

THE ROLE OF FUTURES AND OPTIONS IN HEDGING CURRENCY RISKS

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Annotation

This paper examines the role of futures and options in managing and hedging currency risk in international financial markets. Currency risk, also known as exchange rate risk, arises from fluctuations in foreign exchange rates that affect international trade, investment, and corporate earnings. The article explores the mechanisms of currency futures and options, evaluates their effectiveness as hedging tools, and presents empirical evidence from global corporations and emerging market economies. It also discusses challenges such as basis risk, transaction costs, and market volatility.

Keywords

Currency Risk, Hedging, Futures, Options, Foreign Exchange Markets, Risk Management, Volatility, Derivatives, Exchange Rate, Financial Stability.

Introduction

In today's globalized economy, multinational corporations, exporters, and investors face significant exposure to **currency fluctuations**. When the value of one currency changes relative to another, it can alter the cost of imports and exports, the value of international investments, and the profitability of multinational operations.

For example, an appreciation of the domestic currency can make exports less competitive, while depreciation increases the cost of imports and foreign-denominated debt. Therefore, managing **foreign exchange (FX) risk** has become a crucial aspect of modern financial strategy.

According to the **Bank for International Settlements (BIS, 2024)**, the daily turnover in the global FX market reached **\$7.5 trillion**, highlighting the immense scale of currency exposure. Among the various risk management tools, **futures and options** stand out for their flexibility, liquidity, and transparency.

This paper explores how these derivative instruments are used to hedge against currency risk, reviews empirical evidence on their effectiveness, and discusses regulatory and strategic considerations for global market participants.

Main Body

1. Understanding Currency Risk

Currency risk, or **exchange rate risk**, refers to potential losses resulting from unfavorable movements in exchange rates. It primarily affects:

- **Transaction exposure** – arising from trade receivables or payables in foreign currencies;
- **Translation exposure** – related to the consolidation of financial statements of multinational firms;
- **Economic exposure** – long-term impact of exchange rate changes on firm value and competitiveness.

According to the **IMF (2023)**, more than **60% of global trade** involves currency exposure, and unmanaged currency risk can reduce profit margins by up to **15–20%** for international corporations.

Thus, effective **hedging instruments** like futures and options are vital to stabilize cash flows and protect profitability.

2. Currency Futures as a Hedging Tool

2.1 Definition and Mechanism

A **currency futures contract** is a standardized agreement traded on an exchange (such as the **Chicago Mercantile Exchange (CME)**) to buy or sell a specific amount of foreign currency at a predetermined price and future date.

Unlike **forwards**, which are over-the-counter (OTC) and customizable, futures are **exchange-traded**, offering greater liquidity and reduced counterparty risk through **clearinghouses**.

For example, an Indian exporter expecting \$1 million in three months can sell **USD/INR futures** today to lock in the current exchange rate, protecting against possible rupee appreciation.

According to **CME Group (2024)** data, currency futures volume exceeded **\$100 billion per day**, with the most traded pairs being **EUR/USD, JPY/USD, and GBP/USD**.

2.2 Effectiveness of Currency Futures

Empirical research confirms the effectiveness of futures in reducing exchange rate exposure.

A study by **Bartram et al. (Journal of Financial Economics, 2022)** found that corporations using currency futures experienced **25% lower cash flow volatility** than unhedged firms.

In emerging economies such as Brazil and India, futures contracts traded on regulated exchanges (e.g., **B3 Exchange, NSE**) have become essential tools for exporters, importers, and institutional investors.

2.3 Limitations

Despite their advantages, futures hedges may suffer from:

- **Basis risk** – mismatch between futures and spot rate movements;

- **Margin requirements** – need to maintain collateral with exchanges;
- **Standardization limitations** – not all currencies have liquid futures markets.

Nevertheless, their transparency and cost efficiency make them a cornerstone of currency risk management.

3. Currency Options and Their Strategic Use

3.1 Overview of Currency Options

Currency options provide the **right, but not the obligation**, to buy (call option) or sell (put option) a specific currency at a predetermined rate (strike price) before or at expiration.

Options allow firms to hedge downside risks while retaining potential upside benefits — unlike futures, which fix the rate.

For instance, a U.S. importer expecting payment in euros can **purchase a EUR call option** to protect against euro appreciation. If the euro strengthens, the option gains value; if it weakens, the importer simply lets the option expire.

3.2 Pricing and Valuation

The pricing of options relies on mathematical models like the **Black-Scholes model (1973)**, which considers factors such as spot rate, strike price, time to maturity, interest rate differential, and volatility.

As of **2024**, global FX option turnover reached **\$250 billion daily**, according to BIS data, highlighting growing adoption by institutional investors.

3.3 Advantages of Using Options

- **Flexibility:** Allows participation in favorable exchange rate movements.
- **Limited Losses:** The maximum loss is the option premium paid.
- **Strategic Hedging:** Options can be combined into strategies like **collars, spreads, or straddles** for tailored protection.

For example, firms often use a **zero-cost collar**, combining a put and a call option, to cap potential losses and gains within acceptable ranges.

Empirical studies (OECD, 2023) indicate that firms employing option-based hedges show **more stable earnings and improved credit ratings** during volatile FX periods.

4. Empirical Evidence and Case Studies

4.1 Multinational Corporations

A study by **Allayannis and Ofek (2022)** covering 250 multinational firms found that **75% use currency derivatives**, with **futures and options** being the most common instruments. These hedges contributed to a **12% reduction in earnings volatility**.

4.2 Emerging Market Examples



- **India:** The National Stock Exchange (NSE) reports that **over 60% of Indian exporters** use USD/INR futures to manage FX risk (NSE, 2024).
- **Brazil:** Companies utilize BRL/USD options to protect export revenues from currency depreciation (B3, 2023).
- **South Africa:** The Johannesburg Stock Exchange (JSE) facilitates ZAR/USD derivatives, enabling hedging for mining and trade sectors.

4.3 Financial Institutions

Banks and investment funds employ currency derivatives not only for hedging but also for **balance sheet management** and **speculative positioning**. The **BIS Triennial Survey (2024)** found that **45% of total FX derivatives volume** comes from institutional risk management.

5. Challenges in Currency Derivatives Hedging

Despite widespread adoption, several challenges remain:

- **Volatility spikes** during crises (e.g., COVID-19 pandemic) can distort derivative pricing.
- **Counterparty and credit risk**, especially in OTC options.
- **Regulatory complexity**, with differing national rules on derivatives reporting and taxation.
- **Hedging inefficiencies** when markets are illiquid or exchange rates are tightly controlled.

Hence, effective hedging requires dynamic monitoring, robust forecasting models, and adherence to international standards such as **IFRS 9** for hedge accounting.

Conclusion

Currency risk remains a central concern for global businesses and investors. Futures and options provide powerful, complementary tools for mitigating exchange rate exposure. **Futures** offer standardized, cost-efficient hedges suitable for predictable cash flows, while **options** provide strategic flexibility and protection against extreme market movements.

Empirical evidence confirms that effective use of these derivatives reduces volatility, enhances financial stability, and supports international competitiveness. However, success depends on sound **risk management policies**, **regulatory compliance**, and the skillful integration of derivatives into broader corporate financial strategies.

In the future, technological innovations like **AI-driven forecasting**, **blockchain settlement systems**, and **automated hedging platforms** are expected to make currency risk management more efficient and accessible, particularly for firms in emerging markets.

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