

4. Developments in the Clearing and Settlement Industry

CS facilities play a critical role in making financial transactions more efficient and in managing risk within the financial system. The Board has a role in overseeing and supervising CS facilities to promote financial stability. The Bank continuously monitors financial and economic developments and their implications for the evolving risk environment in which Australian and overseas CS facilities operate. Over the past year, volatility in markets has remained elevated, responding to developments affecting the inflation outlook, international bank failures and economic uncertainty. In Australia and overseas, regulators are placing a greater focus on CS facilities' operational resilience and their oversight of critical third-party providers, particularly with many CS facilities looking to transition core functions to the cloud. These developments highlight the importance of the Bank's monitoring of the financial and operational risk management practices of CS facilities for the smooth functioning of the financial system.

The role of CS facilities in financial markets

CS facilities support the processing of many transactions in financial markets. There are two types of CS facility – CCPs and SSFs.

CCPs provide clearing services and play a major role in managing the risks associated with trading in many types of financial instruments. They stand between the counterparties to a financial trade, acting as the buyer to every seller and the seller to every buyer; this activity is known as 'central clearing'. Participants in centrally cleared markets have credit and

liquidity exposures only to the CCP, rather than other participants in the market. If a participant defaults, the CCP takes over its portfolio. The CCP faces potential losses from changes in the value of a defaulting participant's portfolio until it closes out the positions in that portfolio. CCPs hold financial resources to meet these potential losses.

SSFs offer settlement services, which involves the delivery of a financial security typically in exchange for payment. An SSF's main responsibility is to mitigate principal risk by making the final settlement of one obligation (e.g. the securities) conditional upon the final settlement of the other (e.g. the cash payment) via a delivery-versus-payment mechanism.

The Bank's regulatory framework

The Board has determined policies for the supervision and oversight of CS facilities in accordance with its powers under the *Reserve Bank Act 1959*.^[1] Day-to-day oversight and supervision is undertaken by the Bank's Payments Policy Department. In carrying out these activities, the Bank works closely with ASIC. The two agencies have complementary oversight powers over CS facilities and share the responsibility for ongoing supervision and assessment under the *Corporations Act 2001*. Where a CS facility is based overseas, the Bank seeks to rely on supervision and assessments undertaken by the home regulator, where appropriate.

[1] RBA (2021), 'The Reserve Bank's Approach to Supervising and Assessing Clearing and Settlement Facility Licensees', 25 February.

The Bank, in cooperation with ASIC and the other CFR agencies, continues to work towards the implementation of a package of reforms to support the effective regulation of FMIs in Australia, including CS facilities. These reforms will provide greater clarity on when offshore FMIs need to be licenced in Australia, strengthen the supervisory and enforcement powers of the regulators and provide new powers for crisis management. The Bank is engaging with the Australian Government on the prospective timeline for legislating the reforms.

The Bank's Financial Stability Standards for CS facilities

Under the Corporations Act, the Bank may determine financial stability standards for CS facility licensees. The Bank is responsible for assessing how well licensees have complied with the standards and their obligation to do all other things necessary to reduce systemic risk.

The Bank has determined two sets of Financial Stability Standards (Standards) – one for CCPs and one for SSFs.^[2] Each licensed CS facility is required to meet the relevant set of Standards. The objectives of the Standards are to ensure that CS facility licensees identify and properly control risks associated with operating their facility, and conduct their affairs in a way that is consistent with the overall stability of the Australian financial system. The Standards set principles-based requirements and regulatory expectations, rather than prescribing detailed rules and obligations.

Table 4.1 presents an overview of the CS facilities most relevant to the Australian market, the products they clear or settle, and their home regulator.

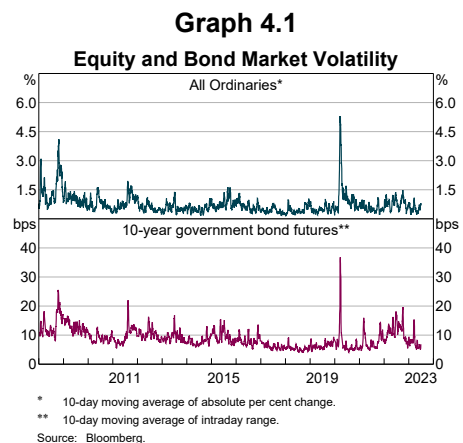
Financial market developments affecting CS facilities

Market volatility has led to an increase in margin calls

Volatility in interest rate markets remained elevated for much of the past year, and CCPs and their participants have generally dealt well with the associated challenges (Graph 4.1). Other markets, such as the electricity derivatives market, also experienced substantial volatility at times over the past year.

The periods of higher market volatility resulted in an increase in margin calls. Margin requirements are designed to respond to changes in the level of risk, a consequence being that when risks rise, participants must be prepared to meet higher liquidity demands. The large margin calls which arose from volatility in domestic electricity future prices in mid-2022 resulted in liquidity stresses for some market participants (Graph 4.2). Heightened volatility increased the costs of using centrally cleared derivatives and led to a decrease in their use, for instance, through participants withdrawing from the market or activity shifting to non-centrally cleared markets.

Most of the increase in total margin requirements during times of heightened volatility arises from changes in the market value



[2] RBA, 'Clearing and Settlement Facilities – Financial Stability Standards'.

Table 4.1: Clearing and Settlement Facilities Most Relevant to the Australian Market

Name	Products relevant to the Australian market ^(a)	Home jurisdiction (regulator)
Central counterparties		
ASX Clear ^(b)	Cash equities, debt products, warrants and equity-related derivatives traded on Australian exchanges or over-the-counter (OTC).	Australia (RBA/ASIC)
ASX Clear (Futures) ^(b)	Futures and options on interest rate, equity, energy and commodity products traded on the ASX 24 market, as well as AUD and New Zealand dollar-denominated OTC interest rate derivatives (IRD).	Australia (RBA/ASIC)
LCH Ltd	Swapclear service: OTC IRDs and inflation rate derivatives.	United Kingdom (Bank of England)
Chicago Mercantile Exchange Inc. (CME)	IRS service: OTC IRD, and non-AUD IRD traded on the CME market or the Chicago Board of Trade. FEX service: Commodity, energy and environmental derivatives traded on the financial market operated by FEX Global Pty Ltd (FEX).	United States (Commodity Futures Trading Commission)
Securities settlement facilities		
Austraclear ^(b)	Debt securities, including government bonds, and repurchase agreements.	Australia (RBA/ASIC)
ASX Settlement ^(b)	Cash equities, debt products and warrants traded on Australian exchanges.	Australia (RBA/ASIC)
Euroclear Bank ^(c)	Debt and equity securities, including government bonds, and repurchase agreements.	Belgium (National Bank of Belgium)
Clearstream Banking S.A. ^(c)	Debt and equity securities, including government bonds, and repurchase agreements.	Luxembourg (Banque Centrale du Luxembourg and Commission de Surveillance du Secteur Financier)

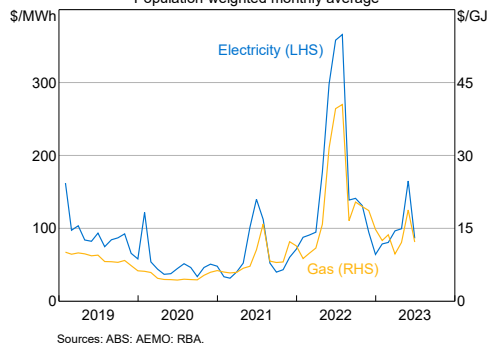
(a) Including service name if applicable (e.g. for overseas facilities that only provide some services relevant to the Australian market).

(b) ASX Group entities.

(c) Not licensed nor exempted in Australia as at 30 June.

Graph 4.2

Wholesale Domestic Energy Prices
Population-weighted monthly average



of positions leading to larger variation margin calls (Graph 4.3). For example, in late September 2022 UK yields increased sharply following the UK Government’s ‘mini-budget’, with the 10-year UK swap rate increasing by more than 100 basis points over a five-day period. This large price change led to variation margin requirements on these products exceeding recent peaks associated with the onset of the COVID-19 pandemic in March 2020 and other volatility events such as the Russia–Ukraine war and evolving inflation outlook.

Initial margin requirements at most CCPs also increased in response to these events (Graph 4.4). Initial margin is an important aspect of financial risk management as it is designed to cover most, but not all, losses arising from a participant default. Reflecting this, initial margin requirements rise as the risk exposure of participant positions increase and in periods of market volatility.

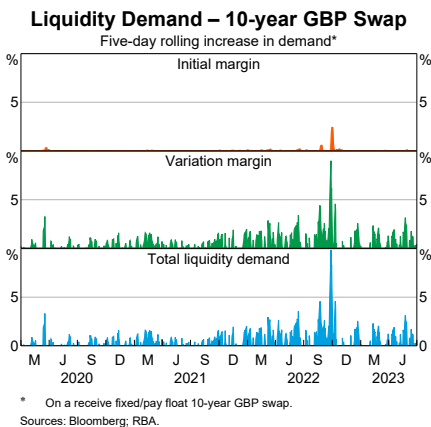
There were no instances of missed margin calls at CCPs operating in Australia despite the elevated liquidity demands on participants arising from higher volatility. Recent events have highlighted that some participants were better prepared than others to meet the swift increase in liquidity demands associated with the change in market conditions. Global standard-setting bodies continue to investigate the extent to which greater transparency around margin models can assist participants and clients better prepare for periods of acute liquidity demand.

Initial margin obligations related to participants' positions must be met by posting either cash or eligible non-cash collateral. Consistent with other periods of heightened volatility, much of the increase in margin requirements during volatility events over the year was initially accommodated through greater postings of cash (Graph 4.5). Over time, participants tend to

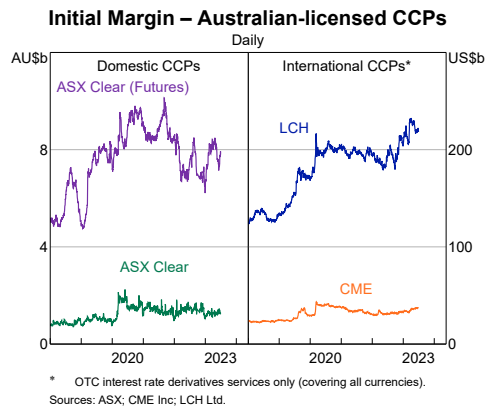
change the mix of collateral they provide in order to minimise costs.

One way CCPs assess the effectiveness of their initial margin models is by testing the protection they provide against adverse historical price movements. Episodes of market stress can lead to an increase in the number of times where initial margin would have been insufficient to cover the hypothetical default losses of a participant. This has led to a deterioration in the historical coverage outcomes seen at LCH Ltd's SwapClear service. In contrast, the ASX's OTC interest rate service has not experienced the same decline. This may reflect that some market shocks, such as interest rate movements associated with the UK mini-budget, were

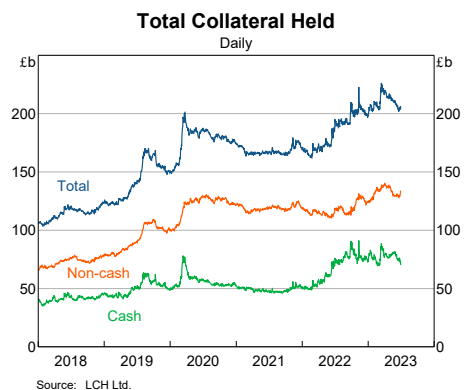
Graph 4.3



Graph 4.4



Graph 4.5

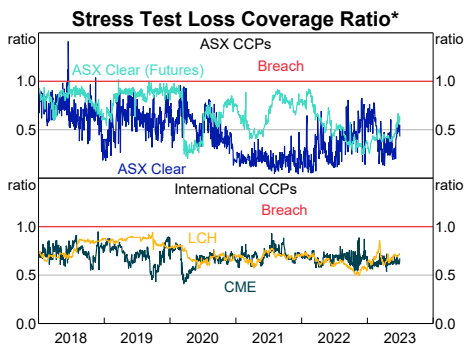


concentrated in overseas markets as well as ASX Clear (Future)'s increases to its initial margin settings in August 2022.

Margin is, however, only one part of the financial resources of CCPs. CCPs also have default funds that provide protection against the potential simultaneous default of the two participants with the largest estimated combined losses in excess of their initial margin (Graph 4.6). The default fund is a pool of financial resources funded by participants to protect against losses in a default event exceeding initial margin requirements in extreme, but plausible, market conditions. In light of the events experienced in the past year, CCPs have reviewed and, where appropriate, strengthened the range of scenarios used to size the default fund.

The Australian financial system was able to weather the stresses emerging from the global banking failures in March 2023. Ahead of its takeover by UBS, Credit Suisse was an active participant of ASX Clear for equity cash market products and had limited positions at other CCPs operating in Australia. CS facilities operating in Australia acted promptly to reduce credit exposures to Credit Suisse. By contrast, there were no direct exposures by licensed CS facilities to the three US banks which failed. Overall, licensed CCPs were well prepared as they regularly conduct tests of their capacity

Graph 4.6



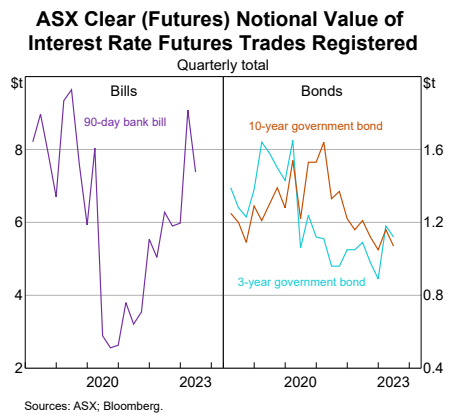
* Ratio of Cover 2 stress test losses to default fund including additional default fund margin.

Sources: ASX; CME Inc; LCH Ltd.

and readiness to manage the default of a large participant.

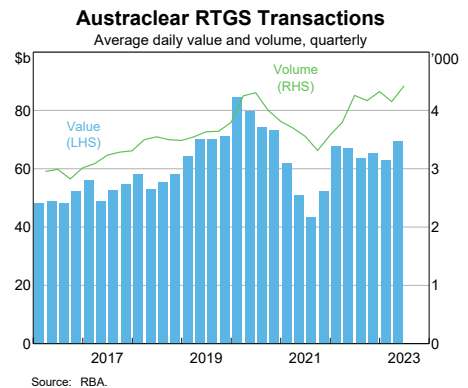
These events contributed to periods of increased activity in IRDs, particularly short-dated overnight interest rate swaps and bill futures, as participants sought to reposition their portfolios in response to the changing risk environment (Graph 4.7). Activity in debt securities markets also increased (Graph 4.8).

Graph 4.7



Sources: ASX; Bloomberg.

Graph 4.8



Source: RBA.

Operational incidents have been low in a challenging external environment

Operational risk arises from deficiencies in systems and processes or disruptions from external events. Operational failures can result in a deterioration in the service provided by a CS

facility, damaging a CS facility's reputation, and lead to financial losses being incurred by the CS facility or its participants.

CS facilities had the operational capacity to manage the increase in trade registrations

CS facilities' trade registration and processing systems have demonstrated their capacity to deal with sustained periods of heightened activity over the past year arising from market events. All CS facilities monitor their system capacity on an ongoing basis to ensure there is sufficient headroom to accommodate trade volumes associated with stressed conditions while maintaining service level objectives.

There were no major service outages that impacted the functioning of clearing and settlement services at the CS facilities licensed in Australia during the past year, and the frequency of operational incidents at CS facilities have been maintained at low levels.

CS facilities are focused on strengthening their cyber resilience

Cyber risk is the potential for information technology systems to be disrupted or destroyed, resulting in interruptions to business and financial loss. The external cyber threat environment is constantly evolving and requires CS facilities to regularly test and strengthen their cyber controls. Despite the elevated risk environment, there have been no direct cyber-attacks reported on firms supervised by the Bank.

The cyber-attack on Ion Markets highlighted the risk faced by CS facilities and their participants in relation to third-party vendors. On 31 January, Ion experienced a ransomware attack on its futures trade matching and reconciliation services used by brokers. As a result, Ion's service was unavailable for several weeks. Even though CS facilities licensed in Australia were not directly affected, the attack disrupted critical processes at several of their participants.

While licensed CS facilities have assessed their controls as adequate, the event demonstrates the importance of managing supply chain security risks, particularly when CS facilities and their participants can be harmed by a breach of a third-party system.

The transition away from LIBOR has been successfully managed by CCPs

A key strategic focus for international CCPs over recent years has been the transition from LIBOR to risk-free rates (RFRs) in many major markets. The transition to RFRs was a complex project. Ahead of US dollar LIBOR's cessation at the end of June, LCH Ltd's SwapClear service and CME's IRS service successfully converted LIBOR-based products to their RFR equivalents. Australian dollar-denominated interest rate swaps linked to Australia's bank bill swap rate (BBSW) did not require conversion as BBSW remains a robust benchmark since it is anchored by a sufficient volume of actual transactions.

CS facilities are planning to move critical services to the cloud

CS facilities are increasingly seeking to use public cloud infrastructure platforms to provide critical services to their participants. The cloud offers the potential for greater operational resilience through the use of geographically diverse locations, system availability and security. However, there are risks associated with using cloud infrastructure. These include:

- project management and migration risks
- the need to provide continuity of services that are critical to the financial system
- operational considerations such as the management of outages and cyber security
- governance risks related to oversight and contractual arrangements associated with outsourcing to a third party.

The Bank is engaging with all licensed CS facilities on their cloud transition plans and will

maintain close supervision on the migration of any critical services to the cloud by domestic CS facilities.

The Bank’s supervision and oversight of financial market infrastructures

The Bank undertakes assessments of licensed CS facilities that are proportionate to their degree of systemic importance in the Australian financial system.^[3] The four CS facilities in the ASX Group are systemically important domestic CS facilities, and LCH Ltd’s SwapClear service is a systemically important overseas CS facility. CME’s CCP services have not been classified as systemically important and are therefore subject to less-intensive supervision.

Summary of assessment for the ASX CS facilities

The Bank’s assessment of the ASX CS facilities as at 30 June 2023 concluded that ASX should place high priority on addressing recommendations related to three Financial Stability Standards: the Framework for the Comprehensive Management of Risks; Governance; and Operational Risk.^[4] Given the pausing of the CHESSE Replacement Program in November 2022, it has become even more critical for ASX to ensure the current CHESSE continues to reliably service the market until after its replacement goes live.

Assessment of LCH Ltd’s SwapClear Service

LCH Ltd’s SwapClear service clears around 90 per cent of the cleared Australian dollar OTC IRDs market (Graph 4.9). SwapClear is used by banks and corporations to manage interest rate risk and take speculative positions. It has six Australian direct participants, including the four major banks.

[3] See ACCC (2023), ‘Targeting Scams: Report of the ACCC on Scams Activity 2022’, April.

[4] RBA (2023), ‘Assessment of ASX Clearing and Settlement Facilities’, October.

The Bank has assessed LCH Ltd’s SwapClear service as being conducted in a way that promotes overall stability in the Australian financial system as at 30 June 2023. This assessment is based on the Bank’s bilateral engagement with LCH Ltd, information from the Bank of England (LCH Ltd’s home regulator), and LCH Ltd’s progress towards meeting the Bank’s regulatory priorities. The Bank of England takes a risk-based approach to oversight, prioritising its supervisory efforts in areas where it considers risks to financial stability are greatest. A summary of the Bank’s regulatory priorities and areas of supervisory focus can be found in Table 4.2, with further detail provided below.

Extension of operating hours

LCH Ltd fully extended SwapClear’s operating hours to cover the Australian business day in late August 2023. The Bank has been a proponent of this work since SwapClear was licensed in 2014, and this change sees the service accept trades 24 hours per day, five days per week (24x5) from its opening at 9 am Sydney time on Monday mornings. The Bank will review the status of the associated regulatory priority once the change is demonstrated to be effectively operating in a business-as-usual manner for a sustained period. This is a good outcome for participants based in Australia and the Asia-Pacific as trades can now

Graph 4.9

Cleared AUD OTC Interest Rate Derivatives
Notional value outstanding, end of quarter

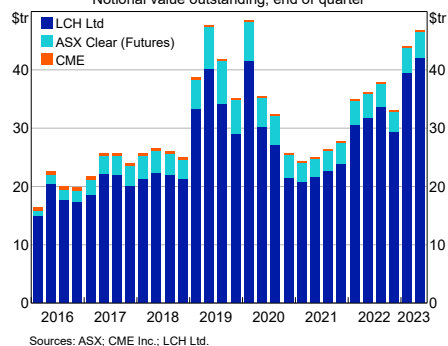


Table 4.2: Regulatory Priorities and Areas of Supervisory Focus for LCH Ltd's SwapClear Service

Name	Description	Status	Relevant Financial Stability Standard(s)
Regulatory priorities			
Extension of operating hours	LCH Ltd should complete its work to extend the operating hours of the SwapClear service within the next year, while maintaining the resilience of its operations; it should keep the Bank informed of its progress. LCH Ltd's business developments should not negatively affect its work on operating hours.	Ongoing	Margin (CCP Standard 6) Operational Risk (CCP Standard 16)
Area of supervisory focus			
Cyber risk management	The Bank will continue to monitor LCH Ltd's ongoing work to enhance its cyber risk management.	Ongoing	Operational Risk (CCP Standard 16)
Australian legal opinion	LCH Ltd should seek a new legal opinion from external advisers to address Australian law issues arising through its operations in Australia, including the extent to which LCH Ltd's rules and related contracts are enforceable under Australian law.	Closed	Legal basis (CCP Standard 1)

be cleared immediately upon submission to the SwapClear service. When the SwapClear service was closed, participants were required to manage bilateral credit risk exposures until the service reopened. Prior to the extension, this affected around 20 per cent of Australian participants' trades.

Other material developments

Other key developments and areas of supervisory focus the Bank took into consideration included:

- *Cyber risk management:* LCH Ltd continues to enhance its control frameworks and capabilities for managing cyber risk. LCH Ltd remains vigilant to changes in the cyber threat landscape, but has not experienced any material incidents. LCH Ltd regularly assesses the effectiveness of its cyber controls through independent reviews, and the Bank of England maintains a holistic focus on cyber resilience.
- *Review of Australian legal risk:* In 2022/23, LCH Ltd and the Bank completed a targeted review into certain aspects of SwapClear's

legal basis related to Australian law, including the extent to which LCH Ltd's rules and related contracts are enforceable under Australian law. The review did not identify any substantive issues of concern and this area of supervisory focus has been closed.

Oversight of Chicago Mercantile Exchange Inc.

CME does not currently have any direct Australian-based participants, and the scope and nature of its Australian activities is limited. Reflecting these factors, the Bank takes a proportionate approach to its supervision of CME, seeking to rely on reports, information and engagement with CME's home regulator to the extent possible.

The Bank also monitors CME's progress in addressing regulatory priorities set by the Bank and other material developments on an ongoing basis. A summary of regulatory priorities can be found in Table 4.3. These regulatory priorities are contingent on either the FEX service growing or developments within CME's business triggering the associated

Table 4.3: Regulatory Priorities for CME

Name	Description	Status	Relevant Financial Stability Standard(s)
Australian dollar liquidity arrangements	CME must establish adequate liquidity arrangements for Australian dollar collateral during Australian hours before introducing any type of eligible collateral for Australian dollar-settled FEX products other than Australian dollar cash.	Ongoing	Collateral (CCP Standard 5) Liquidity (CCP Standard 7)
Australian dollar settlement bank arrangements	Should the FEX service grow, CME must ensure the settlement arrangements in place to support money settlements for the FEX clearing service remain appropriate, including adequate back-up arrangements. CME must share its assessments of these arrangements with the Bank for review.	Ongoing	Settlement finality (CCP Standard 8) Money settlements (CCP Standard 9)

requirements. These priorities are designed to provide clarity on the regulatory expectations.

Engagement with Clearstream Banking

Clearstream Banking S.A. (CBL) is an internationally focused SSF with a 5–10 per cent market share in the custody and settlement of Australian dollar-denominated securities. A disruption in the operation of CBL could have implications for the functioning of the Australian bond market.

CBL is in the process of applying for a licence to operate a SSF in Australia. The Bank has undertaken an initial assessment of how CBL's settlement facility meets the FSS. The Bank will jointly make a determination with ASIC of whether CBL's home regulatory regime is

equivalent to that in Australia. This assessment will be published in due course.

Engagement with Euroclear Bank

Euroclear Bank is an internationally focused SSF that provides settlement and custodial services for securities, including Australian dollar-denominated securities. Euroclear Bank has a material share of Australian dollar-denominated securities settlement activity, but to date has not applied for a licence to operate in Australia.

The Bank is a member of the Euroclear Bank Multilateral Oversight Group, which is chaired by the National Bank of Belgium (Euroclear Bank's home supervisor). It serves as a cooperative oversight forum between the central banks of the major currencies settled in Euroclear Bank. ✎