From Ledgers to Algorithms: The Evolution of Trust and Function in Commercial Banking

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Abstract. Few institutions are more important to economic development than the commercial bank; and yet its actual form and function are continually changing. This paper describes the history of the latter-day commercial bank. It traces the evolution of the commercial bank into a technological and algorithmic entity in the 21st century, analyzing its dual character: a facilitator of commerce and a potential instrument of risk. The primary theme in the history of the commercial bank is the technical and institutional means of creating and organizing "trust." The study examines this development at the various stages encompassing the invention of double-entry bookkeeping, and state-chartered public banks (the Bank of England, etc.), the globalization of money and finance, and the latter placing risk management in the hands of banks (under the Basel Accords). Finally, the paper examines today's turning point, wherein the competitive forces of Financial Technology (Fintech) and its "weaponization" by warring nation states (especially the UK and USA), require that the banks define themselves ironically as brand-names who can be trusted.

Keywords: Commercial Banking, Financial History, Trust, Fintech, Geopolitics.

1. Introduction

Commercial Banks are pillars of modern development [1], yet the very nature and business model of the banks are under threat from powerful forces that vehemently challenge it. The rapid development of Financial Technology (Fintech) [2] and the use of finance as a geopolitical weapon are disrupting it [3].

A rich literature follows the long-term evolution of banking, covering its institutional and functional evolution over centuries [4, 5]. Separately, there is a growing literature on the impact of digitalization and platforms on the existing banking order [6, 7]. Yet there is often a meaningful gap between the historical perspective, which looks at banking through the lens of centuries, and the analysis of these immediate 21st-century shocks: what is often missing is a synthesis that uses long-term historical archetypes to illuminate the mechanisms driving contemporary shocks.

This paper aims to fill that gap with a synthetic account of history. It argues that the central organizing story of banking over its multi-millennia evolution is one of the search for, and technical iteration of, the mechanism of "trust". From the personal trust in the priests of the ancient temple, through to the code-based trust of digital algorithms, the "function" of banking (managing payments, pricing risk, creating trust) is constant, while its "form" (the building, the book, the app) radically transforms.

To develop this argument, the paper is structured as follows. Section 2 reviews the key historical milestones in banking, re-interpreting them as evolutions in trust. Section 3 analyzes the digital transformation as the latest iteration of this pattern. Section 4 examines the new frontiers of geopolitical risk and technological competition. Section 5 concludes with the implications of this historical perspective for understanding the future of banking.

2. Historical Milestones: The Evolution of Trust and Function

Following where the money goes offers a lens into history. Not because money can explain everything, but because wherever trade, trust, government, technology, or war moved, banks soon appeared nearby. Banks did not start with tall buildings and strict rules. They began as simple answers

to simple questions, such as how to keep valuables safe, how to pay someone far away, and how to use today's money for tomorrow's needs. As people asked more from banks, banks changed. And every change brought new risks that had to be handled.

2.1. From Informal Trust to Formal Practice

Long before "banks" became a profession, people were already doing bank-like work. Temples kept valuables. Market money-changers swapped coins and wrote down balances. Guilds and tax officials held deposits and made payments for others [5]. In that early world, trust came first, institutions came later. People invented useful practices because they needed them; only later did those practices turn into formal organizations. The basic bank functions — keeping money safe, moving payments, and giving credit — already existed, just spread across different people and places instead of under one roof.

As trade grew in medieval Europe, paper started to replace metal currency on dangerous roads. The bill of exchange was a written promise specifying that a payment made here could be received there. If a merchant's name had a good reputation, that piece of paper was safer and faster than carrying a chest of silver. Careful bookkeeping and settling on time became part of a merchant's honor. That is also why great family houses rose in the Renaissance. People trusted networks of people even more than buildings. Double-entry bookkeeping turned that trust into clear lines on a page, and regular balancing turned habit into discipline [5].

2.2. The Rise of State-Chartered Institutions

A further advancement occurred when cities and states established public infrastructure for clearing and settlement, ensuring smooth payments. The Bank of Amsterdam (1609) is legendary. By using account money and central clearing to mitigate the chaos of mixed coins, banks made transfer entries safer and easier than moving metal. Cutting the costs of exchange encouraged more transactions, and increased trade meant greater liquidity and accounting activity.

Another leap was the clear marriage between state finance and private banking. The Bank of England (1694) showed how this could work [4]. The state borrowed from the public by selling bonds. The bank managed payments and issued notes backed by those bonds. The state's taxing power helped people trust the money. In the nineteenth century, joint-stock banks grew, gathered deposits from ordinary people, spread risks across many owners, and built national branch networks [8]. Banking moved from "family cash boxes" to professionally run institutions with boards, rules, and a public role.

Industrialization then rewired bank balance sheets. Factories, railways, and ports needed long-term money. Households placed savings for interest. The basic model took root, consisting of deposits coming in, loans and investments going out, and a margin in between. Banks moved beyond short trade loans to include medium- and long-term lending based on expected future income. In many countries that relied on banks more than capital markets, this model became the backbone of growth—and it still matters today [8].

China's path followed a similar rhythm in its own way. In late imperial times, Piao Hao (raft banks) and Qian Zhuang (local money houses) ran national remittance networks. In the late Qing and early Republic, hybrid forms appeared as the state tried to modernize money and credit. After 1949, the People's Bank of China once held many functions; with reform and opening, specialized banks were set up and later commercialized, while the central bank focused on central banking [9]. This history reveals a clear pattern. Whenever society asked finance to do more—farther, faster, safer—institutions changed shape to keep up.

2.3. The Modern Era of Risk Management

Toward the end of the 20th century, banks no longer just lent money. There were complications of managing when money came in and when it went out. The collapse of the Bretton Woods fixed exchange-rate system, oil shocks, and high inflation led to volatility in prices and interest rates [1].

"If a bank lent long but funded short at the wrong time," wrote Schwartz, "it could be in deep trouble." As a result, Asset-Liability Management (ALM) became part of the daily work of a bank managing cash-flow timing, diversifying funding and repricing as the market moves.

Openness brought opportunities — and vulnerability. Glorious but infamous bank busts showed how swiftly market and liquidity panic could bounce across time zones. Debt issues in some territories poured sovereign jeopardy into the equation. For the first time, global rules sought to enhance collective security. The simple Basel capital framework (of 1988): banks can grow but should always carry a little capital cushion just in case [10].

Different crises taught the same lesson in different ways. In the US, the Savings and Loan crisis showed the folly in funding long, fixed-rate mortgages with short, rate-sensitive money. When rates flew upwards, spreads went negative, and many failed [5]. Japan's late 1980s bubble showed how low interest rates coupled with optimism created excess land and stock prices. Once policy tightened, collateral fell, and bank capital was impaired [8]. In Asia (1997-1998), currency pegs, short-term foreign-denominated debt, and property problems triggered a disaster. With a rout in national currencies and exitable capital, asset prices fell, but dollar debts still had to be repaid [1].

China learned from these shocks too. In the late 1990s, non-performing loans were very high, which led to years of clean-up, recapitalization, and better governance. Later, as finance deepened quickly, some "shadow" and off-balance-sheet practices appeared. From 2016 onward, a tighter supervision cycle began. Interbank nesting, bank–trust products, entrusted loans, and asset-management products were cleaned up. In 2018, unified asset-management rules aimed to break implicit guarantees and reduce hidden risks, guiding banks back to serving the real economy more clearly [9].

At the same time, interest-rate liberalization and the digital economy changed how banks make money. When customers and funds moved to new platforms, net interest margins got thinner and profit growth slowed. In short, "how to earn" and "how to manage risk" became the same daily question.

3. The Digital Transformation and the Enduring Core of Banking

After 2008, another quiet change sped up, as banking moved from counters to code. In daily life, QR codes replaced small coins; digital wallets replaced cash; and credit checks began to read data trails, not only paper slips [11]. In China especially, retail digital finance made it hard to answer the question "what is a bank?" by pointing at a building [7].

Behind the scenes, business got tougher. Rate liberalization and platform competition squeezed spreads. Banks had to compete for funding while watching new kinds of liquidity and market risk. If customers and funds move to internet platforms, banks rely more on wholesale, non-deposit funding. Unless the timing between assets and liabilities is managed carefully, maturity and liquidity risks can grow. In a way, the "grow fast" model gave way to a model where risk capacity matters as much as revenue.

What is perhaps most striking is how much of the old story is still inside the new one. Long ago, a bill of exchange worked only if people trusted the name at the top. Today, a line of code works only if people trust the system behind it. The tools changed—from ledgers to databases, from signatures to cryptography—but the real product is still trust [12]. Modern banks are no longer family treasuries. They are public-facing institutions built to take risk, price risk, and keep promises. The more digital banking becomes, the truer this statement holds.

Another constant is that banks grow because people demand more of them. At first, they wanted safe storage, safer ways to travel with money. Then the challenge was to create pools of capital, national payment systems. Then they wanted global reach, smart ways to spread risk, and now: a tap on your phone that instantly pays, a pretty reasonable way to borrow money. Each stage in the cycle of growth brings risk and cries out for rules—from double-entry bookkeeping in Florence to

standardized clearing in Amsterdam, capital buffers in Basel, unified asset-management rules in all large modern markets. The names are new, but the story stays the same.

4. New Frontiers: Geopolitics and Technology

Commercial banks today are again standing at an important turning point. They are deeply involved in the two biggest forces of our time—the rapid development of technology and the competition among great powers that comes with it. Looking at these changes through a historical lens is both useful and necessary. It helps to make sense of how the world works and informs decision-making in the present.

Recent history shows how the global financial system is being used as a tool of power, and how this affects commercial banks [13]. A prominent example emerged after 9/11, when the United States launched a large campaign against terrorist financing networks, uncovering that terrorists had used ordinary banks to move money for their operations. In recent years, the use of finance as a foreign policy tool has become even more visible. Iranian banks were once cut off from key international payment systems, and since the start of the Russia–Ukraine war, Western countries have frozen billions of dollars of Russian central-bank reserves. These were ways to try to bludgeon Russia into defeat, but they have reverberated widely [14]. Even some Chinese banks have been sanctioned because of their links to Russian entities—a situation unprecedented in the history of China's financial system.

However, technology complicates sanctions enforcement, as cryptocurrencies are often used for offsets. Furthermore, China has unveiled new policies to 'internationalize' the yuan, aiming not only to elevate its global status but also to prepare for a potential future where access to the dollar system is restricted [15]. Furthermore, technology brings the bank-technology link closer, rendering banks themselves as useful tools of state, as well as symbols.

5. Conclusion

The history of commercial banking is not linear; it is a cyclical adaptation to new economic and political realities. This paper has argued that the constant factor throughout this evolution is the mechanism of trust. From the personal trust in early merchants, to the institutional trust in state-chartered banks, to the regulatory trust in post-crisis frameworks like Basel, and finally to the code-based trust of digital Fintech, banking adapts its form to serve its function.

This review of history reveals a core pattern, which is that while the form of banking (the physical building, the counter, the website) is constantly disrupted by technology, the function of banking (managing payments, pricing risk, and serving as a trusted intermediary) remains essential. Banks have arrived at yet another inflection point today. They are becoming tools of geopolitical machinations while continuing to be disintermediated by technology. Ultimately, the concept of a "bank" as a physical edifice for safekeeping deposits may evolve. The essential functions will likely continue to find new institutional and technical forms in the decades to come.

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