

INTERNATIONAL TRADE AND FINANCE MASTERCLASS

PART 09 OF 25 · SECTION IV: FOREIGN EXCHANGE

PART 9

FOREIGN EXCHANGE — UNDERSTANDING THE MARKET

The \$7.5 trillion-per-day market that determines the value of every international transaction. How currencies are priced, what moves them, the three types of FX exposure, and why a 10% currency move can wipe out an entire year's profit margin.

IN THIS PART

- The FX market structure — who trades and why
- Spot rates, forward rates, and interest rate parity
- What moves exchange rates — the complete framework
- Transaction, translation, and economic exposure distinguished
- Fixed versus floating exchange rate regimes
- The carry trade and why it collapses violently

CASE STUDIES

Each part includes fully worked case studies with detailed calculations, real-world context, and practical lessons for CFOs and finance leaders.

■ THE WORLD'S LARGEST MARKET

Seven Point Five Trillion Dollars Every Single Day

The foreign exchange market is the largest financial market in the world by an enormous margin. Global equity markets trade approximately three hundred billion dollars per day. The US Treasury market — the deepest bond market on earth — trades approximately nine hundred billion dollars per day. The foreign exchange market trades approximately seven point five trillion dollars per day. Every twenty-four hours, the equivalent of roughly the entire annual GDP of Germany changes hands in the FX market. Yet despite its enormous scale, most CFOs have a relatively superficial understanding of how this market actually works.

For a company doing international business, the FX market is not an abstract financial system. It is the market that determines whether your EUR revenue is worth more or less in USD terms this quarter than last quarter. It is the market that determines whether your Chinese manufacturing costs have become cheaper or more expensive in dollar

terms. It is the market that determines whether your German subsidiary's profits translate into more or fewer dollars on your consolidated income statement. Understanding how this market works is not optional for a CFO with international exposure — it is foundational.

The Structure of the FX Market

The foreign exchange market has no central exchange, no central clearinghouse, and no single physical location. It is an over-the-counter market — a global network of banks, financial institutions, corporations, central banks, hedge funds, and individual traders who trade directly with each other via electronic platforms and telephone. This decentralized structure has important implications for the prices that different participants receive.

At the top of the hierarchy is the interbank market — the market in which the world's largest banks trade with each other. The interbank market is where the tightest spreads exist and where the 'true' exchange rate is determined. When Reuters or Bloomberg quote the EUR/USD rate as one point zero eight four three, they are quoting the interbank rate — the rate at which major banks trade with each other in the wholesale market. This is not the rate your company will receive when it exchanges currency. Your company is not a major bank, and the rate it receives will always include a markup — called the spread — that compensates the bank for providing the service.

◆ FX SPREAD — COST AND NEGOTIATION

THE FX SPREAD — HOW BANKS MAKE MONEY ON YOUR TRANSACTIONS

Interbank EUR/USD rate: 1.0843 / 1.0844 (bid/ask spread: 1 pip)

WHAT YOUR BANK CHARGES (corporate customer):

Bank's buy rate (bank buys EUR from you): 1.0780

Bank's sell rate (bank sells EUR to you): 1.0910

Spread: $1.0910 - 1.0780 = 0.0130$ (130 pips)

COST OF THE SPREAD ON \$1,000,000 OF EUR PURCHASED:

At interbank midpoint (1.08435): EUR 922,970

At your bank's sell rate (1.0910): EUR 916,590

EUR you lost to the spread: 6,380

USD equivalent at midpoint: $6,380 \times 1.08435 = \$6,918$

Effective spread cost: $\$6,918 / \$1,000,000 = 0.69\%$

HOW TO NEGOTIATE A BETTER RATE:

Volume: Higher annual FX volume = tighter spreads

Competition: Get quotes from multiple banks simultaneously

FX platforms: Corpay, Fleetcor, Wise Business for SMEs

For large companies: direct access to electronic platforms
can reduce spread to 5-20 pips (0.05-0.20%)

On \$10M annual FX: difference between 0.69% and 0.20%

= \$49,000 annual saving from better execution

Spot Rates and Forward Rates: The Mathematics of Time

The spot rate is the exchange rate for immediate delivery — in practice, settlement two business days after the transaction. If you want to exchange dollars for euros today to pay an invoice that is due immediately, you use the spot rate. But what if your invoice is not due for three months? You could wait until the invoice is due and then exchange at whatever the spot rate happens to be on that day. Or you could enter into a forward contract today — agreeing to exchange a specific amount at a specific rate on a specific future date. The rate applicable to a forward contract is called the forward rate, and it is not simply a prediction of what the spot rate will be in three months. It is calculated mathematically from the spot rate and the interest rates in the two currencies.

The relationship between the spot rate and the forward rate is governed by a principle called Interest Rate Parity. The principle can be explained simply: if you can earn more interest in one currency than another, the forward rate for the higher-interest currency will be lower than the spot rate, by an amount that exactly offsets the interest rate advantage. If this were not the case, traders could make a risk-free profit by borrowing in the low-interest currency, converting to the high-interest currency, investing, and locking in the forward rate to convert back. Such risk-free profits attract

unlimited capital until they disappear — which is why interest rate parity holds.

◆ FORWARD RATE CALCULATION

FORWARD RATE CALCULATION — INTEREST RATE PARITY

FORMULA: $F = S \times (1 + r_{\text{domestic}}) / (1 + r_{\text{foreign}})$

F = Forward rate

S = Spot rate

r_domestic = Domestic interest rate (USD)

r_foreign = Foreign interest rate (EUR)

EXAMPLE: USD/EUR 3-month forward rate

Spot rate (USD per EUR): 1.0843

3-month USD interest rate (annualized): 5.35%

3-month EUR interest rate (annualized): 3.65%

CALCULATION:

3-month USD rate: $5.35\% \times 90/360 = 1.3375\%$

3-month EUR rate: $3.65\% \times 90/360 = 0.9125\%$

$F = 1.0843 \times (1 + 0.013375) / (1 + 0.009125)$

$F = 1.0843 \times 1.013375 / 1.009125$

$F = 1.0843 \times 1.004211$

F = 1.0889 (3-month forward rate)

INTERPRETATION:

Spot: 1 EUR = \$1.0843

3-month forward: 1 EUR = \$1.0889

The EUR is at a forward PREMIUM of 0.46 cents

Why? USD interest rates are higher than EUR rates

To prevent arbitrage, forward EUR must be worth more USD

The forward premium exactly offsets the interest differential

What Moves Exchange Rates: The Complete Framework

Many CFOs treat currency movements as essentially random events — unpredictable and therefore unmanageable. This is partly true in the short term, where currencies can move significantly based on news flow, sentiment, and positioning. But in the medium and long term, exchange rates are driven by fundamental economic forces that can be understood, monitored, and — to a degree — anticipated. Understanding these drivers helps a CFO make better hedging decisions, better pricing decisions, and better investment decisions.

Driver One: Interest Rate Differentials

The most powerful short-to-medium-term driver of exchange rates is the differential between interest rates in two countries. Higher interest rates attract capital: investors move money into a currency to earn higher returns, increasing demand for that currency and pushing its value up. When the US Federal Reserve raised interest rates aggressively in 2022 and 2023, the US dollar strengthened dramatically against virtually all other currencies — not because the US economy was doing particularly well in relative terms, but because dollar-denominated investments were paying significantly higher returns than euro, yen, or pound investments.

Driver Two: Inflation Differentials — Purchasing Power Parity

In the long run, the most reliable driver of exchange rates is the difference in inflation rates between countries. A country with consistently higher inflation than its trading partners will see its currency depreciate over time, because inflation erodes the purchasing power of the currency. This principle — called Purchasing Power Parity — says that in the long run, exchange rates should adjust so that the same basket of goods costs the same amount in every country when expressed in a common currency.

◆ PURCHASING POWER PARITY CALCULATION

PURCHASING POWER PARITY — LONG-RUN EXCHANGE RATE IMPACT

EXAMPLE: USD/TRY (Turkish Lira)

Year 2018: Exchange rate: 1 USD = 5.0 TRY

Annual inflation rates (2018-2023):

Turkey average CPI inflation: approximately 65% per year

US average CPI inflation: approximately 4.5% per year

Inflation differential: approximately 60.5 percentage points

PPP PREDICTED EXCHANGE RATE (5 years):

$$F = S \times (1 + i_{\text{Turkey}})^5 / (1 + i_{\text{US}})^5$$

$$F = 5.0 \times (1.65)^5 / (1.045)^5$$

$$F = 5.0 \times 12.429 / 1.246$$

$$F \text{ (PPP predicted): } 5.0 \times 9.974 = 49.87 \text{ TRY/USD}$$

ACTUAL EXCHANGE RATE (end 2023): approximately 29-32 TRY/USD

PPP overstated depreciation — other factors partially offset

But direction was completely correct

Turkish Lira DID depreciate massively, as predicted by PPP

LESSON FOR CFOS: If you operate in a high-inflation country,

PPP tells you the currency WILL depreciate substantially.

Plan your financing, pricing, and hedging accordingly.

The Three Types of FX Exposure: Transaction, Translation, Economic

Understanding the difference between the three types of foreign exchange exposure is one of the most important conceptual foundations in international finance. Many CFOs use the terms interchangeably — which leads to confusion, mismanagement, and inappropriate hedging strategies. Each type of exposure is distinct, arises in a different way, has a different impact on the financial statements, and requires a different management approach.

Transaction Exposure: The Most Visible Risk

Transaction exposure arises when a company has contractual cash flows — receivables or payables — denominated in a foreign currency. If a US company has invoiced a German customer for one million euros, it has a transaction exposure: the USD value of that receivable will change every day as the EUR/USD exchange rate moves. If the euro weakens by five percent before the invoice is paid, the company receives five percent less in USD terms than when it issued the invoice. This exposure is specific, quantifiable, and hedgeable.

Translation Exposure: The Accounting Risk

Translation exposure — also called accounting exposure — arises when a parent company must consolidate the financial statements of foreign subsidiaries into its reporting currency. A US parent company with a German subsidiary will translate the subsidiary's balance sheet and income statement from euros to dollars. If the euro weakens, the subsidiary's assets, liabilities, revenues, and expenses are all worth fewer dollars when translated — even if the subsidiary performed identically in local currency terms. The translation loss appears in Other Comprehensive Income as Cumulative Translation Adjustment.

Economic Exposure: The Strategic Risk

Economic exposure — the most subtle and most significant of the three — is the risk that exchange rate movements will affect the long-term competitive position and cash-generating ability of a business. A US manufacturer that competes with German manufacturers in third-country markets faces economic exposure: if the euro weakens substantially against the dollar, German goods become cheaper relative to US goods in every market where both compete — not because anything has changed in either company's operations, but simply because the currency has moved. Economic exposure is the hardest to measure and the hardest to hedge because it is structural rather than transactional.

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CASE STUDY 1

NorthAmerica Exports Inc.

Transaction Exposure — How a 10% EUR Move Wiped Out the Profit Margin

Background

NorthAmerica Exports sells specialty food products to European grocery chains. The company prices all its European sales in euros — a common practice to simplify billing for European customers — and collects payment in euros, which it then converts to US dollars. In January 2022, the company signed annual supply agreements with three major European grocery

chains for a total of eight million euros of sales at prices that assumed an EUR/USD rate of one point thirteen. By September 2022, the euro had fallen to parity with the dollar — a decline of approximately eleven percent.

◆ TRANSACTION EXPOSURE — UNHEDGED VS HEDGED

NORTHAMERICA EXPORTS — TRANSACTION EXPOSURE LOSS

Annual EUR sales contracted: EUR 8,000,000

EUR/USD rate assumed at contract signing: 1.1300

Expected USD revenue: EUR 8,000,000 x 1.1300 = \$9,040,000

EUR/USD rate at time of actual collection: 1.0020

Actual USD revenue: EUR 8,000,000 x 1.0020 = \$8,016,000

USD revenue lost to FX movement: (\$1,024,000)

IMPACT ON PROFITABILITY:

Expected operating margin: 12.4%

Expected operating profit: \$9,040,000 x 12.4% = \$1,120,960

FX loss: (\$1,024,000)

Actual operating profit: \$1,120,960 - \$1,024,000 = \$96,960

Actual operating margin: \$96,960 / \$8,016,000 = 1.21%

FX wiped out 91% of the anticipated operating profit

HEDGED SCENARIO (if 12-month forward had been sold at 1.1280):

Forward rate locked: 1.1280

Hedged USD revenue: EUR 8,000,000 x 1.1280 = \$9,024,000

Operating profit: \$9,024,000 - \$8,919,040 costs = \$104,960

Wait — with forward: operating profit approx \$1,008,960

Hedging would have preserved virtually all the profit

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CASE STUDY 2

BrazilCo Manufacturing

Economic Exposure — When a Currency Move Changes Your Competitive Position

Background

BrazilCo Manufacturing produces industrial pumps and sells them globally, competing primarily with German and Japanese manufacturers. In 2022-2023, the Brazilian real depreciated approximately twenty-two percent against the US dollar. BrazilCo's costs are almost entirely in reais — wages, local materials, utilities — while its revenues are largely in US dollars and euros. The currency depreciation had a profound effect on the company's competitive position that extended far beyond the simple transaction exposure calculation.

◆ ECONOMIC EXPOSURE — COMPETITIVE POSITION IMPACT

BRAZILCO — ECONOMIC EXPOSURE ANALYSIS

Annual USD revenue: \$45,000,000

Annual BRL cost base: BRL 180,000,000

BRL/USD at start of period: 5.20 (so costs = \$34,615,385)

BEFORE DEPRECIATION:

Revenue: \$45,000,000

Costs (BRL 180M at 5.20): \$34,615,385

Operating profit: \$10,384,615 (23.1% margin)

AFTER 22% REAL DEPRECIATION (BRL/USD moves to 6.34):

Revenue: \$45,000,000 (unchanged — USD-denominated)

Costs (BRL 180M at 6.34): \$28,390,957

Operating profit: \$16,609,043 (36.9% margin)

PROFIT INCREASE: \$6,224,428 — simply from currency move

STRATEGIC ECONOMIC EXPOSURE IMPACT:

BrazilCo can now reduce USD prices by up to 13.8%

and maintain its original 23.1% margin

German competitor's costs are in EUR — unaffected

BrazilCo wins market share in price-sensitive segments

This is ECONOMIC exposure — structural competitive shift

Financial hedges do not protect against this; only

operational responses (geographic diversification,

natural hedging, production footprint) address it

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CASE STUDY 3

Atlantic Consumer Goods

The JPY Carry Trade — Borrowing in Yen, Paying in Dollars

Background

Atlantic Consumer Goods needed to finance expansion in Southeast Asia. Its treasurer identified what appeared to be an attractive opportunity: borrowing in Japanese yen at an interest rate of approximately zero point five percent — far cheaper than the company's USD borrowing rate of six point eight percent. The company borrowed the equivalent of twenty million dollars in yen in early 2023 and converted the proceeds to US dollars for its expansion. In August 2024, the Bank of Japan raised interest rates and the yen strengthened dramatically against the dollar, creating a significant loss on the JPY debt.

◆ CARRY TRADE RISK — FINANCIAL IMPACT

ATLANTIC — CARRY TRADE RISK MATERIALIZATION

JPY borrowed: JPY 2,900,000,000 (at 145 JPY/USD = \$20,000,000)

JPY interest rate: 0.5% per annum

USD interest rate (alternative): 6.8% per annum

Annual interest saving: $(\$20M \times 6.8\%) - (\$20M \times 0.5\%) = \$1,260,000$

YEN STRENGTHENS: JPY/USD moves from 145 to 102 (Aug 2024)

Original JPY borrowed: JPY 2,900,000,000

Value in USD at original rate (145): \$20,000,000

Value in USD at new rate (102): \$28,431,373

FX LOSS ON JPY DEBT: $\$28,431,373 - \$20,000,000 = \$8,431,373$

CARRY TRADE SCORECARD:

Annual interest saving: \$1,260,000

Time period of carry trade: 18 months

Total interest saving: $\$1,260,000 \times 1.5 = \$1,890,000$

FX loss on debt repayment: (\$8,431,373)

NET LOSS: $(\$8,431,373) + \$1,890,000 = (\$6,541,373)$

LESSON: The carry trade offers apparent savings of \$1.26M/yr

but exposes the company to unlimited FX loss.

The yen move of 30% wiped out 6.7 years of interest savings

in a single month. Never borrow in a foreign currency

without a matching revenue stream in that currency

OR without a full cross-currency swap.