

NXW INVESTMENT LIBRARY

Forex & Crypto *Investing*

From Theory to Practice



DR MAI HUU MINH

NXW INVESTMENT LIBRARY · VOLUME 3

CHAPTER 1

What Are Currencies and Crypto-Assets?

Money, exchange rates and a new digital asset class

Opening question

"I hold dong, a few dollars and some bitcoin. Are they all money — and how should an investor think about them?"

Many Vietnamese families keep savings in three forms at once: dong in the bank, dollars in a drawer or a foreign-currency account, and, more and more often, a few crypto-assets on a phone. All three are called "money" in everyday speech, yet they behave very differently. This chapter explains what money is, what an exchange rate measures, what a crypto-asset is and is not, and why currencies and crypto-assets do not behave like stocks or bonds.

In this chapter

- The three jobs of money and why trust matters
- How to read an exchange-rate quote: base and quote currency, pips and spreads
- Currencies as an asset class: the exposure you already have, and where returns come from
- What bitcoin and ether are, and how they differ from a currency issued by a central bank
- Stablecoins and other tokens: what they promise and what they do not
- Why currencies and most crypto-assets have no cash flows and cannot be valued like shares
- Currencies and crypto from the point of view of a Vietnamese investor
- A map of the six modules of this book

1.1 What money does

Economists define money by what it does rather than by what it is made of. Money has three classic functions:

- **Medium of exchange** — it is accepted in payment for goods, services and debts, so people do not need to barter.
- **Unit of account** — prices, wages, contracts and accounts are written in it, which makes it easy to compare values.
- **Store of value** — it keeps purchasing power over time, so income earned today can be spent later.

Shells, salt, silver and gold coins and gold-backed notes have all played these roles. Today we use **fiat money** — money issued by a central bank and not convertible into any commodity. A dong or dollar note has value because the law makes it legal tender, taxes must be paid in it and, above all, people trust that others will accept it tomorrow.

Most money today is not cash but **bank deposits**: when you pay by transfer or QR code, you move deposits, not notes.

Trust is the key word: when inflation erodes a currency, people save in another currency, in gold or in property. It is also the starting point of the bitcoin story: its creator proposed a form of money whose supply is set by computer code rather than by any government (Chapter 2).

1.2 Exchange rates and how to read a quote

An **exchange rate** is the price of one currency in terms of another. Because it compares two monies, it is always a **relative price**: if the dollar rises against the dong, the dong has fallen against the dollar.

Exchange rates are quoted as currency pairs written with three-letter ISO codes: USD for the US dollar, EUR for the euro, JPY for the Japanese yen, CNY for the Chinese renminbi, VND for the Vietnamese dong. In the quote EUR/USD = 1.0850, the first currency (EUR) is the **base currency** and the second (USD) is the **quote currency**: one euro costs 1.0850 dollars. The same rate can be inverted: one dollar costs $1 \div 1.0850 = 0.9217$ euro.

By convention the euro and the pound are quoted as the base against the dollar; most other currencies are quoted per dollar, as USD/JPY or USD/VND. A rising USD/VND therefore means a stronger dollar and a weaker dong.

Pair	Example quote (illustrative)	Read as	Smallest usual step (pip)
EUR/USD	1.0850	USD 1.0850 per euro	0.0001 (fourth decimal)
USD/JPY	150.25	JPY 150.25 per dollar	0.01 (second decimal)
USD/VND	25,000	VND 25,000 per dollar	Usually 1 dong; banks quote whole dong
BTC/USD	60,000	USD 60,000 per bitcoin	Set by each trading venue

Table 1.1 — Reading exchange-rate and crypto quotes (illustrative levels)

A **pip** (percentage in point) is the smallest conventional price step in a currency pair. For most pairs it is the fourth decimal place; for pairs involving the yen it is the second. Traders count gains and losses in pips.

Example — what a pip is worth (illustrative)

EUR/USD moves from 1.0850 to 1.0875: a rise of 0.0025, or 25 pips.

- On a position of EUR 100,000, each pip is worth $100,000 \times 0.0001 = \text{USD } 10$.
- The 25-pip move is worth $25 \times 10 = \text{USD } 250$, a change of about 0.23% in the value of the position.
- For USD/JPY at 150, one pip on USD 100,000 is JPY 1,000, or about **USD 6.67**.

Small moves become large sums on big positions — and larger still with borrowed money (Chapter 17).

Every quote has a **bid** (the price at which the dealer buys the base currency) and an **ask** (the price at which it sells). The gap, the **spread**, is the first cost of any currency trade. Chapter 4 explains how the market sets these prices.

1.3 Currencies as an asset class

For an investor, a currency is not only a tool for travel or trade but an **asset class** — a source of return and of risk.

The exposure you already have

You are exposed to exchange rates even if you never trade them. A Vietnamese family that plans to pay university fees in Australia is exposed to the Australian dollar. A worker in Japan who sends money home is exposed to the yen. A Vietnamese investor who buys an American stock or a gold ETF listed abroad owns, in effect, dollars as well as the asset. A company that imports cotton in dollars and sells shirts in dong carries currency risk in its profits. Chapter 13 shows how investors and companies decide how much of this exposure to keep.

Where currency returns come from

Holding a foreign currency produces two kinds of return: the **change in the exchange rate** and the **interest** earned on a deposit or bond in that currency. If the foreign interest rate is higher than the domestic rate, the investor earns an interest differential, called the **carry**; if it is lower, the investor gives up income and needs the currency to rise to break even.

Return on a foreign-currency deposit, in home currency

$$(1 + \text{Return}) = (1 + \text{Foreign interest rate}) \times (1 + \text{Change in the exchange rate})$$

The change in the exchange rate is measured as home-currency units per foreign unit. Roughly, the return equals the foreign interest rate plus the currency's appreciation. Chapter 8 shows why, in theory, higher interest rates should be offset by expected depreciation — and why in practice they often are not.

Example — a dollar deposit seen from Hanoi (illustrative)

An investor converts VND 250 million into USD 10,000 at USD/VND 25,000 and places it on a one-year deposit at 4%. A dong deposit would pay 5%.

- If USD/VND ends the year at 26,000, the dollar has gained 4%. Return in dong: $1.04 \times 1.04 - 1 = \mathbf{8.16\%}$, against 5% on the dong deposit.
- If USD/VND ends at 24,500, the dollar has lost 2%. Return in dong: $1.04 \times 0.98 - 1 = \mathbf{1.92\%}$, less than the dong deposit.

The dollar deposit is not "safe" or "risky" in itself: its result depends on the exchange rate, which no one can forecast reliably over a year.

Major exchange rates are usually **less volatile** than stocks, but they can move sharply in crises, pushed by trade, capital flows, interest rates and central banks (Chapter 3).

1.4 What is a crypto-asset?

A **crypto-asset** is a digital asset recorded on a **blockchain** — a shared ledger that is kept by many computers and protected by cryptography, so that no single party can change past entries at will. Ownership is controlled by **private keys**, secret numbers that allow their holder to move the asset. Lose the key and the asset is usually lost. Chapter 6 explains blockchains, wallets and custody.

Bitcoin

Bitcoin was proposed in a 2008 white paper by an anonymous author using the name Satoshi Nakamoto, and its network started in January 2009. It was designed as "peer-to-peer electronic cash": a way to send value over the internet without a bank. Its rules cap the total supply at **21 million bitcoins**, released on a declining schedule (Chapter 2). No company or central bank issues bitcoin; new coins are created as

rewards to the "miners" who secure the network. Most holders today treat it less as a means of payment than as a scarce digital asset, sometimes called "digital gold".

Ether

Ether is the native asset of **Ethereum**, a blockchain launched in 2015 that can run programs called **smart contracts**. Ether is used to pay transaction fees ("gas") on the network and, since Ethereum moved to proof of stake in 2022, can be "staked" to help secure the network in exchange for rewards. Unlike bitcoin, ether has no fixed maximum supply. Ethereum and similar platforms host many other tokens, from stablecoins to applications in decentralised finance (Chapter 7).

What crypto-assets are not

In almost all countries, crypto-assets are **not legal tender**, are **not issued or guaranteed by a central bank**, and are **not covered by deposit insurance**. They are mostly not a claim on any company's profits. Their value depends on what other people are willing to pay for them, on the usefulness of their networks and on trust in their code and in the firms that hold them for customers.

1.5 Stablecoins and other tokens

Beyond bitcoin and ether, thousands of other tokens exist. Two broad groups matter for investors.

Stablecoins are tokens designed to keep a fixed value, usually one US dollar. The largest are issued by private companies that say they hold reserves — bank deposits, short-term government bills and similar assets — to back each token. They are widely used to move money between crypto trading venues. But a stablecoin is only as good as its reserves, its issuer and the rules that apply to it. Some designs that relied on algorithms rather than reserves have failed spectacularly, most famously TerraUSD in May 2022 (Chapter 7).

Other tokens cover a wide range: tokens of rival blockchain platforms, governance tokens that give votes in a decentralised project, utility tokens used inside an application, and "meme" tokens with no purpose beyond speculation. The rights they confer vary enormously, and many have lost almost all their value. Figure 1.1 groups the main kinds of assets an investor can hold.

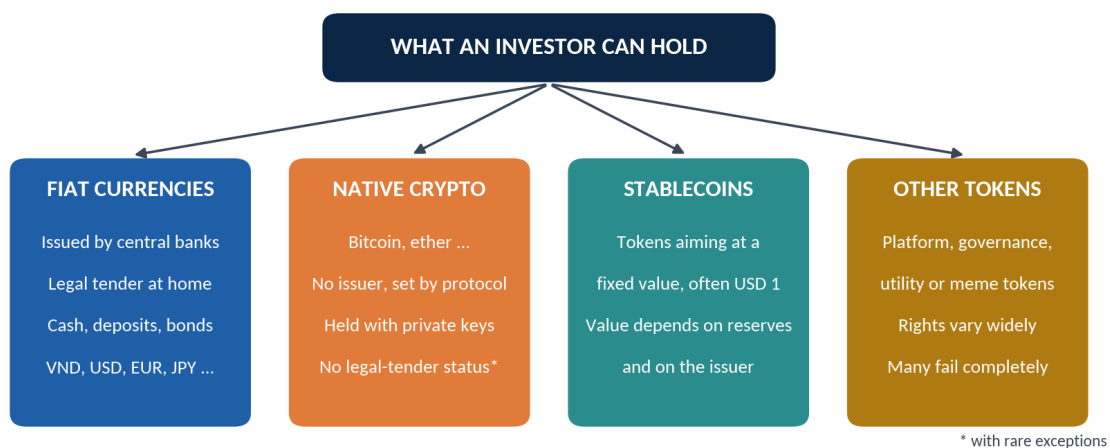


Figure 1.1 — Fiat currencies and the main families of crypto-assets

Feature	Fiat currency (e.g. VND, USD)	Bitcoin	Stablecoin (USD type)	Other tokens
Issuer	Central bank	None; protocol rules	Private company or	Project team,

Feature	Fiat currency (e.g. VND, USD)	Bitcoin	Stablecoin (USD type)	Other tokens
			protocol	foundation or protocol
Supply	Set by monetary policy	Capped at 21 million	Grows and shrinks with demand	Set by each project; often changeable
Legal tender	Yes, in its country	No, with rare exceptions	No	No
What backs value	Law, taxes, trust in the central bank	Scarcity, network, belief of users	Reserves and the issuer's soundness	Use of the project, speculation
Typical price behaviour	Low to moderate volatility	High volatility	Stable unless it depegs	Often extreme volatility

Table 1.2 — Fiat money and crypto-assets compared

1.6 Why FX and crypto behave differently from stocks and bonds

An investor used to shares and bonds must adjust several habits.

Relative prices, not claims on growth

A share is a claim on profits, so the stock market tends to rise with the economy. An exchange rate is the price of one money in another. If the dollar gains 10% against the yen, yen holders lose what dollar holders gain. Currency returns therefore come from interest differentials and from moves between currencies, not from economic growth as such.

No cash flows for most crypto-assets

A bond pays interest and a share pays dividends, so their value can be estimated as the present value of those payments. A bitcoin pays nothing. Its value depends only on what the next buyer will pay, which in turn depends on adoption, scarcity, liquidity and sentiment (Chapter 10). Without cash flows there is no reliable "fair value", which helps explain why crypto prices can double or halve within months.

Volatility and 24-hour markets

The currency market trades around the clock on weekdays; crypto markets never close, even at weekends. Volatility differs greatly between the two. Figure 1.2 shows three simulated price paths with volatilities typical of a major currency pair, a broad stock index and a large crypto-asset. In this simulation the crypto-asset loses almost half its value within seven months, climbs to almost twice its starting value by month 23 and ends three years later about 36% below where it began.

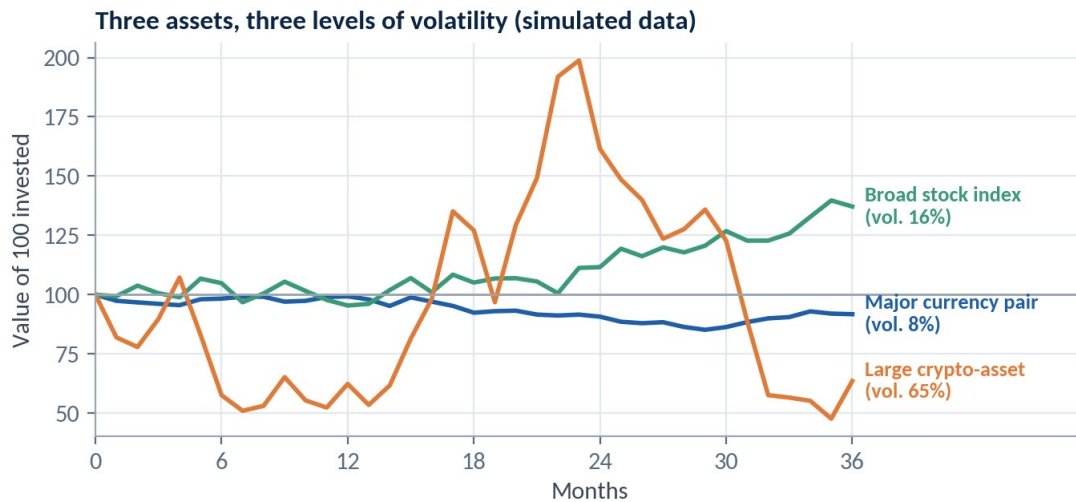


Figure 1.2 — Three assets, three levels of volatility (simulated data)

The arithmetic of losses is harsh: after a fall of 50%, an asset must rise 100% to recover; after a fall of 75%, it must rise 300%. Large crypto-assets have suffered falls of this size more than once.

Feature	Stocks and bonds	Currencies	Crypto-assets
Source of return	Profits, dividends, coupons	Exchange-rate moves and interest differentials	Price changes; some staking or lending yields
Long-run drift	Rises with the economy (stocks)	No natural drift for the market as a whole	Depends on adoption; highly uncertain
Main drivers	Earnings, interest rates, growth	Trade, capital flows, interest rates, central banks	Adoption, liquidity, leverage, sentiment, regulation
Trading hours	Exchange hours	24 hours on weekdays	24 hours, 7 days
Typical volatility	Moderate	Low to moderate for major pairs	High to extreme

Table 1.3 — Stocks and bonds, currencies and crypto-assets compared

1.7 Who trades currencies and crypto-assets, and why

The two markets bring together very different participants.

- **Companies** pay for imports, receive export income and invest abroad; many hedge (Chapter 13).
- **Banks and dealers** quote prices and earn spreads; they are the core of the currency market (Chapter 4).
- **Central banks** manage reserves and sometimes intervene to steady their currency (Chapter 9).
- **Institutional investors** hold foreign assets, hedge currency risk and run strategies such as carry and momentum (Chapter 12).
- **Households** exchange money for travel, education and remittances, save in foreign currency and buy crypto-assets.
- **Crypto-native firms** — exchanges, market makers, miners and validators, stablecoin issuers — provide the infrastructure of the crypto market (Chapter 6).

The currency market is the largest financial market in the world. The Bank for International Settlements estimated average turnover at more than 7 trillion dollars a day in 2022, with the US dollar on one side of

the large majority of trades. Crypto markets are much smaller, open to anyone with a phone and dominated in many countries by individual traders.

1.8 FX and crypto for a Vietnamese investor

For a Vietnamese saver, currencies and crypto-assets are not abstract topics.

Vietnam spotlight — dong, dollars and digital assets

- **A managed dong.** The State Bank of Vietnam (SBV) announces a daily central rate for the dong against the dollar, and commercial banks may trade within a band around it — a band widened to $\pm 5\%$ in recent years (Chapter 3).
- **Dollars and gold as savings.** Many households keep part of their savings in dollars and in gold, a habit rooted in periods of high inflation and currency weakness in past decades.
- **Remittances.** Vietnam receives large remittances from relatives working or living abroad, so many families are directly exposed to the dollar, the yen, the won and other currencies.
- **High crypto adoption.** Vietnam has ranked among the leading countries in global crypto-adoption indexes, such as those published by Chainalysis, in recent years.
- **An evolving legal framework.** For a long time crypto-assets were neither legal tender nor a recognised means of payment in Vietnam; from 2025 the country began to build a legal framework for digital assets, including a pilot for a licensed crypto-asset market. Rules are still developing and investors should check the current position (Chapter 20).

These features raise the questions this book answers for a Vietnamese reader: how much dollar exposure a family already has, whether a foreign-currency deposit makes sense, and how to judge the risks of crypto-assets and avoid the scams that thrive wherever interest is high (Chapter 21). Similar questions arise in Thailand, Indonesia and the Philippines.

A sensible first step is an inventory of what you hold in dong, foreign currencies, gold and crypto-assets, and of which future spending depends on exchange rates — the exercise of Practice lab 1.

1.9 A map of the book

Like its companions in the NXW Investment Library, this book groups its 22 chapters in six modules.

- **Module 1 — Foundations (Chapters 1–3).** What currencies and crypto-assets are, how money and exchange rates evolved from the gold standard to bitcoin, and how exchange rates are determined.
- **Module 2 — Markets and instruments (Chapters 4–7).** The foreign exchange market with spot, forwards and swaps; currency futures and options; how crypto markets work; stablecoins, tokens and decentralised finance.
- **Module 3 — Drivers and theory (Chapters 8–11).** Interest rates, inflation and parity conditions; central banks and currency crises; what drives crypto prices; and how to measure risk, volatility and correlation.
- **Module 4 — Strategies (Chapters 12–15).** Carry, momentum and value in currencies; hedging for investors and companies; crypto investment strategies; and FX and crypto indexes.
- **Module 5 — Products and practice (Chapters 16–19).** Funds, ETFs and ETPs; platforms, brokers and costs; building a portfolio; and building and back-testing an index in Excel and R.
- **Module 6 — Invest (Chapters 20–22).** Currencies and crypto in Vietnam and Asia; risks, regulation, scams and behaviour; and the future of money, from central bank digital currencies to tokenisation.

Examples marked "illustrative" or "simulated" are teaching tools, not forecasts. This book is educational: it does not recommend any currency, coin, broker or trade.

Key takeaways

- Money serves as a medium of exchange, a unit of account and a store of value; fiat money rests on law and trust in the central bank.
- An exchange rate is a relative price between two currencies; read the base and quote currency carefully, and count small moves in pips.
- Holding a foreign currency earns the exchange-rate change plus the foreign interest rate; most people already have currency exposure through spending, savings and investments.
- Bitcoin and ether are native crypto-assets with no issuer or central bank; stablecoins aim at a fixed value but depend on their reserves and issuers; other tokens vary widely and many fail.
- Currencies are relative prices and most crypto-assets have no cash flows, so neither can be valued like shares or bonds; crypto volatility is far higher than that of major currencies.
- Vietnamese investors live with a managed dong, dollar and gold savings, large remittances and high crypto adoption under a still-developing legal framework.

Practice lab 1

Download the workbook **Lab01_Currencies_and_Crypto.xlsx** from the companion site.

- **Sheet 1 — Read the quotes.** Record today's bid and ask for EUR/USD, USD/JPY and USD/VND from a bank or data website; invert each rate, compute the spread in pips and in percent.
- **Sheet 2 — A foreign deposit.** Reproduce the dollar-deposit example of Section 1.3; change the interest rates and the final USD/VND rate and find the exchange rate at which the dollar and dong deposits give the same return.
- **Sheet 3 — Volatility side by side.** Using the simulated monthly prices in the sheet, compute monthly returns, annualised volatility and the largest fall from a peak for a currency pair, a stock index and a crypto-asset.
- **Sheet 4 — Your currency inventory.** List your own (or a model family's) holdings and future spending by currency, gold and crypto-assets, and chart the share of each.

Further reading

- Satoshi Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System", 2008.
- Niall Ferguson, *The Ascent of Money: A Financial History of the World*.
- Paul R. Krugman, Maurice Obstfeld and Marc J. Melitz, *International Economics: Theory and Policy* — chapters on exchange rates.
- Bank for International Settlements — Triennial Central Bank Survey of foreign exchange and OTC derivatives markets.
- Arvind Narayanan and co-authors, *Bitcoin and Cryptocurrency Technologies*.