Financial Technology (FinTech)

Understanding the Revolution in Financial Services – Deep Dive

What Makes This Deep Dive Different

This variant goes beyond the standard lecture:

- **Collaboration economics:** when each model creates vs. destroys value – not just what models exist
- **Regulatory theory:** why mandated API access was a rational policy response, not just what PSD2 says
- **Unit economics:** CAC, LTV, churn – the numbers that determine which fintechs survive
- **Historical parallels:** telegraph, telephone, internet as prior waves; what the pattern predicts for fintech
- **Game theory:** the strategic logic behind bank-fintech relationship choices

Assumed Background

You are familiar with: DCF, risk-adjusted returns, regulatory frameworks, financial intermediation theory. This session applies those lenses to fintech strategy.

Central Analytical Question

Under what conditions does technology-led disruption of intermediaries create *net* economic value vs. merely redistribute rents?

Collaboration Model Economics I: The Value Creation Logic

Why Do Partnerships Exist at All?

Standard transaction cost theory (Coase, Williamson): a firm boundary exists when internal coordination costs are lower than market transaction costs. Bank-fintech partnerships form when *neither party* can replicate the other's asset faster than the cost of partnering.

Bank's non-replicable assets:

- Regulatory charter (years to obtain)
- Depositor trust capital (cannot be purchased)
- Balance sheet / cost of funds advantage
- Existing compliance infrastructure

Fintech's non-replicable assets:

- Speed-to-market culture (flat hierarchy)
- User experience IP (redesigning from zero)
- Proprietary data models (alternative credit scoring)
- Developer talent ($\neq$ bank talent)

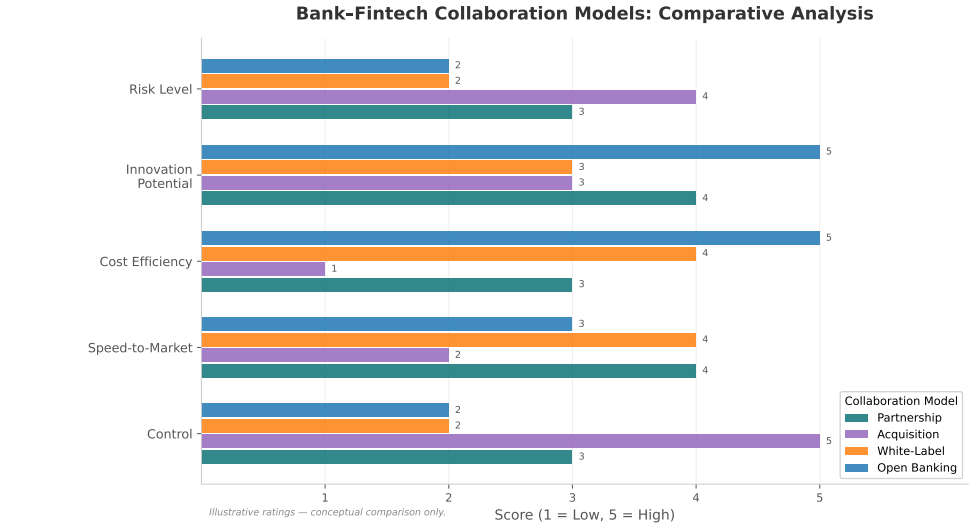
Value Creation Condition

A partnership **creates** value when:

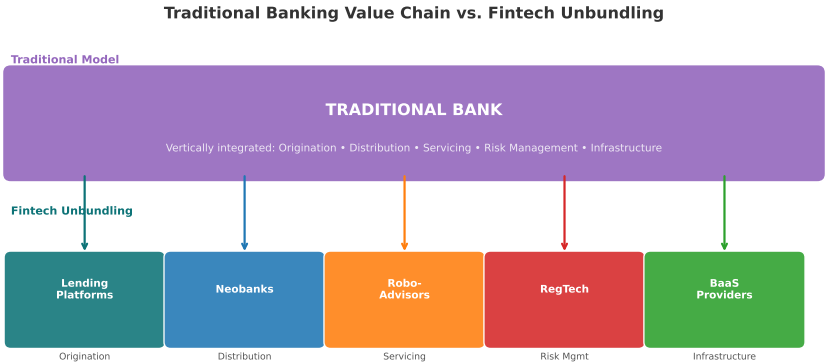
Joint surplus $>$ Sum of standalone values

i.e., the bank could not build the UX in 3 years, and the fintech could not obtain the

Collaboration Model Economics II: When Each Model Destroys Value



Collaboration Model Economics III: The Unbundling-Rebundling Cycle



"Fintech does not replace the bank — it unbundles it."

Each startup attacks the most profitable or inefficient piece of the value chain.

The cycle has three phases:

Regulatory Theory I: Why Did Regulators Mandate API Access?

The Information Asymmetry Argument:

- Banks hold transaction histories that are the single richest data asset for assessing creditworthiness, spending behaviour, and financial risk
- This creates a **data moat**: the incumbent's information advantage is a structural barrier to entry – not a legitimate product innovation
- A new lender cannot price credit competitively without transaction history; a bank can withhold it as a retention tool

Three Regulatory Justifications:

1. *Consumer sovereignty:* data about a consumer should be portable by that consumer (GDPR logic extended to financial data)
2. *Competition policy:* reduce structural barriers to entry in financial services
3. *Innovation externality:* third-party developers will build services on open data that incumbent banks have no incentive to build themselves

The Policy Logic

If data concentration creates market power, and market power is not the result of superior product

The Counter-argument

Regulatory Theory II: Open Banking Models and Systemic Trade-offs

Mandate Design Choices:

- *Scope:* current accounts only (UK/EU) vs. all financial products (Australia's CDR) vs. all sectors (India's Account Aggregator). Broader scope creates more value but more systemic risk
- *Consent model:* bank-mediated vs. consumer direct. EU GDPR requires explicit consent per use case – creates friction
- *Liability allocation:* who is responsible when an authorised third party misuses data? PSD2 places liability on the TPP; US frameworks are unclear
- *API standardisation:* voluntary (US, Germany) vs. mandated standard (UK Open

Systemic Risk Introduced

Open banking creates API interdependence. A data breach at a large AISP (Account Information Service Provider) exposes data from *hundreds of banks simultaneously* – a new systemic risk vector that did not exist under siloed banking.

Empirical evidence:

- UK Open Banking: 7+ million users by 2023, but concentration in large fintechs (Plaid-equivalent providers)
- Brazil's PIX: fastest open payments

Fintech Unit Economics I: The CAC/LTV Framework

The Two Metrics That Determine Survival

Customer Acquisition Cost (CAC):

$$\text{CAC} = \frac{\text{Sales + Marketing Spend}}{\text{New Customers Acquired}}$$

Lifetime Value (LTV):

$$\text{LTV} = \frac{\text{ARPU} \times \text{Gross Margin}}{\text{Churn Rate}}$$

Viability condition: $\text{LTV}/\text{CAC} \geq 3$ (venture-capital benchmark) and payback period ≤ 12 months for consumer fintech.

The neobank problem:

Why churn rate dominates LTV:

- At 5% monthly churn: avg. customer life = 20 months
- At 2% monthly churn: avg. customer life = 50 months
- A 3 percentage point improvement in retention has larger LTV impact than doubling ARPU

The Cross-Sell Imperative

Every fintech with a payments or account product is using it as an *acquisition loss leader*. The business model only works if the company can cross-sell lending, insurance, or investment products at much higher

Fintech Unit Economics II: The Path to Profitability

Three Structural Routes to Profitability:

1. **Scale through lending:** move into credit products (BNPL, personal loans, SME lending). Net interest margin 3–8% replaces interchange revenue. Requires either a banking licence or BaaS partnership. Risk: credit losses in downturns (2022–23 BNPL deterioration)
2. **B2B pivot:** sell the technology stack built for consumers to enterprises. Marqeta, Stripe, Adyen succeeded here. B2B SaaS economics are far superior: lower churn, higher ACV, shorter sales cycle at scale
3. **Data monetisation:** aggregate anonymised transaction data and sell insights to retailers, asset managers, advertisers. High margin, no

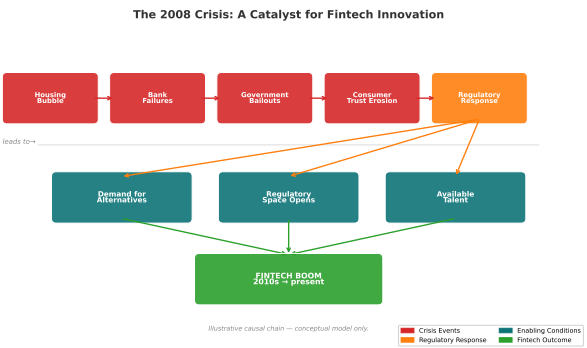
Valuation Implication

Fintech valuations depend critically on *which* profitability route investors believe in:

- Lending route $\Rightarrow$ valued as a bank (P/B multiple, credit quality scrutiny)
- B2B/SaaS route $\Rightarrow$ valued as software (revenue multiple, NRR focus)
- Data route $\Rightarrow$ valued as a platform (GMV/DAU metrics)

Misalignment between narrative and unit economics is a leading indicator of

Historical Parallels: Four Waves of Infrastructure Disruption in Finance



The Repeating Pattern:

1. **Telegraph (1840s–1890s):** enabled commodity arbitrage across exchanges; collapsed local information monopolies of trading houses. Analogue: fintech's API economy collapsing data monopolies.
2. **Telephone (1900s–1940s):** disintermediated physical brokers for simple transactions; created the first remote banking relationships. Analogue: neobanks disintermediating branch networks.
3. **Mainframe + ATMs**

What History Predicts: The Consolidation Phase

Carlota Perez's Technology Surge Model:

- **Installation phase:** new infrastructure deployed; financial speculation; many entrants; incumbents threatened but not yet displaced
- **Turning point:** financial crisis (or rate shock) eliminates weak entrants; capital dries up; survivor bias reveals true product-market fit
- **Deployment phase:** surviving technologies permeate the economy; incumbents either adopt or die; regulation catches up

Where Is Fintech Now?

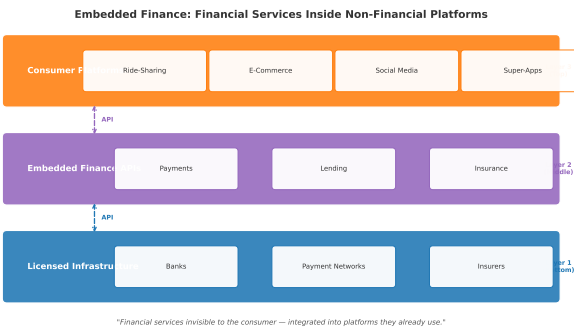
The 2021 peak and 2022–23 correction follow Perez's pattern precisely: a speculative installation phase ended by rate shock. We are likely at the

Strategic Prediction

In each previous wave:

- The number of providers *collapsed* by 80%+ from peak
- The infrastructure layer became a regulated utility (telcos, payment networks)
- The application layer on top remained competitive and innovative
- Incumbents who survived partnered with infrastructure rather than trying to own it

Game Theory of Bank-Fintech Relationships



The Repeated Game Structure:

- Bank and fintech face a classic **Stag Hunt** dynamic: cooperate for large mutual gain, but each can defect for smaller certain gain
- *Bank's defection option:* build in-house once the fintech demonstrates product-market fit (free-ride on fintech's R&D)
- *Fintech's defection option:* obtain a banking licence once the customer base justifies the cost (disintermediate the bank partner)

Sustaining Cooperation

Synthesis: Implications for Financial Strategy

For Incumbent Banks:

- The unbundling-rebundling cycle means the competitive threat *intensifies over time*, not diminishes. Mature fintechs are more dangerous than early-stage ones
- Opt for partnerships early (before rebundling), acquisitions of pre-scale fintechs (before they obtain licences), and open banking compliance as a platform play rather than a compliance burden
- Unit economics analysis of partner fintechs should precede strategic commitment: a partner with LTV/CAC < 1 will eventually be acquired, pivot, or fail – none of which is predictable or contractually manageable

For Fintech Founders/Investors:

- The path to profitability must be articulated at Series A, not IPO. Investors who funded on growth metrics alone mispriced the 2020–21 cohort
- Regulatory positioning is existential: a fintech without a licence or a licensed BaaS partner is one enforcement action away from shutdown
- Historical consolidation pattern suggests: be the infrastructure (durable, recurring revenue, high switching costs) rather than the

Appendix A: The Definitions Debate – Arner, FSB, and BIS

Three Major Definitional Frameworks:

Arner, Barberis & Buckley (2016):

- FinTech = "technology-enabled financial innovation that is giving rise to new business models, applications, processes, and products with an associated material effect on financial markets and institutions and the provision of financial services"
- Historical scope: includes 1860s telegraph-based bond trading; fintech is not new
- Three eras: FinTech 1.0 (infrastructure), 2.0 (digitalisation), 3.0 (democratisation)

FSB (Financial Stability Board, 2017):

BIS (2018, CGFS-FSB Working Group):

- Adds: "the range of new technologies that have the potential to transform the provision of financial services, spurring the development of new business models, applications, processes, and products"
- Distinction: BIS focuses on *technology categories* (AI, DLT, cloud, APIs, big data) rather than outcomes

Why the Debate Matters

If fintech = any technology-enabled

Appendix B: Fintech Valuation Frameworks – From Startup to Maturity

Stage-Dependent Valuation Metrics:

Stage	Primary Metric
Pre-revenue	Team + TAM + technology moat
Seed / A	GMV, MAU, activation rate
Series B / C	CAC, LTV/CAC, net revenue retention
Growth / Pre-IPO	Revenue multiple, EBITDA trajectory, regulatory clean bill
Public market	P/E or P/B (if bank), EV/Revenue (if SaaS), EV/GMV (if marketplace)

DCF Application to Fintech:

- Terminal value dominates (70–90% of DCF value) due to near-zero near-term FCF
- Discount rate controversy: WACC using a pure fintech beta (high) vs. financial services beta (medium) vs. tech beta (low) produces dramatically different valuations
- Growth rate assumptions: most fintech DCFs assume growth convergence to market average within 10 years – the historical evidence from tech suggests this understates both growth and competitive obsolescence

Appendix C: Further Reading – Analytical Tier

Foundational Academic Papers:

- Philippon, T. (2019). "On Fintech and Financial Inclusion." *NBER WP 26330.* – Core paper on whether fintech reduces the cost of financial intermediation
- Buchak, G., Matvos, G., Piskorski, T., & Seru, A. (2018). "Fintech, Regulatory Arbitrage, and the Rise of Shadow Banks." *Journal of Financial Economics* 130(3). – Shows fintech growth is 60% regulatory arbitrage, 40% technology
- Frost, J., et al. (2019). "BigTech and the Changing Structure of Financial Intermediation." BIS WP 779. – Platform economics applied to financial services

Advanced Books:

- Perez, C. (2002). *Technological Revolutions and Financial Capital.* Elgar. – The macro framework for technology-finance waves
- Arner, D., Avgouleas, E., & Gibson, E. (2019). *Reconceptualising Global Finance and its Regulation.* Cambridge. – Regulatory theory of digital finance
- Lam, J. (2023). *Enterprise Risk Management in the Age of Fintech.* Wiley. – Operational risk and systemic risk in fintech

Policy Documents:

Appendix D: Extended Bibliography

Regulation & Open Banking:

- Directive 2015/2366/EU (PSD2), Recitals 27–34
- HM Treasury (2022). "Future of Open Banking." UK Government
- Babina, T., et al. (2022). "Customer Data Access and FinTech Entry." *NBER WP 30306*
- Vives, X. (2019). "Competition and Stability in Modern Banking: A Post-Crisis Perspective." *International Journal of Industrial Organization* 64
- Claessens, S., Frost, J., Turner, G., & Zhu, F. (2018). "Fintech Credit Markets Around the World: Size, Drivers and Policy Issues." BIS Quarterly Review

Historical Parallels & Theory:

- Perez, C. (2002). *Technological Revolutions and Financial Capital.* Elgar
- Coase, R.H. (1937). "The Nature of the Firm." *Economica* 4(16)
- Williamson, O.E. (1975). *Markets and Hierarchies.* Free Press
- Axelrod, R. (1984). *The Evolution of Cooperation.* Basic Books
- Eisenmann, T., Parker, G., & Van Alstyne, M. (2006). "Strategies for Two-Sided Markets." *HBR* Oct 2006

Financial Inclusion & Impact:

- Demirguc-Kunt, A., et al. (2022). *Global Findex Database 2021.* World Bank