Currency Exposure
Methodology
Q&A

1. **Why does a specific fund not have a currency exposure?**

The currency exposure calculation follows a bottom-up approach so that Morningstar first calculates the currency exposure of each holding and then calculates the overall portfolio currency exposure. Based on this approach, we set up a validation logic for each holding of the portfolio and for the overall portfolio currency exposure.

At holding level, we will assign an undefined currency exposure if the holding is classified with a security type that is not covered by Morningstar calculation methodology, or whenever it is covered by the methodology but there are no sufficient data inputs for the calculation.

A portfolio-level currency exposure will be published if the portion of the portfolio with unidentified currency is within a certain validation threshold. In particular, the portfolio level-calculation will be triggered only if the sum of absolute weights of long and short unidentified currency exposure will be less than 10% of the total market value of the portfolio.

2. **Will Morningstar calculate currency exposure on portfolios collected through the Morningstar standard portfolio template?**

Morningstar collects full holding portfolios using different portfolio templates. The Morningstar Standard portfolio template, or SPT, contains less information than advance reporting formats,[1] or ARFs, which are data-collection templates hosting more terms and conditions on derivatives. Some derivatives require specific data points for the calculation of currency exposure that can be collected only though ARF. However, many securities require only a few data points, which are available in the SPT. Therefore, it is possible to calculate the currency exposure on portfolios collected through the SPT such that validation thresholds are met. Nevertheless, Morningstar sets up additional control rules on portfolios collected with the SPT so that only portfolios which a) do not invest in currency derivatives, and b) do not have cash offset positions are eligible for the calculations.

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[1] The Advanced reporting formats are N-Port, TPT, and Morningstar Advanced Reporting Template.

3. **Why does a portfolio reported through APT, TPT, or N-Port not have currency exposure calculated?**

This may happen if the sum of absolute currency weights of security types not covered by the methodology and the sum of absolute currency weights of security types covered by the methodology but without sufficient input data is greater than 10%.

4. **Why are currency options excluded from the calculation?**

Terms and conditions on currency exposures are reported in inconsistent ways by portfolio providers.

5. **Why does Morningstar not use notional exposure to calculate the currency exposure of equity and fixed-income derivatives?**

Morningstar uses a replicating portfolio approach to determine the currency exposure of derivatives. Through this approach we aim to build a replicating portfolio generating the same cash flows of the derivative. Although there may be multiple types of derivatives with their own replicating portfolios, in general, a financial derivative is structured so that investors can gain exposure to its underlying asset with a small amount of money, generating a leverage effect. This is the case of futures, forwards, and some swaps. Therefore, a general replicating portfolio consists in an amount of cash borrowed by the investor to gain the notional exposure to the underlying. The cash liability and the underlying asset are typically in the same currency; therefore, the currency exposure of the two positions in the replicating portfolios offsets each other except for the profit and loss of the derivative (the accumulated difference, along the life of the derivative, between the implied liability and the implied asset of the derivative that has not been settled). For example, we can compare an investor whose base currency is euro and who can buy either a portfolio of physical stocks denominated in USD or a derivative (a future, a contract for difference, or a simple equity swap) so that the portfolio equity exposure is equal to the fund TNA. For convenience, let's suppose that the basket of underlying holdings is the S&P 500 and that the derivative is a future and let's assume the margin required is zero.

Portfolio 1	Portfolio 2
120 USD invested in S&P 500 constituents	100 EUR in cash + Future on S&P 500 (notional equal to 120 USD)

Let's suppose that in Portfolio 1, at the beginning of day 1, the spot exchange rate EUR/USD is equal to 1,2 and that at the end of the day 1, the spot exchange rate is 1,22. In Portfolio 2, the price of the index did not move at all (the underlying security prices did not move at all).

The first portfolio will be always valued USD 120 (as the price of constituents did not move), however, the fluctuation on exchange rate will generate a loss in terms of EUR as the portfolio will be now valued USD 120/EUR 1,22= 98,36 with a loss of EUR 1,63. The second portfolio, however, will still be valued EUR 100, as the future did not move and therefore no profit and loss has been accumulated.[2]

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[2] In the real world, the investor pays an interest rate to the clearing house, which is debited on the margin account and that is the remuneration for the implied amount of money borrowed by the derivative investor.

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The difference between the two portfolios is determined by the fact that the leveraged exposure in the second portfolio is financed through the liability implied in the future, which is denominated in the same currency of the future.

Regarding noncurrency options, we can demonstrate that the value of a European option is the difference of a contingent asset and a contingent liability denominated in the same currency of the underlying. Therefore, also in this case, the currency exposure of the implied asset and liability offset each other, except for the accounting value of the option, which is its premium.

6. **Why are equity, asset swaps, and total return swaps excluded from the calculation?**
Swaps are over-the-counter instruments that may be customizable. We believe that swaps may have terms and conditions that can provide exposure to a basket of currency forwards to synthetically replicate the economic exposure of the underlying as well as the currency exposure.

7. **Why are derivatives with an underlying index excluded from the calculation?**
Derivatives over a specific index may be subject to index licensing that may prevent us the ability to calculate and deliver analysis on them.

8. **What is the source for currency used by Morningstar in the calculation?**
Morningstar uses the currency reported by asset managers as well as the currency derived from our reference database after portfolio holdings are identified.

9. **How do you control the quality of the calculated data?**
Morningstar has different levels of quality controls.
We can break the quality controls into three big buckets:
   a. Control on data provided by asset manager. These types of controls consist of the analysis of conformity of the file provided with respect to specific acquisition templates as well as the identification of holdings and validation of individual data points.
   b. Control on the completeness of inputs used for the holding-level currency exposure calculation. Based on this control we flag each security as ready or not ready for currency exposure calculation.
   c. Control on the sufficiency of the percentage of portfolio for which we can calculate currency exposure in order to set a limit to the portion of the portfolio that will not be included in the analysis.

10. **What are the securities covered in the calculation?**
The security types covered by the methodology are available in the Appendix 1 of the methodology paper.

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11.   **Is the calculation including share class level hedging?**

Morningstar calculates the currency exposure at portfolio level. Portfolios are collected at fund level and therefore all securities shared by all fundholders are included in the calculations. Hedging layers applied at share class level are not included in the calculation.

12.   **How do you treat foreign-exchange swaps?**

Morningstar does not assign a specific taxonomy to foreign-exchange swaps, also known as FX swaps, which are falling in the broader group of currency swaps. The currency calculation is based on the top of the Morningstar holding taxonomy and therefore foreign-exchange swaps will follow the same rules of cross-currency swaps. A foreign-exchange swap is a contract that simultaneously agrees to buy (sell) an amount of currency at an agreed rate at an upcoming date and resell (repurchase) the same amount of currency at a later expiration date to (from) the same counterparty, also at an agreed rate. It may be modeled as a combination of two foreign-exchange forwards. The short-dated foreign-exchange forward is called the near leg and the long-dated foreign-exchange forward is called the far leg. The two foreign-exchange forwards are on the same currency pairs but with different directions. Therefore, if the near leg buys a certain notional of currency A at a CurrencyA/CurrencyB exchange rate, the far leg reverses the foreign-exchange forward-buying currency B at CurrencyB/CurrencyA exchange rate at the far date. The real risk implied in a foreign-exchange forward at initiation is the interest-rate risk, as the foreign-exchange rates on the two implied foreign-exchange forwards will discount the expected differential between the interest rates on the two currencies. However, after the near leg is executed and settled, the instrument will generate a currency exposure similar to that of the foreign-exchange forward on the far leg.

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Methodology History

Version: 1.0   31 March 2022   Original publication

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