet

Nominal Bond Par Asset Swap



Index-Linked Bond Par Asset Swap