AMRO
ASEAN +3 MACROECONOMIC RESEARCH OFFICE

Analytical Note

Understanding Currency Carry Trades: The Yen Carry Trade and Its Impact on ASEAN+3 Economies[1]

December 19, 2024

I. Introduction

1. **Currency carry trade has come under the spotlight following a sharp appreciation of the Japanese yen (JPY) in early August.** This appreciation, started in mid-July and accelerated in early August, was linked to multiple factors, including a shift in the market's assessment of the monetary policy path for both the Federal Reserve (Fed) and the Bank of Japan (BOJ). Market expectations of an imminent rate cut by the Fed rose around mid-July due to softer-than-expected inflation data and surged further due to weaker United States (U.S.) labor market data[2] and a persistent sell-off in U.S. equities, which reflected rising political uncertainty and a weaker growth outlook. On the other hand, the BOJ's announcement of a policy rate increase to 0.25 percent strengthened the case for yen appreciation (Figure 1). According to market participants, technical factors such as the unwinding of the yen carry trade, accelerated the appreciation of the yen against the US dollar (USD). This development has placed carry trades at the center of macrofinancial stability discussions. What, then, is a currency carry trade? How can we measure the scale of this practice? Moreover, how could ASEAN economies, as well as China and Korea, be affected by the unwinding of yen carry trades? What type of policies may help mitigate the impact of the unwinding of yen carry trades?

II. What is Currency Carry Trade?

2. **A currency carry trade is a trading strategy that leverages cross-currency positions to take advantage of interest rate differentials and low volatility.**[3] In

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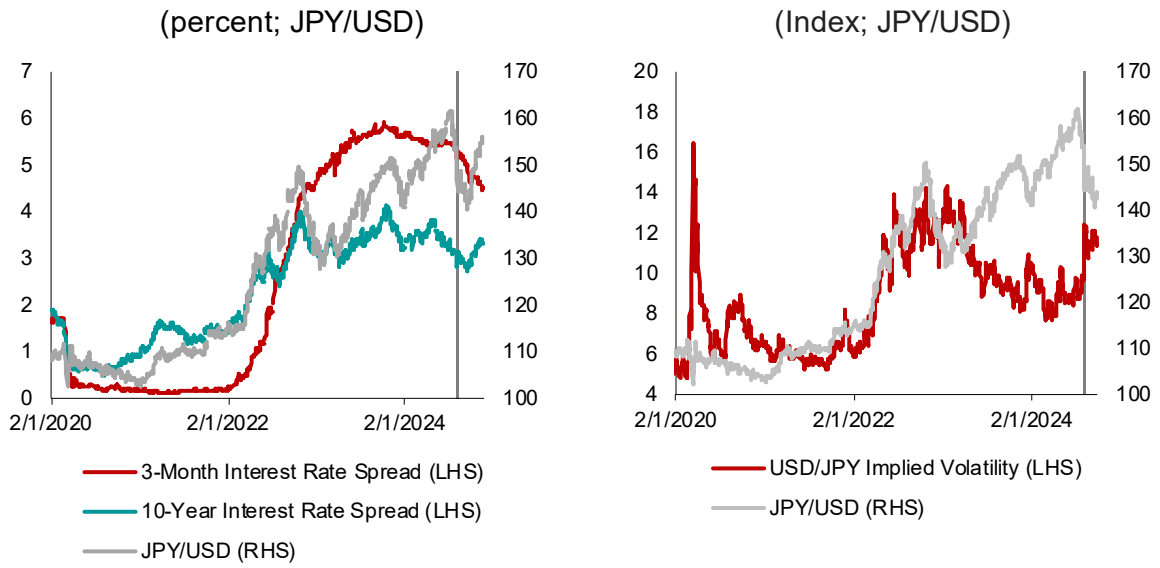
[2] BIS (2024) analyzes that markets are showing an increasing response to labor market conditions in the U.S.

[3] An asset's "carry" is defined as "its futures (or synthetic futures if none exist) return assuming that prices stay the same" (Koijen et al, 2016). In other words, carry is the cost of maintaining a financial position over time. Carry is positive when, all else equals, holding the position leads to gains and is considered negative when it leads to loses. A carry trade is positive carry as position involves borrowing in a lower interest rate and investing in a higher interest rate.

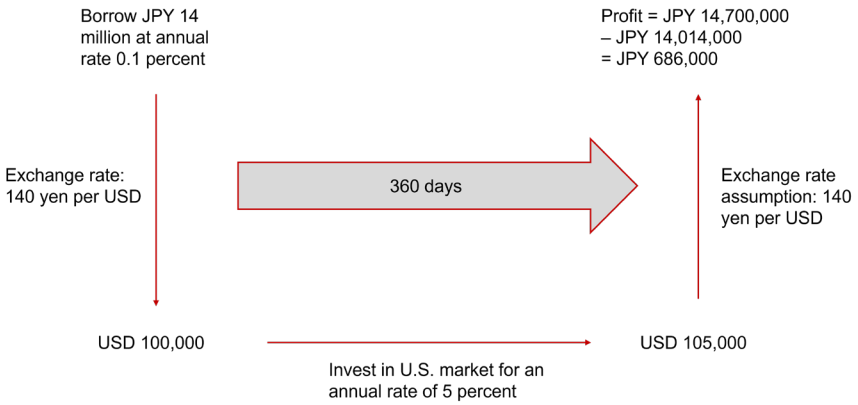
particular, this strategy involves borrowing funds in a low-interest-rate currency (the funding currency) and purchasing an asset in another higher-yielding currency (the target currency). The strategy is only profitable as long as the gains from interest rate differentials stay higher than any losses incurred due to adverse exchange rate movements over the investment horizon. The position is leveraged and retains significant currency risk, thus making it highly sensitive to changes in exchange rates or interest rate differentials.[4]

Figure 1. JPY/USD Exchange Rate and Implied Volatility



Sources: Haver Analytics; Bloomberg LP and AMRO staff calculations
Note: The interest rate spread is based on 3-month and 10-year government securities of Japan and the U.S. The vertical grey line marks the period of the BOJ's announcement on raising interest rates (July 31, 2024), which coincides with the timing of the Federal Open Market Committee's meeting and press conference. It was followed by the release of the July US unemployment rate and non-farm payrolls data (August 2, 2024). USD/JPY volatility refers to three-month implied volatility.

Figure 2. An Illustration of a Simple Yen Carry Trade without FX Hedging



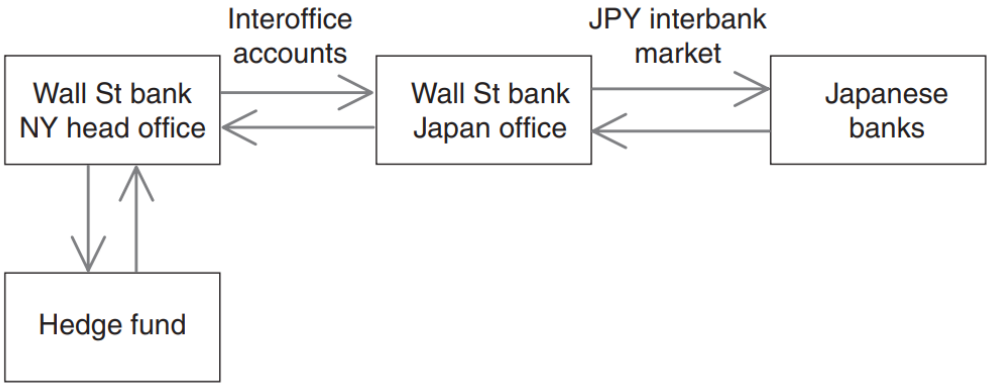
Source: Author's construction

[4] Carry trade is an uncovered interest rate arbitrage position and has a notable difference in risk exposure compared to covered interest rate arbitrage. Covered interest rate arbitrage is a strategy used by investors to eliminate risk by exploiting interest rate differences between two markets while hedging exchange rate risk. This strategy is profitable only in periods when the expected gains from interest rate differentials and exchange rate changes are greater than the cost of hedging the currency exposure.

3. For example, a market participant can borrow 14 million JPY at an annual interest rate of 0.1 percent. The cost of borrowing for one year would be 14,000 JPY. The investor then converts the 14 million JPY to USD at the current spot exchange rate, assuming an exchange rate of 1 USD = 140 JPY. The amount received in USD would be 100,000 USD. The investor then invests the 100,000 USD in a U.S. bond that pays an annual interest rate of 5 percent. At the end of the year, the investment grows to 105,000 USD. The investor can then convert it back to JPY to repay the yen loan. Assuming the exchange rate remains unchanged at 140 JPY per USD, the total JPY received after conversion is 14.7 million JPY. After repaying the loan with interest, the investor is left with a profit of 686,000 JPY (Figure 2). In other words, the position will remain profitable as long as the exchange rate remains above 133.47 at the end of one year. This is the typical structure of a currency carry trade but it is highly vulnerable to changes in exchange rates.

4. **The carry trade is not merely a bet on exchange rate movements but also influences the broader financial system through interconnected balance sheets of financial intermediaries.** As illustrated in Figure 3, a Wall Street bank borrowing dollars in New York pays a rate tied to the USD interbank rate. However, if it borrows yen in Tokyo, it may benefit from the much lower yen interest rate as long as the cost of conversion to the required currency (say USD) is not restrictive. A global bank with a Tokyo office can borrow yen and use these funds for various purposes. The yen may be lent to hedge fund clients or retained for the bank's own operations. Interoffice accounts reveal how much of these yen liabilities are used to finance activities outside Japan. Based on our interaction with market participants, a large part of such exposure is hedged for currency movements which allows the banks to minimize their risks while optimizing their borrowing costs.[5]

Figure 3. Balance Sheet Trail of Finance Activities Outside Japan

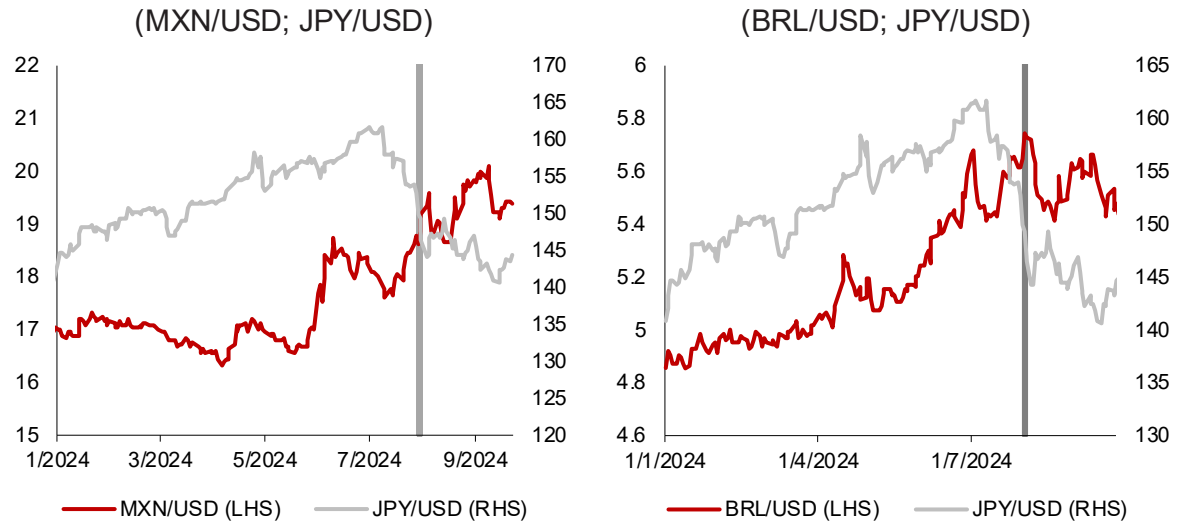


Source: Hattori and Shin (2009)

[5] Due to regulatory changes, banks are actively hedging unwanted foreign exchange (FX) risks on their balance sheets, including those from interoffice accounts, making them less susceptible to exchange rate movements (Ahnert et al, 2018).

5. **High and persistent interest rate differentials, low exchange rate volatility, and the expectations of a weaker low-yielding currency are prerequisites for a carry trade strategy.** Over the past decade, official interest rates have been the lowest in Japan, making the yen one of the most commonly used funding currencies for carry trade strategies. The interest rate differentials between Japan and the U.S. have increased dramatically since 2022 and has been accompanied by sustained strengthening of the USD against the yen (Figure 1), which incentivised the built up of currency carry positions that used the yen as a funding currency. The monetary divergence between the Fed and the BOJ also strengthened the case for a stronger dollar against the yen. These factors, in an environment of moderate volatility provided an ideal backdrop for the rise of currency carry trades (Figure 1).

Figure 4. MXN/USD and BRL/USD Exchange Rate



Sources: Bloomberg LP and AMRO staff calculations
Note: The vertical grey line marks the period of the BOJ's announcement on raising interest rates (July 31, 2024), which coincides with the timing of the Federal Open Market Committee's meeting and press conference. It was followed by the release of the July US unemployment rate and non-farm payrolls data (August 2, 2024). The LHS scale is Mexican peso (MXN) per USD for the left panel, and Brazilian real (BRL) per USD for the right panel. The RHS scale is JPY per USD for both panels.

6. **However, appreciation in the funding currency, changes in interest rate expectations, or a rise in market volatility[6] can lead to an unwinding of the currency carry trade positions.[7]** The appreciation of the funding currency can erode the profits incurred by the currency carry trade. This can force investors to unwind their positions to lock their profits or cut their losses. The unwinding involves buying back the funding currency, which adds to the appreciation pressures and triggers the unwind of more carry trades. Meanwhile, less attractive interest rate differentials and higher financial market volatility would deter investors from entering new carry trade positions. This phenomenon was seen in early-August in the yen carry trade positions and were triggered by the appreciation of the yen against the dollar since mid-July, expectations of US-Japan interest rate differential to narrow and a general rise in market volatility due to risk aversion. As a result, the JPY appreciated by around 5.6 percent against the USD between July 30 and

[6] Broader stock market, as well as FX volatility, was observed during the unwinding of the yen carry trade.
[7] Brunnermeier, Pedersen, and Nagel (2008) argued that when risk appetite and funding liquidity decrease, sudden unwinding of carry trades can occur.

August 5, which corresponded with a heightened implied volatility index for USD/JPY (Figure 1). As a high-yielding investment currency, the Mexican peso (MXN) depreciated sharply by around 3.2 percent between July 30 to August 5 (Figure 4). As noted by Aquilina et al. (2024), the Brazilian real (BRL) and South African rand also depreciated sharply by around 2.5 and 2 percent during this period, respectively.

III. Indications of Yen Carry Trade and Its Scale

7. **There is no single measure to capture carry trade activities, mainly due to the diverse pool of market participants using the strategy and the complex nature of its applications.** Depending on the mandate and risk appetite, hedge funds, asset managers, and individual investors could all be applying carry trade strategies. The lack of publicly available data on foreign exchange exposures makes it difficult to detect carry trade activity. In addition, as a trading strategy, carry trades can take many different forms and be combined with other strategies for various purposes.[8] This makes it difficult to distinguish between pure carry trade activity and those that serve multiple purposes.

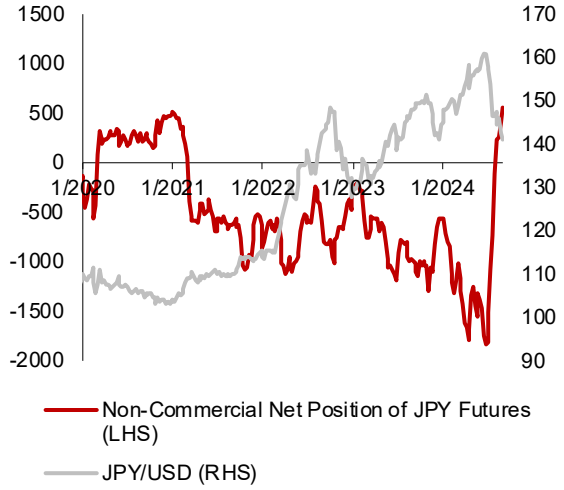
8. **However, certain measures can provide insights into and evidence of the scale of carry trade activities, such as FX market activity indicators.** One such measure is the net open positions of non-commercial traders in futures markets. Non-commercial traders are typically speculators, such as hedge funds and large institutional investors, whereas commercial traders are those involved in the actual production, processing, or commercial handling of the underlying assets. Net open positions of non-commercial traders can indicate speculative activities (Klitgaard and Weir, 2004). A significant short position in yen futures contracts (non-commercial) has been observed since around 2022, coinciding with the period of increasing interest rate differentials between the U.S. and Japan (Figure 5). Moreover, a net decrease in over-the-counter (OTC) retail FX margin observed in July and August supports an increase in withdrawals during this period.

9. **Examining exchange rate movements alongside net open positions can shed light on currency carry trade activities.** During periods of yen appreciation, the MXN and BRL show signs of depreciation, as these currencies are frequently used as targets in carry trades. Net open positions for MXN among non-commercial traders reveal an overall long position, though a reduction is evident in August (Figure 6). Additionally, a negative co-movement between MXN and JPY is particularly pronounced from June to September 2024 (Figure 4). Similarly, net open positions for BRL show a marked reduction, coinciding with a negative co-movement between BRL and JPY (Figure 4).

[8] BIS (2015) details carry trade strategies that are commonly adopted in Latin America.

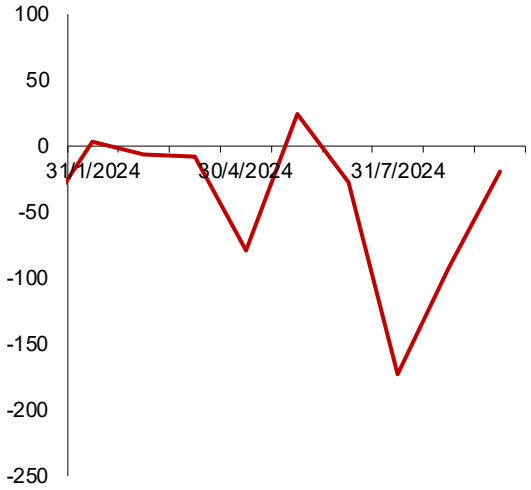
Figure 5. FX Indicators

JPY Future Net Open Positions of Non-Commercial Traders
(hundreds of future contracts; JPY/USD)



Sources: Bloomberg LP and AMRO staff calculations
Note: The LHS scale is in thousands of contracts, and the RHS scale is in JPY per USD.

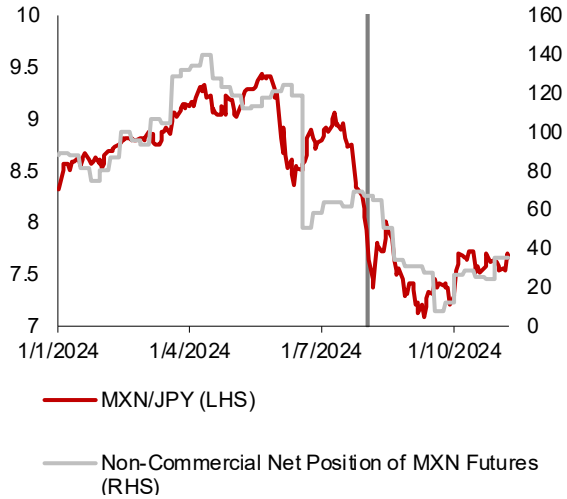
OTC Retail Margin FX Net Change
(billions yen)



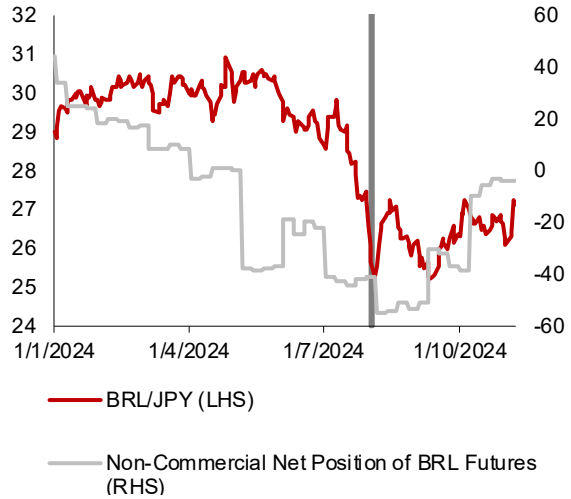
Sources: Federation of Bankers Associations of Japan and Haver Analytics
Note: The chart shows the monthly change in Required Amount for Separate Management, which is the amount that FX firms, having received money deposits from customers, are legally required to put in a money trust at a trust company. The fall in August was largely driven by customer withdrawals from FX transactions.

Figure 6 MXN and BRL Future Net Open Positions of Non-Commercial Traders

(MXN/JPY; thousands of future contracts)



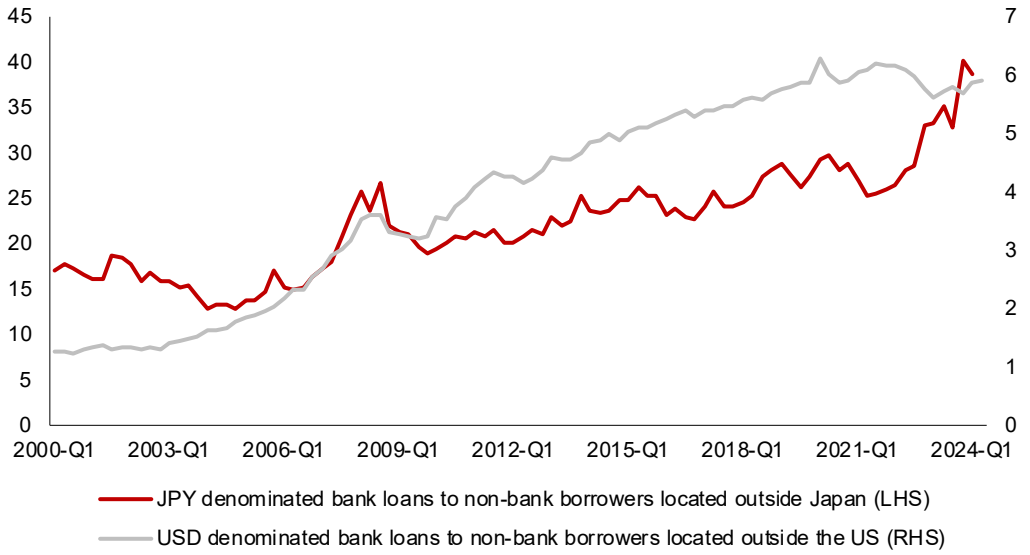
(BRL/JPY; thousands of future contracts)



Sources: Bloomberg LP and AMRO staff calculations
Note: The LHS scale is in MXN per JPY for the left panel and BRL per JPY for the right panel, and the RHS scale is in thousands of contracts. The vertical grey line marks the period of the BOJ's announcement on raising interest rates (July 31, 2024), which coincides with the timing of the Federal Open Market Committee's meeting and press conference. It was followed by the release of the July US unemployment rate and non-farm payrolls data (August 2, 2024).

10. **Cross-border JPY loans may provide insights on the attractiveness of the yen as a funding currency.** Since many carry trade activities are leveraged, examining trends in the cross-border loans can help understand the attractiveness of the funding currency.[9] The total yen-denominated loans are estimated to be around 41 trillion yen as of June this year (Figure 7) as compared to 27 trillion yen in March 2021. The trend indicates a notable increase in yen-denominated loans alongside a mild decline in USD-denominated loans, suggesting that the yen emerged as a preferred borrowing currency as the Fed began its rate-hiking cycle.

Figure 7. Cross-border Yen-denominated and USD-denominated Loans to All Countries
(trillions JPY; trillions USD)

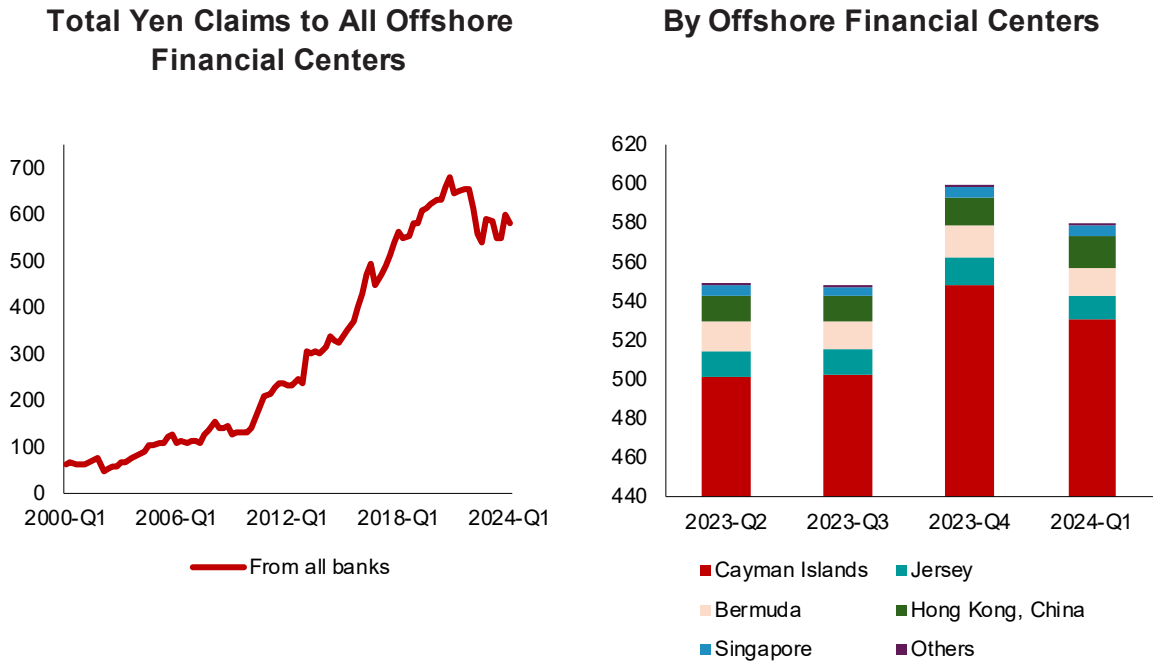


Sources: Bank for International Settlements (BIS) Global Liquidity Indicators
Note: The series plots JPY denominated bank loans to non-bank borrowers located outside Japan, and USD denominated bank loans to non-bank borrowers located outside the US.

11. **Another measure is yen claims to borrowers from offshore financial centers, which provides insights into the attractiveness of the yen as a funding currency for carry trades.** Offshore financial centers typically host a large number of speculative traders, which provides an indication of activities related to carry trades. As of the first quarter of 2024, total yen-denominated claims to offshore financial centers from all banks amount to approximately 579 billion USD (Figure 8). Notably, the Cayman Islands is the largest yen-claim counterparty, accounting for 530 billion USD of yen-denominated claims (Figure 8). Offshore financial centers often host numerous Special Purpose Vehicles (SPVs), which are involved in various financial activities. While yen-denominated flows to these centers could theoretically represent funding for carry trades executed by hedge funds or other non-bank financial entities, it is difficult to distinguish these flows from other activities, such as the acquisition of securities issued by SPVs.

[9] Galati, Heath, and McGuire (2007) used BIS statistics that track international currency flows as evidence for monitoring carry trade activities.

Figure 8. Total Yen Claims to Non-Banks in Offshore Financial Centers
(billions USD)



Sources: BIS Locational Banking Statistics and AMRO staff calculations.
Note: Offshore centers include Cayman Islands, Curaçao, Gibraltar, Guernsey, Hong Kong China, Isle of Man, Jersey, Liechtenstein, Singapore and Turks and Caicos Islands.

IV. An Analysis of the Exposure of Selected ASEAN Economies, China, and Korea to Yen Carry Trade

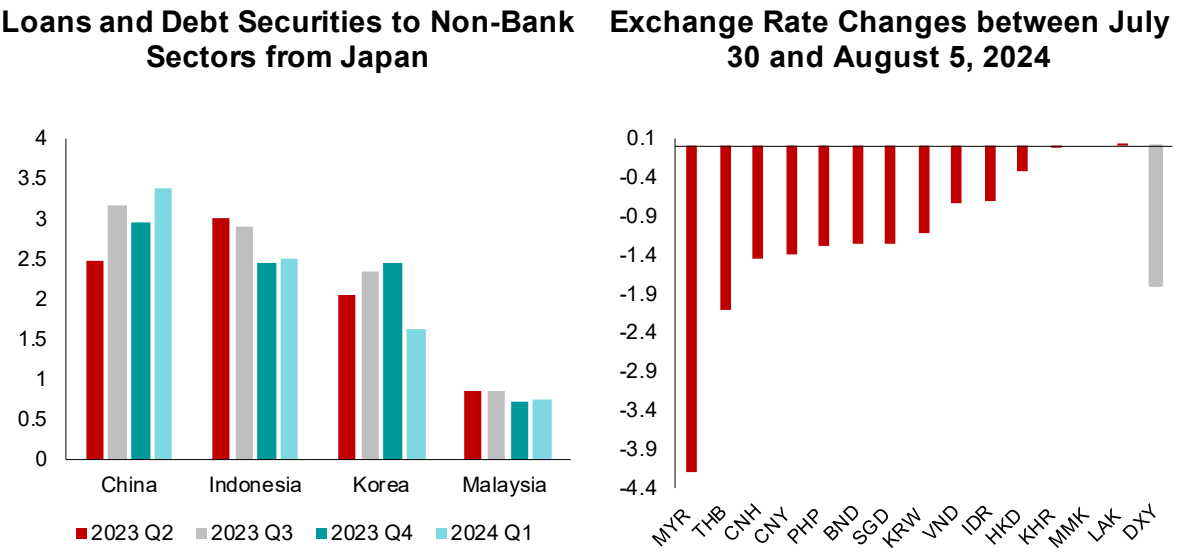
12. **ASEAN economies, along with China and Korea, show relatively low exposure to the buildup or unwinding of yen carry trade activities.** Analyzing yen-denominated loans and securities borrowed by non-bank sectors in these economies provides insight into how attractive yen is as a borrowing currency. The non-bank sectors include speculative traders such as hedge funds and institutional investors.[10] As of Q4 2024, yen-denominated loans and debt securities borrowed by the non-bank sector in China account for 3.4 percent of total yen-denominated loans and debt securities worldwide, the largest share among the economies with available data. For Indonesia, the share is approximately 2.5 percent, while Korea accounts for 1.6 percent, and Malaysia around 0.7 percent (Figure 9).

13. **While the currencies of ASEAN economies, along with China and Korea, showed varied responses against the USD, they all appreciated during the period of yen appreciation, with no clear evidence of the impact of the unwinding of carry trades.** Over the course of sharp yen appreciation (from July 30 to August 5, 2024) — a period believed to involve the unwinding of yen carry trade positions — examining the movements of relevant currencies can provide insights into the impact of these unwinding

[10] Non-bank sectors—such as hedge funds and institutional investors—are more directly involved in speculative carry trade activities (BIS, 2007; 2024). However, focusing solely on non-bank sectors leaves out an important part of the financial market, namely the banking sector, which is a limitation of this analysis and should be addressed in future studies.

activities.[11] In particular, Malaysia ringgit, Thai baht, and offshore RMB showed significant appreciation. Other currencies showed mild appreciation of around 1 percent or less, which may have been a reflection of a decrease in USD strength over that period by 1.7 percent, as reflected by the U.S. Dollar Index (Figure 9). Exchange rate level-based analysis provides an indication but can be misleading, as exchange rates are sensitive to a wide range of factors, including geopolitical events, and market sentiment.

Figure 8. Lending to Non-Bank Sectors in China, Indonesia, Korea and Malysia and Currency Movements in ASEAN+3 Economies
(percent)



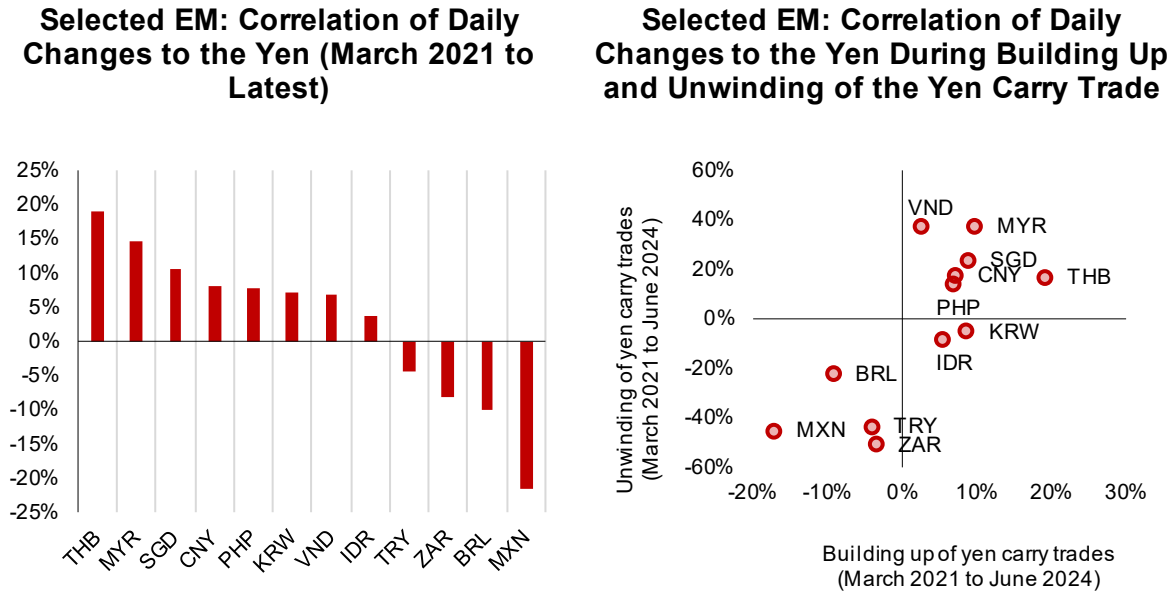
Sources: BIS Locational Banking Statistics; Bloomberg LP and AMRO staff calculations.
Note: MYR – Malaysian Ringgit, THB – Thai baht, CNH – Offshore Chinese renminbi, CNY – Chinese renminbi, PHP - Philippine peso, BND – Brunei dollar, SGD – Singapore dollar, KRW – South Korean won, VND - Vietnamese dong, IDR - Indonesian Rupiah, HKD – Hong Kong dollar, KHR - Cambodian riel, MMK - Myanmar Kyat, and LAK - Laotian Kip. DXY – U.S. Dollar Index.

14. **Empirical analysis further supports the observation that ASEAN+3 currencies were not preferred for initiating yen carry trades.** The currency carry trade involves buying the investment currency and selling the funding currency. Therefore, after eliminating the common factors—such as the US dollar strength—the investment currency should be negatively corelated to the funding currency. A visual inspection of the left panel in Figure 5 illustrating JPY Future Net Open Positions of Non-Commercial Traders reveals that yen short positions began increasing in March 2021 and subsequently declined after peaking in June 2024. We look at the daily correlations (after stripping out an estimated US dollar factor) between the yen and various EM currencies during this period, which likely includes the phases of building (March 2021 to June 2024) and unwinding (July 2024 to latest) of yen carry trades. Over the entire period, we find that currencies of Brazil, Mexico, South Africa and Turkey are negatively correlated to the yen (Figure 10). The negative correlation for these currencies strengthens during phases of the carry trade unwind (Figure 10). In

[11] This exercise does not cover the exchange rate regimes of these economies. Carry trade activities are common in economies with floating exchange rate regimes. In such regimes, exchange rate movements provide a better indication of the effects of unwinding yen carry trades.

ASEAN+3, only Indonesian rupiah and Korea won have shown some negative correlation during the yen carry trade unwind. The results provide some evidence that ASEAN+3 currencies were probably not used extensively for yen carry trade, and hence may not be significantly affected if there is another episode of yen carry trade unwind.

Figure 9. Estimated Vulnerability of EM Currencies to Yen Carry Trades
(percent)



Sources: Bloomberg LP and AMRO staff calculations
Note: MYR – Malaysian Ringgit, THB – Thai baht, CNY– Chinese renminbi, PHP - Philippine peso, SGD – Singapore dollar, KRW – South Korean won, VND - Vietnamese dong, IDR - Indonesian Rupiah, MXN – Mexican peso, BRL – Brazilian real, ZAR – South African rand, TRY –Turkish lira. The exchange rates against the US dollar are used and are adjusted for the US dollar effect using daily changes in the US dollar index (DXY). The correlations are calculated using daily log changes in the adjusted exchange rates over the specified period against the daily changes to the adjusted yen exchange rate.

15. **This current lack of exposure does not preclude ASEAN economies from being impacted by such activities in the future, underscoring the need for policymakers to take proactive measures to mitigate risks associated with currency carry trades.** As these economies continue to grow and evolve, further development in the breadth and depth of their financial markets could increase their vulnerability to global financial activities, such as currency carry trades. Currency carry trades are concerning because they can lead to destabilizing capital inflows and sudden reversals (BIS, 2015). With more sophisticated and liquid financial markets, ASEAN countries may become more attractive to speculative capital flows, introducing new risks. This means that the current lack of exposure may change as foreign investors seek new opportunities in emerging markets. A sudden shift in global investor sentiment or changes in interest rate differentials could then have more pronounced effects on these economies. To address these challenges, it is crucial for ASEAN policymakers to proactively strengthen regulatory frameworks, enhance risk management strategies, and build financial resilience to prepare for potential volatility. For example, implementing prudential measures, such as countercyclical capital buffers, could help manage excessive credit growth or portfolio capital inflows (Biljanovska et al., 2023). Additionally, increasing awareness about the risks of foreign currency borrowing among businesses and the public can help mitigate risky financial behaviors.

References

Aquilina, Matteo, Marco Lombardi, Andreas Schrimpf, and Vladyslav Sushko. 2024. "The market turbulence and carry trade unwind of August 2024." *BIS Bulletin*, Bank for International Settlements, August 27. Link.

Bank of Japan. 2024. "Change in the Guideline for Money Market Operations and Decision on the Plan for the Reduction of the Purchase Amount of Japanese Government Bonds". July 31. Link.

Bank for International Settlements. 2024. Locational banking statistics, BIS WS_LBS_D_PUB 1.0 (dataset). Link.

Bank for International Settlements, Monetary and Economic Department. 2015. Currency Carry Trades in Latin America. *BIS Papers.* No. 81. April. Link.

Bank for International Settlements. 2024. Carry Off, Carry On. BIS Quarterly Review. September 16. Link.

Biljanovska, Nina, Sophia Chen, Gaston Gelos, Deniz.O. Igan, Maria Soledad Martinez Peria, Erlend Nier, and Fabian Valencia. 2023. "Macroprudential Policy Effects: Evidence and Open Questions". *IMF Departmental Papers*, DP/2023/002. April. Link.

Brunnermeier, Markus, Stefan Nagel, and Lasse Pedersen. 2008. "Carry trades and currency crashes", *NBER Working Paper Series* no. 14473, November. Link.

Galati, Gabriele, Alexendra Heath, and Patrick McGuire. 2007. "Evidence of carry trade activity", *BIS Quarterly Review*, September. Link.

Hattori, Masazumi, Hyun S. Shin. 2009. "Yen Carry Trade and the Subprime Crisis." *IMF Staff Papers*, *2009* (002), A007. Link.

Klitgaard, Thomas and Laura Weir. 2004. "Exchange rate changes and net open positions of speculators in the futures market", *Economic Policy Review*, vol 10(1), Federal Reserve Bank of New York, pp 17–28. Link.