Topic 1.3: Two Philosophies of Change

FinTech vs. Crypto/DeFi

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Learning Objectives

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

1. **Understand** the fundamental philosophical difference between FinTech and Crypto/DeFi approaches to financial innovation
2. **Classify** any financial innovation as FinTech, Crypto/DeFi, or hybrid
3. **Articulate** the tradeoffs, advantages, and disadvantages of each philosophy
4. **Recognize** the convergence trends between these two approaches
5. **Apply** this framework to evaluate new innovations critically

The Central Question

When targeting the same financial frictions, **how** do you approach the solution?

Prerequisites: Recap of Money and Finance

From Topic 1.1 – The Three Functions of Money:

Medium of Exchange
- Facilitates trade
- Eliminates barter
- Requires acceptance

Store of Value
- Preserves purchasing power
- Enables saving
- Time-shift consumption

Unit of Account
- Common measure
- Enables comparison
- Foundation for contracts

Key Insight: Both FinTech and Crypto/DeFi aim to improve how money performs these functions—they differ in **how** they approach the improvement.

Prerequisites: The Financial Frictions (Topic 1.2)

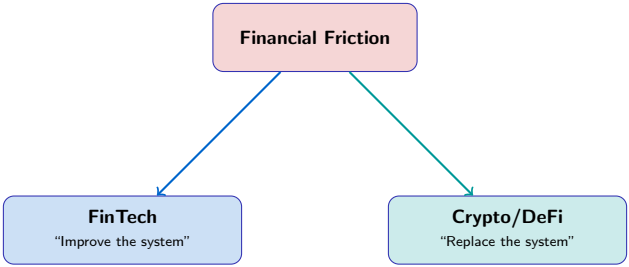
From Topic 1.2 – The Six Frictions Digital Finance Addresses:

1. **Information Asymmetry**
   Unequal knowledge between parties
2. **Access & Inclusion**
   1.4B adults remain unbanked
3. **Transaction Costs**
   Speed, fees, complexity
4. **Trust & Counterparty Risk**
   Will the other party perform?
5. **Agency Problems**
   Misaligned incentives
6. **Regulatory Complexity**
   Fragmented rules across jurisdictions

The Fork Ahead

Both approaches target these same frictions.
The fundamental difference is **philosophy**: improve the system or replace it?

The Fundamental Fork



Work *within* existing infrastructure
Better UX on existing rails
Partner with incumbents

Build *new* infrastructure
Trustless, decentralized
Disintermediate incumbents

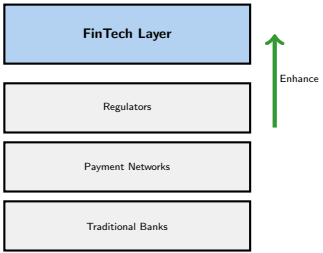
"Better UX on Existing Rails"

Core Belief:
The existing financial infrastructure works. It just needs:

- Better user interfaces
- More efficient processes
- Smarter technology
- New business models

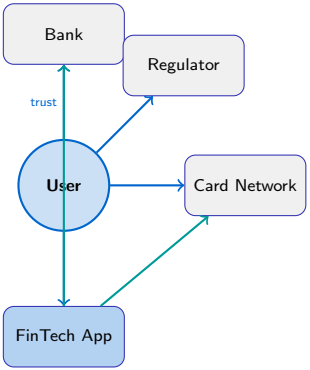
Key Technologies:

- APIs and Open Banking
- Mobile apps
- Cloud computing
- Machine learning
- Big data analytics



FinTech builds *on top of* the existing system

Institutional Trust



How FinTech Trust Works

- **Regulatory oversight** protects consumers
- **FDIC insurance** backs deposits
- **Chargebacks** reverse fraudulent transactions

FinTech Examples: Payments

P2P Payments:

- **Venmo** – Social payments layer on ACH
- **Zelle** – Bank consortium instant transfer
- **Cash App** – P2P + banking features
- **PayPal** – Original digital payment pioneer

Merchant Payments:

- **Stripe** – API-first payment processing
- **Square** – POS + ecosystem
- **Adyen** – Global payment platform

Cross-Border:

- **Wise** (TransferWise) – Mid-market FX rates
- **Remitly** – Remittance focus
- **PayPal/Xoom** – Global reach

Common Thread:
All operate on existing payment rails (ACH, SWIFT, card networks) with better interfaces, pricing, and user experience.

You may already use some of these! Venmo for splitting dinner, PayPal for online shopping, or Wise for international transfers.

Key Insight

When you send money via Venmo, it still settles through ACH—FinTech adds a convenience layer, not new infrastructure.

FinTech Examples: Banking & Lending

Neobanks (Apps You Might Know):

- **Chime** – No-fee banking via partners
- **N26, Revolut** – European mobile banks
- **Nubank** – Latin America's largest
- **Monzo** – UK challenger bank
- **SoFi, Ally** – Digital-first banking

How Neobanks Work:

1. Partner with chartered banks
2. Use existing deposit insurance
3. Better UX, lower fees
4. No physical branches

Digital Lending:

- **LendingClub, Prosper** – P2P marketplace
- **Affirm, Klarna** – BNPL (Buy Now Pay Later)
- **Upstart** – AI-based underwriting
- **Kabbage** – SMB lending

Innovation Approach:

- Alternative data for credit decisions
- Faster approval processes
- Better user experience
- Still uses traditional credit infrastructure

FinTech Examples: Investing & Insurance

Investing/WealthTech (Student-Friendly):

- **Robinhood** – Commission-free stock trading
- **Webull** – Advanced trading features
- **Betterment, Wealthfront** – Robo-advisors
- **Acorns, Stash** – Micro-investing
- **Public, M1 Finance** – Social investing

Key Innovation:
Democratized access to investing through lower minimums, no commissions, and simplified UX. You can start with $5, not $5,000.

InsurTech:

- **Lemonade** – AI-powered claims
- **Oscar** – Health insurance tech
- **Root** – Telematics-based auto
- **Hippo** – Smart home insurance
- **Metromile** – Pay-per-mile auto

Key Innovation:
Better risk assessment through data, faster claims processing, improved customer experience.

FinTech Pattern

Use technology to make existing financial services faster, cheaper, more accessible—without changing the underlying infrastructure.

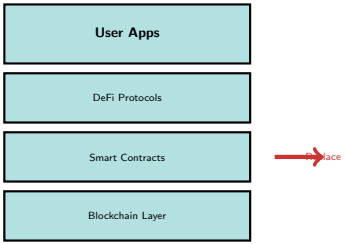
"New Rails, New Rules"

Core Belief:
The existing infrastructure is fundamentally flawed. We need:

- New trust model (cryptographic, not institutional)
- Decentralization (no single point of control)
- Programmable money (smart contracts)
- Permissionless access

Key Technologies:

- Blockchain and distributed ledgers
- Public-key cryptography
- Consensus mechanisms
- Smart contracts

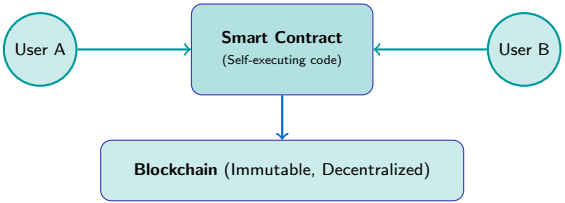


Crypto/DeFi builds a *parallel* system

Simple Analogy

Imagine a vending machine that can be a bank—no employees, just code that follows rules automatically. That's DeFi.

Cryptographic Trust ("Code is Law")



How Crypto/DeFi Trust Works

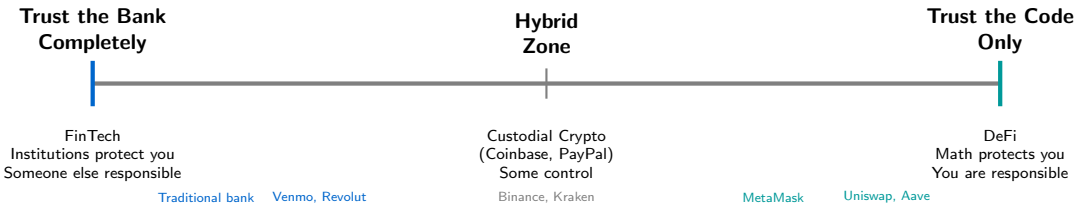
- **Cryptographic proofs** verify transactions mathematically
- **Consensus mechanisms** ensure network agreement
- **Smart contracts** execute automatically—no intermediary needed
- **Open-source code** is auditable by anyone

Smart Contract Analogy

Like an escrow account that releases funds automatically when conditions are met—no lawyer needed. If you buy a house: when title transfers + payment

Trust Spectrum: Two Extremes

Where Do You Want to Be on This Spectrum?



The Key Question

- **Left (FinTech):** More protection, less freedom. Bank says "we've got you."
- **Right (DeFi):** More freedom, less protection. Code says "you're on your own."

Crypto/DeFi Examples: Currencies & Tokens

Native Cryptocurrencies:

- **Bitcoin (BTC)** – Digital gold, store of value
- **Ethereum (ETH)** – Smart contract platform
- **Solana (SOL)** – High-speed transactions

Stablecoins:

- **USDC** – Circle, fiat-backed
- **USDT** – Tether, most liquid
- **DAI** – MakerDAO, algorithmic
- **FRAX** – Fractional-algorithmic

Layer 2 Solutions:

- **Polygon** – Ethereum sidechain
- **Arbitrum** – Optimistic rollups
- **Optimism** – Optimistic rollups
- **zkSync** – Zero-knowledge rollups

Purpose:
Create new forms of money and value transfer that operate outside traditional banking infrastructure.

Key Distinction

These are not "better PayPal"—they are entirely new monetary infrastructure with different properties (censorship-resistant, borderless, programmable).

Crypto/DeFi Examples: Exchanges

Decentralized Exchanges (DEXs):

- **Uniswap** – Automated Market Maker
- **SushiSwap** – Community fork of Uniswap
- **Curve** – Optimized for stablecoins
- **dYdX** – Decentralized derivatives
- **0x Protocol** – DEX aggregation

How DEXs Work:

- No central operator
- Liquidity pools replace order books
- Smart contracts execute trades
- Users retain custody of assets

Centralized Exchanges (CEXs):

- **Coinbase** – US-regulated
- **Binance** – Global, largest volume
- **Kraken** – Security-focused

Note: CEXs bridge fiat and crypto but operate more like FinTech (custodial, KYC-required)

Key Contrast:
DEXs are "pure DeFi" (permissionless, non-custodial).
CEXs are hybrid bridges between worlds.

Crypto/DeFi Examples: Lending

DeFi Lending Protocols:

- **Aave** – Multi-chain, flash loans
- **Compound** – Algorithmic interest rates
- **MakerDAO** – DAI stablecoin issuance
- **Liquity** – Interest-free borrowing

How DeFi Lending Works:

1. Deposit collateral to smart contract
2. Borrow against collateral (over-collateralized)
3. Interest rates set algorithmically
4. Liquidation is automatic if under-collateralized

Comparison to FinTech Lending:

	FinTech	**DeFi**
Credit check	Yes	No
Collateral	Optional	Required
Approval	Human/AI	Instant
24/7 access	Limited	Yes
Identity	Required	Anonymous

Key Tradeoff:
DeFi: Permissionless but requires collateral
FinTech: Credit-based but requires identity

Crypto/DeFi Examples: Derivatives & Infrastructure

Derivatives Protocols:

- **Synthetix** – Synthetic assets
- **GMX** – Perpetual futures
- **Perp Protocol** – Virtual AMM derivatives
- **Dopex** – Options protocol

What They Enable:

- Trade synthetic stocks 24/7
- Access derivatives without broker
- Permissionless leverage
- Global, borderless access

Critical Infrastructure:

- **Chainlink** – Decentralized oracles
- **The Graph** – Indexing protocol
- **IPFS** – Decentralized storage
- **ENS** – Ethereum naming service

Why Infrastructure Matters:
Smart contracts need external data (prices, events).
Oracles bridge on-chain and off-chain worlds.

Common Thread

All operate on blockchain rails, using smart contracts, without traditional intermediaries.

Permissioned vs. Permissionless: Why Does This Matter for YOU?

Permissioned (FinTech):

Someone can say NO:

- Need ID and proof of address
- Credit check required
- Geographic restrictions apply
- Account can be frozen
- Service can refuse you

You GET:

- ✓ Customer support
- ✓ Fraud protection
- ✓ Chargebacks
- ✓ Legal recourse

Permissionless (DeFi):

No one can say NO:

- Only need internet + wallet
- No credit check
- Works anywhere
- Cannot be frozen
- No approval needed

You GET:

- × No customer support
- × No fraud protection
- × No chargebacks
- × No legal recourse

The Real-World Impact

FinTech: Safer but can exclude you. **DeFi:** Includes everyone but you're on your own.

Side-by-Side Comparison

Dimension	FinTech	Crypto/DeFi
Trust model	Institutions	Code/Math
Infrastructure	Existing rails	New rails
Permission	Licensed, regulated	Permissionless
Identity	Required (KYC)	Optional (pseudonymous)
Reversibility	Chargebacks possible	Transactions final
Speed to market	Faster (use existing)	Slower (build new)
Regulatory clarity	Higher	Lower
User experience	Polished	Improving
Censorship resistance	Low	High

Understanding Who Controls Your Money

Custodial (FinTech Approach):

Like a Bank Holds Your Money

The exchange/platform holds your crypto for you. You log in with username + password.

Examples:

- Coinbase account
- PayPal crypto
- Robinhood crypto

Pros:

- Easy to use
- Can recover password
- Customer support

Cons:

Non-Custodial (DeFi Approach):

Like Cash in Your Pocket

You hold the private keys. Only you can access your crypto. No one else has control.

Examples:

- MetaMask wallet
- Ledger hardware wallet
- Trust Wallet

Pros:

- True ownership
- Cannot be frozen
- No counterparty risk

Cons:

Comparison Deep Dive: Trust & Custody

FinTech: Third-Party Custody

- Bank holds your deposits
- Broker holds your securities
- Insurance protects against failure
- Legal system enforces rights
- ✓ Consumer protections
- × Not your keys, not your coins

Implications:

- Accounts can be frozen
- Geographic restrictions apply
- Dependent on institution solvency

Crypto/DeFi: Self-Custody

- Private keys = ownership
- No counterparty risk (if self-custody)
- Cannot be seized without keys
- No geographic boundaries
- ✓ True ownership
- × No recovery if keys lost

Implications:

- Full responsibility on user
- No customer support
- Higher technical barrier

Comparison Deep Dive: Access & Identity

FinTech: KYC Required

- Government ID verification
- Address proof required
- Credit history checked
- AML/CTF compliance

Who Gets Excluded:

- Undocumented individuals
- Those without fixed address
- Countries under sanctions
- People with poor credit history

Crypto/DeFi: Permissionless

- Only need internet + wallet
- Pseudonymous by default
- No credit check
- No geographic restrictions

Who This Serves:

- 1.4B unbanked globally
- Citizens of unstable regimes
- Privacy-conscious users
- Cross-border workers

The Tradeoff

FinTech: Protections come with exclusion
DeFi: Inclusion comes with fewer protections

Comparison Deep Dive: Operating Characteristics

Aspect	FinTech	Crypto/DeFi
Hours	Business hours, settlement windows, batch processing	24/7/365 continuous operation
Settlement	T+1 to T+3 days (securities), instant facade (payments)	Minutes to hours (blockchain confirmation)
Scalability	Add servers/databases (proven, costly)	Blockchain trilemma (Layer 2 solutions)
Transparency	Proprietary systems	Open-source, on-chain
Composability	API partnerships (permissioned)	"Money Legos" (permissionless)

Tradeoffs: FinTech

Advantages:

- ✓ Familiar UX
- ✓ Regulatory compliance
- ✓ Consumer protections
- ✓ Fiat integration
- ✓ Customer support
- ✓ Fast iteration
- ✓ Proven business models

Disadvantages:

- × Still intermediated
- × Geographic restrictions
- × Can be censored/frozen
- × Limited innovation ceiling
- × Data centralization
- × Dependent on banks
- × Exclusion still possible

Best For

Users who want **better** financial services within the existing system, with familiar protections and convenience.

Tradeoffs: Crypto/DeFi

Advantages:

- ✓ Permissionless access
- ✓ Censorship resistant
- ✓ Transparent (open-source)
- ✓ Composable ("money legos")
- ✓ 24/7 global operation
- ✓ Self-custody possible
- ✓ Programmable money

Disadvantages:

- × Complex UX
- × Regulatory uncertainty
- × No chargebacks
- × Smart contract risks
- × Volatility (non-stablecoins)
- × Scalability challenges
- × "Code is law" rigidity

Best For

Users who need **different** financial infrastructure—global access, self-sovereignty, censorship resistance, or programmable finance.

Risk Comparison

Risk Type	FinTech	Crypto/DeFi
Counterparty Risk	Medium (institutional)	Low (if self-custody)
Smart Contract Risk	N/A	High (bugs, exploits)
Regulatory Risk	Low (compliant)	High (uncertain)
Custodial Risk	Medium (FDIC helps)	High (lost keys = lost funds)
Censorship Risk	Medium (can be frozen)	Low (resistant)
Volatility Risk	Low (fiat-based)	High (crypto) / Low (stables)
Recovery Options	High (legal recourse)	Low (irreversible)

Key Insight: Neither approach eliminates risk—they trade one set of risks for another.

Consumer Protection Implications

FinTech: Regulated & Protected

Bank Fails?

FDIC insures up to $250,000 in the US
Similar protections in EU (€100k), UK (£85k)

Fraud/Unauthorized Transaction?

Chargebacks available
Zero liability for credit cards
Limited liability for debit cards

Company Misbehaves?

Sue them in court
Regulatory oversight (SEC, CFPB)
Legal recourse available

DeFi: Unregulated & Unprotected

Smart Contract Hacked?

Your money may be gone forever
No insurance, no government bailout
"Code is law"—even if buggy

Sent to Wrong Address?

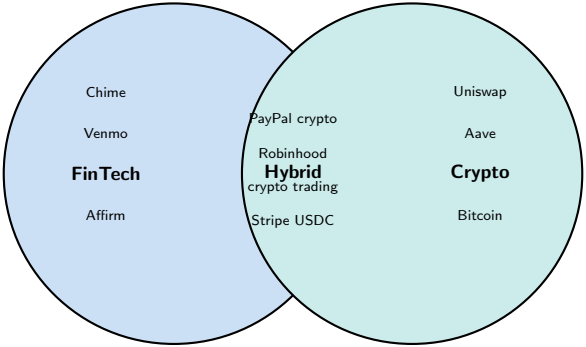
Transactions are irreversible
No chargebacks, no undo button
Lost keys = lost funds

Protocol Fails?

No one to sue
Anonymous developers
No regulator to complain to

Bottom line: You have a safety net

The Convergence



Increasingly:

- FinTech companies add crypto features (PayPal, Revolut)
- Crypto projects improve UX toward FinTech standards
- Traditional banks explore blockchain settlement
- Lines blur, but **philosophies remain distinct**

Convergence in Practice

FinTech Adding Crypto:

- **PayPal** – Buy/sell/hold crypto
- **Robinhood** – Crypto trading alongside stocks
- **Stripe** – USDC payouts for merchants
- **Visa/Mastercard** – Crypto card programs
- **Block (Square)** – Bitcoin integration

Why?
Customer demand, new revenue streams, competitive positioning

Crypto Improving UX:

- **Account abstraction** – No gas fees for users
- **Social recovery** – Not losing keys forever
- **Fiat on-ramps** – Easy entry points
- **Mobile-first wallets** – Better interfaces
- **L2 solutions** – Lower costs, faster speeds

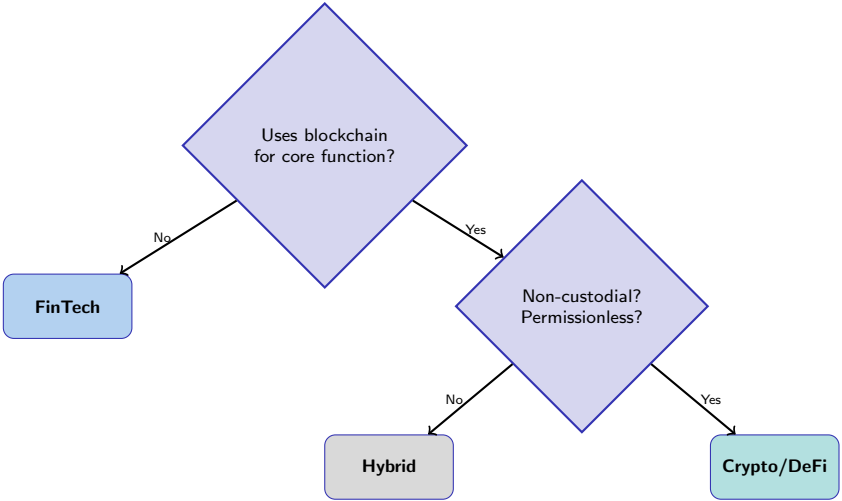
Why?
Mass adoption requires FinTech-level UX

The Question

Will convergence produce the "best of both worlds"—or compromise the unique benefits of each?

Classification Framework

How to classify any financial innovation:



Examples:

Classification Exercise

For each innovation, decide: FinTech or Crypto/DeFi?

1. A mobile app that rounds up purchases and invests the change in ETFs

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5. A service that uses AI to approve loans faster **FinTech** (better process, same infrastructure)

Real-World Use Cases: When to Choose Which?

Choose FinTech When:

- You want consumer protections
- Regulatory compliance is required
- You need customer support
- Working within a stable banking system
- Fiat currency is primary
- Business-to-business with contracts

Examples:

- Payroll processing
- Mortgage applications
- Business expense management
- Retail investing

Choose Crypto/DeFi When:

- Permissionless access is essential
- Cross-border without intermediaries
- 24/7 operation is critical
- Programmable money is needed
- Censorship resistance matters
- Self-custody is preferred

Examples:

- International remittances (high-fee corridors)
- Savings in unstable currency regimes
- DAO treasury management
- Permissionless derivatives access

Discussion: Which Philosophy Do You Prefer?

Team FinTech argues:

- "If it ain't broke, don't rebuild it"
- Regulatory protection matters
- Most users want convenience, not sovereignty
- Crypto is too volatile and risky
- The existing system has centuries of evolution

Team Crypto argues:

- "The system IS broke for billions"
- Financial freedom requires autonomy
- Permissionless access is a human right
- Code is more trustworthy than institutions
- Innovation requires new foundations

Discussion Questions

- Is there room for both philosophies to coexist?
- Under what circumstances would you choose each?
- What would make you switch from one to the other?

Application: Scenario Analysis

For each scenario, which approach is better suited?

1. **A freelancer in Argentina** needs to receive USD payments from US clients while the peso devalues rapidly.
   → **DeFi:** Stablecoin payments avoid forex restrictions, instant settlement

2. **A US retiree** wants to set up automatic monthly investments in index funds.
   → **FinTech:** Robinhood/Betterment offers familiar UX, tax-advantaged accounts

3. **A DAO** needs to manage a treasury across global contributors without a legal entity.
   → **DeFi:** Multisig wallets, on-chain governance, no jurisdiction issues

4. **A small business** needs a line of credit and expense management.
   → **FinTech:** Brex/Ramp offers credit, integrations, customer support

Executive Summary

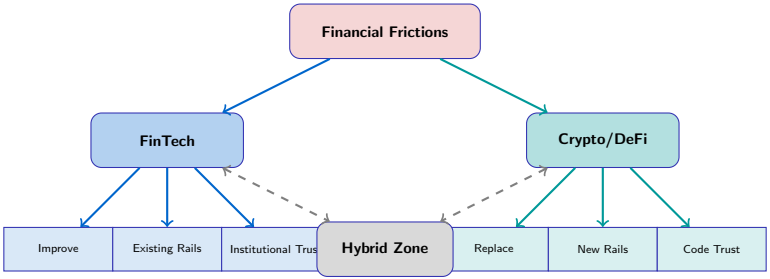
The Fundamental Fork

Both FinTech and Crypto/DeFi target the same financial frictions but approach them fundamentally differently.

Key Takeaways:

1. **FinTech = "Improve the system"** – Better UX on existing rails, works with regulators and banks, institutional trust model
2. **Crypto/DeFi = "Replace the system"** – New rails, permissionless, cryptographic trust, disintermediates incumbents
3. **Neither is universally better** – Choose based on use case, risk tolerance, and values
4. **Convergence is happening** – But the philosophical divide remains meaningful
5. **Classification skill is essential** – Understand whether an innovation improves or replaces infrastructure

Concept Map: The Philosophical Fork



Reading the map: Both philosophies emerge from the same frictions but diverge in approach. The hybrid zone represents the growing convergence.

Key Terms & Definitions (1/2)

FinTech Financial technology that improves existing financial infrastructure through better UX, processes, and technology while working within traditional systems.

Crypto/DeFi Decentralized finance built on blockchain infrastructure that aims to replace traditional intermediaries with trustless, permissionless protocols.

Institutional Trust Trust model based on regulated institutions, legal contracts, and government oversight (banks, regulators, courts).

Cryptographic Trust Trust model based on mathematical proofs, consensus mechanisms, and immutable code ("code is law").

Permissionless Systems that anyone can access without approval from a central authority (no KYC, no geographic restrictions).

Self-Custody Holding assets under your own control via private keys, without third-party intermediaries.

Key Terms & Definitions (2/2)

KYC (Know Your Customer) Regulatory requirement to verify customer identity—standard in FinTech, often absent in pure DeFi.

Smart Contract Self-executing code on blockchain that automatically enforces agreement terms without intermediaries.

Composability "Money Legos"—ability to combine DeFi protocols permissionlessly to create new financial products.

Censorship Resistance Property of systems where no single party can block or reverse transactions.

Neobank Digital-only bank without physical branches, typically a FinTech that partners with licensed banks.

DEX (Decentralized Exchange) Exchange protocol running on smart contracts without central operator or custody.

Oracle Service that provides external (off-chain) data to smart contracts (e.g., Chainlink for price feeds).

Common Misconceptions

1. **"All crypto companies are DeFi"**
   FALSE: Centralized exchanges like Coinbase operate more like FinTech (custodial, KYC-required). Pure DeFi is permissionless and non-custodial.

2. **"FinTech is not innovative because it uses old rails"**
   FALSE: Innovation in UX, business models, and accessibility can be transformative even on existing infrastructure. Stripe revolutionized payments without changing the underlying rails.

3. **"DeFi is only for speculation and crypto gambling"**
   FALSE: While speculation exists, DeFi also enables real use cases: remittances, savings in unstable currencies, permissionless lending, and programmable finance.

4. **"The two philosophies cannot coexist"**
   FALSE: They serve different needs and user preferences. The convergence zone shows productive overlap, and users can choose based on specific requirements.

Self-Assessment Question 1

Question: What is the core philosophy of FinTech?

A) Replace the existing financial system with blockchain
B) Improve the existing financial system with better UX and technology
C) Eliminate all financial intermediaries
D) Create permissionless financial infrastructure

Self-Assessment Question 1

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D) Create permissionless financial infrastructure

Answer: B

Explanation: FinTech's core belief is that the existing financial infrastructure works but needs better user interfaces, more efficient processes, and smarter technology. It builds on top of existing rails rather than replacing them.

Self-Assessment Questions 2-3

Question 2: What is the identity verification difference between FinTech and Crypto/DeFi?

A) FinTech requires KYC verification; Crypto/DeFi systems can be pseudonymous
B) Both require full identity verification
C) Crypto/DeFi requires more identity verification than FinTech
D) Neither requires any form of identity verification

Self-Assessment Questions 2-3

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Answer: A – FinTech operates within regulatory frameworks requiring KYC. Crypto/DeFi can operate pseudonymously with wallet addresses.

Question 3: What is the fundamental fork that distinguishes FinTech from Crypto/DeFi?

A) Mobile-first vs. desktop-first design

B) Improve the existing system vs. replace the system

C) B2B vs. B2C business models

D) Domestic vs. international focus

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Question 3: What is the fundamental fork that distinguishes FinTech from Crypto/DeFi?

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C) B2B vs. B2C business models

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Answer: B – The fundamental fork is philosophical: FinTech improves existing infrastructure; Crypto/DeFi aims to replace it with new trustless, decentralized infrastructure.

What's Next: Topic 1.4 – Landscape Overview

Preview

Now that you understand the two philosophical approaches, we will map the **entire digital finance landscape** to see how these innovations fit together.

Topics in 1.4:

- The six sectors of digital finance: Payments, Lending, Trading, Banking, Insurance, Investing
- Infrastructure layers: Blockchain, APIs, Data, Identity
- How FinTech and Crypto/DeFi examples map across sectors
- Connections and dependencies between sectors
- Locating any innovation within the landscape

Key Question:

"Where does any given innovation fit in the broader map of digital finance?"

Resources for Further Learning

Books:

- *The FinTech Book* – Chishti & Barberis (2016)
- *DeFi and the Future of Finance* – Campbell Harvey et al. (2021)
- *The Infinite Machine* – Camila Russo (Ethereum history)

Online Resources:

- DeFi Llama (`defillama.com`) – DeFi protocol analytics
- CB Insights FinTech reports – Industry analysis
- Bankless podcast – DeFi-focused content
- a]6z Crypto Startup School – Free curriculum

Research:

- BIS Working Papers on FinTech
- Federal Reserve FinTech reports
- Academic journals: *Journal of Financial Economics*, *Review of Financial Studies*

Topic 1.3: FinTech vs. Crypto/DeFi

Key Takeaway:
"Same frictions, different philosophies—
improve the system or replace it?"

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Next: Topic 1.4 – Landscape Overview