

## Lesson 1.4: Platform Economics and Fintech Business Models Practice Exercises

Digital Finance Course

## Exercise 1: Unit Economics Calculation

**Calculate the viability of a neobank's unit economics:**

**Given data per customer:**

- Customer Acquisition Cost (CAC): \$55
- Monthly interchange revenue: \$3.50 (from card spend)
- Premium subscription: \$10/month (12% of users convert)
- Lending interest margin: \$2.00/month (only 8% of users take a loan)
- Monthly variable cost per customer: \$2.80
- Annual churn rate: 20%

**Calculate:**

- 1 Blended Average Revenue Per User (ARPU) per month
- 2 Monthly contribution margin per customer (ARPU – variable cost)
- 3 Average customer lifetime in months ( $= 12 \div \text{annual churn rate}$ )
- 4 Customer Lifetime Value (LTV = contribution margin  $\times$  lifetime)
- 5 LTV/CAC ratio—is this healthy ( $> 3.0\times$ )?
- 6 Months to break even on each customer (CAC  $\div$  monthly contribution margin)

## Exercise 2: Platform vs. Pipeline Analysis

**Compare two financial services firms serving the small-business lending market:**

**Firm A (Pipeline – Traditional Bank):**

- Funds loans from its own deposits
- Employs 50 loan officers
- Processes 200 loans/month
- Average loan: \$80,000
- Net Interest Margin (NIM): 4.0%
- Fixed cost: \$600,000/month

**Firm B (Platform – Lending Marketplace):**

- Matches borrowers with institutional investors
- 5-person engineering team
- Processes 800 loans/month
- Average loan: \$60,000
- Platform fee: 2.5% origination
- Fixed cost: \$250,000/month

**Analyze:**

- ① Calculate monthly revenue for each firm
- ② Calculate profit (revenue – fixed cost) for each
- ③ Which has better unit economics? Which carries more risk?
- ④ If loan defaults increase to 8%, which firm is more exposed? Why?

## Exercise 3: Network Effects Identification

**For each scenario, identify the type of network effect (direct, indirect, or cross-side) and explain:**

- 1 A stock exchange where more listed companies attract more investors, and more investors attract more companies seeking to list
- 2 A mobile banking app where users can instantly split bills with other users of the same app
- 3 A financial data platform where more data consumers attract more data providers (banks, exchanges) who build integrations
- 4 An insurance marketplace where more policyholders attract more insurers, and more insurers attract more policyholders with better pricing
- 5 A cryptocurrency blockchain where more users increase the number of nodes, which increases network security, which attracts more users

**Bonus:** For each, describe the “chicken-and-egg” challenge and how the platform might solve it.

## Exercise 4: Embedded Finance Revenue Model

**An e-commerce platform is considering embedding financial services. Model the revenue opportunity:**

**Platform data:**

- 2 million monthly active merchants
- Average merchant monthly Gross Merchandise Volume (GMV): \$25,000
- Current payment processing revenue: 2.5% of GMV

**Proposed embedded finance products:**

- **Working capital loans:** 15% of merchants eligible, avg loan \$10,000, 5% origination fee, 2 loans/year
- **Merchant insurance:** 10% adoption, \$50/month premium, platform keeps 25% commission
- **Business savings account:** 20% adoption, \$0.80/month per account (BaaS revenue share)

**Calculate:**

- ① Current annual payment processing revenue
- ② Annual revenue from each embedded product
- ③ Total embedded finance revenue as a % of current payment revenue
- ④ Which embedded product has the highest revenue per participating merchant?

## Exercise 5: BaaS Build-vs-Buy Decision

**A fintech startup wants to offer digital bank accounts. Compare two approaches:**

### **Option A: BaaS Partnership**

- Setup cost: \$150,000
- Time to launch: 4 months
- Per-account fee: \$2.50/month to BaaS provider
- Revenue share: 20% of net revenue to BaaS
- No banking license needed

### **Option B: Own Banking License**

- License application cost: \$3,000,000
- Time to launch: 18 months
- Regulatory capital requirement: \$10,000,000
- No revenue sharing
- Full compliance team needed: \$80,000/month

**Shared assumptions:** Expect 50,000 accounts in Year 1, growing to 200,000 by Year 3. ARPU = \$8/month.

**Analyze:**

- 1 Calculate Year 1 and Year 3 net revenue under each option
- 2 At what scale (number of accounts) does Option B become cheaper annually?
- 3 What non-financial factors should influence the decision?
- 4 Which option would you recommend for: (a) a startup with \$5M seed funding? (b) a fintech with 1M existing users expanding into banking?

## Exercise 6: Super-App Strategy Design

You are designing a super-app strategy for a European neobank with 500,000 users and €3M monthly revenue from payments.

**Feature expansion options (estimated investment and projected uplift):**

- **Crypto trading:** €400k dev + €100k/yr compliance; +€1.2M/yr revenue; regulatory risk: HIGH
- **Travel insurance:** €150k dev; +€600k/yr revenue (commission); regulatory risk: LOW
- **Stock brokerage:** €500k dev + €200k/yr license; +€2.0M/yr revenue; regulatory risk: MEDIUM
- **Bill splitting/social:** €80k dev; +€0/yr direct revenue but +15% engagement/retention
- **Business accounts:** €300k dev; +€1.5M/yr revenue; regulatory risk: LOW
- **Buy Now Pay Later:** €350k dev + credit risk capital; +€1.8M/yr revenue; regulatory risk: MEDIUM

**Budget constraint:** €1,000,000 for development

**Tasks:**

- 1 Choose the optimal feature combination within budget. Justify your choices.
- 2 Calculate the projected annual revenue increase from your chosen features
- 3 What is the revenue ROI (additional revenue ÷ development cost)?
- 4 Which feature has the best risk-adjusted return?

## Exercise 7: Marketplace Lending Economics

**Model the economics of a peer-to-peer lending platform over one year:**

**Platform parameters:**

- Loan volume: \$50 million originated in Year 1
- Average loan size: \$8,000, average term: 24 months
- Origination fee: 3.5% (charged to borrower at disbursement)
- Servicing fee: 0.8% p.a. of outstanding principal (charged monthly to investors)
- Default rate: 5% of principal (platform bears no credit loss—investors do)
- Operating costs: \$1.2M/year (team, tech, marketing, compliance)

**Calculate:**

- 1 Number of loans originated in Year 1
- 2 Total origination fee revenue
- 3 Servicing fee revenue in Year 1 (assume all loans outstanding for full year for simplicity)
- 4 Total platform revenue vs. operating costs—is the platform profitable?
- 5 If the default rate rises to 12%, the platform loses no money directly—but what happens to investor returns and platform viability long-term?

## Exercise 8: Path to Profitability Analysis

**A fintech has been operating for 3 years. Diagnose its unit economics and recommend a path to profitability:**

### **Current metrics:**

- Total users: 800,000 (growing 8% quarterly)
- CAC: \$35
- Revenue mix: Interchange \$1.80/user/mo; Subscriptions \$0.30/user/mo (3% premium at \$10/mo); FX \$0.20/user/mo
- Variable cost: \$1.90/user/month
- Fixed costs: \$1.5M/month (engineering, compliance, office)
- Monthly churn: 2.5%
- Annual net loss: \$12M

### **Analyze:**

- 1 Calculate current blended ARPU, contribution margin, and LTV
- 2 Is the LTV/CAC ratio healthy? What does it tell you?
- 3 Identify the two most impactful levers to improve profitability
- 4 Model the effect of: (a) increasing premium conversion to 10%, and (b) adding lending at \$0.50/user/month—recalculate LTV/CAC for each
- 5 At what user count does the fintech break even monthly (assuming current per-user economics)?