

Monetary Tightening, Quantitative Easing, and Financial Stability

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 - * Effective as price and financial stabilisation tool short term
- ▶ Little known on QE implications on financial stability over business cycle
 - * Riskier behaviour of financial intermediaries?
- ▶ QE recently repurposed as financial stabilisation tool
 - * In 2022, substantial interest rate hikes
 - * Subsequent financial turmoils in US, UK, Switzerland
 - * Temporary balance sheet expansions

SVB crash, March 2023

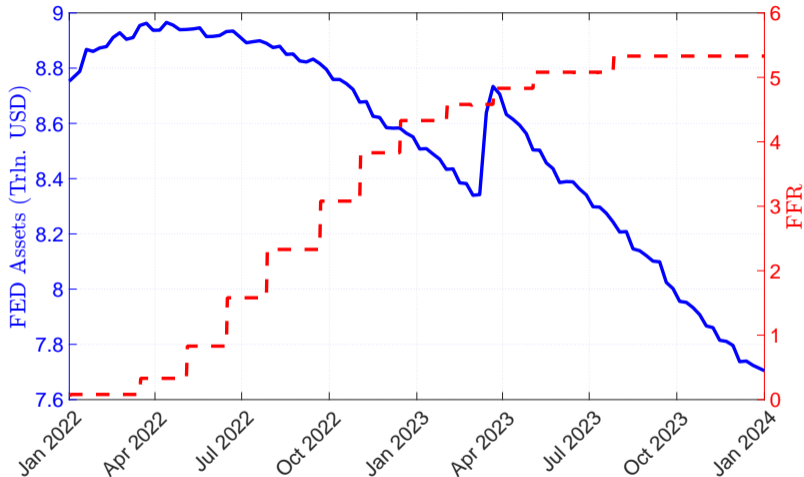


Figure FED balance sheet (Trln. USD), Policy rate (pp.)

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 - * on financial stability over business cycle?
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 - * on financial stability over business cycle?
 - * on price and financial stability in tightening cycle?
- ▶ QE implies:
 - * More frequent and longer-lasting financial stress episodes
 - * Significant costs to price stability in tightening cycle

- ▶ Balance sheet as stabilisation tool
 - * Gertler and Karadi (2011), Cúrdia and Woodford (2011), Gertler and Kiyotaki (2010), Gertler and Kiyotaki (2015), Sims and Wu (2021), Chen, Cúrdia, and Ferrero (2012), Cui and Sterk (2021), Del Negro et al. (2017)
 - * **This paper: effects of QE on financial stability over business cycle**

Literature

- ▶ Balance sheet as stabilisation tool
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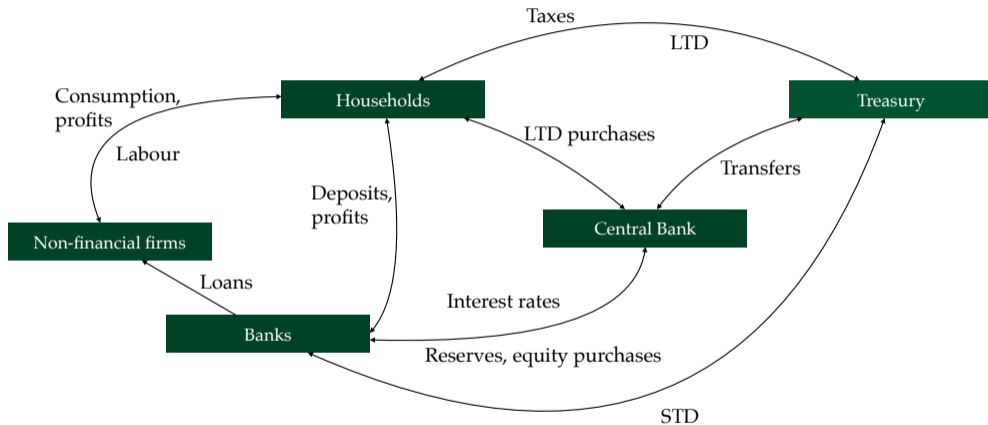
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 - * **This paper: (i) implications of QE on bank risk-taking, (ii) first GE monetary model to reproduce empirical business cycle moments & stylised fin. stress facts**
- ▶ Sequencing balance sheet and interest rate policy
 - * Benigno and Benigno (2022), Haas (2023), Airaudo (2023)
 - * **This paper: QE in a tightening cycle**

Today

- ▶ Model
- ▶ Quantitative properties
- ▶ QE stabilisation properties and financial stress frequency
 - * Stabilisation properties
 - * Stress frequency
- ▶ QE & Tightening cycle

Model

Model overview



Banks

- ▶ Agency problem as in Gertler and Kiyotaki (2010)
 - * Balance sheet:

Assets	Liabilities
Firm Equity	Deposits
Safe Assets	Net Worth

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- ▶ **Moral hazard:** can divert fraction of assets

- * Non-absconding in equilibrium (leverage constraint):

$$\text{Net Worth PDV} \geq \text{Divertible Assets} \quad (1)$$

- * Safe Assets $\uparrow \implies \downarrow$ Divertible Assets

Unconventional Monetary Policy

- ▶ CB Flow of Funds

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- * Lead to different distortions \implies type of QE matters

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▶ Public QE

- * Purchase LTD from households
- * Lower LT Yields

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▶ Public QE

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▶ Private QE

- * CB takes on intermediation
- * Swaps high-yield private assets for low-yield reserves

Financial Stress and Policy

Policy Rules

- ▶ QE follows CS targeting rule

$$\text{Asset acquisition} = (\text{Credit Spread})^{\phi_{QE}^i} \mathbb{1}(\text{Fin.stress}) \quad (3)$$

Policy: Stabilisation Properties

Table Standard deviations of aggregates

	Baseline	Public QE	Private QE
ϕ_{QE}^i	0	10	10
Output, Y	2.01	1.93	1.87
Investment, I	6.88	6.49	6.21
Net-Worth, N	4.84	4.24	3.82
Credit Spread, \mathcal{S}	0.99	0.71	0.47

Note: standard deviations in % from simulated quarterly mean except, \mathcal{S} which is annualised.

Policy: Stress Frequency

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Stress freq.	5.65%	6.38%	7.33%
Δ from baseline	-	0.73%	1.67%

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Stress frequency: share of periods when leverage constraint binding.

Why higher stress frequency under QE? (1/2)

▶ Bank precautionary behaviour

- * Banks dislike net-worth variance
- * Pick lower leverage to avoid hitting constraint
- * Under QE, **net-worth variance lower** \implies smaller precautionary motive

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▶ How big is precautionary motive?

- * Assume banks surprised by leverage constraint

Policy: Bank precautionary behaviour

Table Standard deviations of aggregates and stress frequency

	Baseline		Public QE	Private QE
ϕ_{QE}^i	0*	0	10	10
Output, Y	2.12	2.01	1.93	1.87
Investment, I	7.36	6.88	6.49	6.21
Net-Worth, N	5.64	4.84	4.24	3.82
Credit Spread, \mathcal{S}	1.11	0.99	0.71	0.47
Stress freq.	10.83%	5.65%	6.38%	7.33%
Δ from baseline	5.17%	-	0.73%	1.67%

Note: standard deviations in % from simulated quarterly mean except, \mathcal{S} which is annualised.
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 - * Lower credit spreads
 - * **Public QE:** lower LT Yield \implies lower deposit rates.
 - * **Private QE:** High-yield private assets swapped for low-yield reserves.

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 - * **Public QE:** lower LT Yield \implies lower deposit rates.
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- ▶ **Tractable decomposition:**
 - * Stress under QE, no stress under Baseline \implies Risk channel
 - * Stress under both, but longer under QE \implies Recapitalisation channel.

Policy: Stress Frequency Decomposition

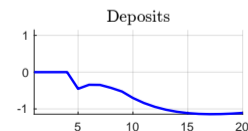
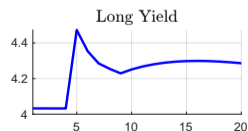
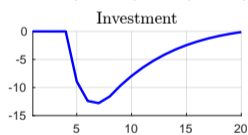
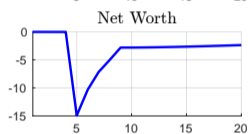
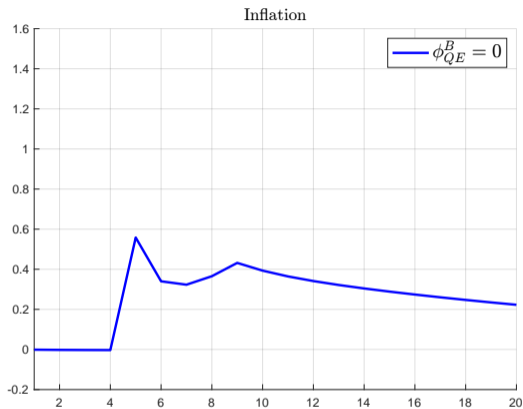
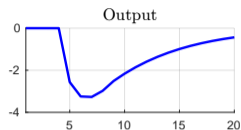
Table Stress frequency

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ϕ_{QE}^i	0	10	10
Stress freq.	5.65%	6.38%	7.33%
Δ from baseline	-	0.73%	1.67%
Risk	-	0.37%	0.69%
Recapitalisation	-	0.37%	0.98%

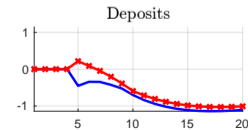
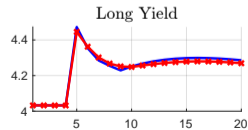
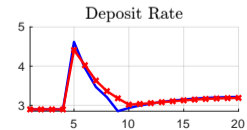
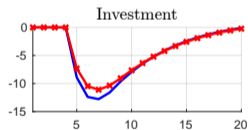
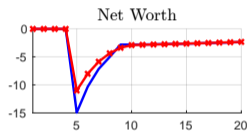
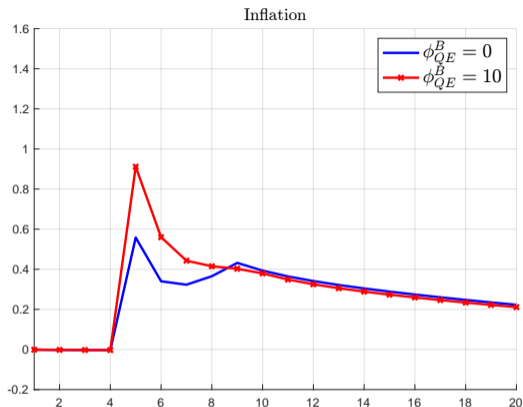
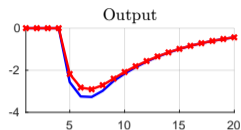
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QE in a Tightening Cycle

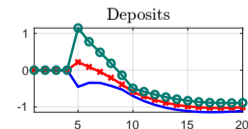
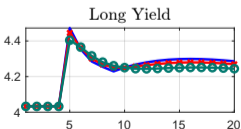
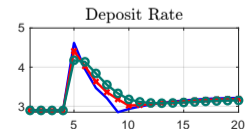
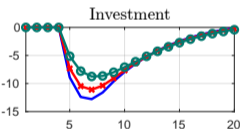
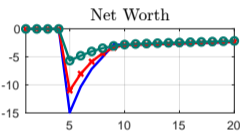
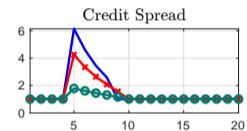
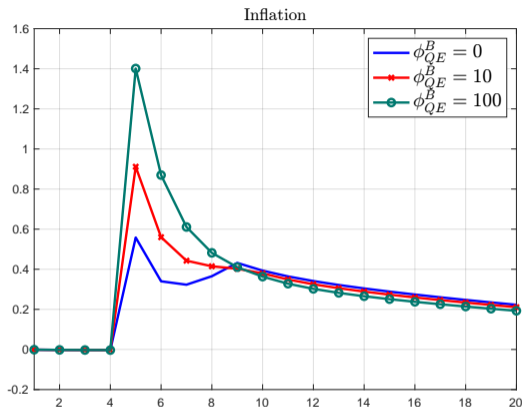
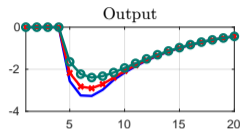
QE in a tightening cycle



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 - * Bank risk taking
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- ▶ QE compromises price stability in tightening cycle
- ▶ Milder but more frequent and longer fin. stress episodes \implies **non-trivial policy trade-off**