

AFIN8003 Week 12 - Emerging Topics in Bank Risk Management

Banking and Financial Intermediation

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2026-10-29

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1 Emerging topics in bank risk management

1.1 Twelve weeks on

Twelve weeks ago we asked a simple question: **why do banks exist?**

The standard answer — banks reduce information asymmetry, transform liquidity, and allocate credit — has held up for two centuries. But every function in that sentence is now contested by someone who does

not call themselves a bank.

💡 A useful provocation

Bill Gates is widely quoted as saying, in 1994: “*Banking is necessary, banks are not.*” Three decades later, the world is still arguing about the second half of that sentence.

This week we look at the forces pulling at the traditional banking model — **FinTech**, **BigTech**, **neobanks**, **open banking**, and **central bank digital currencies (CBDCs)** — and what they mean for risk management.

1.2 Changing dynamics

Traditional banks — taking deposits, granting loans, running payments — face pressure on every side.

- **Global competition** with other banks.
- **Competition with nonbanks** (“shadow banks”):
 - Many of banks’ classic functions can now be performed by nonbanks.
 - FinTech firms reduce information asymmetry through big-data screening and AI/ML monitoring, customise services, and cut search-and-match costs through platform economics.
 - Crucially, **nonbanks are not regulated, or are less regulated, than banks.**
- **Central bank digital currencies (CBDC)**:
 - If households hold CBDC instead of bank deposits, banks lose their cheapest funding source.
- **Technology**:
 - Mobile banking has made deposits more mobile too — runs now happen at the speed of a Twitter/X screenshot (e.g., SVB).
- **Business model**:
 - The shift from *originate-and-hold* to *originate-and-distribute* (Week 11) means banks now manufacture and ship credit risk rather than warehouse it.

📍 Silicon Valley Bank, 10 March 2023

SVB lost **US\$42 billion of deposits in a single day** — about a quarter of its deposit base — after a Slack-and-Twitter-driven panic among its tech-VC client base. The FDIC took it over the next morning. This was the **first social-media-driven bank run** at systemic scale. The takeaway: digital channels are not just a customer-experience story; they are a liquidity-risk story.

1.3 FinTech

Financial technology — **FinTech** — has grown from a niche to a structural feature of finance.

The **EY Global FinTech Adoption Index** (2019), measuring FinTech users as a share of the digitally active population, gave a snapshot just before COVID:

- Global average: **64%** in 2019 (up from 16% in 2015).
- China and India led at **87%**.
- Russia and South Africa: **82%**.
- Australia: **58%**.
- United States: **46%**.

⚠️ The numbers are now stale

EY did not refresh this index after 2019. By all subsequent measures (Statista, FIS, World Bank Findex 2021/2025) adoption has risen further — particularly mobile payments in emerging markets and BNPL in advanced economies. Treat the 2019 numbers as a *lower bound*, not current state.

Note

The Financial Stability Board (FSB) defines FinTech as “*technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services.*”

1.4 Evolution of FinTech

FinTech is older than your phone — it dates to the **1800s**.

- **1866** — the first successful trans-Atlantic telegraph cable was laid, enabling near-instant financial globalisation.
- **1918** — the Federal Reserve Banks established **Fedwire**, transferring funds via a Morse-code telegraph system.
- **1930s** — Germany trialled the world’s first **telex** network, replacing the Morse key with a typewriter keyboard.
- **1958** — Western Union began building a telex network in the United States.
- **1960** — **Quotron Systems** delivered the first electronic real-time stock quotes.
- **1966** — telex became the standard for long-distance interbank communication.

History rhymes

Each generation thinks its technology is uniquely transformative. In 1866 the telegraph let London and New York settle trades the same day — a change as radical as instant settlement looks today.

The late 1960s and 1970s brought rapid advances in electronic payments.

- **1967** — Barclays installed the **first ATM** in Enfield, London. Cheques marked with carbon-14 served as security tokens (anti-card-skimming, 1960s edition).
- **1968** — the UK established the **Inter-Bank Computer Bureau** (renamed **BACS** in 1971).
- **1970** — the US launched the **Clearing House Interbank Payments System (CHIPS)**.
- **1971** — **NASDAQ**, the world’s first electronic stock market, opened for business.
- **1973** — **SWIFT** was founded to standardise global interbank messaging.

The **1980s** brought electronic trading, mainframe-driven retail banking, and the modern customer database.

The **1990s** brought the public Internet, e-commerce, and online discount brokerages (E*Trade, Charles Schwab Online).

The **early 2000s** brought decimalisation, algorithmic trading, and high-frequency trading (HFT) — Shkilko and Sokolov (2020) show that when rain and snow disrupt HFT firms’ microwave links, removing their speed advantage, trading costs fall.

So when did ‘FinTech’ start?

Depending on whom you ask: 1866 (the cable), 1967 (the ATM), 1973 (SWIFT), or 2008 (Bitcoin and the iPhone App Store). The label is recent; the activity is not.

1.5 Factors driving FinTech development

Both **supply-side** and **demand-side** factors explain the modern FinTech wave.

1.5.1 Supply-side

1. The Global Financial Crisis (2008–09):

- Post-crisis regulation forced banks to cut costs, hoard capital, and de-risk.
- Higher capital and conduct costs led banks to retreat from marginal lending (small business, riskier consumers).
- New entrants — peer-to-peer (P2P) lenders, marketplace lenders — moved into the gap, using cloud infrastructure rather than branch networks.

2. Macroeconomic conditions:

- The post-GFC near-zero interest rate environment compressed net interest margins.
- FinTechs leaned hard on automation — algorithmic underwriting, instant onboarding — to undercut bank cost structures.

💡 Same crisis, two opposite responses

The GFC made *banking* more conservative and *banking-adjacent activity* more aggressive. Many household-name FinTechs (Square, Stripe, Nubank, Afterpay, Monzo, Revolut) were founded **2009–2015** — a direct product of the regulatory and rate environment that followed the crisis.

1.5.2 Demand-side

1. Mobile technology:

- The **iPhone (2007)** and Android launched the mobile revolution.
- Smartphones turned a phone into a wallet, broker, bank branch, and payment terminal.
- Global smartphone penetration was ~67% in 2020 and has continued to rise, particularly in Asia, Africa, and Latin America.

2. Demographics:

- **Millennials** (born 1981–1996) became the largest generation in the U.S. labour force in 2016.
- They are tech-native and, in surveys, more sceptical of traditional banks (a residue of watching parents in the GFC).
- **Gen Z** is even more app-first and bank-agnostic. For many, their “bank” is whichever app holds their card.

i Cultural shift, not just product shift

Ask a 25-year-old to describe their main bank. Increasingly the answer is an app — Up, Revolut, Wise, Cash App — often with a licensed bank sitting invisibly behind it. The customer relationship has moved up the stack.

1.6 Changing relationship between banks and FinTechs

A decade ago, the consensus was that FinTechs would eat banks. The story is now more nuanced.

- In the **2010s** many predicted the demise of traditional banks.
- FinTechs had real advantages: no legacy core systems, no branches, no compliance scars, a single-product focus.
- Some suggested banks would shrink into “**narrow banking**” — holding only safe assets while platforms matched borrowers and savers directly.
- In 2015, JPMorgan Chase CEO **Jamie Dimon** famously warned shareholders that “*Silicon Valley is coming*” for the banking industry.
- A 2015 PwC survey: **56%** of CEOs worried about cross-sector competition; **32%** named technology as the main threat.
- By 2016: **76%** of executives saw FinTech as a risk — particularly in consumer banking. Key worries: market share loss (70%), margin pressure (70%), customer churn (50%).
- McKinsey estimated that **10–40% of retail banking revenues** and **20–60% of profits** could be at risk by 2025.

! The outcome by 2026

By 2026, the apocalyptic predictions look overstated. Incumbents kept the **deposit franchise** (cheap funding, deposit insurance, regulated trust). Most successful FinTechs ended up *partnering* with banks, *getting a banking licence* (Revolut, Klarna, and Square’s parent Block), or *being acquired*. The interesting question is no longer “will banks survive?” but “**who owns the customer interface, and who owns the balance sheet?**”

! FinTech failure: Wirecard (June 2020)

Germany’s celebrated payments FinTech — at one point worth more than Deutsche Bank — collapsed when auditors discovered that **€1.9 billion** of supposed escrow cash in the Philippines simply did not exist. CEO Markus Braun was arrested; COO Jan Marsalek remains a fugitive. The episode forced a broader European debate about how *exactly* FinTech “innovation” was being supervised.

1.7 Neobanks and challenger banks in Australia

- **Neobank:** fully digital bank, no physical branches, mobile-first, modern tech stack.
- **Challenger bank:** newer, agile bank competing with incumbents; can be digital-only or hybrid.

Common features:

- App-based onboarding and product delivery.
- Faster product cycles; little legacy IT debt.
- Low fixed costs (no branch network).
- Often target younger or underserved segments (SMEs, gig workers, students).

! To take deposits, you need an ADI licence

APRA grants **Authorised Deposit-taking Institution (ADI)** licences. Without one, an entity may *brand* itself as a bank-like product but cannot legally call itself a bank or accept deposits. APRA introduced a **Restricted ADI (RADI)** pathway in 2018 to lower the entry barrier for new entrants — Volt, Xinja and Judo were among the early users.

Table 1: Selected neobanks and digital challengers in Australia

Bank	Notes
Up	Mobile-only, launched 2018; runs on Bendigo & Adelaide Bank’s ADI
UBank	NAB-owned; relaunched 2022 on the 86 400 tech stack after NAB acquired 86 400 in 2021
Judo Bank	Full ADI granted April 2019; SME-focused; ASX-listed November 2021
Alex Bank	Full ADI granted December 2022; consumer lending and savings
ANZ Plus	ANZ’s in-house digital bank, launched 2022 on a new cloud core

! Neobank graveyard

Two Australian neobanks did **not** make it:

- **Xinja** — surrendered its ADI in **December 2020** after burning through capital while paying market-leading deposit rates with no lending book to offset funding cost.
- **Volt Bank** — closed and returned deposits in **June 2022** after failing to raise the capital

needed to scale a profitable lending book.
The lesson: a neobank is still a bank. You cannot out-tech the basic arithmetic of net interest margin, capital adequacy, and credit losses.

1.8 Neobanks and bank risk

- **Competition** — new entrants pressure incumbents on UX, pricing, and deposit products.
- **Funding & liquidity** — digital-only customer bases tend to be **more rate-sensitive** and **more mobile**. Deposit beta is higher; deposit runs are faster (SVB, again).
- **Operational & cyber risk** — heavy reliance on cloud, APIs, third-party tech. A single AWS region outage can take a neobank offline; a single API key leak can be catastrophic.
- **Regulation** — APRA's regimes for digital banks, Banking-as-a-Service (BaaS), and crypto/stable-coin exposure are still evolving.
- **Profitability challenge** — many neobanks remain structurally loss-making. *Growth at any cost* is no longer rewarded by capital markets.

1.9 BigTech in finance

Google, Apple, Amazon, Meta and (in Asia) Alibaba and Tencent have all pushed into financial services.

- Tech giants invested heavily in FinTech for new revenue streams (CB Insights tracks well over **US\$1 billion** in big-tech FinTech investment per year in recent years).
- The competitive edge: massive distribution, deep user data, no legacy IT, near-zero customer-acquisition cost for existing users.
- Focus has been **mostly on payments and embedded credit** rather than full banking:
 - **Apple Pay, Google Pay, Amazon Pay.**
 - **Apple Card** (with Goldman Sachs, 2019). In January 2026 Goldman agreed to hand the card to JPMorgan Chase after heavy losses, a sign that even highly publicised BigTech-bank tie-ups are fragile.
 - **Apple Savings Account** (2023, via Goldman) — a high-yield savings product reached billions of dollars in deposits within weeks.
- BigTechs generally **prefer to partner with a licensed bank** rather than become one — the regulatory burden of a full bank charter is rarely worth the marginal profit.

Ant Group's IPO, November 2020

In one of the most dramatic regulatory interventions in financial history, China suspended Ant Group's **US\$34 billion** IPO — what would have been the largest IPO ever — *two days before its shares were due to start trading*. Beijing then forced Ant to restructure as a financial holding company subject to bank-style capital rules. The clear message to the rest of the world's BigTechs: **if you start to look like a bank, you will be regulated like one.**

1.10 Generative AI and banks

The wave that none of the textbooks anticipated. Since the release of **ChatGPT (November 2022)**, banks have shifted from cautious AI pilots to large-scale deployment.

- **Customer service automation** — **Klarna** announced in early 2024 that an OpenAI-powered assistant was handling the equivalent of **700 full-time customer-service roles** in its first month, with comparable customer satisfaction.
- **Code generation** — most major banks now have internal LLM coding assistants; Goldman, JPMorgan, and Morgan Stanley have publicly disclosed deployments.
- **Risk and compliance** — LLMs are being used to triage AML alerts, draft credit memos, and summarise regulatory filings.

New risks to manage

GenAI introduces *new* operational and model risk categories that current frameworks barely address:

- **Hallucination** in customer-facing chat (a wrong answer about a mortgage product is a mis-selling exposure).
- **Third-party concentration** — almost every bank's GenAI stack runs on Microsoft Azure / OpenAI or AWS Bedrock. That is a *systemic* concentration of operational dependency.
- **Model and data governance** — APRA's CPS 230 (operational resilience, effective July 2025) and CPS 234 (information security) now both apply to AI service providers.
- **Bias and explainability** — GenAI-assisted credit decisions still need to satisfy responsible-lending obligations.

1.11 Regulatory approaches to FinTech

1.11.1 FinTech charters and other licences

- Regulators have introduced virtual bank licences, FinTech charters, e-money licences, and restricted ADIs to **lower the cost of entry**.
- In 2018, the U.S. Treasury recommended **special-purpose national bank charters for FinTechs**; legal challenges from state regulators have delayed implementation, and several FinTechs have instead sought *full* national bank charters.
- Australia uses the **RADI** pathway (APRA, since 2018); the U.K. uses **PRA's New Bank Start-up Unit**; Singapore issues **digital full-bank** and **digital wholesale-bank** licences.

1.11.2 Regulating BigTech

- BigTech firms can scale rapidly using existing user bases, data, and network effects — raising concerns about market power, data governance, and contagion to the financial system.
- In China, **Alipay (Ant)** and **WeChat Pay (Tencent)** between them process the vast majority of mobile payments — a level of concentration regulators elsewhere consider a cautionary tale.
- BigTechs have already expanded into lending, insurance, and wealth management.
- The traditional **activity-based** regulatory framework (regulate the activity, not the firm) may be inadequate when one firm conducts many activities at scale.
- **Entity-based** regulation is on the rise:
 - EU **Digital Markets Act** (2022) and **Digital Services Act**.
 - China's anti-monopoly guidelines and the Ant restructuring.
 - U.S. antitrust action against the largest platforms.

1.11.3 Cross-border regulations

Two EU regulations have been particularly consequential for FinTech globally.

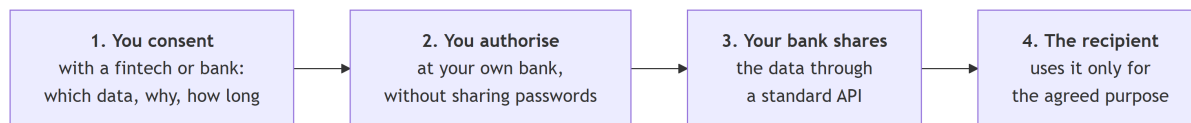
- **GDPR** (adopted 2016, enforceable 25 May 2018) gives EU citizens control over their personal data and requires protection of data exported outside the EU. It has effectively become a **global standard** because most multinational firms apply one privacy regime everywhere.
- **PSD2** (passed 2015, payment services in effect Jan 2018; strong customer authentication from Sep 2019) requires banks to share consumer banking data with authorised third parties — the foundation of **open banking**.

1.12 Open Banking and the Consumer Data Right (CDR)

PSD2 was the first regulatory move to the concept of **open banking**.

Open banking allows the sharing of financial data between institutions through application programming interfaces (APIs), conditional on **the consent of the customer**. In Australia this lives under the

Consumer Data Right (CDR).



- Consent lasts up to 12 months, and you can withdraw it at any time.
- Only recipients accredited by the ACCC can receive data; the OAIC oversees privacy.
- The CDR started in **banking in 2020** and **energy in 2022**. Non-bank lenders begin sharing customer data from **November 2026**.

1.13 Open banking and bank competition

Banks exist partly because they know their borrowers. That private information is also a source of **market power**: rivals cannot easily judge a bank's customers, so those customers are costly to win away. Open banking lets the customer carry that information to a competitor, lowering switching costs.

- **Action initiation.** A 2024 law lets consumers authorise accredited firms to *act* for them, such as making a payment, not just read their data. It is meant to replace **screen scraping**, where an app logs in to your bank account with your password.
- **Slow uptake.** About 300,000 consumers were using the CDR by October 2024, a small share of those eligible, and the government has moved to simplify its rules.

Research

He et al. (2023) show that open banking, by letting fintechs screen borrowers with bank data, could leave the financial industry better off yet all borrowers worse off, even when borrowers choose whether to share. Babina et al. (2024) document the early effects in practice.

A concrete example

A lender accredited under the CDR can, with your consent, pull your full transaction history from another bank via the CDR and underwrite a personal loan in minutes — using *the incumbent bank's own data* against it. That is open banking working as designed.

1.14 Central Bank Digital Currency (CBDC)

A **CBDC** is a digital form of a country's currency that is a direct claim on the central bank.

Form of money	Issued by	Who can hold it	Form
Cash	Central bank	Everyone	Physical
Reserves (ES balances, Week 9)	Central bank	Banks only	Digital
Bank deposits	Commercial banks	Everyone	Digital
Retail CBDC	Central bank	Everyone	Digital
Wholesale CBDC	Central bank	Financial institutions	Digital, often on a shared ledger

- A **retail CBDC** is digital cash: the only digital money the public could hold that is not a claim on a private firm.
- A **wholesale CBDC** is a new form of reserves, used to settle payments between institutions, often for tokenised assets.

- Potential benefits: faster and cheaper payments (including cross-border), financial inclusion, and a public alternative to crypto and stablecoins.
- Key concerns: privacy, cybersecurity, and bank disintermediation.

1.15 Designing a retail CBDC

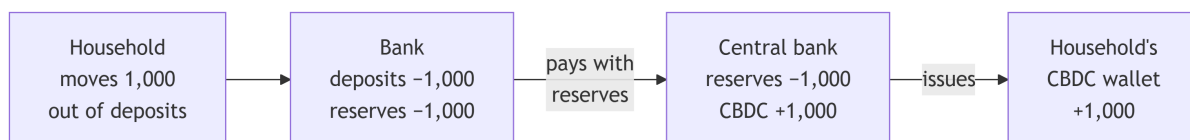
Every retail CBDC has to settle four design choices.

Choice	Options	Examples
Who runs the wallets	<i>Two-tier</i> : the central bank issues, banks and payment firms serve customers. <i>Direct</i> : the central bank runs everyone's account.	Two-tier: e-CNY, digital euro, digital pound proposal. Direct: rarely proposed.
Account or token	<i>Account</i> : tied to your identity, like a bank account. <i>Token</i> : works like a digital banknote, even offline.	The digital euro plans both online and offline versions.
Interest	None, like cash, or interest-bearing.	None: digital euro and digital pound proposals. Interest: e-CNY wallets since 2026.
Holding limit	A cap per person, or none.	About €3,000 discussed for the digital euro; £10,000 to £20,000 proposed for the digital pound.

💡 Tip

Most of these choices are really about banks. Two-tier wallets keep banks in the customer relationship; no interest and holding limits stop a CBDC from draining deposits.

1.16 How a retail CBDC competes with banks



The mechanics match a deposit moving to another bank (Week 9), except the money leaves the banking system altogether.

- **Funding.** Deposits are banks' cheapest funding. To keep them, banks must pay more on deposits or turn to dearer wholesale funding, which can raise loan rates or shrink lending.
- **Runs.** In a panic, customers could move into the safest money in the country with one tap, at SVB speed.
- **Payments and data.** CBDC wallets could take a share of payment fees, and of the transaction data banks use to assess borrowers.

1.17 Disintermediation is not automatic

i Research

Chiu et al. (2023) show that where banks have market power over deposits, an interest-bearing CBDC can *raise* deposit rates and expand lending, by forcing banks to compete. Their calibration to the US economy suggests bank lending could rise by 1.57%.

Chiu and Davoodalhosseini (2023), Williamson (2022) and Niepelt (2024) show that the effect on bank credit depends on design: whether CBDC pays interest, whether holdings are capped, and whether the central bank lends the lost funding back to banks.

! The takeaway for bank risk managers

A CBDC that pays no interest and caps holdings looks like cash, and changes little. A CBDC that pays interest with no cap competes directly for deposits: banks keep their customers only by paying more for them.

1.18 CBDCs in 2026

i Live retail CBDCs

- **Bahamas: Sand Dollar** (October 2020), the world's first.
- **Nigeria: eNaira** (October 2021).
- **Jamaica: JAM-DEX** (2022).

Adoption has been modest in all three.

i China: e-CNY

The largest pilot in the world. From **1 January 2026**, e-CNY wallet balances pay interest, are covered by deposit insurance, and are managed on banks' balance sheets: China has moved its CBDC closer to a bank deposit. Bai et al. (2025) find that even with heavy promotion in pilot cities, most users stuck with Alipay and WeChat Pay.

i In design, or ruled out

- **EU: digital euro.** The ECB finished its preparation phase in October 2025. EU lawmakers are negotiating the law in 2026; a first issuance could come in 2029.
- **UK: digital pound.** The design phase runs through 2026, with no decision yet to launch.
- **US: ruled out.** A January 2025 executive order barred federal agencies from any action to establish, issue or promote a CBDC. Whether a country gets a CBDC is now as much politics as economics.

1.19 Australia: wholesale first

! From Project Atom to Project Acacia

- **Project Atom** (2020): the RBA's first wholesale CBDC proof of concept, with CBA, NAB, Perpetual and ConsenSys.
- **Project Dunbar** (2022): with the BIS Innovation Hub and the central banks of Singapore, Malaysia and South Africa, testing cross-border settlement in multiple CBDCs.

- **eAUD pilot** (2023): a limited pilot CBDC with the Digital Finance Cooperative Research Centre (DFCRC), testing use cases proposed by industry.
- **2024**: a joint RBA and Treasury paper found no strong case for a retail CBDC for now, and made wholesale digital money the priority.
- **Project Acacia** (2024 to 2026): the RBA and the DFCRC issued pilot wholesale CBDC to settle tokenised assets. The final report was released in May 2026.

1.20 Three lessons from the semester

If you remember three things from this entire course:

1. **Banks exist because information is costly and trust is scarce.** Every “disruption” — FinTech, BigTech, crypto, CBDC — is ultimately a story about who can solve those two problems most cheaply, and who is allowed to.
2. **Risk does not disappear; it migrates.** Loan sales move credit risk to buyers. Securitisation moves it to investors. Shadow banking moves it outside the regulated perimeter. Open banking moves it across firms. CBDC could move it onto the central bank’s balance sheet. The regulator’s job is to know where it lands.
3. **The regulator is always one crisis behind.** Basel I was the response to 1980s loan-loss cycles. Basel III to the GFC. CPS 230 to operational and cloud risk. Whatever the next big rulebook covers will tell us what just broke.

2 Finally...

2.1 Suggested readings

- Australian Banking Association — [Open Banking](#).
- [Consumer Data Right \(CDR\)](#) — the official Australian CDR portal.
- Reserve Bank of Australia — [Project Acacia](#) and predecessor wholesale CBDC research.
- BIS Innovation Hub — [Project Dunbar](#) on multi-CBDC cross-border settlement.
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