

History of Fintech III

MGT 4074 Fintech & Crypto Tokens, Fall 2025

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Welcome

By Wednesday 8/27, please read “Seeing Like a Bank” by Patrick MacKenzie
From his collection of essays “Bits about Money”

<https://www.bitsaboutmoney.com/archive/seeing-like-a-bank/>

Roadmap:

- In the News: Stablecoins and Government Debt
- Timeline of Financial Innovation
 - Pre-Industrial (pre-1760)
 - Industrial (1760 - 1944)
 - Modern (post-1944)

In the News: Stablecoins and Government Debt

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Bessent's discussions came around Congress's passage of the Genius Act in July, which establishes a regulatory framework for stablecoins. The act requires stablecoins to be backed by a select number of ultra-safe and ultra-liquid assets, including Treasury bills.

In the News: Stablecoins and Government Debt

Stablecoins are a vital link between traditional and digital assets, and generally seek to trade consistently at \$1. Issuers are able to maintain this peg by holding portfolios of high-quality, short-term debt.

The stablecoin market is worth about \$250bn, according to [research](#) from the Federal Reserve Bank of Kansas City — tiny compared with the \$29tn US Treasury market. But Bessent has previously told Congress he expects the market to expand to \$2tn in the coming years.

Discussion Question: Why might stablecoins increase demand for government debt?

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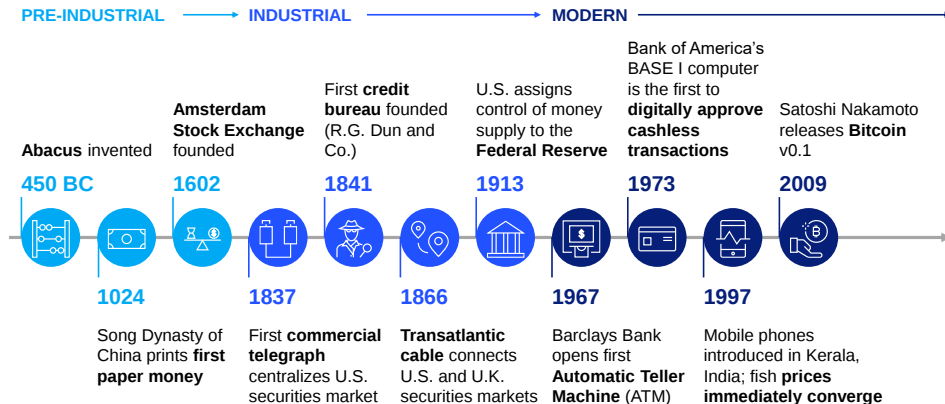
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 - (post-2008) formally understanding the physical limits of computing power enables **cryptographic money** to be verifiably scarce

Fintech History in One Slide



Roadmap

1 Pre-Industrial Financial Technology

2 Industrial Financial Technology

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Pre-Industrial Financial Technology

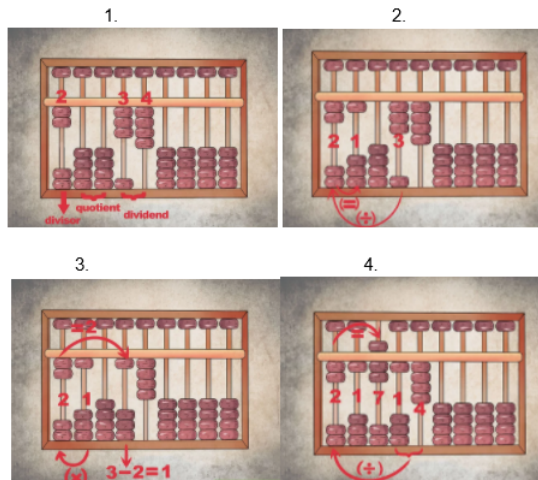
What needs did pre-industrial financial technology need to meet?

- Tracking ownership
- Generating *seignorage* revenue
- Trade finance and speculation

Tracking Ownership of Value

- Tracking ownership requires addition and subtraction.
- The first surviving documentation of a mechanical calculation aid is from 450 BC.
- The **abacus** was capable not only of addition and subtraction but also multiplication

Functions of an Abacus



Abacus Operators Rivalled Electric Calculators Through 1946

“One charming story reports a Tokyo competition in 1946 between the U.S. Army’s most expert operator of the electric calculator in Japan and a champion operator of the abacus in the Japanese Ministry of Postal Administration. According to the report, the addition contest consisted of adding 50 numbers each containing three to six digits... The abacus champion completed the addition tasks in an average of 75 seconds, while the calculator champion required 120 seconds. They battled to a standoff in multiplication and division. The abacus expert won four of the five contests and was declared the victor.”

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- 2 years of training required for first-grade Abacus certificate

Paper Money

- Song Dynasty issued *Jiaozi* money in standardized denominations as early as 1024
- Emperors abused *seignorage* and created *hyperinflation*
 - Government only held 1/14 of total banknote value in specie and often suspended convertibility
- Despite this, usefulness was recognized by the Mongol *Yuan* dynasty of 1271 who introduced paper money to Europe

Trade Finance

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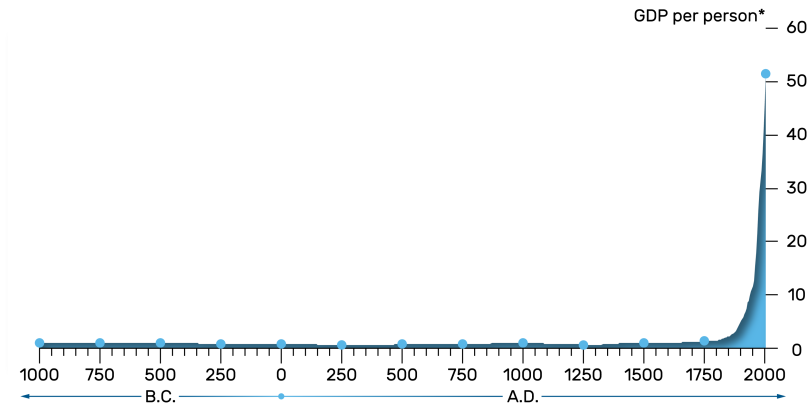
“Contractual and information frictions were a major barrier to establishing international trading relationships in the 19th century, just as they are today. The long lag between the initial shipment by exporters, the receipt of goods by importers, and their final sale to consumers means that purchase and payment is staggered, and there is room for default on both sides. Contractual terms over quantities or quality may be difficult to enforce when the exporter is risky, which is particularly likely for exporters in countries of low institutional quality or in new, riskier markets.”

The United Kingdom quickly surpassed the Dutch, controlling 98% of trade finance by 1860. Trade credit was so concentrated that a single bank failure in 1866 disrupted global trade for over 50 years. (Xu, 2022)

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GDP Growth Breakpoint in 1760



Source: Bank of England

Industrial Financial Technology

What needs did industrial financial technology need to meet?

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- Promoting trade between speculators to encourage **price discovery** and allocate resources to their best uses
- Facilitating lending to anonymous counterparties using **credit reporting**
- Insulating the money supply it from short-term political pressures using **Independent Central Banks**

Central Liquid Markets

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- The Transatlantic Sea Cable of 1866 further integrated global markets by connecting the U.S. and U.K. financial markets

The Transatlantic Sea Cable

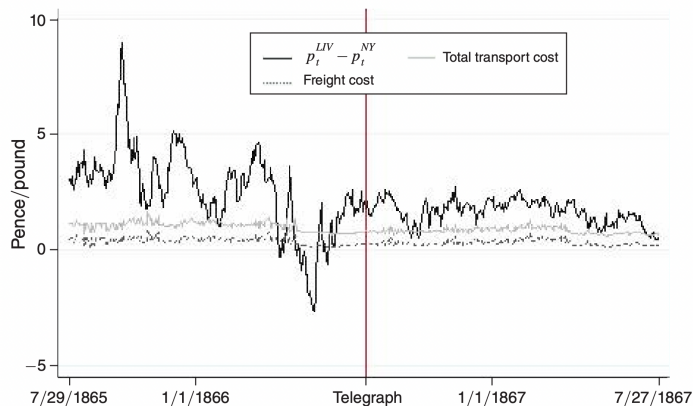


FIGURE 2. DIFFERENCES BETWEEN LIVERPOOL AND NEW YORK COTTON PRICES, FREIGHT COST, AND TRANSPORT COST

Steinwender (2018)

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- **Bankruptcy law** was created to prevent debt collectors from fighting with each other over the assets of broke debtors.

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 - Maximize employment
 - Minimize inflation
 - Independent control of the money supply is challenged by short-termist politicians to this day

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Computing Power Breakpoint in 1944

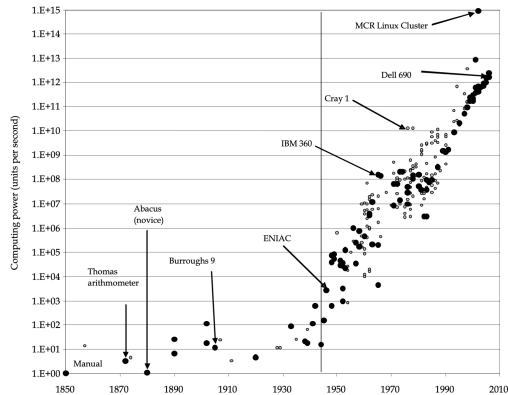


FIGURE 2
THE PROGRESS OF COMPUTING POWER MEASURED IN COMPUTATIONS PER
SECOND (CPS)

Source: Nordhaus (2007)

Modern Financial Technology

What finance has modern technology enabled?

- Universal instant money access and transfers
- Universal instant price discovery
- Scarce money backed by neither **specie** nor **fiat**: **cryptocurrency**

Universal Instant Money Access

- Barclays released the Automatic Teller Machine in 1967
- Bank of America released the BankAmericard in 1958 and processed 5,000 electronic transactions per day by 1973
- Today, the VISA network (spun off from BofA in 1970) processes 15,000 transactions *per second*.

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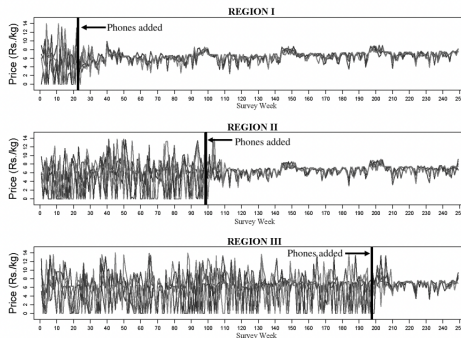


FIGURE IV

Prices and Mobile Phone Service in Kerala

Data from the Kerala Fisherman Survey conducted by the author. The price series represent the average 7:30–8:00 A.M. beach price for average sardines. All prices in 2001 Rs.

Jensen (2007)

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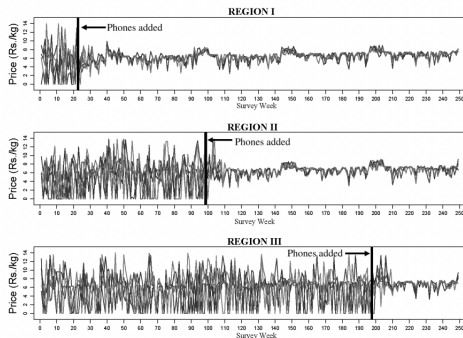


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Jensen (2007) (...was this good for the fish, though?)

Cryptocurrency

We will be covering cryptocurrency extensively in this class.

The first cryptocurrency was **Bitcoin**, described in a whitepaper by Satoshi Nakamoto (whose true identity is still unknown)

- Scarcity is enforced by **Proof of Work** – as long as computing power is scarce, so is Bitcoin
 - This feature make it an excellent **store of value** but a terrible **medium of exchange**
- Coordination relies on a **consensus mechanism**: stakeholders “vote with their compute”
- Minimal structure is needed: the chain is **decentralized** and can be freely joined and left

Proof of Work

“The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power.”

Nakamoto (2008)

Consensus Mechanism

“Nodes work all at once with little coordination. They do not need to be identified, since messages are not routed to any particular place and only need to be delivered on a best effort basis. Nodes can leave and rejoin the network at will, accepting the proof-of-work chain as proof of what happened while they were gone. They vote with their CPU power, expressing their acceptance of valid blocks by working on extending them and rejecting invalid blocks by refusing to work on them. Any needed rules and incentives can be enforced with this consensus mechanism.

Nakamoto (2008)