

How to manage strategic currency exposure

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As APAC investors’ foreign investment portfolio grows, it is important to actively manage external currency as a distinct asset class, which requires a delicate balance to align risk with opportunity. For this paper, we discuss the long-run policy hedging ratio for APAC investors with a focus on risk mitigation. In a separate paper, [The US Dollar Free Lunch Is Over. What Now?](#), we discuss our cyclical (medium-term) views on currency hedging and explain the rationale behind our recommendation to increase US dollar hedge ratio.

For APAC investors, hedging most fixed income exposures typically improves risk metrics, as currency risk reduction outweighs diversification benefits. In contrast, the optimal hedge ratios for foreign equity portfolios are typically lower, though optimal levels vary by base currency and horizon. We summarize the recommended strategic hedge ratios in the table below:

Base currency of investors	Recommended fixed income strategic hedge ratio	Recommended equity long-run structural hedge ratio
KRW	Hedging the majority of the portfolio for risk mitigation	0–20%
SGD		0–20%
MYR		50–60%
THB		10–40%
TWD		Close to 0%

As of June 2025. Source: State Street Investment Management.

For Asian-based investors who prefer to manage equity exposures relative to the USD and separately hedge USD against their local currency, our recommended strategic hedge ratios are summarized below.

Base currency of investors	Recommended equity long-run structural hedge ratio
USD	40–60%

As of June 2025. Source: State Street Investment Management.

APAC portfolio expansion calls for strategic currency hedging

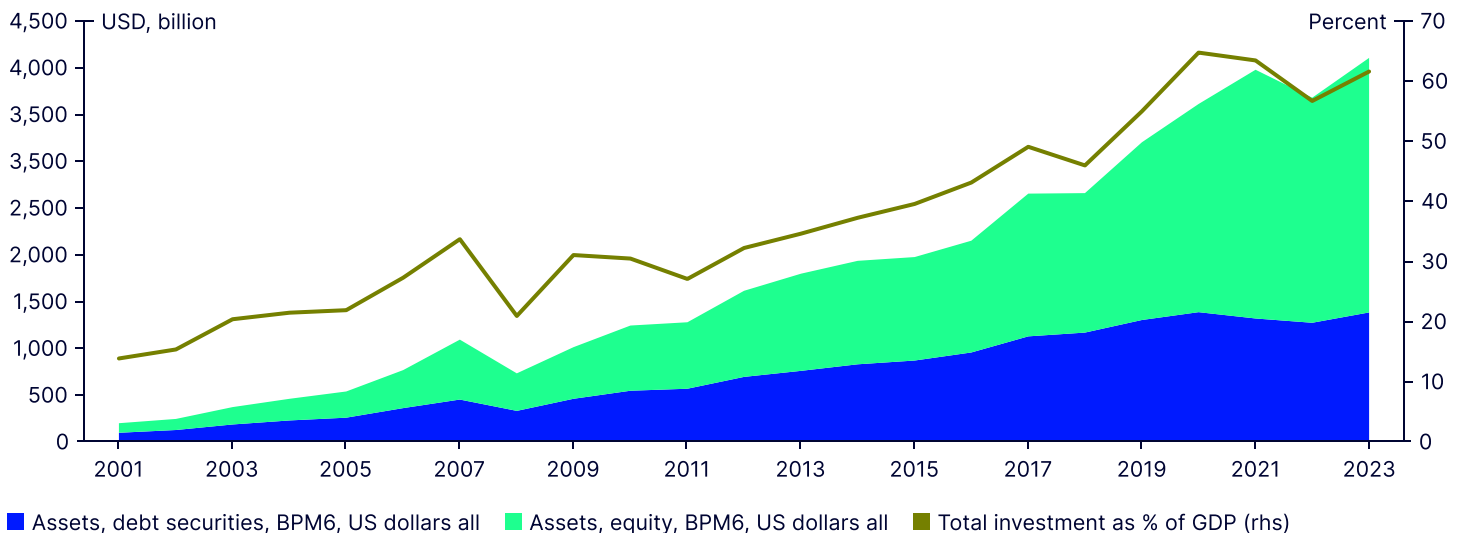
- APAC's external portfolio investment has grown remarkably in the past two decades.
- As capital flows surge, so do the complexities and importance of managing foreign currency exposures, which requires a delicate balance to align risk with opportunity.

The Asia Pacific region has witnessed a remarkable transformation in its macroeconomic and financial landscape over the past two decades. Despite varying stages of development, the region's countries have collectively experienced a surge in external portfolio investment, with the total share of external portfolio

investment as a percentage of GDP skyrocketing from below 15% in the early 2000s to around 60% by the end of 2023. This rapid growth is a testament to the region's increasing integration into the global financial system. Yet, as capital flows surge, so too do the complexities of managing them.

For investors navigating this landscape, managing foreign currency exposures can be a complex challenge. The mismatch between the currency denomination of their assets and their commitments to domestic stakeholders, often in local currency terms, can pose significant risks to their portfolios. However, this challenge also presents an opportunity for investors to adopt a more sophisticated approach to managing currency exposures, which requires the consideration of both currency risk and return perspectives to their portfolio.

Figure 1: APAC external portfolio investment growth trend 2001–2023



As of December 2023. Source: IMF Coordinated Portfolio Investment Survey, World Bank, State Street Investment Management. In US dollar terms. Countries reported included: Australia, Indonesia, Korea, Malaysia, Philippines, Singapore and Thailand. Based on external portfolio assets. GDP data based on nominal GDP at current prices.

The importance of implementing currency management

- Currency exposure is a critical, often overlooked driver of global portfolio performance.
- Currency should be purposely managed as a distinct asset class with consideration of both return and risk perspective to a portfolio. Decoupling currency decisions from underlying investments enables investors to enhance risk-adjusted returns.
- Designing a currency strategy requires the consideration of multiple factors, such as risk/return views, operational planning, and decisions on investment approach, scope, and time horizon.

Currency exposure represents one consequential—yet frequently underestimated—determinant of portfolio performance. While currency risk is a byproduct of cross-border asset allocation, empirical evidence demonstrates that foreign currencies often move around 20% to 40% over 7–10 year horizons. The contribution of unmanaged currency risks to total portfolio performance could become material when international asset allocation surpasses 10–15% of the total portfolio.

Rather than passively inheriting currency exposure as a byproduct of foreign investment, we believe investors ought to evaluate it as a distinct asset class. Currency management, often facilitated through derivatives such as forward contracts, enables the decoupling of currency decisions from underlying asset allocations. This separation permits investors to either (i) retain foreign asset exposures while neutralizing FX risk or (ii) target specific currency risk independently. Such flexibility enables investors to potentially enhance portfolio efficiency by aligning currency exposure with explicit objectives.

That said, like the construction of any portfolio, the construction of a currency management program is not entirely straightforward. One must have a view on the uncertain future risk and return of currencies and their co-movement with all other assets in the portfolio. Armed with these views, the investor must then choose what to do with that information. Should the approach be active or passive? Should all foreign currencies be included in the strategy? What is the target horizon? In addition, there are key operational considerations that must be addressed in derivatives usage.

Creating a currency risk management strategy: Science + Art

- An optimal currency risk management strategy blends quantitative rigor and strategic judgment.
- A two-step framework can be considered when designing a strategic currency risk management strategy: structural (long-term) and cyclical (medium-term). Long-run policy hedging ratio setting focuses on risk mitigation, while medium-term adjustment accounts for the cyclical currency swings from fair value.
- Tactical (short-term) overlay can be implemented to source additional alpha opportunities or mitigate short-term risks.

In this paper, we focus on the determination of long-term, structural hedging policy, with an emphasis on risk management, for base currencies including the US dollar, Korean won, Malaysian ringgit, Singapore dollar, Thai baht and Taiwan dollar.

Conceptual framework for setting the long-run benchmark hedging policy

The policy hedge ratio calibrates the structural level of currency risk of the international portfolio.

- 1 **Derive the minimum volatility hedge ratio.** We begin by identifying the hedge ratio that minimizes historical portfolio volatility in the long run.
 - Time horizon sensitivity is a key consideration in estimating volatility and correlation, as results

can vary significantly with different measurement periods. For most investors, the benchmark hedge should be based on at least 5–10 years, the common horizon used for strategic asset allocation decisions. However, we have a limited dataset going back only 25–30 years, which limits statistical reliability. To address this, we analyzed both monthly and rolling 3-year data: the former captures short-term dynamics, while the latter smooths noise and highlights medium-term correlation structure. For long-term investors, 3-year rolling windows offer more stable estimates, though monthly data remains valuable for cross-validation. This dual approach helps balance precision with perspective across time horizons.

- 2 **Add return consideration and adjust the hedge ratio for risk premia.** In most cases, the expected return of a currency should not be zero due to the presence of long-term currency/country risk premia, which serves as compensation for factors such as liquidity risk, cyclical risk, balance sheet risk, and political risk. As a result, currencies with higher perceived risk often structurally exhibit higher interest rates. Here we use the long-term cost of carry as a practical proxy for risk premia, as it captures the compensation investors demand for bearing the long-term currency risks.
 - The optimal hedge ratio can be derived using a utility-maximization framework that balances expected returns against investor-specific risk aversion. While the investor-specific risk aversion parameter could vary substantially, we do not attempt precise calibration here. Instead, we simply make a reasonable adjustment to the plausible hedge ratio range to reflect return assumptions, allowing investors to tilt based on their objectives.

A quick comment on dynamic medium-term and tactical hedge ratio adjustments

A detailed discussion of dynamic hedge ratio strategies are beyond the scope of this paper, but for completeness we provide a few thoughts below.

Establishing an ultra-long-term hedge ratio is primarily a risk-minimization exercise. However, for shorter horizons, currency return expectations—driven by cyclical deviations from fair value—become equally important. These swings can impact portfolio returns by 1.5–3% p.a. over typically a 7–10 year horizon, deviating from equilibrium long-run fair value for extended periods before partially reverting over a half-life of 3–5 years.

Long-run fair value can be determined by Purchasing Power Parity (PPP) measure, which is preferred in State Street Investment Management. Investors can consider increasing hedge ratios for overvalued currencies and reducing them for undervalued ones, relative to the long-run policy hedge. For medium-term hedge ratio adjustments targeting 3–5 years, it is also desirable to make qualitative adjustments due to the high estimate error of PPP fair values and long valuation cycles tending to last 15–20 years. Qualitative adjustments include variables such as fiscal sustainability, the impact of the net international investment position, current account balance/stability, and potential medium-term policy risks.

Our separate paper, [The US Dollar Free Lunch Is Over. What Now?](#), is an example of medium-term hedge ratio choice in action. We discuss our cyclical (medium-term) views on currency hedging and explain the rationale behind our recommendation to Asian investors to increase US Dollar hedge ratio and decrease their hedge ratios on major non-USD currencies.

Investors whose concerns include shorter-horizon volatility may want to consider a tactical hedging strategy. We believe in multi-strategy, multi-horizon approaches anchored by long-term value, while also calibrating hedge ratios with an eye to broad risk regimes, relative economic performance, and cross-market technical factors in equity and commodity markets, etc.

Fixed income hedging leads to risk reduction across currencies

- In the long run, our findings indicate that currency hedging can reduce overall fixed income portfolio risk.
- In most currencies we analyzed, targeting a large hedge ratio helps minimize volatility of a global bond portfolio.

We conducted the analysis at the asset class level for a global fixed income index using Bloomberg Global Aggregate Index (Unhedged) as the proxy. Our analysis across all included currencies demonstrates that currency hedging of global fixed income investments reduces overall portfolio risk (but to different degrees).

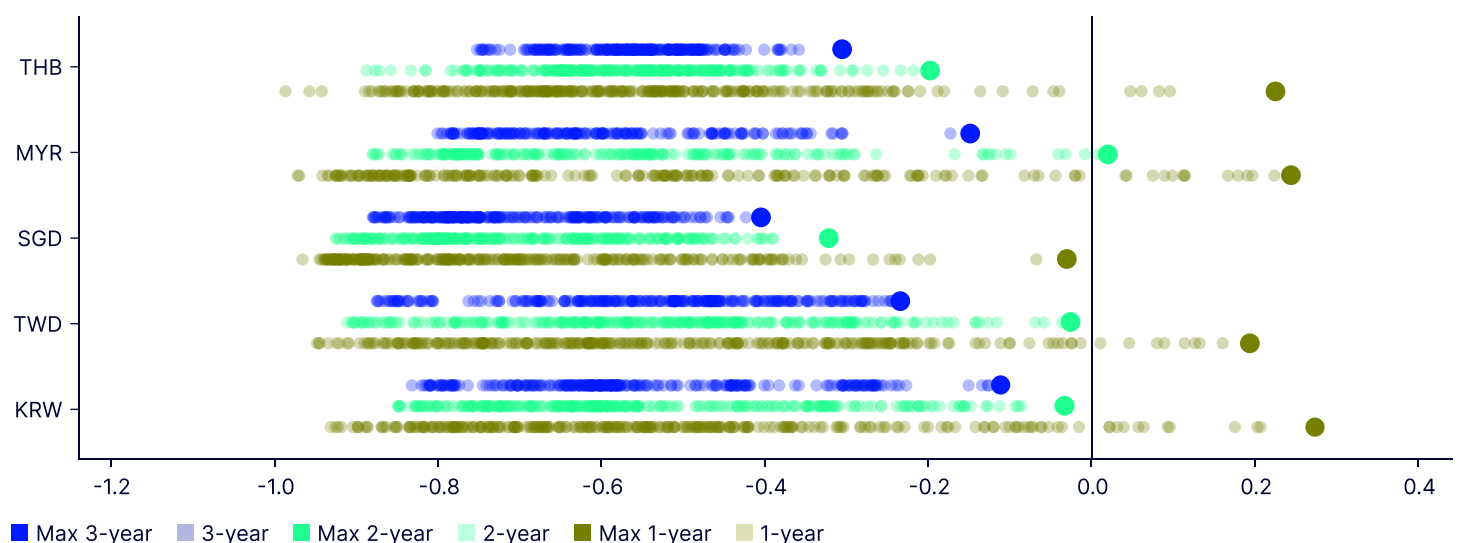
There is typically a negative correlation between global bonds and currencies studied (external to base), as shown in Figure 2. In the short run, the correlation may spike and move to positive territory but the longer-run

correlation is less volatile and stays fairly consistently in the negative territory.

On the other hand, currency risk is normally substantial versus global fixed income market risk. As a result, the reduction in currency risk from hedging is typically higher than the diversification benefits obtained from foreign currency exposures, resulting in significant improvement in risk figures when increasing the hedging ratio of fixed income portfolios, as shown in Figure 3 below. While the monthly data suggests a close-to-100% hedging ratio for all currencies, the rolling 3-year data suggested a slightly lower hedge ratio for some currencies (but still recommending hedging a majority of the portfolio).

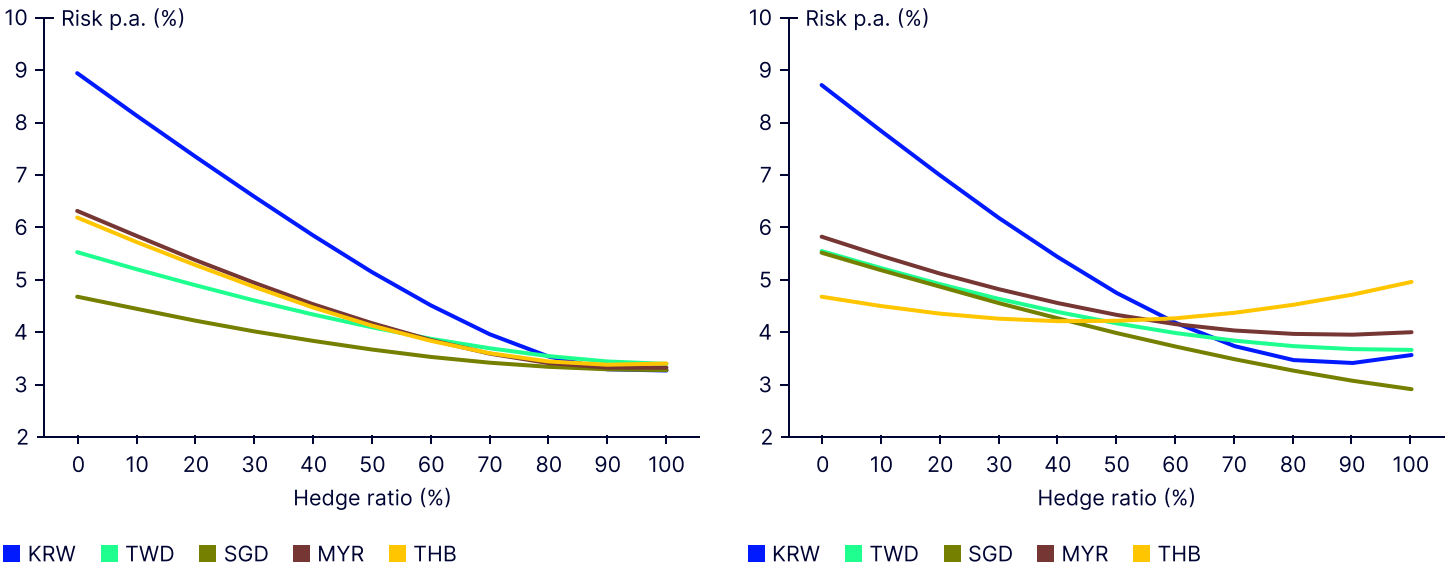
This paves ways for hedging the majority of global fixed income investment in the long-run for risk minimization. And it can be combined with dynamic hedge ratio adjustments to potentially enhance the risk-adjusted return of a global fixed income portfolio for APAC investors.

Figure 2: Rolling 1-3 years return correlation distribution comparison of global bonds and currency



Based on monthly data starting from January 2000 to June 2025 (for MYR, June 2005–June 2025), calculated using Bloomberg Global Aggregate USD unhedged and 1-monthly spot exchange rate (USD to base). Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

Figure 3: Monthly and rolling 3-Year global bonds portfolio total risk and hedge ratio (2000–2025H1)



Based on monthly data starting from January 2000 to June 2025 (for MYR June 2005–June 2025), calculated using Bloomberg Global Aggregate USD unhedged and 1-monthly spot exchange rate (USD to base). Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

Equity hedging: Divergence in return/risk impact

- Optimal FX hedge ratios for global equities are typically well below 100% due to stronger diversification benefits from unhedged currencies and the higher relative volatility of equity returns.
- Investment horizon has a significant impact on the optimal hedge. On average, the optimal risk minimizing hedge ratios are higher at longer horizons.

In this study, we used MSCI World (unhedged) as the proxy for a global equity portfolio. Unlike fixed income, the optimal currency hedge ratios on global equity portfolios tend to be substantially below 100% due to the tendency for unhedged foreign currency to provide diversification benefits and the lower return volatility of currency relative to equity:

- **Diversification benefit of unhedged foreign currency:** The correlations between global equity and currency returns in the Asia-Pacific region have been largely negative, especially during market downturns. This can be explained by the dominance of USD exposures in global equities. Given the safe haven nature of USD, a drop in global equities and reduction in risk appetite often leads to rise in demand for the dollar, causing its value to appreciate. For a US dollar-based investor, however, unhedged foreign currency tends to increase risk.
- **Lower return volatility of currency relative to equity returns:** As numerous Asia-Pacific central banks adopt a controlled approach to currency

management, the external currency risk component of a global equities portfolio, as measured by volatility, typically accounts for a relatively modest proportion of the total risk (around one-third to two-thirds of the global equities total risk under normal market circumstances). However, it may rise sharply in crisis scenarios. It is also important to note that the low observed volatility of managed currencies does not necessarily reflect low true risk of the currency. Any cessation of existing currency management could trigger a major dislocation.

- Although hedging reduces currency exposure, it simultaneously decreases the diversification benefits inherent to unhedged foreign currency exposures (That said, we expect the dollar to be a less reliable safe haven over the next 5–10 years) Since currency risk is modest relative to overall equity volatility, the diversification benefit loss from hedging could be larger than the currency risk reduction.

Investment horizon also has a significant impact on the optimal hedge: on average the optimal hedge ratios are higher at longer horizons. Analysis reveals that multi-year return correlations is closer to zero or even positive, diverging from the correlations observed in monthly, quarterly, or annual returns. This implies a reduced long horizon diversification benefit and supports higher hedge ratio. In addition, while many countries manage the shorter term volatility of their currencies, the cumulative moves over long periods can be large, albeit with a smoother path. The reduced diversification effect and the longer horizon relative volatility effect collectively on average increase optimal hedge ratios.

Optimal strategic hedge ratios of equities investment by base currency

The remainder of the paper provides a detailed look at optimal strategic hedge ratios of equities investment in different base currencies.

Many Asian investors use the US dollar as their reference currency for external investments. In these cases, the hedging strategy is designed relative to a US dollar base, covered here:

- USD base (page 11)

For investors wishing to design their hedging strategy directly versus their home currency, we include individual sections describing hedging considerations relative to each base currency below.

- KRW base (page 12)
- MYR base (page 14)
- SGD base (page 15)
- THB base (page 17)
- TWD base (page 18)

USD—Recommending 40%–60% long-run hedge ratio

- We recommend a long-run strategic hedge ratio between 40–60% for US dollar-based investors due to the positive correlation of foreign currency with equity markets and positive carry returns from hedging.

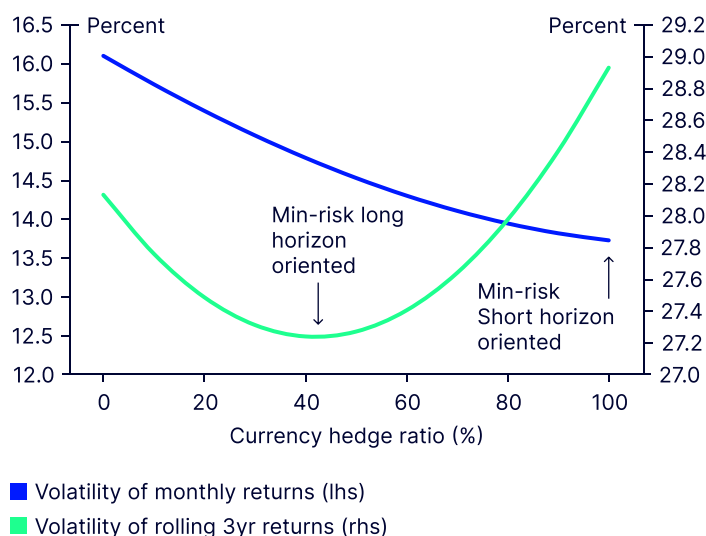
A large percentage of our Asian-based investors prefer to manage their non-USD developed market exposures versus the USD, and separately consider hedging USD versus their home currency. In keeping with that approach, this section discusses the optimal hedging policy for the currency exposure of the MSCI World ex-US index versus the US dollar base.

We recommend a long-run strategic hedge ratio between 40–60% for US dollar-based investors due to the positive correlation of foreign currency with equity markets and positive carry returns from hedging. Within that range, we suggest that long horizon investors favor a lower hedge ratio and investors more concerned with short-term volatility and drawdowns favor a hedge ratio toward the upper end of the range.

The role of the US dollar as the primary global reserve currency has been associated with its behavior as a safe haven asset. As a result, unhedged foreign currency from the perspective of a USD base tends to increase total portfolio risk, especially during periods of high volatility—though this diversification effect is most pronounced over short horizons.

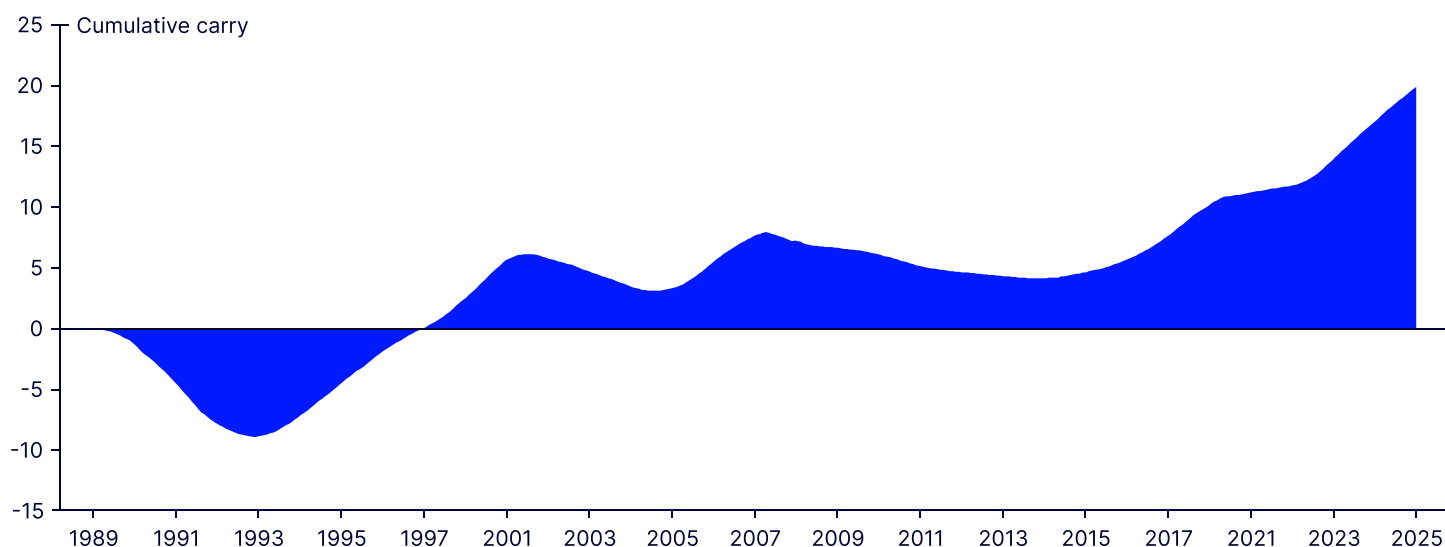
Figure 4 shows the total risk of an MSCI World ex-US portfolio ranging from 0% to 100% hedge ratios. Using monthly returns, we see a steady risk reduction from increasing currency hedging, leading to an optimal

Figure 4: Total portfolio risk with 0–100% hedge ratios
Currency hedging impact on MSCI world xUS hedged to USD since 1989



Data from 1989–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

Figure 5: Cumulative carry from 100% hedging MSCI world x US to USD



Data from 1989–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

minimum risk hedge ratio of 100%. Looking at the rolling 3-year returns, it reveals an optimal hedge ratio around 40–50%. Combining the two with greater consideration on the longer term 3-year risk data, the optimal hedge ratio range can be between 40–70% with short-term oriented investors favoring hedge ratios at the upper end of that range.

It is also important to consider the cost of carry. Figure 5 shows the cumulative carry of a 100% hedge of the MSCI World ex-US index back to the US dollar. After a brief period of negative carry in the early 1990's, USD-based investors have been well paid to hedge. Based on our views of fair value interest rates and current market pricing, we expect future carry to remain positive for USD-based currency hedgers, likely between 0.9-1.0% p.a. This reward to hedging in addition to risk reduction makes a strong case for hedging a substantial portion of portfolio risk. This skews our recommendation for the optimal hedge slightly higher to a 50–60% range.

We do not recommend a higher hedge ratio for a few reasons. First, we want to avoid extreme hedge ratio benchmarks due to the relatively short sample size of the data. Thirty years may seem like a long period, but the typical USD cycle lasts 15–20 years. Secondly, there is instability in the hedge impact across different periods. During the 1990's and early 2000's, the US dollar was positively correlated to risk assets. Only since 2008 has it been more of a safe haven with stably negative correlations to risk assets. This observed

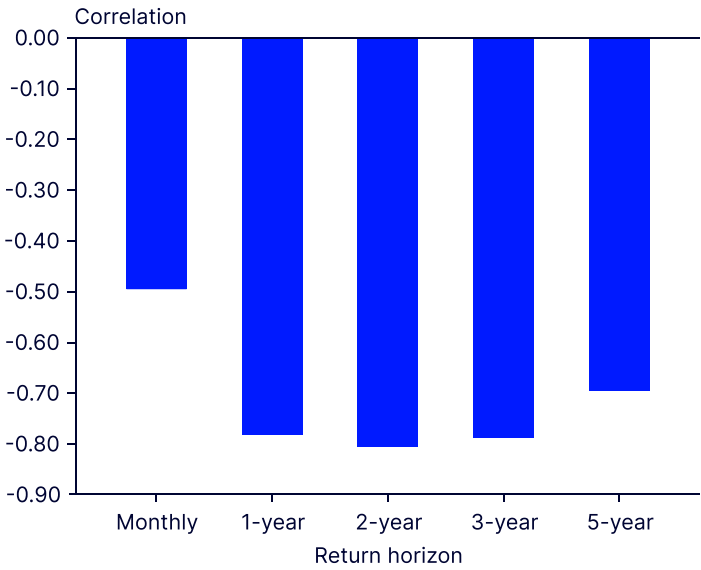
variability in correlation tempers our confidence in recommending extremely high policy hedge ratios. Finally, there are possible scenarios that could weigh heavily on the US dollar which are not well captured by historical events. The gradual US move toward higher tariffs, combined with potential issues due to the extreme growth in fiscal debt, may cause adverse shifts in US inflation and potential growth. Having some unhedged foreign currency exposure would help to hedge such scenarios.

The high debt and policy risks facing the US dollar are also likely to increase the volatility of US country risk premium and make the US dollar a less reliable safe haven currency. As a result, we believe the hedge ratio analysis above based entirely on historical analysis may slightly overstate the optimal hedge ratio. For that reason, we recommend a 40–60% hedge ratio over the next 10–15 years, rather than the higher hedge ratio range of 40–70% from the pure, backward-looking empirical analysis.

KRW—Recommending below-20% long-term benchmark hedge

- KRW is a highly pro-cyclical currency. Hence, unhedged FX exposure tends to provide diversification of equity risks over longer-term horizons. Moreover, we expect the cost of carry to be flat-to-negative over the next 10+ years.

Figure 6: Term structure of correlation: MSCI World Equity vs. MSCI World Currency—KRW base

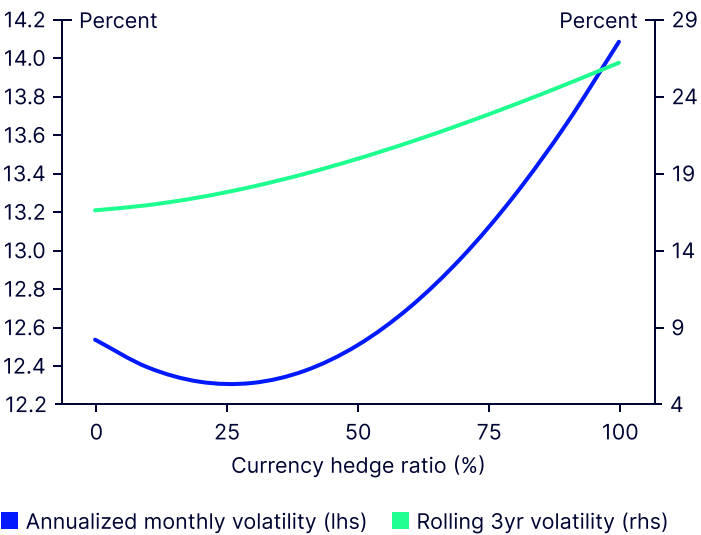


Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

- We recommend a 0–20% long-term benchmark policy hedge for KRW investors, with long-horizon investors favoring a lower hedge ratio and investors more concerned with short-term volatility and drawdowns favoring hedge ratios in the 10–20% range.

Unhedged foreign currency provides material diversification benefits, reducing the risk of a global equity portfolio for long-term investors. Figure 6 summarizes the correlation between the currency

Figure 7: Total portfolio risk with 0–100% hedge ratios

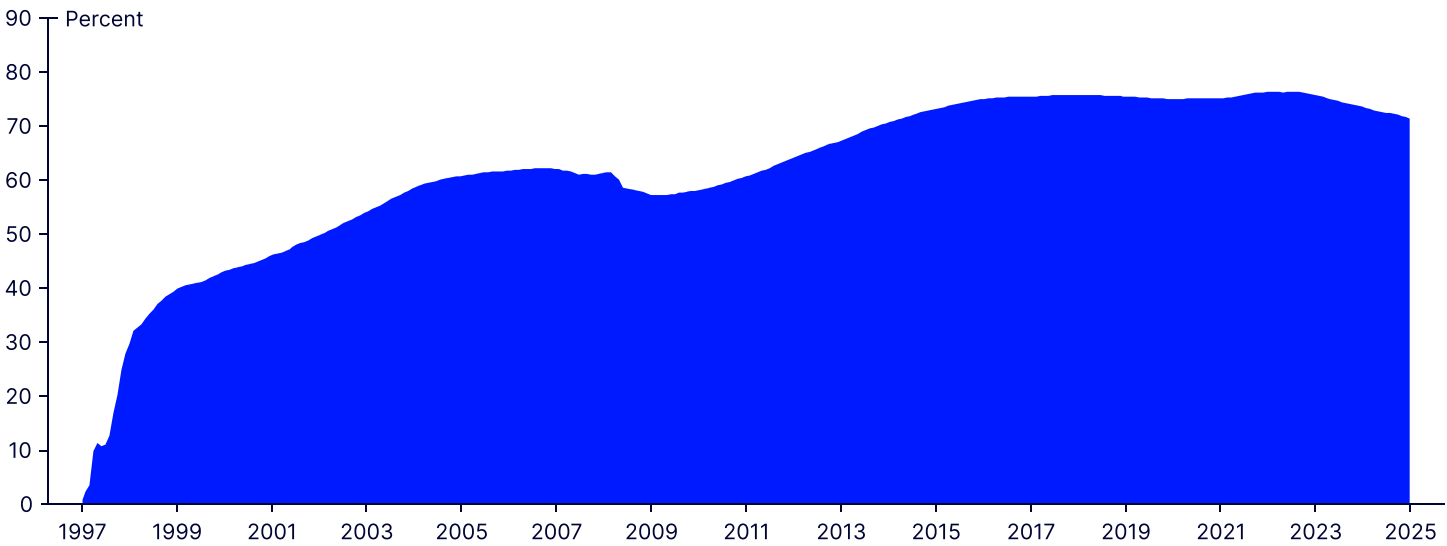


Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

component of the MSCI World index versus the Korean won since June 2004. The currency exposure versus KRW has a significantly negative correlation to local equity returns over all return horizons due to the cyclicity of won. Using monthly returns, we see a slightly weaker diversification benefit. In light of this, investors who are more concerned with short-term portfolio risk would historically benefit from a modest hedge on foreign currency.

Figure 7 summarizes the risk impact on the MSCI World index over the past 20 years of hedging currency at different hedge ratios. Consistent with the correlation

Figure 8: Cumulative carry of a 100% currency hedge on the MSCI World back to KRW



Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

structure long horizon investors proxied by the volatility of rolling 3-year returns would have minimized portfolio risk by remaining unhedged. In contrast, using the annualized volatility of monthly returns a shorter horizon investor would have minimized portfolio risk at about a 25–30% hedge ratio.

In terms of carry, Figure 8 shows the cumulative carry return of a 100% currency hedge of the MSCI World index back to the Korean won. Investors were well paid to currency hedge due to high relative interest rates in Korea from 1997–2005, following the Asian currency crisis and again from 2009–2016 following the global financial crisis. More recently, since 2016, the carry on hedges has been near zero and negative over the past few years. Current pricing in the currency forward market suggests that carry will be negative over the next 5+ years, maybe as low as -1.50% per year, a noticeable drag on hedged portfolio returns.

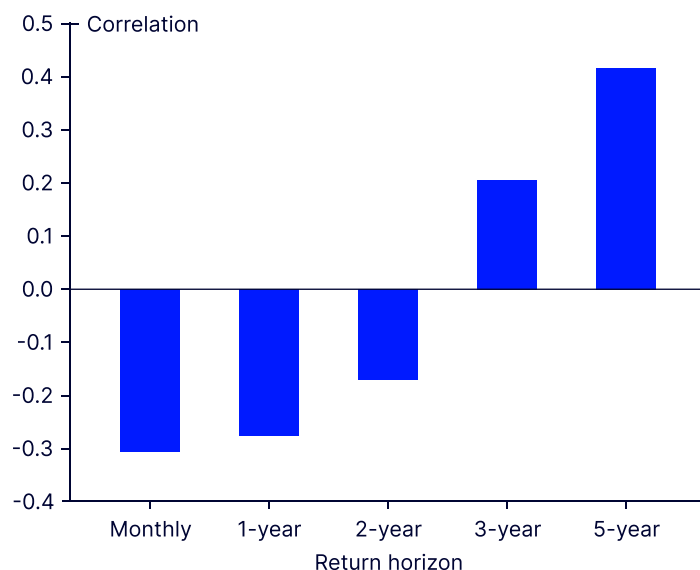
Altogether we recommend a low 0–20% benchmark currency hedge ratio for Korean won-based investors because hedging is likely to increase long-term portfolio risk and reduce return via high cost of carry.

MYR—Recommending an over-50% hedge ratio for the long run

- We recommend at least a 50–60% benchmark policy hedge for long-horizon MYR based investors in global equity portfolios. Over shorter horizons, MYR's negative correlation to equity markets suggests a lower risk minimizing hedge ratio closer to 25–30%. However, using longer horizon 3–5 year rolling return history, that correlation flips positive, resulting in a healthy reduction in historical portfolio risk from hedging.
- Interest rate carry does not have an impact on our recommendation. Markets expect the cost of carry to be slightly negative, but we believe that it is likely to be closer to zero as we see US yields returning to the low-to-mid 3% range over the long term.

Figure 9 summarizes the correlation between the currency component of the MSCI World index versus MYR since June 2006. Over shorter horizons, unhedged foreign currency exposure is negatively correlated providing a diversification benefit. However, that correlation flips positive using 3–5 year rolling returns. This suggests that longer-horizon MYR based investors should favor higher hedge ratios.

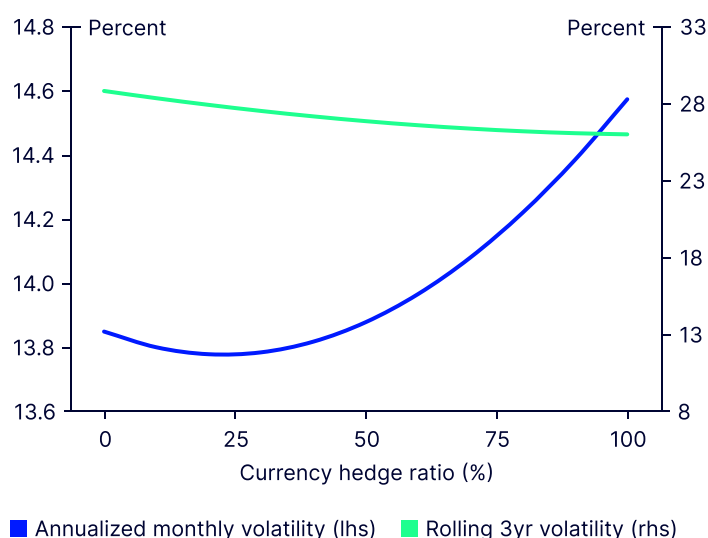
Figure 9: Term structure of correlation: MSCI world equity vs. MSCI world currency—MYR base



Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

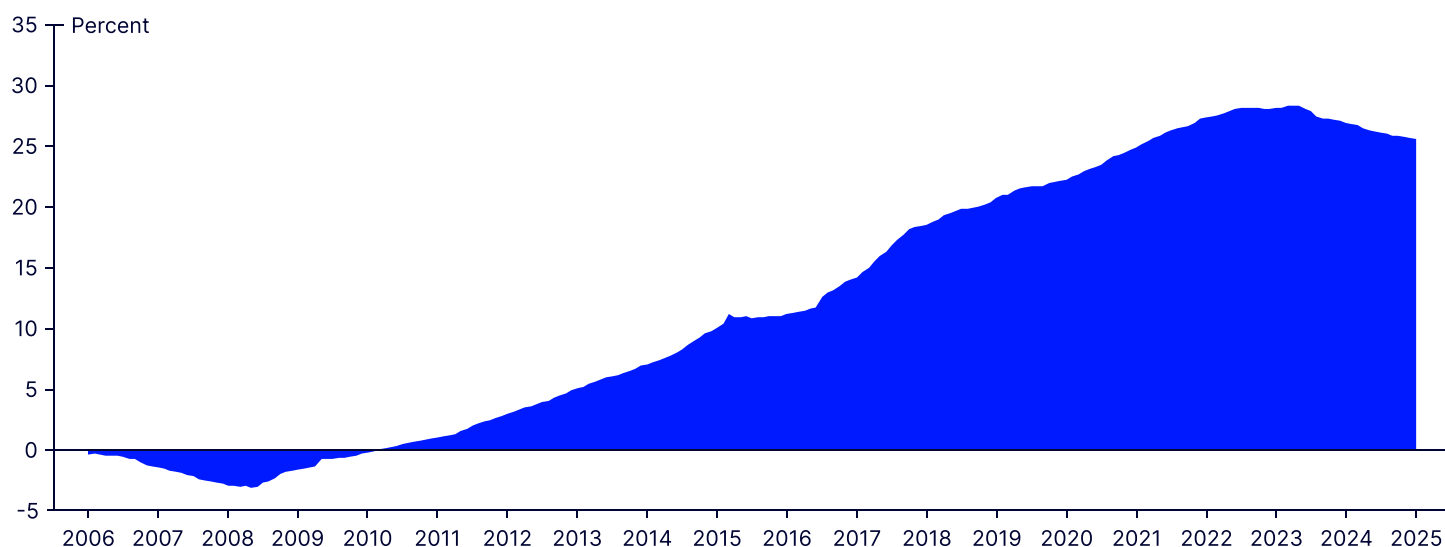
Figure 10 summarizes the risk impact of currency hedging the MSCI World index over the period since June 2006, using hedge ratios from 0% to 100%. Consistent with the correlation structure, a long-run investor proxied by the volatility of rolling 3-year returns would have minimized portfolio risk by hedging 100%. An investor more concerned with monthly returns would have minimized risk by hedging 25–30% of the foreign currency exposure.

Figure 10: Total portfolio risk with 0–100% hedge ratios



Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

Figure 11: Cumulative carry hedging MSCI world back to base



Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

For carry, Figure 11 shows the cumulative carry of a 100% currency hedge on the MSCI World index since June 2006. Aside from a brief period in 2006–2009 and since mid-2022, MYR-based investors have been well paid to hedge, nearly 0.7% per year. Thus, for most of this historical period, it made sense to hedge more than suggested by the simple risk minimization analysis. Going forward, the market is pricing negative level of carry, circa -1.0% p.a. for the next 5 years. However, this is driven by 5-year US yields, which we believe are 50–75 bp higher than our estimate of long-run equilibrium. Thus, we expect realized carry to be closer to zero, or even slightly positive, once US rates normalize.

Altogether, we recommend a 50–60% policy benchmark hedge for MYR-based investors. While our long-horizon methodology (rolling 3-year risk analysis) suggests a 100% hedge ratio—aligning with the strategic nature of policy benchmarks—we prefer a lower hedging ratio due to two considerations. First, the relatively short data history reduces our confidence in those measures. Second, residual diversification benefits from shorter-term currency exposures retain value even for long-term portfolios. The cost of carry does not materially influence our decision here, as we expect it to be flat-to-slightly positive.

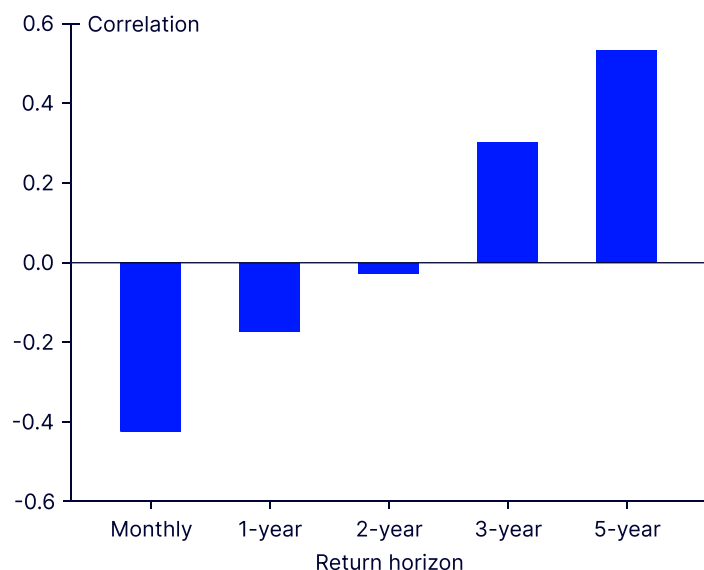
SGD—Recommending to stay mainly unhedged for long run

- We see little historical benefit for SGD-based investors to hedge foreign currency on a long-term basis and recommend to remain largely unhedged with an optimal hedge ratio in the 0–20% range.
- The cost of carry has been close to zero over the past 15 years and -0.15% p.a. over the past 5 years. Current market pricing suggests the cost of carry will continue to be negative, further supporting the case to remain unhedged.

Figure 12 summarizes the correlation between the currency component of the MSCI World index versus SGD since June 2004. Shorter horizons, monthly returns, and rolling 1-year returns show that unhedged foreign currency provides a diversification benefit. As the horizon extends to 3–5 years, that diversification benefit evaporates and unhedged currency tends to amplify risk. This suggests that long-horizon global equity investors should consider hedging a portion of their foreign currency exposure.

Figure 13 shows the risk impact of currency hedging the MSCI World xSGD index with the risk calculated using monthly vs. rolling 3-year returns, with hedge ratios varying from 0% to 100%. This quantifies the portfolio impact implied by the correlation structure

Figure 12: Term structure of correlation: MSCI world equity vs. MSCI world currency xSGD—SGD base

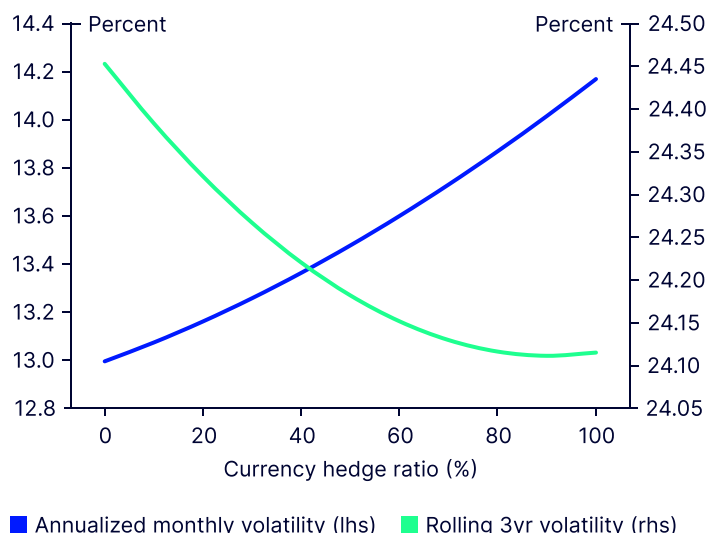


Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

above. Here we see that shorter-term risk measures increase steadily with the hedge ratio. The longer-term perspective, rolling 3-year, shows a reduction in risk but it is very small, less than 0.15% as between unhedged and 100% hedged. Therefore, we suggest that long-horizon investors maintain a low hedge ratio and short-horizon investors remain unhedged.

As for carry shown in Figure 14, the cumulative carry on a 100% hedge of the MSCI World xSGD, the cost of carry is close to neutral over the past 15 years. Thus it

Figure 13: Total portfolio risk with 0–100% hedge ratios

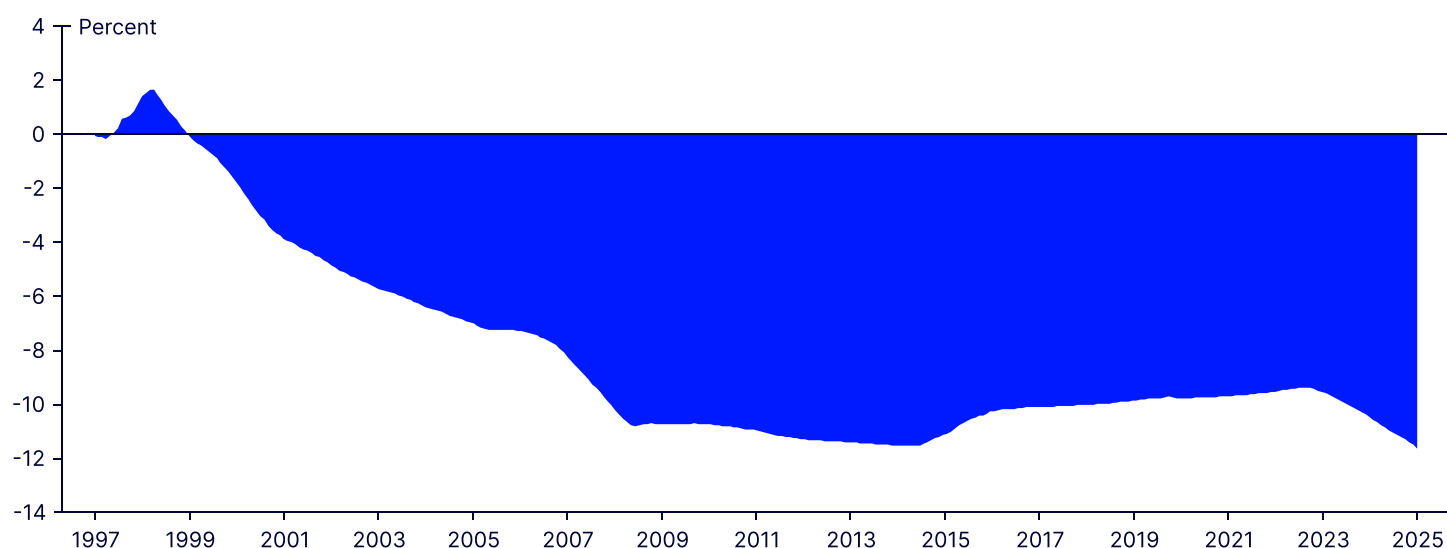


Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

has little impact on the choice of hedge ratio. However, going forward, current market pricing suggests an annual cost of carry of about 1.9%. That is a steep cost, even for long-term investors who would historically have enjoyed a small risk reduction from hedging. We believe US rates are currently above fair value, suggesting that the cost of carry is likely better than -1.2%, but we still expect it to be negative.

Overall, we recommend a 0–20% long-run policy hedge ratio, giving negative carry and limited risk reduction at longer horizons and higher risk at shorter horizons.

Figure 14: Cumulative carry hedging MSCI world back to base



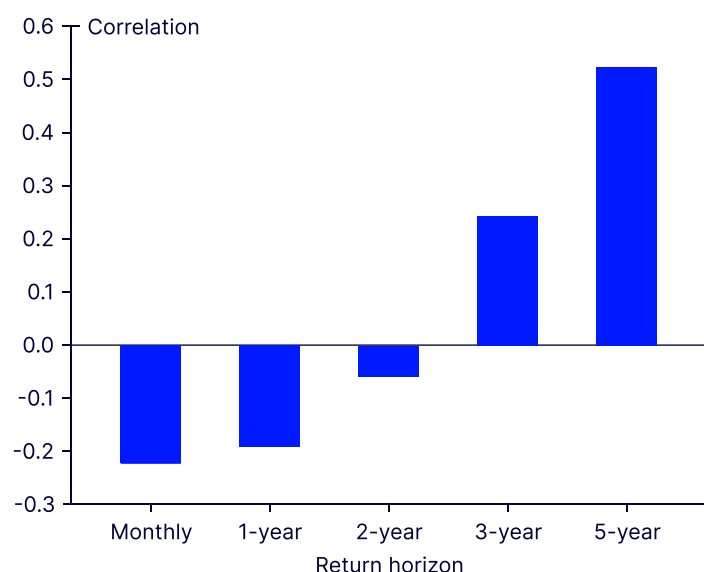
Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

THB—Recommending a below-40% long-run hedging ratio

- We see a strong case for THB investors with long investment horizons to hedge 10–40% of the currency risk in their global equity portfolio.
- Investors more concerned with short-term risk should go toward a 10–20% hedge ratio due to the short horizon diversification benefits of unhedged foreign currency and high cost of carry.

Figure 15 summarizes the correlation between the currency component of the MSCI World index vs. the Thai Baht since June 2004. Shorter horizons, monthly returns, and rolling 1-year returns show that unhedged foreign currency provides a diversification benefit. As the horizon extends to 3–5 years, that diversification benefit evaporates and unhedged currency tends to amplify risk. This suggests that long-horizon global equity investors consider hedging a healthy portion of their foreign currency exposure, while shorter-term investors may want to limit hedging.

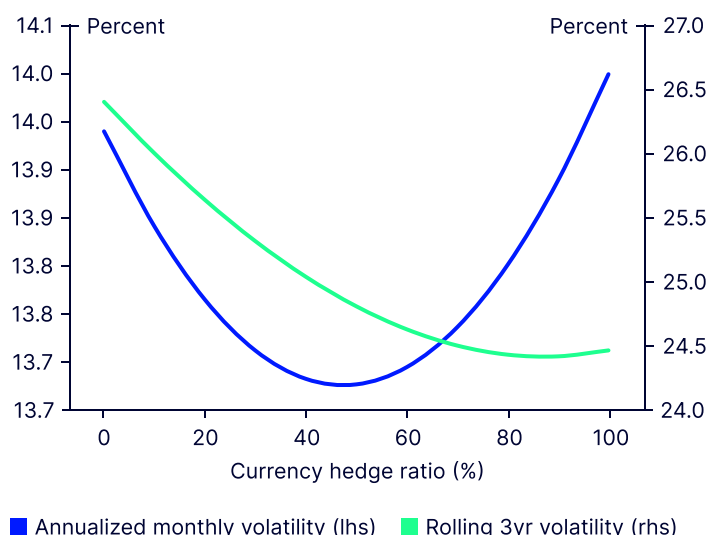
Figure 15: Term structure of correlation: Equity vs. THB



Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

Figure 16 shows the volatility impact of currency hedge ratios on the MSCI World index since June 2004. It confirms the hedge impact implied by the correlation

Figure 16: Total portfolio risk with 0–100% hedge ratios



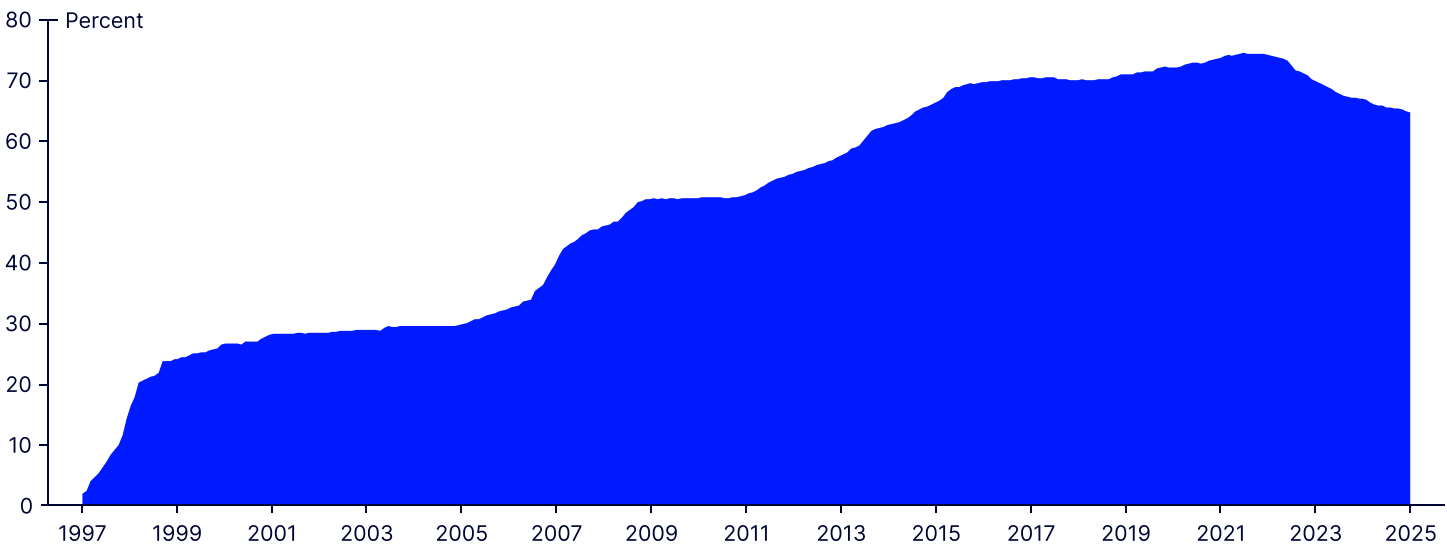
Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

chart above. Shorter-horizon annualized volatility of monthly returns indicates a risk minimizing hedge ratio of around 40%. Longer-term volatility computed from rolling 3-year returns suggests a risk minimizing hedge ratio of 100%. From a pure risk perspective, we recommend a 60–70% hedge ratio for long horizon and a lower 40–50% hedge ratio for short-term focused investors. We avoid a 100% hedge because limited data for the rolling 3–5 year returns reduces our confidence in those measures.

However, the choice of the long-term benchmark hedge ratio is more than just a risk minimization exercise. Figure 17 shows that, for most of the past 25 years, THB-based investors were paid to hedge. As a small open economy, Thai interest rates tended to be well above the average interest rate within the MSCI World index. Over the past few years, that has changed and current 5-year currency forwards suggest that the cost of carry will remain near -2.4% p.a. While we believe current expected US rates are too high, the THB carry is likely to cost nearly 1.5% per year—even if US rates fall back into the low to mid 3% range as we expect.

As a result, we recommend a lower than benchmark hedge ratio of 10–40%, with short-horizon and return-sensitive investors skewing toward the bottom of that range.

Figure 17: Cumulative carry hedging MSCI World back to base



Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

TWD—Recommending to stay unhedged for long run

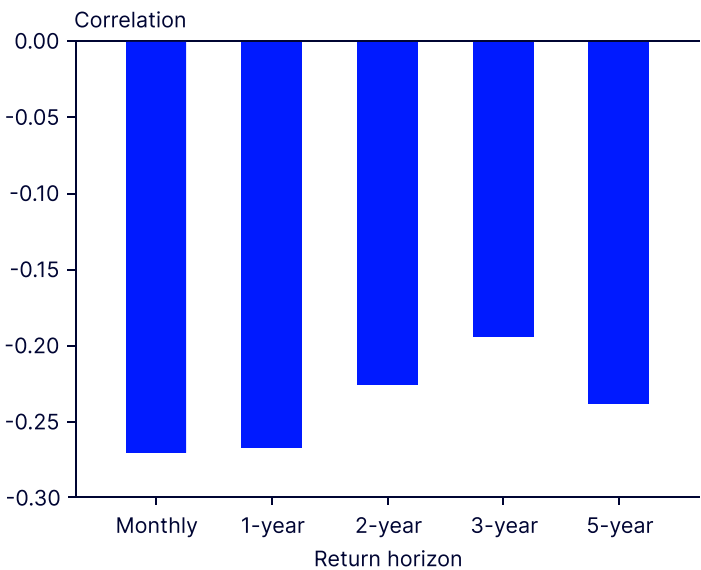
- We see a strong case for long-horizon, TWD-based investors to remain unhedged. Historically, unhedged foreign currency has provided healthy diversification benefits over both short and long horizons.

Figure 18 summarizes the correlation between the currency component of the MSCI World index vs. the

Taiwan dollar since June 2004. The analysis reveals a strong negative correlation across all horizons. This suggests that TWD-based investors enjoy a substantial diversification benefit from unhedged currency.

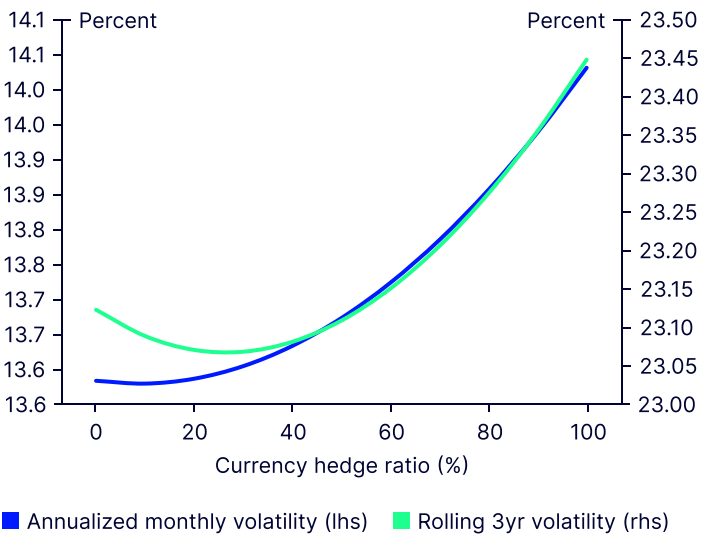
Figure 19 shows the volatility impact of currency hedge ratios from 0% to 100% on the MSCI World index since June 2004. As expected from the correlation analysis, hedging any amount of foreign currency exposure increases portfolio risk.

Figure 18: Term structure of correlation: Equity vs. TWD



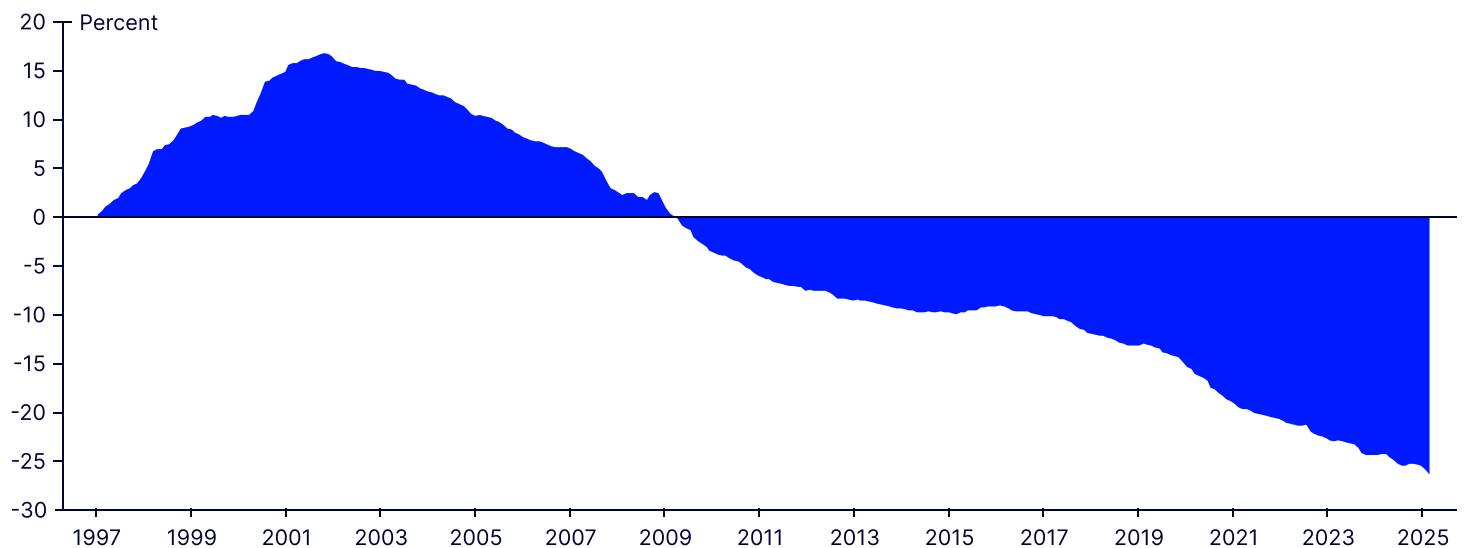
Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

Figure 19: Total portfolio risk with 0–100% hedge ratios



Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

Figure 20: Cumulative carry hedging MSCI world back to base



Data from 1997–2025 H1. Source: Bloomberg, Factset, State Street Investment Management, as of June 2025.

Not only does hedging increase portfolio risk over the past 20 years, it is also costly. Carry was -1.44% p.a. over the last 20 years and -2.75% p.a. over the last 5 years. Looking ahead, current yield curves point to negative carry on the order of 3% p.a. over the next 5, 10, and 20 years.

Overall currency hedging is unlikely to reduce risk and is likely to substantially reduce returns. Therefore, we do not recommend that TWD investors structurally hedge foreign currency exposure.

Conclusion

Over the past two decades, APAC's deepening integration into global financial markets has driven a sharp rise in external portfolio investment. As foreign exposures grow, managing currency risk becomes essential. Our recommendations for strategic hedge ratios—tailored to asset class, base currency, and investment horizon—highlight that, while fixed income portfolios generally benefit from higher hedge ratios, equity exposures require a more nuanced approach to balance risk and diversification. We believe that APAC investors should move beyond unhedged exposure and adopt currency hedging as a core strategic lever—aligning portfolios with long-term, risk-adjusted performance goals.

Appendix: Key Operational Considerations

Cashflow Management

Hedging reduces currency exposure but may introduce cashflow management risks. The hedge returns must be realized periodically, generating regular cashflows, whereas the bulk of the currency return in the underlying portfolio remains unrealized. Most Asian currencies tend to be more pro-cyclical than the major G10 currencies that dominate global portfolios. This means that currency hedges for regional investors tend to experience large losses that must be realized and funded during times of extreme market stress. It is critical to understand and plan for the possibility that the portfolio may have to fund these hedge losses by selling equity or credit assets in unfavorable periods.

This risk can be mitigated, but not eliminated. One could simply ensure ample, easily available sources of cash perhaps by maintaining a large equitized cash balance. We also recommend laddering long-term forwards, such that the cashflow dates are staggered and the entire hedge gain/loss does not realize on a single date. Investors who are cash constrained may be biased toward a lower average level of hedging. In an extreme case, investors can explicitly limit the maximum potential hedge loss in any one period using put options rather than forwards. However, that asymmetric risk profile is not free and we'd expect an options-based hedge to systematically underperform a hedge using currency forward contracts.

Leverage Risk/Hedge Ratio Drift

Hedges are generally readjusted monthly or when there is a material change in the currency exposures. However, in between these rebalancing periods, market value changes of the underlying portfolio causes the hedge ratio to drift. For example, assume the hedge on an equity portfolio is calibrated to a 100% target hedge ratio. If the equity market falls by 10% afterwards, the hedge ratio will drift up to 110%, making the portfolio net short foreign currency. In many cases, this would be considered to be a leveraged position and may violate investment or regulatory policies. This can be mitigated by adjusting hedges daily to maintain the target hedge ratio, but because there is a tendency for short-term mean reversion in markets and hedge adjustments incur transaction costs, it can be quite costly. For investors who are sensitive to hedge ratio

drift, we recommend setting a band such as +/-5% around the target and rebalancing when the hedge ratio drifts beyond that band.

Counterparty Risk

Whenever your currency hedge has an unrealized gain, you are exposed to counterparty credit risk. Investors who have the ability to maintain larger daily cash balances and are highly averse to counterparty risk may opt to post margin under a credit support agreement. This is generally a regulatory requirement for non-deliverable forward contracts, but can be extended to all forward contracts. Doing so limits credit exposure to very short-term fluctuations, i.e. market moves that happen between adjustments to margin balances (usually 1-1.5 days). However, the average required daily cash balances will generally be higher and the increase in administration to track and move margin add costs. For that reason, the majority of our clients using deliverable forward contracts do not collateralize.

The cornerstones of counterparty risk management (especially in the absence of collateralization) are counterparty selection, diversification, and tenor management. It is critical to choose quality counterparties and conduct ongoing credit research to ensure they remain high quality. Limiting exposure through diversification of a currency hedge across multiple counterparties also directly limits credit risk. Finally, limiting forward contract tenors to 4 months or less will reduce the probability of having extremely large credit exposures.

Private Assets

We believe that private assets should be hedged similarly to public assets. On average, that means near 100% hedge ratios on fixed income type exposures and lower, but non-zero hedges on equity-like exposures. Oftentimes, delays in the reporting of the value of private assets creates a slightly less precise hedge, but hedging still functions in managing the bulk of the long-term currency risk. Other issues such as capital calls can be handled by rebalancing the hedges to reflect any discrete changes in the value of the currency exposures due to the required cash flows.

Liquidity and Proxy Hedging

Liquidity risk is an important issue, though it most dramatically impacts emerging markets currencies with greater convertibility risk and restricted access

to onshore currency markets. This is a significant consideration for currency hedgers based in EM Asia. For those with restricted domestic currencies that can only be easily accessed through non-deliverable forwards, it can make sense to keep hedging in-house, provided the investor has access to onshore forward markets. It also encourages investors to take a two-step approach, focusing first on hedging policy back to US dollars as though they were a US-based investor, then separately trading the US dollar back to their home currency as the US dollar cross is usually the most liquid.

We do not usually support proxy hedging (hedging a relatively illiquid currency exposure with a more liquid currency). The issue is that the transaction cost savings is almost always incredibly low compared to the basis risk. For example, investors may look to hedge the Swedish krona using the euro, given their relatively high correlation. But the pair can easily trend up or down 20%. Even assuming that a fair amount of that could be taken care of via a beta adjustment, the tracking error due to basis risk is likely to be orders of magnitude higher than the cost savings.

Management Risk: Operational and Psychological

Operational: Currency hedges tend to be large in notional terms. Given their scale, even minor execution errors can lead to material operational losses. Robust operational infrastructure is critical to mitigate such risks, including precise trade execution, settlement processes, and reconciliation systems. Many institutional investors opt to outsource passive currency hedging to specialized managers, partly to transfer operational complexity and reduce exposure to internal errors.

Psychological: Currency hedging demands unwavering discipline, as cycles often span 7–10 years or longer. A passive hedging strategy may underperform for over a decade before reversing, testing investor patience. Premature termination of hedges during periods of underperformance—locking in losses—often leaves portfolios exposed to subsequent currency declines. Asset owners must internalize the long-term nature of hedging, align stakeholder expectations, and commit to policies through full market cycles to avoid costly reversals. Success hinges on governance frameworks that prioritize multi-decade outcomes over short-term performance pressures.

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* This figure is presented as of June 30, 2025 and includes ETF AUM of \$1,689.83 billion USD of which approximately \$116.05 billion USD in gold assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Investment Management are affiliated. Please note all AUM is unaudited.

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