

White Paper

Hedging

This white paper addresses the following openfunds fields:

OFST010205 Has Duration Hedge
OFST010410 Fund Currency
OFST020540 Share Class Currency
OFST010210 Portfolio Currency Hedge
OFST020262 Share Class NAV Hedge

Hedging Methods

Today, funds implement a wide range of hedging techniques. For equity investments, these techniques are used to eliminate the price risks for specific stocks, stock markets or sectors. For interest bearing assets, it is the risk of interest rate change in particular that is mitigated through hedging techniques. The most common application of hedging, however, is to protect against currency exchange rate fluctuations in modern fund management.

The openfunds standard takes into account funds that implement hedging against **interest rate changes** as well as **currency risks**. The implementation of both types of hedging in openfunds is explained below.

Duration Hedge

For interest rate hedging, openfunds currently provides the Boolean field “OFST010205 Has Duration Hedge”. A “yes” should be entered in this field if interest rate hedging is applied, even if only occasionally. If the investment guidelines provide the possibility of hedging the risk of interest rate changes, but actual implementation is very unlikely, then this field should be filled out with “no”.

Currency hedging methods

Currency hedging can take place at the **share class level** or **fund level** (portfolio level).

Fund level hedging

Hedging at the fund level means the currency of all investments that are not made in the fund’s base currency (as specified by “OFST010410 Fund Currency”) are hedged. In this way the value of the fund in its base currency is protected from currency fluctuations. A fund is considered hedged when more or less all investment currencies contained with the fund are hedged. If a minimum of 90% of the foreign currencies in the fund are permanently hedged, openfunds considers it a “full portfolio hedge”. If, on the other hand, less than 90% of the foreign currencies are hedged, either on a permanent or temporary basis, openfunds considers it as a “partial hedge”. Occasionally currency management of a fund is made independently of the investment currencies of the fund. This is defined by openfunds as “currency overlay”.

Implementation in openfunds:

In addition to the above mentioned terms („full portfolio hedge“, „partial hedge“ und „currency overlay“) the openfunds field „OFST010210 Portfolio Currency Hedge“ also recognizes a fourth possibility; „no hedge“.

Share class level hedging

At the share class level, openfunds differentiates between a full NAV hedge and a residual hedge.

Full NAV hedge:

Full hedging at the share class level is the standard case of currency hedging. For example, consider a European equity fund that decides to launch a US-dollar based share class that mirrors the price development of the umbrella fund. Protection against exchange rate fluctuation is achieved by applying a EUR/USD forward hedge on the new share class.

It therefore doesn't matter how many foreign currency shares a fund has invested in. What matters for the hedge is solely the amount of money, in this example US dollars, that has flowed into the hedged share class.

The result of the hedge is easily seen when viewing the performance of the Euro- and USD- share classes in a chart; the price development of both share classes are virtually parallel. In the case of a perfectly executed hedge, the two charts should only differ by the swap rate, or interest rate differential between the two currencies.

Residual Hedge:

This type of hedge functions differently than a full hedge in that it takes into account the different currencies that the fund has invested in. Suppose, for example, that the above mentioned European Stock Fund consisted 80% of European shares and 20% Swiss share. In the case of a full NAV hedge in Swiss Francs, the fund would have a Euro currency exposure of -20% and a Swiss Franc currency exposure of 120% (see table 5). Since such excessive security is not always required, some fund managers prefer a “residual hedge”. This means they would only take out a Swiss Franc hedge on 80% of the fund volume.

Implementation in openfunds:

In openfunds the relevant field is named „OFST020262 Share Class NAV Hedge“. This field recognizes the three values “no“, “yes, 100% NAV hedge“ and “yes, residual hedge“. For example, in the case of the above described full hedge, the value “yes, 100% NAV hedge“ would be chosen. In the case of a partial hedge, the value “yes, residual hedge“ would be the correct choice.

Examples

A. Unsecured share class

Let us take a European Stock Fund as an illustration. The fund was launched in Euros (OFST010410 Fund Currency = EUR) and consists of 50% Euro-share, 30% British Pound-shares and 20% Swiss shares. A portion of the investments would not only be affected by share prices but also on the currency exchange rates of the Euro against the Pound and Swiss Franc.

For example, in case there was little change in share prices but not in Euro exchange rate against the Pound, however the Swiss Franc appreciated 20% over the other two currencies. In this case, share class A would gain 4% in value (20% Swiss stocks had no increase in share value, however the Swiss Franc had a 20% exchange gain against the Euro = $0.2 \times 0.2 = 0.04 = 4\%$).

B. Portfolio Currency Hedge

If in the above example a Fund Manager would like to avoid the fund's performance dependency on Pound and Swiss Franc exchange rates, he would forward hedge the two currencies against the Euro. If this hedging is full and permanent, then the value "full portfolio hedge" would be entered in the field "OFST010210 Portfolio Currency Hedge". The currency (OFST020540 Share Class Currency) of share class B would then be the same as the Fund Currency (OFST010410), namely Euros.

C. Share Class NAV Hedge

Both share classes A and B above can also be hedged at the share class level.

For the unhedged share class A at portfolio level the two possibilities for share class hedging are full or residual NAV hedging. This results in the values for field "OFST020262 Share Class NAV Hedge" being either "yes, 100% NAV hedge" (**example D**) or "yes, residual hedge" (**example C**).

If the fund (for example share class B from above) is already hedged at the portfolio level, then only full NAV hedging at the share class level makes sense (**example E**), since there is no other foreign currency dependencies left in the fund. In the case of portfolio level hedging ("full portfolio hedge") combined with a full hedge at the share class level ("yes, 100% NAV hedge"), the share class behaves performance-wise like a share class with a residual hedge that is unhedged at the fund level (**example C**).

This situation is mirrored in Table 1 below where share classes C and E show the same performance.

Performance and currency exposure of hedged share classes

In the following section, the effects of different methods of currency hedging with regards to performance and currency exposure are investigated.

Subsequently, it is shown how the different methods of hedging are represented in openfunds.

The following five share classes are considered:

- A. Unhedged Euro-share class.
- B. Euro-share class with hedging at fund level (Portfolio Currency Hedge. Value: „full portfolio hedge“).
- C. Share class A hedged by means of a residual NAV hedge against the Swiss Franc (Share Class NAV Hedge. Value: „yes, residual hedge“).
- D. Share class A hedged by means of a 100% NAV hedge against the Swiss Franc (Share Class NAV Hedge. Value: „yes, 100% NAV hedge“).
- E. Share class B hedged by means of a 100% NAV hedge against the Swiss Franc (Portfolio Currency Hedge. Value: „full portfolio hedge“ and an additional Share Class NAV hedge. Value: "yes, 100% NAV hedge").

	EUR	GBP	CHF	Total
Portfolio weight	50%	30%	20%	100%
Performance of shares in local currency	5%	10%	0%	
Performance of currency against the Euro	--	0%	20%	
A. Euro share class without hedging	2.5%	3%	4%	9.5% (EUR)
B. Euro share class with Portfolio Currency Hedge	2.5%	3%	0%	5.5% (EUR)
C. Share class A with residual NAV hedge in CHF	2.5%	3%	0%	5.5% (CHF)
D. Share class A with 100% NAV hedge in CHF				9.5% (CHF)
E. Share class B with 100% NAV hedge in CHF				5.5% (CHF)

Table 1: Performance of the share classes and hedge variants

Currency sensitivity

One can directly calculate currency exposure of the different portfolio and hedge variants. This is illustrated by the following tables:

Share Class A, Currency EUR	Weight in EUR	Weight in GBP	Weight in CHF
Equities	50%	30%	20%

Table 2: Portfolio weight, share class A

As can be seen in table 2, unhedged, Euro-based share class A is influenced 30% by Euro- Pound currency fluctuation and 20% by Euro-Swiss Franc fluctuation.

Share Class B, Currency EUR	Weight in EUR	Weight in GBP	Weight in CHF
Equities	50%	30%	20%
Portfolio Currency Hedge	+50%	-30%	-20%
Currency Exposure of Share Class	+100%		

Table 3: Portfolio Currency Hedge, share class B

Hedged share class B, however, is not affected by currency exchange rate fluctuations. This also explains why it exhibits 4% lower performance, see Table 1. As opposed to share class A, share class B did not profit from the 20% appreciation of the Swiss Franc.

Share Class C, Currency CHF	Weight in EUR	Weight in GBP	Weight in CHF
Equities	50%	30%	20%
Residual NAV hedge	-50%	-30%	+80%
Currency Exposure of Share Class	0%	0%	100%

Table 4: Residual NAV hedge, share class C

Table 4 illustrates share class C with residual NAV hedge. This portfolio-level hedge is shown from the view of a Swiss Franc oriented investor; the fund is protected against exchange rate fluctuations of all other currencies in the fund.

Share Class D, Currency CHF	Weight in EUR	Weight in GBP	Weight in CHF
Aktieninvestments	50%	30%	20%
100% NAV hedge	-100%		+100%
Currency Exposure of Share Class	-50%	30%	120%

Table 5: 100% NAV hedge, share class D

In order for Swiss franc-based share class C to have the same performance as Euro-based share class A, the Swiss Franc would have to be 20% over-hedged so that the Swiss Franc weight also profits from the appreciation. This over-hedged variation is illustrated by share class D in Table 5 above.

Share Class E, Currency CHF	Weight in EUR	Weight in GBP	Weight in CHF
Aktieninvestments	50%	30%	20%
Portfolio Currency Hedge	+50%	-30%	-20%
Share Class Currency Hedge	-100%		+100%
Currency Exposure of Share Class	0%	0%	100%

Table 6: Combination of a Portfolio hedge with a 100% NAV hedge

From the viewpoint of a Swiss Franc-based investor, share class E has no exposure to foreign currency fluctuations. Its performance profile is similar to that of the aforementioned share class C with residual NAV hedge. This can be seen in tables 4 and 6.

Implementation in openfunds

A summary of the above mentioned examples as implemented in openfunds is shown in table 7 below. As mentioned before, share class C and E have the same foreign currency exchange exposure. This

openfunds

shows that independent of fund-level hedging, all currency hedging at share class level can be represented.

OFST010210 Portfolio Currency Hedge	no	yes
OFST020262 Share Class NAV Hedge	A) no	B) yes
	C) yes, residual hedge	E) yes, 100% NAV hedge
	D) yes, 100% NAV hedge	

Table 7: Representation of currency hedging variants in openfunds

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1.2	2017-06-20	Final	Changed level of duration hedge to share class
1.1	2016-02-26	Final	Corrections. Added duration hedge
1.0	2016-02-18	Draft	First Version. Currency Hedge

Implementation

If you have any questions about the new data type or difficulties with implementation, please contact us at businessoffice@openfunds.org.

Joining openfunds

If your firm has a need to reliably send or receive fund data, you are more than welcome to use the openfunds fields and definitions free-of-charge. Interested parties can contact the openfunds association by sending an email to: businessoffice@openfunds.org

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