



# Macroeconomic and fiscal impacts of quantitative easing in New Zealand.

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**5 September 2025**



# Research Question

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What were the impacts of COVID-19 monetary policies on the New Zealand economy and consolidated fiscal position?

- Policy rate at the effective lower bound (0.25%).
  - Private banks not operationally ready for negative rates.
- Forward guidance – no rate increases for one year from 2020Q1.
- Large scale asset purchases ~59B NZD.

Counterfactuals: What may have been the impacts from alternative policies?

- No large scale asset purchases.
- Negative interest rates.
  - Private banks not operationally ready during COVID.
  - Otherwise could have entertained mildly negative rates (e.g. -0.5%).



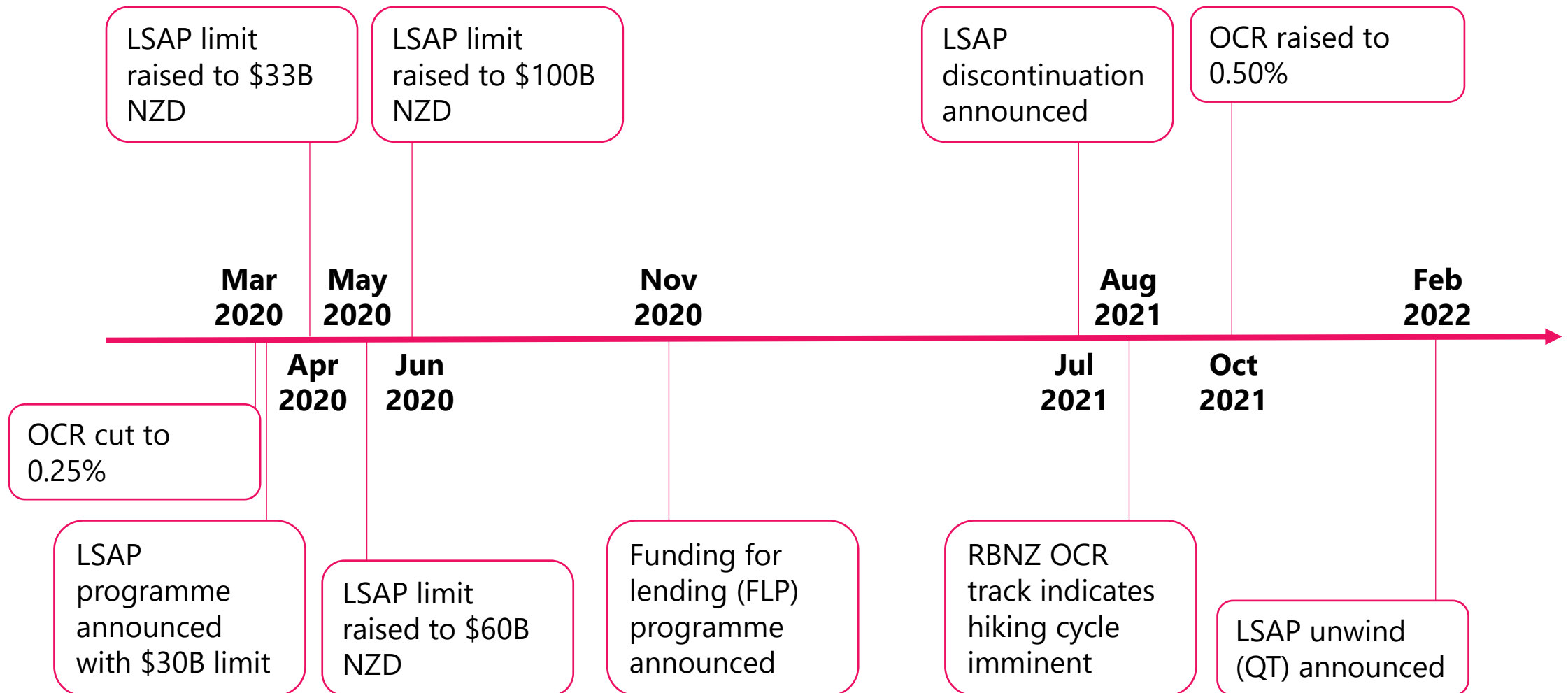
# Motivation

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- New Zealand applied a mixture of policies in response to COVID-19.
  - As did many countries.
- Little data is available to empirically assess the effect of these policies.
  - Relatively short LSAP period.
  - Quarterly data.
- Need a structural model to prepare for potential future shocks.
  - Better understand likely impacts.



# Motivation





# What We Do

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- Use the model of Erceg et al. (2024).
  - DSGE model with nonlinear Phillips curve and behavioural discounting.
  - Conventional policy, QE, government consumption, forward guidance.
  - Perfect foresight solution.
- Do **not** directly model some COVID-era policies.
  - Health policies.
  - Macroprudential policies.
  - COVID-19 Response and Recovery Fund (~58.4B NZD)
  - Funding for lending (~19B NZD).
- Calibrate the model to New Zealand.
  - Similar calibration exists for Sweden.



# What We Do

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- Apply the algorithm of Kolasa, Laséen, and Lindé (2025) in the NZ COVID-era context.
  - Demand shocks added from a 2019Q4 starting point.
    - Mimic a deterioration in the economy, then a stronger pickup.
  - Not ideal, since we know a substantial supply shock occurred.
    - Still matches ELB period and subsequent rate hikes.
    - Allows for a useful comparison of tools.
    - Can proxy for the net impact of a variety of shocks.
  - Given these demand shocks, simulate the economy.
    - With actual purchases.
    - No LSAPs.
    - Moderately negative policy rates instead of LSAPs.



# What We Find

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- Without LSAPs.
  - Higher policy rate in the long run.
  - Worse inflation and output outcomes in crisis.
  - Similar government debt outcomes.
    - Model central bank losses with LSAPs close to reality.
    - Offset by higher tax revenue.
- With moderately negative policy rates.
  - Would have still been at ELB for extended period.
  - Rates as low as -0.75% allow similar outcomes to LSAPs.
  - High inflation may have peaked slightly higher/persisted for longer.
  - Higher debt during the crisis, but lower after central bank losses.



# Literature

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- Clouse et al. (2000).
  - Central bank policy rates may hit their ELBs in a low inflation environment.
  - Support economic activity through purchases of US Treasuries by the Fed.
    - Increase liquidity.
    - Alter expectations.
    - Promote bank lending.

- Bernanke (2002).


*...a central bank, either alone or in cooperation with other parts of the government, retains considerable power to expand aggregate demand and economic activity even when its accustomed policy rate is at zero.*





# Literature

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- Andres, Lopez-Salido, and Nelson (2004).
  - New Keynesian model with imperfect substitutability between long- and short- term financial assets.
  - Relative asset stocks movements  Long-term rates deviate from  $E(\text{Short-term rates})$
- Chen, Cúrdia, and Ferrero (2012).
  - New Keynesian GFC counterfactual with no LSAPs.
  - US LSAPs increased output growth by at most 0.33 percentage points.
  - Negligible effects on inflation.



# Literature

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- Kolasa and Wesolowski (2020).
  - Spillover of LSAPs by major economy central banks to SOEs.
  - Large economy LSAPs boost domestic demand in SOE.
  - But reduce competitiveness and activity via capital inflows/exchange rate appreciation.
- Erceg et al. (2024)
  - Relative to policy rate increases, asset sales generate more adverse international spillovers.
  - Inflation-output tradeoff due to exchange rate depreciation in recipient.
  - Particularly in emerging economies with exchange rate pegs.



# Literature

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- Adrian et al. (2025).
  - LSAPs tend to decrease the debt-to-GDP ratio due to:
    - Higher activity boosting tax revenues.
    - Debt service costs falling due to lower interest rates.
    - Higher bond prices making new debt issuance cheaper.
    - Existing debt being inflated away.
  - Consolidated fiscal position may improve despite subsequent CB losses.
- Kolasa, Laséen, and Lindé (2025).
  - Impact of SOE central bank LSAPs/negative rates.
  - Sweden: Significant *cumulative* impacts on growth, inflation, and the exchange rate.



# Model

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- Two country New Keynesian model.
  - Myopic households – shrink expectations toward steady state.
  - Nonlinear Phillips curve
- Segmented markets for short and long term government bonds.
- Central Bank exogenously takes positions in long term bond markets.
  - Issues reserves to do so.
  - Holdings mean-revert.
- LSAP profits/losses are remitted to the government.
- Private holdings of short-term bonds = Government bonds + CB reserves.
- Private holdings of long-term bonds + CB holdings = Long-term government bonds.



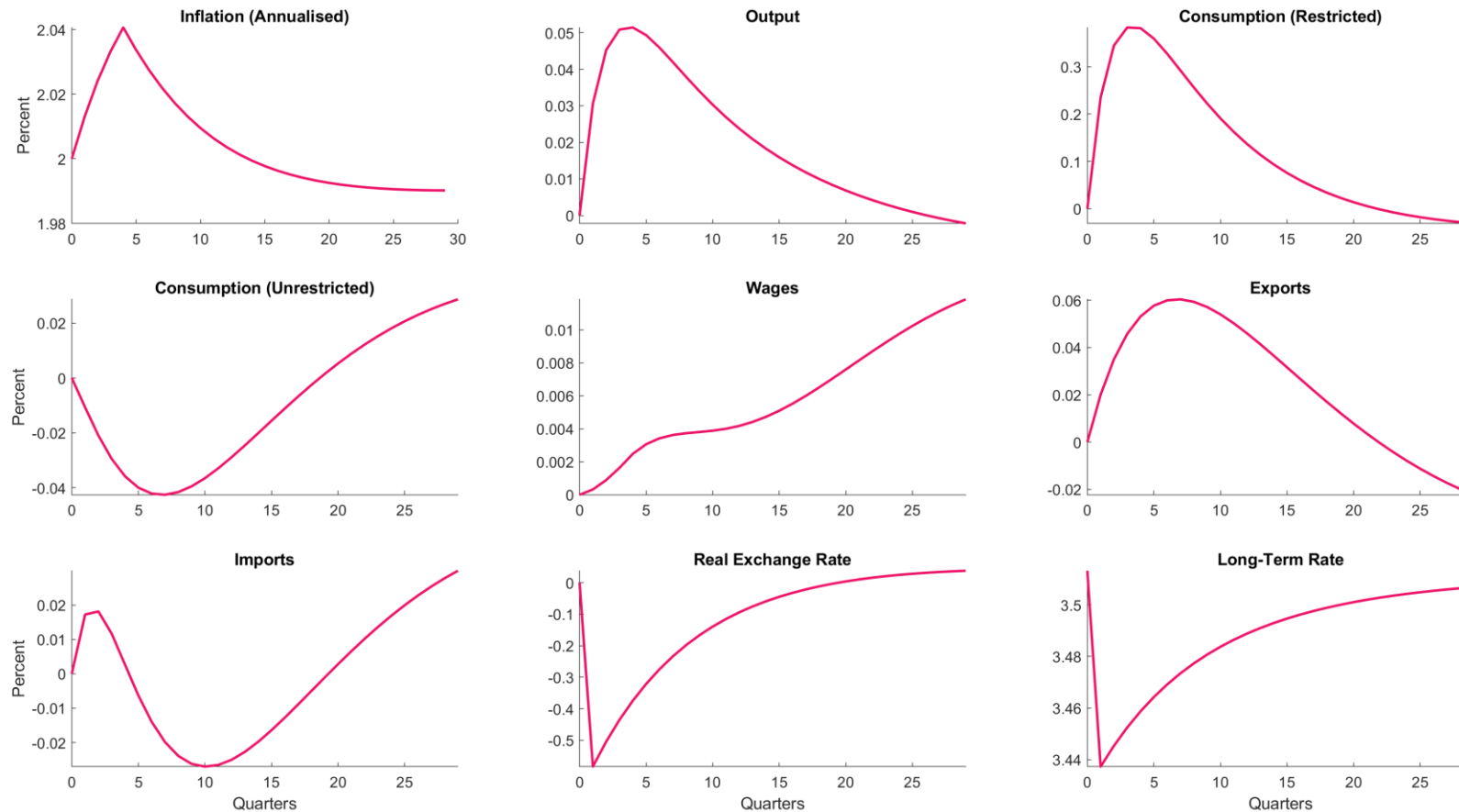
# Calibration

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- Choose some parameters based on data.
  - Size of home relative to large economy.
  - Bond duration.
  - Tax rates.
- Choose some parameters based on estimated models.
  - Taylor coefficient.
  - Output weight.
- Choose some parameters to match impulse responses.
  - RBNZ's forecasting model's response to a monetary shock.
  - Fiscal multipliers for a government expenditures shock.
  - Non-CB researchers for impact of LSAP shock on output.

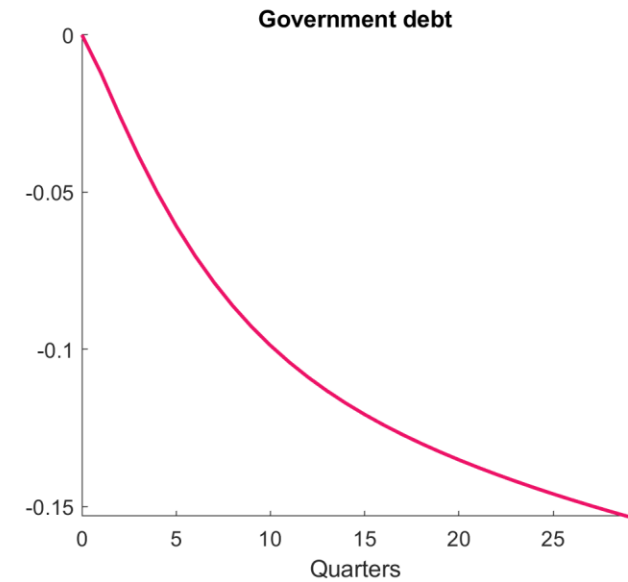
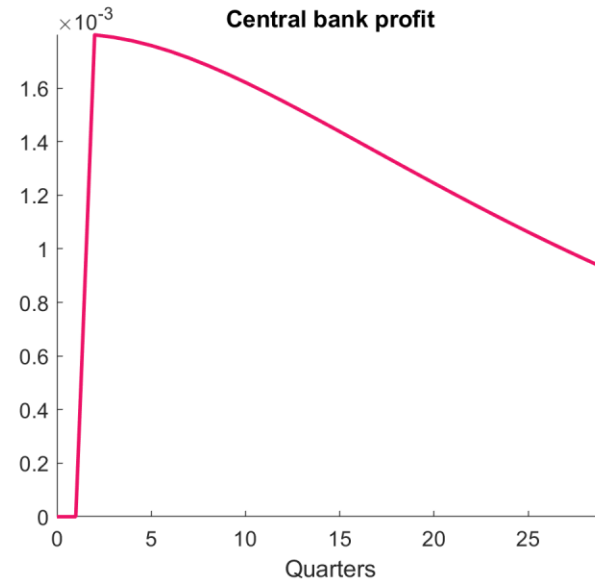
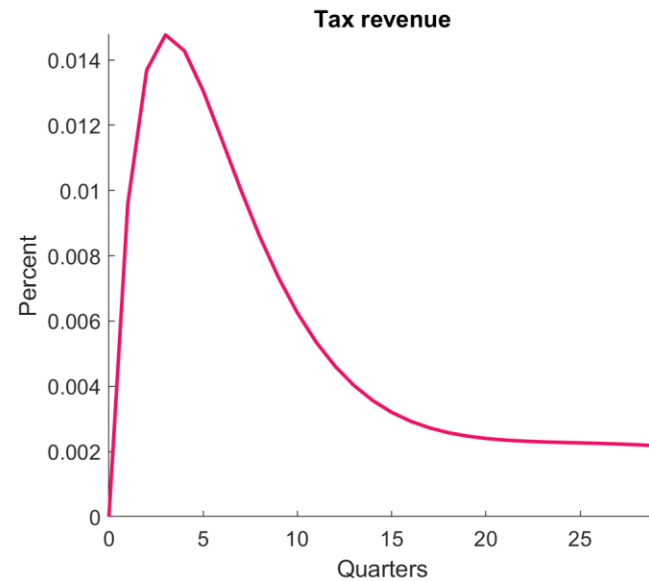


# Transmission Mechanism – LSAP shock





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# Transmission Mechanism – LSAP shock

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- Surprise increase in the demand for long-term government bonds.
  - Causes yield to fall.
  - Depreciates the exchange rate.
- Inflation, output, and exports all increase.
  - Less than in response to a conventional shock to policy rate.
- Consumption of agents who can hold short-term bonds responds weakly.
  - Arbitrage between short- and long-term bonds.
- Output response is well below estimates in non-central bank research (e.g. Fabo et al., 2021).
- Persistent increase in net exports.
  - Due to decline in long-term rate/exchange rate.
  - Decrease in term premium is driven by stock of assets purchases rather than flow.





# Methodology – Demand Shocks

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- Choosing demand shocks in the simulation.
  - To match RBNZ policy rate forecasts.
  - Given LSAP announcements.



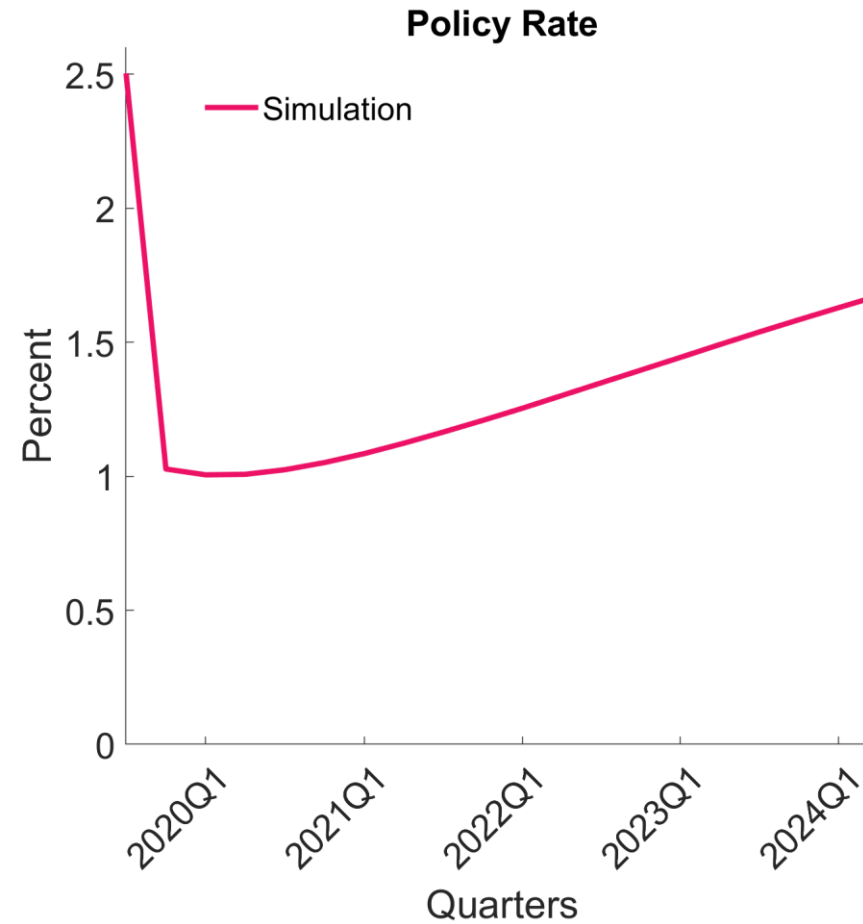
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- Initial state: Policy rate at about 1%.
  - A single shock puts policy rate at this level.



# Methodology – Demand Shocks





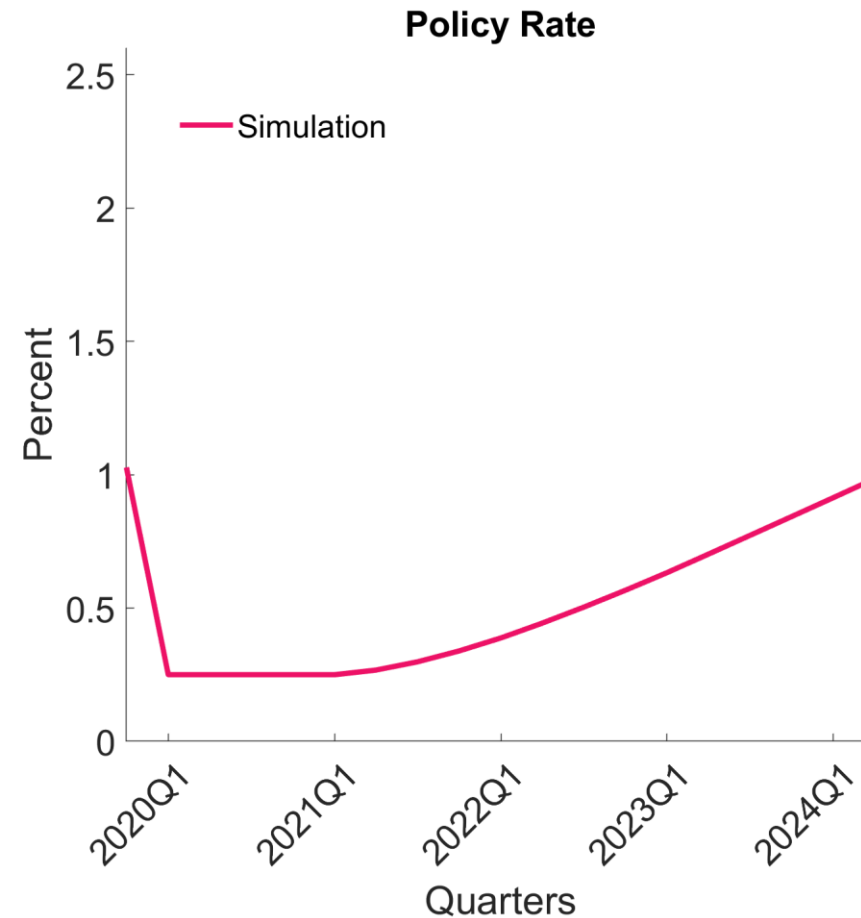
# Methodology – Demand Shocks

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- Choosing demand shocks in the simulation.
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  - Given LSAP announcements.
- Initial state: Policy rate at about 1%.
  - A single shock puts policy rate at this level.
- Initial COVID shock.
  - Puts policy rate at the ELB (0.25%) for one year.
  - Economic impacts take place next period.



# Methodology – Demand Shocks





# Methodology – Demand Shocks

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- 2020 Q1 – 2021 Q3 – ELB period.
  - Choose demand shock to match forecast ELB duration.
- 2021 Q4 – 2022 Q4 – Hiking cycle.
  - Choose demand shock to match rate increases.
- 2023 Q1 – 2024 Q4 – Post hiking cycle.
  - Choose demand shock to match overall trajectory.



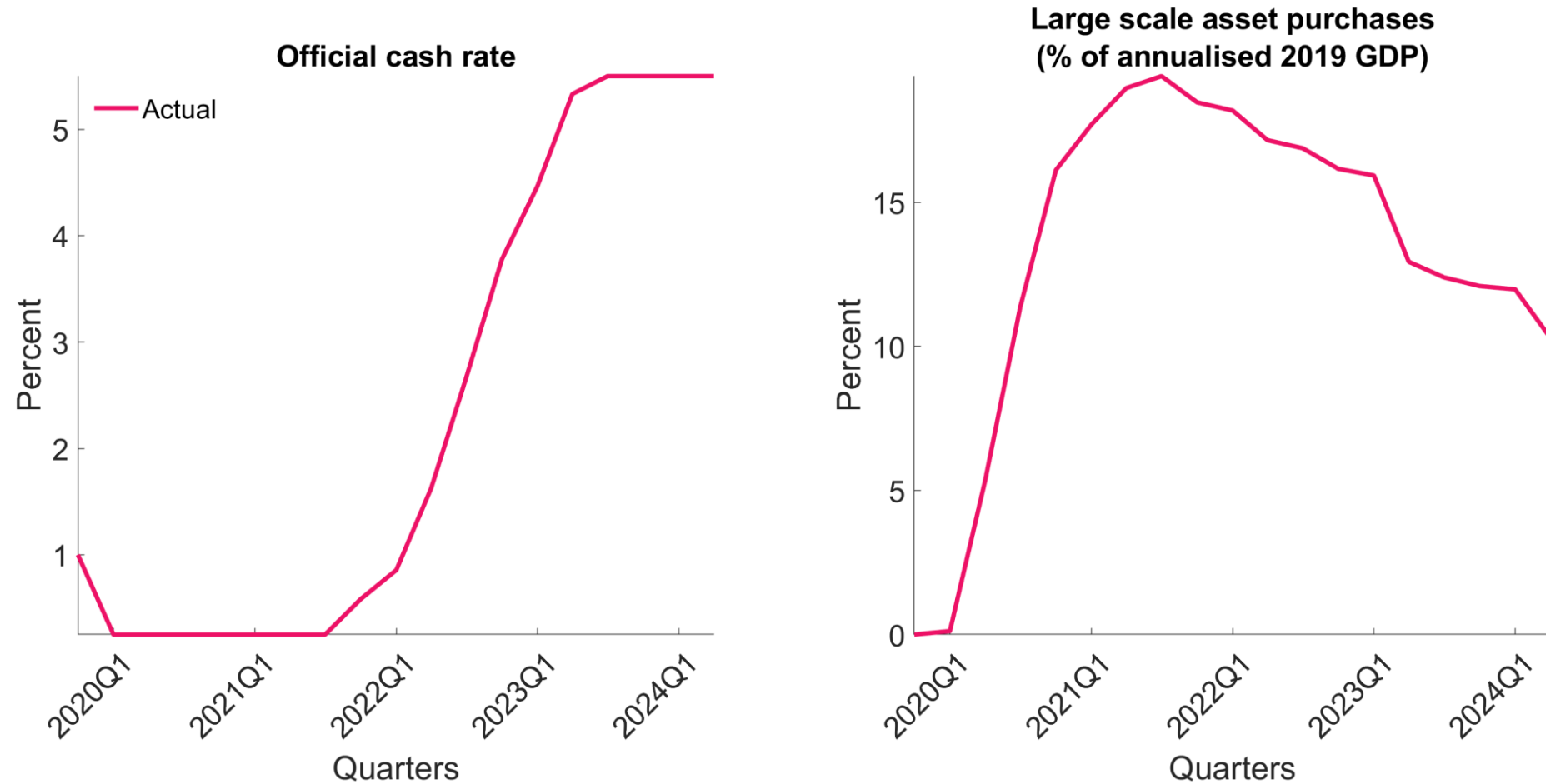
# Baseline/Counterfactuals

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- Baseline: Simulated Policy Rate and Actual LSAPs.
  - Shocks as computed in the previous step.
  - Endogenous policy rate settings.
  - LSAP shocks adding up to total purchases.
  - Mean reversion of asset holdings upon wind-down.
- Counterfactual 1: No LSAPs.
  - All of the above without LSAPs.
- Counterfactual 2: Negative rates.
  - All of the above without LSAPs.
  - Effective lower bounds of -0.25% and -0.75%.



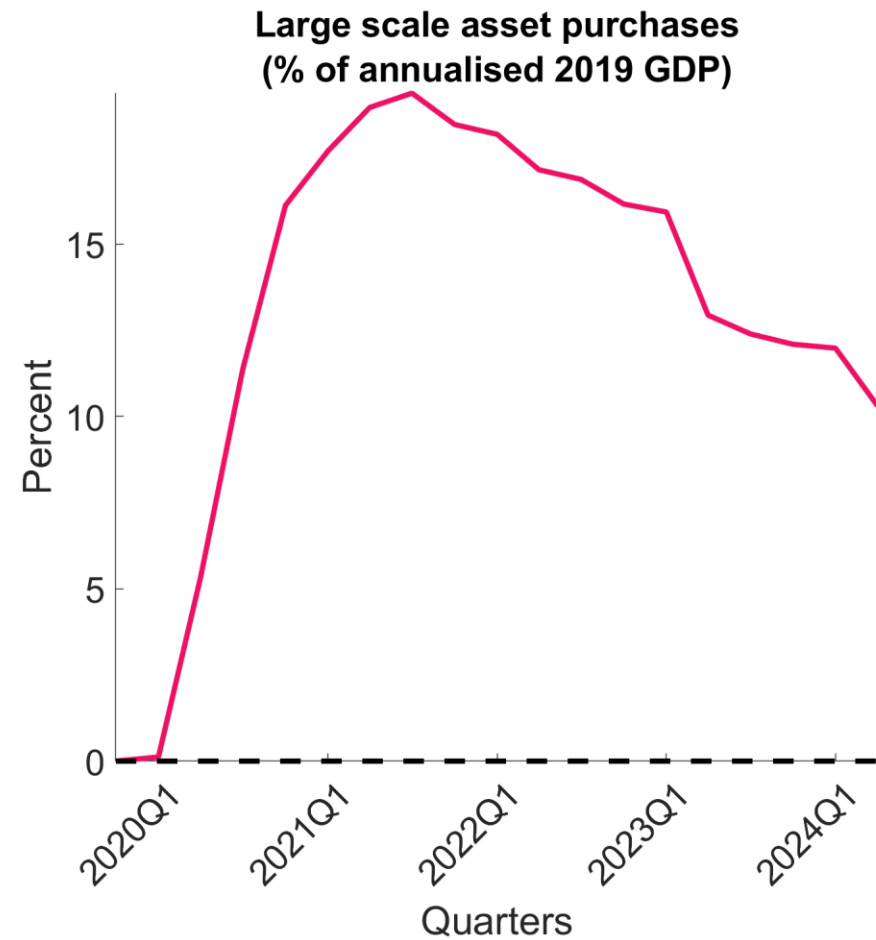
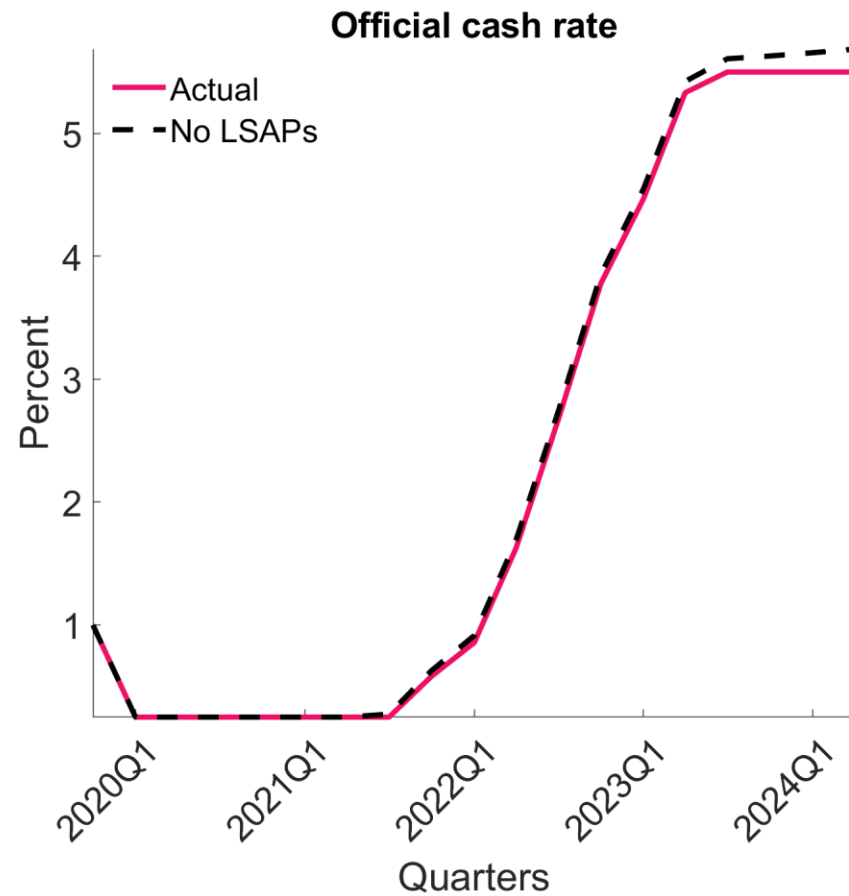
# Results





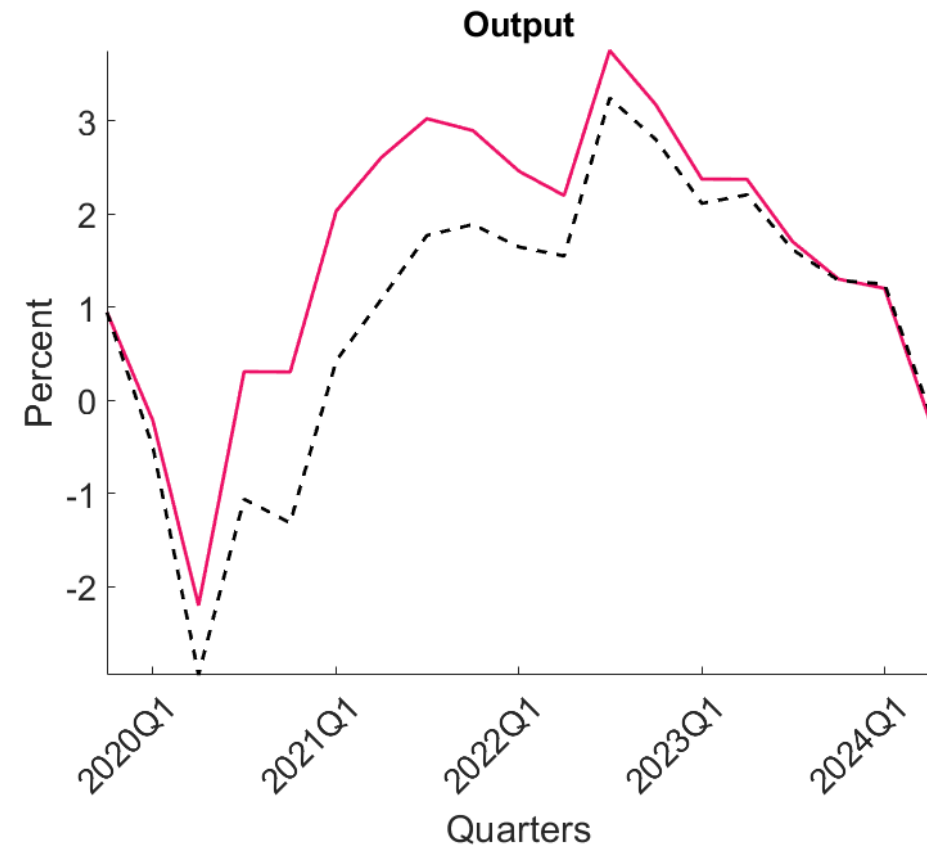
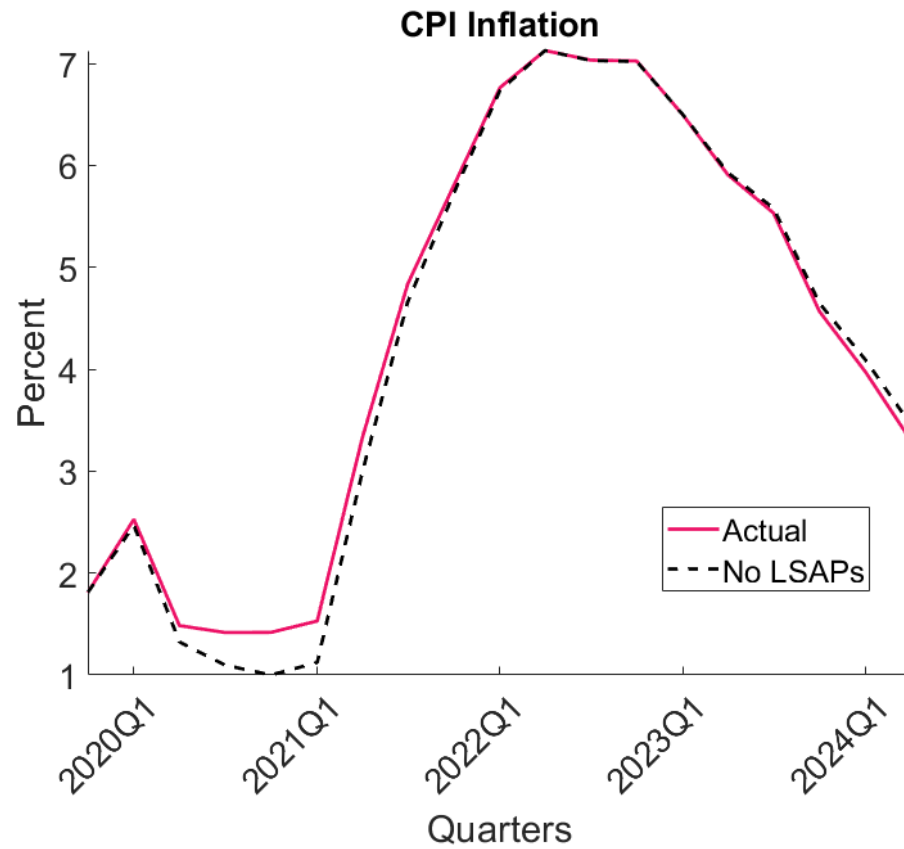


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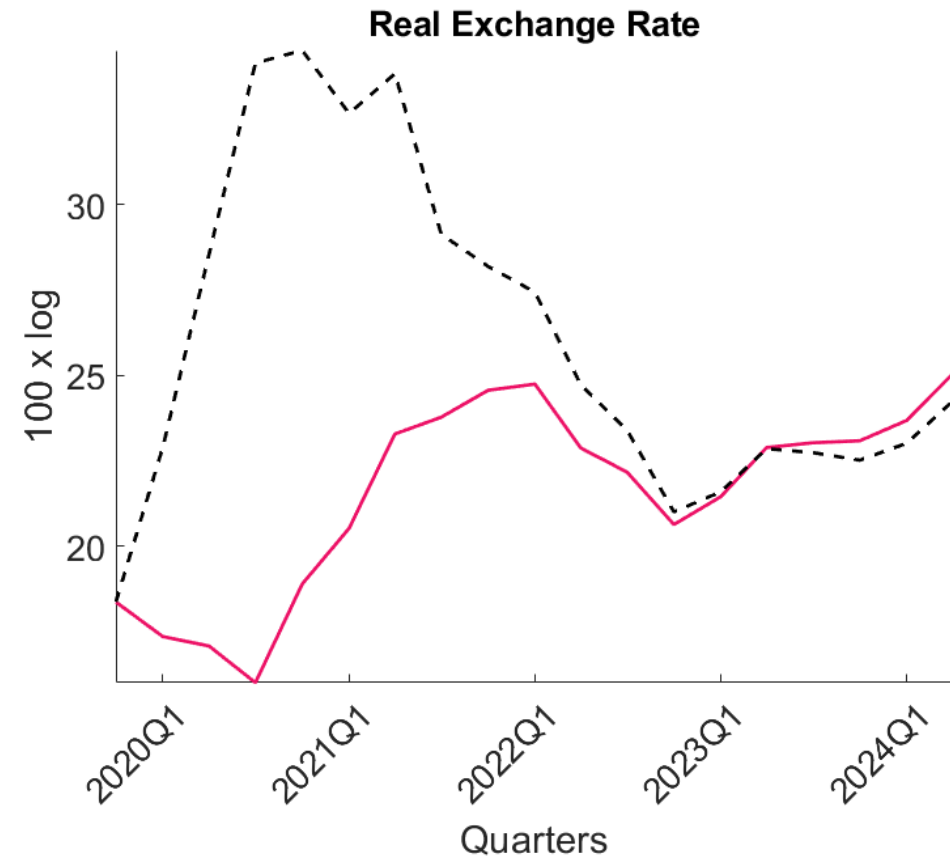
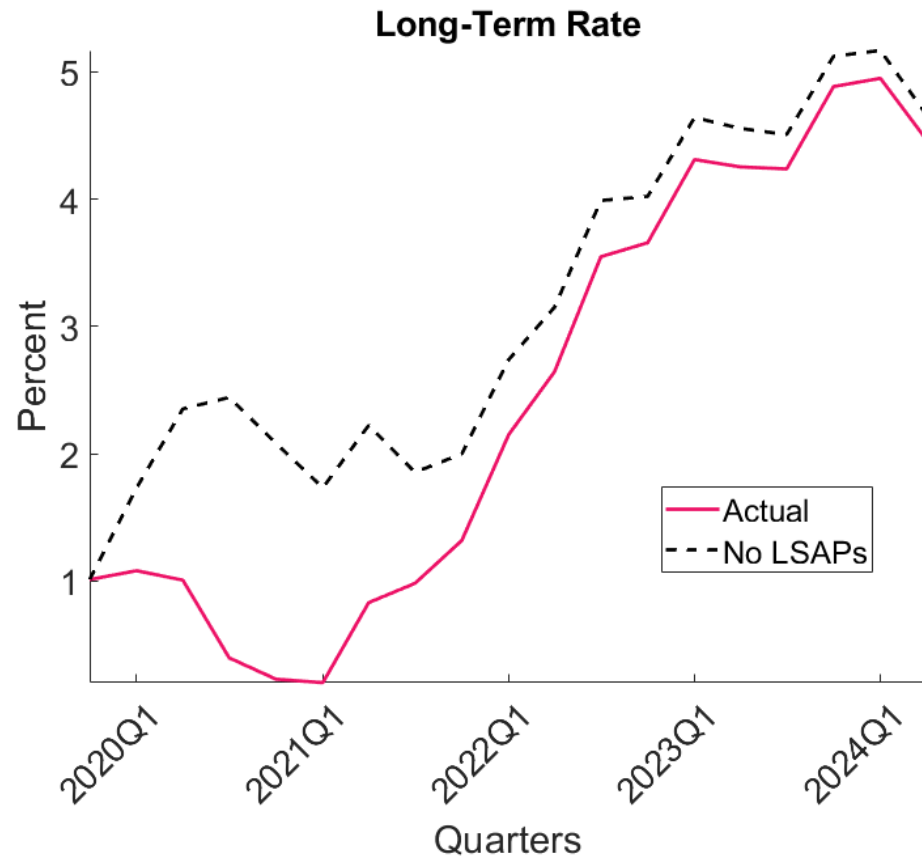


# Results – No LSAPs



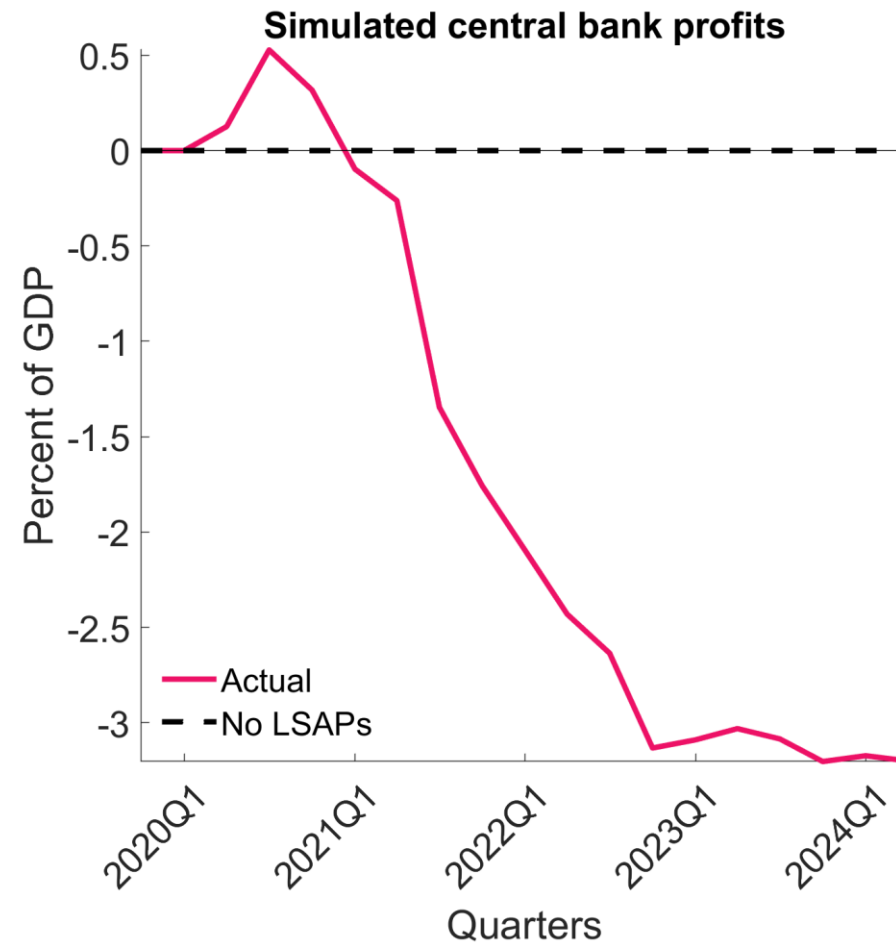


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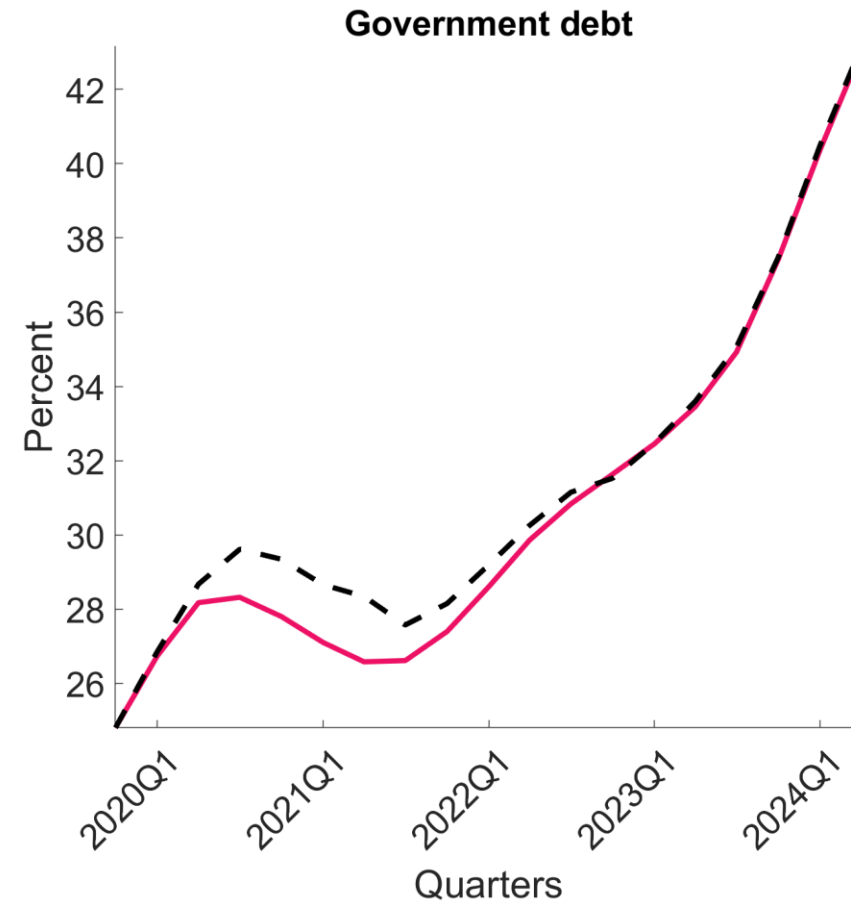
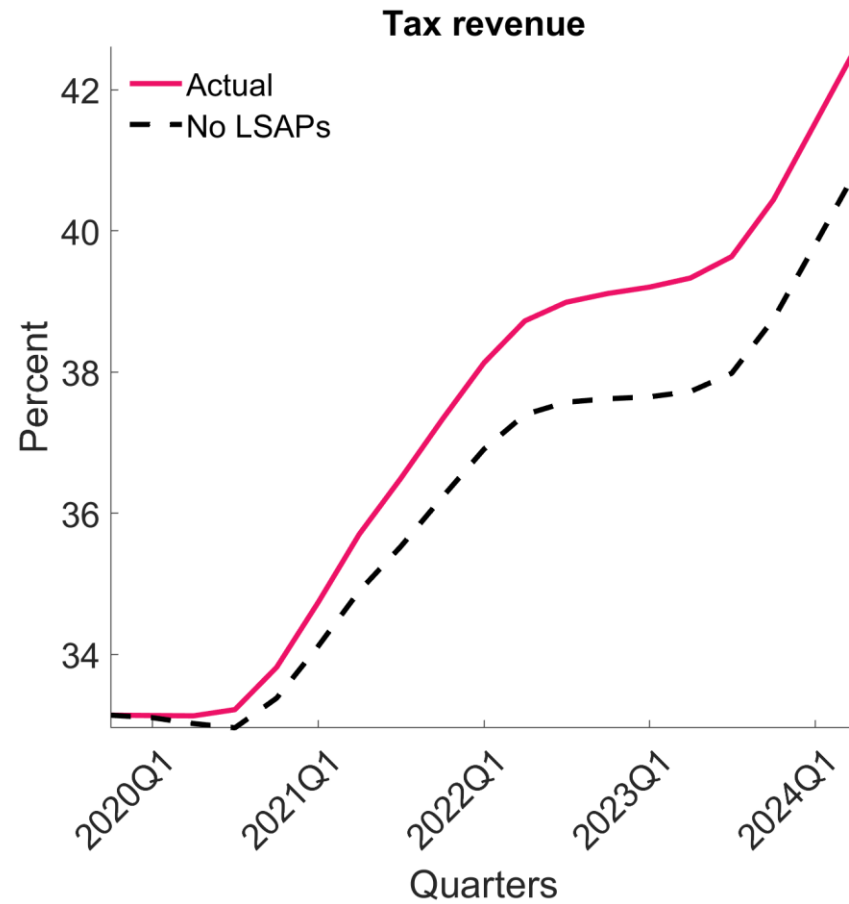


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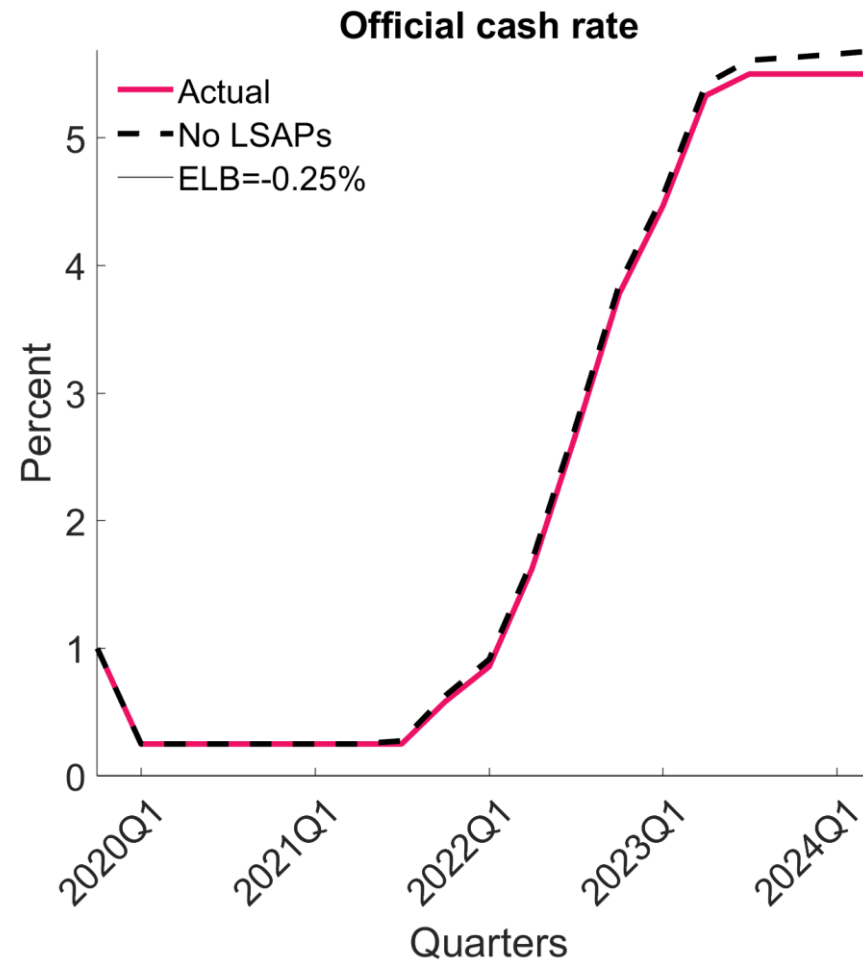


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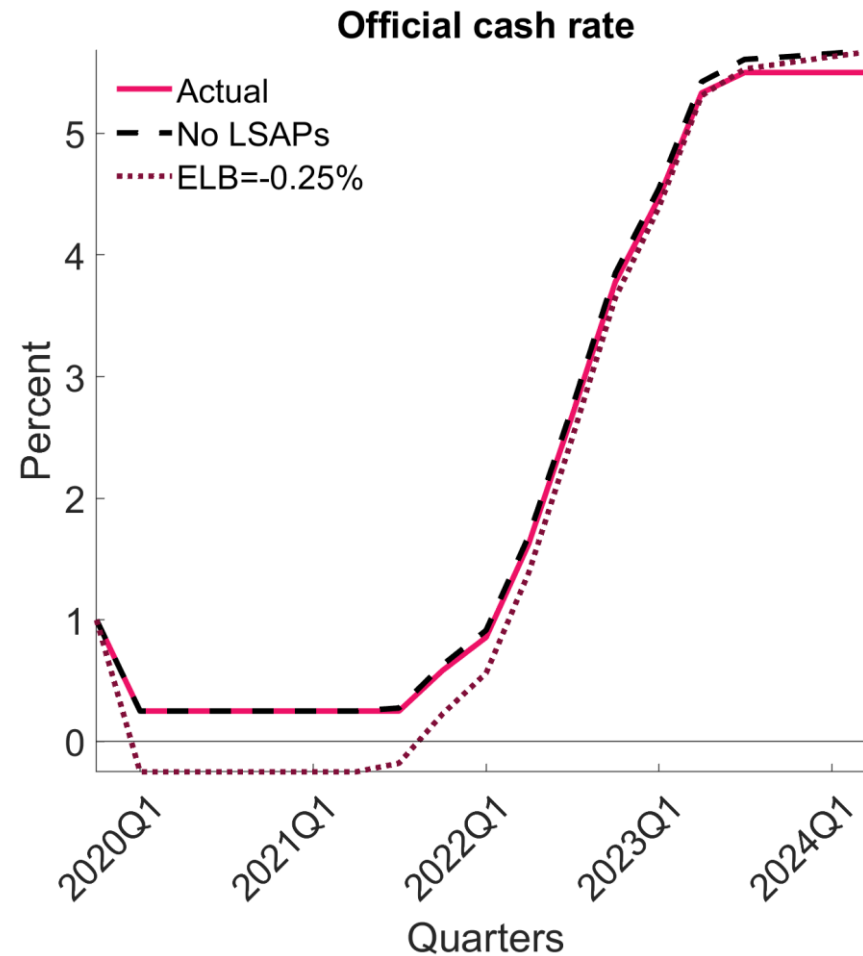


# Results – Negative Policy Rates



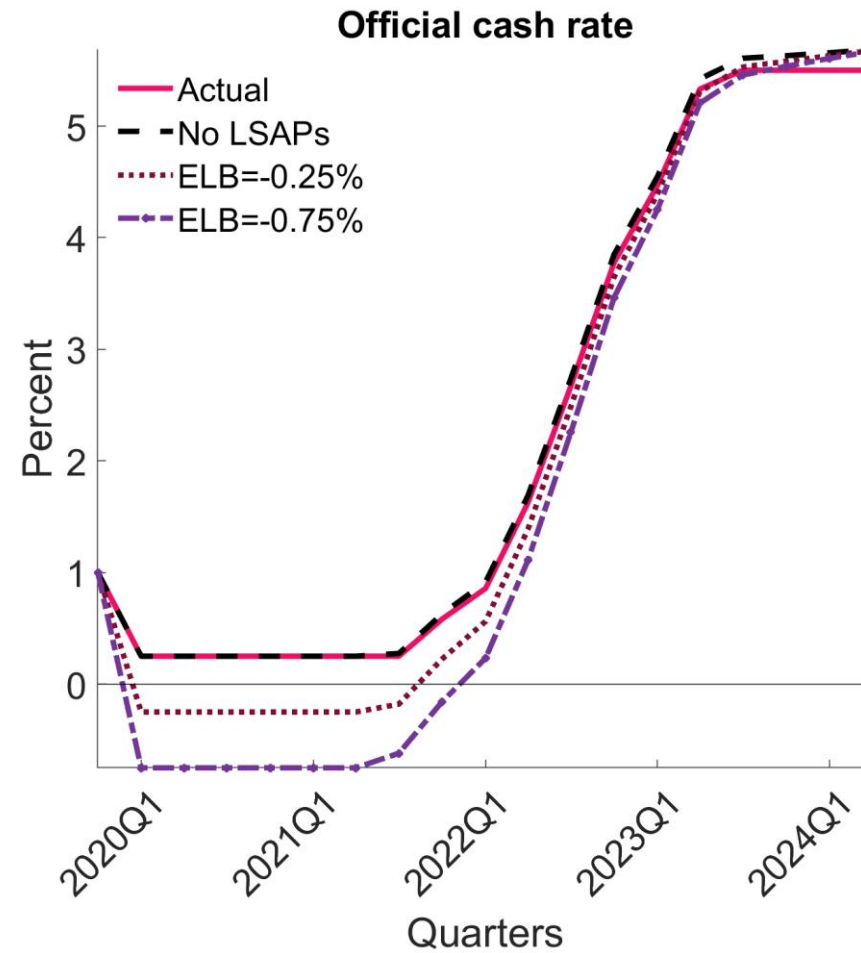


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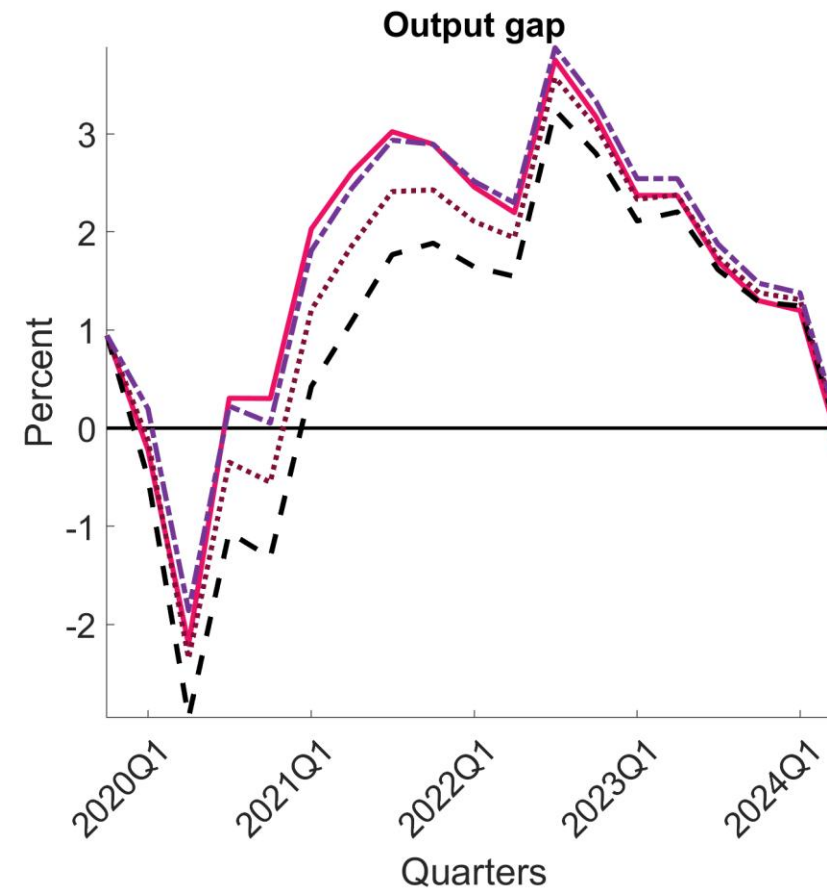
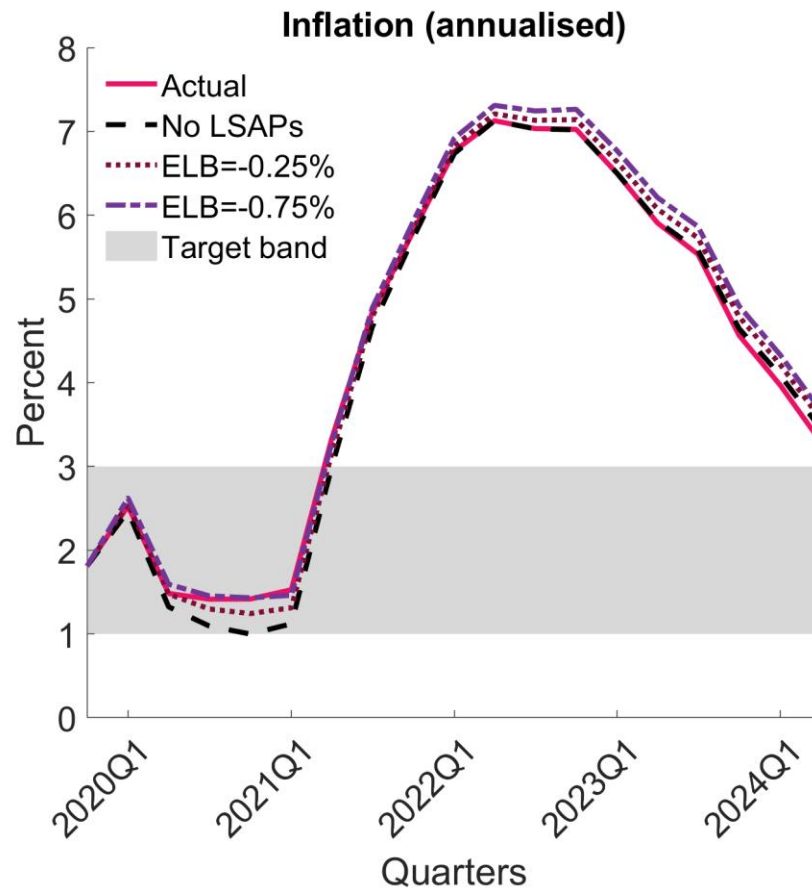
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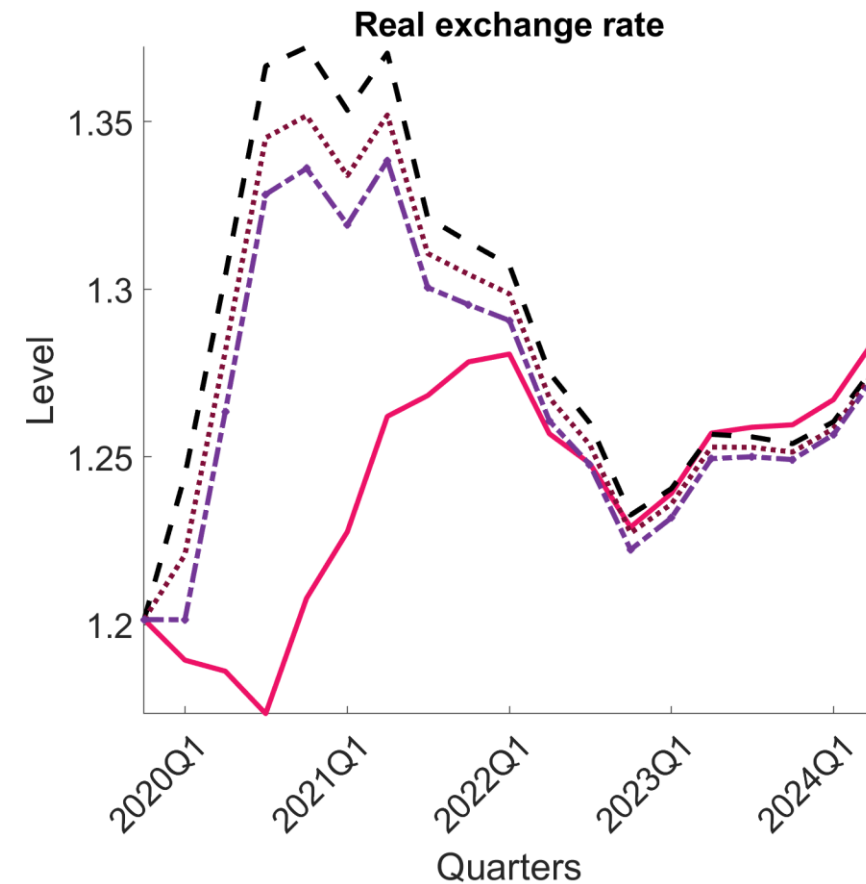
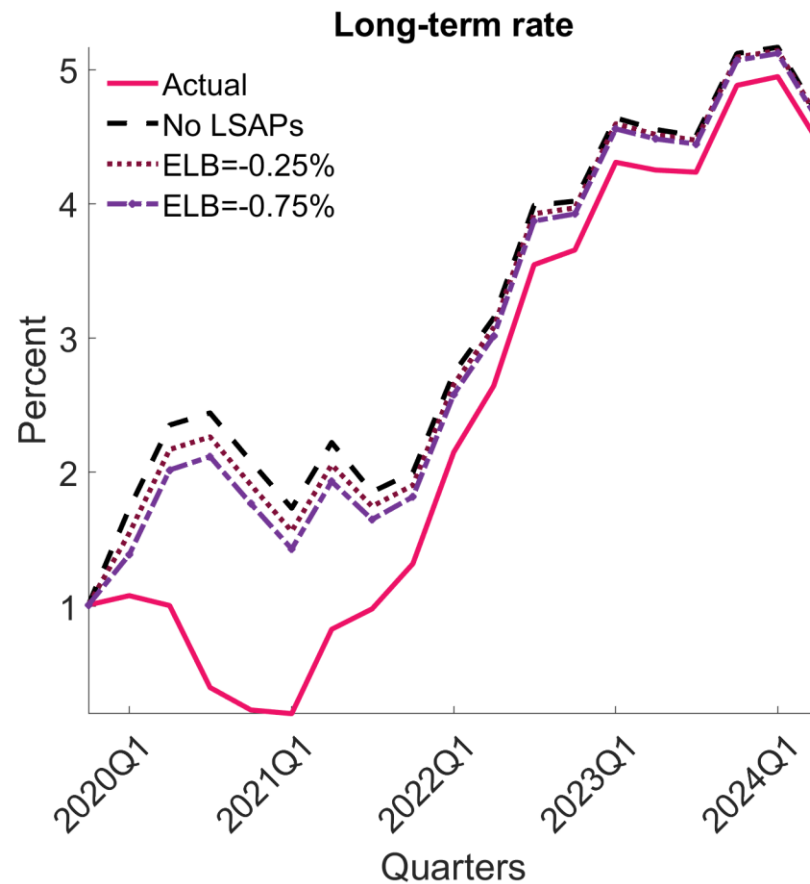


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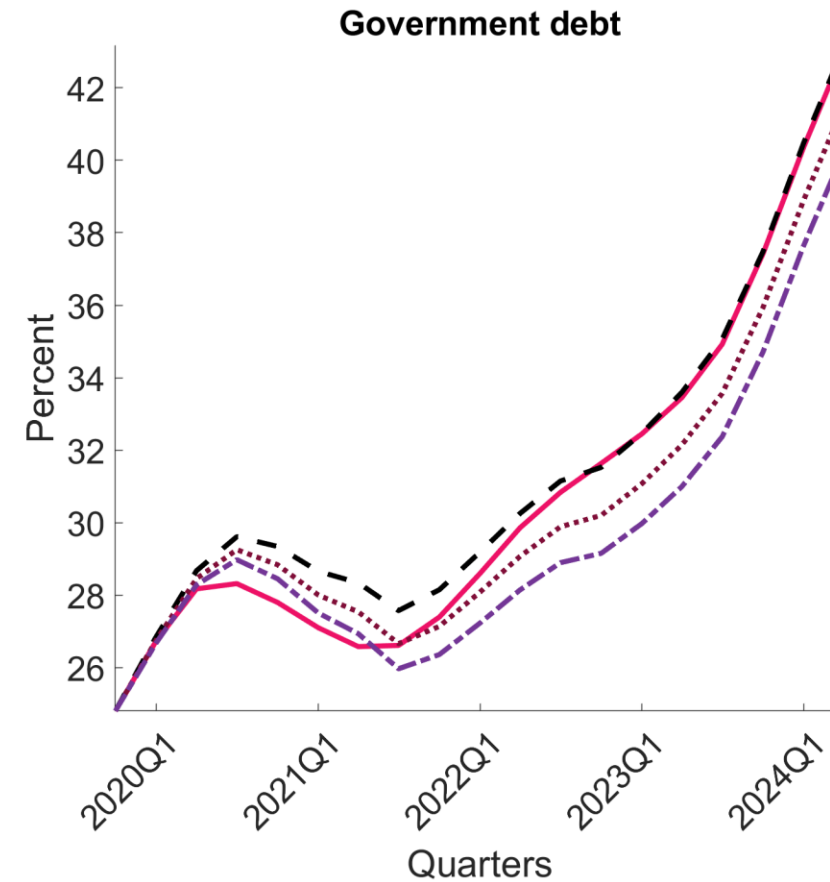
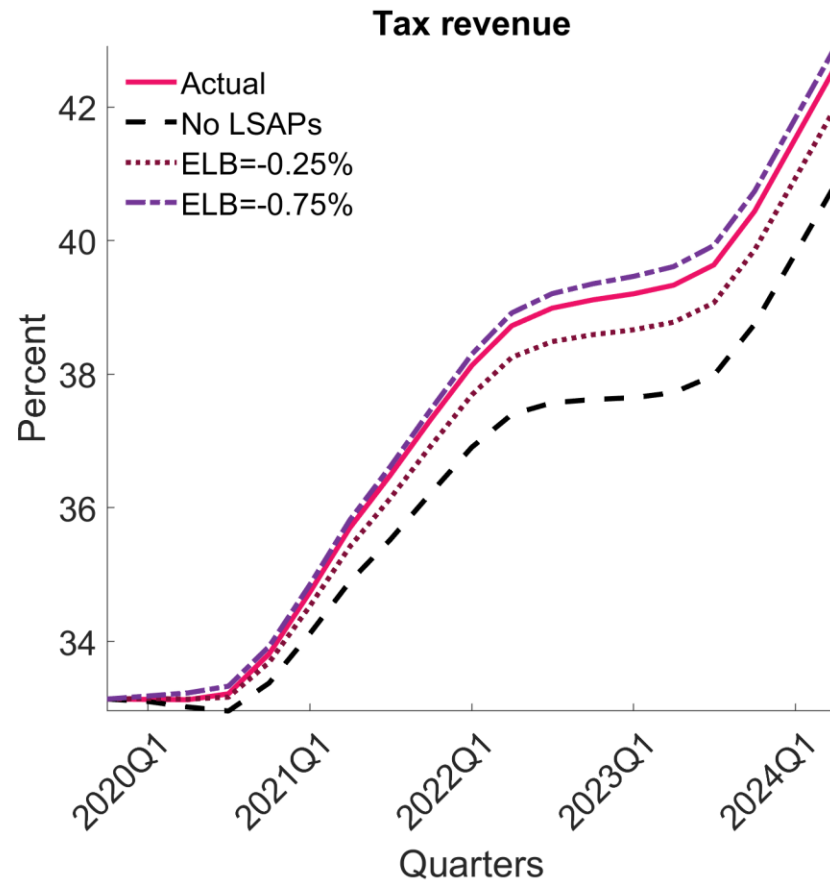


# Results – Negative Policy Rates





# Results – Negative Policy Rates





# Results - Overview

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- LSAPs supported inflation and output during the crisis period of COVID-19.
  - Did not contribute materially to subsequent rise/peak in inflation.
  - But contributed to a higher output gap.
- Losses realised on RBNZ's asset purchase programme.
  - Similar in model as in data.
  - Offset by increased tax revenue and lower interest payments.
  - Positive effects during crisis attained without any significant fiscal cost for the consolidated government balance sheet.



# Results - Overview

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- A negative policy rate was not an option for the RBNZ during LSAPs.
  - Concerns that systems and processes in the wider financial sector were not prepared.
  - Now confident that the system operate effectively at if the OCR lowered below zero.
- Outcomes similar with an ELB of -0.75%.
  - Inflation may have peaked higher and persisted more.
  - Minor difference.
- More moderate support for the economy with an ELB of -0.25%.
  - Milder increase in the output gap after the crisis.
- Lower government debt at end of simulation.
  - Tax revenues may have been higher or lower.
  - Lack of central bank losses.



# Results - Overview

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- Trade-offs for policy-makers.
  - When choosing between policies.
  - Or mixes of policies.
- LSAPs.
  - Lower the long-term rate and hence the exchange rate.
  - Increase competitiveness of domestic exports and their domestic currency value.
- Negative rates.
  - Stimulate domestic demand rather than export demand.
  - Positive fiscal implications relative to LSAPs.
- Policy-makers may select a different mix depending on desired transmission mechanism and fiscal risk characteristics.



# Future Work

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- LSAPs likely less costly than conventional fiscal policy.
  - Lindé and Erceg (2014).
  - Kolasa, Laséen, and Lindé (2025).
  - Check for New Zealand COVID scenario.
- Financial frictions.
  - Domestic LSAP transmission through bank lending.
  - Impact of RBNZ's Funding for Lending Programme.
  - Removal of macroprudential policies.
- Multiple demand- and supply-side factors.
  - Were a factor during COVID.
  - Are the results robust?



# Summary

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- Need for a structural model to better understand impact of COVID-era policies.
- Model of Erceg et al (2024).
  - Monetary policy, effective lower bound, LSAPs.
- Calibration to NZ.
  - Reasonably matches empirical evidence on policy shocks.
- Simulation following Kolasa, Laséen, and Lindé (2025).
  - LSAPs improved inflation and output outcomes during the crisis.
  - Increased tax revenue offset RBNZ mark-to-market losses.
  - Negative rates could produce similar economic outcomes with more positive fiscal implications.
- Policy-makers face trade-offs when selecting between tools.