Topic 1.2: Financial System's Pain Points

Where Friction Creates Opportunity

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Learning Objectives

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

1. **Identify** the 6 core frictions in traditional finance systems
2. **Understand** who bears the cost of each friction and how
3. **Analyze** why these frictions persist despite technological advances
4. **Connect** each friction to digital finance innovations that address it
5. **Evaluate** which frictions cause the most societal harm

Key Insight

Every FinTech and DeFi innovation targets a specific friction. Understanding the frictions helps you understand the solutions.

Prerequisites and Background

What You Should Know:

- Basic understanding of how banks operate
- Familiarity with common payment methods
- Awareness of international money transfers
- General knowledge of stock market trading

Building On Topic 1.1:

- The financial system serves critical functions
- Multiple intermediaries exist for historical reasons
- Trust is distributed across institutions
- Regulation shapes system structure

Connection to Course

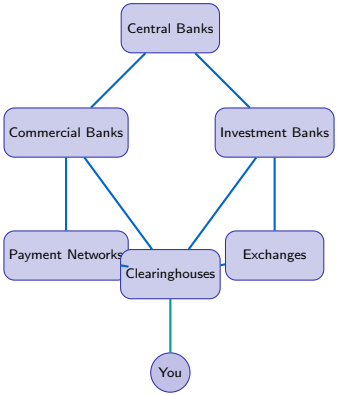
Understanding pain points is essential for evaluating whether digital finance solutions actually solve real problems or create new ones.

The Big Picture: Why Study Pain Points?

Framework for Analysis:

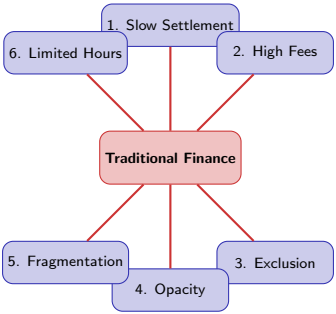
- Innovations that don't address real pain points fail
- The bigger the friction, the bigger the opportunity
- Friction = value captured by intermediaries (or lost entirely)

The Global Financial System: A Marvel of Complexity



This system moves **$9.6 trillion daily**, serves billions, rarely fails catastrophically... but has significant frictions.

The Six Frictions: Overview



Each friction represents billions of dollars in costs and millions of people affected.

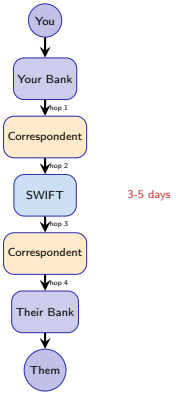
Friction #1: Slow Settlement

The Problem:

- Stock trade: T+1 (Trade day + 1 business day—you buy Monday, money settles Tuesday)
- International wire: 1-5 business days
- ACH transfer: 2-3 business days
- Even "instant" payments take hours behind scenes

Why so slow?

- Multiple intermediaries
- Batch processing (not real-time)
- Timezone differences
- Manual compliance checks
- Legacy systems from 1970s



Each intermediary adds fees and delays.

Slow Settlement: The Technical Reality

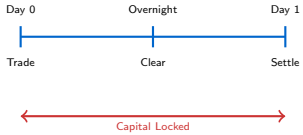
Batch Processing Explained:

- Transactions queue during the day
- Processed in batches overnight
- ACH runs 4-5 times per day
- Fedwire: real-time but expensive
- SWIFT: messaging only, not settlement

The T+1 Journey:

1. Trade execution (instant)
2. Trade confirmation (hours)
3. Clearing (overnight)
4. Settlement (next day)

Example: Buy stock Monday at 2pm. Money leaves your account Tuesday morning. Until then, capital is locked.



Cost Impact

$1 trillion locked in settlement = $50M+/day in opportunity cost (at 2% annual rate)

Slow Settlement: Who Pays?

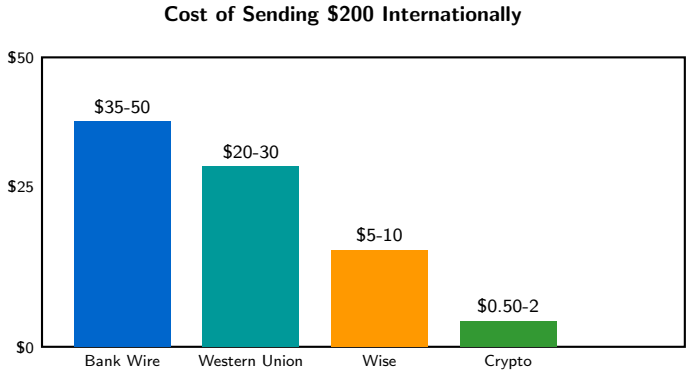
Direct Costs of Settlement Delays:

Stakeholder	Cost Type	Impact
Businesses	Working capital	Cannot use funds for 1-5 days
Traders	Counterparty risk	Exposure until settlement
Banks	Capital requirements	Must hold reserves for pending trades
Consumers	Opportunity cost	Money in transit earns nothing
Markets	Systemic risk	Failure cascades during crisis

2008 Financial Crisis Connection

Lehman Brothers' failure created \$600B+ in unsettled trades. Settlement delay amplified contagion risk across the entire financial system.

Friction #2: High Fees (Especially Cross-Border)



Who pays? Migrant workers sending money home. The global remittance market is **$700+ billion/year**, with **$50+ billion** lost to fees.

Example: A Filipino worker sending $200 home loses about $14 in fees—that's 7% just to move their own money.

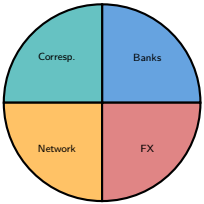
High Fees: Where Does Your Money Go?

Components of a $50 Wire Fee:

- Originating bank fee: $15-25
- SWIFT messaging: $3-5
- Correspondent bank(s): $10-20
- Receiving bank fee: $5-15
- FX spread (hidden): 2-4%

Hidden Costs:

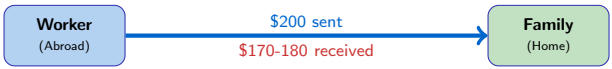
- Exchange rate markup
- Intermediary deductions
- "Lifting fees"
- Delay costs



Fee Distribution

Result: A $200 remittance can cost 10-15% in total fees when all costs are included.

High Fees: The Human Cost



Global Statistics:

- **200+ million** migrant workers worldwide
- Average remittance fee: **6.4%** globally (2023)
- Sub-Saharan Africa: **8-9%** average fees
- UN SDG target: reduce to **3%** by 2030
- **$50+ billion/year** lost to fees that could lift millions from poverty

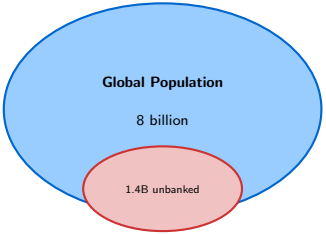
Friction #3: Financial Exclusion

The Unbanked and Underbanked:

- **1.4 billion** adults globally have no bank account
- **Additional 1+ billion** are underbanked
- In the US: 6% unbanked, 18% underbanked

Why excluded?

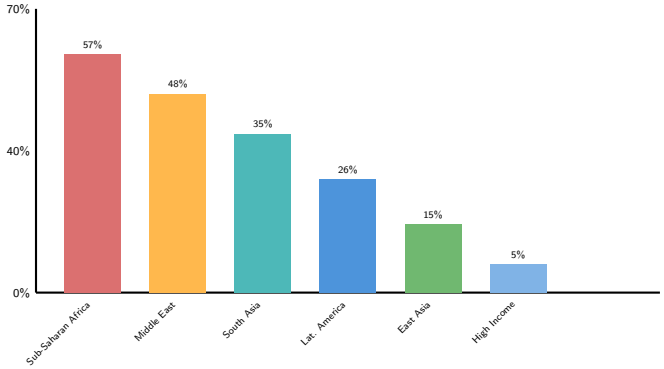
- **No government ID** (birth certificate never issued)
- **Distance:** Nearest bank is 50km away
- **Minimum balance:** $500 required, you have $100
- **Documentation:** Need 3 months utility bills + employer letter
- Poor credit history
- Distrust of institutions



The Paradox

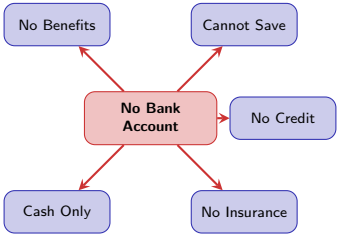
Those who need financial services most have the least access to them.

Financial Exclusion: Global Distribution



Key Insight: Financial exclusion correlates with poverty, gender (women more excluded), rural location, and education level.

Financial Exclusion: The Cascading Effects



Without financial access, people cannot:

- Build savings for emergencies or education
- Access credit to start businesses or buy homes
- Insure against health, weather, or other risks
- Receive government payments efficiently
- Participate in the formal economy

Friction #4: Opacity and Information Asymmetry

What you don't know:

- True cost of financial products
- Where your money goes
- How prices are determined
- What risks you're taking
- How algorithms affect you

Examples:

- Hidden fees in mutual funds (expense ratios)
- Payment for order flow in stock trading
- Credit card interchange fees
- Insurance pricing algorithms

Your "free" bank: $2 per ATM, $35 overdraft, $10 monthly minimum, $3 paper statement...

Information asymmetry = one party knows more than the other. Usually favors financial institutions.

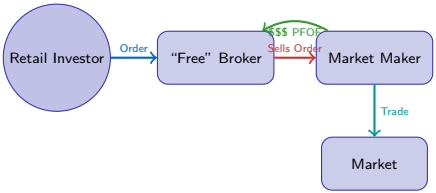
Opacity: Real-World Examples

Product	Hidden Element	Cost to Consumer
Mutual Funds	Expense ratios, trading costs, soft dollars	1-2% annual drag on returns
Stock Trading	Payment for order flow (PFOF)	Worse execution prices
Credit Cards	Interchange fees (merchant pays)	Higher retail prices
Mortgages	Yield spread premiums, points	Thousands in extra interest
Insurance	Algorithmic pricing, risk factors	Unexplained premium differences

The Asymmetry Problem

Institutions have teams of analysts; consumers have Google. The information gap enables exploitation.

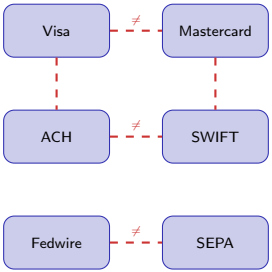
Opacity Case Study: Payment for Order Flow



How it works:

- Broker sells your orders to market makers
- Market maker profits from spread (often pennies per share)
- You may get slightly worse prices than the "best" available
- "Commission-free" trading isn't actually free

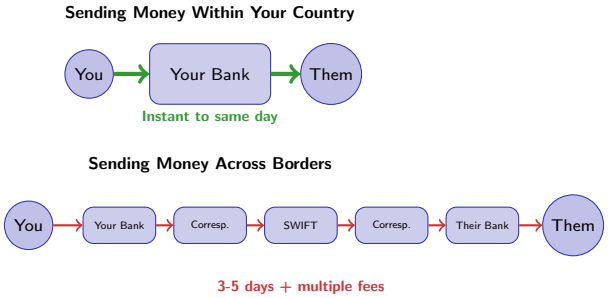
Friction #5: Fragmentation and Incompatibility



The result:

- Moving money between systems is expensive
- Data doesn't flow smoothly
- Innovation is slow (must work with legacy systems)
- Lock-in effects (hard to switch providers)

Fragmentation: Domestic Fast, Cross-Border Slow



Why the difference? Different payment networks, different regulations, currency conversion, multiple intermediaries, batch processing cycles.

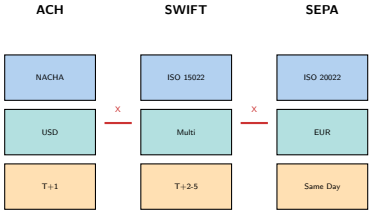
Fragmentation: A Technical Mess

Incompatible Standards:

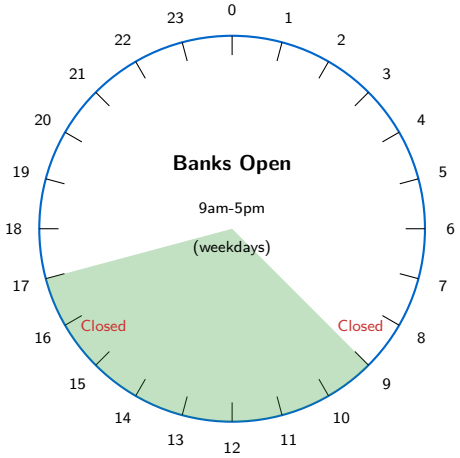
- Different message formats
- Different APIs (or none)
- Different settlement cycles
- Different regulatory regimes
- Different currencies/units

Example: Moving $10,000

1. US bank account (ACH)
2. To EU bank account (SEPA)
3. Requires: SWIFT, correspondent banks, FX conversion



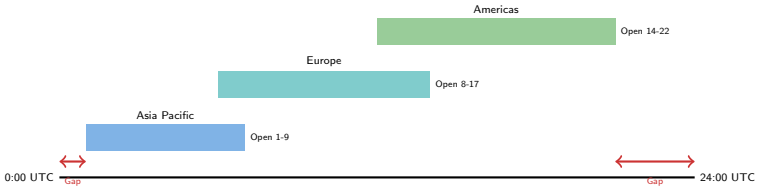
Friction #6: Limited Operating Hours



Traditional finance operates on:

- Business hours only (no nights, weekends, holidays)
- Local timezone (misaligned with global commerce)

Limited Hours: The Global Business Problem



Consequences:

- International transfers initiated Friday arrive Tuesday (or later)
- Cash flow gaps force businesses to hold extra reserves
- Time-sensitive opportunities missed during off-hours
- Emergency financial needs unmet on weekends

Who Bears the Cost? A Summary

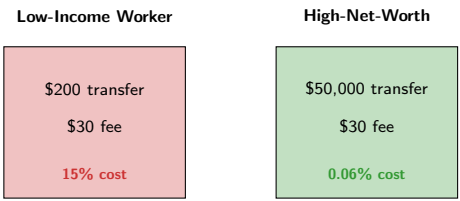
Friction	Primary Cost Bearer	Impact
Slow settlement	Businesses, traders	Tied-up capital, missed opportunities
High fees	Consumers, migrants	Reduced purchasing power
Exclusion	Poor, rural, undocumented	No access to savings, credit, insurance
Opacity	Retail investors	Worse outcomes, exploitation
Fragmentation	Everyone	Inefficiency, higher costs
Limited hours	Global businesses	Delays, cash flow problems

Key Insight

Friction costs are **regressive**—they hurt those with less money more than those with more.

Why Frictions Are Regressive

Example: $30 Wire Transfer Fee



Pattern Repeats Across All Frictions:

- Minimum balances hurt those with less
- Flat fees take larger % from small amounts
- Exclusion denies services to those most in need
- Complexity favors those with advisors
- Time delays hurt those without cushion

Implication

Financial innovation that reduces friction can be inherently progressive.

Why Do These Frictions Persist?

Structural Reasons:

- Legacy infrastructure (COBOL systems from 1960s)
- Regulatory requirements
- Network effects (everyone uses existing rails)
- High switching costs
- Coordination problems

Incentive Reasons:

- Friction = revenue for intermediaries
- Information asymmetry benefits incumbents
- Limited competition in some markets
- Regulatory capture
- "Good enough" for powerful customers

Key Question

For each friction, ask: Is this a **technical problem** or an **incentive problem**? The answer shapes the solution.

Friction as Opportunity

Slow settlement $\rightarrow$
Real-time payments, instant settlement
High fees $\rightarrow$
Low-cost transfers, crypto rails
Exclusion $\rightarrow$
Mobile money, neobanks

Opacity $\rightarrow$
Transparent protocols, open data
Fragmentation $\rightarrow$
APIs, interoperability standards
Limited hours $\rightarrow$
24/7 digital infrastructure

Mapping Frictions to Digital Finance Solutions

Friction	FinTech Solution	DeFi/Blockchain Solution
Slow Settlement	Real-time rails (FedNow, UPI)	On-chain settlement (seconds)
High Fees	Wise, Remitly, neobanks	Stablecoins, L2 networks
Exclusion	Mobile money (M-Pesa)	Permissionless wallets
Opacity	Open banking APIs	Transparent smart contracts
Fragmentation	Plaid, Stripe, aggregators	Blockchain interoperability
Limited Hours	Digital-first banks	24/7 blockchain networks

Preview

Topics 1.3-1.6 will explore how these solutions actually work, their trade-offs, and real-world adoption patterns.

Counter-Argument: Are Some Frictions Features?

The Devil's Advocate Position:

Settlement Delay:

- Time for fraud detection
- Error correction window
- Compliance verification

Exclusion (KYC):

- Anti-money laundering
- Terrorist financing prevention
- Consumer protection

Limited Hours:

- Human oversight
- Market stability (circuit breakers)
- Error recovery time

Opacity:

- Proprietary innovation
- Competitive differentiation
- Security through obscurity

Critical Thinking

Not all friction is bad. The question is whether the friction **proportionate** to the benefit it provides.

Discussion: Frictions You've Experienced

Think-Pair-Share:

1. **Think** (2 min): Have you personally experienced any of these frictions?
   - Waiting for a transfer?
   - Paying unexpected fees?
   - Difficulty opening an account?
   - Not understanding financial products?
2. **Pair** (3 min): Share your experience with a neighbor
3. **Share**: What patterns emerge?

Discussion Questions

- Which friction affects you most?
- Which friction causes the most societal harm?
- Are any of these frictions *features* rather than bugs?

Application: Friction Analysis Framework

Use this framework to analyze any financial product or service:

Example Analysis: International Student Tuition Payment

- **Friction:** High fees ($40-80), slow settlement (3-5 days), FX markup
- **Cost:** 2-4% of tuition payment
- **Who pays:** Students and families, often from developing countries
- **Opportunity:** Wise, Flywire, and crypto rails target this market

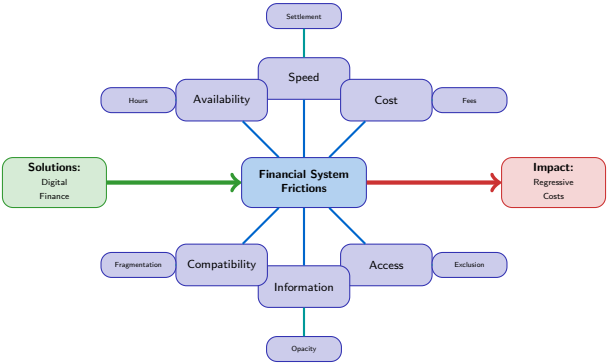
Executive Summary: Key Takeaways

The Six Frictions of Traditional Finance

1. **Slow Settlement:** Days to move money due to batch processing and intermediaries
2. **High Fees:** Especially for cross-border, hitting migrants hardest ($50B+/year)
3. **Financial Exclusion:** 1.4B unbanked, 1B+ underbanked globally
4. **Opacity:** Hidden costs and information asymmetry favor institutions
5. **Fragmentation:** Incompatible systems increase costs and slow innovation
6. **Limited Hours:** 9-5 weekday banking misaligned with 24/7 global commerce

Core Insight: Friction costs are **regressive**—hurting those with less money more. Every digital finance innovation targets one or more of these frictions.

Concept Map: Financial System Frictions



Key Terms and Definitions (Part 1)

Settlement The actual transfer of securities and/or payment between transaction parties, completing a trade.

T+1 / T+2 Settlement time conventions; T+1 means settlement one business day after trade date.

Correspondent Bank An intermediary bank that provides services on behalf of another bank, often in cross-border transactions.

SWIFT Society for Worldwide Interbank Financial Telecommunication; messaging network for international payments (not settlement).

Remittance Money sent by workers to family in another country; global market exceeds $700B annually.

Unbanked Adults without any bank account; 1.4 billion globally.

Underbanked Adults with limited access to mainstream financial services; reliant on alternatives like payday loans.

Key Terms and Definitions (Part 2)

Information Asymmetry When one party in a transaction has more relevant knowledge than the other; typically favors financial institutions.

Payment for Order Flow (PFOF) Practice where brokers receive payment for routing customer orders to market makers.

Batch Processing Processing transactions in groups at scheduled intervals rather than in real-time.

Fragmentation The existence of multiple incompatible systems requiring translation, conversion, and intermediaries to interact.

Regressive Cost A cost that takes a larger percentage from those with less money than from those with more.

KYC (Know Your Customer) Identity verification requirements imposed by financial regulations.

Financial Inclusion The availability and equality of opportunities to access useful and affordable financial services.

Common Misconceptions

1. **“Instant” payments are actually instant**
   - Reality: Most “instant” payments still have batch processing behind the scenes; actual settlement may take hours or days
2. **“Free” services have no cost**
   - Reality: Free trading apps monetize through payment for order flow, interest on cash, or data; you pay indirectly
3. **Financial exclusion only affects developing countries**
   - Reality: 6% of US adults are unbanked, 18% underbanked; exclusion exists in all economies
4. **Digital solutions automatically reduce friction**
   - Reality: Digital can add new frictions (e.g., digital divide, cybersecurity risks, algorithmic bias)
5. **All friction is bad and should be eliminated**
   - Reality: Some friction provides protection (fraud detection, error correction, compliance)

Self-Assessment Question 1

Question

Approximately how many adults globally have no bank account?

Options:

A. 500 million

B. 1.4 billion

C. 3 billion

D. 5 billion

Self-Assessment Question 1

Question

Approximately how many adults globally have no bank account?

Options:

A. 500 million

B. 1.4 billion

C. 3 billion

D. 5 billion

Answer: B

1.4 billion adults globally are unbanked, with an additional 1+ billion who are underbanked. This represents a massive financial exclusion problem where those who need financial services most have the least access to them.

Self-Assessment Question 2

Question

During what hours do traditional banks typically operate?

Options:

A. 24/7 including weekends

B. 9am-5pm weekdays only

C. 8am-8pm seven days a week

D. 6am-10pm weekdays only

Self-Assessment Question 2

Question

During what hours do traditional banks typically operate?

Options:

A. 24/7 including weekends

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D. 6am-10pm weekdays only

Answer: B

Traditional banks typically operate 9am-5pm on weekdays only, creating significant friction for global commerce that operates 24/7. This limited operating schedule causes delays, cash flow problems, and misalignment with international business needs.

Self-Assessment Question 3

Question

What is the primary reason why ACH transfers take 2-3 business days despite appearing "instant" to users?

Options:

A. Government regulations require a waiting period

B. Banks hold funds to earn interest

C. Batch processing cycles run behind the scenes

D. Blockchain confirmation times are slow

Self-Assessment Question 3

Question

What is the primary reason why ACH transfers take 2-3 business days despite appearing "instant" to users?

Options:

A. Government regulations require a waiting period

B. Banks hold funds to earn interest

C. Batch processing cycles run behind the scenes

D. Blockchain confirmation times are slow

Answer: C

ACH transfers take 2-3 business days because they use batch processing rather than real-time settlement. Although the user interface may show an immediate transfer, the actual movement of funds happens through scheduled batch cycles, typically processed overnight or at specific intervals.

What's Next: Topic 1.3 - Digital Solutions Overview

Preview of Topic 1.3:

We'll explore:

- How FinTech addresses each friction
- The rise of digital banking
- Open banking and APIs
- Mobile money revolution
- Blockchain-based alternatives

Key questions:

- Which solutions actually work?
- What new frictions do they create?
- Who wins and loses in the transition?
- What role does regulation play?

Connection

The pain points we studied today are the **why** behind digital finance innovation. Topic 1.3 explores the **how** and **what**.

Resources and Questions

Further Reading:

- World Bank Global Findex Database (financial inclusion data)
- BIS Papers on cross-border payments
- IMF Reports on remittances
- SWIFT Annual Review

Online Resources:

- Remittance Prices Worldwide: `remittanceprices.worldbank.org`
- Global Findex: `globalfindex.worldbank.org`
- BIS Innovation Hub: `bis.org/innovation`

Questions?