

# Lesson 1: Introduction to Fintech

## Module 1: Fintech and Innovation

Digital Finance Course

January 3, 2026

# What is Fintech?

## Definition:

- Financial Technology (“Fintech”)
- Technology-enabled financial services innovation
- Intersection of finance, technology, and business models

## Core Characteristics:

- Customer-centric design
- Digital-first approach
- Data-driven decision making

## Not Just About Technology:

- Business model innovation
- User experience transformation
- Market structure disruption

## Evolution of Term:

- Pre-2000s: Back-office technology
- 2010s: Startup-driven disruption
- 2020s: Embedded finance, DeFi

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**Key insight: Fintech is about reimagining financial services, not just digitizing existing processes. [Source: <https://www.cbinsights.com/research/fintech/>, <https://www.statista.com/topics/2404/fintech/>]**

## **Era 1 (1866-1967): Foundation**

- 1866: First transatlantic cable
- 1918: Fedwire launch
- 1950: First credit card (Diners Club)
- 1967: First ATM (Barclays, London)

## **Era 2 (1967-2008): Digitization**

- 1973: SWIFT established
- 1994: First online banking
- 1998: PayPal founded
- 2007: First iPhone launched

## **Era 3 (2008-Present): Disruption**

- 2008: Global Financial Crisis
- 2009: Bitcoin whitepaper
- 2015: Neobank explosion
- 2020: Embedded finance rise
- 2023: Generative AI in finance

## **Key Inflection Point:**

- Post-2008: Trust erosion in banks
- Smartphone enabling mobile-first services

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The 2008 financial crisis was the catalyst for the modern fintech revolution. [Source: <https://www.cbinsights.com/research/fintech/>, <https://www.statista.com/topics/2404/fintech/>]

# Key Drivers of Fintech Growth

## Technology Enablers:

- Cloud computing infrastructure
- Mobile ubiquity (5B+ smartphones)
- API economy and microservices
- AI and machine learning

## Regulatory Drivers:

- Open banking mandates (PSD2)
- Sandbox frameworks (FCA, MAS)
- Digital identity standards (eIDAS)

## Market Forces:

- Millennial and Gen Z preferences 1.3B unbanked (World Bank Findex 2025)<sup>a</sup>
- COVID-19 digital acceleration
- Network effects and platform economics

## Economic Factors:

- VC investment driving innovation
- Cost pressure on incumbents
- Declining transaction costs

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<sup>a</sup>Source: biia.com

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Source: CB Insights, Statista, BIS fintech research

## Core Players:

- Fintech unicorns (see next slides)
- Incumbent banks (JPMorgan, DBS)
- Big Tech (Apple, Google, Ant Group)
- Payment networks (Visa, Mastercard)

## Enablers:

- Infrastructure (Plaid, Adyen)
- Core banking (Mambu, Thought Machine)
- Cloud providers (AWS, Azure, GCP)

## Capital Providers:

- Venture capital (Sequoia, a16z)
- Private equity (KKR, Blackstone)
- Corporate venture arms

## Support Infrastructure:

- Regulators (ECB, Fed, FCA, BaFin)
- Accelerators (Y Combinator, Techstars)
- Professional services

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Fintech success depends on a complex ecosystem of players, enablers, and capital.

# Top Fintech Unicorns by Valuation (2025)

## Payments & Infrastructure:

- **Stripe** (USA) – \$129B
- **Revolut** (UK) – \$75B
- **Adyen** (NL) – \$40B
- **Wise** (UK) – \$8B

## Key Insight:

- Payments dominates valuations
- B2B infrastructure highly valued

## Neobanks & Consumer:

- **Nubank** (Brazil) – \$81B
- **Chime** (USA) – \$18B
- **Klarna** (Sweden) – \$17B
- **N26** (Germany) – \$9B

## Valuation Trends:

- 2021 peaks, then 50-70% cuts
- 2025: Recovery for profitable fintechs

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Valuations as of Dec 2025. Source: PitchBook, CB Insights, company filings.

# Payment Giants by Market Cap (2025)

## Card Networks:

- **Visa** – \$530B market cap
  - 4.3B cards, \$14.8T volume
- **Mastercard** – \$410B market cap
  - 3.1B cards, \$9.0T volume

## Payment Processors:

- **PayPal** – \$85B market cap
  - 430M accounts, \$1.5T volume
- **Block (Square)** – \$55B market cap
  - Cash App: 50M+ users

## Key Insight:

- Networks remain dominant
- Processors gaining share

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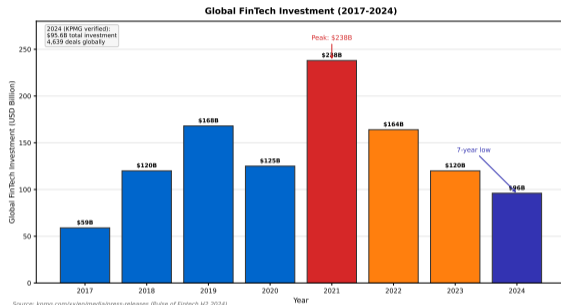
Market caps as of Dec 2025. Source: [companiesmarketcap.com](https://companiesmarketcap.com)

## Investment Trends (2024):

- \$33.7B (CB Insights State of Fintech 2024)<sup>a</sup>
- Down from \$119.8B in 2023
- Peak 2021: \$238B (crypto boom)
- 7-year low reflects market correction

## Regional Distribution (2024):

- Americas: 52% of investment
- EMEA: 27% of investment
- APAC: 21% of investment



<sup>a</sup>Source: <https://www.cbinsights.com/research/report/fintech-trends-2024/>

[//www.cbinsights.com/research/report/fintech-trends-2024/](https://www.cbinsights.com/research/report/fintech-trends-2024/)

2024 marks a return to fundamentals: profitability over growth at any cost.

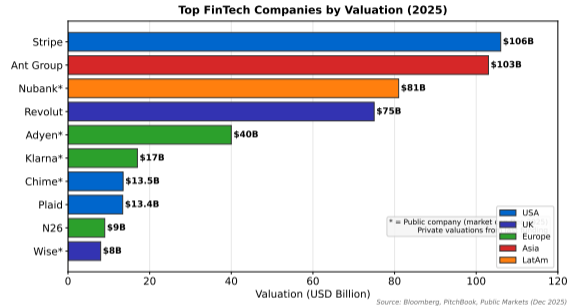
# Top Fintech Valuations (2025)

## Global Leaders:

- Stripe: \$129B (USA)
- Nubank: \$81B (Brazil)
- Revolut: \$75B (UK)
- Chime: \$18B (USA)
- Klarna: \$17B (Sweden)

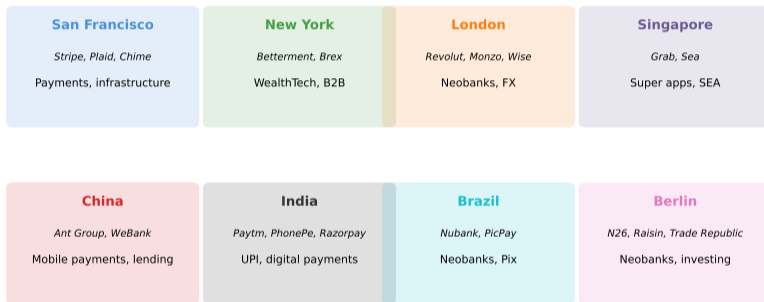
## Notable Changes:

- Many 50-70% valuation cuts from 2021
- Shift to profitability metrics
- 2025: Recovery for profitable fintechs



Valuations corrected from 2021 peaks. Source: PitchBook, CB Insights, company filings.

## Global FinTech Hubs

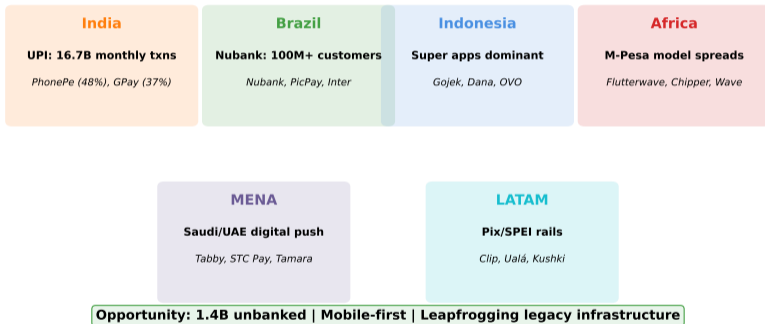


2024 City Ranking: 1. Beijing 2. San Francisco 3. New York 4. London 5. Singapore

Source: [findexable.com](https://findexable.com) (Global Fintech Index 2024)

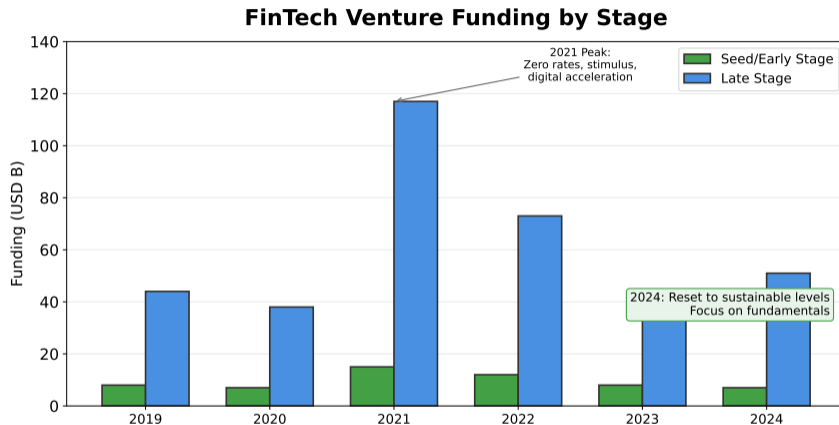
**London, New York, and Singapore lead as global fintech hubs—emerging markets show rapid growth.**

## FinTech in Emerging Markets



Source: [npci.org.in/upi-statistics](https://npci.org.in/upi-statistics), [nubank.com.br](https://nubank.com.br) (2024)

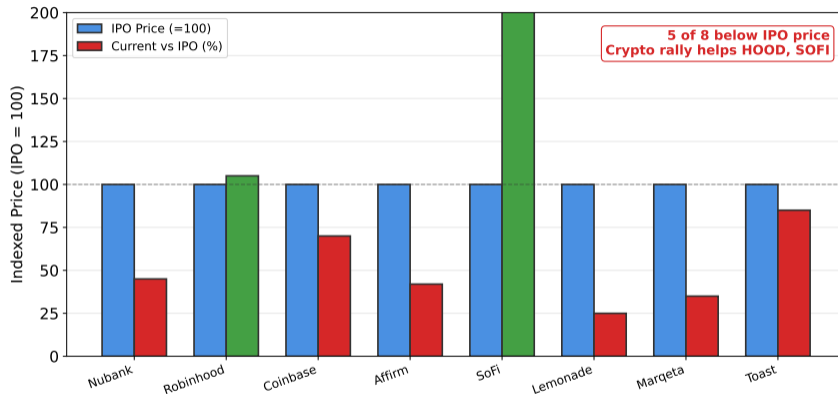
Emerging markets drive fintech adoption—mobile-first solutions address financial exclusion.



Source: cbinsights.com, pitchbook.com (FinTech Funding)

VC funding cycles show boom-bust pattern—2021 peak followed by 2022-2024 correction.

## FinTech IPO Performance vs IPO Price



Source: [finance.yahoo.com](https://finance.yahoo.com), [nasdaq.com](https://nasdaq.com) (Dec 2024)

Many fintech IPOs underperformed initial valuations—profitability concerns dominate investor sentiment.

## Major FinTech M&A Deals

Acquirer		Target	Value	Year
Schwab	acquires	TD Ameritrade	USD 26B	2020
Morgan Stanley	acquires	E*TRADE	USD 13B	2020
Visa	acquires	Plaid	USD 5.3B*	2020
SoFi	acquires	Galileo	USD 1.2B	2020
PayPal	acquires	Honey	USD 4B	2019
Mastercard	acquires	Finicity	USD 825M	2020

\*Visa/Plaid deal blocked by DOJ antitrust concerns

2023-24 Trend: Consolidation continues, focus on profitable targets, lower valuations

Source: sec.gov, pitchbook.com (Verified M&A Transactions)

M&A activity increases as market consolidates—banks acquire fintech capabilities, fintechs merge for scale.

## Digital Payments:

- Payment processors (Stripe, Adyen, Square)
- Mobile wallets (Apple Pay, Google Pay, Alipay)
- Cross-border (Wise, Remitly)
- BNPL (Klarna, Affirm, Afterpay)

## Market Dynamics:

- Shift from cash to digital (80% by 2025)
- Real-time payments (FedNow, SEPA Instant)
- Embedded payments growing

## Key Innovations:

- QR code payments (WeChat Pay, Paytm)
- Contactless NFC technology
- Account-to-account (A2A) payments

## European Context:

- PSD2 enabling third-party access
- Strong Customer Authentication (SCA)
- Digital euro development (ECB)

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Payments is the largest and most mature fintech category, driving financial inclusion globally.

## Neobanks/Challenger Banks:

- Mobile-first current accounts
- No physical branches
- Examples: Revolut, N26, Monzo, Chime
- EU: 35M+ neobank customers (2024)

## Alternative Lending:

- P2P lending (Funding Circle)
- SME financing (Kabbage)
- Invoice financing (BlueVine)

## Business Models:

- Freemium basic accounts
- Premium subscriptions (5-15 EUR/month)
- Interchange from card spending
- FX margin on currency exchange

## Technology Advantages:

- Lower CAC (\$10-50 vs \$200-400)
- Instant account opening (3-5 min)
- AI-driven underwriting

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Neobanks achieve 10x lower customer acquisition costs through digital channels. [Source: CB Insights, Statista 2024]

## Robo-Advisors:

- Automated portfolio management
- Algorithm-based asset allocation
- Betterment, Wealthfront, Scalable Capital \$3.5T+ (2025 estimates)<sup>a</sup>

## Commission-Free Trading:

- Zero-fee stock trading (Robinhood)
- Fractional shares investing
- Revenue from PFOF and interest

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<sup>a</sup>Source: <https://coinlaw.io/robo-advisors-market-statistics/>

## Fee Comparison:

- Traditional advisor: 1.0%-2.0% AUM
- Robo-advisor: 0.25%-0.50% AUM
- Hybrid model: 0.50%-0.75% AUM

## Investment Products:

- ETF-based portfolios
- ESG/thematic investing
- Tax-loss harvesting
- Cryptocurrency access

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Robo-advisors democratize wealth management with fees 75% lower than traditional advisors. [Source: CB Insights, Statista 2024]

## Business Model Innovations:

- P2P insurance (Lemonade, Friendsurance)
- Usage-based insurance (Root, Metromile)
- On-demand insurance (Cuvva, Trov)
- Embedded insurance (Qover)

## Technology Applications:

- AI claims processing (90% automation)
- IoT risk monitoring (telematics)
- Parametric insurance (auto payouts)

## Market Impact:

- Global InsurTech investment: \$8B (2024)
- Digital insurance penetration: 25%
- Incumbents partnering vs competing

## Product Examples:

- Pay-per-mile auto insurance
- Cyber insurance for SMEs
- Crop insurance with satellite data
- Flight delay parametric coverage

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InsurTech uses IoT and AI to shift from reactive claims to proactive risk prevention. [Source: CB Insights, Statista 2024]

## RegTech Solutions:

- KYC/AML automation (Onfido)
- Transaction monitoring (Featurespace)
- Regulatory reporting (Suade)
- Risk management (Quantexa)

## Cost Savings:

- Compliance: 4%-10% of revenue
- RegTech reduces by 30%-50%
- Manual KYC: \$50-100/customer
- Automated KYC: \$5-15/customer

## Infrastructure/BaaS:

- Core banking (Mambu, Thought Machine)
- Banking-as-a-Service (Solarisbank)
- Payment infrastructure (Plaid)
- Identity verification (Jumio)

## Enabling Technologies:

- NLP for regulation parsing
- ML for anomaly detection
- Graph analytics for networks

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RegTech enables 80% cost reduction in compliance while improving accuracy. [Source: CB Insights, Statista 2024]

# Fintech vs Traditional Banks: Comparison

## Cost Structure:

- Bank cost-to-income: 55%-65%
- Fintech cost-to-income: 35%-50%
- Branch network vs cloud
- Legacy IT vs modern stack

## Customer Acquisition:

- Bank CAC: \$200-\$400
- Fintech CAC: \$10-\$50
- Viral growth and referrals

## Fintech Advantages:

- Speed: Account in minutes vs days
- UX: Mobile-first, intuitive design
- Pricing: Lower fees, better FX
- Innovation: Rapid iteration

## Bank Advantages:

- Trust and brand recognition
- Full license and deposit insurance
- Diversified revenue streams
- Physical presence for complex needs

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Fintechs win on cost and UX; banks retain trust and regulatory advantages. [Source: CB Insights, Statista 2024]

## Apple:

- Apple Pay (500M+ users globally)
- Apple Card (Goldman partnership)
- Apple Pay Later (BNPL)
- Savings account (4.15% APY)

## Google:

- Google Pay (150M+ users)
- Google Wallet integration
- Limited banking ambitions

## Amazon:

- Amazon Pay (merchant payments)
- SME lending (\$1B+ originated)
- Insurance comparison
- Embedded checkout financing

## Meta:

- WhatsApp Pay (Brazil, India)
- Meta Pay (formerly Facebook Pay)
- Diem stablecoin (discontinued)

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Big Tech leverages existing user bases and trust to enter financial services. [Source: <https://www.juniperresearch.com/research/fintech-payments/digital-commerce/>]

## Ant Group (Alipay):

- 1.3 billion users globally
- Payments + commerce + finance
- Yu'e Bao money market fund
- Regulatory crackdown 2021-2023

## Tencent (WeChat Pay):

- 1.318 billion (2025)<sup>a</sup>
- Embedded in WeChat ecosystem
- Social + payments integration

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<sup>a</sup>Source: <https://www.demandsage.com/wechat-statistics/>

## Super-App Model:

- Single app for all financial needs
- Payments, lending, insurance, wealth
- Social commerce integration
- Data advantage from ecosystem

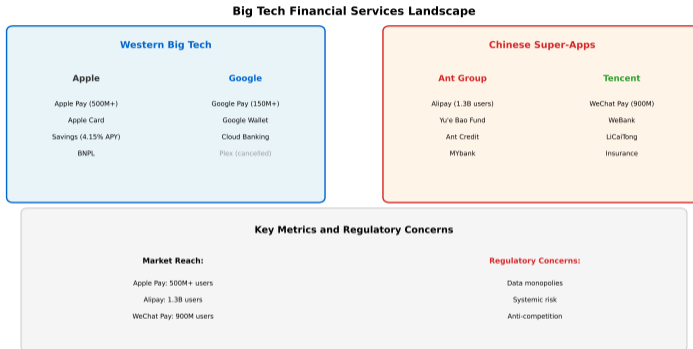
## Global Adoption:

- Grab (Southeast Asia)
- Paytm (India)
- Revolut pursuing similar model

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The super-app model from China is being adapted globally, combining finance with commerce. [Source: Nilson Report, World Bank 2024]

# Big Tech Financial Services Landscape



Source: [bis.org/publ/work1129.htm](https://www.bis.org/publ/work1129.htm) (BIS 2024), Company reports

**Big Tech combines massive user bases with financial services—regulators worldwide watching closely.**

## Business Challenges:

- Path to profitability (most still loss-making)
- Customer retention and churn
- Scaling while maintaining economics
- Competition from Big Tech

## Technology Risks:

- Cybersecurity threats
- System outages and downtime
- Third-party vendor dependency
- AI bias and fairness

## Regulatory Risks:

- Licensing requirements
- Capital adequacy rules
- Consumer protection mandates
- Cross-border complexity

## Market Risks:

- Interest rate sensitivity
- Credit risk in lending
- Valuation corrections (2022-2024)
- Funding winter and VC pullback

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Profitability remains the key challenge: only 5% of neobanks are profitable globally.

## Leading Markets (2024):

- UK: \$9B investment, 2,500+ fintechs
- Germany: \$2.5B, focus on B2B
- France: \$2.2B, strong InsurTech
- Netherlands: \$1.8B, payments hub
- Sweden: \$1.5B, Klarna home

## European Champions:

- Revolut (UK, \$75B valuation)
- Adyen (Netherlands, \$40B market cap)
- N26 (Germany, \$9B)
- Wise (UK, \$8B market cap)

## Regulatory Environment:

- PSD2: Open banking mandate
- MiFID II: Investment services
- GDPR: Data protection
- MiCA: Crypto-asset regulation
- DORA: Digital operational resilience

## Competitive Dynamics:

- Fragmented market (27 countries)
- Cross-border passporting
- Emerging hubs (Estonia, Lithuania)

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The UK remains Europe's fintech capital, but Brexit complicates EU market access. [Source: CB Insights, Statista 2024]

## Emerging Trends:

- Embedded finance: Finance in non-financial apps
- Open finance: Beyond banking to all products
- Real-time everything: Payments, credit, FX
- Generative AI: Personalized advice, fraud

## Technology Evolution:

- Central Bank Digital Currencies (CBDCs)
- Quantum-resistant cryptography
- Biometric authentication standards

## Market Consolidation:

- M&A activity increasing
- Bank acquisitions of fintechs
- Platform aggregation (super-apps)
- Vertical integration strategies

## Regulatory Evolution:

- Harmonized EU fintech regulation
- AI governance frameworks
- ESG integration in fintech
- Consumer protection enhancements

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Embedded finance is projected to be a \$7 trillion market by 2030. [Source: CB Insights, Statista 2024]

## Core Concepts:

- Fintech = Technology-enabled financial innovation
- Driven by mobile, cloud, AI, and regulation
- Ecosystem of startups, banks, Big Tech
- Multiple categories: Payments, banking, wealth, insurance

## Market Reality (2024):

- \$95.6B investment (down from peak)
- European leaders: Revolut, Adyen, Wise
- Path to profitability remains challenging

## Critical Success Factors:

- Customer experience and trust
- Unit economics and scalability
- Regulatory compliance
- Sustainable business models

## Looking Ahead:

- Embedded finance as dominant model
- Consolidation and maturation
- Collaboration over disruption
- AI-driven personalization

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Fintech has moved from disruption to collaboration; the winners will combine innovation with profitability. [Source: CB Insights, Statista 2024]

# Lesson 2: Digital Payments I – Fundamentals

We will explore:

- Payment lifecycle and infrastructure
- Card networks (Visa, Mastercard)
- Interchange fees and economics
- ACH and SEPA payment systems
- Payment processing value chain

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Understanding next lesson preview is essential for modern financial systems.