Quiz: Platform Wars – Strategy, Power, and Design

Day 7B – 20 Questions

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Digital Finance – Intensive Course

Question 1 – Switching Costs

According to Klemperer (1995), which of the following is a *learning cost* type of switching cost?

A. The fee charged by a bank to close an account
B. The time and effort required to rebuild your workflow and muscle memory on a new platform's interface
C. The loss of accumulated loyalty points when leaving a platform
D. The uncertainty about whether the competitor's product actually works

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Answer: (B) Learning costs are the cognitive and time costs of adapting to a new interface or workflow. They differ from transaction costs (the cost of the migration process itself), loyalty costs (accumulated reward loss), contractual costs (termination fees), and psychological uncertainty (fear of the unknown).

Question 2 – Winner-Take-All Conditions

Which combination of factors is most likely to produce a winner-take-all outcome in a digital payments market?

A. Low switching costs on both sides AND weak network effects
B. Strong cross-side network effects AND single-homing by consumers
C. Multi-homing by both merchants and consumers AND low data accumulation advantages
D. High switching costs for merchants only, with consumers easily multi-homing

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Answer: (B) Winner-take-all requires (i) strong cross-side effects (each new user adds value for the other side) AND (ii) single-homing by at least one side (so users are not on both platforms). If consumers single-home, merchants must join the dominant network to reach them. This feedback loop tips the market.

Question 3 – Data Flywheel

The data flywheel effect describes a self-reinforcing competitive advantage. What makes it a "flywheel" rather than just a "competitive advantage"?

A. It is powered by electricity, unlike traditional competitive advantages

B. Each turn of the loop increases the speed of the next turn: more users generate more data, which improves models, which lowers costs, which attracts more users – compounding over time

C. It requires external investment to keep spinning, unlike natural advantages

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Answer: (B) The "flywheel" metaphor captures compounding: the advantage does not just persist, it accelerates. Each loop turn strengthens the next. This is why the data flywheel creates such durable moats: a competitor starting 5 years later faces an incumbent whose flywheel has spun 5 years more.

Question 4 – Ant Group Switching Costs

Sesame Credit (Ant Group) creates a switching cost that is qualitatively different from standard switching costs. Which of the following best describes this difference?

- **A** It is cheaper than other switching costs, making it easy for Ant Group to create
- **B** It is a reputation asset that took years to accumulate and cannot be transferred – leaving Alipay means losing the credit history that enables cheap borrowing, insurance, and housing applications
- **C** It is regulated by the PBOC, making it legally binding on users
- **D** It only applies to users who actively choose to use Huabei credit products

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Answer: (B) A Sesame Credit score is a non-transferable, non-portable reputation asset. Unlike passwords or payment data (which can be migrated), a credit score built on Ant's proprietary model cannot be ported to a competitor. Users who leave lose years of accumulated scoring, making the cost of switching uniquely durable.

Question 5 – Multi-Homing and Competition

Stripe allows merchants to also use Braintree, Adyen, or other payment processors simultaneously (multi-homing). What is the main competitive consequence for Stripe?

- (A) Stripe benefits because more processors reduce fraud, lowering Stripe's risk
- (B) Merchant multi-homing limits Stripe's ability to raise prices: if Stripe raises fees, merchants can shift volume to a competitor without incurring high switching costs
- (C) Stripe benefits because processing more merchants increases network effects for all users
- (D) Multi-homing has no effect because Stripe's developer tools create insurmountable lock-in regardless

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Answer: (B) Multi-homing on the merchant side means competition on price is intense. Stripe cannot extract monopoly rents because merchants have ready alternatives. This is why Stripe competes primarily on developer experience, API quality, and fraud tools – dimensions where genuine differentiation is possible – rather than on price.

Question 6 – AMM Price After Trade

A Uniswap v2 pool starts with $x = 1000$ ETH and $y = 2{,}000{,}000$ USDC, so the invariant is $k = x \cdot y = 2 \times 10^9$. A trader swaps in $\Delta x = 100$ ETH. How many USDC does the trader receive?

- **A** Exactly 200,000 USDC (spot price times quantity)
- **B** $y - k/(x + \Delta x) = 2{,}000{,}000 - 2{,}000{,}000{,}000/1100 \approx 181{,}818$ USDC
- **C** 100,000 USDC
- **D** 220,000 USDC due to slippage in the trader's favour

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Answer: (B) $y' = k/x' = 2{,}000{,}000{,}000/1100 \approx 1{,}818{,}182$. The trader receives $\Delta y = y - y' = 2{,}000{,}000 - 1{,}818{,}182 \approx 181{,}818$ USDC – less than the spot price implies because the large trade moves the price (price impact).

Question 7 – Impermanent Loss Concept

An LP deposits equal value of ETH and USDC into a Uniswap pool when ETH = $2000. ETH later doubles to $4000. The LP withdraws. Compared to simply holding the initial ETH and USDC, the LP:

- **A** Is better off because trading fees compensate for any rebalancing
- **B** Has the same outcome as holding because the pool tracks market prices continuously
- **C** Experiences impermanent loss and receives less value than a holding strategy would have delivered (before fees)
- **D** Is better off because AMM positions always outperform holding when prices rise

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Answer: (C) When ETH doubles ($r = 2$), impermanent loss $= 2\sqrt{2}/(1+2) - 1 \approx -5.7\%$. The LP's position is worth 5.7% less than holding would have been. The AMM automatically sold ETH as it rose (arbitrageurs extracted it). The LP still profits if fees earned exceed 5.7% of the position.

Question 8 – MEV Sandwich Attack

A Maximal Extractable Value (MEV) sandwich attack on a DEX works by:

A. A hacker intercepting the transaction before it reaches the blockchain

B. A bot observing a pending large trade in the mempool, buying the same asset first (front-run), then selling it immediately after the victim's trade moves the price (back-run), extracting the price impact from the victim

C. The DEX protocol charging an extra fee on large trades above a threshold

D. Miners delaying transaction inclusion to accumulate more fees

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Answer: (B) The sandwich: (1) bot buys asset X before victim's buy order executes; (2) victim's trade moves price of X up; (3) bot sells X at higher price. The victim effectively paid a higher price than the pre-trade spot. This is a mechanism failure: the AMM mechanism does not prevent bots from exploiting pending order visibility.

Question 9 – PFOF Mechanism Failure

Payment for Order Flow (PFOF), as practiced by Robinhood, is a mechanism failure because:

A. Robinhood charges too high a commission compared to other brokers

B. The mechanism that is supposed to give users best execution actually optimises for PFOF revenue: the broker's incentive (maximise payments from market makers) is misaligned with the user's incentive (minimise execution cost)

C. Market makers exploit Robinhood by underpaying for order flow

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Answer: (B) PFOF creates a principal-agent problem: the broker (agent) is paid by market makers, but should be acting in the user's (principal's) interest. The hidden cost to users is the spread widening – they pay slightly more (buy) or receive slightly less (sell) than the best available price, but this cost is invisible to most users.

Question 10 – Lerner Index Interpretation

A payment platform has a price of \$1.00 per transaction and an estimated marginal cost of \$0.15. What is the Lerner index, and what does it imply?

- (A) $L = 1.00/0.15 = 6.7$; the platform has infinite market power
- (B) $L = (1.00 - 0.15)/1.00 = 0.85$; the platform retains 85 cents of every dollar charged above cost, suggesting significant market power
- (C) $L = 0.15/1.00 = 0.15$; the platform earns only 15% margins, indicating competitive pricing
- (D) $L = 1.00 - 0.15 = 0.85$; this means the platform sets prices 85% above marginal cost in absolute terms

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Answer: (B) $L = (P - MC)/P = (1.00 - 0.15)/1.00 = 0.85$. A Lerner index of 0.85 means the platform operates with an 85% price-cost margin. This is high, suggesting significant market power. By comparison, $L = 0$ means perfect competition; $L = 1$ means MC is zero and the firm captures all consumer surplus.

Question 11 – Lerner Index and Elasticity

The Lerner index is related to price elasticity by $L = -1/\varepsilon$. If a fintech platform has $L = 0.5$, what is the price elasticity of demand it faces?

- **A** $\varepsilon = -0.5$ (highly inelastic demand)
- **B** $\varepsilon = -2$ (demand falls 2% for every 1% price increase)
- **C** $\varepsilon = -5$ (demand falls 5% for every 1% price increase)
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Answer: (B) $\varepsilon = -1/L = -1/0.5 = -2$. A Lerner index of 0.5 corresponds to a price elasticity of -2: for every 1% price increase, the platform loses 2% of demand. This is moderately elastic. Platforms with $L = 0.85$ face $\varepsilon = -1.18$ (near unit elasticity).

Question 12 – Apple Pay and Barriers to Entry

The EU's 2024 ruling against Apple Pay found that restricting NFC access to Apple Pay on iPhones constituted:

- **A** A data moat, because Apple controlled user transaction data
- **B** An artificial (contractual/technical) barrier to entry that had no technical justification, preventing competing wallets from accessing hardware they needed to compete
- **C** A network moat, because Apple's user base was too large for competitors to challenge
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Answer: (B) The EU found that NFC restriction was an artificial barrier: Apple could have allowed third-party wallet access to NFC without compromising security (as demonstrated by alternatives). Controlling a hardware interface to prevent competition in an adjacent market is abuse of dominant position under EU competition law.

Question 13 – PSD2 as IO Policy

PSD2's Account Information Service (AISP) provision addresses which specific barrier to entry in retail banking?

A. Network moat – by forcing banks to share their user base

B. Data moat – by requiring banks to provide API access to customer transaction data, allowing new entrants to build services on data they previously could not access

C. Integration moat – by mandating that bank software integrates with third-party fintech APIs

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Answer: (B) AISPs can read your bank account data with your consent. This directly attacks the data moat: banks previously had exclusive access to years of your transaction history. PSD2 portability means a challenger bank can access the same data to personalise offers and build credit models.

Question 14 – Ant Group IO Verdict

Which of the following correctly identifies the primary IO concern that led Chinese regulators to halt Ant Group's IPO and require restructuring?

A. Ant Group had too high a Lerner index in payment processing, overcharging merchants

B. Ant was operating bank-like functions (taking deposits via Yu'e Bao, making loans via Huabei) with near-zero capital requirements, while Sesame Credit gave it a data monopoly in consumer credit scoring that banks could not replicate

C. Ant was not paying sufficient taxes on its transaction processing revenue

D. Ant's Lerner index in payments was below 0.5, indicating it was undercharging and distorting competition

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Answer: (B) Regulators identified two problems: (i) regulatory arbitrage (bank functions without bank capital requirements, creating systemic risk) and (ii) data monopoly (Sesame Credit controlled credit scoring for 500m people, blocking banks from building competing models). The restructuring addressed both: Ant became a financial holding company subject to capital rules, and Sesame data was shared with the PBOC credit bureau.

Question 15 – MiCA Scope: EMT vs ART

The EU Markets in Crypto-Assets Regulation (MiCA, in force mid-2024) distinguishes between EMT (E-Money Tokens) and ART (Asset-Referenced Tokens). Which of the following statements is FALSE?

- A) EMTs are pegged to a single fiat currency (e.g., USDC, EUROC)

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- D) EMTs may be issued without authorisation as long as they are pegged to a major fiat currency

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Question 16 – Ant Group Post-Restructuring 2024-2026

Following the People's Bank of China's restructuring of Ant Group between 2021 and 2024, which of the following business lines survived in some form versus which was dismantled?

- A) Alipay payments survived; MYbank consumer lending survived under Basel-equivalent capital; Sesame Credit dismantled as a financial holding company segment

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- D) No restructuring occurred; the cancelled 2020 IPO was the only regulatory action taken

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Question 17 – Embedded Finance

The economic logic behind embedded finance (e.g., Shopify Capital offering loans to Shopify merchants) is:

- (A) Shopify is cheaper than banks because it has no regulatory overhead
- (B) Shopify has superior transaction data on its merchants that reduces adverse selection in lending: it knows merchant revenues, seasonality, and growth trajectory better than any external bank
- (C) Embedded finance is simply a distribution strategy with no economic advantage over standalone banking products
- (D) Shopify can charge higher rates than banks because merchants are captive inside its platform

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Answer: (B) The embedded finance advantage is informational: the platform sees data (daily GMV, return rates, customer acquisition costs) that traditional banks cannot access. This Akerlof advantage – reducing adverse selection in lending – allows better pricing and lower defaults, not just distribution efficiency.

Question 18 – DeFi Disruption Classification

Using Christensen's framework, DeFi (Decentralised Finance) in 2024 is best classified as:

A. Sustaining innovation: it improves existing financial products on the dimensions banks compete on (safety, yield, liquidity)

B. New-market disruption in progress: it currently serves crypto-native users who are largely unserved by traditional finance, with an ongoing trajectory toward mainstream markets if mechanism failures are resolved

C. Low-end disruption: it serves the least profitable segment of bank customers with a worse product

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Answer: (B) DeFi follows the new-market disruption pattern: it started by serving users TradFi did not serve (unbanked crypto users, global permissionless users), with a simpler product (AMMs, lending protocols) that TradFi would not build. Whether the disruption continues depends on whether mechanism failures (MEV, hacks, regulatory barriers) are resolved before TradFi adapts.

Question 19 – AI and Data Moats

Why might PSD2-style data portability mandates be insufficient to address AI-driven data moats in fintech?

- A AI systems do not use transaction data, so PSD2 portability is irrelevant to AI competition
- B Data portability shares the raw data, but not the model trained on it. An incumbent's AI model trained on 15 years of data cannot be replicated by sharing 1 year of ported data, because the model embodies the historical patterns in a non-shareable form
- C PSD2 already addresses AI models through its algorithmic accountability provisions
- D AI competition in fintech is not affected by data moats because open-source models are free

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(D) AI competition in fintech is not affected by data moats because open-source models are free

Answer: (B) This is the key IO insight for AI: sharing data does not share the model's parameters, which encode learned patterns from years of historical data. A competitor who receives one year of ported transaction data cannot replicate the predictive power of a model trained on ten years. The next regulatory frontier is "model sharing" or "model auditability," not just data access.

Question 20 – Alipay Full Seven-Lens Analysis

Which of the following correctly applies all seven Day 7 lenses to explain why Alipay's data moat enabled above-market interest rates on Huabei (Ant's consumer credit product)?

- **A** TCE: Huabei reduced borrowing costs; Akerlof: Sesame score resolved adverse selection; Rochet-Tirole: Huabei subsidised borrowers; Christensen: disruptive; Klemperer: low switching costs; Lerner: L near zero; Mechanism: no failures
- **B** TCE: Huabei eliminated the access TC to credit; Akerlof: Sesame score resolved adverse selection; Rochet-Tirole: Ant subsidised users via the payments side to build data; Christensen: new-market disruption; Klemperer: Sesame score is a non-transferable switching cost; Lerner: high L enabled by the data moat; Mechanism: data monopoly created a mechanism with no market correction
- **C** Only TCE and Akerlof apply; the other five lenses are not relevant to a credit product
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Answer: (B) All seven lenses apply coherently and reinforce each other. The Sesame score switching cost (Klemperer) amplifies the information moat (Akerlof) that justifies the high Lerner index. This is why the Ant Group case is the definitive fintech economics case: it validates all seven analytical frameworks simultaneously.