Central Banks Indpendence and Risk Taking at the Zero Lower Bound

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Geneva Graduate Institute and CEPR

Singapore ABFER
21 May, 2026

Central Bank Independence and Risk-Taking at the Zero-Lower Bound

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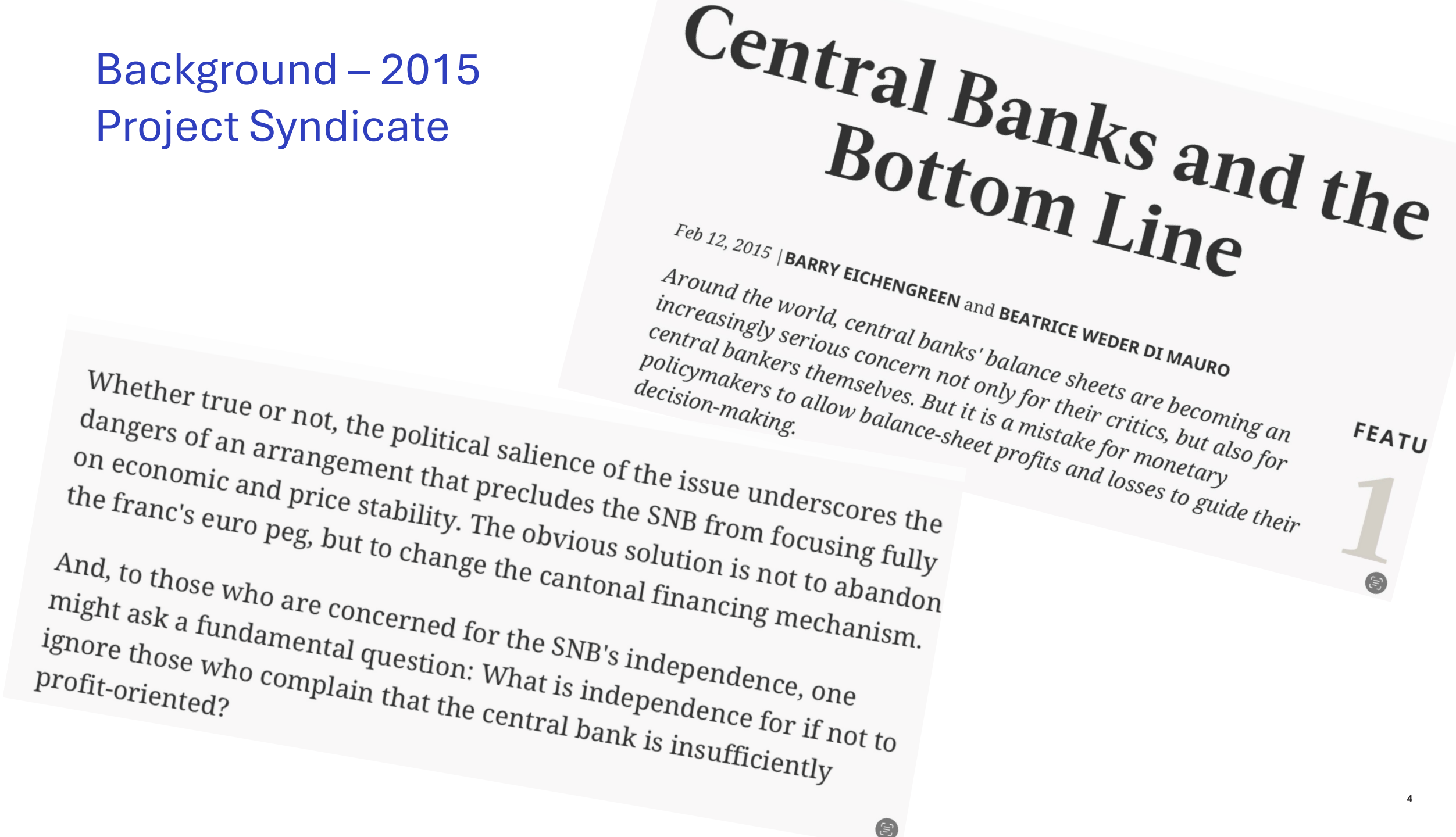
Why this paper ?

- After GFC an extraordinary period for monetary policy –balance sheet expansion from 2007-22
  - FED : 6 – 33 % of GDP
  - ECB : 16 – 60 % of GDP
  - BoJ : 21 – 126 % of GDP
- Central Banks balance sheet composition changed
  - more long-term assets
  - more foreign exchange
- Concerns about risks on their balance sheet
  - independence and fiscal dominance

Background – 2015
Project Syndicate



Central Banks and the Bottom Line

Feb 12, 2015 | BARRY EICHENGREEN and BEATRICE WEDER DI MAURO

Around the world, central banks' balance sheets are becoming an increasingly serious concern not only for their critics, but also for central bankers themselves. But it is a mistake for monetary policymakers to allow balance-sheet profits and losses to guide their decision-making.

FEATU

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Whether true or not, the political salience of the issue underscores the dangers of an arrangement that precludes the SNB from focusing fully on economic and price stability. The obvious solution is not to abandon the franc's euro peg, but to change the cantonal financing mechanism.

And, to those who are concerned for the SNB's independence, one might ask a fundamental question: What is independence for if not to ignore those who complain that the central bank is insufficiently profit-oriented?

Background – around 2023 – Central bank losses in the news

Reuters

World Business Markets Sustainability Legal Breakingviews Technology Investigatic

ECB reports record loss for 2023 as rate hikes bite

By Reuters

February 22, 2024 5:51 PM GM

Reuters

World Business Markets Sustainability Legal Breakingviews Technology Investigations M

Fed's paper losses top the $200 bln mark

By Michael S. Derby

October 3, 2024 10:40 PM GMT+2 · Updated 4 months ago

CNBC LIVESTREAM SIG

EUROPE ECONOMY

Swiss central bank posts biggest loss in its 116-year history

PUBLISHED MON, JAN 9 2023·8:13 AM EST
UPDATED MON, JAN 9 2023·10:08 AM EST

Bank of England losses cost government £45bn

The Treasury has had to foot the bill as interest rates rise and gilts are sold back to investors

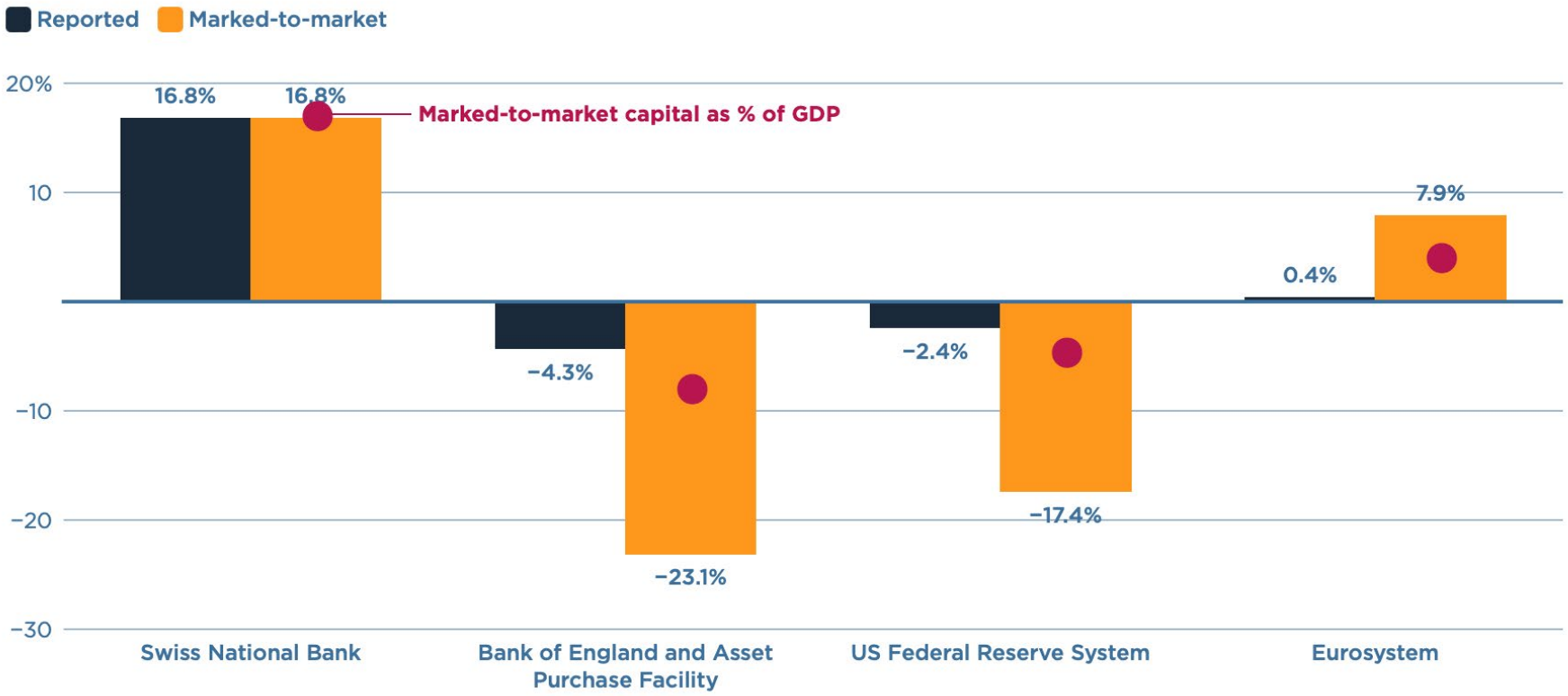
Mehreen Khan, Economics Editor

The government transferred nearly £45 billion to the Bank of England to cover losses it made in the last year, prompting questions about how to reduce the cost of monetary policy.

Background – why care? Honohan 2025

Some central banks' 2024 reported asset losses and gains look bigger if marked to market

Leverage ratios at four big central banks, 2024 (capital as percent of total assets)



PIIE

Notes: The leverage ratio is marked-to-market capital as a percentage of total assets. The figure for the Bank of England and the Asset Purchase Facility (APF) is as of February 2024; it treats the capitalized value of APF indemnity as unrealized loss. Eurosystem data are based on the European Central Bank and the 11 largest national central banks in the Eurosystem.

Source: Author's calculations based on the annual financial statements of each entity.

Background – Interview with SNB President April 2026

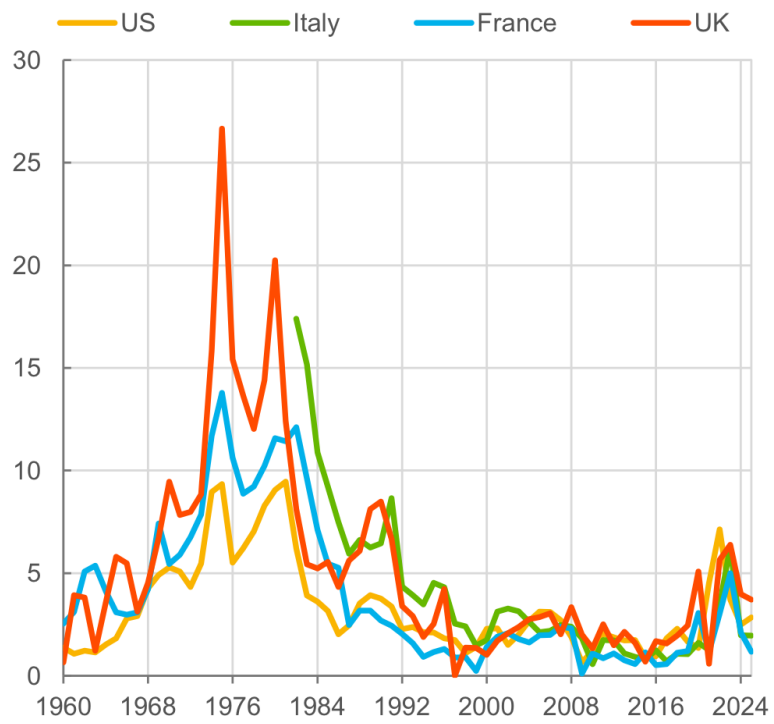
A smoother distribution policy makes sense because it allows the federal government and the cantons to plan their budgets. But first and foremost, the SNB needs a robust balance sheet. Our balance sheet is large, and large profits can be followed by large losses. That is why it is important that we have sufficient equity capital. At the moment, we do not have enough and need to build it up.

Your equity ratio is currently around 19 percent. Compared with banks, that is high. Why does the SNB need more?
Banks can hedge their exchange-rate risk to a large extent; we cannot. That is why our risks are also much greater.
In principle, a central bank could also function with negative equity capital, since it can create money itself.
That is fundamentally true, but it is a situation that should be avoided, because central banks then lose credibility and come under greater political pressure."

Background – independence under pressure - Schnabel 2026

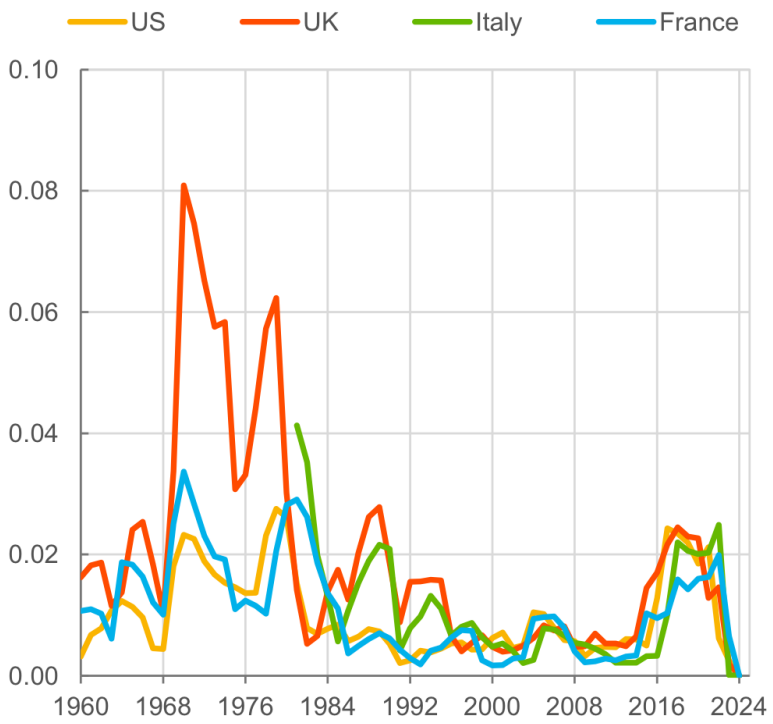
Independent central banks contributed to lower and more stable inflation

GDP deflator
(y-o-y percentage changes)



Sources: Office for National Statistics, INSEE, Istituto Nazionale di Statistica, Bureau of Economic Analysis and Haver Analytics.
Latest observation: 2025.

GDP deflator volatility
(percentage changes over rolling 5-year windows)

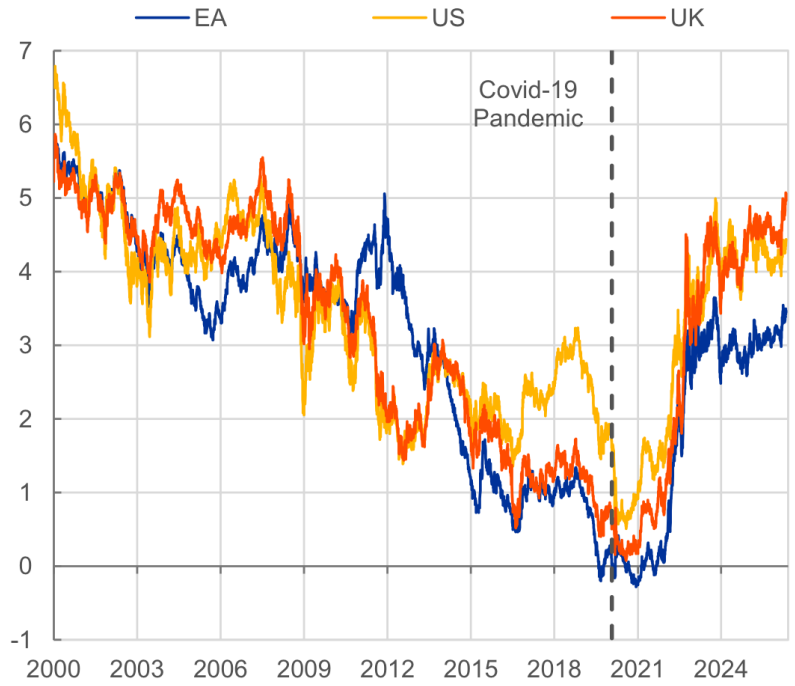


Sources: Office for National Statistics, INSEE, Istituto Nazionale di Statistica, Bureau of Economic Analysis and Haver Analytics.
Notes: Volatility is measured as the standard deviation of percentage changes in the GDP deflator, computed over rolling 5-year windows.
Latest observation: 2024.

Background – in defence of independence - Schnabel 2026

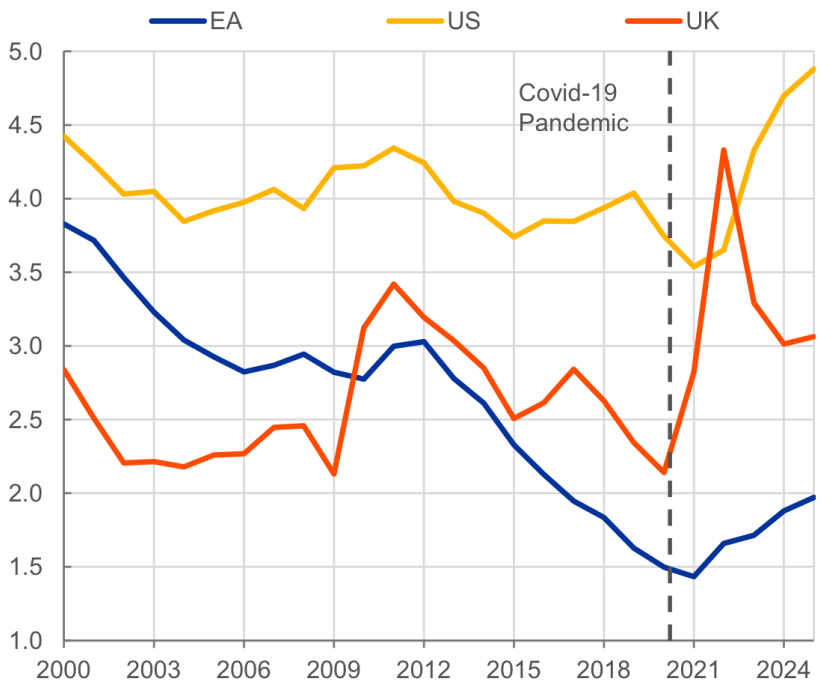
Central banks tightened forcefully when inflation surged despite rising debt servicing costs

10-year sovereign debt yields
(percentages)



Sources: Bloomberg, ECB and ECB calculations.
Notes: EA represents the GDP-weighted average yield for the countries in the euro area. The vertical dashed line indicates the onset of the COVID-19 pandemic in 2020.
Latest observation: 5 May 2026.

Sovereign interest payments
(percent of GDP)



Source: European Commission.
Notes: EA includes the 21 countries of the euro area. The vertical dashed line indicates the onset of the COVID-19 pandemic in 2020.
Latest observation: 2025.

This paper, main contributions

⇒ **This paper:**

- Focus on ex ante **risk**, rather than ex post **profits**
- First comparative estimate of central bank financial risks across across 18 advanced economy central banks and over an extended period of time (1995–2016).
- Allows assessing systematic correlations between risk-taking, macroeconomic developments and institutional factors

Literature

- Central bank balance sheets and fiscal dominance
  - Sims (2016): "[T]he risk of large fluctuations in net worth at market value [...] invites political second-guessing, and reflects an increased fiscal impact of central bank decisions, thereby threatening independence"
  - The case for/against fiscal support: Benigno & Nistiò (2020), Del Negro and Sims (2016), Buiter (2020)
- Central bank balance sheet risks and profitability
  - Increasing attention on determinants of central bank profits (Goncharov et al. 2023, Humann et al. 2024) and potential policy implications (Gebauer et al. 2024)
  - Case studies on individual central banks' risk-taking (Caballero et al. 2020)
- Effects of central bank independence on monetary policy and risk (Alesina & Summers, 1993; Unsal et al., 2022).

Summary of findings

- Value at Risk across 18 central banks increased to about 3 % of GDP (after GFC)

- Central banks take more risk in periods of
  - low interest rates (zero lower bound)
  - higher growth prospects (for central banks with large foreign exchange holdings, capital inflows and appreciation)
  - contractionary fiscal policies (against view of fiscal dominance)

- More independent central banks take on more financial risks
  - possibly because they are better insulated from political risk to pursue their mandate

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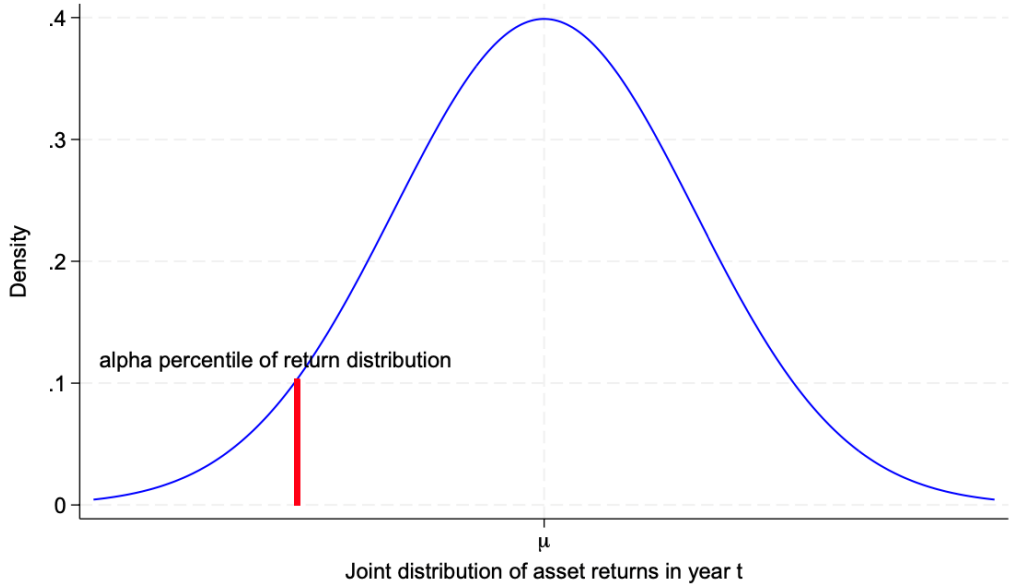
Methodology : VaR

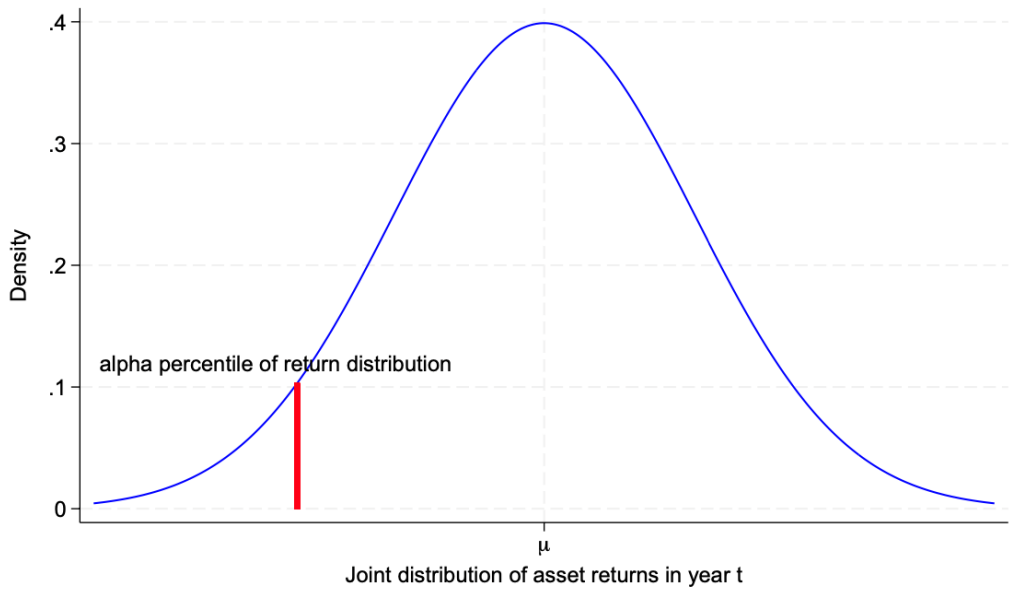
Intuition:

- The **value** of asset i is $P_i \times A_i$.
- The **value at risk** (VaR) of asset i between t and $t+1$ at the confidence level α is $\Phi_\alpha^{-1}(\frac{P_{i,t+1}-P_{i,t}}{P_{i,t}}) \times A_i$.
- **Main challenge**: estimating return distribution Φ. Here: parametric approach.
- **Total VaR** requires estimate of **joint return distributions** of all assets. Accounts for **diversification effects**.



Methodology

Assets	Liabilities
Domestic bonds A_1	Banknotes
FX reserves A_2	Reserves
Repos A_3	Capital
...	...



Compute aggregate VaR from

- Marketable assets : observable return distribution and correlation
  – note that implies mark to market – reveals risk in hold to maturity accounting

- Non-marketable assets : lending operations to commercial banks – not observable
  – worst case default rate : credit loss in a percentile of worst cases and assumption of correlation of bank loan portfolio of *0.25* (in line with value under Basel regulations)

Data

Sample

- 18 advanced economy central banks
- Annual data on balance sheets from 1995-2016
- Most granular asset breakdown (weights) as available from public data

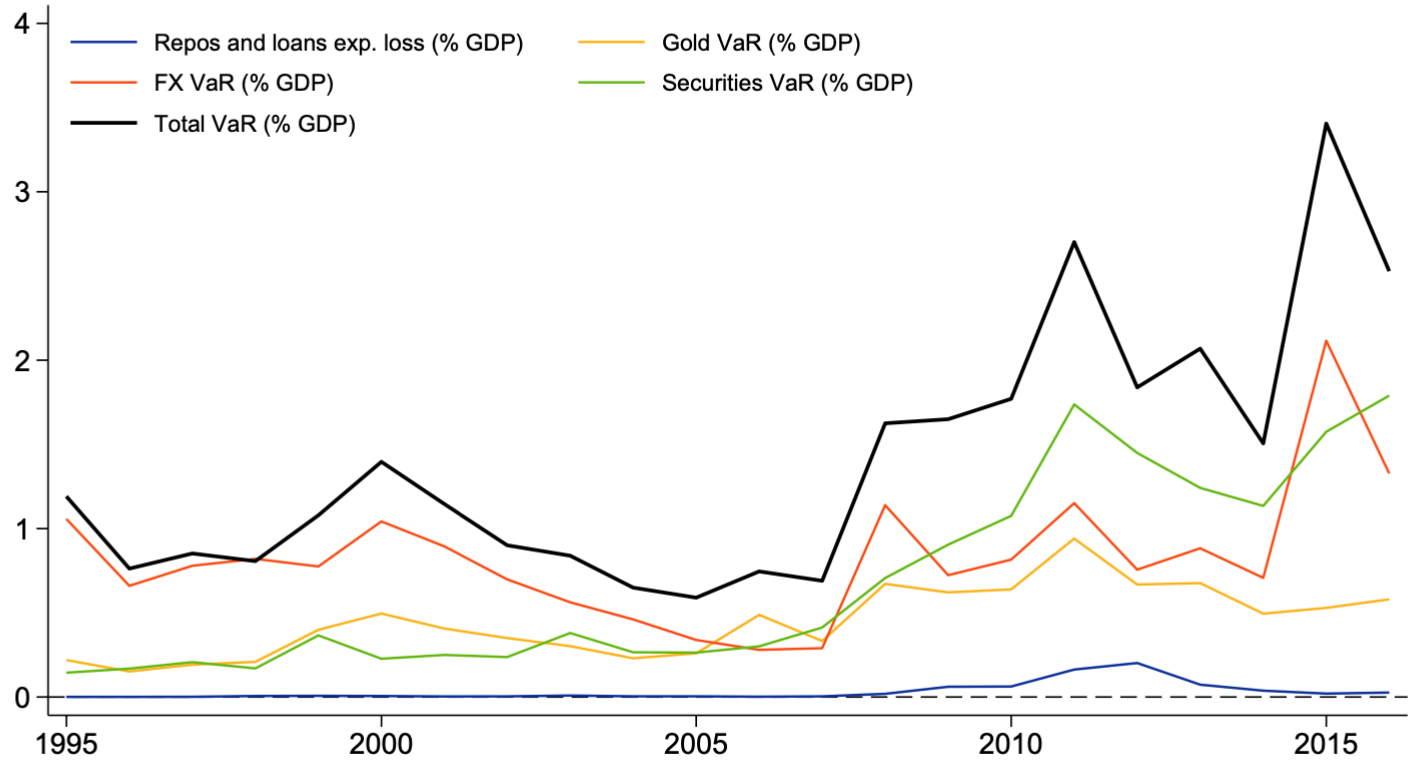
Price data

- Daily prices for representative assets per asset class
- Repos with commercial banks: market-based default probabilities, assumptions about recovery value

VaR

Central Bank Risk-Taking Over Time:

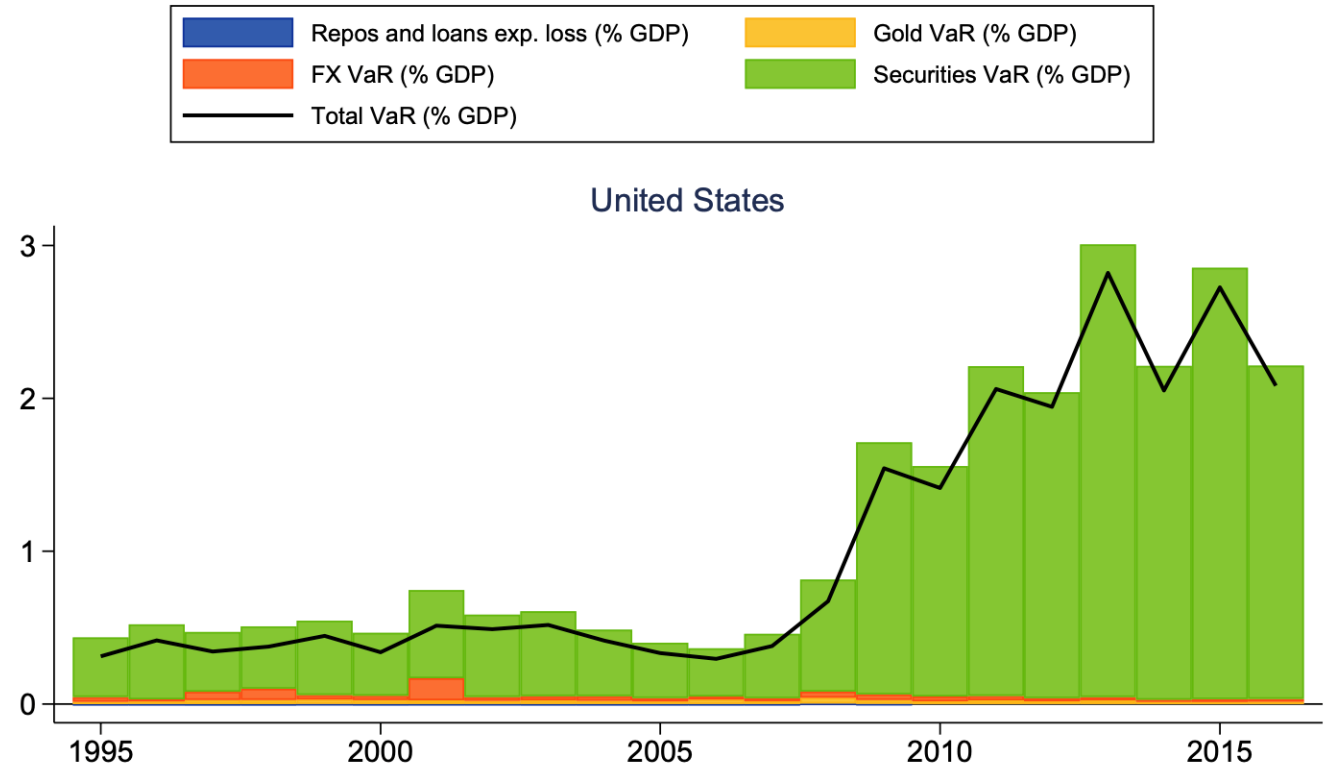
- VaR increased from less than 1% to over 3% of GDP post-2008.
- Composition of main risk contributors has changed.



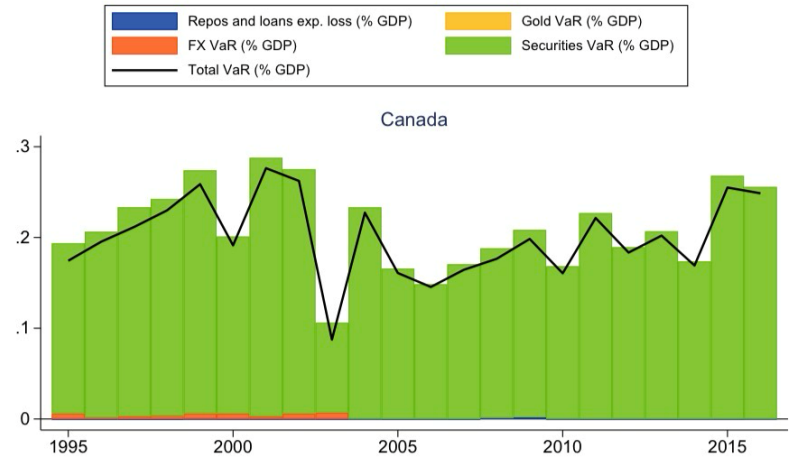
VaR by types of central banks

Domestic risk-takers:

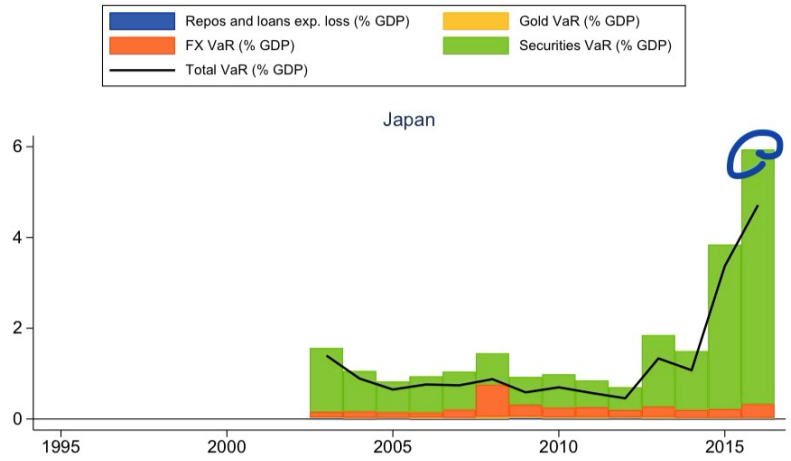
- "Reserve currency" central banks tend to focus on domestic assets (US, UK, JP, CA)
- Risk driven by nominal holdings; limits diversification benefits



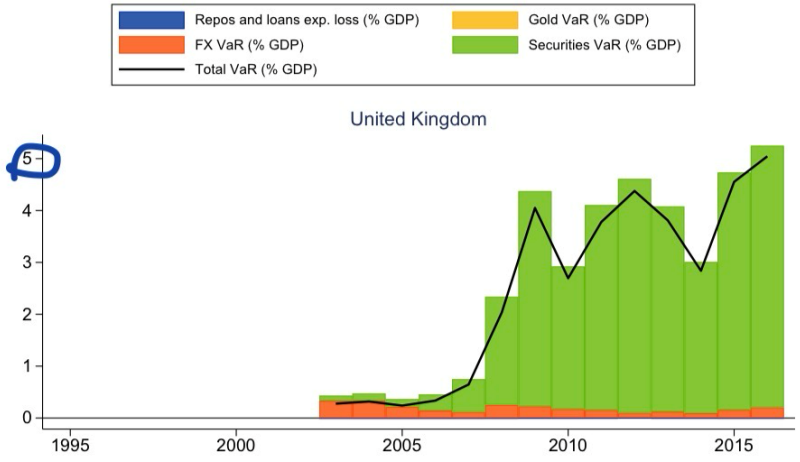
VaR by types of central banks



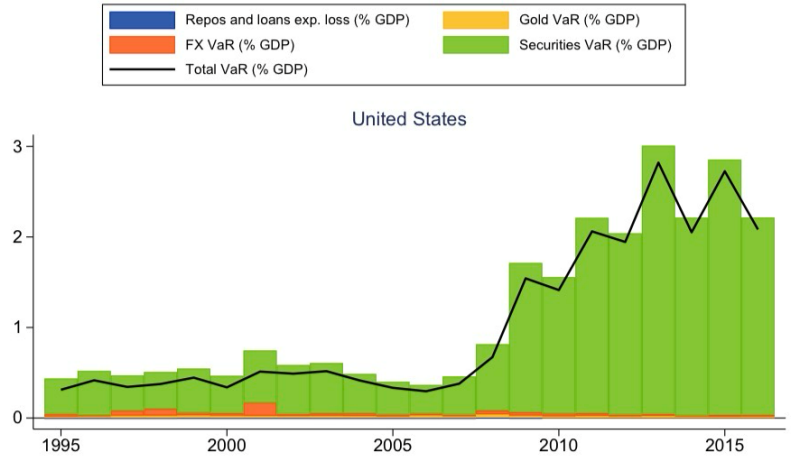
(a) Bank of Canada



(b) Bank of Japan



(c) Bank of England

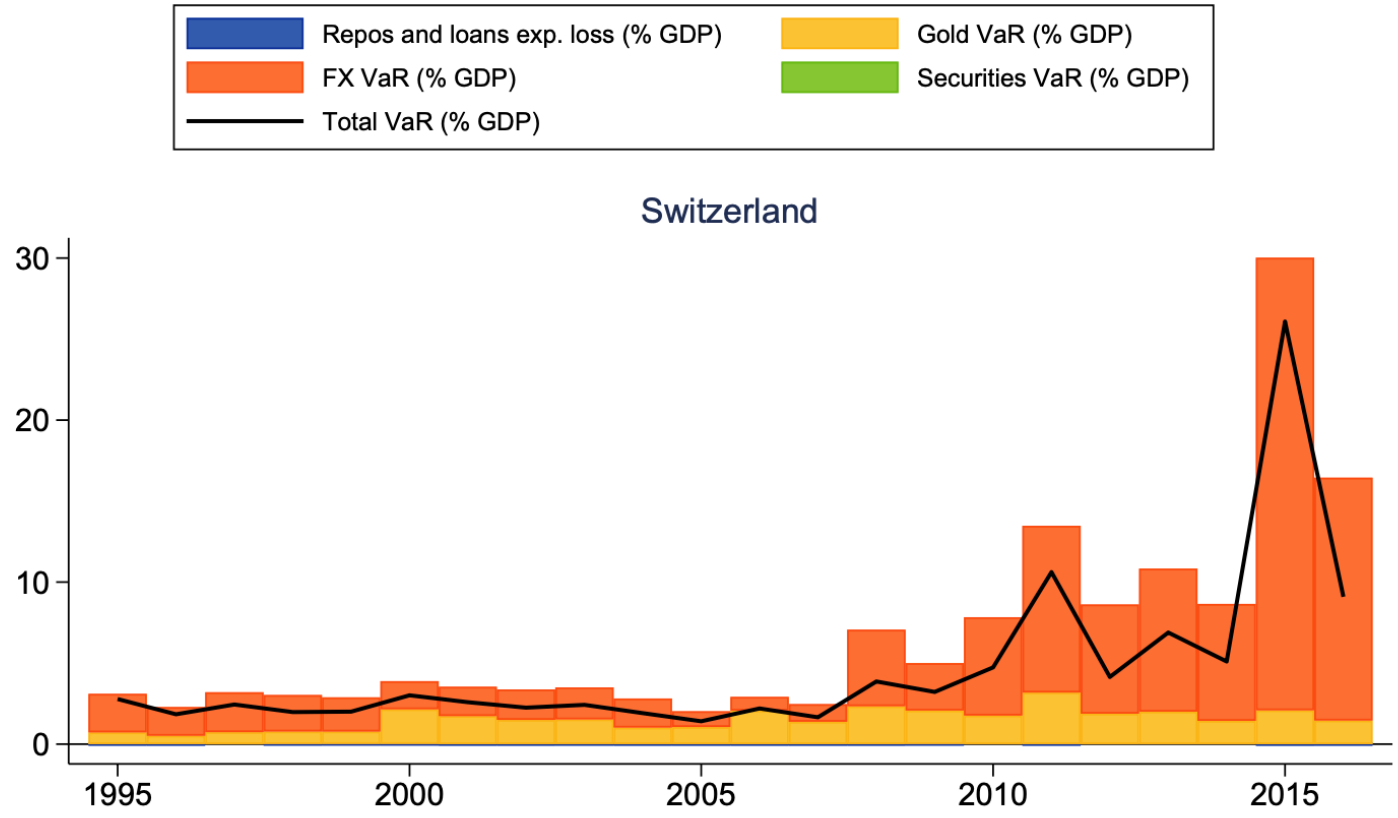


(d) Federal Reserve

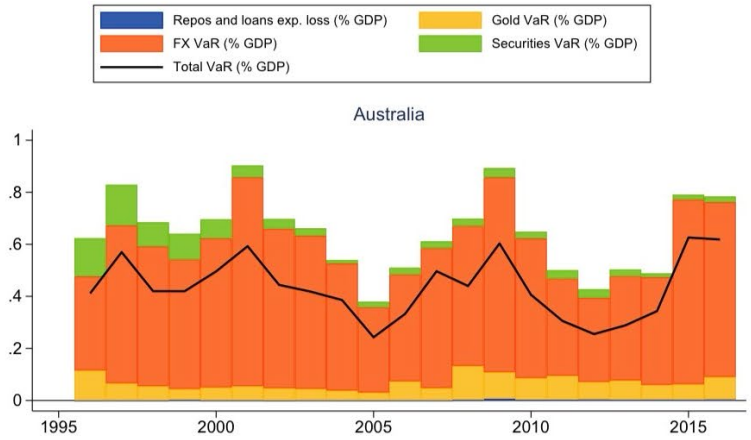
VaR by types of central banks

Foreign risk-takers:

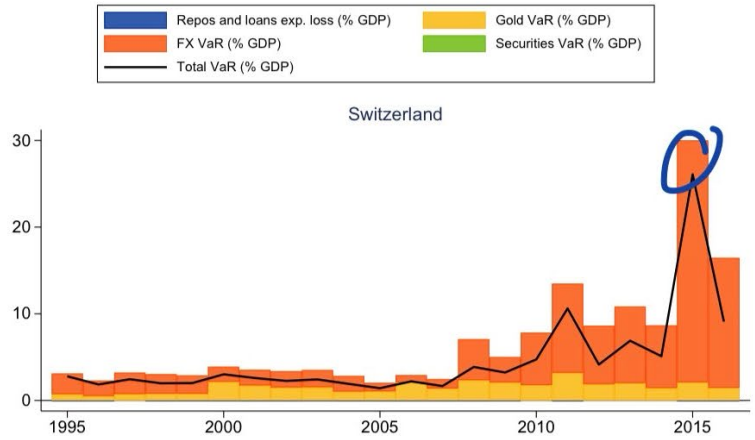
- "FX targeters" focus on foreign assets (CH, DK, AU, SE)
- Risks driven by asset prices; portfolios allow diversification



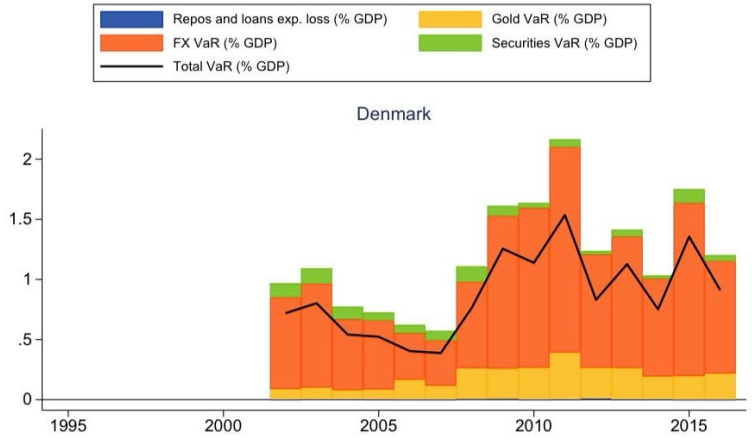
VaR by types of central banks



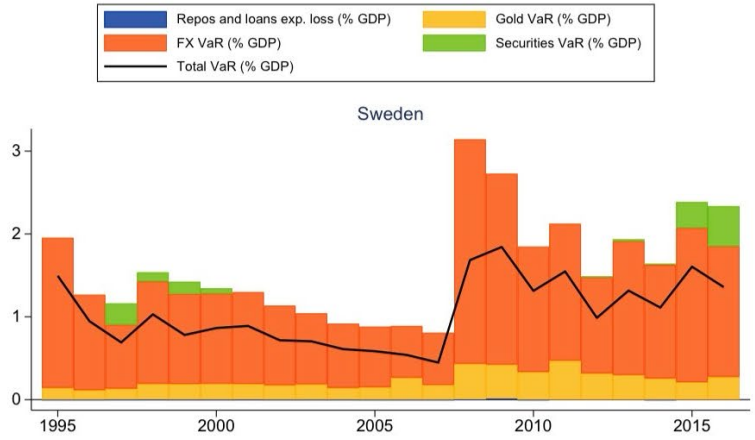
(a) Reserve Bank of Australia



(b) Swiss National Bank



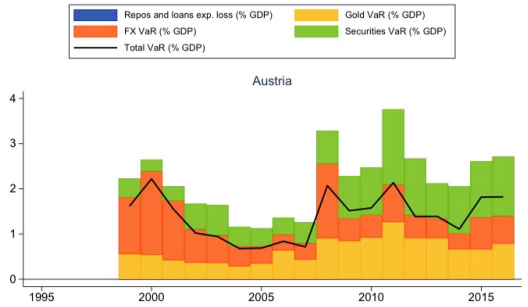
(c) Danish Nationalbank



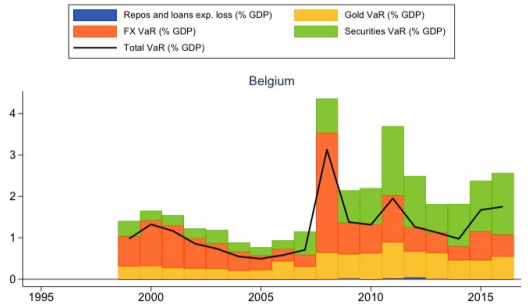
(d) Swedish Riksbank

Euro System Central banks

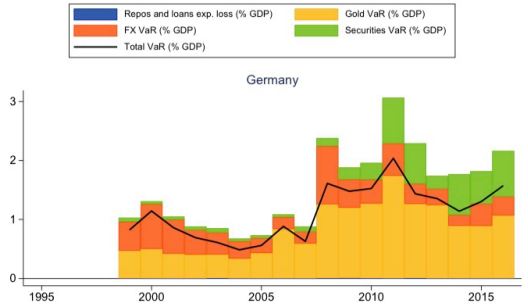
Risk Sharing Arrangements



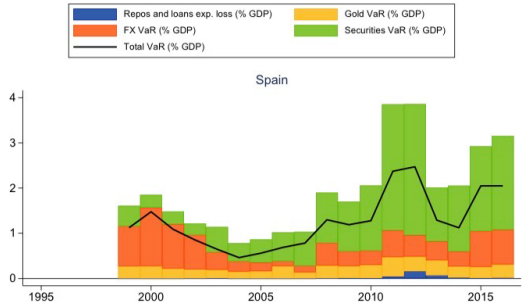
(a) Austrian National Bank



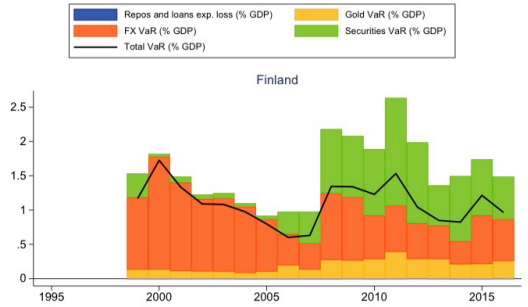
(b) National Bank of Belgium



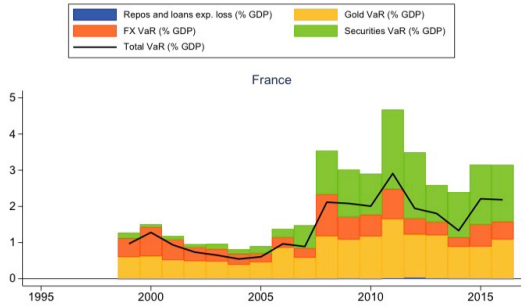
(c) German Bundesbank



(d) Bank of Spain



(e) Bank of Finland



(f) Bank of France

Empirical framework

Empirical Model:

$$\begin{aligned}\frac{\text{Risk}}{\text{GDP}}_{ct} &= \beta_1 \text{Total assets/GDP}_{ct} + \beta_1 \text{Policy rate}_{ct} \\ &+ \underbrace{\beta_3 \text{Output gap}_{ct} + \beta_4 \text{Proj. inflation dev. from target}_{ct} + \beta_5 \text{Projected GDP growth}_{ct}}_{\text{“Taylor rule”}} \\ &+ \underbrace{\beta_6 \text{Fiscal balance}_{ct} + \beta_7 \text{Debt/GDP}_{ct}}_{\text{Fiscal}} \\ &+ \underbrace{\beta_8 \text{Current account}_{ct} + \beta_9 \Delta\text{Exchange rate}_{ct}}_{\text{External balance}} \\ &+ \underbrace{\beta_{10} \text{CB Independence}_{ct}}_{\text{Institutional setting}} \\ &+ m_c + n_t + u_{ct}\end{aligned}$$

Estimation:

- Fixed effects panel regression (country and year).
- Robustness checks across country samples, time periods, and asset types.

Results

	(1) VaR (% GDP)	(2) VaR (% GDP)	(3) VaR (% GDP)	(4) VaR (% GDP)	(5) VaR (% GDP)	(6) VaR (% GDP)
Total assets (% GDP)	0.073**	0.083***	0.083***	0.091***	0.092***	0.089***
	(0.026)	(0.023)	(0.022)	(0.021)	(0.021)	(0.021)
Policy rate		-0.157	-0.356*	-0.291	-0.341*	-0.377*
		(0.123)	(0.187)	(0.175)	(0.182)	(0.190)
Policy rate × Policy rate			0.031	0.018	0.019	0.021
			(0.021)	(0.020)	(0.020)	(0.020)
Inflation deviation (p.p., forecast t+1)		0.122	0.100	0.119	0.125	0.101
		(0.188)	(0.173)	(0.136)	(0.129)	(0.119)
GDP growth (%, forecast t+1)		0.292***	0.308***	0.195**	0.208**	0.208**
		(0.085)	(0.091)	(0.075)	(0.074)	(0.077)
Output gap (% Potential GDP)		0.134*	0.141*	0.029	0.030	0.026
		(0.071)	(0.073)	(0.035)	(0.031)	(0.029)
Fiscal balance (% GDP)				0.111*	0.107*	0.099*
				(0.055)	(0.053)	(0.051)
Gross government debt (% GDP)				-0.012	-0.012	-0.010
				(0.014)	(0.014)	(0.014)
Current account (% GDP)					-0.007	-0.013
					(0.017)	(0.017)
Δ FX (%, y-o-y)					0.019*	0.021*
					(0.011)	(0.012)
Central Bank independence index						2.178**
						(0.962)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs.	332	332	332	332	332	332
R-Squared	0.489	0.517	0.520	0.541	0.546	0.549

Clustered standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

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Central Bank independence index						2.178**
						(0.962)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs.	332	332	332	332	332	332
R-Squared	0.489	0.517	0.520	0.541	0.546	0.549

Clustered standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Results

	(1) VaR (% GDP)	(2) VaR (% GDP)	(3) VaR (% GDP)	(4) VaR (% GDP)	(5) VaR (% GDP)	(6) VaR (% GDP)
Total assets (% GDP)	0.073**	0.083***	0.083***	0.091***	0.092***	0.089***
	(0.026)	(0.023)	(0.022)	(0.021)	(0.021)	(0.021)
Policy rate		-0.157	-0.356*	-0.291	-0.341*	-0.377*
		(0.123)	(0.187)	(0.175)	(0.182)	(0.190)
Policy rate × Policy rate			0.031	0.018	0.019	0.021
			(0.021)	(0.020)	(0.020)	(0.020)
Inflation deviation (p.p., forecast t+1)		0.122	0.100	0.119	0.125	0.101
		(0.188)	(0.173)	(0.136)	(0.129)	(0.119)
GDP growth (%, forecast t+1)		0.292***	0.308***	0.195**	0.208**	0.208**
		(0.085)	(0.091)	(0.075)	(0.074)	(0.077)
Output gap (% Potential GDP)		0.134*	0.141*	0.029	0.030	0.026
		(0.071)	(0.073)	(0.035)	(0.031)	(0.029)
Fiscal balance (% GDP)				0.111*	0.107*	0.099*
				(0.055)	(0.053)	(0.051)
Gross government debt (% GDP)				-0.012	-0.012	-0.010
				(0.014)	(0.014)	(0.014)
Current account (% GDP)					-0.007	-0.013
					(0.017)	(0.017)
Δ FX (%, y-o-y)					0.019*	0.021*
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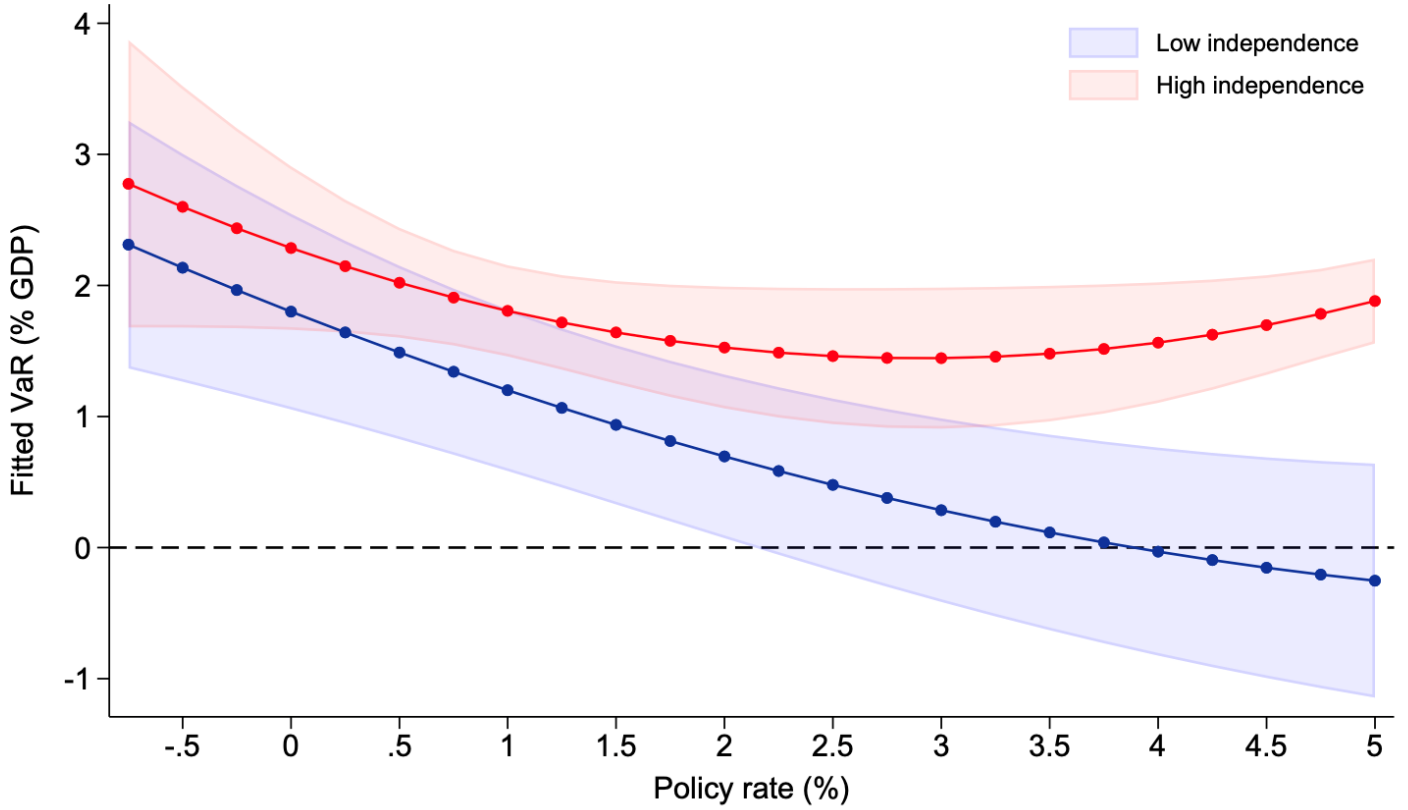
Results

Impact of Central Bank Independence:

- More independent central banks take on higher risk.
- But difference declines in the proximity of the ELB.



Conclusion

- Our paper suggests that the independence of the central banks “works”
  - They take on more financial risks when needed
  - And resist fiscal dominance

Background – Interview with SNB President April 2026

Momentan erhöhen Sie zur Stärkung Ihres Eigenkapitals jedes Jahr Ihre Rückstellungen um 10 Prozent und äufnen erst danach eine Ausschüttungsreserve. Deshalb gab es 2022 und 2023 auch keine Ausschüttungen. Braucht es eine stärkere Verstetigung solcher Zahlungen?

Eine Verstetigung ist sinnvoll, weil sie Bund und Kantonen erlaubt, ihr Budget zu planen. Aber in erster Linie braucht die SNB eine robuste Bilanz. Unsere Bilanz ist gross, auf grosse Gewinne können hohe Verluste folgen. Deshalb ist es wichtig, dass wir genügend Eigenkapital haben. Wir haben im Moment zu wenig und müssen es aufbauen.

Ihre Eigenkapitalquote beträgt derzeit rund 19 Prozent. Im Vergleich zu den Banken ist das viel. Wieso braucht die SNB mehr?
Die Banken können ihr Wechselkursrisiko weitgehend absichern, wir nicht. Deswegen sind unsere Risiken auch viel grösser.

Im Prinzip könnte eine Zentralbank auch mit negativem Eigenkapital funktionieren, da sie ja selbst Geld schaffen kann.
Das stimmt grundsätzlich, aber es ist ein Zustand, den man vermeiden sollte, weil dann Zentralbanken an Glaubwürdigkeit verlieren und unter grösseren politischen Druck kommen

Background – Interview with SNB President April 2026