

ACROSS MARKETS AND BORDERS

Enterprise, Trade and Leadership with Purpose and Integrity

PART V | GLOBAL FINANCE, TRADE AND ECONOMIC STATECRAFT



CHAPTER 17

INTERNATIONAL FINANCE AND CROSS-BORDER PAYMENTS

Foreign Exchange, Risk, Trade Finance and Settlement

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CHAPTER 17 | INTERNATIONAL FINANCE AND CROSS-BORDER PAYMENTS

Foreign Exchange, Risk, Trade Finance and Settlement

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Abstract

International finance begins when a cross-border commercial promise must survive currency movement, funding constraints, counterparty risk, bank intermediation, compliance controls, and final settlement. This chapter develops an integrated treasury-to-payment architecture linking foreign-exchange markets, parity conditions, corporate exposure measurement, hedging, international financing, working capital, trade finance, correspondent banking, clearing, settlement, and emerging payment technologies. It explains spot, forward and cross rates; purchasing-power and interest-rate parity; transaction, translation and economic exposure; forwards, futures, options, swaps, natural hedges and operational responses; and the economics of letters of credit, documentary collections, guarantees, export finance and open-account trade. African evidence is central through PAPSS, mobile money and Airtel Africa, while Airbus provides a comparative global hedging case. The chapter distinguishes financial messaging from settlement, hedging from speculation, accounting translation from cash exposure, and legal compliance from moral legitimacy. Christian moral reasoning treats finance as stewardship of claims, liquidity, risk and power, requiring truthfulness, fair dealing, inclusion, prudence, accountability and responsibility for foreseeable consequences.

Keywords: international finance; foreign exchange; currency exposure; hedging; treasury management; trade finance; letters of credit; cross-border payments; settlement risk; African payments

Learning Outcomes

By the end of this chapter, the reader should be able to:

No.	Learning outcome
1	Explain the international financial architecture linking firms, banks, central banks, foreign-exchange markets, payment infrastructures, trade-finance providers and regulators, with particular attention to African financial systems.
2	Read and calculate direct, indirect and cross exchange rates; distinguish bid, ask, spread, value date and market convention; and calculate forward premiums or discounts without confusing a quotation convention with economic appreciation or depreciation.
3	Derive and critically apply relative purchasing-power parity, the Fisher relation, covered interest parity, uncovered interest parity and the international Fisher effect, explaining why parity conditions are benchmarks rather than guaranteed forecasting rules.
4	Evaluate exchange-rate forecasts using macroeconomic, market-implied and statistical evidence while recognizing structural breaks, model uncertainty and the classic difficulty of outperforming simple benchmarks.
5	Distinguish transaction, translation and economic exposure, identify the cash-flow mechanism behind each, and construct an exposure register by currency, amount, timing, confidence and offset.
6	Explain why a value-maximizing firm may hedge despite the Modigliani-Miller benchmark, including financial distress, tax convexity, financing frictions, investment continuity, agency problems and risk-bearing capacity.
7	Design and calculate basic hedges using forwards, futures, options, FX swaps and currency swaps, choosing instruments according to exposure certainty, tenor, liquidity, basis, collateral, optionality and counterparty risk.
8	Build natural and operational hedges through matching, netting, leading and lagging, currency clauses, pricing, sourcing, financing and operational flexibility, and identify when such measures merely relocate rather than reduce risk.
9	Explain international financing choices, currency-matched borrowing, liquidity buffers, cash pooling, trapped cash, intercompany funding and treasury controls, and apply currency-consistent WACC and cash-flow reasoning at an introductory level.
10	Construct a simplified multinational capital-budgeting analysis that distinguishes project and parent cash flows, taxes, remittance constraints, exchange assumptions and political risk, while leaving full valuation and investment appraisal to Chapter 18.
11	Compare advance payment, open account, documentary collections, documentary credits, standby credits, demand guarantees, factoring, forfaiting, supply-chain finance and export-credit support using commercial risk, bank risk, cost, documentation, working-capital and relationship criteria.
12	Trace a documentary credit under UCP 600 and a documentary collection under URC 522, identifying the roles, documentary conditions, discrepancies, independence principle and operational limits of bank undertakings.
13	Explain correspondent banking, Nostro and Vostro accounts, SWIFT messaging, clearing, settlement, RTGS, instant-payment systems and payment-versus-payment, and distinguish communication of an instruction from movement and finality of funds.
14	Analyze cross-border payment performance through cost, speed, access, transparency, liquidity, interoperability, foreign-exchange conversion, settlement risk, fraud and failure recovery rather than through headline transfer time alone.

No.	Learning outcome
15	Evaluate PAPSS, mobile money, fast-payment interlinking, ISO 20022, APIs, tokenized money, stablecoins and central-bank digital currency proposals through interoperability, monetary integrity, governance, cyber resilience, inclusion and evidential maturity.
16	Apply AML/CFT, KYC/KYB, sanctions screening, fraud controls and payment-message data requirements proportionately while recognizing de-risking, exclusion, false-positive, privacy and due-process consequences.
17	Apply Christian moral reasoning alongside consequentialist, rights-based, deontological, justice, virtue, care and stakeholder perspectives to dilemmas involving financial exclusion, sanctions, speculation, hidden fees, predatory pricing, corruption, surveillance and unequal bargaining power.
18	Use the Cross-Border Finance and Payment Stewardship (CFPS) Protocol to design, challenge, execute and review a treasury, trade-finance or payment decision with explicit economic, legal, operational and moral guardrails.

Concept Map and Chapter Roadmap

INTERNATIONAL FINANCE AS A TREASURY-TO-SETTLEMENT SYSTEM

Commercial obligation becomes exposure, financing, payment and final settlement under governance.

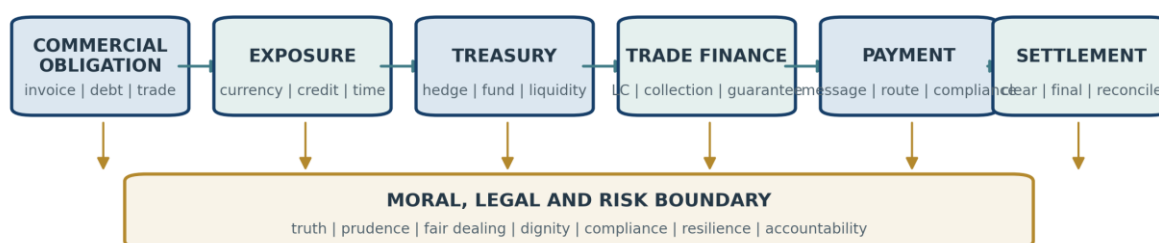


Figure 17.1. International finance as a treasury-to-settlement system.

Source/Note: Author's synthesis. The architecture follows the approved Book Blueprint and connects commercial exposure, treasury decisions, trade-finance instruments, payment messaging, clearing and settlement within legal, risk and moral boundaries.

Chapter 16 ended at the customer-market interface. It showed how an international marketer can price, distribute and communicate an offer across currencies and institutions, but it deliberately left the treasury question unresolved. Chapter 17 begins when those customer-facing commitments become receivables, payables, funding needs and payment instructions. Its central question is not merely whether a firm can quote a foreign price. It is whether the cash value promised by that price can be financed, protected, collected, transmitted and finally settled with acceptable risk, cost and moral legitimacy.

The approved purpose is therefore practical and theoretical at once. This chapter owns corporate foreign-exchange exposure, multinational finance, trade finance and cross-border payment settlement. It assumes the exchange-rate macroeconomics of Chapter 14, the multinational strategy of Chapter 15, the international pricing and route-to-market logic of Chapter 16, and the accounting foundations of Chapter 9. It does not reteach portfolio theory, securities valuation, venture-capital deal mechanics or full FDI project appraisal, which belong to Chapter 18. It identifies trade-law and sanctions interfaces but leaves formal legal doctrine, statecraft and commercial diplomacy to Chapter 19. It uses digital technologies as financial infrastructure without taking over the technology-strategy scope of Chapter 20.

The internal sequence is deliberate. Sections 17.1-17.4 establish the problem, scope, institutional architecture and African context. Sections 17.5-17.8 develop FX market mechanics, parity conditions, forecasting and corporate exposure. Sections 17.9-17.14 move from hedging theory to derivatives, natural hedges, treasury, financing and multinational capital-budgeting interfaces. Sections 17.15-17.20 develop trade-finance methods, documentary instruments, guarantees and export finance. Sections 17.21-17.25 follow a payment from messaging through clearing and settlement, then examine African payment integration, fintech, ISO 20022 and emerging rails. Sections 17.26-17.28 address financial crime, sanctions, cyber and fraud risks before applying the framework to Airtel Africa and Airbus. Section 17.29 integrates faith, ethics and moral reasoning. The final sections provide the CFPS professional protocol, recurring errors, synthesis, questions, cases, an evidence exercise, references and the hand-off to Chapter 18.

SCOPE BOUNDARY | What Chapter 17 owns, and what it leaves to neighboring chapters

Chapter 17 owns foreign-exchange market mechanics, corporate FX exposure, corporate hedging, multinational treasury and financing, trade-finance instruments, correspondent banking, payment messaging, clearing and settlement, and the governance risks attached to those systems. Chapter 14 owns country-level exchange-rate regimes and open-economy macroeconomics. Chapter 16 owns customer-facing international pricing and marketing. Chapter 18 owns securities analysis, portfolio construction, CAPM, full investment valuation, FDI appraisal and venture capital. Chapter 19 owns trade-law doctrine, legal remedies, formal sanctions policy analysis, diplomatic negotiation and geoeconomic statecraft. This chapter crosses those interfaces only far enough to make financial decisions coherent.

Chapter Architecture and Scope Control

Editorial design question	Chapter 17 answer
Approved purpose	Give managers a practical and theoretically grounded understanding of global financial markets, FX exposure, corporate risk management, trade finance and payment settlement.
Immediate prerequisites	Chapters 9, 14, 15 and 16, with decision and risk discipline from Chapters 4-5 and governance foundations from Chapter 13.
Principal duplication risks	Re-teaching exchange-rate regimes from Chapter 14; marketing price architecture from Chapter 16; investment valuation and portfolio theory from Chapter 18; trade-law doctrine and geoeconomics from Chapter 19.
Major theory streams	Parity conditions; market microstructure; corporate risk-management theory; exposure measurement; working-capital and treasury theory; documentary trade-finance rules; payment-system economics; settlement-risk theory; interoperability and network effects.
Main evidence streams	BIS FX and settlement surveys; GFXC FX Global Code; FSB/CPMI cross-border payment monitoring; ICC banking rules and Trade Register; ADB trade-finance survey; Afreximbank and PAPSS; GSMA mobile-money evidence; corporate risk disclosures.
African cases	PAPSS as an opening payment-integration problem; Airtel Africa as a corporate FX-risk case; mobile money and trade-finance access as recurring evidence.
Global comparison	Airbus treasury and long-horizon currency hedging; CLS/PvP and Project Nexus as payment-infrastructure comparisons.
Quantitative applications	Spot/forward/cross-rate calculations; parity conditions; forward and option hedges; exposure sensitivity; WACC currency consistency; parent cash-flow appraisal; trade-finance cost; remittance and settlement-risk calculations.
Core moral questions	When does risk transfer become speculation? When does compliance become exclusion? Who bears opaque FX spreads and payment fees? How should firms treat sanctions, privacy, vulnerable customers, and power over liquidity or credit?

Opening Case: PAPSS and the Financial Problem of Trading Across Africa Without Paying Twice for Distance

A Rwandan importer buys industrial inputs from a supplier in Ghana. The commercial logic is simple: goods move from one African economy to another, and payment should move in the opposite direction. Yet the financial path can be more circuitous than the shipment. Where the buyer and seller do not share a readily convertible currency pair or a direct banking relationship, the payment may be translated through a major reserve currency and routed through correspondent banks outside the two trading countries. Each additional conversion and intermediary can create fees, FX spreads, liquidity demands, compliance checks, processing time and points of failure. The economic border is therefore not only a customs post. It can be embedded inside the payment architecture itself.

The Pan-African Payment and Settlement System (PAPSS), developed by Afreximbank in collaboration with the African Union and the AfCFTA institutions, was designed to reduce some of these frictions by allowing participating institutions to initiate cross-border payments in local currencies and settle through a common architecture. PAPSS reported that Morocco became its seventeenth country of presence in July 2025 and that Algeria became the eighteenth the following month. In February 2026, its linkage with Kenya's Pesalink was announced as connecting more than 80 Pesalink participants to more than 160 PAPSS participating banks, enabling 24/7 cross-border transfers into Kenyan banks and mobile-money operators through local-currency settlement arrangements. In July 2026, the Bank of Central African States (BEAC), the regional central bank serving the six CEMAC economies, joined PAPSS, creating an additional institutional route for connecting

Central African payment systems with the wider network. These are system-reported reach indicators, not proof that every bank, corridor or end-user proposition in the participating jurisdictions is live, equally liquid, equally priced or used at comparable scale (PAPSS, 2025a, 2025b, 2026a, 2026b).

The system matters because payment architecture changes the economics of trade. A trader that must first obtain US dollars may face a currency spread and a shortage of dollar liquidity before the underlying supplier risk is even considered. A local-currency route can reduce one layer of dependence, but it does not abolish FX economics. Someone still bears the risk of converting and settling between currencies whose market depth, central-bank arrangements and liquidity conditions differ. A payment that is technically real time at the messaging layer may still require liquidity, prefunding, end-of-cycle settlement or exception handling. A system that reduces cost for large banks may not automatically reach a microenterprise whose provider does not participate. Financial integration is therefore an architecture, not a slogan.

Africa's broader trade-finance context raises the stakes. Afreximbank's *African Trade Report 2025* described an African trade-finance gap of roughly US\$100 billion per year. Globally, the Asian Development Bank's 2023 survey estimated unmet trade-finance demand of US\$2.5 trillion in 2022, up from US\$1.7 trillion in 2020 (Afreximbank, 2025; Beck et al., 2023). A payment rail cannot by itself solve a credit gap, and a credit line cannot by itself solve a settlement bottleneck. Yet the two interact. A firm that waits longer for payment needs more working capital. A bank that cannot verify counterparties or payment data cheaply may ration credit. A supplier facing uncertain settlement may demand advance payment. Improvements in identification, data quality, interoperability and settlement can therefore affect trade financing indirectly even when they do not create credit by themselves.

The case also reveals questions of power and policy. Reducing reliance on a third-country settlement currency can strengthen regional monetary autonomy and lower some transaction costs. It can also concentrate important functions in a new network whose governance, cybersecurity, access criteria and dispute arrangements become consequential. A system can be regionally owned yet still impose burdens on weak participants if liquidity requirements are poorly designed. A local-currency objective can be strategically attractive while individual firms still rationally prefer a more liquid reserve currency for particular contracts. Responsible analysis must distinguish the continental aspiration from the economics of a specific corridor and transaction.

PAPSS signal	What it demonstrates	What it does not prove
18 countries of presence by August 2025	Expanding institutional reach across African jurisdictions.	Uniform transaction volume, liquidity, pricing or user experience across all corridors.
Local-currency payment design	Potential to reduce repeated conversion through third currencies and shorten routing chains.	Elimination of exchange-rate risk or the need for liquidity management.
Pesalink link in Kenya in 2026	Interoperability can connect banks and mobile-money endpoints through existing domestic infrastructure.	That every participant provides identical fees, limits, compliance processes or instant finality end to end.
More than 160 participating banks reported through the linkage	A growing institutional network.	Universal access for SMEs, informal firms or consumers in every member country.
Connection to AfCFTA objectives	Payment infrastructure can complement lower trade barriers.	That payment reform alone creates competitive production, trade finance or viable demand.

MANAGERIAL INSIGHT | A payment rail is not the same thing as a payment outcome

A cross-border payment should be evaluated as an end-to-end chain. Ask who initiates it, which currency is debited, where FX conversion occurs, who provides liquidity, which messages travel, which intermediaries screen them, when the beneficiary receives usable funds, when obligations become final, what happens if one leg fails, and who bears each fee and risk. Speed at one stage can coexist with delay or exposure elsewhere.

The opening case gives the chapter its central problem: **How can an enterprise preserve the economic value of a cross-border promise from pricing and invoicing through financing, risk transfer, payment instruction and final settlement?**

17.1 Why International Finance and Cross-Border Payments Matter

International business creates financial claims that are not fully visible in the physical transaction. An exporter can win a profitable order and still lose margin if the invoice currency depreciates before collection. An importer can secure a low supplier price and still suffer a cash-flow shock if its home currency weakens before payment. A multinational can report translation losses even when no foreign subsidiary has remitted cash. A bank can transmit a correct payment message while the underlying funds remain exposed to settlement risk. A seller can receive an apparently strong letter of credit and

discover that documentary conditions are impossible to satisfy. These are different financial problems, and competent management begins by naming them correctly.

The scale of the global FX market makes the issue unavoidable. The BIS 2025 Triennial Central Bank Survey reported average daily OTC foreign-exchange turnover of US\$9.6 trillion in April 2025, up 28% from 2022. FX swaps accounted for about US\$4.0 trillion per day, spot transactions US\$3.0 trillion and outright forwards US\$1.8 trillion. The US dollar was on one side of 89.2% of trades, and the four largest trading locations, the United Kingdom, United States, Singapore and Hong Kong SAR, accounted for roughly three quarters of turnover (Bank for International Settlements [BIS], 2025a). These figures describe wholesale market activity, not the value of real-economy trade, but they demonstrate the depth of the financial infrastructure through which currencies are exchanged and risks are transferred.

Cross-border finance also creates a mismatch between commercial time and financial time. Goods may be manufactured for weeks, transported for days and paid for months after shipment. Every gap creates a financing need. Where buyer and seller are far apart institutionally, trade finance can substitute bank credit, documents or guarantees for trust that has not yet been built. Where payment systems are fragmented, settlement can require correspondent banks and multiple balance-sheet positions. Where sanctions or AML controls are strict, a payment may be delayed even after commercial performance is complete. The international finance manager therefore coordinates time, currency, credit, liquidity, documentation and compliance.

For African enterprises, currency volatility, access to trade finance, dollar liquidity and cross-border payment costs can be especially material because many firms earn local-currency revenues while importing equipment, fuel, software, medicines, machinery or intermediate goods priced in major currencies. Yet the continent is also a source of payment innovation. Mobile-money systems, regional payment infrastructures and new interoperability initiatives show that African financial development is not simply a process of copying banking models from elsewhere. The analytical task is to determine which innovations genuinely reduce total cost and risk, and which merely relocate them.

17.2 The International Finance System: Claims, Institutions and Flows

International finance can be understood as a network of claims. A deposit is a claim on a bank. A bond is a claim on an issuer. A forward contract creates reciprocal future obligations. A letter of credit is a bank undertaking subject to stated conditions. A payment message instructs institutions to adjust claims, while settlement changes positions so that the financial obligation is discharged according to the rules of the relevant system. Thinking in claims prevents a common error: confusing an instruction, a promise, a clearing calculation and a final transfer of value.

At the center of the system are households, firms and governments that create real-economy payment obligations. Commercial banks provide deposits, credit, FX conversion and payment access. Dealer banks and non-bank liquidity providers make FX markets. Central banks issue settlement assets, operate or oversee payment systems and influence liquidity conditions. Correspondent banks connect institutions that lack direct account relationships. Market infrastructures clear trades, calculate obligations and may provide settlement services. Export credit agencies, multilateral banks and insurers absorb or redistribute trade and political risks. Regulators and standard setters shape prudential, AML, sanctions, consumer and operational requirements. Fintechs and mobile-money providers add new access layers while still depending, directly or indirectly, on regulated money and settlement arrangements.

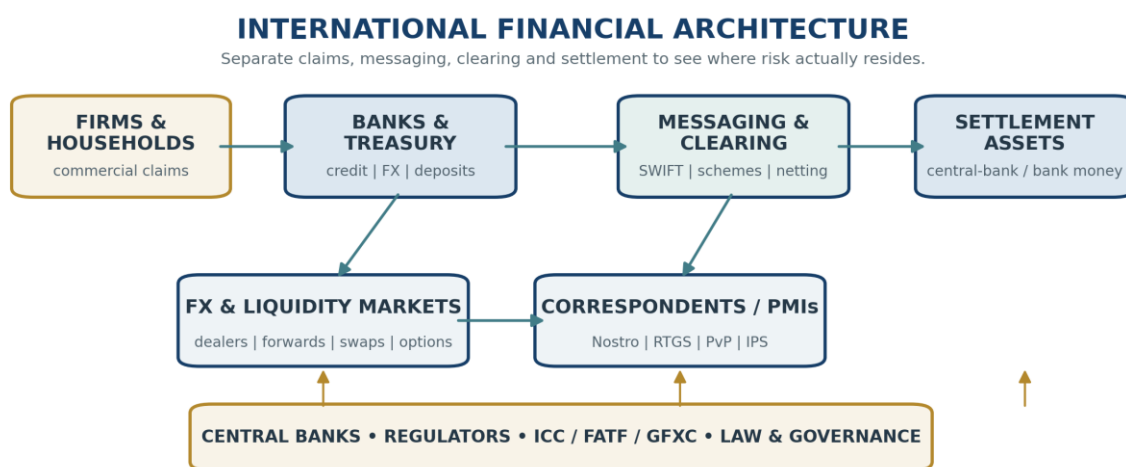


Figure 17.2. International financial architecture from commercial obligation to final settlement.

Source/Note: Author's synthesis. Messaging, clearing and settlement are shown separately because one can occur without the others being complete.

The architecture is layered because no single institution has to perform every function. SWIFT, for example, provides secure financial messaging and standards but is not itself the institution that generally settles the underlying bank funds. A correspondent bank can hold a Nostro account for another bank and move balances across its books. A domestic RTGS system can settle high-value obligations in central-bank money. CLS can provide payment-versus-payment for eligible FX trades. A mobile-money wallet may give a customer immediate local value while the provider's interinstitutional settlement occurs through bank or central-bank arrangements elsewhere in the chain. Professional analysis must therefore ask what asset is being transferred, whose balance sheet changes, and when the change becomes final.

17.2.1 The African financial context

African financial systems are diverse. South Africa has deep capital and banking markets relative to many peers; East Africa has highly developed mobile-money ecosystems; several West and Central African economies share regional currencies and central banks; many smaller markets rely heavily on a few banks and external correspondent relationships. These differences change the availability and pricing of hedges, the depth of forward markets, the convertibility of currencies and the ease of cross-border settlement. It is misleading to speak of an "African FX market" as though one quotation, derivative menu or settlement convention applied uniformly.

The policy challenge is equally heterogeneous. Deepening local-currency markets can reduce currency mismatches, but shallow markets cannot be made liquid by declaration. Regional payment systems can lower routing friction, but they require interoperable rules, participant trust and dependable liquidity. Capital controls can protect scarce reserves in some circumstances while increasing parallel-market incentives in others. The chapter therefore treats African financial development as an institutional design problem rather than as a linear movement toward one external model.

17.3 Historical and Theoretical Foundations

International finance developed at the intersection of money, trade and arbitrage. The classical law-of-one-price intuition asks why identical claims should have materially different prices once transaction costs and barriers are considered. Purchasing-power parity extends that intuition to goods-price levels. Interest-parity conditions connect spot and forward exchange rates to interest rates. Modern market microstructure then adds a more realistic observation: prices emerge from dealer inventories, order flow, balance-sheet costs, information and liquidity, not from frictionless equations alone. Corporate finance adds another layer by asking why a firm should hedge at all when diversified investors could theoretically manage risk themselves.

17.3.1 From parity to frictions

Parity conditions are best understood as no-arbitrage or equilibrium benchmarks. Covered interest parity (CIP) is particularly strong because a forward contract can remove exchange-rate uncertainty from a matched borrowing-investment strategy. Yet even CIP can deviate when balance-sheet capacity, regulation, collateral, counterparty risk or market segmentation makes arbitrage costly. Du, Tepper and Verdelhan (2018) documented persistent post-crisis CIP deviations for major currencies and showed that bank balance-sheet constraints help explain the cross-currency basis. The lesson is not that no-arbitrage reasoning is wrong. It is that the arbitrage trade itself consumes scarce institutional capacity.

Purchasing-power parity is weaker in short horizons because goods are not frictionless financial claims. Transport costs, tariffs, non-traded services, product differentiation, taxes, pricing-to-market and sticky prices allow large deviations. Rogoff (1996) described the resulting puzzle: real exchange rates appear to revert toward PPP over long horizons, but much more slowly than simple monetary models would suggest. A manager should therefore use PPP as a long-run anchor or diagnostic rather than a 90-day invoice forecast.

17.3.2 Why firms hedge

In a frictionless Modigliani-Miller world, a firm's financial risk-management policy need not create value because investors can diversify and capital markets fund good projects regardless of temporary cash-flow variation. Real firms face taxes, distress costs, costly external finance, information asymmetry, contractual restrictions and operational commitments. Froot, Scharfstein and Stein (1993) showed how hedging can create value when external finance is more costly than internally generated funds: stabilizing internal cash flow helps preserve the firm's ability to fund valuable investment when shocks occur. Allayannis and Ofek (2001) found evidence that large US nonfinancial firms used currency derivatives in ways associated with reducing exchange-rate exposure rather than simply taking speculative positions.

This theory gives treasury a disciplined objective. The goal is not to eliminate every fluctuation. It is to protect the firm's capacity to meet obligations and pursue valuable strategy against risks that it is poorly positioned to bear. Hedging is therefore an allocation decision about risk-bearing capacity. A firm should retain risks for which it has a genuine informational, operational or strategic advantage and transfer risks that can destroy value without offering commensurate expected return.

17.3.3 The payment-system perspective

Payment economics emphasizes network effects, interoperability, finality, liquidity and risk. A payment system becomes more useful as more relevant participants can reach each other, but network concentration can also create dependence on a few infrastructures. Faster settlement can reduce credit exposure but increase intraday liquidity needs. Richer data can improve straight-through processing and compliance but also expand the consequences of data misuse. Interoperability can lower fragmentation while creating common points of cyber and operational vulnerability. These are recurring trade-offs rather than temporary implementation defects.

Perspective	Core mechanism	Managerial contribution	Limitation if used alone
Purchasing-power parity	Goods-price differences and inflation eventually affect currency values.	Provides a long-run valuation anchor and real-exchange-rate intuition.	Weak short-horizon forecast where trade costs, non-tradables and sticky prices matter.
Interest parity	Interest-rate differentials relate spot and forward exchange rates through arbitrage or expected depreciation.	Connects treasury pricing, forward points and financing choices.	Market frictions, basis, credit and balance-sheet constraints can create deviations.
Market microstructure	Order flow, dealer inventories, liquidity and information shape exchange-rate formation.	Explains spreads, execution cost and short-horizon price dynamics.	Does not by itself determine long-run macro value.
Corporate hedging theory	Risk management can preserve investment capacity and reduce costs created by market imperfections.	Clarifies why firms may hedge even if investors are diversified.	Can justify over-hedging unless exposure, horizon and governance are explicit.
Network and payment economics	Interoperability, network effects, liquidity and finality determine payment performance.	Makes end-to-end payment architecture visible.	Can understate legal, political and distributive questions if treated as engineering only.
Institutional perspective	Rules, convertibility, capital controls, enforcement and trust shape feasible financial choices.	Explains why the same instrument works differently across countries.	Country labels can become vague unless the precise constraint is identified.

17.4 Foreign-Exchange Markets, Quotations and Conventions

Foreign exchange is the price of one monetary unit in terms of another. The arithmetic is simple only after the quotation is defined. In this chapter, unless otherwise stated, the spot rate is written as:

$$S_{H/F} = \text{units of home currency H per one unit of foreign currency F}$$

If a Rwandan firm treats the Rwandan franc (RWF) as home currency and the euro as foreign currency, an illustrative quotation of RWF 1,650 per EUR means that one euro costs RWF 1,650. A rise from 1,650 to 1,700 under this convention means the RWF has depreciated against the euro because more home currency is required to buy one euro. The economic statement depends on the quotation direction. Analysts should never say "the exchange rate rose" without specifying which currency is in the numerator and denominator.

From the home-currency perspective, a direct quotation expresses units of home currency per unit of foreign currency, while an indirect quotation expresses the reciprocal. Thus RWF 1,650 per EUR is a direct RWF quotation for a Rwandan firm; its reciprocal is approximately EUR 0.000606 per RWF. Because the labels are perspective-dependent, professional reports should state the currency pair, quotation direction and units rather than relying on the words direct or indirect alone.

17.4.1 Bid, ask and spread

Dealers normally quote two prices. The bid is the price at which the dealer buys the base or foreign currency under the stated convention; the ask is the price at which the dealer sells it. If EUR/RWF is quoted 1,648/1,654 RWF per EUR, a customer selling euros receives approximately RWF 1,648 per euro, while a customer buying euros pays approximately RWF 1,654. The spread compensates the market maker for inventory, adverse-selection, operational and balance-sheet costs as well as profit. In less liquid currencies, spreads can widen materially, especially during stress.

A simple proportional spread can be expressed as:

$$\text{Relative spread} = \frac{\text{Ask} - \text{Bid}}{(\text{Ask} + \text{Bid})/2}$$

For the illustrative 1,648/1,654 quote, the midpoint is 1,651 and the relative spread is approximately 0.36%. That number is not the customer's total transaction cost if the provider adds a fee or uses a retail rate different from the wholesale market.

WORKED EXAMPLE | Converting a foreign-currency receivable at bid

A Kigali exporter receives EUR 250,000. Its bank quotes RWF 1,648/1,654 per EUR. Because the firm is selling euros to the bank, it receives the bid: $250,000 \times 1,648 = \text{RWF } 412,000,000$. Using the ask by mistake would overstate proceeds by RWF 1,500,000. The example shows why the side of the market matters even before any forecast is made.

17.4.2 Cross rates

A cross rate derives the price of two currencies from their prices against a third. Suppose illustrative wholesale mid-rates are RWF 1,450 per USD and KES 129 per USD. Since one dollar buys 129 Kenyan shillings and costs RWF 1,450, the implied RWF price of one KES is:

$$S_{\text{RWF/KES}} = \frac{1,450}{129} \approx 11.24$$

So one KES is approximately RWF 11.24 before spreads and fees. Cross rates are useful for detecting inconsistent quotations, but real-world arbitrage depends on executable bid-ask prices, timing, transaction size, credit limits and settlement costs.

17.4.3 Spot, forward, swap and value date

A spot FX transaction exchanges currencies at an agreed rate for a standard settlement date, commonly two business days for many currency pairs, though conventions vary. An outright forward fixes today the rate for exchange at a future value date. An FX swap combines a near-leg exchange with a reverse exchange at a later date. It is widely used for short-term funding and liquidity management and accounted for the largest category of global FX turnover in the 2025 BIS survey (BIS, 2025). Currency swaps are longer-term contracts that exchange cash-flow streams, often involving principal and interest in different currencies.

The forward rate is not simply a market forecast of the future spot rate. Under covered interest parity, it primarily reflects the interest-rate differential between the two currencies, adjusted in real markets for basis and transaction costs. Confusing a forward discount with a forecasted depreciation is one of the most persistent errors in introductory international finance.

17.4.4 Forward premiums and discounts

For a maturity of n days, an annualized forward premium on the foreign currency under the H/F quote can be approximated by:

$$\text{Forward premium} \approx \left(\frac{F - S}{S} \right) \left(\frac{365}{n} \right)$$

Suppose the spot RWF/EUR rate is 1,650 and the 90-day forward is 1,675. The foreign currency trades at a 90-day forward premium of about 1.52%, or roughly 6.15% annualized on a simple 365-day convention. Market conventions can use different day counts, so professional calculations must follow the contract standard rather than a textbook default.

17.4.5 Market conduct and execution

The FX Global Code, last updated in December 2024, sets principles of good practice concerning ethics, governance, execution, information sharing, risk management and settlement. It is not law and does not replace applicable regulation, but it is an important wholesale-market benchmark (Global Foreign Exchange Committee [GFXC], 2024). The January 2025 review strengthened guidance on settlement risk and transparency around certain transaction practices. For corporate treasurers, the Code reinforces a broader principle: execution quality is not measured only by the quoted rate. Conflicts of interest, pre-hedging, information handling, benchmark use, settlement arrangements and disclosure all matter.

17.5 Parity Conditions: Benchmarks, Not Prophecies

Parity conditions link prices across markets. Their value is analytical: they reveal what would have to be true for arbitrage or equilibrium to eliminate differences. Their danger is pedagogical overconfidence. A formula can be exact under its assumptions while the assumptions fail in the market that a manager actually faces.

17.5.1 Law of one price and purchasing-power parity

The law of one price states that an identical tradable good should have the same price across locations once prices are converted into a common currency and relevant costs are considered. Absolute PPP generalizes this to price levels:

$$S_{H/F} \approx \frac{P_H}{P_F}$$

Relative PPP focuses on changes. If home inflation is expected to exceed foreign inflation, the home currency should depreciate approximately by the inflation differential over time:

$$\frac{\Delta S}{S} \approx \pi_H - \pi_F$$

If Rwandan inflation were 7% and euro-area inflation 2% over a period, relative PPP would suggest roughly 5% RWF depreciation against the euro under the RWF/EUR quote, all else equal. This is an equilibrium benchmark, not a prediction that overrides capital flows, policy changes, productivity, risk premia or market intervention.

17.5.2 The Fisher relation and international Fisher effect

The Fisher relation decomposes a nominal interest rate into a real return and expected inflation:

$$(1 + i) = (1 + r)(1 + \pi^e)$$

For modest rates, i is approximately $r +$ expected inflation. If real rates are similar across two countries, differences in nominal rates may partly reflect expected inflation differences. The international Fisher effect extends this reasoning to expected currency change, suggesting that a higher nominal interest rate can be associated with expected currency depreciation. In practice, risk premia and time-varying real rates prevent the relation from functioning as a mechanical forecast.

17.5.3 Covered interest parity

With S quoted as home currency per foreign currency, covered interest parity for the same maturity is:

$$\frac{F}{S} = \frac{1 + i_H}{1 + i_F}$$

The logic is arbitrage. One unit of home currency invested domestically should produce the same home-currency terminal value as converting into foreign currency, investing abroad and locking the future conversion with a forward. If not, a riskless arbitrage appears in the frictionless model.

WORKED EXAMPLE | Deriving a theoretical forward from interest rates

Assume a one-year spot rate of RWF 1,450/USD, a RWF interest rate of 8% and a USD rate of 4%. CIP implies $F = 1,450 \times (1.08/1.04) =$ approximately RWF 1,505.77/USD. The RWF trades at a forward discount under this quote because one future dollar costs more RWF. If an actual executable forward were materially different, the analyst would first check bid-ask spreads, funding access, counterparty credit, collateral, capital controls and basis before declaring an arbitrage.

The global financial crisis and subsequent regulatory environment demonstrated that CIP deviations can persist even in major currencies. Du et al. (2018) showed that the cross-currency basis is related to bank balance-sheet costs and quarter-end regulation. For currencies with shallow offshore markets, convertibility constraints or segmented funding, deviations can be larger and more persistent.

17.5.4 Uncovered interest parity

Uncovered interest parity replaces the forward hedge with an expectation of future spot rates:

$$E_t\left(\frac{S_{t+1} - S_t}{S_t}\right) \approx i_H - i_F$$

Unlike CIP, UIP is not a riskless arbitrage condition because the future spot rate is unknown. Empirical deviations are common, and strategies that borrow low-yield currencies to invest in high-yield currencies have sometimes earned positive carry, though with crash risk. The professional lesson is clear: an interest differential is not free return, and expected currency movements are not guaranteed to offset it on the decision horizon.

17.5.5 A parity diagnostic table

Condition	Core relation	Strongest use	Why it can fail in practice
Absolute PPP	$S \approx PH/PF$	Long-run valuation intuition	Non-tradables, taxes, transport, differentiated goods, administered prices.
Relative PPP	$\Delta S/S \approx \pi_H - \pi_F$	Inflation-consistency check	Risk premia, capital flows, policy, productivity, sticky prices.
Fisher relation	$(1+i) = (1+r)(1+\pi_e)$	Separating nominal return into real rate and inflation expectations	Real rates and risk premia differ across markets.
CIP	$F/S = (1+i_H)/(1+i_F)$	Forward pricing and arbitrage benchmark	Balance-sheet constraints, credit, collateral, segmentation, capital controls, basis.
UIP / IFE intuition	$E(\Delta S/S) \approx i_H - i_F$	Expected-return reasoning	Currency risk premium, carry, expectation errors, structural breaks.

EVIDENCE CHECK | A parity equation is not a forecast guarantee

Use parity conditions to test internal consistency and identify mechanisms. Do not report a future exchange rate to false precision merely because a formula produces one. A decision should show the benchmark, the market quote, the assumptions that separate them and the consequence if the assumptions fail.

17.6 Exchange-Rate Forecasting and the Discipline of Humility

Forecasts matter because budgets, tenders, procurement, debt service and investment plans have future currency consequences. Yet exchange rates incorporate monetary policy, inflation expectations, capital flows, political risk, commodity prices, global risk appetite and positioning. Many of these variables are themselves difficult to forecast, and their exchange-rate effects can change across regimes.

Meese and Rogoff's (1983) classic out-of-sample study found that major structural exchange-rate models of the 1970s failed to outperform a random-walk benchmark at horizons up to twelve months, even when realized future values of explanatory variables were supplied. Later research has refined the result rather than abolished the challenge. Some models improve in particular regimes, currencies or horizons, but there is no universal forecasting model that reliably converts macro fundamentals into short-horizon exchange rates.

A professional forecasting process should therefore use multiple lenses. A macro model examines inflation, rates, external balances, fiscal conditions, reserves and terms of trade. Market-implied information uses forward curves, options and risk reversals while remembering that these prices include risk premia and liquidity. Technical or time-series methods can summarize momentum or mean reversion but should not be mistaken for causal explanation. Scenario analysis asks how exposure behaves under plausible shocks. The decision should then be tested against the cost of being wrong rather than judged only by point-forecast accuracy.

17.6.1 Forecast, scenario and hedge are different objects

A forecast is an estimate of what will happen. A scenario is a conditional description of what could happen. A hedge is a contractual or operational response that changes the consequence if something happens. The distinction is crucial. A treasurer can hedge a payable even when the central forecast predicts a favorable currency move because the firm may have little capacity to absorb the adverse tail. Conversely, a firm may deliberately leave part of a low-consequence exposure unhedged if hedge cost exceeds the value of risk reduction.

17.6.2 A forecast governance template

Question	Required discipline
What is the horizon?	Match model and evidence to the cash-flow date, not a generic annual view.
What is being forecast?	Spot rate, average rate, closing rate, distribution, or threshold probability.
Which variables drive the view?	State mechanism and direction, not just correlation.
What is the benchmark?	Compare against random walk, market forward or other simple baseline.
What would falsify the view?	Define signposts and update conditions.
What is the decision consequence?	Quantify cash, covenant, margin and liquidity effects across scenarios.
Who owns override authority?	Separate independent risk challenge from trading or commercial incentives.

17.7 Corporate Foreign-Exchange Exposure

Currency risk is not the same as foreign-currency accounting balances. Adler and Dumas (1984) emphasized economic exposure as the sensitivity of value to exchange-rate changes, including firms with no obvious foreign-currency items on their balance sheets. A domestic utility can be exposed if its customers or competitors are import-dependent. A local manufacturer can gain from depreciation if imported competitors become more expensive. Exposure is therefore a causal relationship between currency movement and future value, not merely the presence of a foreign-currency invoice.

17.7.1 Transaction exposure

Transaction exposure arises from contracted or highly probable foreign-currency cash flows whose home-currency value changes with the exchange rate. Typical items include receivables, payables, interest, principal, royalties and committed purchases. The exposure is usually measurable by currency, amount and date, which makes it the most straightforward category to hedge financially.

Suppose a Rwandan exporter has a EUR 1,000,000 receivable due in 90 days. At a spot rate of RWF 1,650/EUR, its current translated value is RWF 1.65 billion. If the euro weakens to RWF 1,550 by collection, proceeds fall by RWF 100 million. If it strengthens to RWF 1,750, proceeds rise by the same amount. The exposure is asymmetric only if the firm has options, pricing clauses, offsets or other nonlinear features.

17.7.2 Translation exposure

Translation exposure arises when financial statements of foreign operations are converted into the reporting currency of the parent. Exchange-rate changes can alter reported assets, liabilities, equity and performance even when no cash is remitted. Accounting standards determine the translation method and location of resulting differences. Translation exposure matters for reported ratios, covenants, investor interpretation and balance-sheet presentation, but it should not be confused automatically with a cash-flow loss.

A good treasury policy therefore states whether the objective is to protect cash flow, accounting equity, earnings volatility, covenant headroom, distributable cash or some combination. Hedging the wrong metric can add cost while leaving the economically relevant risk intact.

17.7.3 Economic or operating exposure

Economic exposure is the sensitivity of future operating cash flows and enterprise value to currency changes. It includes the competitive response of prices, volumes and costs. An importer may initially suffer when home currency weakens, but if competitors import the same input and customers accept price increases, long-run exposure may be smaller. An exporter may appear to benefit from depreciation, but imported components, foreign-currency debt or wage adjustment can offset the gain. The exposure evolves through the business model.

A simple empirical representation is:

$$\Delta V_t = \alpha + \beta_{FX} \Delta S_t + \varepsilon_t$$

where β_{FX} summarizes observed sensitivity of firm value or cash flow to exchange-rate changes. Such regressions can be useful diagnostics but do not by themselves identify causation. Exchange rates may move with commodity prices, interest rates or macro shocks that also affect the firm. Exposure analysis should combine statistical evidence with operational mapping.

17.7.4 Building an exposure register

A treasury exposure register should include confirmed and forecast exposures but distinguish confidence levels. It should record currency, gross amount, natural offsets, net amount, expected date or time bucket, cash-flow type, business owner, hedge eligibility, existing hedge, hedge accounting status where relevant, settlement method and residual risk. Forecast exposures should be probability-weighted or managed through hedge ratios appropriate to confidence rather than treated as if they were contracted receivables.

Exposure item	Currency	Gross amount	Natural offset	Net exposure	Timing	Confidence	Primary risk
Export receivable	EUR	1,000,000	EUR supplier payment 250,000	750,000 long EUR	90 days	Contracted	EUR depreciation vs home currency
Equipment purchase	USD	600,000 payable	USD revenue 150,000	450,000 short USD	120 days	Contracted	USD appreciation
Forecast software fees	USD	1,200,000 annual	None	1,200,000 short USD	12 monthly buckets	80% forecast	Rate and volume uncertainty
Subsidiary net assets	KES	accounting position	local liabilities	net investment	long term	Existing	Translation and strategic value

PRACTICE TOOL | Exposure before instrument

Never begin a hedging meeting with "Should we buy a forward or an option?" Begin with the exposure. What cash flow changes, by how much, when, through which mechanism, and what loss would matter to strategy? Instrument selection is downstream from exposure diagnosis.

17.8 Measuring Exposure, Cash-Flow-at-Risk and Stress

The simplest risk measure is sensitivity. If an unhedged USD payable is US\$2 million and the home currency weakens by 10%, the home-currency cost rises by approximately 10%, before nonlinear pricing, tax or operating responses. A sensitivity table is often more useful to a manager than a sophisticated model because it directly connects exchange rates to liquidity and margin.

For a portfolio of currencies, risk becomes less intuitive because exposures can offset or reinforce each other. A firm can use scenario matrices, historical stress episodes, Monte Carlo simulation or cash-flow-at-risk methods, drawing on the statistical and simulation principles developed in Chapters 4 and 5. This chapter does not reteach VaR methodology. It adds a treasury requirement: the risk measure must match the cash-flow horizon, recognize nonlinearity from options, include basis and liquidity risk where material, and be translated into decisions about cash, debt headroom and hedge capacity.

17.8.1 A simple cash-flow stress table

Suppose a company has net USD payables of US\$4 million and net EUR receivables of EUR 2 million over the next quarter. Let current illustrative rates be RWF 1,450/USD and RWF 1,650/EUR. The unhedged home-currency positions are RWF 5.8 billion payable and RWF 3.3 billion receivable. Consider three independent currency shocks:

Scenario	RWF/USD	RWF/EUR	USD payable cost	EUR receivable proceeds	Net cash effect vs current
Current	1,450	1,650	(5.80bn)	3.30bn	baseline
Home currency - 10% vs both	1,595	1,815	(6.38bn)	3.63bn	-RWF 250m
Home currency +10% vs both	1,305	1,485	(5.22bn)	2.97bn	+RWF 250m
USD stress only +15%; EUR unchanged	1,667.5	1,650	(6.67bn)	3.30bn	-RWF 870m

The first symmetric scenario looks partly self-hedging because the EUR receivable offsets some USD payable exposure. The USD-specific shock reveals a larger loss because the two currencies do not necessarily move together. Cross-currency correlations are regime-dependent, so a natural hedge should be recognized only when the economic offset is reliable enough for the decision horizon.

17.9 Corporate Hedging Policy: From Risk Appetite to Governance

Hedging is the deliberate modification of financial exposure. It does not make uncertainty disappear. It changes who bears the risk, how the payoff behaves, what cash or collateral is required, and which new risks replace the original one. A forward removes much of the price uncertainty on a known amount but creates counterparty, liquidity and opportunity-cost considerations. An option caps an adverse outcome while preserving favorable movement, but its premium is an explicit cost. A natural hedge reduces reliance on derivatives but can distort sourcing or financing if pursued mechanically. Treasury policy must therefore optimize the whole risk system rather than minimize one volatility measure.

17.9.1 The economic rationale for hedging

A well-governed firm first asks whether exchange-rate variability can destroy value. Common channels include financial distress, breach of covenants, inability to fund positive-NPV projects, sharp price changes that damage customer relationships, working-capital shocks and management distraction. Tax systems can also create convex costs where volatile pre-tax income produces a higher expected tax burden. Agency problems can work in both directions: managers may hedge excessively to protect their positions, or speculate because gains are rewarded while losses are shifted to shareholders or creditors.

The Froot et al. (1993) framework is especially useful because it links risk management to real investment. If a currency shock would force a firm to cancel a high-value expansion, the cost of that shock exceeds the accounting FX loss itself. The appropriate hedge protects investment capacity. This also explains why two firms with identical gross exposure may choose different hedge ratios. The firm with ample cash, low leverage and flexible capital expenditure can retain more risk than a highly leveraged firm whose critical project depends on stable internal funding.

17.9.2 Risk appetite and hedge objectives

A treasury policy should specify what volatility is acceptable, which exposures qualify for hedging, approved instruments, maximum tenors, counterparties, collateral limits, delegation authorities, hedge ratios, accounting treatment, documentation, valuation methods and exception procedures. The policy should distinguish risk management from trading. A derivative position without a documented underlying exposure, policy purpose or authorized risk limit deserves independent scrutiny.

Economic hedging and hedge accounting are related but not synonymous. A derivative can reduce cash-flow risk without qualifying for hedge accounting, and an accounting designation can fail if the required documentation, hedge relationship or effectiveness assessment is not maintained. Where hedge accounting is used, treasury and finance should align the hedged item and risk, instrument, hedge ratio, designation date, valuation evidence and ongoing monitoring under the applicable reporting framework. Accounting presentation should support transparent reporting of the economic risk decision rather than dictate whether an economically sensible exposure should be managed.

A disciplined hedge sequence begins by eliminating avoidable exposures only where doing so does not damage the business model. Treasury then nets genuine offsets, transfers residual risk with instruments suited to the amount, timing and uncertainty of the exposure, and deliberately retains only the risk the firm has capacity and a defensible reason to bear. The final step is continuous monitoring of basis, counterparty, liquidity, collateral and operational risks created by the hedge itself. This sequence is not a ranking in which derivatives are inherently inferior to natural hedges; its purpose is to prevent instrument choice from substituting for exposure diagnosis.

17.9.3 Hedge ratio and layering

The hedge ratio is the proportion of an exposure covered by hedging instruments. A contracted payable may justify a high hedge ratio because amount and timing are known. A forecast sale twelve months away may justify a lower initial ratio, increasing as the forecast becomes more certain. Layering hedges across maturities can reduce timing concentration and avoid placing the entire forecast at one market rate.

For exposure E and hedge notional H:

$$\text{Hedge ratio} = \frac{|H|}{|E|}$$

A hedge ratio above 100% can create a net speculative position if the underlying exposure fails to materialize. This is one reason forecast exposures require cancellation and rebalancing rules.

GOVERNANCE CHECK | The derivative can be correct and the governance can still be wrong

A hedge should have an identifiable exposure owner, treasury owner, independent valuation source, counterparty limit, settlement instruction, accounting treatment and escalation threshold. Many derivative losses arise not because the instrument was mysterious but because the mandate, notional, valuation, collateral or control process was weak.

17.10 Forward Contracts and Futures

17.10.1 Forward contracts

An FX forward is an over-the-counter agreement to exchange a specified amount of currencies at a future date for a rate agreed today. For a known foreign-currency receivable, the exporter can sell the foreign currency forward. For a payable, the importer can buy the foreign currency forward. The instrument converts an uncertain future home-currency amount into a known amount, subject to counterparty performance and the terms of the contract.

WORKED EXAMPLE | Hedging a euro receivable with a forward

A Rwandan exporter expects EUR 1,000,000 in 90 days. The current spot rate is assumed to be RWF 1,650/EUR and its bank offers a 90-day forward rate of RWF 1,675/EUR. By selling EUR 1,000,000 forward, the exporter locks RWF 1.675 billion. If the future spot rate is RWF 1,550/EUR, the hedge protects RWF 125 million compared with leaving the exposure unhedged. If the future spot rate is RWF 1,800/EUR, the exporter forgoes RWF 125 million of favorable currency movement. The forward does not create a loss relative to the policy objective merely because the unhedged outcome would have been better. Its purpose was certainty.

The economic result should be compared with the firm's budget rate, product margin and risk tolerance, not with hindsight. A treasurer who is rewarded for "beating the market" may be encouraged to delay hedges or take directional views inconsistent with corporate purpose.

17.10.2 Forward points, basis and credit

Quoted forward rates embed interest-rate differentials, but the executable corporate rate also reflects dealer spreads, counterparty credit, collateral terms and currency-market structure. In currencies subject to controls or limited deliverability, non-deliverable forwards (NDFs) may be used. An NDF does not exchange the restricted currency offshore. Instead, the parties settle the difference between the contracted forward rate and an agreed fixing, commonly in a major currency. NDFs can hedge value but may leave basis risk between the offshore fixing and the firm's actual onshore conversion rate.

17.10.3 Futures

Currency futures are standardized exchange-traded contracts with defined contract sizes, maturities and daily margining. Their central clearing can reduce bilateral counterparty risk, and market prices are transparent. Standardization, however, can create basis and timing mismatch for a corporate exposure. Daily variation margin can generate liquidity demands even when the hedge is economically effective over its full horizon. Futures therefore substitute one form of credit exposure with clearing, margin and basis considerations rather than providing a universally superior hedge.

Feature	Forward	Futures
Trading venue	OTC bilateral	Exchange-traded and centrally cleared
Customization	High for amount and date	Standardized contract specifications

Feature	Forward	Futures
Credit structure	Counterparty and collateral terms matter	Central clearing with margin requirements
Cash-flow timing	Usually settlement at maturity, subject to collateral	Daily mark-to-market and variation margin
Liquidity	Deep for major pairs; variable for others	High in listed contracts, limited currency universe
Best fit	Precise corporate cash-flow matching	Standardized, liquid exposures where basis is acceptable

17.11 Options: Paying for Asymmetric Protection

An FX option gives the holder the right, but not the obligation, to exchange currency at a specified strike rate. An importer with a foreign-currency payable can buy a call on the foreign currency, setting a ceiling on the home-currency purchase price while retaining benefit if the foreign currency weakens. An exporter with a foreign-currency receivable can buy a put, setting a floor on the conversion rate while retaining benefit if the foreign currency strengthens.

For a foreign-currency call with strike K and terminal spot rate S_T under the home-per-foreign quote, the payoff per unit of foreign currency is:

$$\text{Call payoff} = \max(S_T - K, 0)$$

For a put:

$$\text{Put payoff} = \max(K - S_T, 0)$$

The premium is paid for that asymmetric protection. It should not be treated as wasted money when the option expires out of the money. Like insurance, the economic question is whether the protection justified its expected cost given the firm's loss-bearing capacity.

WORKED EXAMPLE | Importer hedge with a currency call

A company must pay US\$500,000 in three months. It buys a USD call with a strike of RWF 1,500/USD for a premium equivalent to RWF 20/USD. If spot at maturity is 1,650, the option protects RWF 150 per dollar, or RWF 75 million before premium. Net protection is RWF 65 million after the RWF 10 million premium. If spot falls to 1,400, the company lets the option expire and buys dollars in the market, enjoying the favorable move while losing only the premium. This asymmetry is valuable when the exposure is uncertain or management wants a worst-case ceiling without surrendering upside.

17.11.1 Option combinations and hidden leverage

Collars can reduce premium by combining a purchased option with a sold option, for example buying a protective call and selling a put. The lower upfront cost is achieved by surrendering part of the favorable currency outcome. Zero-cost does not mean risk-free or costless in economic terms. Exotic structures can embed barriers, leverage, knock-outs or path dependence that behave poorly in stress. A policy should prohibit any structure whose worst-case payoff, liquidity demand or termination value cannot be explained clearly to the approving authority.

17.11.2 When options fit best

Options are particularly useful when the underlying exposure is uncertain, when downside protection is important but upside participation has strategic value, or when a tender or acquisition may not close. A forward used for a contingent exposure can become a speculative position if the transaction disappears. An option contains this contingency at the cost of premium.

17.12 FX Swaps and Currency Swaps

An FX swap combines two exchanges of principal in opposite directions at different value dates, usually a spot or near leg and a forward far leg. Economically, it is often a short-term funding instrument. A bank or corporation that has one currency and temporarily needs another can exchange principal now and reverse the exchange later. Because FX swaps accounted for about 42% of global FX turnover in April 2025, they are central to international dollar funding and liquidity management (BIS, 2025).

A cross-currency or currency swap is typically longer term and can exchange principal and interest streams in different currencies. A borrower may issue debt where it has investor access and then swap the cash flows into the currency

matching its operations. The apparent reduction in funding cost must be assessed after swap spreads, collateral, counterparty risk, basis and accounting implications.

17.12.1 Example: transforming funding currency

Suppose a firm can issue fixed-rate EUR debt at favorable terms but needs USD funding for a US dollar revenue project. Through a cross-currency swap, it can exchange EUR principal for USD principal and service USD cash flows while its swap counterparty services the EUR leg. If designed correctly, the synthetic USD liability can match project cash flows. The structure does not erase risk. It creates counterparty exposure, collateral requirements and potential basis between the swap and the underlying debt.

17.12.2 The treasury lesson

Swaps are most useful when they transform a funding or liquidity mismatch. They are dangerous when their economic purpose is vague. A treasury should be able to reconcile every material swap to an underlying funding, asset, liquidity or hedging objective and model its cash requirements under stress.

17.13 Natural Hedging and Operational Responses

Financial derivatives are only one way to manage currency exposure. A natural hedge aligns foreign-currency inflows and outflows so that the firm needs to convert only the net amount. Operational responses alter the business structure itself. These tools can reduce derivative dependence and long-run economic exposure, but they can also create hidden costs if the currency objective dominates commercial logic.

17.13.1 Matching and netting

A firm with USD revenues can borrow in USD or source some inputs in USD so that depreciation or appreciation affects both sides. Multinational groups can net intercompany receivables and payables by currency and date, reducing the gross amount that must be converted or settled. Bilateral netting reduces two-way flows between entities; multilateral netting uses a central process to offset obligations across the group. The legal enforceability, tax treatment, exchange-control rules and transfer-pricing implications of netting must be checked in each jurisdiction.

17.13.2 Leading and lagging

A firm may accelerate or delay a payment when a currency move is expected or when liquidity conditions favor one timing. This is called leading or lagging. The technique is constrained by supplier relationships, contractual terms, tax rules and capital controls. Using bargaining power to delay payment merely to gain FX advantage can impose financing costs on a weaker supplier and may be economically efficient for one entity while morally defective for the supply chain.

17.13.3 Pricing and currency clauses

Contracts can include currency-adjustment clauses, shorter quote-validity periods or indexation. These mechanisms share risk with customers rather than transferring it to a financial counterparty. They can preserve margin but may reduce demand or damage trust if repricing is opaque. Chapter 16 developed customer-facing international pricing; the treasury contribution is to make the currency mechanism explicit and test how pricing policy changes the residual exposure.

17.13.4 Operational diversification

Sourcing from multiple currency zones, locating costs closer to revenues, maintaining flexible production and diversifying markets can reduce economic exposure. Yet currency matching is not sufficient reason to choose a worse supplier, enter a weak market or duplicate inefficient capacity. Operational hedges should be justified through total strategic and operational value, not FX risk alone.

Natural or operational response	Risk reduced	New trade-off
Match revenue and debt currency	Debt-service exposure	Funding cost and refinancing market may differ
Match foreign revenues and purchases	Net transaction exposure	Supplier quality or strategic dependence may change
Multilateral netting	Gross conversion and settlement volume	Legal, tax, system and governance complexity
Shorten payment terms	Exposure duration	Customer or supplier working-capital burden
Currency adjustment clause	Margin sensitivity	Customer affordability, competitiveness and trust

Natural or operational response	Risk reduced	New trade-off
Geographic production diversification	Long-run operating exposure	Fixed cost, managerial complexity and political risk

17.14 International Financing, Cost of Capital and Treasury Management

International financing asks where, in what currency, at what maturity and under what legal and risk structure a firm should raise funds. The lowest coupon is not necessarily the lowest economic cost. A foreign-currency loan with a low nominal interest rate can become expensive if the borrower's home currency depreciates. A domestic loan can be expensive but reduce currency mismatch. A cross-currency swap can transform funding currency but introduce basis, collateral and counterparty costs. The correct comparison is an all-in risk-adjusted cost consistent with the cash flows the financing supports.

17.14.1 Currency matching and liability structure

A basic principle is to match debt-service currency to the currency of reliable operating cash flow where practical. This reduces the chance that a depreciation increases debt service precisely when local-currency revenue is unchanged. It is not always possible. Exporters may have diversified currency revenues; infrastructure projects may collect regulated local tariffs while imported capital equipment is financed in dollars; sovereign restrictions may limit local-currency debt depth. Where mismatch remains, the firm needs explicit hedging or stress capacity.

17.14.2 Local versus centralized financing

A multinational can finance subsidiaries locally, centrally or through a mixture. Local borrowing can match currency and build local banking relationships, but markets may be shallow or costly. Parent funding can exploit group credit strength and centralized liquidity, but it may create withholding tax, transfer-pricing, thin-capitalization, exchange-control and trapped-cash issues. A treasury centre can centralize netting, FX dealing, liquidity, banking relationships and risk measurement, but centralization should not disconnect decisions from local regulation and operating reality.

The financing menu itself can include local bilateral or syndicated bank facilities, revolving credit, commercial paper, medium-term notes and bonds, multilateral or export-credit-supported facilities, and intercompany loans. These sources should be compared on an all-in basis that includes currency, maturity, fixed or floating rate, fees, covenants, collateral, refinancing concentration, legal-entity access, market depth and hedge cost. An offshore loan with a lower headline coupon can be economically more expensive if currency depreciation, rollover risk or cross-currency basis overwhelms the initial interest saving; conversely, local funding may justify a higher nominal rate when it materially reduces currency mismatch and preserves operating resilience.

Interest-rate risk also interacts with currency choice. A floating-rate foreign-currency borrowing exposes the firm simultaneously to the exchange rate and the reference-rate path, while fixed-rate debt trades rate certainty for the possibility of remaining above future market rates. Interest-rate swaps can alter the fixed-floating profile, and cross-currency swaps can transform both currency and interest cash flows, but only by introducing counterparty, collateral and basis considerations. The financing decision should therefore be made on the whole cash-flow risk structure rather than by selecting the lowest observed coupon in isolation.

17.14.3 Cash pooling and trapped cash

Physical cash pooling transfers balances to a concentration account. Notional pooling offsets balances for interest calculation without necessarily moving principal, subject to bank and jurisdictional rules. Both can reduce idle cash and external borrowing. Cross-border pooling may be limited by capital controls, legal entity separateness, tax rules and insolvency protections. "Excess cash" is not freely movable merely because it appears on a consolidated balance sheet.

17.14.4 International working capital

Cross-border trade lengthens the cash-conversion cycle through manufacturing lead time, shipment, customs, documentation and payment terms. An exporter offering 90-day open-account terms effectively finances the buyer for three months after delivery, unless it discounts or finances the receivable. An importer paying in advance finances the supplier before receiving goods. Trade-finance instruments redistribute this working-capital burden together with credit risk.

A treasury should model the cash conversion cycle by currency and corridor. A firm can be profitable in accounting terms and still face a foreign-currency liquidity crisis because receivables arrive later than hard-currency payables. Liquidity buffers, committed credit lines and payment calendars are therefore part of FX risk management.

17.14.5 Cost of capital and currency consistency

The general weighted average cost of capital is:

$$WACC = w_E r_E + w_D r_D (1 - T)$$

Chapter 18 develops required returns and valuation in depth. The Chapter 17 requirement is currency consistency. A nominal cash flow in USD should be discounted with a nominal USD rate reflecting the relevant risk, not mechanically with a RWF discount rate. If analysts translate a USD project into RWF using forecast exchange rates, the inflation and risk assumptions embedded in those exchange rates must be consistent with the discount rate. Mixing real and nominal cash flows, or one currency's inflation assumptions with another currency's discount rate, can distort value materially.

17.14.6 Multinational capital budgeting: the treasury interface

A multinational project can create different cash flows for the project entity and the parent. Local profits may be taxed before dividends, royalties or interest are remitted. Withholding tax may apply. Capital controls may delay remittance. The parent can face exchange-rate changes between local generation and upstreaming. Subsidized local financing or political guarantees may change risk allocation. The treasury must therefore reconcile project cash flow with parent cash flow before valuation.

A simplified parent cash-flow expression is:

$$CF_t^{parent} = (Div_t + Roy_t + Int_t - ParentSupport_t)X_t - ParentTax_t$$

where X_t is defined explicitly as parent-currency units per one unit of local currency. If a market quote is given in the reciprocal convention, it must be inverted before multiplying the local-currency remittance by X_t . This unit discipline prevents a common valuation error and makes the exchange assumption auditable. The expression remains an analytical scaffold, not a substitute for jurisdiction-specific tax, accounting and legal advice.

WORKED EXAMPLE | Project cash flow can be positive while parent cash is constrained

A subsidiary generates LC 10 billion of distributable cash. Local rules permit only LC 6 billion to be remitted this year. A 10% withholding tax applies to the dividend, and the market exchange rate is quoted as 1,000 local-currency units per USD, equivalent to $X_t = \text{USD } 0.001$ per local-currency unit. Parent cash received is therefore LC 5.4 billion after withholding, multiplied by USD 0.001 per local-currency unit, or US\$5.4 million. The other LC 4 billion remains local cash. A consolidated income statement can show economic success while the parent still lacks the hard-currency liquidity needed to service debt elsewhere.

17.14.7 Treasury as control architecture

Treasury governance should separate dealing, confirmation, settlement and accounting where scale permits. Authorized counterparties and payment instructions should be independently maintained. Derivatives require independent valuation and collateral monitoring. Bank account openings and signatory changes require controlled approval. Payment master data should be protected against business-email compromise and unauthorized changes. The treasury function is therefore both a financial decision unit and a control environment.

17.15 Trade Finance: Financing Trust, Time and Performance

Trade finance exists because a cross-border sale creates a sequence problem. The seller would prefer cash before releasing goods. The buyer would prefer to inspect or resell the goods before paying. Transport separates shipment from receipt, law separates jurisdictions, and unfamiliar counterparties make enforcement uncertain. Trade-finance instruments redistribute three core risks: commercial credit risk, performance or documentary risk, and financing or liquidity risk.

The scale of unmet demand shows why the topic is not merely administrative. The Asian Development Bank estimated a global trade-finance gap of US\$2.5 trillion in 2022, defined as unmet requests for financing to support imports and exports. The survey covered 137 banks in 54 countries and 185 companies in 43 countries (Beck et al., 2023). Afreximbank's 2025 report described Africa's trade-finance gap at about US\$100 billion annually (Afreximbank, 2025). These estimates are not identical measures and should not be combined mechanically. They nevertheless indicate that access to working capital, guarantees and documentary instruments remains a material constraint on trade participation.

A payment term should therefore be understood as a financing arrangement. If an exporter grants 90-day open-account terms, it is extending credit to the buyer. If a buyer pays 100% in advance, it is financing the exporter and bearing performance risk. A letter of credit inserts a bank undertaking between them, provided documentary conditions are met. Each method changes price, bargaining power and working capital.

17.15.1 A risk continuum for payment terms

Method	Exporter risk	Importer risk	Bank role	Working-capital effect	Typical fit
Advance payment	Low after cleared receipt	High performance and delivery risk	Payment transmission	Buyer funds before shipment	New/high-risk buyer, scarce product, strong seller power
Confirmed irrevocable documentary credit	Low if compliant documents and confirming bank performs	Pays against documents, not physical inspection	Issuing bank and possibly confirming bank undertake payment	Can support pre/post-shipment finance	Higher country/bank risk, new relationship, large or strategic shipment
Unconfirmed documentary credit	Issuing-bank and country risk remain	Documentary control	Issuing/advising banks	Can support financing	Established acceptable issuing bank/country
Documentary collection D/P	Buyer can refuse documents; seller retains documentary control	Payment required for documents	Banks transmit documents/instructions, no payment guarantee	Seller carries credit and transit risk	Moderate trust, goods can be redirected, acceptable country risk
Documentary collection D/A	Higher exporter credit risk after acceptance	Deferred payment	Banks process acceptance/documents	Seller finances buyer unless discounted	Established buyer, acceptable tenor
Open account	High buyer credit and collection risk	Low before receipt	Payment only, unless financing added	Exporter finances receivable	Strong relationship, competitive market, credit-insured or financed trade

The table is not a moral ranking. Demanding advance payment may be prudent with a high-risk buyer, but it can exclude smaller buyers with limited working capital. Offering long open-account terms can deepen a relationship, but it can transfer financing stress to an exporter that cannot absorb it. Responsible finance asks whether risk is allocated to the party best able to manage it and whether weaker parties understand the terms.

17.16 Documentary Collections Under URC 522

A documentary collection is a bank-mediated process in which the exporter entrusts documents to banks with instructions to obtain payment or acceptance from the buyer. Under the ICC Uniform Rules for Collections, 1995 Revision, Publication No. 522 (URC 522), the rules apply when incorporated into the collection instruction. Banks act on instructions, but they do not guarantee that the buyer will pay and are not required to examine documents to determine whether they comply with the underlying sales contract (International Chamber of Commerce [ICC], 1995).

17.16.1 D/P and D/A

Under documents against payment (D/P), commercial documents are generally released to the buyer against payment. Under documents against acceptance (D/A), documents are released when the buyer accepts a time draft or other deferred-payment undertaking. D/A therefore transforms immediate documentary control into buyer credit exposure for the remaining tenor. The exporter should not confuse the buyer's acceptance with a bank guarantee unless a bank has separately added an undertaking.

DOCUMENTARY COLLECTION: BANKS TRANSMIT DOCUMENTS AND INSTRUCTIONS

URC 522 does not turn the collecting banks into guarantors of buyer payment.

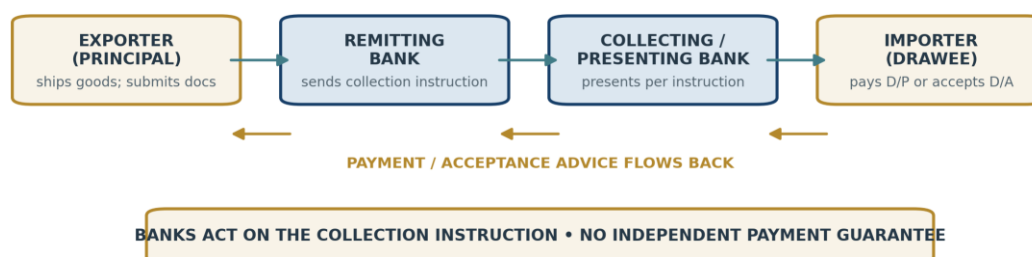


Figure 17.3. Simplified documentary collection flow.

Source/Note: Author's synthesis based on URC 522 roles. Exact documents, legal effects and bank procedures depend on the collection instruction, applicable law and banking practice.

17.16.2 What banks do and do not do

URC 522 makes the collection instruction central. Banks process documents and follow instructions but are not insurers of the goods, contract performance or buyer solvency. This matters when sales staff assume that "the bank has the documents" means "the bank will make us whole." The exporter remains exposed if the buyer refuses the documents, the goods deteriorate, storage costs accumulate or legal recourse is difficult.

A disciplined collection decision therefore asks whether goods are readily marketable elsewhere, whether title or control documents actually prevent delivery without the buyer's cooperation, how long a refusal can be tolerated, who bears demurrage or storage, and whether the buyer's jurisdiction recognizes the intended documentary control.

17.16.3 Electronic collections

The ICC has supplemented URC 522 for electronic presentation through eURC. Electronic records can shorten document transmission and reduce manual handling, but digitizing a weak process does not solve ambiguous instructions, false documents, cyber compromise or legal uncertainty. Digital trade finance requires identity, data integrity, interoperability and legal recognition in addition to technical messaging.

17.17 Documentary Credits and UCP 600

A documentary credit, commonly called a letter of credit (LC), is a bank undertaking to honor a complying presentation under the terms of the credit. The current ICC rules are UCP 600, the 2007 Revision of the Uniform Customs and Practice for Documentary Credits. UCP 600 applies when the credit expressly states that it is subject to the rules. The eUCP supplement, now available as version 2.1 with UCP 600 publications, addresses electronic presentation (ICC, 2007, 2023a).

The power of the LC is substitution. The exporter relies not only on the buyer's willingness to pay but on the issuing bank's undertaking, subject to documentary compliance. If a confirming bank adds its confirmation, the exporter gains an independent undertaking from that bank as well. The instrument can therefore transform buyer and country risk, but it does not eliminate documentary, fraud, bank or legal risk.

17.17.1 Parties and roles

The applicant is normally the buyer requesting issuance. The issuing bank issues the credit. The beneficiary is the seller entitled to present. An advising bank authenticates and advises the credit without necessarily adding payment responsibility. A confirming bank adds its own undertaking when authorized or requested under appropriate arrangements. A nominated bank may be authorized to honor or negotiate depending on the credit.

17.17.2 Independence principle and documents

A central UCP principle is that credits are separate from the underlying sales contract. Banks deal with documents, not goods, services or performance. This separation creates speed and predictability in documentary examination but also a boundary. A complying bill of lading does not prove that the goods are commercially satisfactory. Conversely, a genuine shipment can still produce a discrepant presentation if the documents do not meet the credit terms.

17.17.3 The LC lifecycle

DOCUMENTARY CREDIT: A BANK UNDERTAKING AGAINST COMPLYING DOCUMENTS

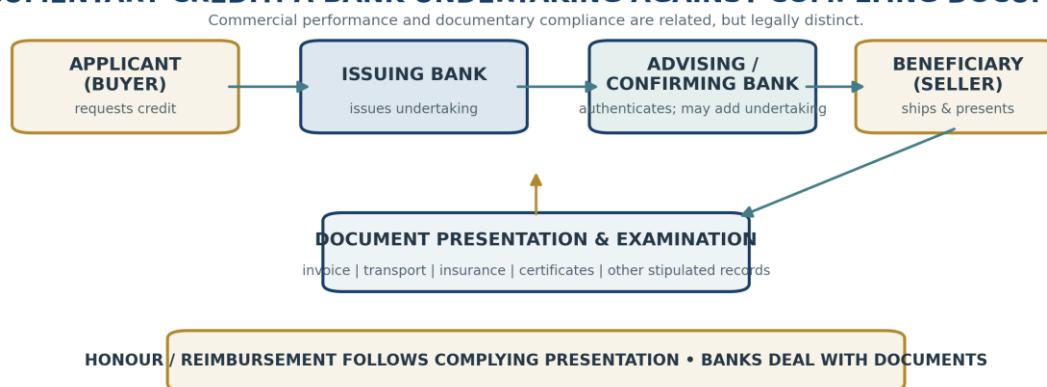


Figure 17.4. Simplified documentary credit lifecycle from contract to payment.

Source/Note: Author's synthesis based on UCP 600. The figure omits some reimbursing, nominated-bank and financing variations for clarity.

A typical sequence is: buyer and seller agree that payment will use an LC; the buyer asks its bank to issue; the issuing bank transmits the credit through an advising bank; the seller checks the terms before shipment; goods are shipped; the

beneficiary presents stipulated documents; the nominated, confirming or issuing bank examines the presentation; compliant documents are honored according to the credit; and documents pass to the applicant for customs or delivery purposes. The exact payment path depends on whether the credit is sight, deferred payment, acceptance or negotiation.

17.17.4 Discrepancies and document design

A discrepancy is a failure of the presentation to comply with the credit, UCP 600 and relevant international standard banking practice. Common problems include inconsistent names, late shipment or presentation, missing documents, incorrect transport data, insufficient insurance, unauthorized transshipment statements, mismatched amounts and certificates that cannot reasonably be obtained.

UCP 600 supplies the contractual rule framework, while the ICC International Standard Banking Practice for the Examination of Documents under UCP 600, ISBP 821 (2023), provides the current practice guide for examining commonly presented trade documents. Under UCP 600 Article 14(b), a nominated bank acting on its nomination, a confirming bank and the issuing bank each have a maximum of five banking days following the day of presentation to determine whether a presentation complies. That period is an examination limit, not a reason to design unnecessarily complex documentary requirements; clearer credits and controllable evidence reduce both discrepancy risk and processing friction (ICC, 2007, 2023c).

The best discrepancy strategy begins before issuance. The seller should review whether every requested document is necessary, obtainable, controllable and consistent with the Incoterm, transport mode and underlying contract. A buyer that writes impossible conditions into an LC can unintentionally destroy the payment protection both parties intended.

PRACTICE TOOL | The controllability test for LC conditions

For every LC condition, ask: Who can issue the required evidence? Can the beneficiary control that party? Does the condition measure something material to the buyer? Is it consistent with the transport and commercial structure? Can compliance be verified from documents without subjective judgment? If not, redesign the condition before the credit becomes operative.

17.17.5 Confirmation

Confirmation is especially valuable when the beneficiary accepts the commercial buyer but is unwilling to bear the issuing bank or country risk. The confirming bank prices its own credit, country, capital and liquidity exposure. Confirmation therefore has a cost and should be used where the risk transferred is material. A strong confirmation from an acceptable bank can also facilitate receivables financing because the payment obligation is more bankable.

17.17.6 UCP is not law

UCP 600 is incorporated by contract. It does not override mandatory law, sanctions or fraud doctrines in the relevant jurisdiction. Nor does it resolve every commercial dispute. Specialist legal advice is required where injunctions, fraud allegations, insolvency, sanctions or conflicting national law affect a credit. Chapter 19 develops the broader legal architecture.

17.18 Guarantees, Standby Credits and Export Credit Support

17.18.1 Demand guarantees

Demand guarantees support performance, payment, advance-payment recovery, bid obligations and other contractual risks. ICC Uniform Rules for Demand Guarantees (URDG 758) can apply when incorporated into the guarantee. A demand guarantee is typically independent of the underlying contract, subject to its terms and applicable law. It should not be confused with a surety arrangement in which defenses under the underlying contract may operate differently.

Common types include bid bonds, performance guarantees, advance-payment guarantees and payment guarantees. Each transfers a different risk. A buyer requesting a 20% advance-payment guarantee is protecting prepaid funds; a performance guarantee protects against defined non-performance risk. The amount, expiry, claim conditions and reduction mechanism should match the underlying exposure rather than becoming an open-ended source of leverage over the supplier.

17.18.2 Standby letters of credit

Standby letters of credit often function as independent payment or performance support rather than as the primary payment mechanism. ISP98 provides specialized ICC rules for standbys, while UCP 600 can also apply where incorporated. The drafting choice should reflect practice, legal advice and the instrument's purpose. Standbys are often drawn only after a default or specified event, unlike a commercial LC expected to be presented in the ordinary course of a shipment.

17.18.3 Export credit agencies and political risk

Export credit agencies (ECAs) and multilateral institutions can insure or guarantee payment, political and financing risks that private markets may not fully absorb. Support can enable longer-tenor exports of capital goods and infrastructure. Berne Union members reported supporting US\$3.714 trillion of new trade in 2025, including US\$3.345 trillion in short-term trade insured (Berne Union, 2026). Such scale demonstrates institutional importance, not the absence of moral hazard. Public support should be evaluated for additionality, pricing, environmental and social consequences, sovereign debt effects, corruption risk and whether taxpayers bear losses created by poorly governed transactions.

17.18.4 Factoring, forfaiting and receivables finance

Factoring converts receivables into earlier cash, with or without recourse depending on the structure. The factor may provide financing, collection and credit protection. Forfaiting typically involves purchase without recourse of medium-term trade receivables, often supported by bank or sovereign-quality obligations. Supply-chain finance can allow suppliers to receive early payment based on the buyer's credit quality while the buyer retains original or extended terms.

These techniques can improve working capital, but the accounting and moral analysis should examine who bears the financing cost and whether extended buyer terms are sustainable. A powerful buyer should not use supply-chain finance as a way to lengthen payment terms aggressively while presenting the arrangement as supplier support.

17.19 Choosing a Trade-Finance Structure

Trade-finance choice is a multi-criteria decision rather than a ladder in which more bank intermediation is always better. The structure should reflect counterparty credit, country and transfer risk, tenor, amount, goods characteristics, relationship maturity, documentation capacity, financing need, bank availability and cost.

A practical risk map includes at least six questions. First, can the buyer pay? Second, will the buyer pay when required? Third, can the seller perform and prove performance? Fourth, can banks in the relevant jurisdictions process the instrument? Fifth, can currency be converted and transferred? Sixth, what happens if sanctions, conflict, fraud, logistics or documentary errors interrupt the chain?

17.19.1 Total trade-finance cost

The quoted bank fee is only one component. For a financing period of n days, a simplified annualized all-in cost can be estimated by dividing the total financing and transaction costs by the net proceeds actually made available, then annualizing for the tenor. The numerator should include interest, bank and arrangement fees, confirmation or insurance cost, material FX cost, documentation cost and expected exception-handling cost. This is a decision approximation rather than a substitute for the lender's contractual annual-percentage-rate convention, tax treatment or jurisdiction-specific disclosure rules.

$$C_{ann} \approx \frac{I + F_b + C + X + D + E}{P_{net}} \left(\frac{365}{n} \right)$$

In the equation, I denotes interest; F_b bank and arrangement fees; C confirmation or insurance cost; X material FX cost; D documentation cost; E expected exception-handling cost; and P_{net} net financing proceeds. Expected exception cost includes discrepancies, amendments, demurrage, delayed release, fraud controls and operational labour. A cheaper LC can become more expensive than open-account insurance if it produces repeated discrepancies and shipment delays. Conversely, a higher upfront confirmation fee can be economical if it allows the exporter to finance a large receivable at much lower risk and capital cost.

17.19.2 Trade finance and financial inclusion

Banks often ration trade finance to smaller firms because fixed compliance and due-diligence costs are large relative to transaction size, documentation quality may be weaker, collateral is limited and historical data are sparse. Digital records, e-invoicing, transaction data and interoperable identity can reduce some information costs. They can also create new exclusion if firms without digital histories are automatically scored as high risk. Financial inclusion therefore requires both better information and proportionate human judgment.

17.20 Documentary Fraud, Trade-Based Money Laundering and Control

Trade documents can be manipulated to disguise value transfer, duplicate financing, misstate goods or obtain payment for transactions that do not exist. Trade-based money laundering can use over-invoicing, under-invoicing, multiple invoicing, false description and complex third-party structures. The existence of an LC or bank document check does not make the underlying trade genuine.

Controls should combine customer knowledge, transaction monitoring, document consistency, sanctions screening, price and quantity reasonableness where appropriate, shipping evidence, beneficial ownership, duplicate-finance detection and escalation for unusual routes or counterparties. Yet controls must be proportionate. An automated system that flags every transaction from a perceived high-risk region can create unjustified exclusion and drive legitimate trade into less transparent channels.

The professional objective is not zero false negatives at any cost. It is a defensible control system that identifies material risk while protecting lawful customers from arbitrary denial, preserving privacy and providing escalation or review where automated rules create false positives.

17.21 Correspondent Banking and the Cross-Border Payment Chain

A bank cannot maintain direct settlement accounts with every bank and currency system in the world. Correspondent banking solves this reach problem. One bank provides account and payment services to another, often holding a Nostro account, meaning "our account with you" from the respondent bank's perspective. The same account is a Vostro, "your account with us," from the correspondent's perspective.

Suppose Bank A in Rwanda needs to pay Bank C in Canada but lacks a direct CAD relationship. It may send instructions through a USD or CAD correspondent that has the required access. The chain can include several intermediaries. Each can screen, charge fees, request repairs or reject the payment. The beneficiary may receive less than the sender expected if intermediary fees are deducted along the route. Transparency therefore requires disclosure of both explicit sending fees and expected receiving deductions where known.

CORRESPONDENT BANKING: REACH THROUGH ACCOUNT RELATIONSHIPS

A SWIFT or other message can travel before the underlying account positions finally settle.

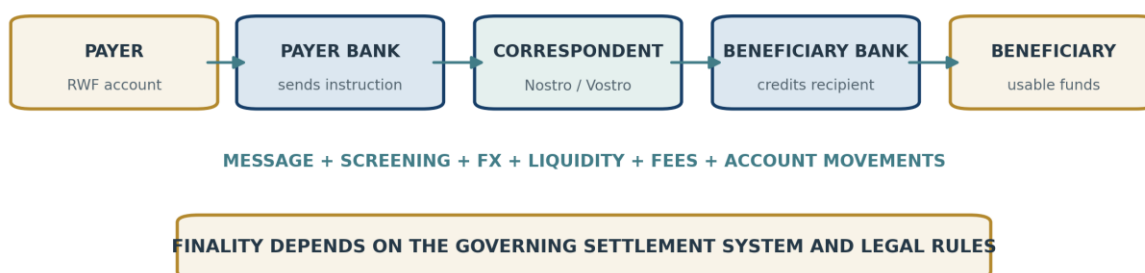


Figure 17.5. A simplified correspondent-banking payment chain.

Source/Note: Author's synthesis. Actual routing varies by currency, account relationships and payment infrastructure.

17.21.1 SWIFT is messaging, not money

SWIFT provides a secure network and messaging standards through which financial institutions communicate payment and securities instructions. The instruction can tell a correspondent how to debit and credit accounts, but the actual settlement occurs on the books of banks or payment infrastructures. This distinction is essential in discussions of sanctions, outages and new technologies. Replacing a messaging layer does not automatically replace the underlying accounts, liquidity, legal finality or FX conversion.

In November 2025, the global SWIFT community ended the coexistence period for legacy MT and ISO 20022 payment instructions under CBPR+, making ISO 20022 the required standard for cross-border payment instructions. SWIFT reported that 97% of payment instructions were using ISO 20022 immediately after the final cutover, with temporary conversion support for remaining traffic (SWIFT, 2025a, 2025b). The richer data can improve automation and compliance, but a richer message does not itself guarantee a faster or cheaper payment.

17.21.2 Correspondent banking and de-risking

Correspondent relationships create AML, sanctions and operational responsibilities. Banks have sometimes exited relationships that appear costly or high-risk relative to revenue, a process often called de-risking. Exit can be rational for a bank facing weak controls or uncertain liability, but widespread withdrawal can isolate countries, remittance firms and smaller banks, raising costs for legitimate users. The policy challenge is to improve risk management without converting risk-based controls into entire-country or entire-sector exclusion.

17.22 Clearing, Settlement and Finality

Messaging answers "what should happen." Clearing determines obligations between participants. Settlement discharges those obligations by transferring the relevant settlement asset according to system rules. Finality identifies when the transfer becomes irrevocable and unconditional under the applicable legal framework. These concepts matter because a payment can appear complete to an end user before interbank settlement is final, or a message can be accepted while settlement later fails.

17.22.1 RTGS and deferred net settlement

Real-time gross settlement (RTGS) systems settle individual payments continuously in central-bank money without netting them against later payments. This reduces credit exposure but increases intraday liquidity needs. Deferred net settlement systems accumulate obligations and settle net positions at defined times, reducing liquidity needs but creating exposure until settlement. Many modern payment ecosystems combine multiple layers, using instant customer crediting with separate interinstitutional settlement mechanisms.

17.22.2 Settlement risk in FX

FX settlement is unusual because two currencies must change hands. The classic Herstatt problem occurs when one party pays away the currency it sold but does not receive the currency it bought because the counterparty fails before the second leg settles. Time-zone differences historically amplified this principal risk.

The BIS 2025 settlement survey provides the most detailed recent measure. Average daily FX settlement obligations exceeded US\$14 trillion in April 2025. About US\$5.2 trillion, or 36%, settled through payment-versus-payment (PvP), which eliminates principal settlement risk by making one payment conditional on the other. A further US\$7.6 trillion, or 54%, used methods such as pre-settlement netting, intragroup settlement or timing controls that mitigate but do not fully eliminate settlement risk. More than US\$1.4 trillion, or 10%, remained on a gross bilateral basis and therefore fully exposed to principal settlement risk (Conway et al., 2026).

17.22.3 Payment-versus-payment and CLS

PvP links the two currency legs so that either both settle or neither settles. CLS Settlement is the most prominent multicurrency PvP service. As of June 2026, CLS settled eligible payment instructions across 18 currencies. Other PvP mechanisms exist in particular markets and regions. PvP coverage is not universal because currencies, counterparties or transaction types may be ineligible, and participants may lack access.

The BIS survey found that access and eligibility, not only technology, were major reasons for continued gross bilateral settlement. This matters for emerging and less-traded currencies. Global risk reduction cannot be achieved merely by encouraging firms to "use PvP" if their currency pair or bank cannot access an appropriate service.

17.22.4 Netting and liquidity

Pre-settlement netting reduces the principal amount that ultimately needs to settle. Conway et al. (2026) reported that pre-settlement netting reduced roughly US\$2.2 trillion of underlying obligations to about US\$337 billion in the surveyed period. Netting can dramatically reduce liquidity needs and settlement exposure, but its legal enforceability must be robust, especially in insolvency. Operational systems must also reconcile trades accurately so that a net amount does not conceal a disputed gross position.

WORKED EXAMPLE | Why PvP changes loss severity

Bank A must deliver US\$100 million and receive the equivalent EUR 92 million from Bank B. Under gross bilateral settlement, Bank A could deliver the US\$100 million and lose the full principal if Bank B fails before delivering euros. Under effective PvP, Bank A's USD leg is released only if the EUR leg is available according to the system's rules. Market risk from replacement cost can remain, but the principal exchange risk is eliminated.

17.23 Cross-Border Payment Performance: Cost, Speed, Access and Transparency

The G20 cross-border payments program organizes improvement around cost, speed, access and transparency. These dimensions interact. A provider can make a payment faster by prefunding more liquidity, which raises capital cost. A strict compliance process can reduce financial-crime risk while delaying payment. A low visible transfer fee can conceal a large FX spread. A corridor can be technically open but practically inaccessible because recipients lack accounts or identity documents.

The Financial Stability Board's 2025 progress report concluded that policy and infrastructure work had advanced but tangible improvement for end users remained limited at the global level and that the 2027 quantitative targets were unlikely

to be met satisfactorily without stronger implementation (Financial Stability Board [FSB], 2025). The appropriate conclusion is not that reform failed. It is that standards and roadmaps create enabling conditions, while domestic implementation, competition, interoperability and commercial incentives determine user outcomes.

17.23.1 G20 quantitative targets

Among the FSB targets, at least 75% of wholesale and retail cross-border payments should provide funds within one hour by end-2027. The retail-payment target also seeks a global average cost no greater than 1%, with no corridor above 3%. The remittance target uses a 2030 horizon and aims for a global average cost no greater than 3%, with no corridor above 5% (FSB, 2021, 2025). These are policy targets, not descriptions of current performance.

17.23.2 Remittance cost

The World Bank's Remittance Prices Worldwide database reported a global average cost of 6.36% for sending a relatively small remittance in its Q3 2025 data, well above the long-run policy goal (World Bank, 2025). The figure is an average across surveyed corridors and provider types; an individual customer can face much higher or lower cost. Digital products are often cheaper than cash-based services, but the relevant question is the total cost to the sender and recipient, including FX margins and payout fees.

WORKED EXAMPLE | Small percentages are large at remittance scale

At a 6.36% total cost, sending US\$200 costs about US\$12.72. At a 3% target cost, the same transfer costs US\$6.00, a saving of US\$6.72. For a family receiving repeated monthly transfers, the cumulative difference is economically material. Cost transparency should therefore show the amount sent, all fees, exchange rate, amount received and expected timing rather than advertising only a low front-end fee.

17.23.3 Why payments remain expensive

Cross-border payments combine compliance, FX, liquidity, messaging, correspondent banking, scheme fees, fraud losses, exception handling and final-mile distribution. Fragmented data standards require manual repairs. Limited competition can sustain wide FX margins. Small transaction values make fixed compliance cost significant. Operating-hour gaps delay settlement. Weak identity data increase false positives. A meaningful reform programme therefore targets the full cost stack.

17.24 African Payment Infrastructure: PAPSS, Mobile Money and Interoperability

Africa provides a particularly important laboratory for cross-border payment design because domestic innovation is strong while regional fragmentation remains material. The correct analytical stance is neither triumphalism nor deficit framing. Some African systems are world-leading in mobile-money use and instant payment access, while cross-border links, currency convertibility and merchant acceptance remain uneven.

17.24.1 PAPSS settlement models

PAPSS describes settlement structures in which participating banks send and receive local currency while the system coordinates cross-border obligations. Its sovereign settlement-agent arrangements can involve central banks providing settlement funds and FX rates, while commercial-bank settlement models can rely on designated commercial settlement agents. PAPSS documentation describes T+1 settlement for these models even where end-user payment messaging can be near-instant (PAPSS, n.d.-a, n.d.-b). This distinction illustrates a general rule: customer speed and interbank settlement timing can differ.

SIMPLIFIED PAPSS LOCAL-CURRENCY PAYMENT LOGIC

Customer-facing speed can differ from the interbank settlement cycle.

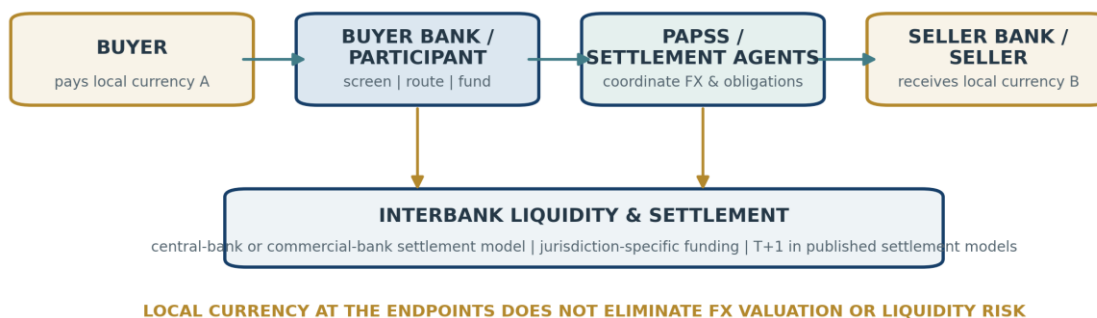


Figure 17.6. Simplified local-currency cross-border payment logic through PAPSS.

Source/Note: Author's synthesis based on PAPSS public settlement descriptions. Actual participant arrangements and liquidity models depend on jurisdiction and settlement-agent structure.

17.24.2 Local-currency settlement and FX risk

Local-currency payment can reduce the need for each customer to source a vehicle currency, but it does not eliminate the need to value one currency against another. The exchange function may move into the participating bank, settlement agent or system arrangement. The quality of the outcome therefore depends on FX pricing, liquidity, transparency and market depth. Local-currency settlement should be evaluated by all-in cost and resilience, not by the symbolic absence of a third currency alone.

17.24.3 Mobile money at scale

GSMA reported that mobile-money services processed about US\$2.1 trillion in transactions in 2025, with 2.3 billion registered accounts and 593 million active 30-day accounts. Sub-Saharan Africa accounted for the majority of new accounts and a large share of interoperable transaction activity (GSMA, 2026a, 2026b). Mobile money can lower last-mile access barriers, particularly where bank branch density is low. Cross-border use still requires FX, compliance, scheme interoperability and settlement between providers.

The growth of mobile money also changes the meaning of a "banking" payment system. A recipient may not need a conventional bank account to receive usable value. Yet consumer protection, agent liquidity, SIM-swap fraud, erroneous transfer recovery, network outages and data privacy become part of payment quality. Financial inclusion cannot be measured only by the number of wallets created.

17.24.4 Interoperability by design

The CPMI's 2026 monitoring emphasizes expanded access, longer operating hours, interoperable standards and links between fast-payment systems as important building blocks for cross-border improvement (Lammer et al., 2026). Interoperability means more than technical API compatibility. Participants need compatible identity, message, compliance, currency, dispute, settlement and governance rules. Two systems can exchange ISO 20022 messages and still be economically non-interoperable if legal finality or liquidity arrangements do not align.

17.25 ISO 20022, Fast-Payment Interlinking and New Payment Rails

17.25.1 ISO 20022 as a common financial language

ISO 20022 provides structured, extensible financial messages. Richer party, remittance and purpose data can improve reconciliation, screening and straight-through processing. SWIFT's November 2025 cross-border migration made ISO 20022 the required instruction standard for its CBPR+ environment, a major operational milestone. The standard is enabling infrastructure, not an outcome guarantee. Poor source data entered into a richer schema remain poor data.

An important next milestone is structured address data. SWIFT has announced that from 14 November 2026 fully unstructured postal addresses will no longer be accepted for CBPR+ payment messages; participants must use fully structured or hybrid address formats, and non-compliant messages may be rejected or delayed. As of this chapter's August 2026 publication date, that cutover is upcoming rather than already completed, so institutions should treat customer and counterparty master-data remediation as a current implementation task rather than a future abstraction (SWIFT, 2026).

17.25.2 Linking instant-payment systems: Project Nexus

More than 70 countries have domestic instant-payment systems, but cross-border connections remain fragmented. Project Nexus was developed by the BIS Innovation Hub and partner central banks as a standardized approach for linking domestic instant-payment systems. In 2025, central banks from India, Indonesia, Malaysia, the Philippines, Singapore and Thailand incorporated Nexus Global Payments to move the project toward live implementation (Bank for International Settlements Innovation Hub, 2025). Nexus is analytically important because it seeks to replace many bespoke bilateral links with a common connection model.

The promise should be stated cautiously. A standardized technical gateway can reduce integration cost, but actual cross-border service still depends on FX providers, sanctions and AML rules, access, dispute handling, consumer protection, scheme governance and commercial adoption. Interoperability is a governance achievement as much as a software achievement.

17.25.3 APIs and open payment architecture

Application programming interfaces can connect banks, fintechs, merchants and payment systems in near real time. Standardized APIs can reduce custom integration and support status tracking. They also enlarge the cyber attack surface and dependency on authentication, certificate management and vendor resilience. API availability is therefore not equivalent to open access. Governance decides who may connect, which data may be queried, how customers consent and who is liable for unauthorized transactions.

17.25.4 Tokenized deposits and distributed ledgers

Tokenization represents claims on money or assets on programmable ledgers. A tokenized commercial-bank deposit can in principle preserve a claim on a regulated bank while enabling atomic or programmable settlement on compatible infrastructure. Distributed-ledger technology can synchronize records and reduce reconciliation in some use cases. Its value depends on legal enforceability, interoperability and whether the chosen architecture actually solves a coordination problem that a conventional database cannot solve more simply.

17.25.5 Stablecoins

Stablecoins seek to maintain value against a reference asset, commonly a major currency. They can provide 24/7 transfer and programmable settlement across some digital networks. Their risks include reserve quality, redemption, governance, run dynamics, operational dependence, illicit-finance controls, consumer misunderstanding and monetary substitution. A payment that settles quickly in a private token can still expose the recipient to issuer or redemption risk that would not exist in central-bank money.

For emerging markets, widespread foreign-currency stablecoin use can create a tension between payment convenience and monetary sovereignty. Individuals may rationally prefer a stable unit during inflation or capital stress, while large-scale substitution can weaken local monetary transmission and accelerate capital flight. The chapter therefore rejects both extremes: stablecoins are neither inherently liberating nor inherently illegitimate. Their evaluation depends on the specific claim, reserve, legal, settlement and governance design.

17.25.6 Central-bank digital currencies

A retail CBDC is a digital liability of a central bank accessible to the public under the chosen design; a wholesale CBDC is aimed primarily at financial institutions or market settlement. Cross-border CBDC proposals seek to reduce correspondent layers or enable synchronized settlement. They also raise questions about privacy, capital flows, cyber concentration and centralization of payment data. A technically efficient design can still be institutionally undesirable if it creates disproportionate surveillance or weakens legitimate intermediary functions without clear benefit.

17.25.7 Technology selection matrix

Payment technology	Potential advantage	Key dependency	Principal governance risk
ISO 20022 messaging	Rich structured data and interoperability	Data quality and consistent usage guidelines	False confidence that standardization alone creates speed
Instant-payment links	Faster retail cross-border transfer	FX, compliance and scheme interoperability	Concentration and cross-system contagion
Mobile money	Broad last-mile access	Agent liquidity, interoperability, identity	Fraud, data misuse, exclusion through SIM/ID barriers
Tokenized deposits	Programmability with bank-money claim	Legal recognition and ledger interoperability	Fragmentation across token platforms

Payment technology	Potential advantage	Key dependency	Principal governance risk
Stablecoins	24/7 digital transfer, global reach	Reserve quality, redemption, network access	Run risk, dollarization, illicit use, consumer misunderstanding
CBDC	Central-bank settlement asset in digital form	Public policy, cyber resilience, privacy design	Excessive state visibility or disintermediation

17.26 AML/CFT, KYC, Sanctions and Fraud: Controlling Risk Without Automating Exclusion

Cross-border payments must operate within financial-crime controls. AML/CFT frameworks require institutions to understand customers, beneficial owners, transaction purpose and risk. KYC refers to customer identification and due diligence; KYB extends similar disciplines to businesses. Sanctions programs can prohibit or restrict dealings with designated persons, entities, sectors, vessels or jurisdictions depending on the relevant legal authority. Fraud controls protect customers and institutions against unauthorized or deceptive transfers. These objectives overlap operationally but should not be collapsed into one undifferentiated "compliance" function.

17.26.1 Risk-based due diligence

A risk-based approach allocates enhanced scrutiny where risk is higher rather than applying maximum friction to every customer. Customer risk can reflect ownership complexity, geography, product, delivery channel, transaction behavior and source of funds. The institution should document why a factor is relevant and avoid using protected or culturally loaded characteristics as crude proxies for risk.

The FATF Recommendations were most recently updated in June 2026. Changes to Recommendation 16 on payment transparency, agreed in June 2025, aim to improve consistency of information accompanying cross-border payments and strengthen tools for detecting fraud and error. FATF has set a longer implementation horizon, with countries expected to be ready by the end of 2030 rather than treating the revised requirements as instantly binding everywhere (Financial Action Task Force [FATF], 2026a, 2026b). Managers must therefore distinguish international standard setting from the actual law and implementation date in each jurisdiction.

17.26.2 Sanctions screening

Sanctions screening commonly checks payment parties, banks, vessels, locations and sometimes transaction narratives against relevant lists and restrictions. Screening can produce false positives because names are similar, transliterations vary and data are incomplete. A well-designed process combines automated matching with trained investigation, quality data, escalation and documented release or rejection decisions.

Sanctions are also morally contested instruments of statecraft. A firm is legally required to comply with applicable sanctions, but compliance does not settle every ethical question about the policy's proportionality, humanitarian effects or political legitimacy. Chapter 19 examines statecraft and sanctions policy in depth. Chapter 17 asks a narrower managerial question: how should a firm comply truthfully, avoid evasion or corruption, protect employees from unlawful pressure, and minimize avoidable harm to lawful counterparties when controls interrupt ordinary commerce?

17.26.3 Fraud and authorized push-payment risk

Payments can be lost through account takeover, business-email compromise, invoice redirection, SIM swap, social engineering and insider manipulation. Faster payment systems reduce the time available to detect and recall fraud. Strong controls include multi-factor authentication, payment limits, payee verification where available, independent callback for bank-detail changes, device and behavioral analytics, segregation of duties and customer education.

A common corporate fraud involves a supplier bank-account change. An attacker compromises email, sends plausible new banking details and pressures accounts payable to transfer urgently. No sophisticated cyber exploit is required if governance allows one email to change master data and release payment. The defense is procedural: verify changes through a known independent channel, separate master-data amendment from payment approval, and flag first payments to new accounts.

17.26.4 De-risking and exclusion

Financial institutions can reduce compliance exposure by exiting entire customer categories or correspondent relationships. This can protect the institution from poorly controlled risk, but indiscriminate de-risking can reduce remittance access, isolate humanitarian organizations, constrain small exporters and push flows toward less regulated channels. Responsible controls should therefore be risk-sensitive and explainable, with review mechanisms for legitimate customers.

ETHICAL DILEMMA | When compliance is legally correct but socially destructive

A bank has a lawful right to exit a small money-transfer company whose corridor produces low revenue and high monitoring cost. The exit would leave a diaspora community with only one expensive alternative provider. Is the bank obliged to retain the relationship? The legal answer may be no. The moral analysis should consider whether risks can be managed proportionately, whether pricing can reflect real cost, whether the exit creates foreseeable harm, and whether public policy has shifted excessive compliance cost onto private gatekeepers.

17.27 Cybersecurity, Operational Resilience and Payment Continuity

Financial infrastructure is a high-value cyber target because it combines money movement, sensitive identity data and time-critical operations. Cross-border payments add dependency on external banks, messaging networks, cloud providers, telecommunications, correspondent systems and foreign infrastructures. Cybersecurity is therefore part of settlement risk, not a separate IT appendix.

17.27.1 Threat surfaces

Threats include credential theft, payment-instruction manipulation, ransomware, distributed denial of service, malware in endpoints, API abuse, supply-chain compromise, insider fraud and data exfiltration. A payment message can be syntactically valid but fraudulent if the credentials used to create it were stolen. Cryptographic integrity protects transmission, not the legitimacy of the human or system that initiated the instruction.

17.27.2 Resilience principles

A resilient payment function identifies critical services, maps dependencies, uses strong authentication, segregates networks and duties, protects cryptographic keys, monitors anomalies, rehearses recovery, maintains alternative communication channels and defines manual fallback where safe. Business continuity plans must specify which payments are truly critical. During a disruption, attempting to process everything can overwhelm scarce recovery capacity.

17.27.3 Third-party and concentration risk

Cloud and specialized technology providers can improve resilience through scale and expertise, but they can also concentrate failure. A common vendor supporting many banks can become a systemic node. Contractual service levels are insufficient if the customer cannot migrate, test exit or access its own data during failure. Treasury and payments governance should therefore include third-party concentration, substitution time and exit readiness.

17.27.4 AI in payments and treasury

AI can support fraud detection, sanctions alert triage, cash forecasting, anomaly detection, document classification and customer service. Its value depends on data quality and human accountability. A model that reduces false positives in payment screening can materially improve both efficiency and inclusion. The same model can create opaque discrimination if it uses poorly governed proxies or if staff cannot challenge decisions. AI should support accountable judgment rather than become a mechanism for transferring responsibility to software.

17.28 African Corporate Case: Airtel Africa and the Reality of Multi-Currency Exposure

Airtel Africa provides a strong case because currency risk is not peripheral to its business model. The group operates across 14 African markets, generating most operating revenues and costs in local currencies while purchasing significant equipment and services in foreign currency. Its reporting currency is US dollars, so currency movements affect both operating economics and financial-statement translation.

For the year ended 31 March 2026, Airtel Africa reported revenue of US\$6.415 billion, up 29.5% in reported currency and 24.0% in constant currency. Underlying EBITDA was US\$3.162 billion. The difference between reported and constant-currency growth shows why financial analysis must separate operational change from translation effects. The annual report also disclosed derivative and FX gains of US\$127 million in the current period, compared with losses of US\$92 million in the prior period, while the earlier period included exceptional derivative and FX losses linked substantially to Nigerian naira devaluation (Airtel Africa plc, 2026).

The more instructive disclosure is sensitivity. Airtel reported that a further 1% movement of the US dollar against all operating-company currencies, assumed at the beginning of a 12-month period, would have an estimated impact of US\$60-62 million on revenue, US\$29-31 million on underlying EBITDA and US\$27-29 million on foreign exchange excluding derivatives. The largest exposure was the Nigerian naira, where a similar 1% movement was estimated to affect FX by US\$14-15 million. A separate balance-sheet sensitivity showed that a 5% USD movement against functional currencies

would affect profit before tax by approximately US\$157 million and equity by US\$33 million, all else equal (Airtel Africa plc, 2026).

These figures should not be interpreted as a forecast or as a claim that a 5% movement produces a perfectly linear economic outcome. They are management sensitivities under stated assumptions. They nevertheless expose three layers of currency risk. First, translation changes the USD presentation of local revenues and EBITDA. Second, monetary balances and foreign-currency obligations create transactional FX effects. Third, imported network equipment and services create economic exposure because currency depreciation can raise the local-currency cost of maintaining and expanding infrastructure.

Airtel's risk management includes foreign-exchange forwards, options, currency swaps and interest-rate swaps, and the company states that it uses derivatives for risk management rather than speculative purposes. It also seeks operational mitigation, including renegotiating some foreign-currency-denominated contracts into local currency where possible. After interest-rate swaps, approximately 40% of group borrowings were at fixed interest rates at 31 March 2026 (Airtel Africa plc, 2026).

17.28.1 What the case teaches

The first lesson is that currency exposure cannot be read from one line in the income statement. Constant-currency reporting helps separate operating momentum from translation, but it does not remove cash-flow exposure. The second lesson is that natural and contractual hedges matter alongside derivatives. The third is that emerging-market currency risk is often inseparable from business continuity. A large depreciation can raise capex and debt-service costs at the same time that customers face declining purchasing power.

The fourth lesson is moral. Passing the full FX shock immediately to customers may preserve margin but make essential connectivity less affordable. Absorbing the shock protects customers but can weaken investment capacity and service quality. Delaying suppliers can preserve cash while transferring the burden to firms with less financial resilience. Treasury decisions therefore distribute risk among customers, employees, shareholders, lenders and suppliers. There is no morally neutral hedge policy.

Airtel Africa 2026 signal	Financial interpretation	Management question
Revenue US\$6.415bn; 29.5% reported vs 24.0% constant-currency growth	Translation materially affected reported growth.	Which performance metrics should be evaluated in local, constant and reporting currency?
1% USD movement estimated to affect revenue by US\$60-62m	Group revenue has meaningful currency sensitivity.	Which exposures should be hedged, priced, matched or retained?
Nigeria largest disclosed FX sensitivity	Exposure is concentrated, not uniform across the 14 markets.	Should hedge policy vary by market liquidity, regulation and business criticality?
Derivatives plus operational mitigation	Risk is managed through multiple mechanisms.	How should treasury compare derivative cost with local-currency contracting and sourcing changes?
Material capex and imported equipment	Currency risk can affect network investment and long-run service.	How should the firm protect investment continuity without shifting all volatility to customers?

17.29 Comparative Global Case: Airbus and Long-Horizon Currency Hedging

Airbus sells commercial aircraft in a market where a large share of revenue is denominated in US dollars while a substantial portion of costs is incurred in euros. The mismatch creates structural economic exposure extending years into the future because aircraft order backlogs and production programs are long-dated. Airbus reports that roughly 75% of revenues are denominated in US dollars and that around 60% of that currency exposure is naturally hedged by dollar-denominated costs. The residual net exposure is managed through a long-term hedge portfolio (Airbus SE, 2026a).

Airbus explicitly states that its currency-hedging purpose is to manage EBIT volatility rather than generate profits from exchange-rate speculation. Its FY2025 financial statements reported an FX hedge portfolio with a notional amount of approximately US\$54.2 billion extending through 2030 and US\$11.9 billion of new hedge contracts added during 2025. By 30 June 2026, Airbus's investor exposure-coverage reporting showed a broader 'hedges and Euro conversion portfolio' of US\$74.3 billion after US\$9.5 billion of new USD coverage was added in the first half of 2026 (Airbus SE, 2026a, 2026b). The two figures use different disclosure definitions and therefore should not be added together or treated as if they measured the same portfolio perimeter. The distinction is itself a useful treasury lesson: notional amounts are meaningful only after the exposure, instrument set, reporting boundary and valuation basis are defined.

17.29.1 Layered hedging under a long production cycle

Airbus cannot wait until an aircraft is delivered to address currency risk because production costs and pricing commitments develop over years. Yet hedging the full notional of uncertain future revenue too early would create over-hedging risk if deliveries change. Long-horizon treasury therefore uses layered coverage, hedge maturities and portfolio management aligned to expected net exposure.

The case also demonstrates why accounting effects can diverge from economic protection. Hedge instruments are marked to market, and hedge-accounting rules affect timing of recognition. A hedge portfolio can show fair-value losses when the underlying expected revenues gain value, or vice versa. Management and investors need to interpret the economic relationship rather than judging derivatives in isolation.

17.29.2 Natural hedge first, derivatives second

Airbus's disclosed approach illustrates the logic developed earlier. Dollar costs offset a large part of dollar revenue before derivatives are applied. This reduces gross notional and avoids paying to hedge an exposure the operations already offset. The residual is then managed financially. The sequence is not universally optimal, but it is a disciplined example of exposure netting before instrument selection.

17.29.3 Comparative lessons for African firms

Few African enterprises have Airbus's hedge-market access, credit quality or long-dated derivative capacity. That makes the conceptual lesson more important, not less. A firm with a shallow local forward market should not imitate the instrument portfolio. It should imitate the logic: identify structural net exposure, distinguish firm commitments from forecasts, layer coverage according to certainty, preserve liquidity, avoid speculative mandates and connect treasury to real operating capacity.

MANAGERIAL INSIGHT | Hedge sophistication should follow exposure sophistication

The correct benchmark is not how many derivative products a treasury uses. A simple forward program with strong exposure data and controls can be superior to a complex option book built on weak forecasts. Sophistication means accurate exposure measurement, coherent objectives, proportionate instruments, liquidity awareness and independent governance.

17.30 Faith, Ethics and Moral Reasoning: Finance as Stewardship of Claims and Power

International finance is often presented as morally neutral plumbing beneath real commerce. That description is incomplete. Financial decisions allocate liquidity, decide whose risk is transferred, determine who receives credit, shape which transactions can settle and influence which persons or firms can participate in markets. A bank that closes a correspondent relationship, a treasury that delays a supplier, a platform that widens an FX spread, or a lender that refuses a small exporter is exercising economic power even when the action is lawful and technically defensible.

Christian moral reasoning begins with the dignity of persons and the obligation of truthful dealing. Scripture condemns dishonest measures in commerce ([Proverbs 11:1](#); [Leviticus 19:35-36](#)). The principle applies naturally to FX spreads, fees, benchmark execution, collateral valuations and financial disclosures. A quoted "zero fee" remittance is not truthful if an undisclosed exchange-rate margin carries the economic charge. A treasury report is misleading if it emphasizes favorable derivative gains while concealing the underlying exposure or downside.

Stewardship adds prudence. Jesus' teaching about faithfulness in handling worldly wealth emphasizes accountability in financial matters ([Luke 16:10-12](#)). In corporate finance, stewardship means that managers are not free to gamble with liquidity entrusted for wages, suppliers, debt service and investment merely because a speculative position could produce profit. Risk-taking can be legitimate where it serves productive enterprise and the risk is understood, bounded and proportionate. Speculation becomes morally problematic when decision makers seek private upside while exposing others to losses they did not knowingly accept.

Justice concerns the distribution of financial burdens. Scripture's concern for withheld wages ([James 5:4](#)) has direct relevance when powerful buyers stretch supplier terms to improve their own cash metrics. A 120-day payment term can be contractually valid and still function as forced financing from a smaller supplier. Likewise, aggressive de-risking can protect a bank's compliance position while imposing high costs on migrants, charities or small firms. Moral judgment asks whether the stronger party is externalizing cost simply because it can.

Neighbour-love does not require reckless lending or the abandonment of controls. It requires that the other party's good be taken seriously ([Philippians 2:4](#)). A bank that ignores money laundering can harm communities and undermine lawful commerce. A provider that makes transfers frictionless without fraud controls can expose customers to irreversible losses. Care for the customer therefore includes both access and protection.

17.30.1 Hedging versus speculation

The moral boundary is not determined solely by whether a derivative is called a hedge. A position should be assessed by purpose, notional, relation to underlying exposure, decision authority, transparency and consequence. A firm may rationally retain some currency risk. It may also use derivatives tactically within policy. The concern arises when treasury becomes a profit centre whose incentives reward directional bets using corporate balance-sheet capacity unrelated to the firm's productive vocation.

A consequentialist perspective evaluates expected gains and losses across stakeholders. A deontological perspective stresses duties of honesty, contract fidelity and authorization. Rights-based reasoning emphasizes property, privacy and due process. Justice asks who bears losses and who has access. Virtue ethics asks what habits the financial system cultivates, including prudence, courage, temperance and integrity. Stakeholder and care perspectives highlight relational dependence. Christian reasoning can learn from each while grounding the worth of persons and the moral limits of power in a theological account of creation, stewardship and neighbourly responsibility.

17.30.2 FX pricing and hidden extraction

Foreign-exchange conversion often involves information asymmetry. A sophisticated corporate customer can compare dealer quotes; a migrant sending a small remittance may not know the wholesale rate or the margin embedded in the retail quote. Charging for service is legitimate. Concealing the real charge is not. Fair pricing requires a defensible relationship between value, cost, risk and profit, with sufficient transparency for informed consent.

This does not imply that every corridor should have the same percentage fee. Small transfers can have higher fixed cost, illiquid currencies can require wider spreads and high-risk transactions can demand more screening. Justice is not identical pricing. It is transparent and non-exploitative pricing whose differences have a legitimate reason rather than taking advantage of ignorance or desperation.

17.30.3 Financial exclusion and risk selection

Finance necessarily selects risk. Banks cannot fund every borrower or process every transaction. The moral question is how selection is performed. A legitimate refusal can protect depositors, shareholders and the public. An arbitrary refusal can deny opportunity without due reason. Automated systems deserve special scrutiny because historical data may encode exclusion and because an opaque score can make appeal impossible.

A Christian approach does not demand equal outcomes regardless of risk. It demands truthful criteria, respect for persons, proportionality, review where decisions are consequential, and humility about what data can prove. "No data" should not be silently converted into "bad person" or "bad business."

17.30.4 Sanctions, conscience and moral limits

Sanctions create one of the hardest interfaces between law and ethics. A company must obey applicable law. Yet sanctions can have spillovers on civilians, employees, suppliers and humanitarian activity. A Christian professional should neither evade lawful restrictions nor treat every state-imposed measure as morally self-validating. The proper posture is lawful compliance, truthfulness, careful attention to exemptions and humanitarian channels, resistance to corruption, and morally serious assessment of foreseeable consequences. Formal policy evaluation belongs to Chapter 19, but individual financial decisions should still preserve conscience and human dignity within lawful boundaries.

17.30.5 Data, surveillance and payment convenience

Modern payments produce detailed data about location, counterparties, purchases and behavior. These data can reduce fraud and improve access. They can also create surveillance and commercial manipulation. The mere technical ability to profile a customer does not create a moral entitlement to do so. Data use should be proportionate to a legitimate purpose, secured, minimized where possible and subject to clear accountability.

CBDCs and centralized identity-linked payment systems make this issue especially visible, but the concern is not unique to governments. Private platforms can accumulate equally granular data and exercise access power without public-law safeguards. Moral analysis should therefore evaluate institutional design rather than assuming that state or private control is inherently benign.

17.30.6 A moral decision test for international finance

A cross-border finance decision should answer six questions. Is the economic claim truthful? Is the risk allocation understood and proportionate? Are fees and terms transparent enough for informed consent? Does the design exploit vulnerability or information asymmetry? Are compliance and security controls necessary and reviewable rather than indiscriminately exclusionary? Finally, if the decision became public and its full effects on weaker parties were known, could it still be defended as faithful stewardship?

FAITH AND VOCATION | Treasury is a stewardship ministry inside the enterprise

The treasurer handles promises that belong to others: wages not yet paid, supplier invoices not yet settled, customer funds in transit, lender capital, shareholder resources and liquidity needed for future work. Faithfulness in treasury therefore includes precision, restraint, truthful reporting, protection against fraud, refusal of corrupt shortcuts and the courage to tell leaders when a profitable financial maneuver creates unacceptable moral or survival risk.

17.31 The Cross-Border Finance and Payment Stewardship (CFPS) Protocol

The CFPS Protocol is a professional decision framework for treasury, trade finance and cross-border payment choices. It integrates commercial purpose, quantitative exposure, instrument design, operational settlement and moral accountability.

CROSS-BORDER FINANCE AND PAYMENT STEWARDSHIP (CFPS) PROTOCOL

Eight stages from real obligation to accountable learning.

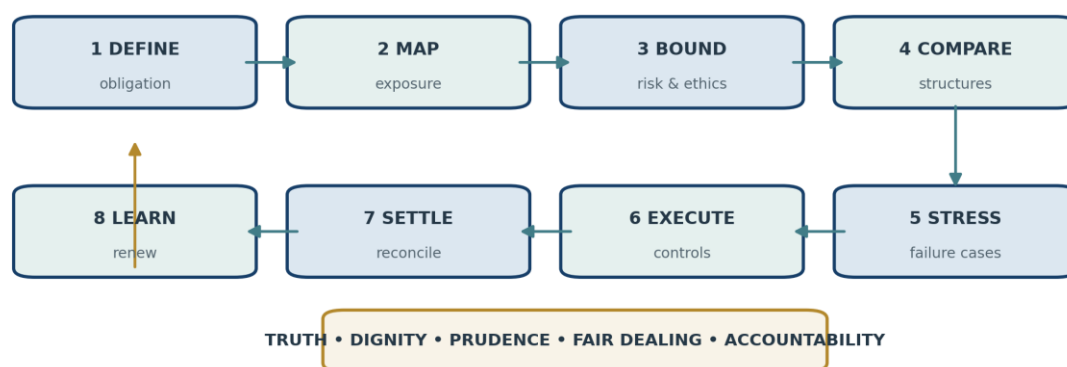


Figure 17.7. The Cross-Border Finance and Payment Stewardship (CFPS) Protocol.

Source/Note: Author's synthesis. The protocol is designed for repeated use in treasury, trade-finance and payment decisions.

Stage 1: Define the real obligation

Identify the underlying commercial promise. Who owes what, in which currency, on what date, under which contract, and for what economic purpose? Distinguish firm commitment, forecast, accounting exposure and strategic sensitivity. If the obligation is unclear, no financial instrument should be selected.

Stage 2: Map the full exposure

Measure gross and net currency positions, counterparty credit, country and transfer risk, liquidity timing, documentation requirements, settlement path and compliance obligations. Include operational and cyber dependencies. Record which risks are retained, transferred or merely shifted to another entity.

Stage 3: Establish decision boundaries

Define risk appetite, liquidity capacity, hedge ratio, approved counterparties, sanctions and AML requirements, customer or supplier fairness constraints, and moral red lines. A transaction that cannot survive this boundary test should be redesigned before pricing optimization.

Stage 4: Compare feasible structures

Compare natural hedging, pricing, forward, option, swap, financing, guarantee, LC, collection, insurance and payment-route alternatives using total cost, risk reduction, optionality, control, working capital and reversibility. Do not optimize one metric while ignoring settlement or liquidity.

Stage 5: Stress the decision

Test adverse FX, interest-rate, counterparty, delay, fraud, sanctions and liquidity scenarios. Model what happens if the underlying transaction is smaller, late or cancelled. Ask whether collateral or margin calls can be funded during stress.

Stage 6: Execute with control

Use authorized counterparties, independent confirmations, verified settlement instructions, proper segregation of duties, controlled master data and documentary review. Ensure that financial messages match the approved commercial obligation.

Stage 7: Settle and reconcile

Track payment status to final settlement, not merely message transmission. Reconcile bank statements, derivative cash flows, trade documents, fees and FX rates. Investigate breaks promptly and preserve audit evidence.

Stage 8: Learn and renew

Compare outcome with policy objective, not hindsight market direction. Review forecast quality, hedge effectiveness, payment failures, fraud events, fees, counterparties, customer impact and exceptions. Update policy when market depth, regulation, technology or business model changes.

CFPS question	Evidence required	Red flag
What are we protecting?	Contract, exposure register, forecast confidence	Instrument selected before exposure defined
What can make us fail?	Stress tests, liquidity map, counterparty limits	Only base-case P&L shown
Who bears residual risk?	Stakeholder and cash-flow map	Risk shifted invisibly to weak supplier/customer
Is the structure comprehensible?	Payoff diagram and plain-language explanation	Decision relies on unexplained exotic feature
Can it settle safely?	Payment route, PvP/netting, instructions	Team tracks message status but not finality
Can controls be defended?	KYC, sanctions, fraud logic, review process	Entire geography excluded without transaction-specific rationale
Is pricing truthful?	Fee and FX spread disclosure	"Zero fee" with undisclosed conversion margin
What triggers change?	Signposts, policy limits, review date	Hedge or payment architecture persists by inertia

17.32 Common Misconceptions, Analytical Errors and Professional Pitfalls

A forward rate is the market's best forecast of future spot. Not necessarily. The forward primarily reflects covered interest-rate relationships, basis and market conditions. It can differ systematically from expected future spot.

All foreign-currency balances should be hedged 100%. Gross accounting exposure is not the same as net economic exposure. Hedging a natural offset can create over-hedging.

Translation loss means cash was lost. Translation can alter reported equity or earnings without an immediate cash outflow. The economic significance depends on covenants, investor interpretation and future remittance.

Options are expensive forwards. Options create asymmetric protection and are particularly valuable for uncertain exposures. The premium pays for retained upside and cancellation flexibility.

Natural hedges are free. Matching revenue and costs can reduce derivative cost but may require more expensive sourcing, financing or operating structures.

A letter of credit guarantees the goods. Banks deal with documents and the credit undertaking. A compliant presentation does not certify commercial quality of the goods.

An LC guarantees payment regardless of documents. Payment depends on a complying presentation and the terms of the credit, subject to applicable law.

Documentary collection is a bank guarantee. Under collection rules, banks act on instructions but do not generally guarantee buyer payment.

SWIFT moves the money. SWIFT primarily transmits standardized financial messages. Settlement occurs through bank accounts and payment infrastructures.

Instant customer notification means final settlement is instant. End-user crediting and interinstitutional finality can occur on different timelines.

Local-currency settlement eliminates FX risk. It can change where conversion occurs and reduce third-currency dependence, but the relative value of currencies still matters.

ISO 20022 fixes payment inefficiency. Better structured data can enable automation and interoperability, but legacy processes, poor data, operating-hour gaps, liquidity and legal fragmentation remain.

Blockchain is automatically cheaper because it removes intermediaries. Some intermediaries perform valuable functions such as compliance, liquidity, dispute handling and credit transformation. Removing one layer may create another.

More compliance is always safer. Excessive or indiscriminate controls can increase false positives, exclusion and informal workarounds. Safety requires proportionality and good data, not maximum friction.

Hedging is successful when the derivative makes money. A hedge can lose money while succeeding because the underlying exposure gained value. Effectiveness is measured against the risk-management objective.

Treasury should be a profit centre. Treasury can improve funding and execution, but rewarding directional trading can create risk inconsistent with the productive purpose of the enterprise.

17.33 Chapter Synthesis and Transition to Chapter 18

Chapter 17 has followed a cross-border financial promise from exposure to settlement. The chapter began by showing that international finance is a system of claims, not a collection of isolated products. Foreign-exchange quotations convert one monetary claim into another. Parity conditions provide benchmarks that connect inflation, interest rates, spot and forward prices, but real markets contain balance-sheet costs, liquidity constraints and institutional frictions. Corporate exposure then translates currency movement into transaction, translation and economic consequences.

The chapter's central managerial insight is that risk management begins with the underlying cash flow rather than the derivative. Forwards, futures, options and swaps redistribute risk according to different payoff structures. Natural hedges, netting and operational changes can reduce residual exposure but may create strategic costs. International financing and treasury management extend the problem into debt currency, liquidity, working capital and the difference between project and parent cash flow.

Trade finance adds a second layer: cross-border commerce requires trust across time and institutions. Advance payment, open account, collections, documentary credits, guarantees, receivables finance and export credit redistribute credit, performance, documentary and financing risks. UCP 600 and URC 522 provide widely used private rules, but they do not replace mandatory law, sound document design or commercial judgment.

The final layer is payment architecture. Messaging, clearing and settlement are distinct. Correspondent banking provides reach; ISO 20022 improves the common language; PvP reduces principal settlement risk; fast-payment interlinking and PAPSS seek to reduce regional friction; mobile money expands last-mile access. New technologies create possibilities, but their value depends on interoperability, liquidity, legal finality, data quality and governance. Compliance, fraud controls and cybersecurity are therefore part of payment performance rather than external constraints.

The moral thread is equally cumulative. Finance is a form of stewardship because financial institutions and corporate treasuries allocate liquidity and risk among persons who do not possess equal information or bargaining power. Truthful pricing, prudent risk-taking, supplier justice, access, privacy, sanctions compliance and fraud prevention are not secondary concerns. A financially efficient arrangement can still be morally defective if it depends on deception, exploitation or irresponsible transfer of foreseeable harm.

Chapter 18 changes the unit of analysis again. Chapter 17 asked how the firm finances, protects and settles cross-border claims. Chapter 18 asks how investors and firms decide where capital should be allocated, what assets and ventures are worth, how portfolios balance risk and return, and how venture-capital deals divide ownership, control and upside. The foreign-exchange and treasury disciplines developed here become inputs to investment valuation, not substitutes for it.

Key Terms

Advance payment: Payment by the buyer before shipment or performance, transferring substantial performance risk to the buyer.

Ask rate: The exchange rate at which a dealer sells the quoted or base currency under the stated market convention.

Bid rate: The exchange rate at which a dealer buys the quoted or base currency under the stated market convention.

Cash pooling: Centralized management of group cash balances through physical transfer or notional offset arrangements.

Clearing: The process of transmitting, reconciling, confirming and, where applicable, calculating obligations before settlement.

Confirmation: An independent undertaking added by a confirming bank to a documentary credit, subject to the credit terms and applicable rules.

Correspondent banking: A relationship in which one bank provides account and payment services to another bank.

Covered interest parity (CIP): The no-arbitrage relation linking spot and forward exchange rates to interest rates when currency risk is covered with a forward.

Cross-currency basis: The deviation between market forward or swap pricing and the simple CIP-implied relationship, reflecting market frictions and balance-sheet conditions.

Currency swap: A longer-term contract that exchanges cash flows, and often principal, in different currencies.

Documentary collection: Bank-mediated handling of commercial or financial documents to obtain payment or acceptance without a bank payment guarantee unless separately provided.

Documentary credit: A bank undertaking to honor a complying presentation under the stated terms of a credit.

Economic exposure: Sensitivity of future operating cash flows and firm value to exchange-rate changes.

FX swap: An exchange of two currencies at one value date with a reverse exchange at a later value date.

Hedge ratio: The proportion of an identified exposure covered by a hedge.

International Fisher effect: The proposition linking nominal interest-rate differentials to expected exchange-rate changes under specified assumptions.

ISO 20022: A structured financial messaging standard used across payments and other financial services.

KYC/KYB: Know-your-customer and know-your-business processes for identity, ownership and risk due diligence.

NDF: Non-deliverable forward, a forward whose value difference is cash-settled, commonly in a major currency, rather than by delivering the restricted currency.

Nostro account: A bank's account held with another bank, viewed from the account-owning bank's perspective.

Open account: Trade term under which the seller ships or performs before receiving payment, thereby extending credit to the buyer.

Payment-versus-payment (PvP): FX settlement mechanism linking the two currency legs so that one settles only if the other settles according to system rules.

Purchasing-power parity (PPP): A relation connecting exchange rates to price levels or inflation differentials.

Settlement: Discharge of a financial obligation through transfer of the settlement asset under applicable system rules.

Settlement finality: The point at which a settlement becomes irrevocable and unconditional under the governing legal framework.

Spot rate: Exchange rate agreed for a transaction settling on the applicable spot value date.

SWIFT: A global financial messaging network and standards organization; it is not generally the institution that settles the underlying funds.

Trade-finance gap: Unmet demand for financing or risk mitigation requested to support trade, as defined by the relevant survey or institution.

Transaction exposure: Home-currency sensitivity of contracted or highly probable foreign-currency cash flows.

Translation exposure: Accounting sensitivity created when foreign-operation financial statements are converted into the reporting currency.

URC 522: ICC Uniform Rules for Collections, 1995 Revision, applying when incorporated into a collection instruction.

UCP 600: ICC Uniform Customs and Practice for Documentary Credits, 2007 Revision, applying when incorporated into a credit.

Vostro account: A correspondent account viewed from the bank holding the account on behalf of another bank.

Concept-Check Questions

1. Why does a rise in an H/F exchange rate imply home-currency depreciation under the convention used in this chapter?
2. Distinguish a spot transaction, an outright forward, an FX swap and a currency swap.
3. Why is a forward rate not automatically a forecast of future spot?
4. Derive covered interest parity under an H/F quotation and explain the arbitrage intuition.
5. Why can CIP deviations persist even in major currencies?
6. Distinguish transaction, translation and economic exposure with one example of each.
7. Give three reasons a firm may hedge even if its shareholders are diversified.
8. When is an option preferable to a forward for a corporate exposure?
9. Why can a natural hedge create hidden business costs?
10. How does local-currency borrowing reduce one form of FX risk while potentially increasing another cost?
11. Explain the working-capital difference between open account and advance payment.

12. What does a bank promise under a documentary credit, and what does it not promise?
13. Distinguish D/P from D/A documentary collection.
14. Why is an LC condition that depends on subjective buyer approval dangerous for the beneficiary?
15. Distinguish financial messaging, clearing and settlement.
16. What is Herstatt risk, and how does PvP address it?
17. Why can a payment be instant for a customer while interbank settlement occurs later?
18. What problem does ISO 20022 solve, and what problems does it not solve?
19. How can local-currency cross-border payment reduce dependence on a vehicle currency without eliminating FX risk?
20. Why can indiscriminate de-risking undermine both inclusion and financial-crime control?

Higher-Order Analytical and Critical-Thinking Questions

1. A multinational has equal and opposite USD receivables and payables in different subsidiaries, but capital controls prevent intercompany transfers. Is the group economically hedged? Explain which legal and liquidity assumptions determine the answer.
2. Evaluate the claim: "A treasury that hedges 100% of forecast FX exposure is more prudent than one that hedges 60%." What additional evidence is required?
3. Suppose covered interest parity indicates one forward rate but the executable market forward differs materially. Construct a diagnostic sequence before concluding that a risk-free arbitrage exists.
4. A firm can borrow in USD at 6% or in local currency at 13%. Its revenues are entirely local currency. What information is required before deciding that USD debt is cheaper?
5. Compare the moral distribution of risk under advance payment and 120-day open account when the buyer is a large multinational and the supplier is a small African manufacturer.
6. Should a central bank promote local-currency settlement if firms voluntarily prefer US dollars because of liquidity and stability? Analyze sovereignty, efficiency, market development and freedom of contract.
7. A bank's sanctions filter rejects 5% of payments from one corridor, but 98% of those alerts are false positives. Is lowering the threshold responsible? What evidence and safeguards are required?
8. Evaluate whether a stablecoin can be a superior remittance instrument in a high-inflation country. Consider reserve quality, redemption, local law, exchange controls, consumer understanding, fees and monetary sovereignty.
9. "SWIFT exclusion disconnects a country from international finance." Critically assess the statement by separating messaging, correspondent accounts, settlement assets and alternative networks.
10. Under what conditions can supplier-finance programs improve justice rather than merely disguise longer payment terms?
11. Compare PAPSS with a traditional correspondent route for one hypothetical African trade corridor. Which costs and risks would you measure before claiming one is superior?
12. If an option hedge costs more than a forward, why might it still maximize firm value for an uncertain tender?

Applied Case: Nyota Medical Equipment and a Multi-Layer Cross-Border Finance Decision

Nyota Medical Equipment Ltd, a fictional Rwandan distributor, has won a contract to supply diagnostic machines to hospitals in Rwanda and eastern Democratic Republic of the Congo. It will buy equipment from a German manufacturer for EUR 2.4 million. Twenty percent is due as an advance in 30 days, 60% on shipment in 120 days and 20% 60 days after shipment. Nyota's hospital customers will pay mostly in RWF and USD over 180 days after installation. Its current RWF cash covers the first advance but not the shipment payment.

The German supplier offers two structures. Option A is open account after the 20% advance, provided Nyota obtains a bank guarantee for the remaining amount. Option B is an irrevocable documentary credit for 80%, payable 60 days after shipment, with confirmation at a European bank. Nyota's bank can issue the LC but requires 30% cash collateral. A regional bank offers a EUR forward for the confirmed 120-day shipment payment but only up to EUR 1.0 million. An OTC option is available for the balance, with a premium of 2.2% of notional. Nyota can also borrow USD at 9% or RWF at 15%; the USD/RWF spot rate is assumed at 1,450 and the 180-day forward at 1,500 for the case. The EUR/RWF spot is 1,650 and the 120-day forward is 1,690. All rates are illustrative.

A distributor partner in DRC proposes to pay Nyota through a regional payment provider in USD. A separate PAPSS-enabled bank route may become available in local currency, but the bank cannot yet guarantee the exact corridor fee or FX spread. Nyota's compliance team also notes that one hospital's beneficial ownership information is incomplete.

Case tasks

Prepare a CFPS analysis that addresses the following:

1. Build an exposure timeline by currency and contractual certainty.
2. Identify transaction, economic, liquidity, counterparty, documentary, settlement and compliance risks.
3. Calculate the RWF value of the EUR 1.44 million shipment payment at spot and at the illustrative 120-day forward.
4. Design at least two hedge structures for the EUR shipment payment, one using the available forward capacity and one using a mix of forward and option. Explain the risk retained in each.
5. Compare the economic logic of USD versus RWF borrowing. Do not choose solely from nominal interest rates.
6. Compare the bank guarantee/open-account option with the deferred-payment confirmed LC. Include collateral, working capital, documentary risk and supplier confidence.
7. Identify which LC conditions Nyota should negotiate before issuance to avoid uncontrollable discrepancies.
8. Propose a payment-routing test for the DRC receipts comparing correspondent USD routing with any PAPSS-enabled alternative.
9. State how incomplete beneficial-ownership data should affect payment acceptance and whether the hospital should be automatically rejected.
10. Make a final recommendation and identify the conditions that would trigger a change in hedge ratio, financing source or payment route.

Ethical and Faith-Informed Dilemma: The Profitable Delay

A multinational buyer normally pays a group of small suppliers in 30 days. Facing a sharp currency depreciation and a temporary dollar-liquidity shortage, treasury proposes extending payment to 120 days without changing purchase prices. The contracts permit 120 days, and suppliers are told that accepting the new term is necessary to remain approved. Treasury estimates the change will reduce external borrowing by US\$40 million and protect a critical debt covenant. Several suppliers have limited access to bank credit and may need expensive factoring to survive the delay.

Analyze the decision through at least four perspectives: shareholder/enterprise continuity, contractual rights and duties, distributive justice, and Christian neighbour-love and stewardship. Consider whether the firm should differentiate suppliers by financial resilience, offer early-payment finance at its own credit spread, share the financing cost, negotiate voluntarily, or use another liquidity source. Explain whether the legal contractual right is morally sufficient and identify what evidence management should obtain before acting.

Data and Evidence Exercise: From FX Market Scale to Corporate Exposure

Use the following published or case-based data:

- BIS April 2025 average daily OTC FX turnover: US\$9.6 trillion.
- Of that, spot US\$3.0 trillion, outright forwards US\$1.8 trillion and FX swaps US\$4.0 trillion.
- Average daily FX settlement obligations in the BIS settlement analysis: more than US\$14 trillion; US\$5.2 trillion PvP, US\$7.6 trillion other risk-mitigating methods and US\$1.4 trillion gross bilateral.
- Airtel Africa 2026 sensitivity: a further 1% USD movement across operating-company currencies estimated to affect revenue by US\$60-62 million, EBITDA by US\$29-31 million and FX excluding derivatives by US\$27-29 million.
- World Bank Q3 2025 global average remittance cost: 6.36% of amount sent.

Complete the following tasks:

1. Calculate the percentage shares of spot, forwards and FX swaps in the US\$9.6 trillion total, noting that other instruments account for the remainder.
2. Verify the approximate settlement-method percentages from the US\$14.2 trillion rounded total implied by 5.2 + 7.6 + 1.4. Explain why the published article uses rounded values.
3. Estimate the annualized notional magnitude of US\$1.4 trillion daily gross bilateral settlement over 250 business days. Explain why this multiplication is a scale illustration, not a measure of annual loss exposure.

4. Use Airtel's midpoint sensitivity estimates to construct a 5% simple linear currency-stress approximation for revenue, EBITDA and FX. Compare with the company's separate disclosed balance-sheet sensitivity and explain why the measures are not interchangeable.
5. Compute the cost of sending US\$200, US\$500 and US\$1,000 at 6.36% and at a 3% policy target. Interpret the distributive significance for households making repeated transfers.
6. Design one chart that communicates settlement-risk composition truthfully. State the denominator, date, source and what the chart cannot show.

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Annotated Further Reading

- Conway, M., Drehmann, M., Lovell, N., McGuire, P., & Shirakami, T. (2026). "Uncovering FX settlement risk." The best current empirical introduction to how modern FX trades actually settle. Read it after the settlement-risk section to understand why PvP access and eligibility remain incomplete even after decades of reform.
- Du, W., Tepper, A., & Verdelhan, A. (2018). "Deviations from covered interest rate parity." A rigorous bridge between textbook no-arbitrage conditions and post-crisis balance-sheet constraints. Particularly useful for readers who want to understand why arbitrage equations can coexist with persistent market basis.
- Froot, K. A., Scharfstein, D. S., & Stein, J. C. (1993). "Risk management: Coordinating corporate investment and financing policies." A foundational corporate-finance explanation for why hedging can create value when external finance is costly. It helps move treasury reasoning beyond the simplistic objective of minimizing volatility.
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- Financial Stability Board. (2025). *G20 roadmap for enhancing cross-border payments: Consolidated progress report for 2025*. Provides the current policy architecture for cost, speed, access and transparency. Read critically alongside user-level evidence because policy milestones do not necessarily equal improved customer outcomes.
- GSMA. (2026). *The state of the industry report on mobile money 2026*. A strong data source on the scale and evolution of mobile money, especially relevant to African payment access. Company and industry-reported metrics should still be distinguished from independent welfare evaluation.
- Afreximbank. (2025). *African trade report 2025*. Useful for connecting payment infrastructure and trade finance to Africa's changing financial architecture. Read its policy recommendations alongside other institutional perspectives rather than treating any single regional institution as normatively decisive.
- Airtel Africa plc. (2026). *Annual report and accounts 2026*. A valuable applied source for seeing how a large African multinational discloses currency sensitivities, derivatives, operational mitigations and translation effects. It is especially useful for linking exposure theory with financial reporting.