FX Viewpoint

# Swimming USD-naked as the tide goes out

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G10 FX Strategy
Global

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## Investors under-hedge US equities vs US fixed income

Foreign investors tend to fully or almost fully FX hedge their US fixed income investments but employ more flexible FX hedging mechanisms for US equities.

## Sharp increase in US equity foreign exposure post-Covid

We find a sharp increase in equity inflows into the US vs. the Euro Area in the post-Covid period. This shift by itself suggests a sharp increase in European investors' unhedged exposure to the USD.

## European equity rotation via passive ETFs

The sharp increase in passive foreign investment in US equities post-pandemic also points to likely low hedge ratios. The relative underperformance of US vs. European equities and EURUSD strength this year have come along with a shift away from passive funds and from exchanged-traded funds (ETF). We would expect more EURUSD strength should investors continue rotating away from US equities via passive ETFs.

## Estimating European hedging scenarios

Using international flow of funds data and estimates of hedge ratios, we gauge how much of the USD denominated security holdings by foreign investors is hedged. Focusing on European investors—which account for half of the foreign investment in the US—their exposure is 73% unhedged for equities and 4% unhedged for bonds, or equivalently to $6.5 trillion in unhedged equity exposure.

## US equities quarterly hedging framework

We estimate how the US equity hedge ratio could have evolved in theory for foreign investors. In the past years, the negative USD-US equity correlation, the appreciating USD, and the elevated hedging cost prompted foreign investors to reduce their FX hedge ratios. This year, USD weakness from an overvalued level, lower US yields and a positive USD-US equity correlation would call for much higher hedge ratios, from a bottom of 18% in early 2024, or 31% before the 2024 US elections, to 49% at 2024 year-end.

## Imminent need to hedge

Applying our theorical hedge ratio framework, a shift back to the pre-COVID (and pre-US-exceptionalism) era's hedge ratio would result in an incremental $2.5tn in notional equity exposure to be hedged by European investors, or $5tn by all foreign investors in the US.

## Some relevant data from European asset managers

Empirical data from some large European asset managers suggests they increased their USD exposure post-pandemic and into this year, may have been wrong footed and are likely to need to increase hedges substantially following USD weakness this year.

ETF: exchange-traded funds

DXY: dollar index

EPFR: Emerging Portfolio Fund Research

AUM: asset under management

SPX: S&P 500


**Refer to important disclosures on page 11 to 12.**
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# Investors under-hedge US Equity vs US Fixed Income

Foreign investors[1] tend to hedge their US fixed income exposure fully or almost fully but employ more flexible hedging mechanisms for US equities. We see two main reasons as to why foreign investors prefer to fully hedge their US fixed income investments:

1. A key motivation for foreigners to invest in US fixed income is to conduct carry trade. In this case, a foreign investor needs to mechanically enter a forwards contract to sell USD against domestic currency.

2. Exhibit 1 shows the USD (proxied by DXY index) has more comparable return and volatility to US fixed income. The USD also has more correlation to US rates than equity. Without FX hedging, it seems likely to us the USD fluctuation over time could offset any total return from holding US fixed income. US equities, on the other hand, have a higher absolute return and volatility than the USD.

**Exhibit 1: Foreign investors tend to fully hedge US fixed income investments as exchange rate fluctuation could easily offset the returns from holding US fixed income**

Quarterly return and annualized volatility for the USD vs US equity and fixed income assets

| | USD | US Equity | US Treasury | US Corp Bond |
|---|---|---|---|---|
| median quarterly return | 0.2% | 3.4% | 0.6% | 1.2% |
| annualized vol | 7.5% | 14.9% | 4.8% | 6.6% |

**Source:** BofA Global Research, Bloomberg. Calculated using daily data over the past 20 years. We use DXY, SPX, Bloomberg US Treasury and Corporate Bond total return indices as proxies for USD, US equity, US Treasury, and US corporate bond.

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We could consider two distinct approaches to hedge foreign equity exposures. Foreign investors who choose a passive hedging approach tend to fully hedge their US equity exposures. Meanwhile, foreign investors who favor a dynamic hedging approach tend to adjust their hedge ratio over time. The effective equity hedge ratio is a weighted average of these two approaches.

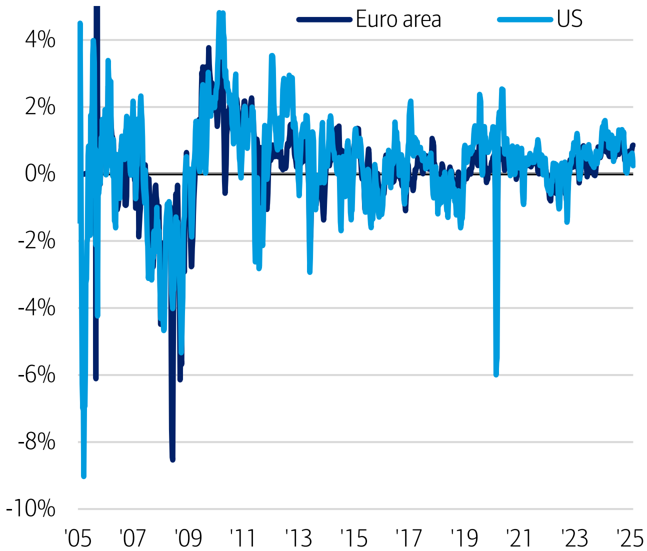
# Sharp increase in US equity foreign exposure post-pandemic

Looking at EPFR data, we find a sharp increase in foreign equity investment into the US vs. the Euro Area in the post-pandemic period. Bond flows have been broadly similar (Exhibit 2). However, the US saw a sharp increase in equity demand from foreigners, compared with weak Euro Area flows in the years after the pandemic (Exhibit 3).

To the extent that equity flows tend to be unhedged, as we discussed above, these trends suggest that the unhedged exposure of foreign investment in the US has increased sharply in recent years, compared with that in the Euro Area. This year, we have already seen a reversal of flows away from US equities and toward Euro Area equities, which could also suggest some change in relative hedge ratios of total exposures.

[1] For the purposes of this report, the term "foreign investors" refers to all non-US investors, regardless of domicile, unless otherwise specified.

**Exhibit 2: Bond flows to US and Euro Area very similar post-pandemic**
Foreign bond investment into US and Euro Area (4-week flow as % AUM)




**Source:** EPFR, BofA Global Research.

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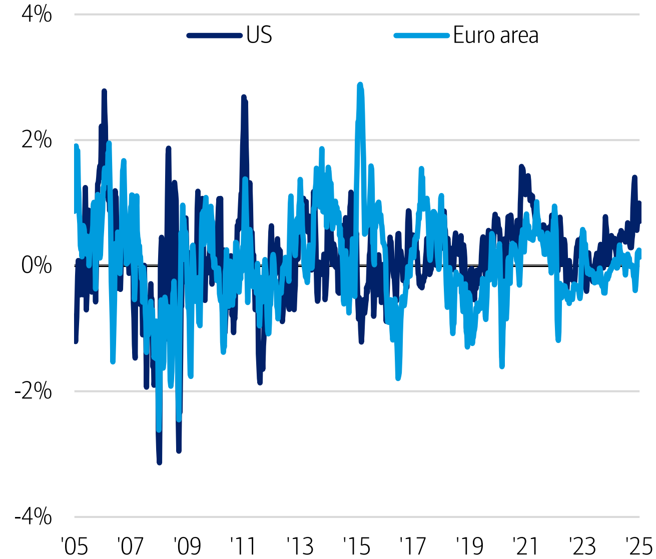
**Exhibit 3: Much stronger equity flows into US than Euro Area post-pandemic**
Foreign equity investment into US and Euro Area (4-week flow as % AUM)




**Source:** EPFR, BofA Global Research.

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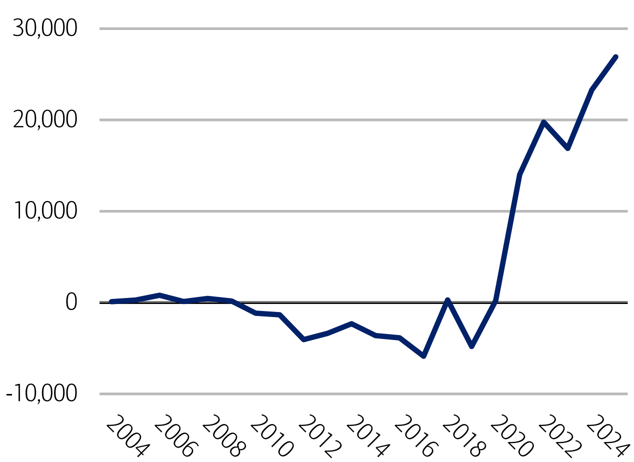
Focusing on Euro area investment in the US, the EPFR data show a sharp shift of toward US equities since the pandemic, rising from around 0 to more than 20,000 on the EPFR index in Exhibit 4. In the years before, bond and equity Euro area investments in the US were relatively balanced. However, the balance shifted massively towards equities in the post-pandemic period.

This shift to equity investment by itself suggests a sharp increase in the unhedged FX exposure of Euro Area investors to the USD, rising from around 0 to more than 59,000 on the index of EPFR data Exhibit 5. This is of course indicative, as the EPFR data is only a subset of total exposures. However, these trends provide interesting insights on possible exposures, as we discuss in more detail below.

**Exhibit 4: Euro Area flows into US shifted sharply towards equities since pandemic**
Index of Euro Area equity flows-bond flows into the US




**Source:** EPFR, BofA Global Research.

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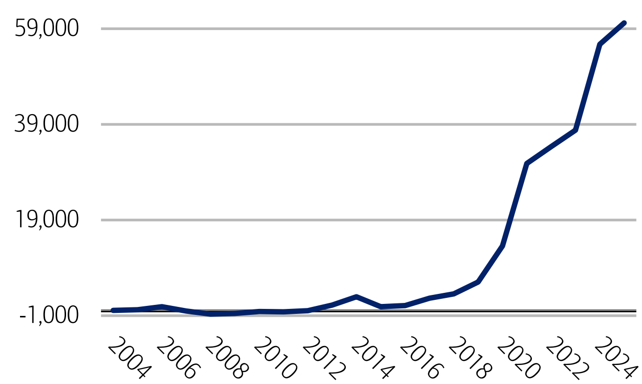
**Exhibit 5: Sharp shift towards US equities suggests Euro Area FX unhedged exposure to US assets increased sharply**
Index of unhedged Euro Area exposures to US assets




**Source:** EPFR, BofA Global Research. Note: we assume 80% of bond investment into the US is FX hedged, while only 20% of equity investment into the US is FX hedged.

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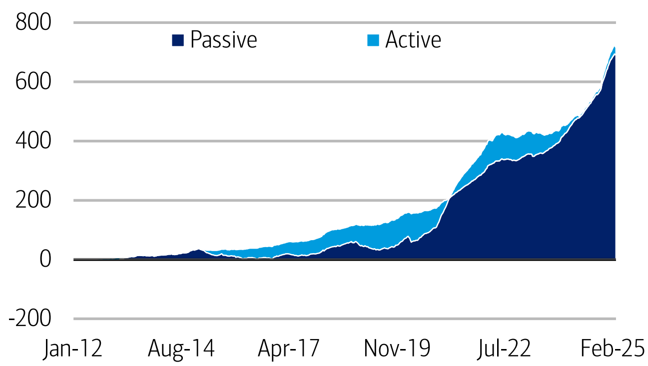
# European equity rotation via passive ETFs

Details of equity flows into the US in recent years also point to likely low hedge ratios. The sharp increase in European investment into US equities has been driven almost exclusively by passive investment (c. $700 bn since 2012), and mainly ETFs (c. $600 bn since 2012, for more details see Exhibit 6 and Exhibit 7). Such flows are less likely to be FX hedged than in the case of active funds.

**Exhibit 6: US equity inflows have mainly been passive**
US equity purchases from Euro area investors by fund type (USD bn)




**Source:** EPFR, BofA Global Research. Data through March 19. Active: Includes only funds that are actively traded and are not tied to a passive index/benchmark. Passive: Includes only funds that are tied to an index/benchmark and seek to mirror the index/benchmark's performance.
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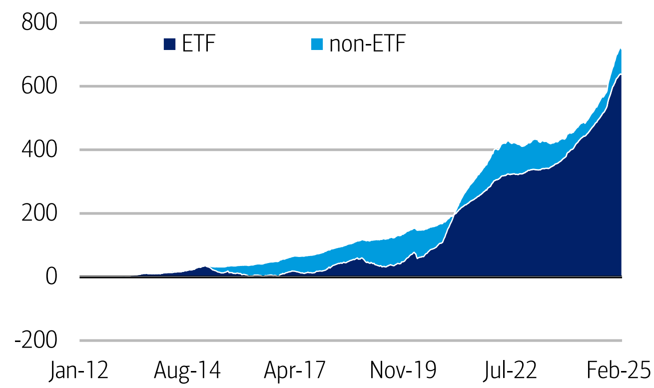
**Exhibit 7: US equity inflows have mainly been via ETFs**
US equity purchases from Euro area investors by fund type (USD bn)




**Source:** EPFR, BofA Global Research. Data through March 19. Non-ETFs: Includes Mutual funds, UCITs, SICAVs, Variable Annuity Funds, other Insurance-linked Funds, closed-end funds and CITs
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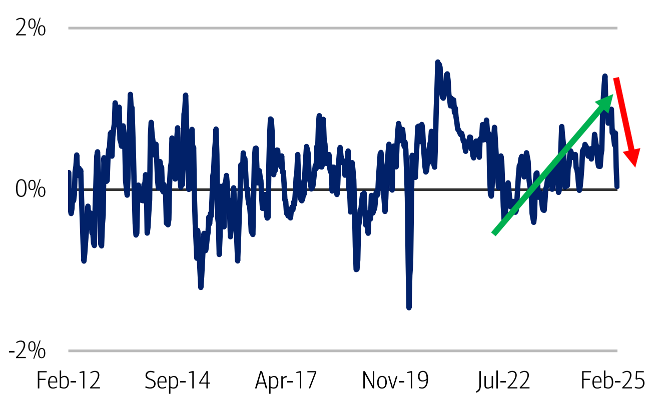
The steady rise in Euro Area investment into US equities from late 2022 – and particularly in Q4 2024 – until early this year had likely offered meaningful support to the USD (Exhibit 8). In similar vein, the recent EURUSD strength has come along a halt in US equity purchases by Euro area investors.

The relative underperformance of US vs. European equities in Q1 came along with a shift away from passive funds and from exchanged-traded funds (ETF) (Exhibit 9). To the extent passive ETF flows are less likely to be FX hedged, we would expect more EURUSD strength should investors continue rotating away from US equities via passive ETFs.

**Exhibit 8: Euro Area investors turned to US equities from late '22**
US equity purchases from Euro area investors (4-week flow as % AUM)




**Source:** EPFR, BofA Global Research. Data through March 19.
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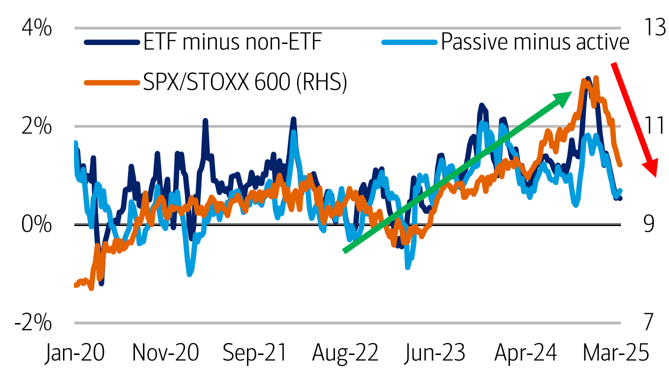
**Exhibit 9: ETF and active flows likely behind recent equity performance**
US equity purchases from Euro area countries by type (4-week flow, % AUM)




**Source:** EPFR, Bloomberg, BofA Global Research. Data through March 19. We subtract non-ETF flows as % AUM from ETF flows as % AUM, and likewise for active and passive.
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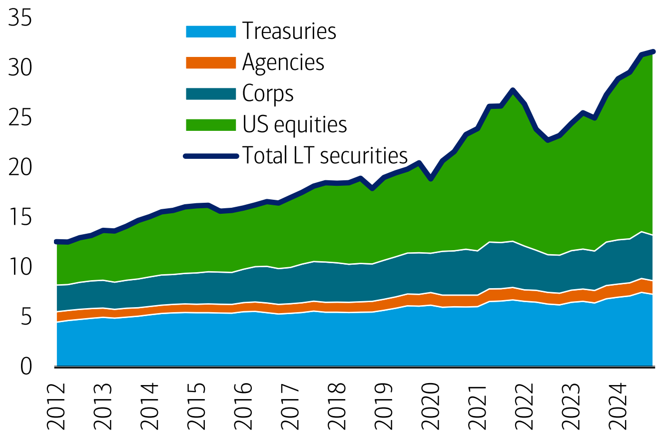
# Estimating European hedging scenarios

Using international flow of funds data and estimates of hedge ratios, we can gauge how much of the current USD denominated security holdings by foreign investors is hedged/unhedged. This can frame what order of magnitude we could expect should foreign investors either rebalance away from USD, or adjust the FX hedge ratios of their USD holdings. While it is difficult to pinpoint what hedge ratios are being applied at any time, we can use various frameworks (our own and from the academic literature) to estimate existing unhedged exposures.

Exhibit 10 displays total holdings of all US long-term securities by non-US investors, while Exhibit 11 zooms in on the regional ownership of US equities.[2] Here we focus specifically on European investors as they are the focal point of the emerging theme of a potential secular asset reallocation, and owners of roughly half of all foreign owned US equities, at roughly $8.9tn.[3] This is consistent with our recent analysis of global imbalances, suggesting that Europe has become the dominant creditor of the global economy, and particularly of the US (see this note [Global Macro Year Ahead: 2025: Stretching the rubber band 24 November 2024]).

**Exhibit 10: US equity ownership by non-US residents have grown materially since COVID**

Holdings of U.S. Long-term Securities by Foreign Residents ($T)




**Source:** Bloomberg; US Treasury TIC data; BofA Global Research

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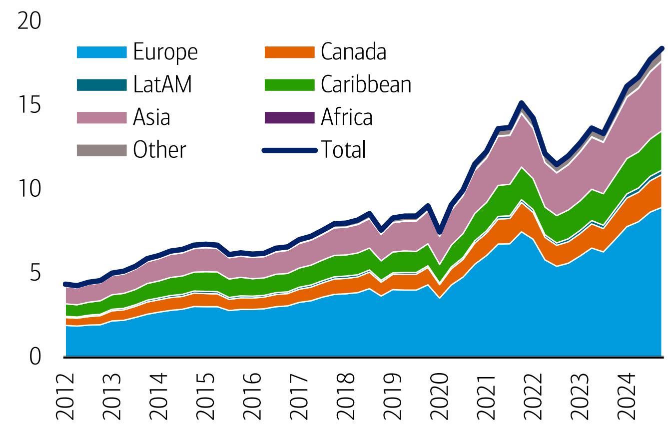
**Exhibit 11: European investors constitute roughly half of foreign US equity ownership**

US equity holdings by Region ($T)




**Source:** Bloomberg; US Treasury TIC data, BofA Global Research

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Exhibit 12 draws on estimates from a Harvard Business School study on non-US investors' hedging behavior (labeled "A" and "B" in the table).[4,5] Applying these estimates as a benchmark, it would imply that European investors equity holdings are 73% unhedged, while their fixed income holdings are just 4% unhedged. Other studies give similar results (see for example Wenxin Du and Amy Wang Huber, 2023).

In dollar terms, this equates to roughly $6.5 trillion in unhedged equity exposure. In other words, based on these estimates, a permanent 1% increase in hedging would equate to approximately $65 billion in EUR/USD hedging.

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[2] According to the US Treasury TIC data

[3] For the purpose of this specific report, we focus mainly on European investors as this sub-set is the largest by asset holdings. Potential future versions could delve deeper into holdings of non-European foreign investors.

[4] For share of funds that hedge, we use estimates in the HBS study presented in tables 3 and 4. The specific funds used were undisclosed, but the study reports "After the above filtering we have 2,483,437 fund-currency-month observations, and 916,806 observations for hedgers."

[5] We combine these HBS estimates with the Treasury TIC data. The HBS study does not incorporate this data.

**Exhibit 12: Equity investments significantly more exposed to FX risk**

Estimated hedge ratios of US equity and fixed income holdings by European investors

| | Equity | | | Fixed Income | | |
|---|---|---|---|---|---|---|
| Ownership location | Euro Area + | UK | Eq total | Euro Area + | UK | FI total |
| Share of funds that hedge (A)* | 51% | 36% | | 90% | 87% | |
| Average Hedge Ratio (B)* | 61% | 34% | | 108% | 102% | |
| Share of hedged holdings (C) = (A*B) | 31% | 12% | | 97% | 89% | |
| Share of European ownership (D)** | 80% | 20% | | 80% | 20% | |
| Share of European holdings hedged (E)=(C*D) | 25% | 2% | | 78% | 18% | |
| Estimated Hedged Assets by European owners F=(E1+E2)*** | | | 27% | | | 96% |
| Estimated Unhedged Assets by European owners (1-F) | | | 73% | | | 4% |

**Source:** Harvard Business School; US Treasury TIC data; BofA Global Research. Euro Area + includes Switzerland, Norway and Sweden. See Alex Cheema-Fox & Robin Greenwood 2024. *A & B are estimates from HBS Study; **proportions from TIC Data holdings; ***E1=E (Euro Area), E2=E (UK)

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# US equities quarterly hedging framework: Methodology

We introduce a dynamic equity hedging framework to help estimate how the theoretical hedge ratio could have changed over time, as well as hedging needs today. Exhibit 13 shows how the hedge ratio may have evolved over the past decade. This section describes the methodology, risk and limitations.

For foreign investors who dynamically hedge US equity exposures, we believe their hedge ratio is affected by four main aspects: USD correlation with US equities, discretionary directional view on the exchange rate, hedging cost, and USD valuation vs history. We devise a framework to estimate how the US equity hedge ratio could have evolved on a quarterly basis for non-US investors.

Because US equity vol is around twice that of the USD (Exhibit 1), we assume foreign investors have 50% as their baseline hedge ratio for US equity and would tilt the hedge ratio according to the aforementioned four aspects:

1. The USD correlation with US equities should have the most impact on the hedge ratio. If the USD rallies during equity selloffs, the USD appreciation would partially offset the equity loss; vice versa if the USD weakens amid a risk-on equity rally. We calculate 52-week rolling beta between weekly DXY returns and SPX returns and modify the 50% baseline hedge ratio by the average of this beta in the latest quarter. E.g. If the average beta between DXY (dependent variable) and SPX (independent variable) were -20% such as in Q1 2024, the new hedge ratio would become 30%.

2. If the discretionary view looks for USD appreciation in the coming quarter, it would translate to less need to hedge US exposure based on this conviction. Vice versa, foreign investors will increase the hedge ratio if they expect the USD to depreciate.

   We use the spread between prevailing price for DXY index at quarter-end with the one-quarter ahead consensus forecast for the DXY index as proxy for the market discretionary view on the USD. This spread is standardized to a -10% to +10% range based on each quarter's spread vs its own history. We first calculated the percentile of latest quarter's spread relative to an expanding window of history quarterly spreads since 2011, which was the start of consistent DXY consensus forecasts available Bloomberg, then linearly mapped the percentile to a -10% to +10% range. The modification based on discretionary FX view is constrained to -10% to 10% because we do not want this aspect to matter more than the USD/US equity correlation. In 2021, consensus forecast was persistently bearish for the USD. As a result, this aspect contributed to a +10% tilt to the baseline hedge ratio.

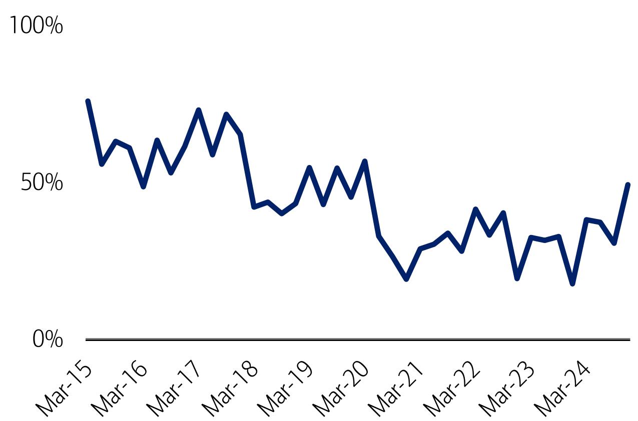
3. We use the spread between prevailing spot price and 3m forwards price for the DXY index as proxy for hedging cost. A lower forwards DXY price relative to spot price would correspond to greater hedging cost, calling for a lower hedge ratio.

   The hedging cost would also be standardized to its own history, and then standardized to an adjustment ranging from -10% to 0% to the baseline hedge ratio. We first calculated the percentile of the latest quarter's forwards premium relative to an expanding window of historical forwards premiums since 1999, which was the year that the Euro was introduced. The percentile is then linearly mapped to a range of -10% to 0%. The adjustment is asymmetric because greater hedging cost should call for lower hedge ratio. However, lower hedging cost should not lead to over-hedge. Hedging cost has been persistently high since 2022, as the Fed out-hiked global central banks and US yields were elevated vs G10 peers.

4. Finally, the USD valuation relative to long-term history also matters. If the USD stands at a rich level vs history, foreigners would be more inclined to over-hedge their US exposure. We use the DXY index's percentile vs its own 5y history as proxy for USD valuation and linearly map this percentile into a -10% to +10% adjustment. In Q3 2022, this aspect applied a +10% adjustment to the baseline hedge ratio, as the USD reached a multi-year high.

See the Appendix for an illustrative example for FX hedge ratio calculation in Q3 2024.

**Exhibit 13: Hedge ratio bottomed out in 2023 but current hedge ratio remains below pre-Covid level**
Quarterly estimate of dynamic hedge ratio for US equity




**Source:** BofA Global Research, Bloomberg

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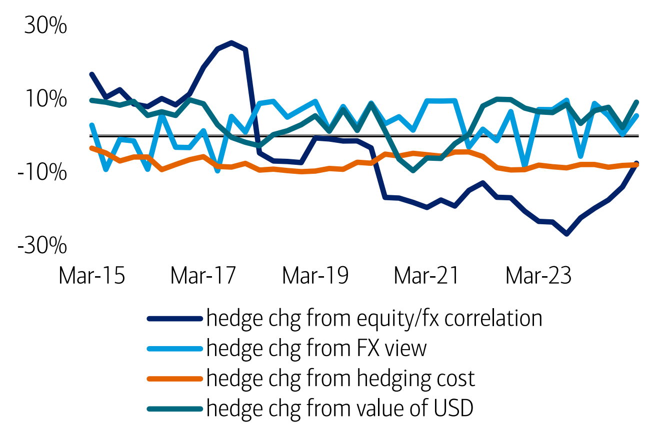
**Exhibit 14: Hedge ratio is rising as USD's negative corr with US equity weakens**
Hedge ratio adjustment over time




**Source:** BofA Global Research, Bloomberg

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# Risks and limitations of the methodology

In our methodology, we assumed that the starting baseline would be a 50% hedge ratio. In practice, this may not be the starting hedge ratio for all investor's hedging analysis. We also assumed each aspect has a linearly additive effect on the final hedge ratio. In practice, other investors could consider more than 4 aspects in their FX exposure hedging decisions, and the actual effective hedge ratio may be higher or lower than we estimated using this methodology. In this note, we simply describe one form of how the FX exposure hedging analysis could look like for investors. We do not intend to make any forward-looking predictions.

# Current US equity hedge ratio vs history

Exhibit 13 shows how the hedge ratio may have evolved over the past decade. It suggests the theoretical hedge ratio for US equities has been low in recent years compared with pre-Covid levels but has been rising since the end of 2023. Historically, this estimate is the highest when the USD exhibits positive correlation with US equities, like in 2017, as well as this year.

Our framework suggests that since Covid, the negative USD-US equity correlation, the appreciating USD and elevated hedging costs were reasons for foreign investors to reduce their hedge ratios.

By contrast, USD weakness from an overvalued level, lower US yields and a positive USD-US equity correlation this year would call for higher hedge ratios, from 18% early last year or 31% before the US elections, to 49% now, according to our framework.

Recent market dynamics would suggest this theoretical hedge ratio could increase further. US yields have fallen sharply vs global yields month-to-date, on the back of rising US recession concerns after the sharp increase in US tariffs, with narrowing rate differentials have reduced the hedging cost for USD sellers. The consensus forecasts are also likely to turn more bearish for the USD compared with the strong bullish views in late-2024.

# Imminent need to hedge

Applying our theorical hedge ratio framework can further frame the possible hedging scenarios. Interestingly, the post-covid average of our theoretical quarterly hedge ratio estimates for equities is 28% (vs. 27% estimated by the Harvard Business School study). During the pre-covid era (from 2015-2020) our quarterly estimates averaged 56% (Exhibit 13).

Exhibit 15 looks at these ratios against the current estimated European holdings of US equities. A shift back to the pre-COVID (and pre US-exceptionalism) era's average hedge ratio would result in an incremental $2.5tn in notional equity exposure to be hedged by European investors alone. If we assume a similar hedge ratio for non-European investment into US equities, and given that the European exposure is about half of the total, this becomes roughly double, namely $5tn in notional equity exposure to be hedged by all foreign investors in the US.

This of course is not an outright prediction, nor is it something that would take place in a short time frame. But it helps put into context the sheer magnitude of what is possible (even at the extremes) if the cross-country equity rotation theme takes form.

**Exhibit 15: A return to pre-COVID hedge ratio averages would result in significant FX hedging by European investors**

Estimated Hedging needs based on pre- and post- COVID hedging model

| | | (Billions) |
|---|---|---|
| **European Holdings of US Equities** | **$** | **8,928** |
| At a 27% Hedge Ratio: | | |
| Of which Hedged: | $ | 2,500 |
| Of which Unhedged: | $ | 6,428 |
| At our estimated/theoretical 56% pre-COVID hedge ratio: | | |
| Of which Hedged: | $ | 5,000 |
| Of which Unhedged: | $ | 3,928 |
| Incremental notional amount to be hedged at pre-COVID average: | $ | 2,500 |

**Source:** US Treasury TIC data; BofA Global Research

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# Some empirical data from European asset managers

The simultaneous decline in USD and US equities this year may have caught some large European Asset Managers on the wrong foot (Exhibit 16). The empirical data suggests that many had increased their USD exposure in recent years, even if it remains lower relative to the pre-Covid period. Notably, ABP – one of Europe's largest pension funds with 550bn AUM as of Jan-25 – has gradually reduced its strategic FX equity hedging to 25% from 50% from Dec-2023.

In similar vein but for data until 2023, Cheema-Fox and Greenwood (2024) show that the proportion of EUR funds hedging their FX risk had diminished in recent years, although it remains considerably higher than 20 years ago.

**Exhibit 16: Some European Asset Managers perhaps wrong-footed by FX**
Currency exposure of some European Asset Managers

| | 2019 | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| Danish insurance and pension funds (USD exposure) | 28% | 24% | 29% | 37% |
| ABP, Netherlands (USD exposure) | 42% | 50% | 59% | |
| AP1, Sweden | 26% | 20% | 18% | 24% |
| AP2, Sweden | 34% | 23% | 22% | 24% |
| AP3, Sweden | 20% | 19% | 18% | 23% |
| AP4, Sweden | 20% | 19% | 22% | 19% |

**Source:** Danmarks Nationalbank, ABP, AP1, AP2, AP3, AP4, BofA Global Research. Own calculation in the cases of the Danish insurance and pension sector and ABP.

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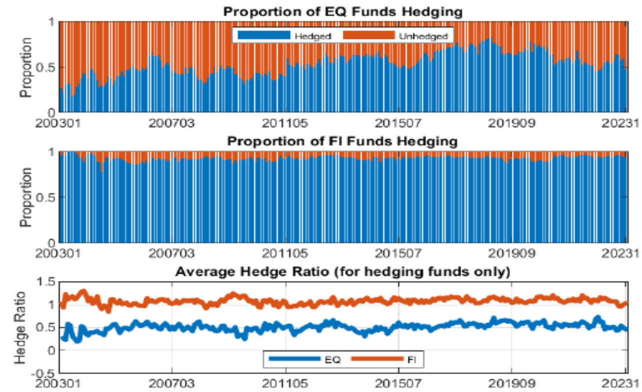
**Exhibit 17: Fewer EUR funds hedged FX risk in recent years**
EUR funds' portfolio hedging (%)




**Source:** Cheema-Fox, Alex and Robin Greenwood (2024). How do Global Portfolio Investors Hedge Currency Risk? Available at SSRN 5036404

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# Appendix: US equity hedge ratio calculation; illustrative example

### Illustrative example for FX hedge ratio calculation in Q3 2024

Exhibit 18 provides a more illustrative example to the FX hedge ratio calculation for Q3 2024. The average 52-week rolling beta between DXY and SPX Indices in this quarter was -14%. As a result, 14% was subtracted from the baseline hedge ratio of 50%. Consensus Q4 2024 DXY forecast was the same as the level of the DXY index at the end of Q3 2024. Market had uncertain USD outlook for Q4 2024 given the binary outcome of the US election. As a result, this aspect did not affect the hedge ratio. 3m DXY forwards price was -0.49% vs spot price at the end of Q3 2024. This was a relatively large forwards hedging cost to sell USD vs historical USD forwards premiums since 1999, which was linearly mapped to -8% on the 0% to -10% scale. Another 8% would be subtracted from the baseline 50% hedge ratio after taking hedging cost into consideration. Finally, while the USD has sold off in August 2024 on the back of negative US labor data surprise, the DXY index still stood at 61st percentile relative to its own 5y history at the end of Q3 2024. Slightly rich USD valuation vs its history linearly mapped to +2% increase to the baseline 50% hedge ratio. In the end, after applying linear additions and subtractions to the baseline 50% hedge ratio, the estimated hedge ratio for Q3 2024 was net lower at 31%.

**Exhibit 18: Each aspect's contribution to the change for the baseline hedge ratio in Q3 2024**
Illustrative example of how hedge ratio would change based on each aspect

| | Aspect Value | Hedge Ratio Change |
|---|---|---|
| Baseline | | 50% |
| 1) Hedge ratio change from FX/equity correlation | -14% | -14% |
| 2) Hedge ratio change from USD view | 0% | 0% |
| 3) Hedge ratio change from forwards hedging cost | -0.49% | -8% |
| 4) Hedge ratio change from USD valuation | 61% | 2% |
| Final hedge ratio | | 31% |

**Source:** BofA Global Research

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# Disclosures

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