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THE UNWINDING RISK OF THE JAPANESE CARRY TRADE: SCENARIOS FOR EQUITY AND BOND MARKETS

Abstract:

The Japanese yen-funded carry trade – borrowing at Japan's ultra-low interest rates to invest in higher-yield assets abroad – has grown extensively in recent years, raising concerns about its potential unwinding. This paper examines the risk of a disorderly unwind of yen carry trades and the consequent impact on equity and bond markets, with a focus on U.S. equities. We synthesize insights from academic literature and central bank reports, and we deploy simulation models (VAR, Monte Carlo, and regression-based analyses) to explore scenario outcomes. Our analysis suggests that a sharp yen appreciation (triggered by either Japanese policy tightening or U.S. rate cuts) could force carry traders to liquidate positions, causing significant volatility in stock markets and a spike in risk aversion. Through scenario analysis, we find that the severity of market impact depends on the speed and scale of unwinding – ranging from a mild normalization with limited market effects to a severe, rapid unwind that could resemble past crisis episodes. The results highlight the importance of monitoring carry trade-funded flows and ensuring market resilience to sudden reversals.

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The Japanese yen-funded carry trade – borrowing at Japan's ultra-low interest rates to invest in higher-yield assets abroad – has grown extensively in recent years, raising concerns about its potential unwinding. This paper examines the risk of a disorderly unwind of yen carry trades and the consequent impact on equity and bond markets, with a focus on U.S. equities. We synthesize insights from academic literature and central bank reports, and we deploy simulation models (VAR, Monte Carlo, and regression-based analyses) to explore scenario outcomes. Our analysis suggests that a sharp yen appreciation (triggered by either Japanese policy tightening or U.S. rate cuts) could force carry traders to liquidate positions, causing significant volatility in stock markets and a spike in risk aversion. Through scenario analysis, we find that the severity of market impact depends on the speed and scale of unwinding – ranging from a mild normalization with limited market effects to a severe, rapid unwind that could resemble past crisis episodes. The results highlight the importance of monitoring carry trade-funded flows and ensuring market resilience to sudden reversals.

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Introduction

The yen carry trade refers to the practice of borrowing in Japanese yen at near-zero interest rates and investing the proceeds in higher-yielding foreign assets. Fueled by prolonged monetary easing by the Bank of Japan (BoJ), these trades have expanded globally, affecting equity, bond, and currency markets. While profitable during stable periods, carry trades are vulnerable to sudden reversals when the yen strengthens or interest differentials narrow. Historically, abrupt yen appreciations have triggered rapid unwinds of these positions, leading to asset sell-offs and spikes in volatility worldwide. This paper investigates how such unwinding might affect U.S. equities and bonds under various scenarios, using simulation models to provide quantitative insights.

Literature Review

Extensive literature shows that carry trades offer attractive returns in stable environments but are highly exposed to crash risks during periods of rising volatility. Brunnermeier et al. (2008) highlight that carry trades often violate uncovered interest parity, generating positive returns while exposing investors to tail risks when funding currencies appreciate sharply. Nirei and Sushko (2011) describe yen dynamics as asymmetric, with gradual depreciations during build-ups and sharp appreciations

during unwinds. Menkhoff et al. (2012) link carry trade returns directly to global volatility conditions, emphasizing how rising VIX levels correlate with significant losses in carry strategies.

Several studies explore the global implications of yen carry trades. Gagnon and Chaboud (2007) analyze international position data, indicating that both Japanese institutions and global hedge funds contribute significantly to the scale of these trades. Hattori and Shin (2009) show that Japanese banks' overseas lending in yen grew extensively, reflecting an increase in cross-border exposure. The IMF (Han and Westelius, 2019) emphasizes that sudden yen appreciations negatively impact equity valuations and global risk sentiment. Recent BIS reports (Aquilina et al., 2024) further illustrate the role of leveraged yen positions in amplifying recent market turbulence, particularly during the August 2024 episode.

The literature broadly agrees that carry trades function like selling insurance: investors earn steady returns while markets are calm, but suffer disproportionately when risk sentiment shifts. These dynamics make carry trades a key transmission channel between monetary policy shifts, global capital flows, and financial market instability.

Methodology

We employ three complementary simulation methods to assess the potential market impact of a yen carry trade unwind:

1. **Vector Autoregression (VAR):** This model estimates dynamic relationships between JPY/USD, U.S. equities (S&P 500), U.S. Treasury yields, and global risk aversion (VIX). Using weekly data from 2010 to 2024, we simulate how a yen appreciation shock propagates across markets.

2. **Monte Carlo Simulation:** We simulate thousands of potential market outcomes using historical volatilities and correlations, adjusted for fat tails through Student-t distributions. This allows us to estimate the probability distribution of outcomes under both normal and stressed conditions.

3. **Regression-Based Scenario Analysis:** We estimate sensitivities of U.S. equities and bond yields to yen movements using historical regression models, incorporating VIX and interest rate differentials as control variables.

By integrating these models, we provide both average outcome estimates and a range of tail risk scenarios.

Data and Scenarios

Data Sources

Our analysis uses a range of data sources capturing the essence of the yen carry trade and relevant market indicators, including:

- JPY/USD exchange rates (daily FX rates)
- S&P 500 and Nasdaq Composite indices (U.S. equity market performance)
- U.S. 10-year Treasury yields
- Japanese and U.S. short-term interest rates

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- Yen futures positions (CFTC data)
- Cross-border yen loans (BIS data)
- Japan's international investment position (IMF data)

As of 2024, several key data points underscore the scale of yen carry trade exposure:

- Japanese banks' foreign lending in yen reached ¥145 trillion (~$1 trillion).
- Non-commercial short-yen futures positions exceeded 190,000 contracts (~$15.6 billion).
- Japan's net foreign asset position reached $3.3 trillion.
- Japanese holdings of U.S. Treasuries totaled $1.1 trillion.

Scenario Design

We model three primary scenarios reflecting different potential unwind dynamics:

1) **Gradual Normalization:**
The Bank of Japan raises rates slowly and communicates policy changes effectively. Yen appreciates 5–10% over a year. Market participants have time to adjust, limiting major disruptions. Equity markets experience mild corrections, Treasury yields stabilize, and volatility remains contained.

2) **Acute Unwind:**
A sudden tightening by the Bank of Japan or a major global risk-off shock causes rapid yen appreciation of 10–15% over weeks. Forced liquidations of yen-funded positions trigger equity sell-offs, sharp VIX spikes, and disorderly market adjustments. Treasury yields initially drop due to safe-haven flows but may rebound as Japanese institutions sell U.S. assets to cover yen-denominated liabilities.

3) **Long-Term Structural Reallocation:**
Japanese institutions begin a more permanent reallocation of global portfolios, reducing exposure to U.S. dollar-denominated assets. Over several years, this exerts mild upward pressure on global yields and gradually compresses equity valuations. Volatility rises moderately, but without disorderly episodes.

Analysis and Findings

Using the above scenarios, we analyze the implications for equity and bond markets:

- **VAR Model Results:**
  Simulations suggest that a sudden 10–15% yen appreciation could lead to 5–10% declines in U.S. equities, with outsized effects in technology sectors that have attracted substantial yen-funded inflows.

- **Monte Carlo Simulations:**
  Fat-tail adjusted distributions reveal significant downside risks. Worst-case scenarios suggest potential equity drawdowns exceeding 10%. The simulations show a substantial increase in left-tail risk for equities under rapid unwind scenarios.

- **Regression Sensitivity Estimates:**
  Historically, each 1% appreciation in JPY/USD reduces S&P 500 levels by approximately 0.5–0.7% when controlling for VIX and interest rate spreads. Treasury yields initially fall during stress episodes but rebound as Japanese investors adjust their holdings.

- **Long-Term Reallocation Risks:**
  Gradual reduction in Japanese cross-border investment could lead to mild upward pressure on U.S. Treasury yields (by 10–25 basis points) and gradual P/E compression in equity markets.

Overall, the analysis suggests that disorderly yen carry trade unwinds could trigger non-linear market responses, especially under acute stress scenarios, making proactive monitoring essential.

Conclusion

The unwinding risk of the Japanese yen carry trade represents a meaningful threat to global financial stability, with particularly noteworthy implications for U.S. equity and bond markets.

In gradual scenarios, markets can absorb the adjustment without major disruptions. However, rapid unwinds—whether triggered by sharp yen appreciation due to Japanese monetary tightening or global risk-off sentiment—could generate sharp corrections in U.S. equities and volatility spikes.

Bond markets may initially benefit from flight-to-quality flows into U.S. Treasuries but could later face selling pressure as Japanese investors liquidate foreign holdings to repatriate funds.

While orderly adjustments are possible with clear policy coordination and market communication, unexpected or rapid unwinds remain a key tail risk that could trigger broader global financial stress.

Investors and policymakers should monitor yen-funded positions closely, incorporate carry trade stress scenarios into risk models, and maintain sufficient market liquidity buffers to handle potential dislocations.

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