Lesson 1.3: Real-Time Payments and Cost Compression
Quiz

Digital Finance

Question 1 – Remember

What does RTGS stand for, and what is its defining characteristic?

A. Real-Time Grouped Settlement—transactions are batched every minute
B. Real-Time Gross Settlement—each transaction settles individually and immediately
C. Regulated Transfer and Guarantee System—government-backed settlement
D. Rapid Transaction Gateway Service—a private-sector clearing protocol

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[Answer hidden – compile with \solutionstrue to reveal]
RTGS settles each payment individually (gross) in real time, with immediate finality on the central bank ledger.

Question 2 – Remember

In the ISO 20022 message family, what does “pain.001” represent?

A. A customer credit transfer initiation message sent by the originator
B. A bank-to-bank interbank credit transfer message
C. A fraud alert notification from the compliance system
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pain.001 is the Customer Credit Transfer Initiation message—it begins the payment flow from the originator's bank.

Question 3 – Remember

Under PSD2, what does PISP stand for?

A. Personal Investment Service Platform
B. Payment Information Security Protocol
C. Public Infrastructure Settlement Provider
D. Payment Initiation Service Provider

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D. Payment Initiation Service Provider

[Answer hidden – compile with \solutionstrue to reveal]
A PISP (Payment Initiation Service Provider) is authorized under PSD2 to initiate payments from a customer's bank account on their behalf.

Question 4 – Understand

Why does RTGS require participants to hold liquidity buffers at the central bank?

A. To comply with anti-money laundering regulations
B. Because RTGS only operates during banking hours and needs collateral
C. To earn interest on deposited funds
D. Because each transaction settles immediately without netting, so the full amount must be available

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Gross settlement means there is no netting—each payment requires the sender's bank to have sufficient funds in its central bank account at the moment of settlement.

Question 5 – Understand

How does ISO 20022 reduce the exception rate in cross-border payments?

A. By eliminating the need for correspondent banks
B. By encrypting all message content so that intermediaries cannot alter it
C. By requiring all payments to be denominated in a single currency
D. By using structured, named data fields instead of free-text, enabling automated parsing and validation

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[Answer hidden – compile with \solutionstrue to reveal]
Structured fields (addresses, remittance info, transaction IDs) allow machines to parse, validate, and route messages without human intervention, reducing errors from 5–10% to near zero.

Question 6 – Understand

In the BNPL model, who primarily bears the cost of providing interest-free installments?

A. The government, through subsidies to BNPL providers
B. The merchant, through a higher Merchant Discount Rate (MDR) paid to the BNPL provider
C. The consumer, through hidden fees embedded in the product price
D. The card network, through reduced interchange fees

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[Answer hidden – compile with \solutionstrue to reveal]
BNPL providers charge merchants an MDR of 3–8% (vs. 1.5–3% for card payments). Merchants accept this because BNPL increases conversion rates and basket sizes.

Question 7 – Understand

Why is the "last mile" (on/off-ramp) the main cost bottleneck in stablecoin corridors?

A. Because stablecoins can only be transferred during banking hours

B. Because converting between fiat and stablecoins requires licensed intermediaries, KYC checks, and FX conversion

C. Because blockchain gas fees dominate the total cost

D. Because stablecoin transfers require manual approval by the issuing entity

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[Answer hidden – compile with \solutionstrue to reveal]
On-chain transfer costs are minimal, but on/off-ramps require regulated entities performing KYC, AML screening, and FX conversion—each adding cost and friction.

Question 8 – Apply

A merchant processes 10,000 card transactions per month at an average ticket of $50 with a 2.5% MDR. If they switch 40% of volume to an instant payment rail at 0.15% cost, what is the monthly fee savings?

A. $1,175
B. $4,350
C. $2,350
D. $4,700

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D. $4,700

[Answer hidden – compile with \solutionstrue to reveal]
Card cost on 4,000 txns: $4{,}000 \times \$50 \times 2.5\% = \$5{,}000$. Instant rail cost: $4{,}000 \times \$50 \times 0.15\% = \$300$. Savings: $\$5{,}000 - \$300 = \$4{,}700$.

Question 9 – Apply

A BNPL provider offers 4 installments on a $200 purchase with a 6% MDR. The provider's cost of capital is 0.8%, and expected credit losses are 2.5%. What is the approximate contribution margin per transaction?

A. $12.00
B. $7.80
C. $3.60
D. $5.40

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MDR revenue: $200 × 6% = $12.00. Cost of capital: $200 × 0.8% = $1.60. Credit losses: $200 × 2.5% = $5.00. Contribution: $12.00 − $1.60 − $5.00 = $5.40.

Question 10 – Apply

A payment orchestrator routes 60% of transactions to Acquirer A (2.1% fee, 92% auth rate) and 40% to Acquirer B (1.8% fee, 88% auth rate). What is the blended authorization rate?

A. 90.4%

B. 91.2%

C. 90.0%

D. 89.6%

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Blended auth rate: $(0.60 \times 92\%) + (0.40 \times 88\%) = 55.2\% + 35.2\% = 90.4\%$.

Question 11 – Apply

A cross-border transfer of $5,000 through correspondent banking costs 3.5% in total fees. The same transfer via a stablecoin corridor costs 0.3% (on-ramp) + $0.50 (network fee) + 0.5% (off-ramp). What is the cost saving?

A. $95.50
B. $175.00
C. $134.50
D. $124.50

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C. $134.50

D. $124.50

[Answer hidden – compile with \solutionstrue to reveal]
Correspondent: $\$5{,}000 \times 3.5\% = \$175$. Stablecoin: $\$5{,}000 \times 0.3\% + \$0.50 + \$5{,}000 \times 0.5\% = \$15 + \$0.50 + \$25 = \$40.50$. Saving: $\$175 - \$40.50 = \$134.50$.

Question 12 – Analyze

A country launches an instant payment scheme, but after two years only 15% of banks have connected. Which factor most likely explains the slow adoption?

A. Consumers prefer slower settlement for security reasons

B. The technology is too complex for modern banking systems

C. Banks that earn interchange from card payments have little incentive to cannibalize that revenue

D. The central bank set transaction fees too high

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This is the incumbent resistance problem: banks earn interchange from card networks and have rational economic incentives to delay connecting to instant payment rails that bypass those fees.

Question 13 – Analyze

An e-commerce merchant observes that adding BNPL increased average basket size by 18% but their effective MDR rose from 2.2% to 5.5%. Under what condition is offering BNPL still profitable?

A. When the merchant's gross margin exceeds the incremental MDR cost on the basket uplift

B. When the BNPL provider shares late-fee revenue

C. When more than half of customers choose BNPL

D. When BNPL default rates are below 1%

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If the gross margin on the incremental 18% basket increase exceeds the extra 3.3 percentage points of MDR across the full basket, BNPL is net positive.

Question 14 – Analyze

A payment orchestrator notices that routing to a local acquirer in Country X yields a 94% auth rate, while routing through a cross-border acquirer yields 86%. What structural factor explains this?

A. Cross-border acquirers use outdated encryption standards

B. Local acquirers process payments faster due to proximity

C. Issuing banks are more likely to approve transactions from acquirers in the same domestic network

D. Local acquirers do not perform fraud checks, leading to higher approval

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Issuing banks have established trust relationships with domestic acquirers and apply less restrictive fraud scoring to transactions acquired locally vs. cross-border.

Question 15 – Analyze

Why did PSD3 propose removing the screen-scraping fallback that PSD2 permitted?

A. Screen scraping was too fast and overwhelmed bank servers

B. Screen scraping requires sharing customer credentials with third parties, creating security risks, and reduced banks' incentive to build proper APIs

C. Consumers preferred screen scraping over APIs

D. Screen scraping only worked for business accounts, not retail

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Screen scraping requires customers to share login credentials with TPPs (a security anti-pattern), and its availability as a fallback reduced banks' urgency to provide high-quality APIs.

Question 16 – Evaluate

A central bank is deciding between mandating instant payment participation and letting the market adopt voluntarily. Which argument best supports a mandate?

A. Mandates are always more efficient than market solutions

B. Mandates guarantee that transaction fees will be zero

C. Payment rails exhibit strong network effects where the social benefit of universal participation exceeds private adoption costs, but individual banks face a free-rider problem

D. Banks are technologically incapable of building instant payment connections without government help

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Network effects create a coordination failure: each bank benefits most if *all* banks connect, but each has an incentive to wait. Mandates solve this collective-action problem.

Question 17 – Evaluate

A fintech startup proposes using an algorithmic stablecoin (no fiat reserve) for a cross-border payment corridor. What is the most critical risk?

A. The peg may break under market stress, causing senders to receive less value than expected and undermining trust
B. The stablecoin may process transactions too slowly
C. Regulators always approve fiat-backed coins faster
D. Algorithmic stablecoins cannot be programmed with smart contracts

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Algorithmic stablecoins maintain their peg through market mechanisms rather than reserves. Under stress, the peg can collapse (as demonstrated by historical de-pegging events), making them unsuitable as a reliable payment medium.

Question 18 – Evaluate

A merchant currently uses a single acquirer. A consultant proposes adding a payment orchestration layer with three acquirers. What trade-off should the merchant weigh most carefully?

A. The orchestration layer adds integration and operational complexity, which must be offset by measurable gains in authorization rate and fee savings

B. Payment orchestration is only beneficial for merchants with over $1 billion in volume

C. Using multiple acquirers always reduces security

D. Acquirers refuse to work with merchants who use orchestration layers

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Orchestration adds value through better routing and failover, but introduces integration cost, vendor management, and operational complexity. The ROI depends on volume and current authorization rate.

Question 19 – Create

You are designing a payment strategy for a marketplace operating in three EU countries. Which combination of rails would best optimize cost, speed, and coverage?

A. SEPA batch transfers only—lowest per-transaction cost

B. Open banking (A2A via PISP) as primary for EU customers, cards as fallback for non-EU, and BNPL for high-value purchases to boost conversion

C. Stablecoin-only—lowest theoretical cost

D. Cards only—universal acceptance ensures coverage

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A multi-rail strategy uses the cheapest rail (A2A) where coverage exists, cards as a universal fallback, and BNPL strategically for high-value items where conversion uplift justifies the MDR premium.

Question 20 – Create

Design a migration plan for a bank moving from legacy MT messages to ISO 20022. Which sequencing is most appropriate?

A. Only migrate cross-border messages since domestic systems work fine

B. Switch all systems simultaneously on a single cutover date

C. Start with internal systems, then domestic payments, then cross-border—running dual formats during transition with automated translation between MT and ISO 20022

D. Wait until all correspondent banks have migrated before beginning

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A phased approach (internal → domestic → cross-border) reduces risk. Dual-format running with automated translation ensures backward compatibility during the coexistence period.