

Nominal lending rates, compensating balances and effective lending rates

21 August 2026

13th biennial IFC conference 2026

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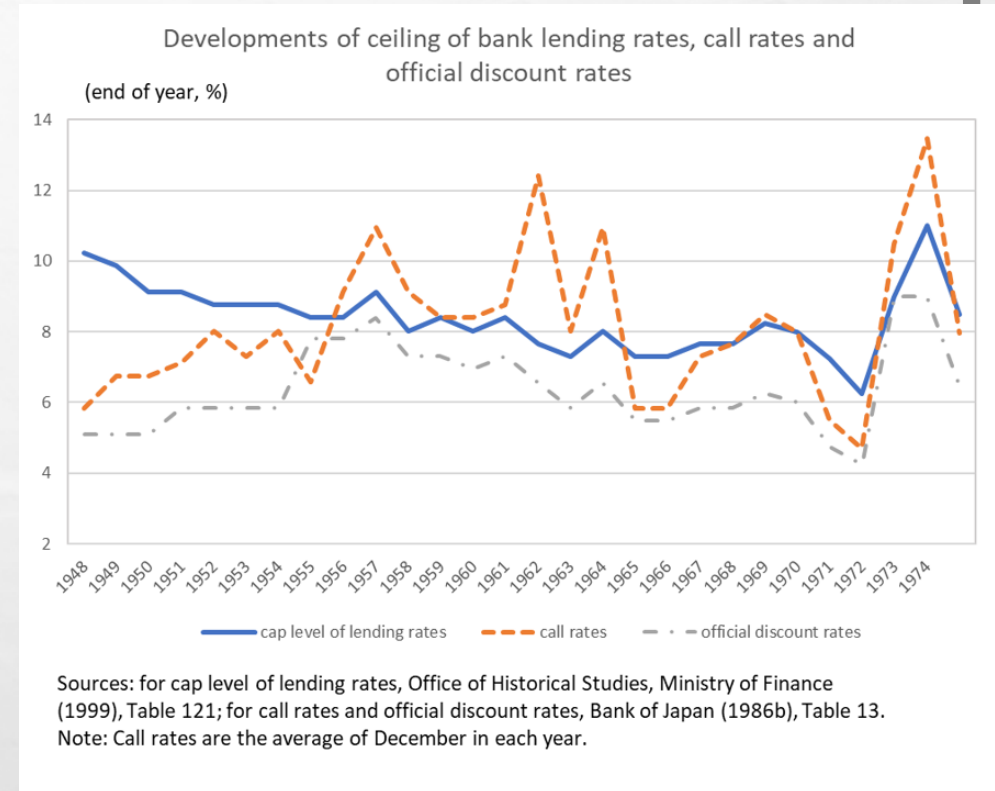
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1 . Motivation and Research Question-1

- The bank lending rate is among various factors outside the control of central banks that influence the effectiveness of monetary policy (Cottarelli and Kouelis 1994).
- The interest rate channel is a major transmission channel for monetary policy (Mishkin 1995) .
 - What would happen if the recognised bank lending rates relying on existing statistics deviated from actual lending rates?
 - Until the first half of the 1960s, bank lending rates in Japan had been heavily regulated in accordance with the government's "industrial policies" to enhance capital investments and there were upper limits for bank lending rates.
 - Under the Temporary Interest Rates Adjustment Law (Rinji Shikin Chosei Ho) , maximum rate on deposits and loans were to be decided by the monetary authorities.

1. Motivation and Research Question-2

- Banks often raised actual lending rates above the upper limit through compensating balances, where borrowers were required to deposit a certain amount in exchange for loans, allowing banks to achieve higher effective interest rates than nominal rates.
- Previous studies rely on aggregated data with “rough” assumptions about compensating balances, such as treating all corporate time deposits as compensating balances (Hayashi, 1982).
- Can we capture actual bank lending rates with minimal assumptions? If so, what does the deviation of actual rates from surface rates really look like?



2. Alternative Data Sources and Calculation of Nominal and Effective Rates-1

- The scheme for “compensating balances” can vary from formal one to informal one
 - Formal case: Pledged deposits; Deposits pledged as collateral (formal procedures involved) (Takada 1990, p. 18)
 - Informal case: deposit unable to be withdrawn by borrowers on de facto basis
- Collecting firm-level data from Financial Statement Reports (Yukashoken hokokusho)

Engel, The Library of Economics,
University of Tokyo

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Among cash and deposits, term deposit of 50,000 thousand yen are the collateral for short-term lending of 50,000 thousand yen.

* 名村造 *

(脚 注)	
第 6 3 期 (昭和 4 3 年 9 月 3 0 日 現在)	第 6 4 期 (昭和 4 4 年 3 月 3 1 日 現在)
※ 1 内 定期預金 5 0, 0 0 0 千円は短期借入金 5 0, 0 0 0 千円の差入担保である。	※ 1 前期に同じ。

Financial Statement Reports of Namura Shipbuilding, Second Half of 1968

2. Alternative Data Sources and Calculation of Nominal and Effective Rates-3

- Existing statistics are based on aggregated data.
 - ✓ Smaller than debtors' deposits
 - ✓ Declining trend
 - ✓ Different figures by definition
- Newly collected firm-level data
 - Semiannual data for 1956–1972
 - Number of sample firms: 175
 - The share of firms with compensating balances is 55.4%; this practice prevailed during the high-growth period even among large firms.
 - Shows diversification across industries and firms

The Survey of the Fair Trading Committee			
			(the share to lending amounts, %)
	City Banks		
	Compensating Balances	Compensating Balances	Debtors' Deposits
	(narrow definition)	(broad definition)	
March, 1965	20.7	33.7	60.1
March, 1970	8.8	23.3	53.0

The Firm Level Dataset		
		(the share to short-term debt, %)
the highest industry	Foodstuff	1.8
the lowest industry	Electric Machinery	0.0
all industry		0.6

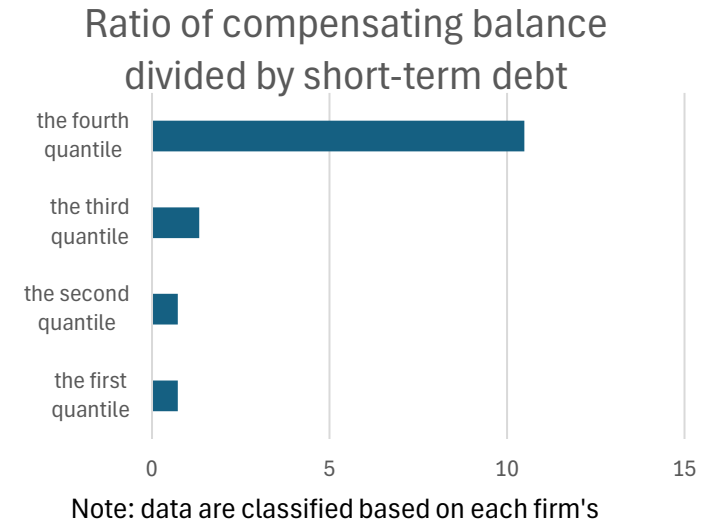
Table 2-12 Compensating balances by firm, Precisions

(thousand yen)

		138	139	140	141	142	143	144	145
1956	1	0	0	5,000	0	7,000	90,000	20,000	11,646
	2	0	0	5,000	0	39,000	52,000	20,000	12,682
1957	1	0	0	5,000	0	46,000	52,000	20,000	867
	2	0	0	5,000	0	62,000	52,000	0	2,345
1958	1	0	0	5,000	0	54,000	74,000	0	2,470
	2	0	0	5,000	0	64,500	74,000	100,000	4,729
1959	1	0	0	5,000	0	57,500	74,000	100,000	12,203
	2	0	0	5,000	0	65,700	54,000	0	4,518

2. Alternative Data Sources and Calculation of Nominal and Effective Rates-4

- Biased distribution among firms: larger compensating balances were imposed on the smallest sample firms
- The impact of compensating balances on bank lending rates
 - Nominal borrowing rates for firms, estimated using interest payments and debt outstanding
 - Effective rates estimated by deducting deposit amounts treated as collateral from debt amounts, and term deposit interest payments from interest payments on debts
 - The gap between nominal and effective rates is not considerable for our sample firms...



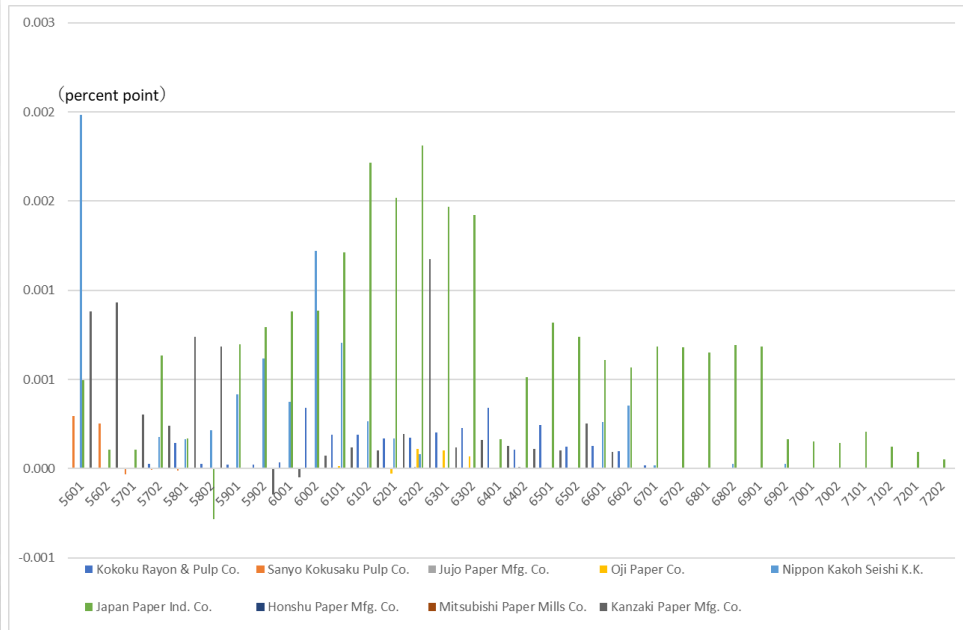
The Gap between Effective and Nominal Lending Rate		
		(% point)
the largest industry	Wooden Products	7.85
the smallest industry	Electric Machinery	0.00
all industry		0.76

2. Alternative Data Sources and Calculation of Nominal and Effective Rates-5

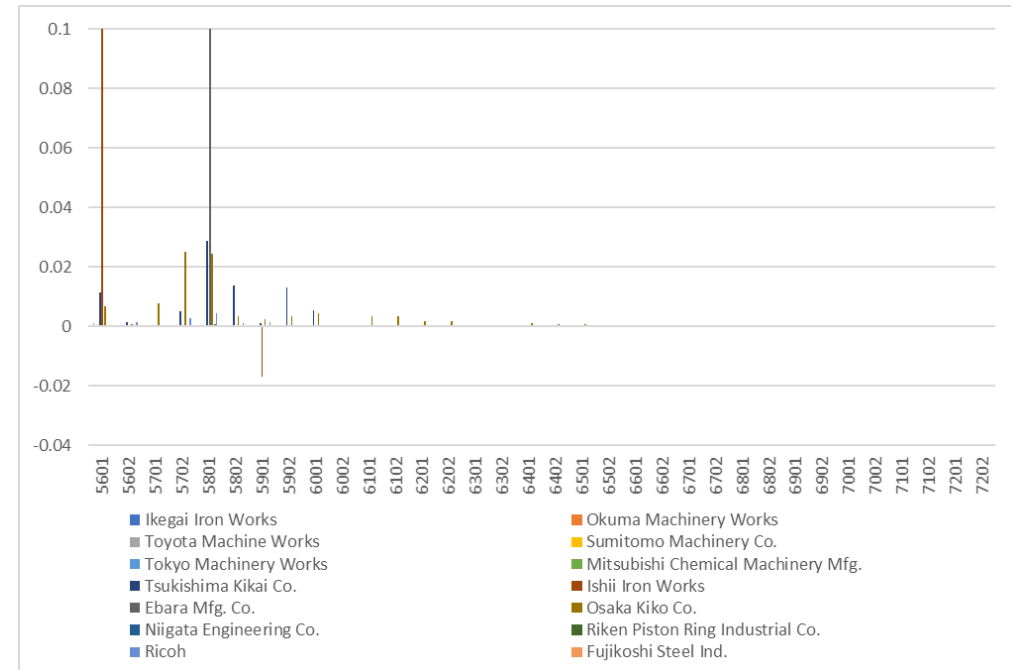
- .., but diversification across industries and firms should be considered.

The Gap between Nominal and Effective Interest Rates

Pulp and Paper



Machinery



3. The details in compensating balances: a case of Namura Shipbuilding

- A firm ranked 128th out of 175 firms, making it part of the third quantile group from the top, recorded the details of compensating balances in its financial reports: loan types, lending banks, and deposits used as collateral.
 - ✓ The practice was concentrated on borrowing from a) 'main banks' with long-term relationships and b) new lenders.
 - ✓ The nominal interest rates for borrowing with deposit collateral were lower than for other loans, hinting that self-regulation by banks reacting to criticism was binding.
 - ✓ The weighted average effective borrowing rate from Sanwa Bank was higher than the bank lending ceiling.
 - eg. Second half of 1960
 - The weighted average effective borrowing rate for four loans from Sanwa Bank: **9.037%**
 - >
 - The ceiling for bank lending rates: **8.15%**
 - >
 - The weighted average effective borrowing rates: **7.443%**
- Sanwa Bank, the main bank, became a guarantor for long-term loans when Namura Shipbuilding did not have sufficient collateral for long-term borrowing toward a large expansion of production capacity.
 - ✓ This practice should be interpreted in the context of bank-customer relationships.

Table 4 Short-term borrowings of Namura Shipbuilding in the second half of 1956

Lender	Loan outstanding (thousand yen)	Interest rate (daily interest amount per 100 yen)	Repayment date (Year in Showa, month, day)	Purpose of borrowing	Notes
Sanwa Bank, Tamade Branch	157,200	2 sen 3 rin	32.5.25	Working capital	
Sanwa Bank, Tamade Branch	130,000	2 sen 3 rin	32.4.30	Working capital	
Sanwa Bank, Tamade Branch	30,000	1 sen 7/8 rin	32.4.30	Working capital	Secured by deposits
Sumitomo Bank, Namba Branch	122,100	2 sen 3 rin	32.5.20	Working capital	
Daiwa Bank, Head Office	50,000	2 sen 3 rin	32.4.20	Working capital	
Kyowa Bank, Daikokucho Branch	25,000	1 sen 7/8 rin	32.4.30	Working capital	Secured by deposits
Daiichi Bank, Tamade Branch	20,000	1 sen 7 rin	32.4.30	Working capital	
Total	534,300				

Source: Financial Report for the second half of 1956, Table (3) Short-term borrowings, p.27.

Conclusion

- Business reports of firms can be alternative sources of nominal and effective bank lending rates, enabling us to reveal the impacts of compensating balances on interest rates on bank loans during Japan's high-growth era.
- The new firm-level dataset reveals that the imposition of compensating balances prevailed even among relatively large firms as prime borrowers. The interest rate channel of monetary policy could have been less effective compared to the effects gauged by existing statistics.
- The magnitude of the effects of compensating balances, formal ones pledged as security, in our sample shows an asymmetric distribution. For larger clusters of firms among listed companies, the adjustment effects on bank lending rates were relatively small, while smaller firms experienced heavier impacts.
- A case study of the actual implementation of compensating balances suggests that imposing such balances worked as a loophole to avoid capped lending rates imposed by regulators. The bank–customer relationship, including the main bank system, played an important role in the application of compensating balance requirements.

<Reference>

Cottarelli, Carlo and Angeliki Kourelis (1994) , “Financial Structure, Bank Lending Rates, and the Transmission Mechanism of Monetary Policy,” IMF Economic Review 41, pp. 587–623.

Hayashi, Toshihiko (1982), “Kasidashi Shikin no Saiteki Haibun to Saimusha Yokin (Optimal Allocation of Loan Funds and Debtors’ Deposits, in Japanese),” Osaka Daigaku Keizaigaku, 32 (2 & 3), pp. 246-255.

Mishkin, Frederic S. (1995), “Symposium on the Monetary Transmission Mechanism,” Journal of Economic Perspectives, Volume 9, Number 4, pp. 3–10.

Takada, Toshio (1990), “ ‘Buzumi-Ryōdateyokin Jishuku’ Sochi no Hensen to Jishukisei no Kakuritsu ni tsuite (The Evolution of the “Voluntary Restrictions on Compensating Balances” and the Establishment of Self-Regulation, in Japanese),” Kinyu, No. 518.

Central Bank of Chile's 100 years of statistical information

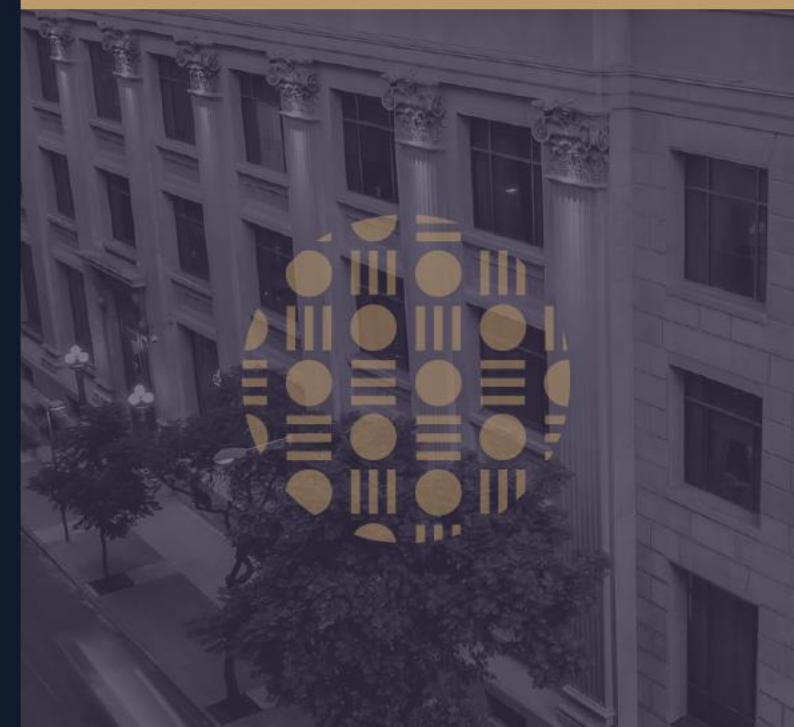
Juan Pablo Cova, Daniela Muñoz, Camilo Poblete and Claudio Sandoval,
Central Bank of Chile

13th biennial IFC Conference
Basel, 20-21 August 2026

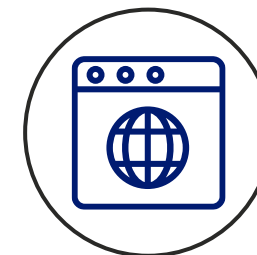
(*): The views and conclusions presented here are exclusively those of the author(s) and do not necessarily reflect the position of the Central Bank of Chile or of the Board members.



LA CONFIANZA
ES CENTRAL



A centenary initiative with three outputs



Analytical document

A narrative of the Central Bank of Chile (CBC) balance sheet from 1925 to 2025

Statistics Database chapter

Official historical statistics incorporated into the CBC's Statistical Database

Centenary website

A public-facing entry point to long time series and charts

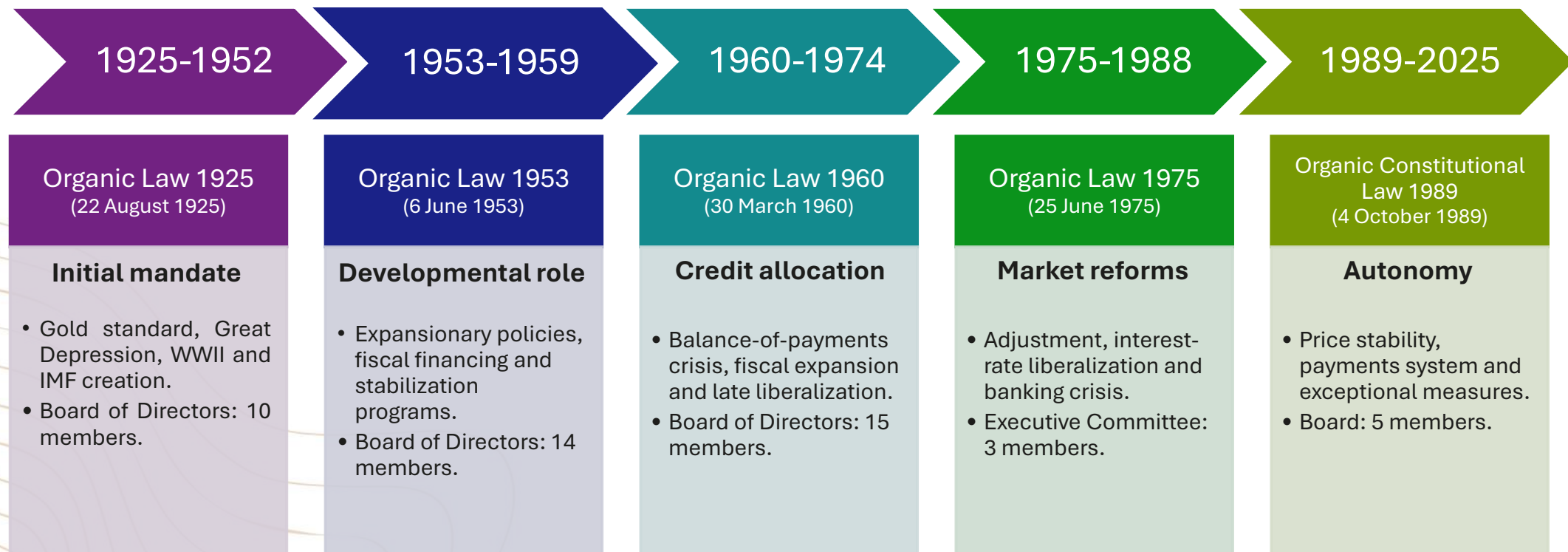
Common objective: make historical information easier to access, interpret and reuse



Five macro-periods, each associated with a different legal mandate

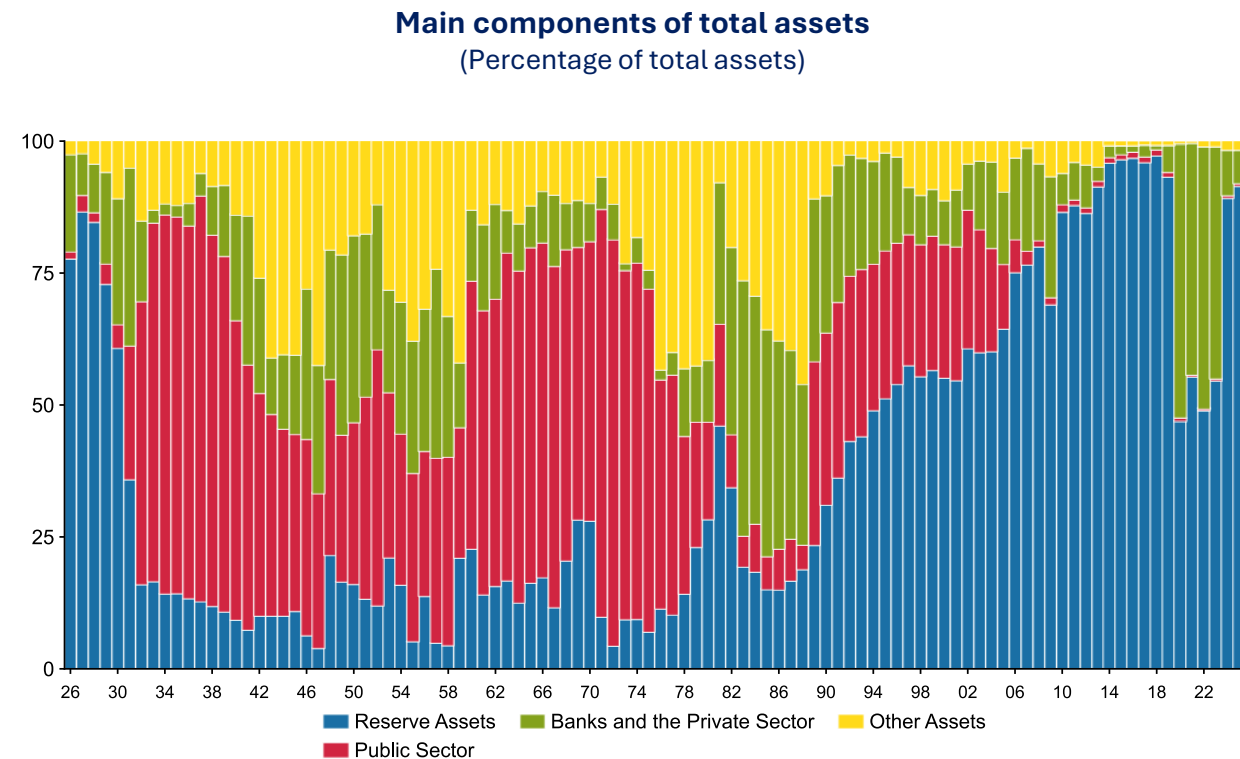
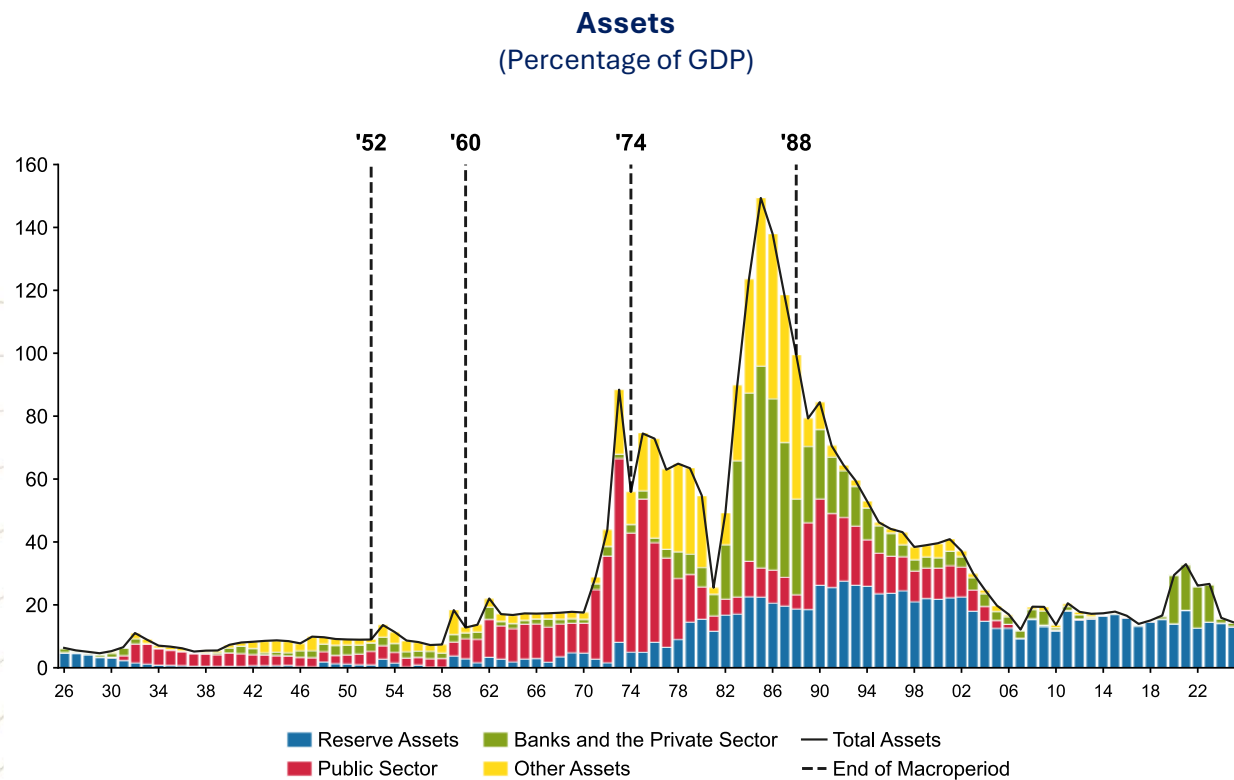


The balance sheet is interpreted through institutional change



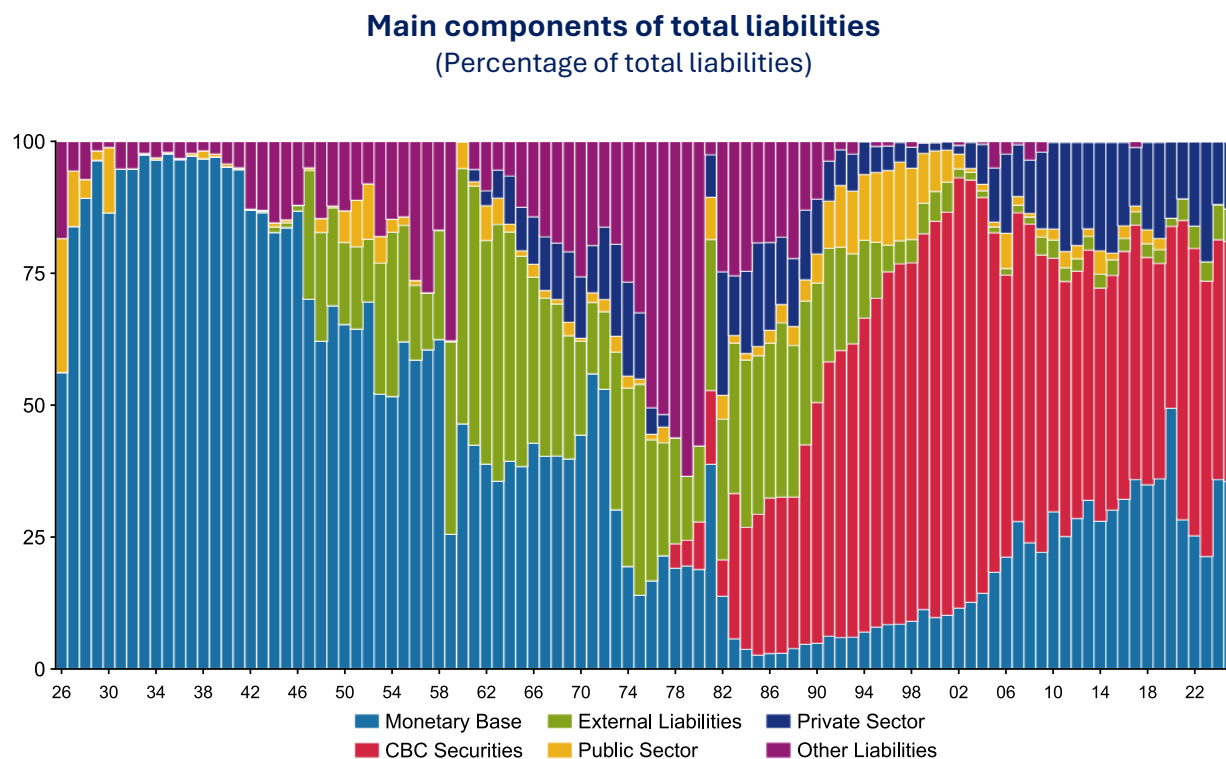
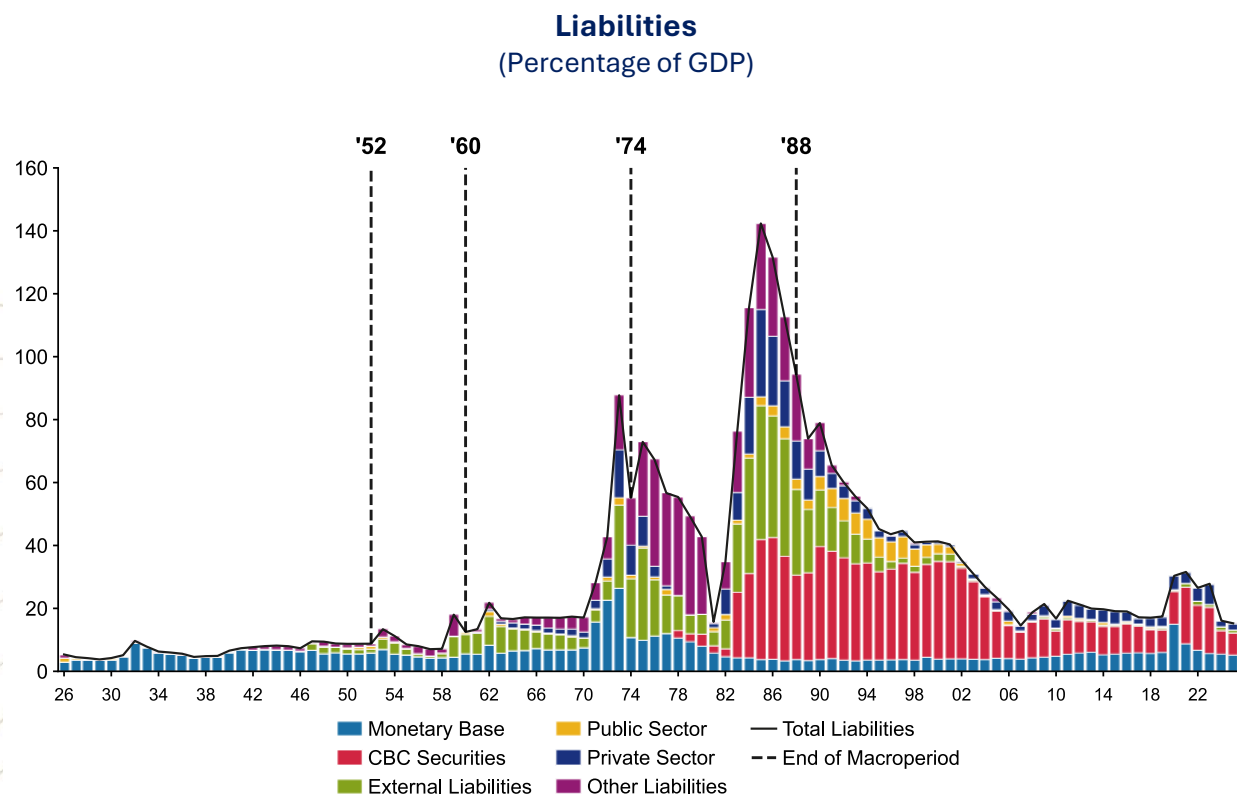
Assets: from reserves to domestic credit and back again

The composition of assets mirrors the Bank's changing role



Liabilities: policy instruments evolved with the monetary framework

Liabilities tell a complementary story about implementation and financing



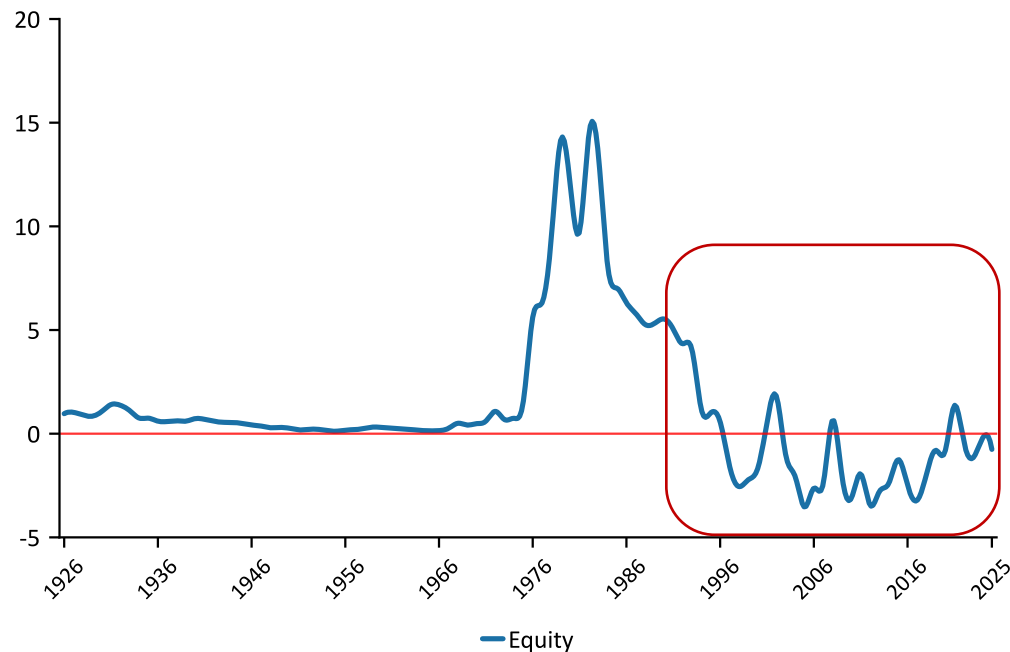
Equity connects the balance sheet with policy costs and valuation effects

Positive equity in early decades reflected returns on reserves and credit above funding costs.

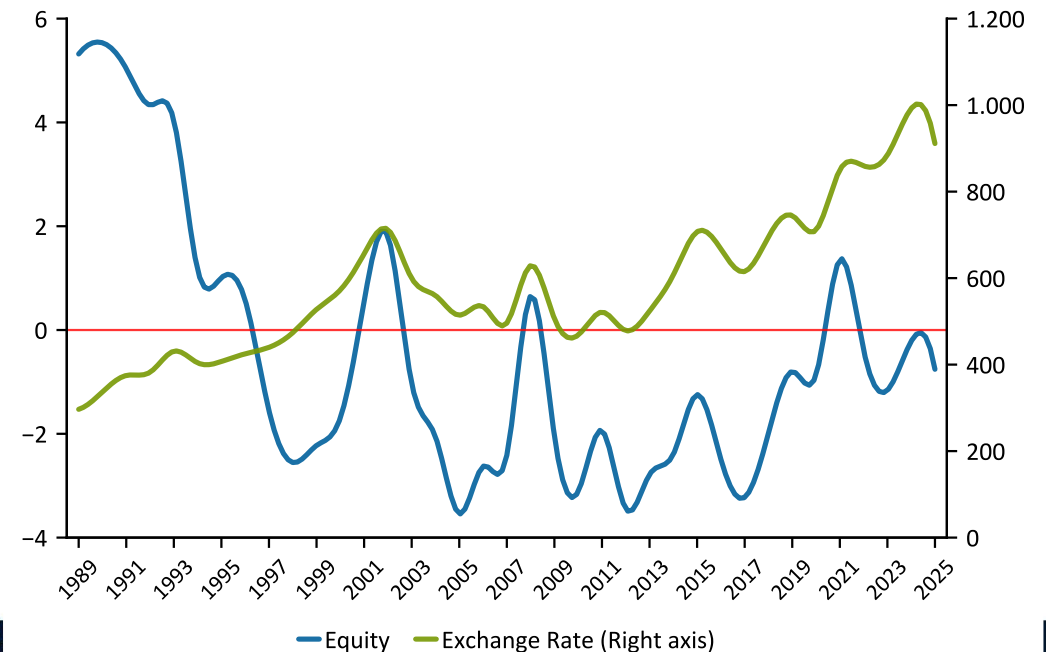
The banking crisis period changed the trajectory through higher costs associated with interventions.

Recent fluctuations are strongly linked to exchange-rate valuation, given the weight of international reserves.

Equity
(Percentage of GDP)



Equity and Exchange Rate
(Percentage of GDP; CLP per USD)



Takeaways



Historical statistics as infrastructure for future analysis

1 From scattered sources to official series

Historical reconstruction creates reusable data assets, not only a commemorative product.

2 From accounting to interpretation

The balance sheet provides a consistent lens to study mandates, policy regimes and shocks.

3 From publication to access

The BDE chapter and website make the information easier to discover, cite and reuse.

4 From national case to shared agenda

Other central banks face similar gaps: long series, metadata, comparability and public communication.

Looking back helps central banks to be prepared for the future.



Thank you!



Central Bank of Chile Balance Sheet

- ☒ Assets
- ☐ Equity
- ☐ Liabilities

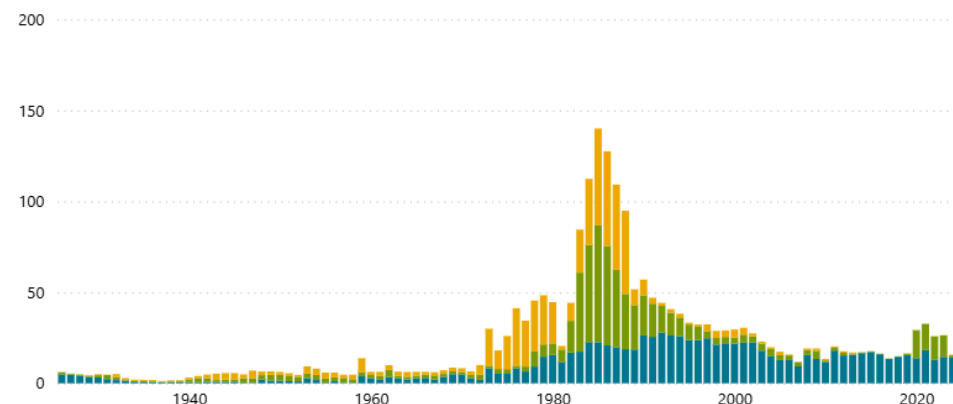
1926

2025



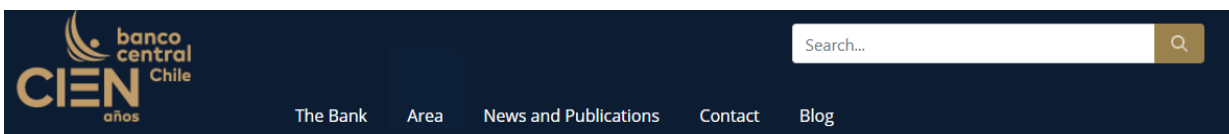
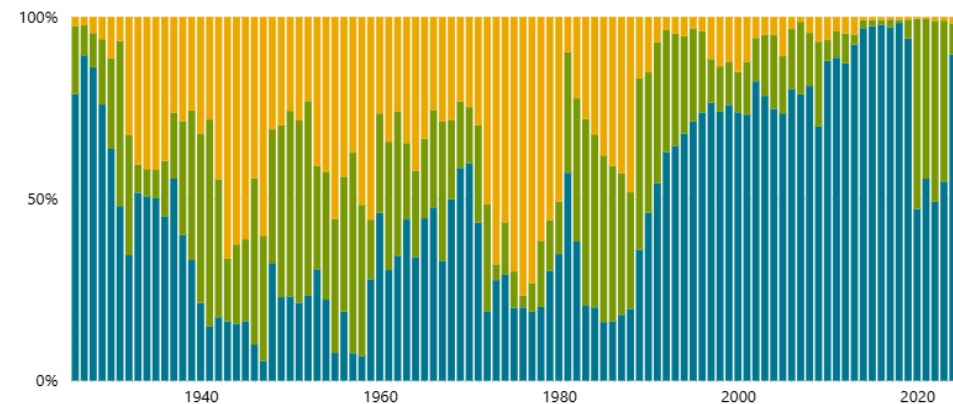
Components relative to GDP

- International Reserves
- Assets with Banks and the Private Sector
- Other assets



Components relative to the total

- International Reserves
- Assets with Banks and the Private Sector
- Other assets



Area / Statistics and Data /

One hundred years of statistical information

- BDE
- Publications

A contribution by the Central Bank of Chile for researchers, academics, and the general public on its centennial

As part of the commemoration of the Central Bank of Chile's 100th anniversary, a new section dedicated to the dissemination of historical statistics is being launched. Its purpose is to preserve and make available a collection of long-term statistical series in an accessible format, encouraging their use by researchers, academics, and the general public.

The historical series presented here have been compiled from official sources, institutional documents, and specialized literature. The publication of series not produced by the Central Bank of Chile does not imply institutional responsibility for their content; rather, it reflects recognition of their analytical value as an input for economic and historical research.

This repository is organized into three main groups of information:

<https://www.bcentral.cl/en/areas/statistics/100-hundred-years-of-statistical-information>

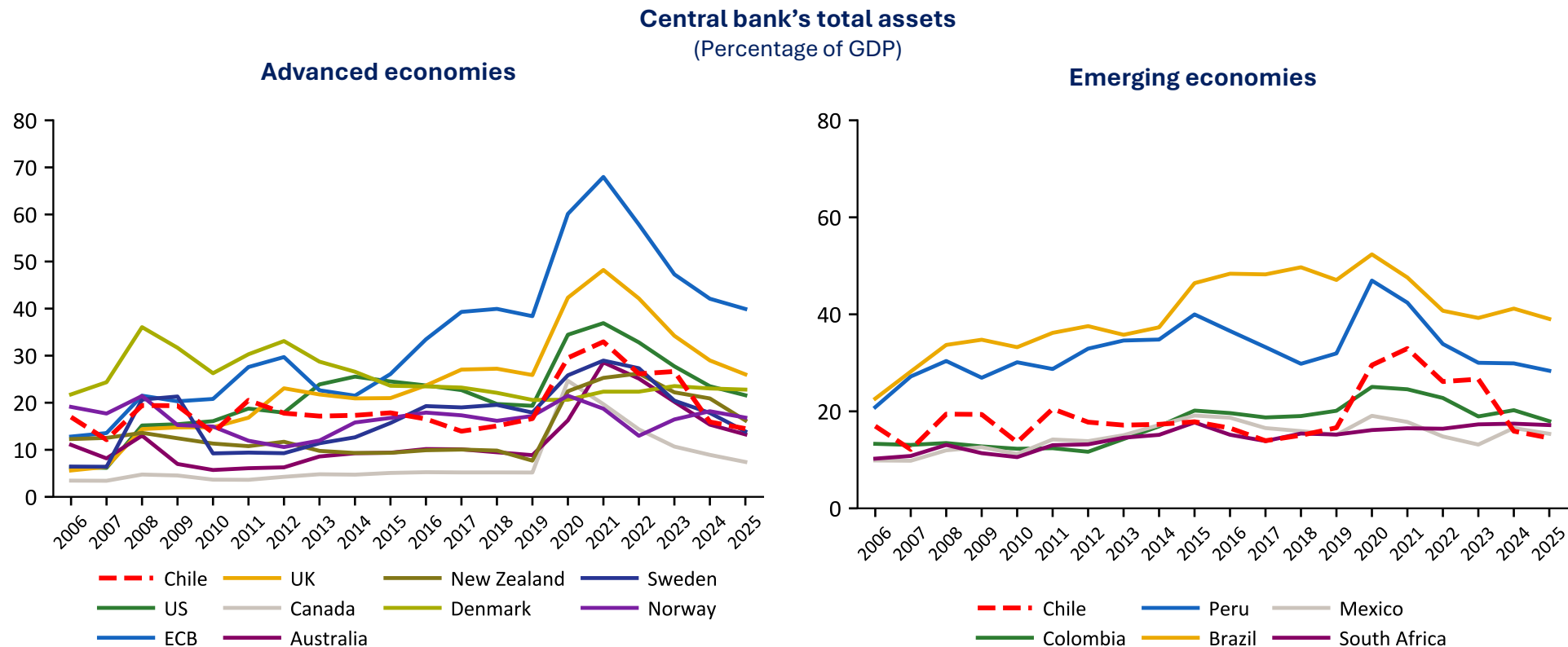


Appendix: International comparison during COVID-19



The pandemic prompted extraordinary central bank measures and a broad expansion of balance sheets.

Chile's balance sheet expansion during 2019-2021 resembled the experience of advanced economies more closely than that of most emerging economies.

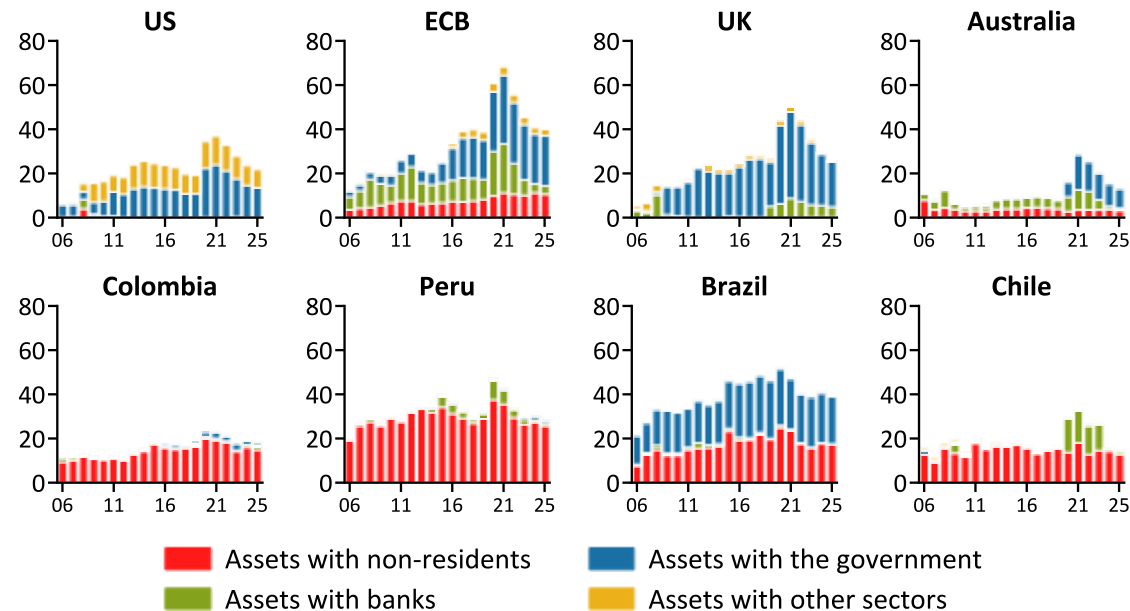


Appendix: International comparison during COVID-19

Internationally, asset purchases and lending facilities were central channels for balance-sheet expansion.

Chile implemented conditional funding facilities to support bank lending and maintain the flow of credit to SMEs. Comparable funding-for-lending schemes were introduced by several other central banks.

Main components of central bank's assets
(Percentage of GDP)





TÜRKİYE CUMHURİYET
MERKEZ BANKASI

Reconstructing historical central bank balance sheets: the case of Türkiye

Burcu Tunç, **Fatma Burcu Çakal** (CBRT) · Olivier Sirello (BIS)

21 August 2026

13th IFC Biennial
Conference · Basel

The views expressed are those of the authors and do not necessarily reflect the views of the BIS and CBRT.



Why reconstruct long-run central bank balance sheets for the CBRT?

- **Historical monetary and financial statistics** are essential to capture long-term economic developments.
 - Specifically, central bank balance sheets reveal the scale and composition of central bank policy operations and how tools are deployed through financial cycles and crises.
- Yet long series are often scarce, incoherent and hard to compare across countries and time (Flandreau et al (2026)).
- Building on existing literature, this paper reconstructs the **CBRT balance sheet back to its establishment almost a hundred years ago** in 1931, splicing historical annual reports with standardised EVDS data from 1986 onwards.
 - The result feeds into the novel BIS **Central bank balance sheets (CBBS) data set**.

Methodological and compilation framework

- Building on Flandreau et al (2026), statistical concepts—linked to central bank functions such as note issuance and liquidity provision—are disentangled from measures reflecting individual accounting items.
- This framework enables comparable statistics by mapping heterogeneous measures to **ten standardised concepts** (eg metallic reserves and foreign assets, domestic securities, public and private claims other than securities / currency, deposits, capital and reserves, provisions, revaluation accounts and total assets)

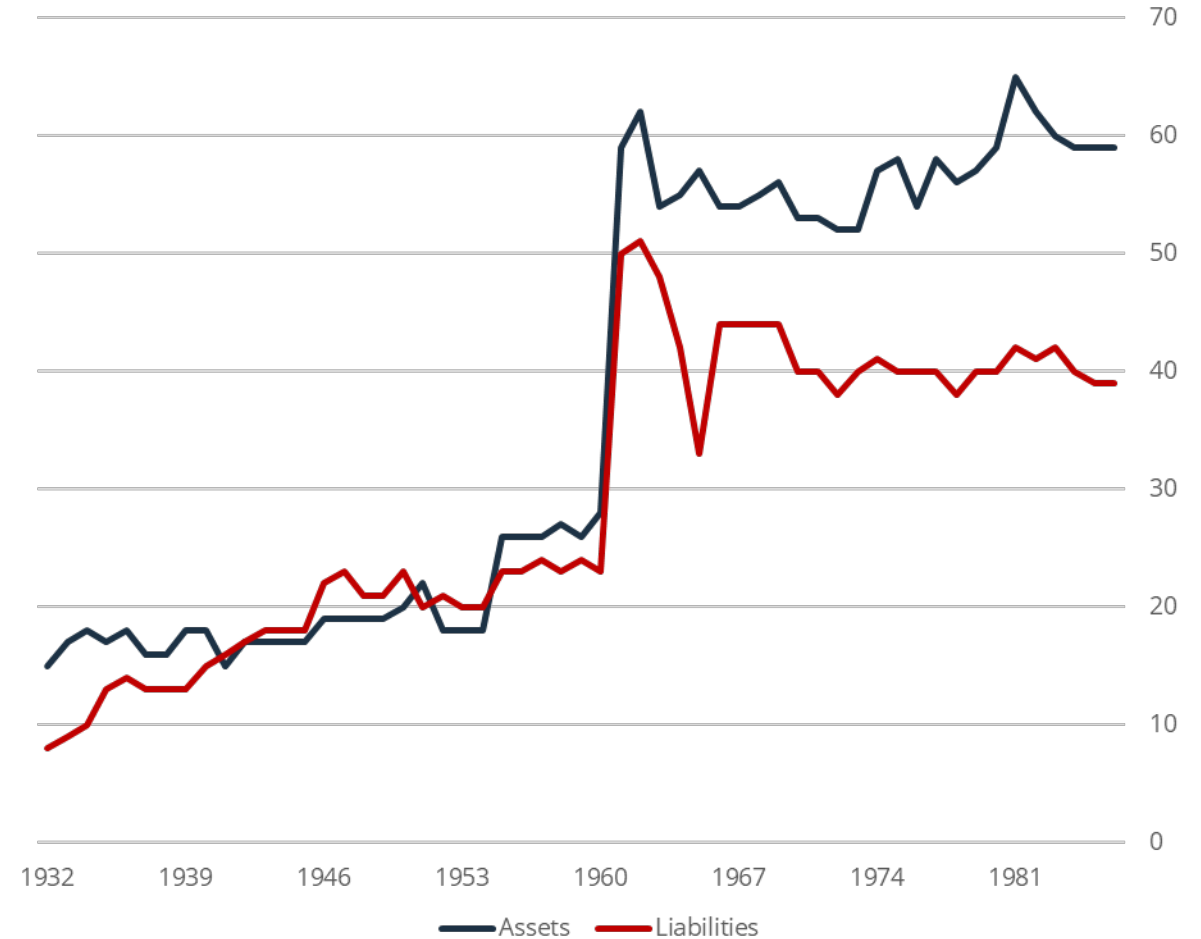
Compilation process:

- Extract and label data from annual reports and EVDS.
- Record account names, footnotes, valuation and coverage.
- Determine metadata such as relationships and structural attributes.
- Classify and map measures to the core statistical taxonomy.
- Identify overlap periods and statistical breaks.
- Validate asset/liability totals and relational identities.

Balance sheet reporting has evolved through distinct accounting regimes

- **1931–1960:** structure set at establishment stayed broadly stable.
- **1961:** accounting change raised disclosed items (counterpart-sector breakdowns).
- **1970:** Law No 1211 redefined CBRT duties, reshaping asset and liability accounts.
- **1980s–2000s:** growing detail on FX, securities and market operations.
- **1997–2001:** Law No 4651 changed advance and loan account coverage, especially vis-à-vis the Treasury.
- **2012/13:** new hierarchy, valuation and classification.

Number of disclosed accounting items, 1932–1986

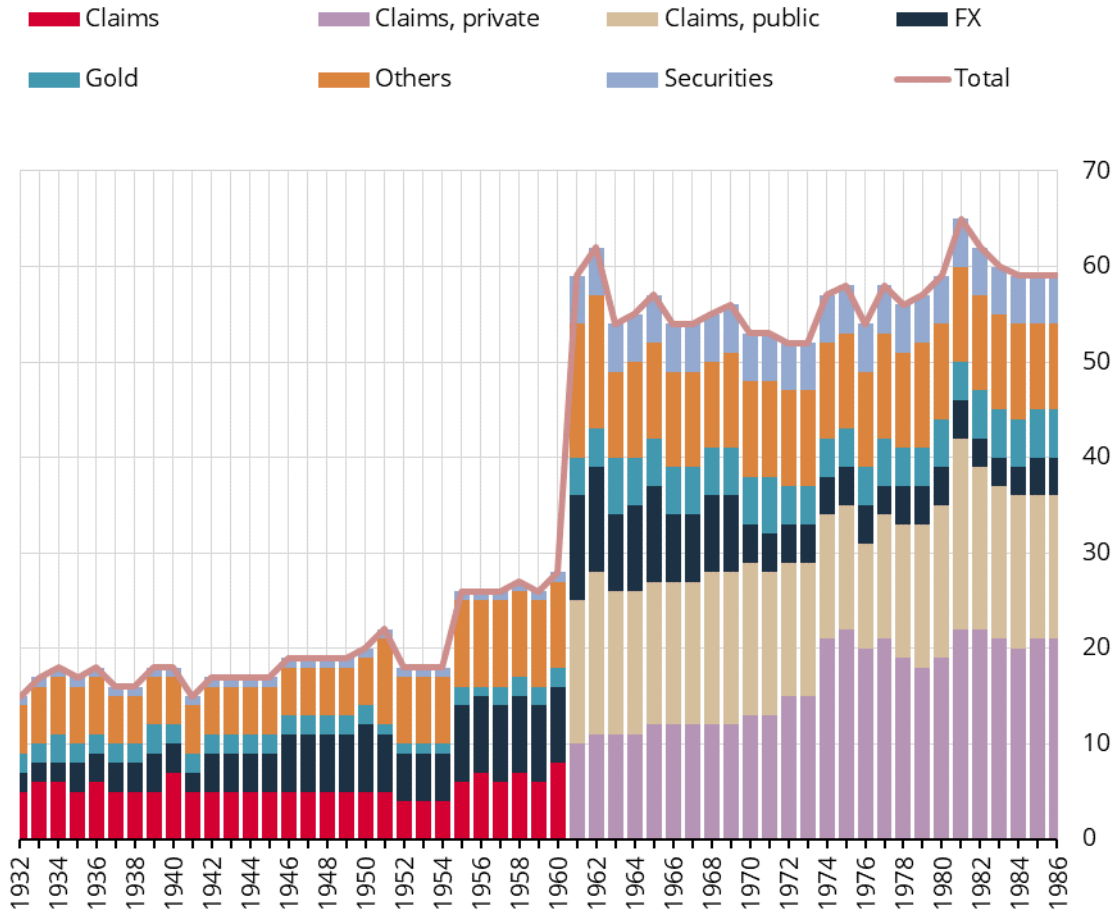


Asset and liability accounting-item availability increased after 1961

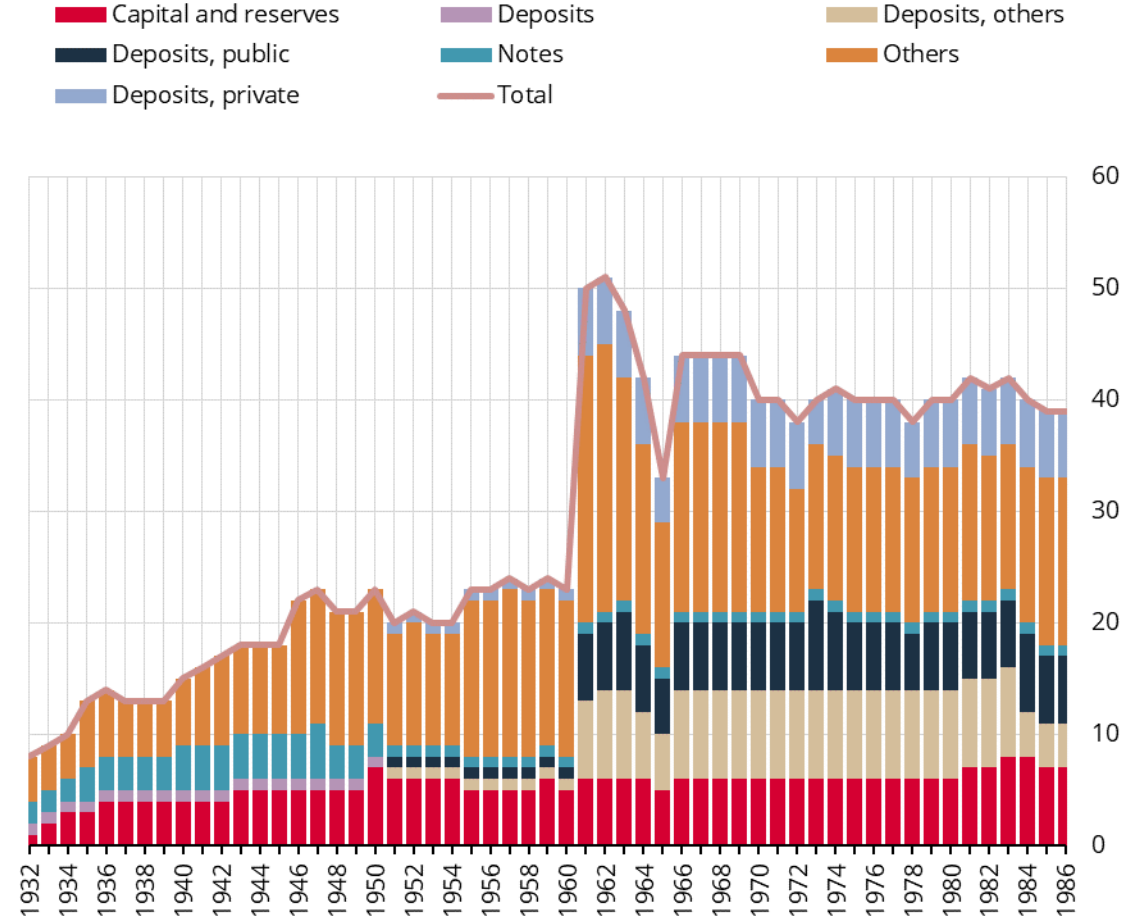
Evolution of measures count per statistical concept between 1932 and 1986

(Number of items)

Assets¹



Liabilities²



¹ Before 1961, public and private claims (deposits) are not available.

² The breakdown of deposits starts in 1951.

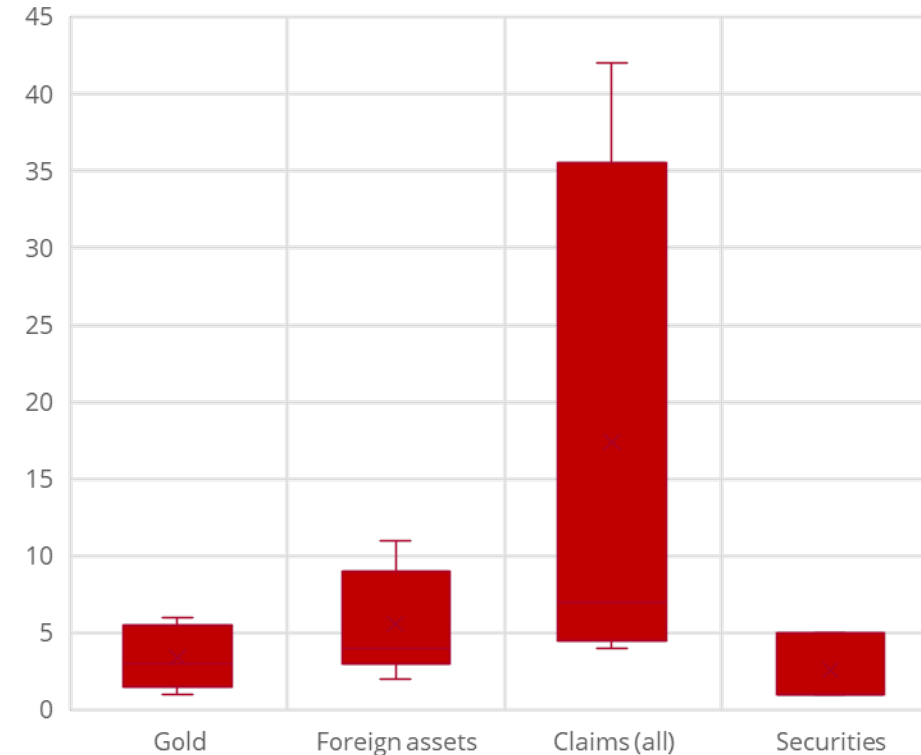
Source: CBRT annual reports; authors' calculations.

Some accounting items show far wider historical variation than others

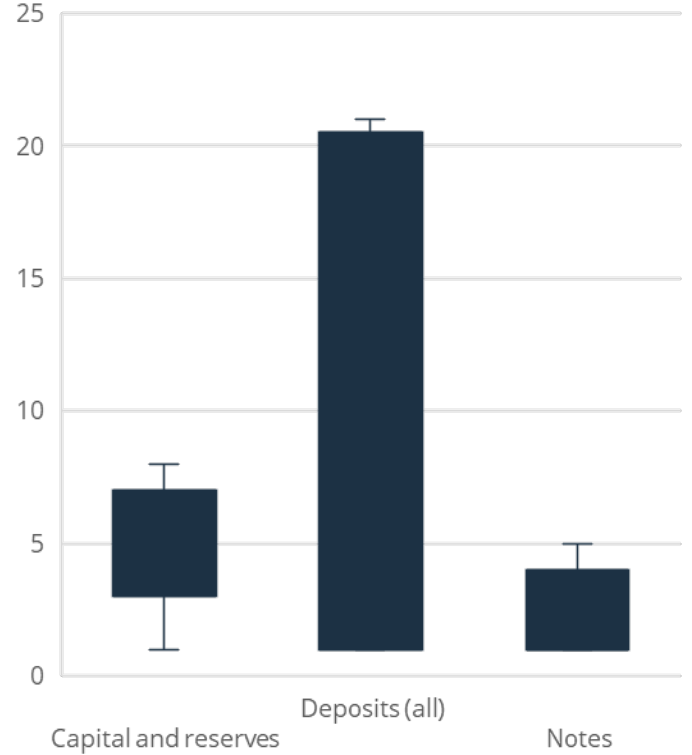
Variation in the number of accounting-item changes, 1932–1986 (Number of items)¹

- Between 1932 and 1986, claims (public and private) show the widest range of variation on the asset side.
- Gold and securities remained comparatively narrow and stable.
- On the liability side, deposits show the widest range of accounting changes.
- This heterogeneity motivates the concept–measure mapping used to keep series comparable over time.

Assets



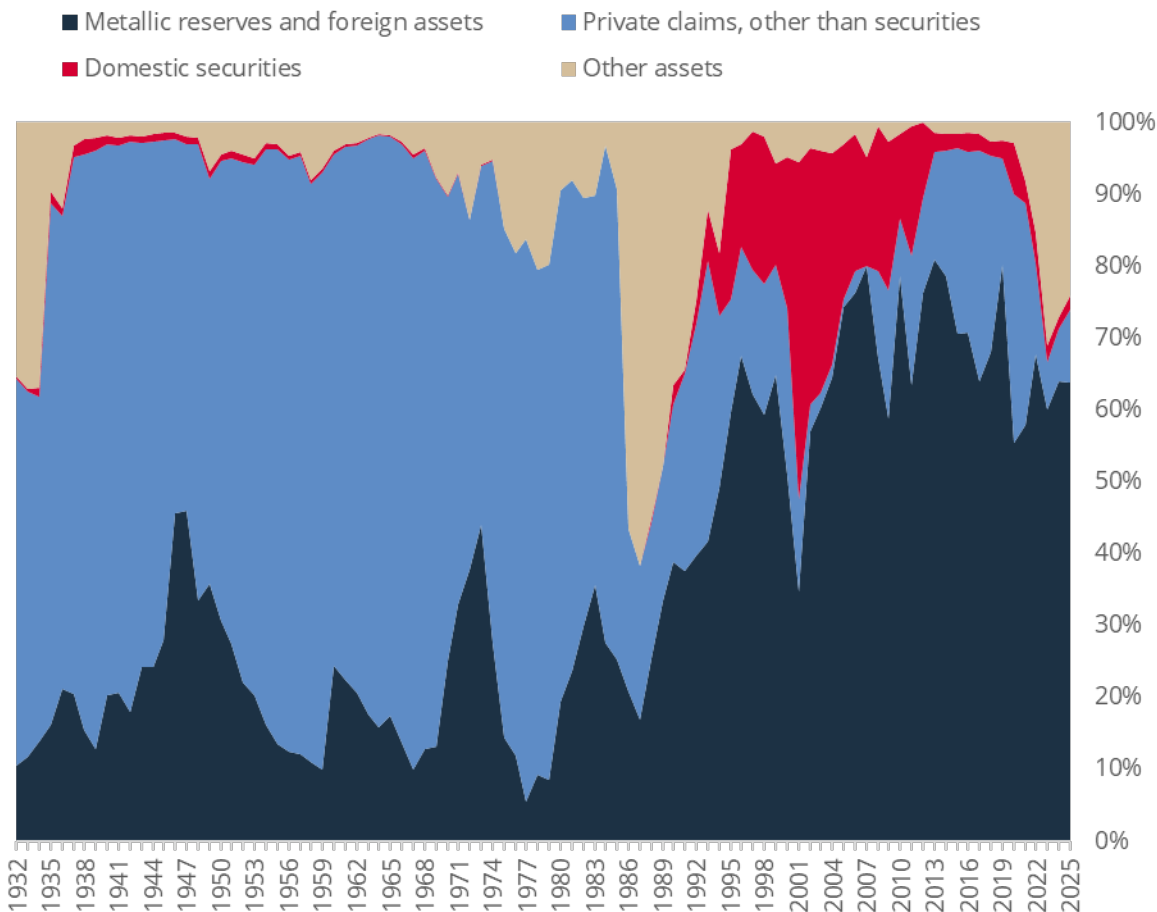
Liabilities



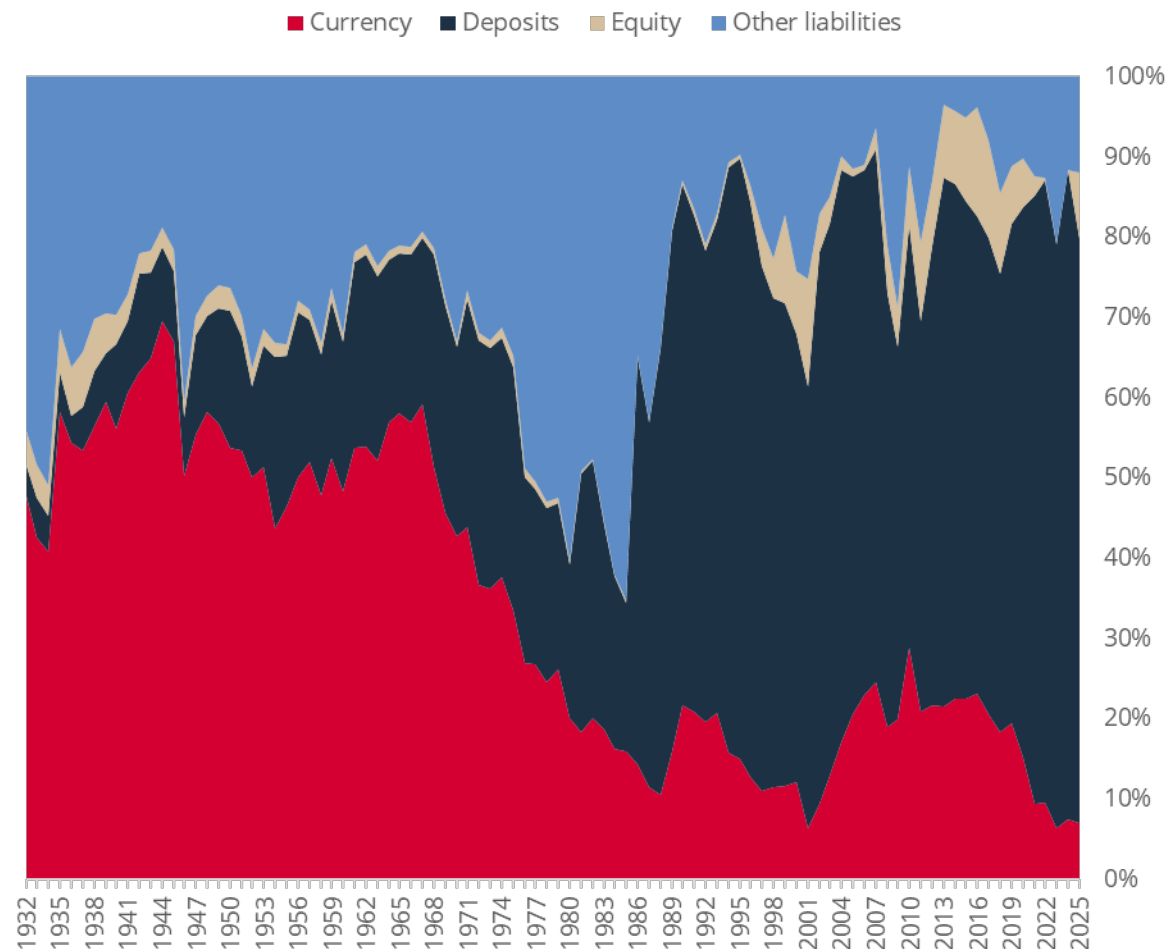
A glimpse into the data: almost a hundred years of the CBRT balance sheet

Evolution of CBRT balance sheet core statistical concepts since its establishment...(In per cent of total size¹)

Assets



Liabilities



Data coverage, limitations and next steps

- Some items (eg foreign liabilities) are excluded to preserve cross-country comparability within the BIS data set, even where CBRT data are available.
- Break-adjusted series aid growth-rate analysis but can create small discrepancies in balance sheet identities at a point in time.
- The data set will provide both unadjusted and break-adjusted series, so users can choose the version suited to their needs.
- Rich metadata will document starting years, breaks and underlying compilation sources for transparency.
- Contributes to the BIS/HMFS international initiative to compile comparable central bank balance sheet statistics across time and countries.



Experimental official statistics: a reflective exercise on historical central bank statistics

13th IFC Biennial Conference, Basel, 21st August 2026

Marc Flandreau (University of Pennsylvania and IFC HMFS), **Josh Bromell** (Reserve Bank of New Zealand), Renato Campos (Central Reserve Bank of Peru), Olivier Sirello (BIS)

The views expressed are those of the authors and do not necessarily reflect the views of the BIS, Central Reserve Bank of Peru, IFC or Reserve Bank of New Zealand.

Introduction and motivation

- Historical statistics on central banks are increasingly **relevant for monetary and financial stability policy**, not least given the increased uncertainty putting a premium on analysing long and structural trends
- Yet high-quality historical statistics require **coherence, consistency and comparability**, which can be difficult to obtain with heterogeneous sources and measurements
- Paper contributions:
 - **Historical**: it documents that a “universal” template for central bank statistics is a well tried, but historically failed project
 - **Conceptual**: it proposes an experimental framework to overcome this issue by suggesting that comparability of concepts do not always require the standardisation of measures
 - **Statistical**: as a test case, it presents a novel BIS data set on historic central bank balance sheets jointly compiled with member central banks.

Historical attempts at standardisation: “centrifugal” vs “centripetal” forces

- Historically, several attempts were made to standardise central bank statistics:
 - **International Statistical Congresses** of the mid-19th century and Bodio Project (1850s to 1882)
 - League of Nations project and creation of BIS (1920s-1930s)
 - IMF, leading after six decades to standardized reporting forms (SRFs) in the early 2000s
- Paper engages with first experiment (**Bodio project**) to outline the role of institutional convergence
 - Spread of proto-central banking (banks of issue) as “**business model**” **institutional convergence** invites **convergence of instruments**
 - Standardisation emerges as **unvoluntary by-product**
 - **Resistance** to full harmonization

Conceptual framework: decoupling concepts and measures for historical statistics

- **Concept:** a qualitative construct, defined by an economic/institutional phenomenon that a statistic seeks to represent (international reserve, liquidity provision/absorption, etc)
- **Measure:** a quantitative construct that assesses a concept and can represent it numerically
- Traditional statistical standards try to harmonise both concepts **and** measures. This is empirically fragile for historical statistics on central banks because:
 - No universally-agreed accounting standard for compiling CB statistics worldwide
 - Level of aggregation/detail varies widely, based on disclosure practice or time
 - Stability of measurements over time is a significant challenge
- The suggested framework: **focus on standardisation of concepts across time and countries while aiming at measurement convergence**

An applied example: the case of central bank balance sheets statistics

- 1 Each **concept** underlies one or more core monetary **function**(s) performed by central banks (note issuance, reserve management, lender of last resort, monetary policy implementation etc)
- 2 Core concepts are defined in a **taxonomy** (eg foreign assets and metallic reserves, claims on the public/private sector, currency, deposits - including reserves - and equity)
- 3 Concepts are mapped to underlying **measures**, mostly derived from financial statements of central banks and are context-dependent

Basic "ontology" illustration



Mapping concepts to measures: methodology

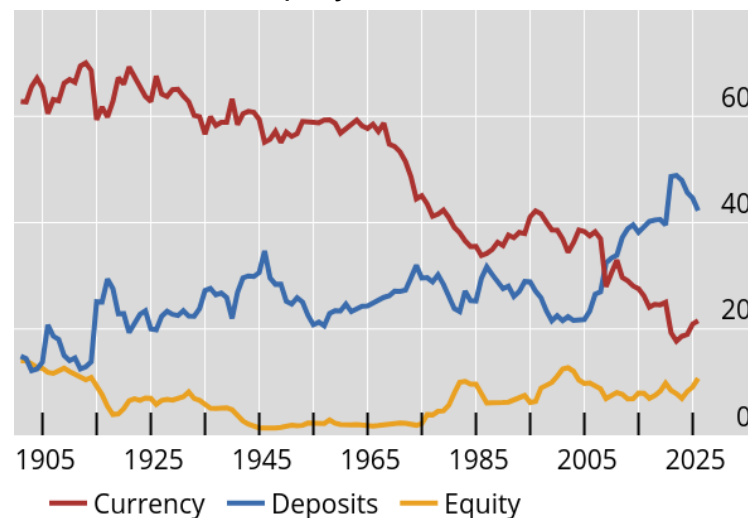
- Various methodological design choices
 - Intermediate level of aggregation
 - Symmetry between assets and liabilities
 - Concept boundaries defined on identifiable institutional distinctions (counterpart vs instrument)
 - Data availability
- When multiple options appear, choice is guided by internal consistency, historical coverage, and conceptual proximity
- Break adjustments applied where required to ensure country specific continuity

Test case: novel BIS data set on central bank balance sheets

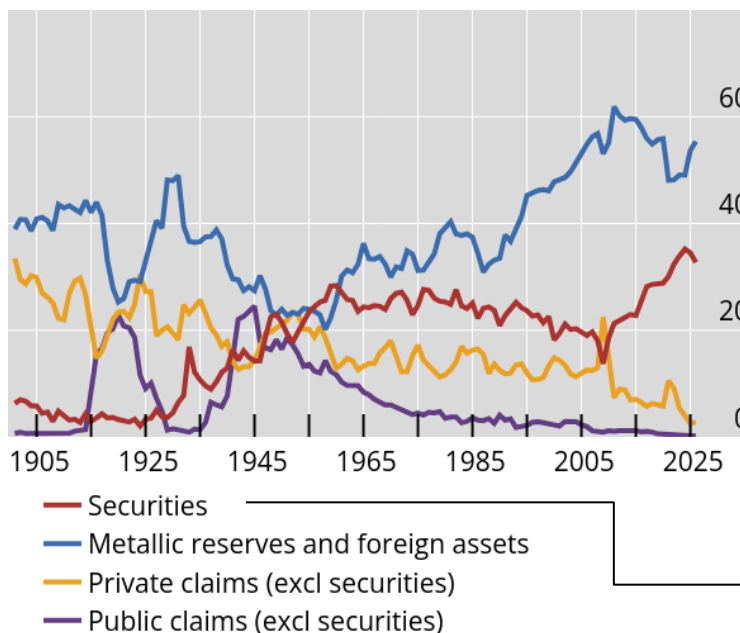
- Comprise data for 23 central banks worldwide going back to their establishment, covering all core statistical concepts, requiring complex splicing and integration
- Further expands the recently-published BIS data set on central bank total assets

Long series on core statistical concepts of central bank balance sheet statistics (% of total size)

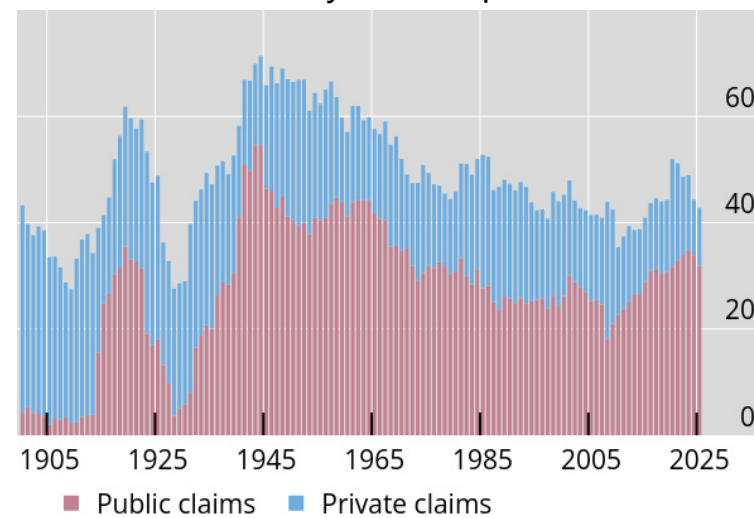
Liabilities and equity



Assets



Domestic claims by counterpart sector, assets



Limitations and risks

- Conceptual comparability does not automatically imply analytical equivalence
- Concept mapping may require qualitative expert judgement
- Operational limitations
 - Uneven data availability over countries and time
 - Disentangling of endogenous and exogenous statistical breaks
- Further central banks to be included