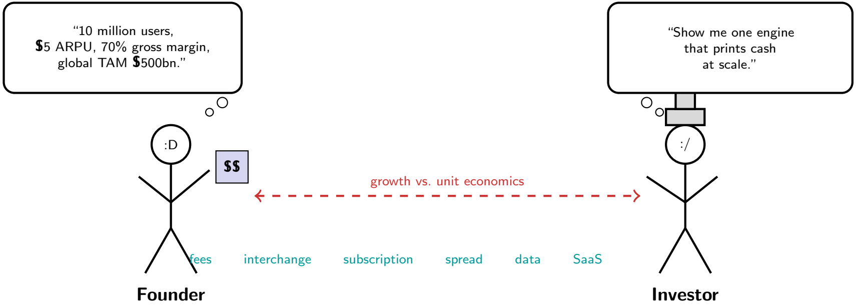
FinTech Business Models: Fundamentals

Lesson 01 — Revenue Engines and Unit Economics

Digital Finance



Every FinTech pitch hides a question: which engine actually pays?

Which Six Engines Power Every FinTech Revenue Statement?

Every FinTech claims to “disrupt finance”. Yet underneath the marketing, only six mechanisms actually generate cash. Understanding which engines a company runs—and which combinations scale—separates viable businesses from venture-backed fiction.

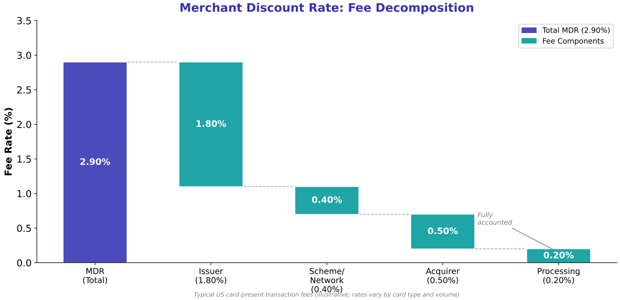
The six revenue engines:

Engine	What It Charges For	Representative Firm
Transaction fees	Per-payment processing	Stripe (2.9% + $0.30)
Interchange	Card-swipe rebate from issuer	Chime (US), Revolut (UK) (1.1–1.8%)
Subscription	Flat monthly/annual fee	Revolut Premium (EUR 7.99/mo)
Interest spread (NIM)	Deposit-to-loan rate gap	SoFi (US), Monzo (UK) (2–4% spread)
Data / advertising	Insight licensing, referral	Plaid (US), Credit Karma (US)
Platform SaaS	API and infrastructure licensing	Mambu (Germany), Solaris (Germany) (B2B)

Every FinTech P&L is a weighted mix of these six. The spine of this lecture decomposes each in turn, then stitches them back together through unit economics and case studies.

Six mechanisms, not six industries. A single firm can run multiple engines simultaneously.

How Does a Payment-Processing Engine Turn Volume Into Margin?



Payment processors charge merchants a visible price; what remains after the card networks and issuing banks take their share is the processor's gross margin.

Stripe economics:

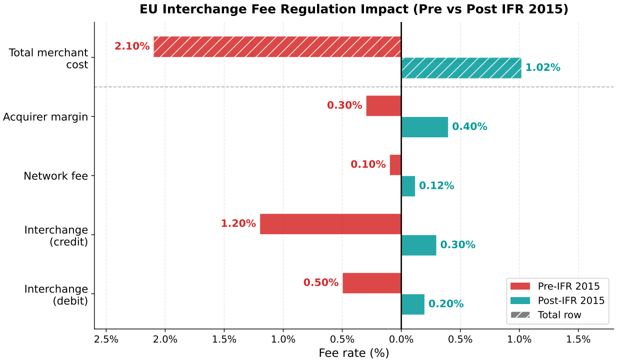
- Headline: 2.9% + $0.30 per US card transaction
- Of the 2.9%, about 1.8% is interchange to the issuer
- Card network (Visa/Mastercard) takes 0.13–0.15%
- Stripe retains roughly 0.6–0.9% as gross margin

Gross margin profile: 30–60% at scale, but only because variable costs (fraud loss, chargeback processing) are a small fraction of volume.

Moat: developer experience and integration depth, not pricing.

Transaction-fee engines live or die on volume. Without scale, variable costs eat the thin headline margin.

Why Is Interchange the Favourite Starting Engine of US Neobanks?



Interchange is the per-transaction fee the *issuing* bank (the bank that gave the consumer the card) receives from the *acquiring* bank (the bank that processes the merchant's side) every time the card is used. US neobanks built entire business models on harvesting it.

Durbin amendment (a US Dodd-Frank provision enacted in 2010 that capped debit-card interchange for large banks; small banks were deliberately carved out, creating the arbitrage neobanks now harvest):

- Caps debit interchange for banks >\$10bn assets at \$0.21 + 0.05%
- Small banks and neobank partners remain uncapped (∼1.15–1.75%)
- Chime + Bancorp Bank partnership earns roughly 1.5% per swipe

Unit economics: Chime reports about \$5–7 monthly interchange revenue per active user; at near-zero marginal cost this is 80–90% gross margin.

Risk: a regulatory cap cut would halve revenue overnight.

Interchange is the cleanest high-margin engine available—until a regulator decides otherwise.

What Does a Subscription Tier Add That Free Users Never See?

Subscription is the most predictable FinTech engine: fixed monthly revenue, high gross margin, but conversion-limited by the free-tier anchor.

Revolut tier cascade:

Tier	Monthly Price (EUR)	What You Get
Standard (free)	0	Basic account, EUR 200 free FX/month
Plus	3.99	Higher FX limits, purchase protection
Premium	7.99	Metal card, travel insurance, crypto fee discount
Metal	13.99	Priority support, airport lounges, 1% cashback
Ultra	45.00	Concierge, WeWork pass, higher cashback

Economic logic: roughly 8% of Revolut's 35 million users pay for a tier; at a blended 5 EUR/month that is a recurring 170 million EUR/year subscription stream. Gross margin on subscription revenue is typically 70–85% once the free infrastructure is built.

Platform SaaS variant (B2B): Mambu and Solaris license core-banking APIs to banks and embedded-finance clients at 100–500 thousand EUR annual contracts. Lower unit count, much higher contract value, comparable gross margin.

Subscription revenue is the FinTech equivalent of an annuity—until conversion plateaus and growth relies on ARPU expansion.

Why Is Every Durable Neobank Secretly Trying to Become a Bank?

The most lucrative engine is the oldest: borrow cheap from depositors, lend dear to borrowers, keep the spread. Banks have run this playbook for centuries, and FinTechs eventually converge on it.

Net interest margin (NIM):

$$\text{NIM} = \frac{\text{Interest income} - \text{Interest expense}}{\text{Average interest-earning assets}}$$

Typical ranges: US retail banks 3.0–3.5%, European banks 1.5–2.0%, neobank lenders 4–6% (higher-risk consumer credit).

Why FinTechs chase it:

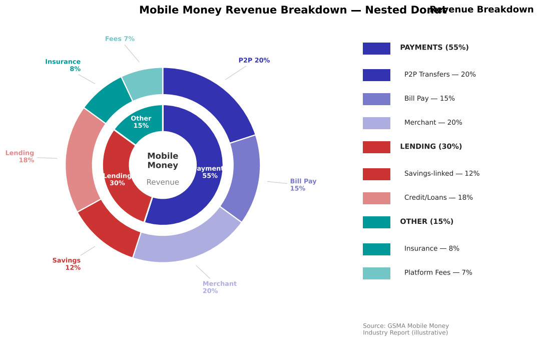
- A bank licence unlocks cheap deposit funding (0.0–2.0% cost)
- Lending at 8–25% APR produces 6–20 percentage points of spread
- At EUR 10bn deposit base, a 3% NIM is EUR 300m/year recurring

Examples: SoFi acquired a national bank charter in 2022; Monzo received UK banking licence 2017; Nubank's NIM reached 18.2% in Brazil Q3 2023 thanks to ultra-high credit-card APRs.

Cost: bank capital requirements (CET1 ratio 10–15%) trap equity; supervisory burden adds 5–15% of revenue in compliance costs.

NIM is the endgame. Every FinTech that survives long enough ends up optimising a balance sheet.

Can a FinTech Turn User Data Itself Into the Product?



When users give a FinTech intimate financial data, the FinTech can turn that data into a product sold to someone else. Gross margins are the highest in the industry—but regulatory risk is also the highest.

Credit Karma (acquired by Intuit, 2020, $7.1bn):

- Free credit-score product attracts 130m users
- Monetises via targeted credit-card and loan offers
- Paid referral fee per conversion ($100–400 per approved card)

Plaid sells aggregated bank-connection APIs to other FinTechs; unit economics feature 70–90% gross margin but narrow single-digit net margin after legal and compliance.

Trust risk: any public misstep (2018 Facebook–Cambridge Analytica moment for finance) can collapse the user base overnight.

Data monetisation is high-margin and high-reputation-risk. Gross margin of 80% means nothing if the user base walks.

How Does Banking-as-a-Service Turn One Licence Into Many Revenue Lines?

The sixth engine is Banking-as-a-Service (BaaS): a licensed bank rents its regulatory wrapper, core ledger, and card-issuing capacity to non-bank brands.

Typical BaaS revenue stack per client:

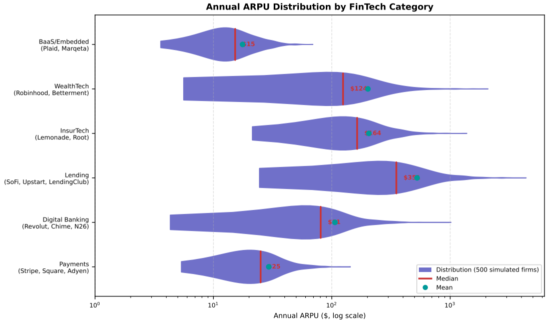
- **Setup fee:** 50,000–250,000 EUR one-time integration
- **Monthly platform fee:** 5,000–50,000 EUR recurring
- **Per-account fee:** 0.50–2.00 EUR per end-user per month
- **Per-transaction fee:** 0.01–0.10 EUR or 0.1–0.5% of volume
- **Interchange share:** 20–50% of card-interchange passed to BaaS provider

Economic logic: the BaaS provider amortises one licence and one tech stack across many brands. Marginal cost per new client is low; gross margin at scale reaches 50–70%.

Examples: Solaris (Germany, 100+ clients), Railsr (UK, 2023 insolvency), Green Dot (US), Treasury Prime. The 2023 Railsr collapse demonstrates that BaaS providers carry the underlying regulatory risk for every client—one client's compliance failure can trigger a systemic provider failure.

BaaS is a wholesale engine. A single licence monetised by many brands, but one compliance fire can destroy all of them together.

Why Does Every FinTech CEO Quote Only Two Numbers in Board Meetings?



Two numbers capture almost every FinTech's unit economics: ARPU (average revenue per user) and CAC (customer acquisition cost).

ARPU benchmarks by segment:

- US neobanks: $50–150/yr
- European neobanks: EUR 20–80/yr
- Payment processors: $200–1,500/merchant/yr
- B2B BaaS: EUR 5,000–50,000/client/yr
- Wealth platforms: 0.25–0.85% of AUM

CAC benchmarks:

- Organic / referral: $5–30
- Paid digital (US): $50–300
- Bank-branch acquisition: $200–500

ARPU is the engine output. CAC is the price of starting the engine. Ratio of the two decides everything else.

How Long Before a FinTech Recovers What It Paid to Acquire You?

Customer lifetime value (LTV) and payback period translate ARPU and CAC into a go/no-go verdict.

Key formulas (fundamentals version, no discounting):

$$\text{LTV} = \text{ARPU} \times \text{Gross margin \%} \times \text{Average customer lifetime (years)}$$

$$\text{Payback period (months)} = \frac{\text{CAC}}{\text{ARPU}_{\text{monthly}} \times \text{Gross margin \%}}$$

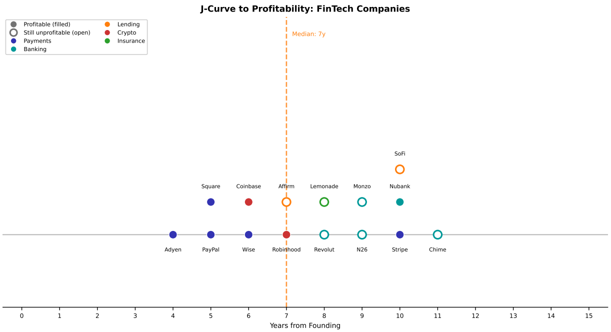
Rule-of-thumb thresholds (venture-capital practice):

- **LTV / CAC ratio $>$ 3.0** — efficient growth, business is investable
- **LTV / CAC ratio 1.0–3.0** — thin, needs ARPU expansion
- **LTV / CAC ratio $<$ 1.0** — destroying value per acquisition
- **Payback period $<$ 12 months** — growth self-funds
- **Payback period 12–24 months** — requires external capital
- **Payback period $>$ 24 months** — relies on continued fundraising

Worked example: a European neobank with ARPU EUR 60/yr, 40% gross margin, 4-year average lifetime has LTV $=$ $60 \times 0.40 \times 4 =$ EUR 96. At CAC EUR 30 the LTV/CAC ratio is 3.2 and payback is roughly 15 months—investable but not exciting.

Two formulas, six revenue engines. Everything else in a FinTech pitch deck is commentary.

Why Does Every FinTech Lose Money Before It Makes Money?



FinTech profitability follows a J-curve: large upfront losses while customer acquisition runs ahead of revenue, followed by a turn as cohorts mature and marketing spend tapers.

Three stages:

- **Descent (years 1–3):** deep losses from CAC outrunning ARPU
- **Trough (years 3–5):** losses narrow as cohort LTV accumulates
- **Ascent (years 5+):** positive contribution margin once retention and cross-sell compound

Time-to-profitability benchmarks:

- Payment processors: 3–5 years
- Neobanks: 6–10 years
- Lending platforms: 5–8 years
- BaaS providers: 4–6 years

The J-curve explains why FinTechs burn cash: the depth of the trough is the price of the ramp that follows.

Outline

Learning Objectives

By the end of this lesson, you will be able to:

1. Explain the six revenue engines that underlie every FinTech business model and identify which a given firm is running
2. Define the four core unit-economics metrics (ARPU, CAC, LTV, payback) and apply them to a worked example
3. Describe three representative FinTech case studies and locate each on the BMC with specific numerical inputs
4. Analyse three failure modes that kill FinTech business models even when product-market fit is achieved

Which Nine Boxes Does a FinTech Have to Fill Out—and With What Numbers?

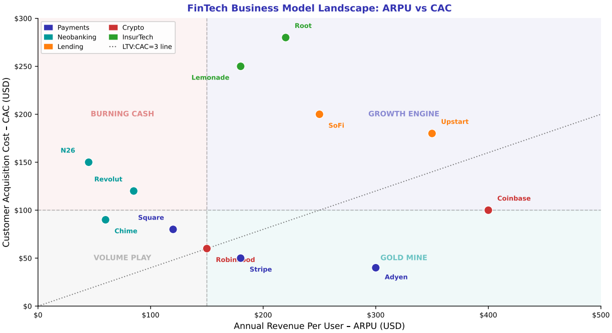
The Business Model Canvas (Osterwalder, 2010) gives nine building blocks. A FinTech fundamentals analyst fills each with concrete numerical inputs, not slogans.

BMC Box	**Question**	**Numerical Input Example (Revolut)**
Customer segments	Who pays?	35m retail users, 0.5m SMB accounts, 8% paying tier
Value proposition	Why pay?	FX at inter-bank + EUR 200/mo free
Channels	How acquired?	70% referral, 25% paid, 5% branch partners
Customer relationships	Retention mechanism	In-app support, 24/7 chat, 85% monthly retention
Revenue streams	Engine mix	Interchange 48%, subscription 30%, FX 18%, other 4%
Key resources	What do we own?	Core ledger, 28 EU/UK licences, 35m user base
Key activities	Daily work	Compliance, app engineering, interchange optimisation
Key partners	Who else matters?	Card networks, issuing banks, regulators
Cost structure	Where does the money go?	Staff 40%, tech 20%, marketing 15%, compliance 15%, card-network 10%

The BMC becomes an analytical tool once every box has numbers. Boxes without numbers are aspirations.

Nine boxes, one rule: no box is filled in until a number lives inside it.

Case Study: Can Low-Margin Plumbing Become a $95bn Business?



Stripe (US-headquartered online-payments company founded by the Collison brothers in 2010, last private valuation $65bn in 2024, down from $95bn in 2021):

Engines: transaction fees (85% of revenue), platform SaaS (Stripe Connect, Atlas, Billing), interchange (small).

Numbers:

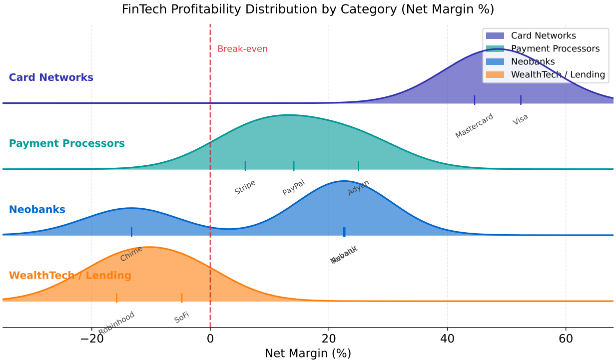
- $1tn+ processed per year (2023)
- Take rate 2.9% + $0.30
- Net take rate (after interchange pass-through) 0.5–0.8%
- Gross margin 30–40%
- Employees ∼7,000

Moat: developer API quality, integration depth at platform clients (Shopify, Lyft, Amazon).

Lesson: a thin-margin engine can still build a durable franchise if volume scales and switching costs accumulate at the customer layer.

Stripe proves that low headline margin + high volume + integration depth is a viable model—if you can afford ten years of compounding.

Case Study: How Did Revolut Stack All Six Engines Into One App?



Revolut (UK-based multi-engine neobank founded in London in 2015, last valuation $45bn in 2024):

Engine evolution:

- 2015–2017: FX fees only, 12% gross margin
- 2018–2020: + subscription, card-interchange
- 2021–2023: + crypto, stock trading, NIM on deposits
- 2023: first full profitable year, gross margin 59%, EUR 1.8bn revenue

Numbers (2023):

- 35m users, 2.5m UK
- ARPU EUR 52/yr
- Paying tier share 8%
- Net profit EUR 344m

Moat: multi-engine revenue mix; single-engine shock no longer threatens viability.

The stacking strategy: start with one engine, add adjacent engines every 18–24 months, diversify into resilience.

Case Study: How Did Nubank Turn One Credit Card Into 100 Million Users?

Nubank (founded 2013, Brazil; IPO 2021 at \$45bn, 2024 market cap ∼\$65bn):

Engines and mix (2023):

- Net interest margin: 18.2% (consumer credit cards, personal loans)
- Interchange: 15% of revenue
- Subscription (Ultravioleta premium card): 3% of revenue
- Insurance distribution: 4% of revenue
- Small share from investment products

Numbers:

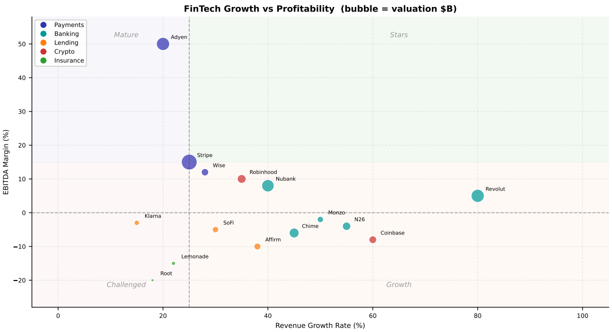
- 94m customers (93m Brazil, 1m Mexico/Colombia)
- ARPU \$11/month blended
- CAC \$5 (largely referral-driven, lowest in fintech)
- Gross margin 43%, net margin 17.6% (2023 full year)
- Time to profitability: 8 years

Moat: local regulatory licence, credit underwriting model tuned to unbanked Brazilian consumers, referral loop where existing customers bring 80%+ of new ones.

Why this works in Brazil but not in Germany: incumbent bank fees in Brazil historically ran at 5–15% of account balances; Nubank's "zero fee" promise released enormous latent demand. In Germany, incumbent fees were already under 50 EUR/yr—so the disruption incentive was weaker.

Nubank is the clearest demonstration that NIM + interchange + ultra-low CAC beats every other combination at scale.

Case Study: How Does Wise Price FX So Low and Still Make Money?



Wise (UK-based cross-border payment company founded in London in 2011 as TransferWise; listed on LSE in 2021):

Engine: transaction fee for cross-border FX, stated at mid-market rate + 0.41–0.60% spread (vs. typical bank 3–7%).

Numbers (FY 2024):

- £118.5bn volume processed
- £1.05bn revenue
- 38% adjusted EBITDA margin
- 12.8m active personal customers
- ARPU £82/yr

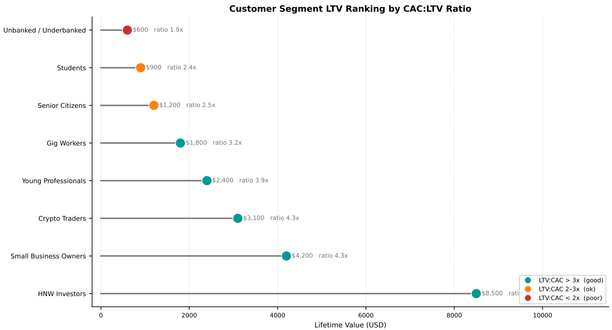
Unit economics:

- Gross take rate: 0.60%
- CAC: £24 (90% organic / referral)
- Payback period: $\sim$4 months

Moat: local-rail network in 40+ countries that bypasses correspondent banking; margin structure impossible for incumbents to replicate without cannibalising 10× higher FX fees.

Wise is a transaction-fee engine operating at single-digit basis-point take rates—profitable only because volume and network effects compound.

What Is the Thin-Margin Trap That Kills Most Payment Start-Ups?



A FinTech whose only engine is a thin headline margin (payments, FX, robo-advisory) must reach massive scale before contribution margin turns positive. Most run out of capital first.

Thin-margin failure chain:

- Take rate 0.3–0.8% on processed volume
- Fixed compliance + tech cost 5–15m EUR/yr
- Break-even requires 1–5bn EUR annual volume
- Runway typically 18–36 months at VC-standard burn
- Capital raise needed every 18–24 months

Examples of collapse:

- Railsr (BaaS, 2023 insolvency)
- Chipper Cash (African cross-border FX, 2024 shutdown)
- Bond Financial (US BaaS, 2023 wind-down)

Thin margin is only viable with enormous volume AND diversified revenue. Neither is guaranteed.

Why Does Every Lending-Based FinTech Run Into a Capital Wall?

Lending requires a balance sheet. A balance sheet requires equity. Equity is expensive and scarce. This is the capital-intensity trap.

Why lending FinTechs struggle:

- **Warehouse funding costs:** pre-profitability FinTechs pay 8–15% on credit facilities vs. 4–6% for banks; spread shrinks
- **Capital ratios:** Basel III mandates 8–13% CET1 for banks; non-bank lenders often leverage 5–10×, amplifying losses
- **Credit cycle risk:** defaults rise in downturn precisely when funding tightens (pro-cyclical)
- **Regulatory arbitrage closure:** what originated as "marketplace lending" (LendingClub, 2014) eventually migrated to balance-sheet lending under regulatory pressure, doubling capital needs

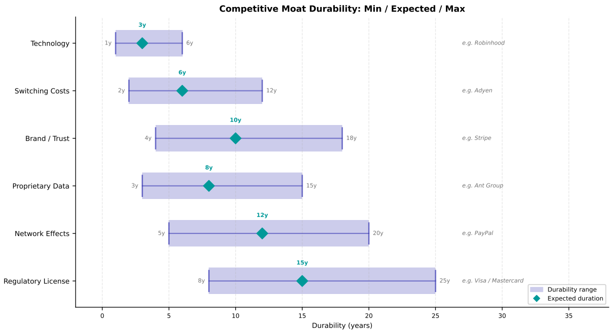
Historical examples of capital-driven collapse:

- LendingClub pivot (2016): peer-to-peer model abandoned after SEC inquiry and credit-quality missteps
- Zopa (UK) wound down P2P lending 2021, took full bank licence
- Goldman Sachs Marcus wrote down $3.0bn on consumer lending losses 2022–2023

Implication: any FinTech that targets NIM must eventually raise bank-like amounts of equity (100m+ EUR) or accept permanent dependence on warehouse-lender goodwill.

You can run a lending book without being a bank—but only until the next recession. Then you wish you had been a bank.

How Can a Single Regulatory Ruling Erase 50% of a FinTech's Revenue Overnight?



Single-engine FinTechs face binary regulatory risk. One ruling can eliminate an entire revenue line.

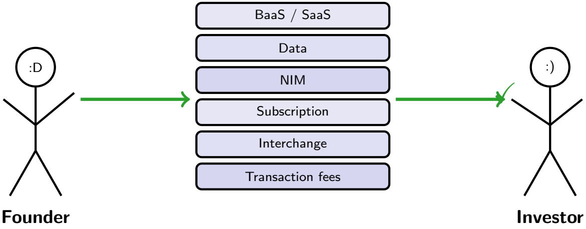
Real episodes:

- **Durbin reform extension proposal (US, 2022):** would cap small-bank debit interchange; Chime and Varo stock-implied value fell 20–30% in quarters preceding votes
- **PSD2 SCA enforcement (EU, 2019):** strong customer authentication requirements raised fraud-review cost by 40% for merchants using Stripe and Adyen
- **UK FCA BNPL review (2023):** Klarna, Clearpay forced into regulated-credit perimeter, raising compliance cost 3×
- **Payment for order flow ban (UK/EU, 2021–2023):** Robinhood's business model legal in US, banned in UK/EU

Implication: revenue diversification is not just a growth strategy—it is a regulatory insurance policy.

Single-engine models are one ruling away from catastrophic revenue loss. Diversified-engine models absorb the blow.

Six-engine revenue stack



One engine explains the pitch. Six engines explain the survival.

Which Lessons Will Reveal the Numbers Behind the Six Engines?

Each subsequent lesson opens up one or two of the six engines in depth.

Lesson	Topic	Engines Explored
02	Neobanks & Open Banking	Interchange, subscription, data (open-banking APIs)
03	P2P Lending & Robo-Advisors	NIM, marketplace commissions, subscription
04	RegTech & Compliance	Platform SaaS, data (compliance-as-a-service)
05	Blockchain & Smart Contracts	Protocol fees (new engine), transaction fees on-chain
06	Financial Markets & Trading	Payment-for-order-flow, subscription, data
07	Risk Management & Regulation	Compliance-SaaS, data monetisation constraints
08	Emerging Topics (CBDC, DeFi, GenAI)	Platform SaaS, protocol economics, data

The six engines are the recurring spine of the course. Each lesson adds numerical detail, regulatory context, and failure modes specific to its topic.

Today's taxonomy becomes next week's case study. Keep the engine list nearby for the remaining seven lessons.

Summary

Key takeaways from this fundamentals deck:

1. **Six engines, not six industries.** Every FinTech P&L is a weighted mix of transaction fees, interchange, subscription, interest spread, data monetisation, and platform SaaS. Identifying the mix is the first analytical move.
2. **Unit economics collapse to four numbers.** ARPU, CAC, LTV, and payback period summarise nearly every FinTech business case. A LTV/CAC ratio above 3.0 and a payback period under 24 months are the minimum threshold for investability.
3. **Case studies reveal that durable FinTechs stack engines.** Revolut stacked FX $\rightarrow$ subscription $\rightarrow$ interchange $\rightarrow$ NIM to reach 59% gross margin; Nubank combined NIM + interchange + ultra-low CAC for 94 million customers; Stripe built switching costs at the developer layer to sustain a thin-margin business.
4. **Three failure modes recur.** The thin-margin trap kills single-engine payment start-ups; the capital-intensity trap catches lending FinTechs before they earn a bank licence; regulatory whiplash erases revenue lines overnight for firms without engine diversification.

Next lesson: Neobanks & Open Banking—how interchange and subscription-driven digital banks contest incumbent markets.