# Assessing Australian Monetary Policy in the Twenty-First Century

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ACE 2022 Hobart

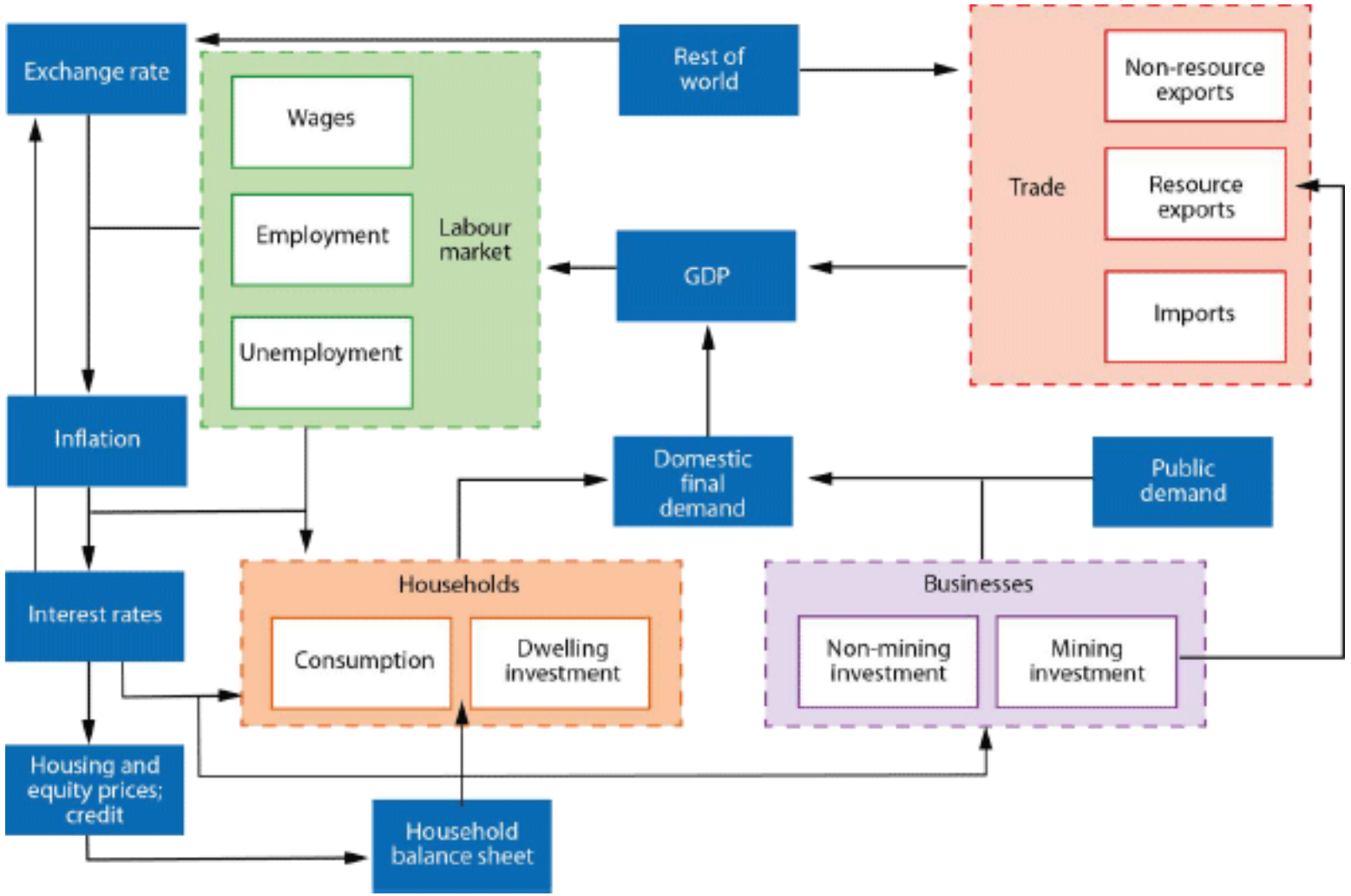
# What we do

- Assess monetary policy over three periods
  - Early 20000s downturn
  - The GFC
  - Pre-pandemic inflation undershooting

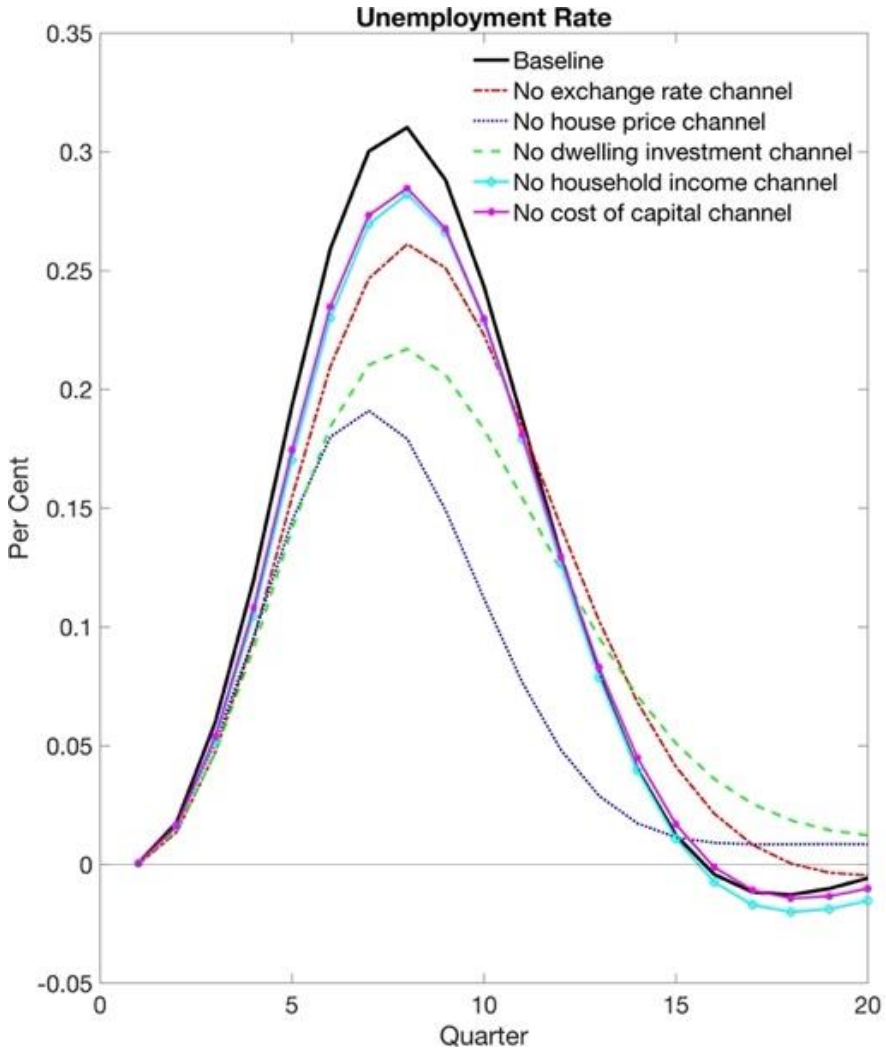
- We use the RBA's models - MARTIN - to create policy counterfactuals

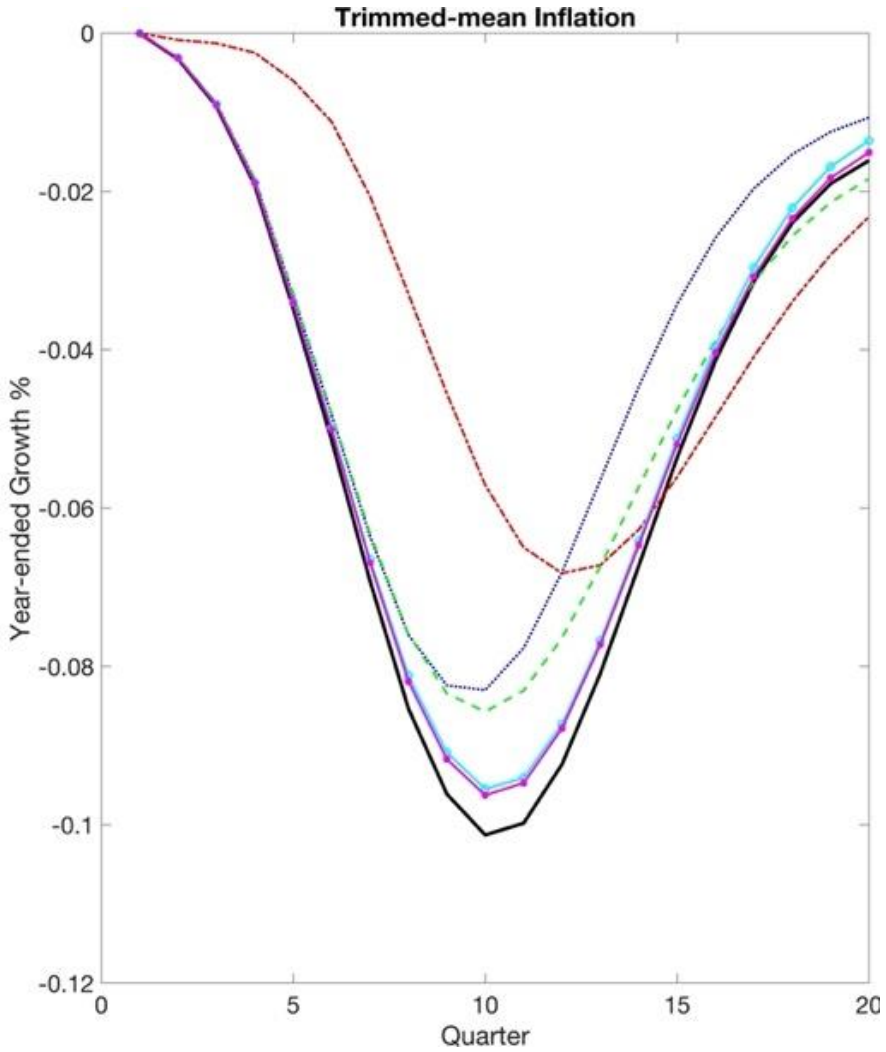
- Results:
  - 2000-2003 - Well calibrated!
  - 2008-2011 - Well calibrated!
  - 2016-2019 - MP too tight!

# MARTIN Structure



# MARTIN IRFs


Unemployment Rate
Baseline
No exchange rate channel
No house price channel
No dwelling investment channel
No household income channel
No cost of capital channel
Per Cent
Quarter
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-0.05
0
5
10
15
20


Trimmed-mean Inflation
Year-ended Growth %
Quarter
0
-0.02
-0.04
-0.06
-0.08
-0.1
-0.12
0
5
10
15
20

# Policy Counterfactuals

- ‘Do Nothing’
  - The cash rate is kept constant.
- ‘Optimal Simple Rule’
  - A simple policy rule the minimises a quadratic loss function of inflation and the unemployment gap
- ‘Full Sample Optimal Simple Rule’
  - OSR, but optimised over the full sample.
- ‘Zero Lower Bound’
  - OSR, but subject to the zero lower bound.

# Welfare

- MARTIN has no direct measure of welfare

- We approximate welfare with a quadratic loss function:

$$L_t = \lambda^{\pi}(\pi_t - 2.5)^2 + \lambda^{u}(u_t - u_t^*)^2 + \lambda^{i}(ncr_t - ncr_{t-1})^2$$

# Optimisation Problem

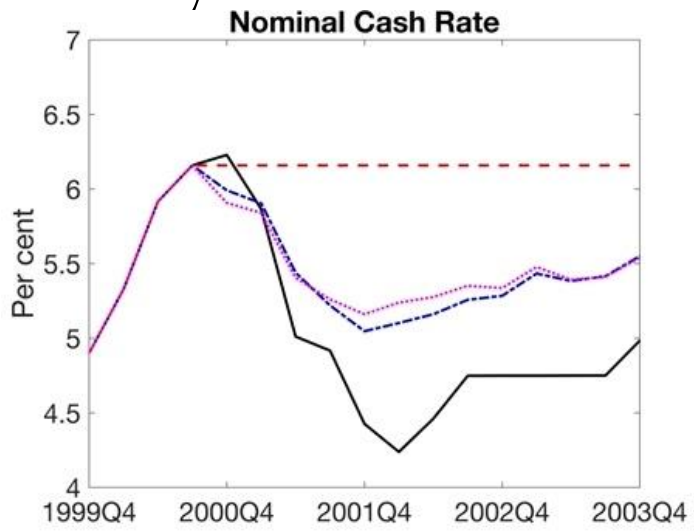
Choose parameters

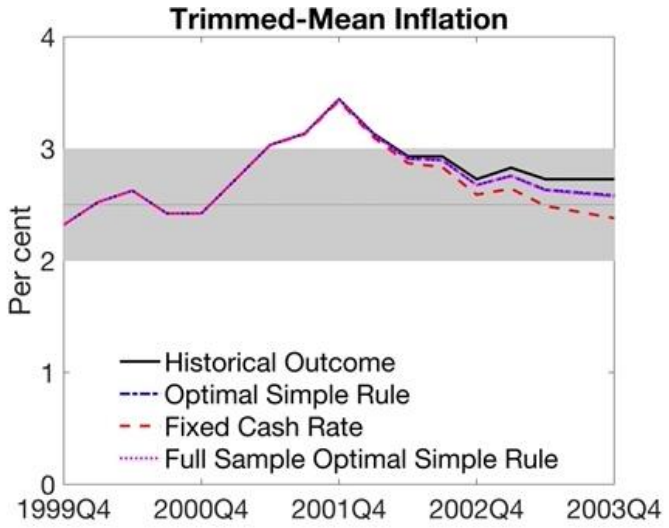
$$ncr_t = \phi^i ncr_{t-1} + \left(1-\phi^i\right)\left(r^*{}_t + \pi_t + \phi^\pi(\pi_t - 2.5) - \phi^u(u_t - u_t^*)\right) - \phi^d(u_t - u_{t-2})$$

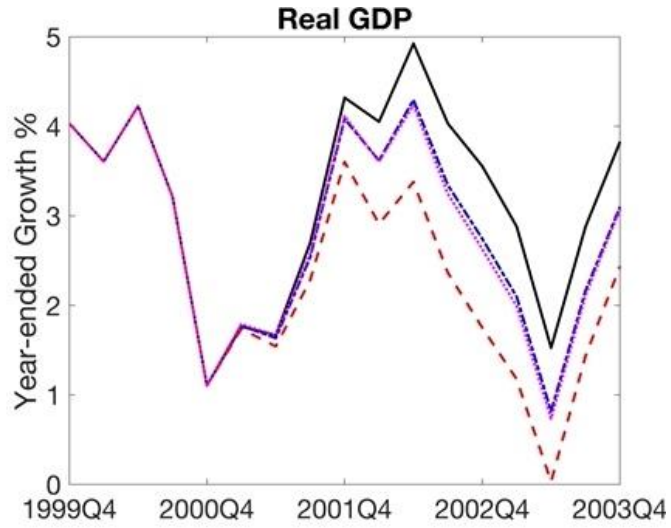
To minimise

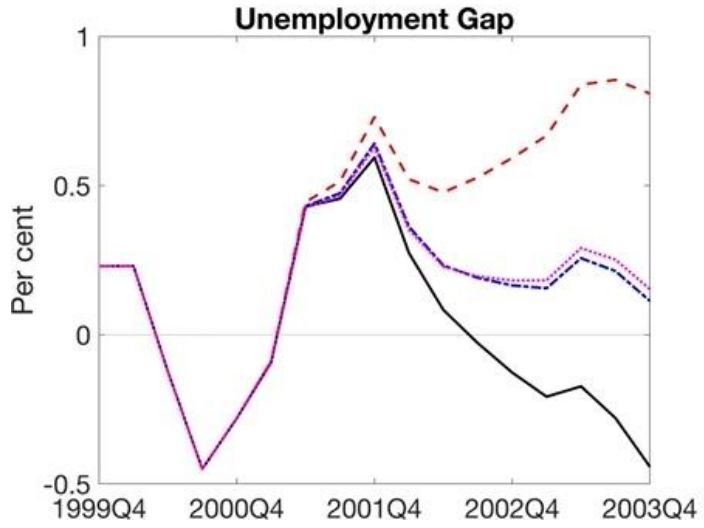
$$L_t = \lambda^\pi(\pi_t - 2.5)^2 + \lambda^u(u_t - u_t^*)^2 + \lambda^i(ncr_t - ncr_{t-1})^2$$

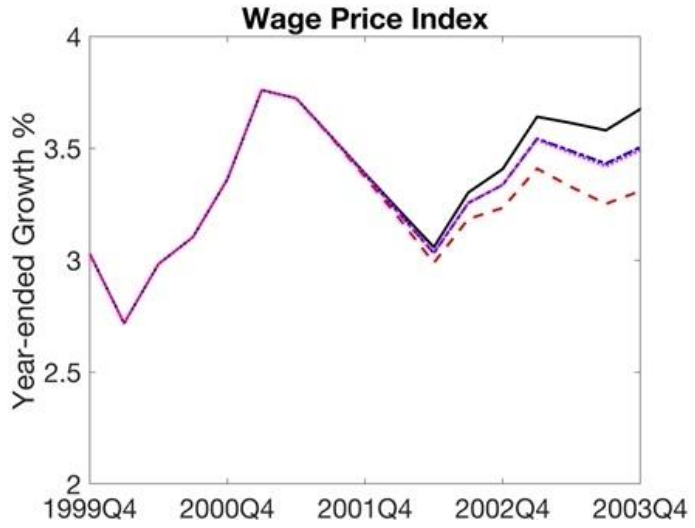
# Early 2000s downturn

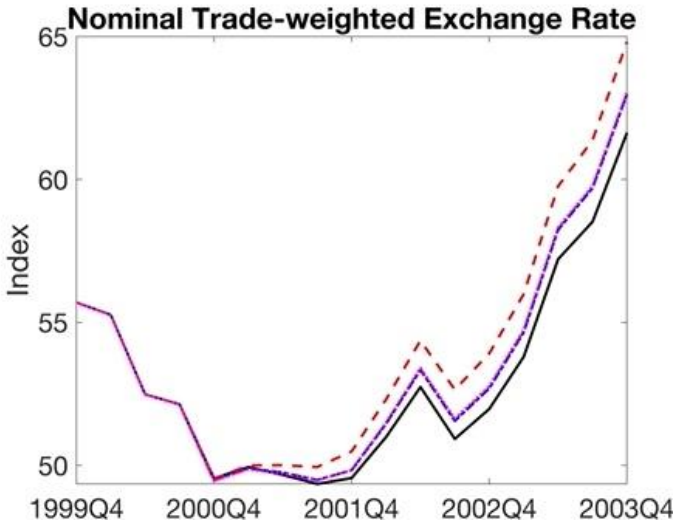


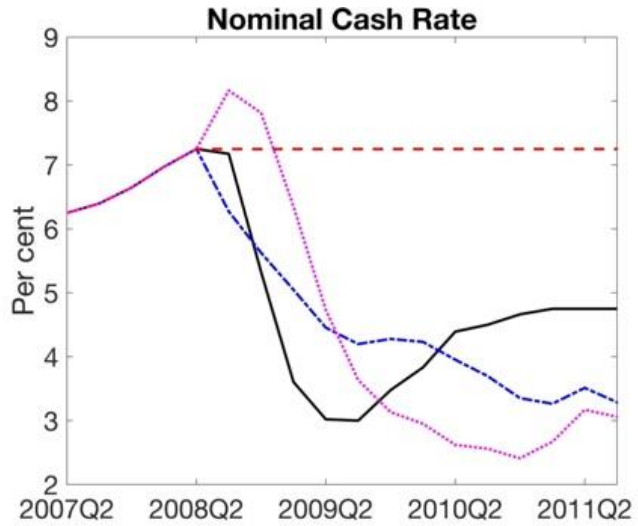



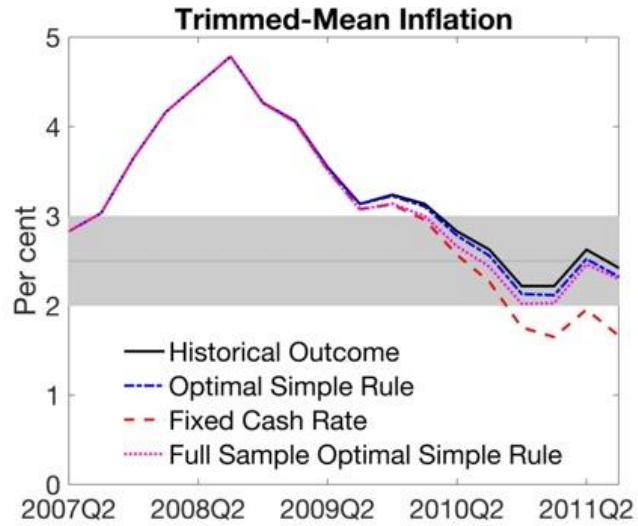



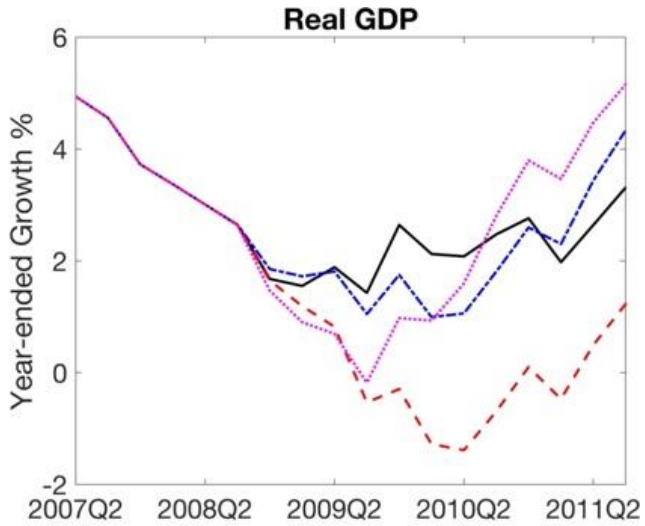



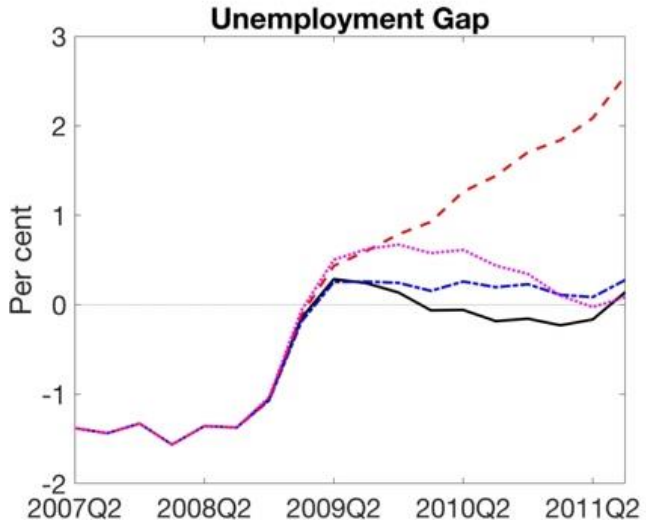



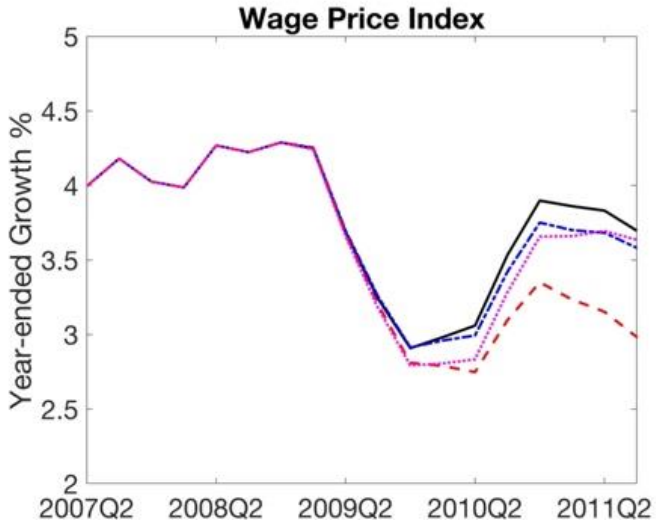
# GFC

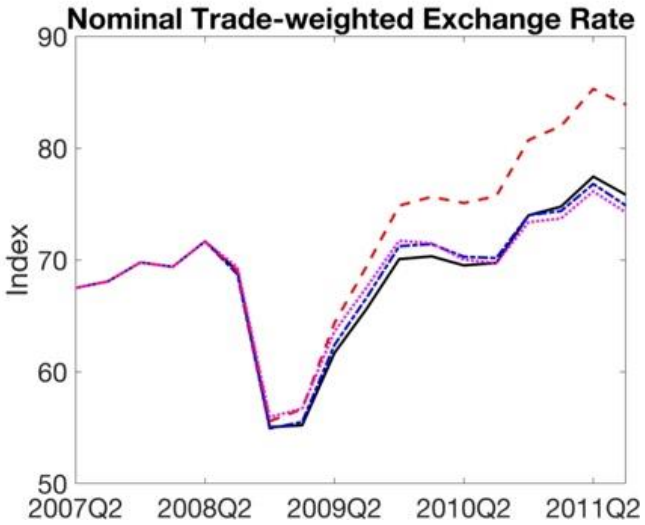

Nominal Cash Rate
Per cent
9
8
7
6
5
4
3
2
2007Q2
2008Q2
2009Q2
2010Q2
2011Q2


Trimmed-Mean Inflation
Per cent
5
4
3
2
1
0
Historical Outcome
Optimal Simple Rule
Fixed Cash Rate
Full Sample Optimal Simple Rule
2007Q2
2008Q2
2009Q2
2010Q2
2011Q2

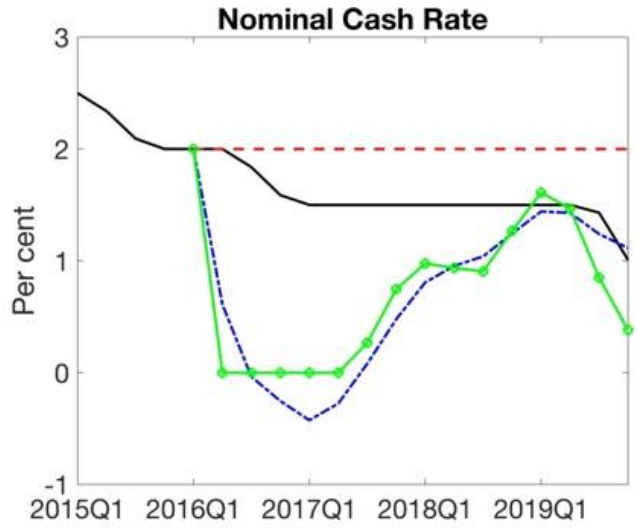

Real GDP
Year-ended Growth %
6
4
2
0
-2
2007Q2
2008Q2
2009Q2
2010Q2
2011Q2

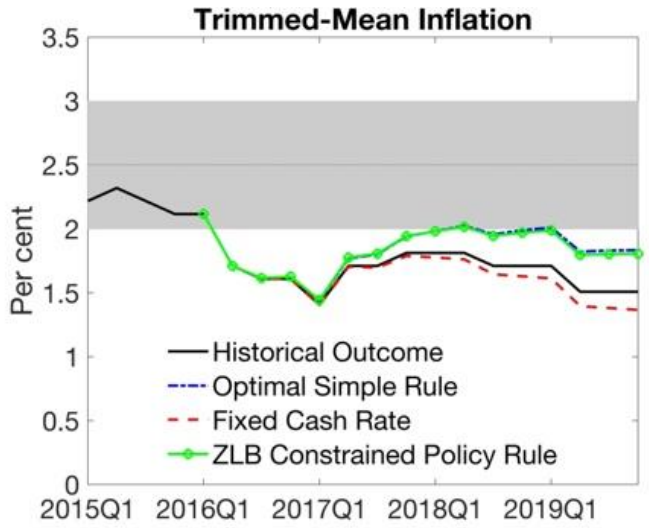

Unemployment Gap
Per cent
3
2
1
0
-1
-2
2007Q2
2008Q2
2009Q2
2010Q2
2011Q2

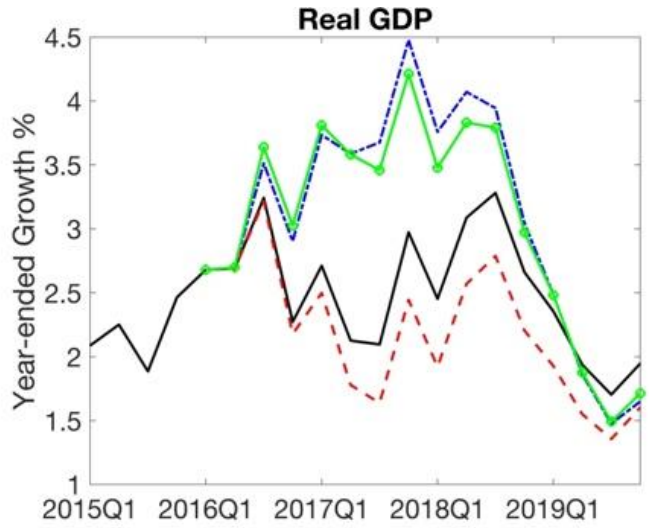

Wage Price Index
Year-ended Growth %
5
4.5
4
3.5
3
2.5
2
2007Q2
2008Q2
2009Q2
2010Q2
2011Q2

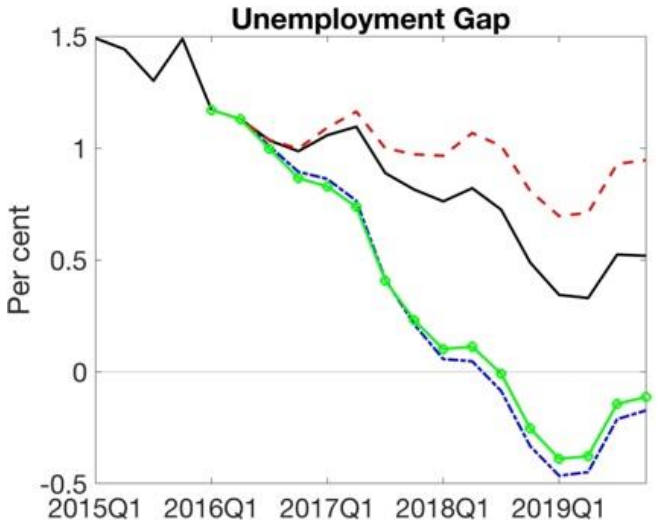

Nominal Trade-weighted Exchange Rate
Index
90
80
70
60
50
2007Q2
2008Q2
2009Q2
2010Q2
2011Q2

# 2016-2019

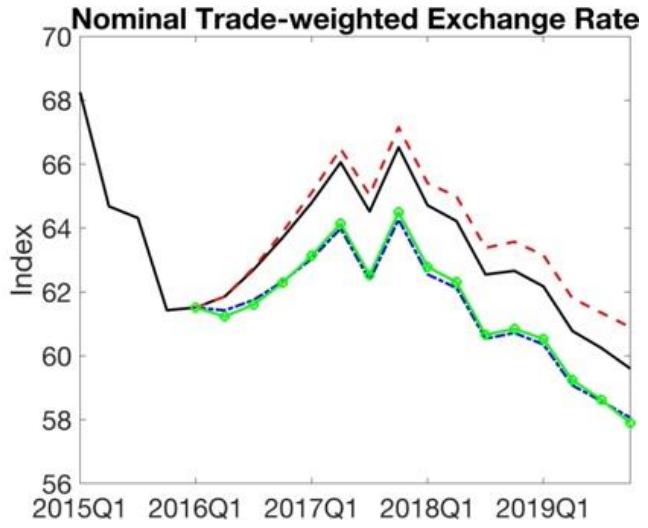

Nominal Cash Rate
Per cent
3
2
1
0
-1
2015Q1
2016Q1
2017Q1
2018Q1
2019Q1


Trimmed-Mean Inflation
Per cent
3.5
3
2.5
2
1.5
1
0.5
0
2015Q1
2016Q1
2017Q1
2018Q1
2019Q1
Historical Outcome
Optimal Simple Rule
Fixed Cash Rate
ZLB Constrained Policy Rule

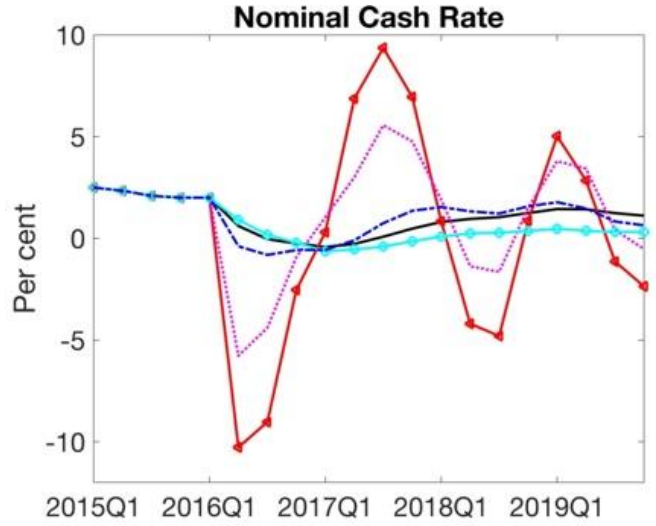

Real GDP
Year-ended Growth %
4.5
4
3.5
3
2.5
2
1.5
1
2015Q1
2016Q1
2017Q1
2018Q1
2019Q1

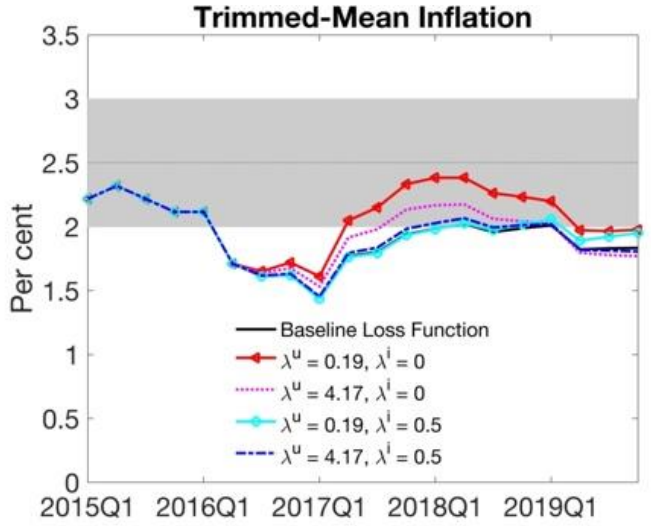

Unemployment Gap
Per cent
1.5
1
0.5
0
-0.5
2015Q1
2016Q1
2017Q1
2018Q1
2019Q1

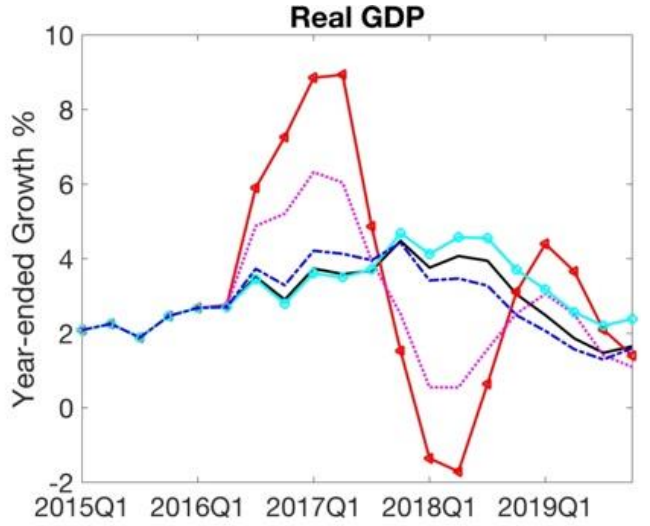

Wage Price Index
Year-ended Growth %
3
2.5
2
1.5
1
2015Q1
2016Q1
2017Q1
2018Q1
2019Q1

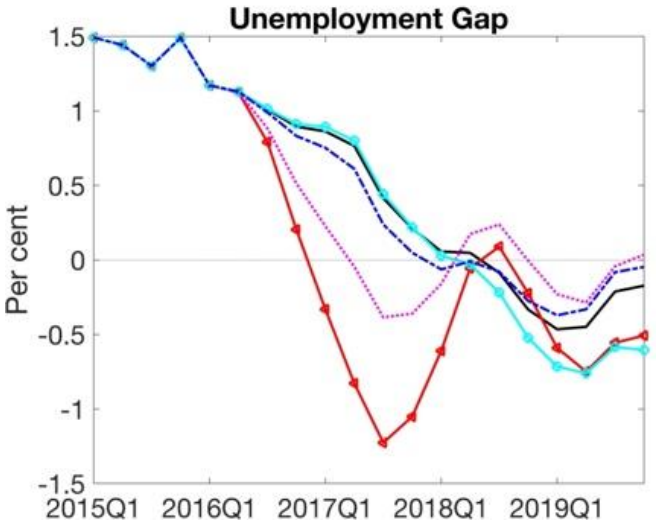

Nominal Trade-weighted Exchange Rate
Index
70
68
66
64
62
60
58
56
2015Q1
2016Q1
2017Q1
2018Q1
2019Q1

# Alternative loss functions

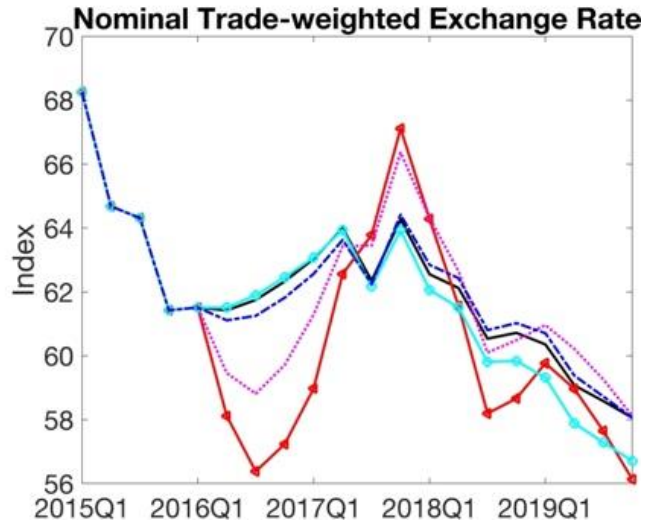


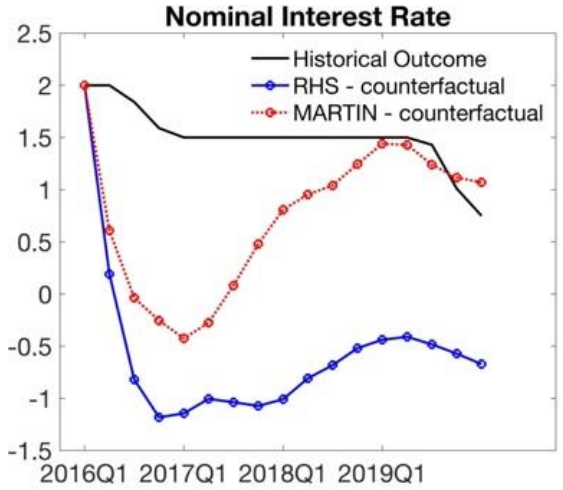



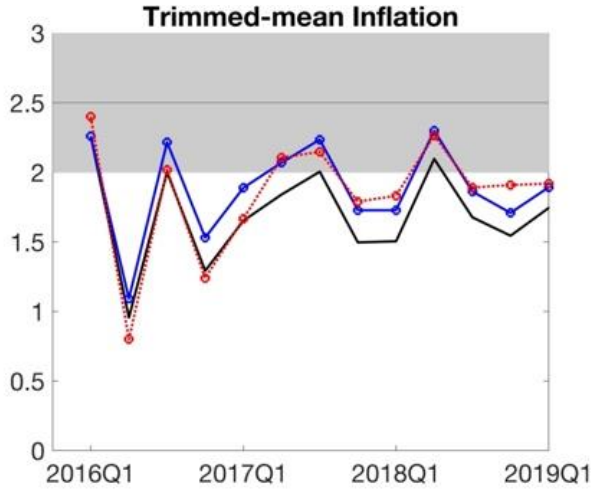



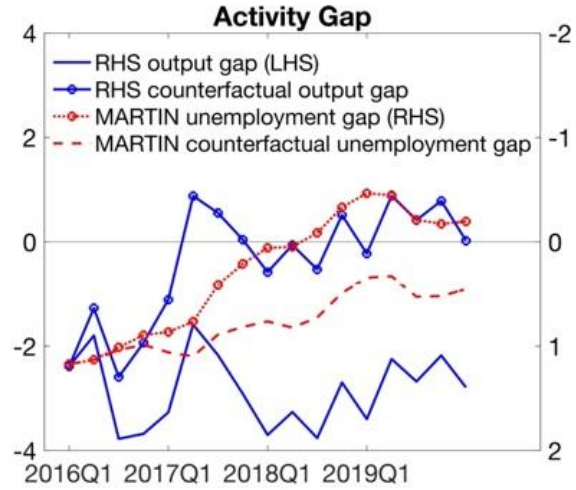


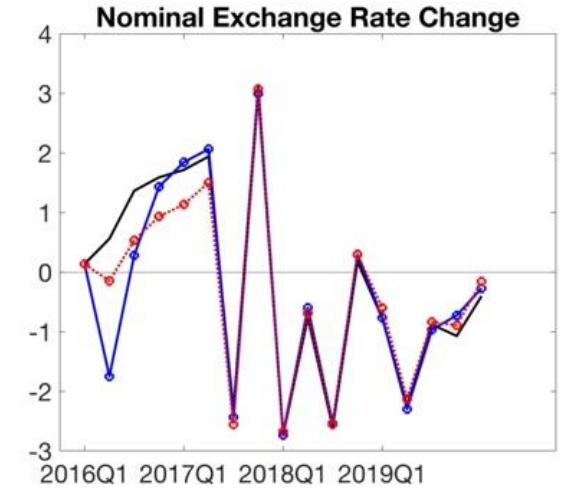


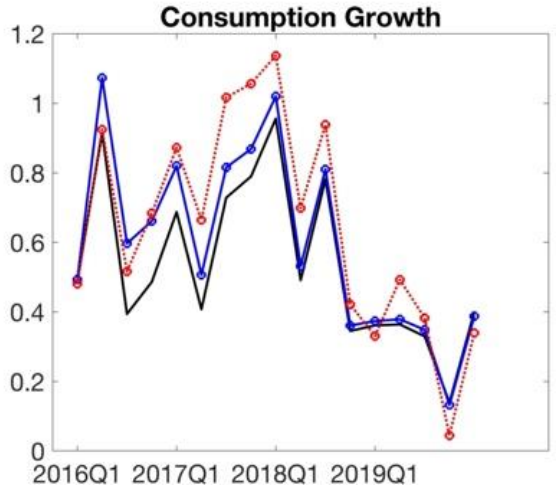
# Alternative Model

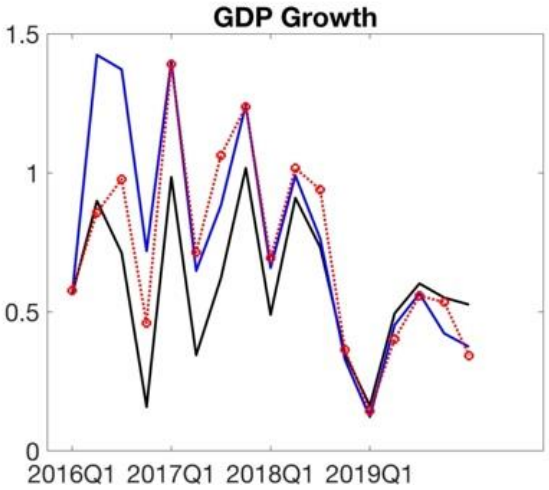


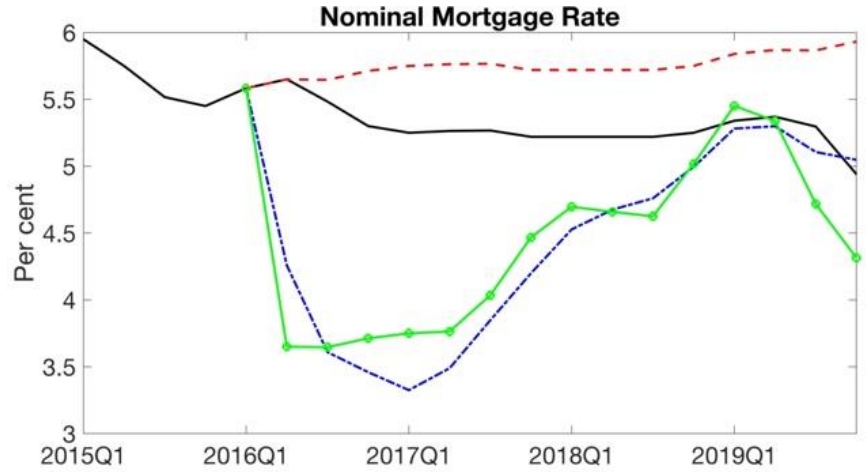



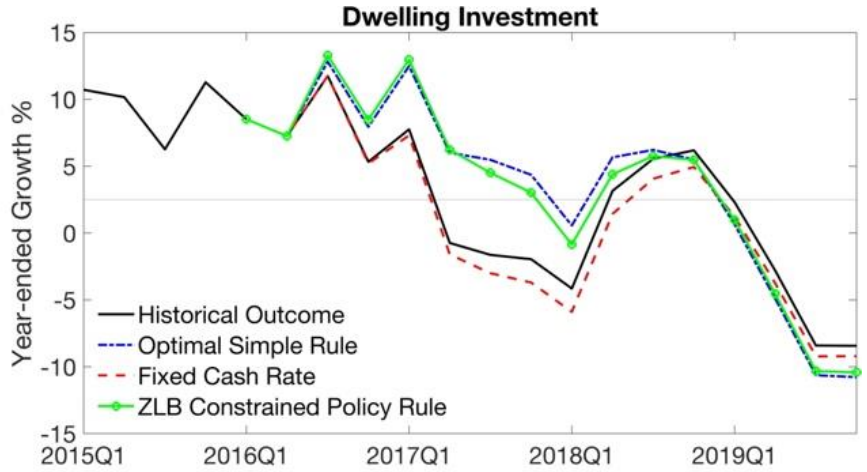
# Why did interest rates remain high?

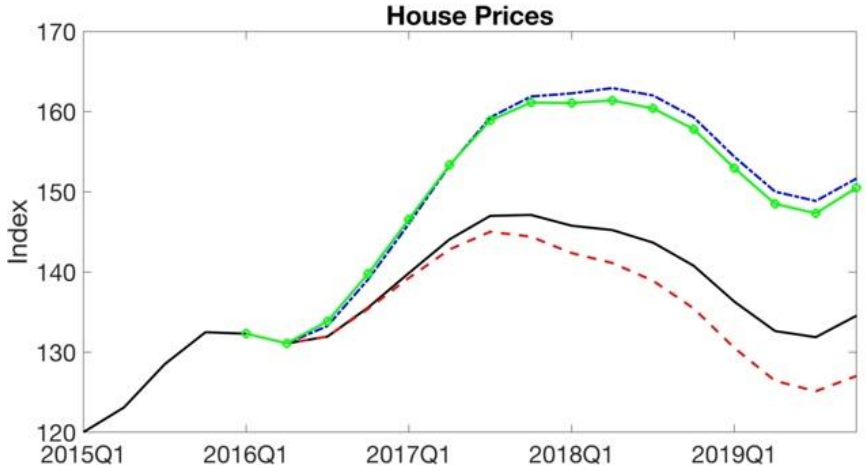
- Fiscal policy?
  - Not at ZLB
- Forecasting errors?
  - Forecasts errors were persistent, but still forecast inflation for bottom of the band.
- Concerns about confidence?
  - RBA research suggest this effect is small.
- Financial stability / Leaning against the wind!

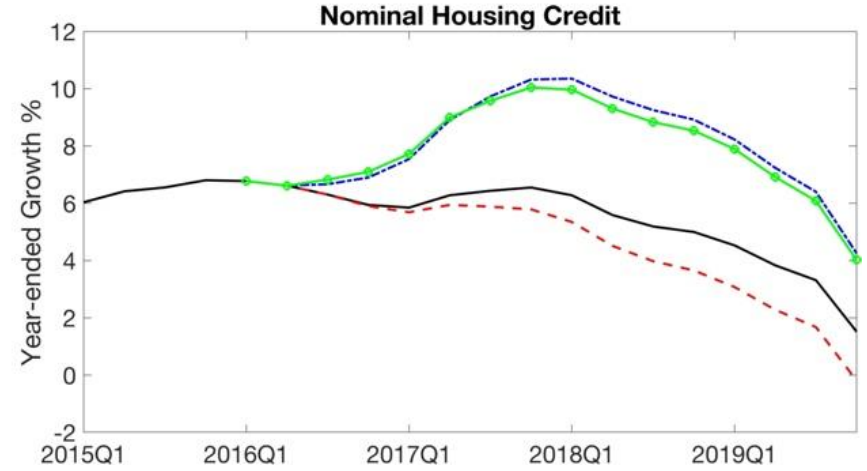
- *'We would like the economy to grow a bit more. If we were to try to achieve that through monetary policy that would encourage people to borrow more and it would probably put upward pressure on housing prices. At the moment I don't think those two things are in the national interest.'* - Governor Philip Lowe

# 2016-2019 Housing Market



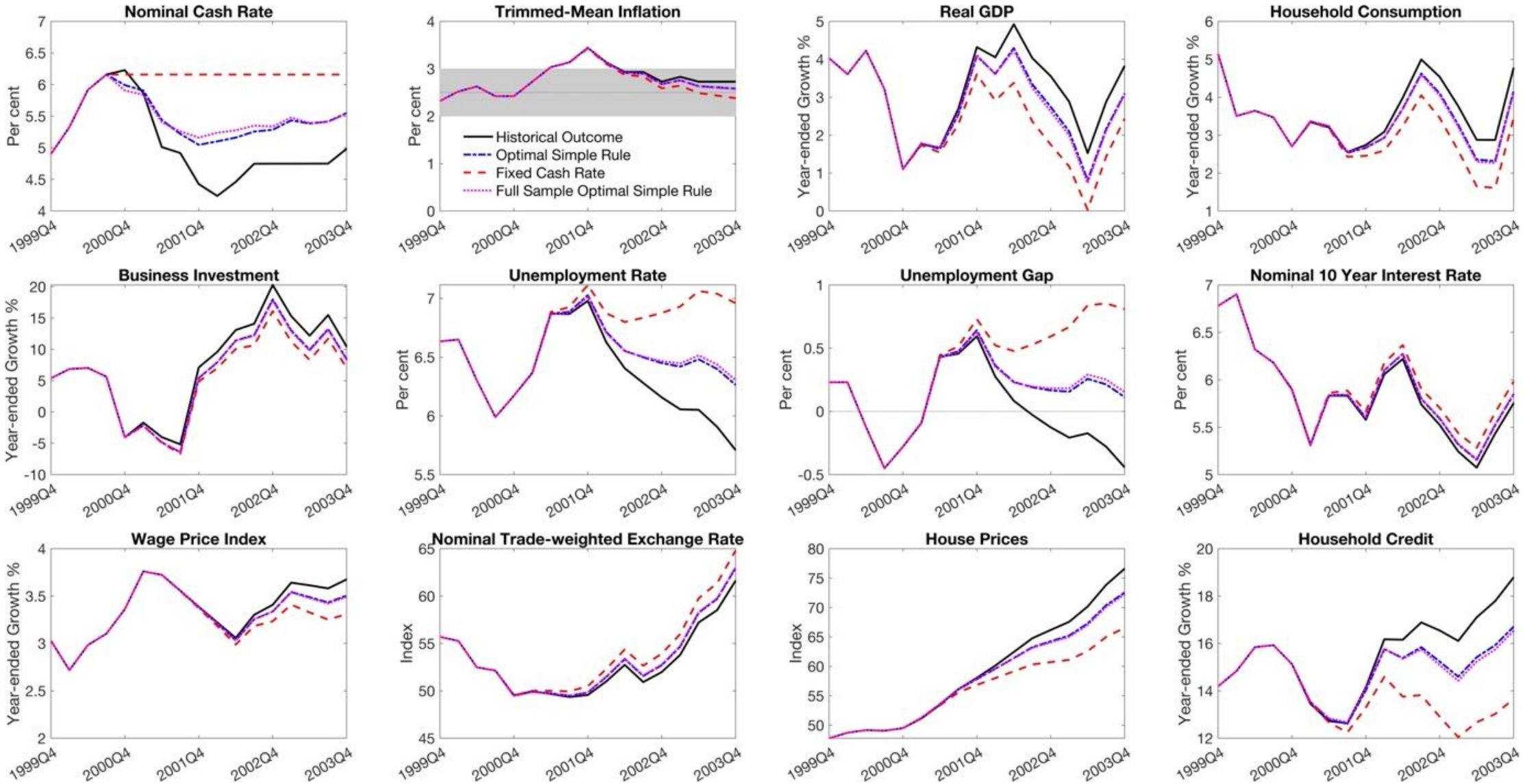



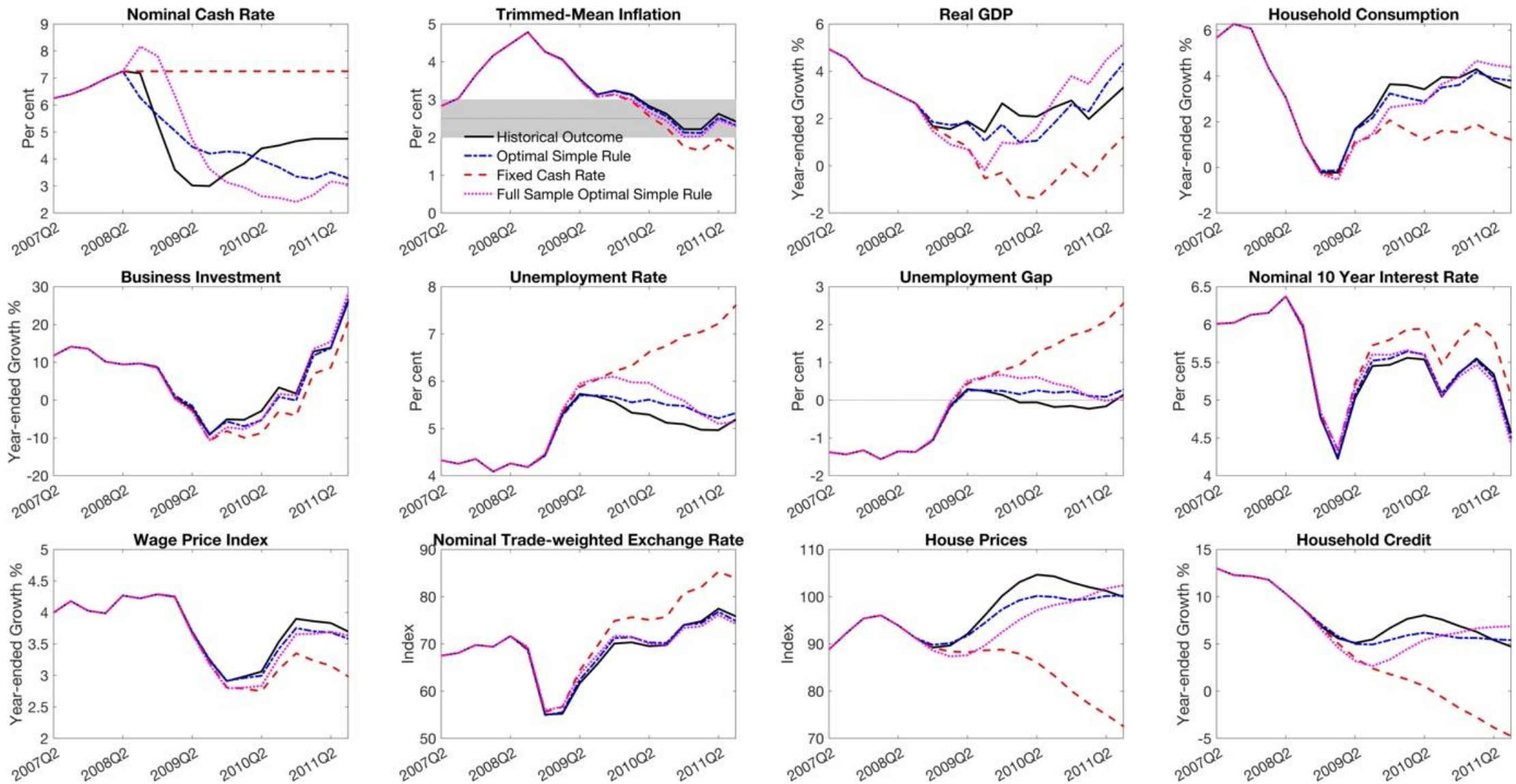



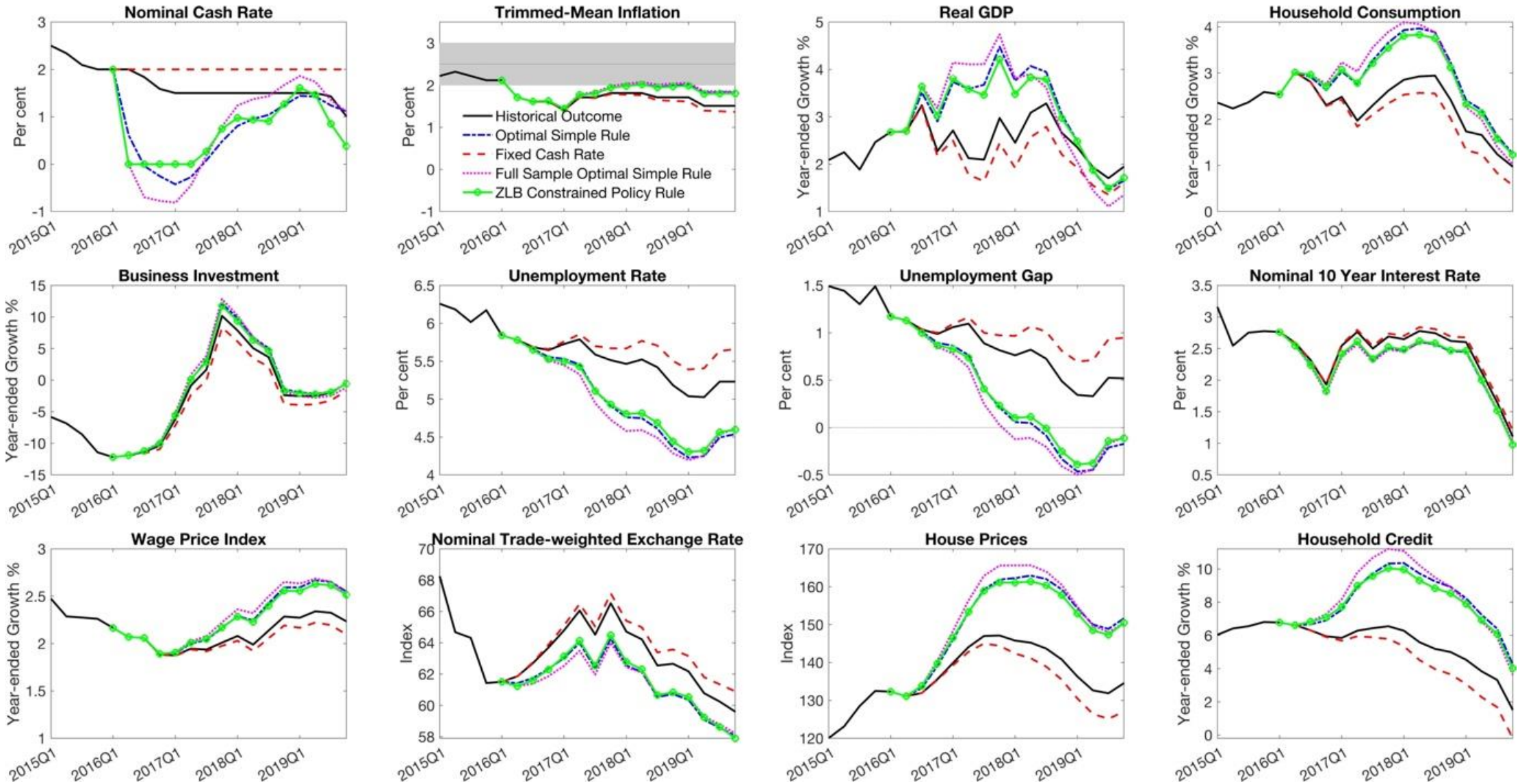
# Conclusion

- The RBA has generally set monetary policy well in the 21st Century.
- Actual performance outperforms simple policy rules in two of the three sample periods.
- But in 2016-2019 interest rates were consistently held too high, with significant effects on inflation and employment.

# Spares

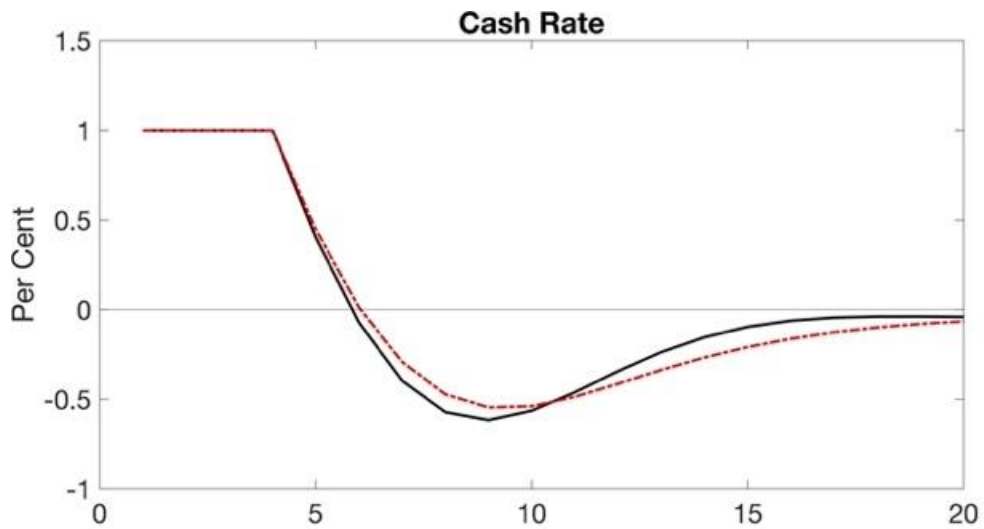

Nominal Cash Rate
Per cent
Trimmed-Mean Inflation
Per cent
Historical Outcome
Optimal Simple Rule
Fixed Cash Rate
Full Sample Optimal Simple Rule
Real GDP
Year-ended Growth %
Household Consumption
Year-ended Growth %
Business Investment
Year-ended Growth %
Unemployment Rate
Per cent
Unemployment Gap
Per cent
Nominal 10 Year Interest Rate
Per cent
Wage Price Index
Year-ended Growth %
Nominal Trade-weighted Exchange Rate
Index
House Prices
Index
Household Credit
Year-ended Growth %
1999Q4
2000Q4
2001Q4
2002Q4
2003Q4

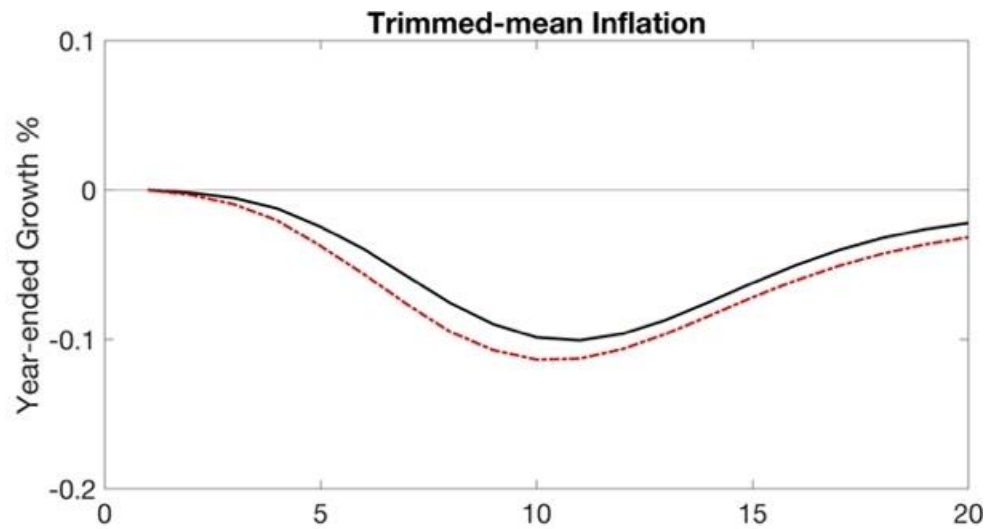

Nominal Cash Rate
Per cent
Trimmed-Mean Inflation
Per cent
Historical Outcome
Optimal Simple Rule
Fixed Cash Rate
Full Sample Optimal Simple Rule
Real GDP
Year-ended Growth %
Household Consumption
Year-ended Growth %
Business Investment
Year-ended Growth %
Unemployment Rate
Per cent
Unemployment Gap
Per cent
Nominal 10 Year Interest Rate
Per cent
Wage Price Index
Year-ended Growth %
Nominal Trade-weighted Exchange Rate
Index
House Prices
Index
Household Credit
Year-ended Growth %
2007Q2
2008Q2
2009Q2
2010Q2
2011Q2

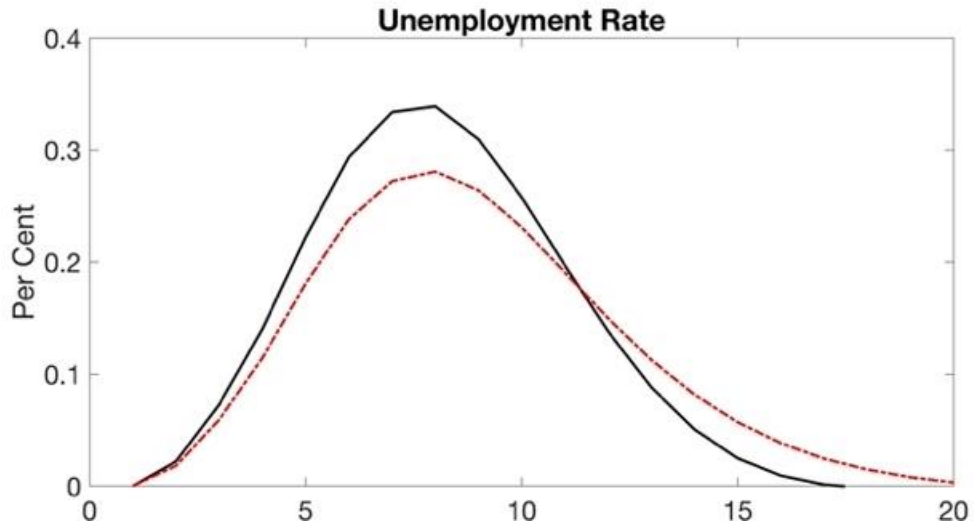

Nominal Cash Rate
Per cent
Trimmed-Mean Inflation
Per cent
Historical Outcome
Optimal Simple Rule
Fixed Cash Rate
Full Sample Optimal Simple Rule
ZLB Constrained Policy Rule
Real GDP
Year-ended Growth %
Household Consumption
Year-ended Growth %
Business Investment
Year-ended Growth %
Unemployment Rate
Per cent
Unemployment Gap
Per cent
Nominal 10 Year Interest Rate
Per cent
Wage Price Index
Year-ended Growth %
Nominal Trade-weighted Exchange Rate
Index
House Prices
Index
Household Credit
Year-ended Growth %
2015Q1
2016Q1
2017Q1
2018Q1
2019Q1

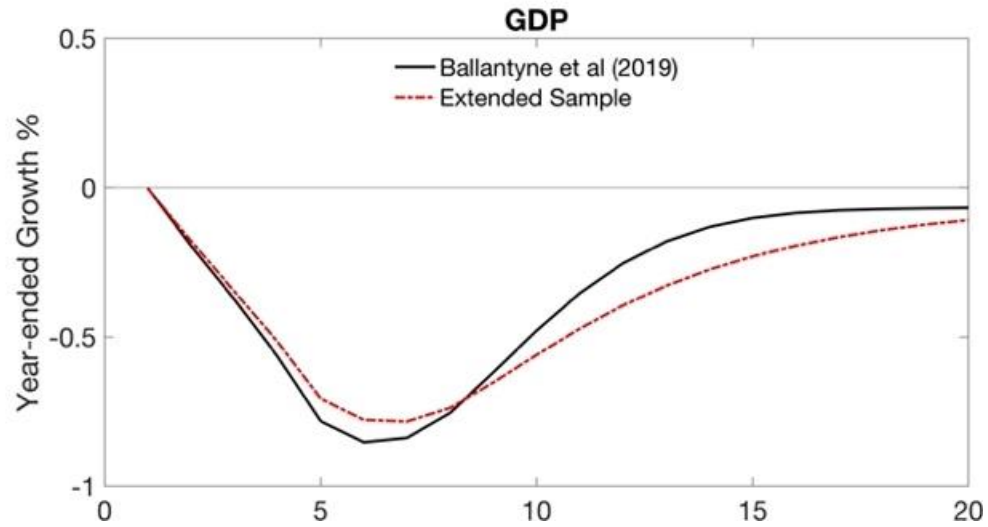
# Optimal Policy Rule Parameters

| Sample | Inflation Coefficient | Unemployment Gap Coefficient | Unemployment Change Coefficient | Interest Rate Smoothing Coefficient |
|---|---|---|---|---|
| **2000Q4-2003Q4** | 0.0 | 2.4 | 0.0 | 0.5 |
| **2008Q3-2011Q3** | 0.0 | 0.1 | 0.6 | 0.3 |
| **2016Q4-2019Q4** | 0.1 | 1.6 | 0.0 | 0.5 |
| **Full Sample (2000Q4-2019Q4)** | 0.1 | 2.1 | 0.0 | 0.4 |


Cash Rate
Per Cent
1.5
1
0.5
0
-0.5
-1
0
5
10
15
20


Trimmed-mean Inflation
Year-ended Growth %
0.1
0
-0.1
-0.2
0
5
10
15
20


Unemployment Rate
Per Cent
0.4
0.3
0.2
0.1
0
0
5
10
15
20


GDP
Ballantyne et al (2019)
Extended Sample
Year-ended Growth %
0.5
0
-0.5
-1
0
5
10
15
20