

# Forecasts and macro policy with a new macro-econometric model of Australia

Chris Murphy, Dinar Prihardini & Nicholas Ward

20 September 2013

# Outline

- **Independent macro-econometric model**
- **Short and long-term forecasts**
- **Optimal macro policy**

## Independent Economics

- **Formerly Econtech Pty Ltd, a specialist economic modelling practice, first established in 1994**
- **Assists clients in Australia and internationally through the development of models for:**
  - forecasting
  - macro policy analysis
  - tax policy analysis
  - industry policy analysis
- **Government clients in Australia, Singapore and Malaysia**

# The Independent Macro-econometric Model

- **New forecasting and policy model**
- **Combines:**
  - a Keynesian (demand-driven) short run
  - a neoclassical (supply-driven) long run
  - forward-looking behaviour in financial markets
- **Distinguishes six industries:**

– Agriculture	- Government Services
– Mining	- Private Services
– Manufacturing	- Housing Services
- **Simulated using either “standard” or “optimal” macro policy**

## Market clearing behaviour

- Wages gradually adjust to clear the **labour market** so that unemployment is at the NAIRU
- Prices gradually adjust to clear the **goods market**
- Activity demand driven in short term and supply driven in the long term
- For **physical assets**, investment adjusts until the actual rate of return from investment matches the required rate that is determined globally
- Expectations theory of the term structure determines the **long-term bond rate**
- Uncovered interest rate parity determines the **nominal exchange rate**

# Short and long-term forecasts

## Short-term forecasts

- The following table compares our short-term forecasts with the Treasury's published in the August Economic Statement.
- Treasury's forecasts were published before the June quarter national accounts; ours were published afterwards.
- For 2013/14, both sets of forecasts agree that economic growth will be below normal, sending unemployment higher.
- For 2014/15, Treasury forecast a normal rate of growth, whereas we forecast the beginning of an economic recovery.
- In our forecast, households respond to low interest rates by lifting housing investment and growth in consumption.
- Hence, we expect unemployment to begin to fall from 2014/15.

## Short-term forecasts

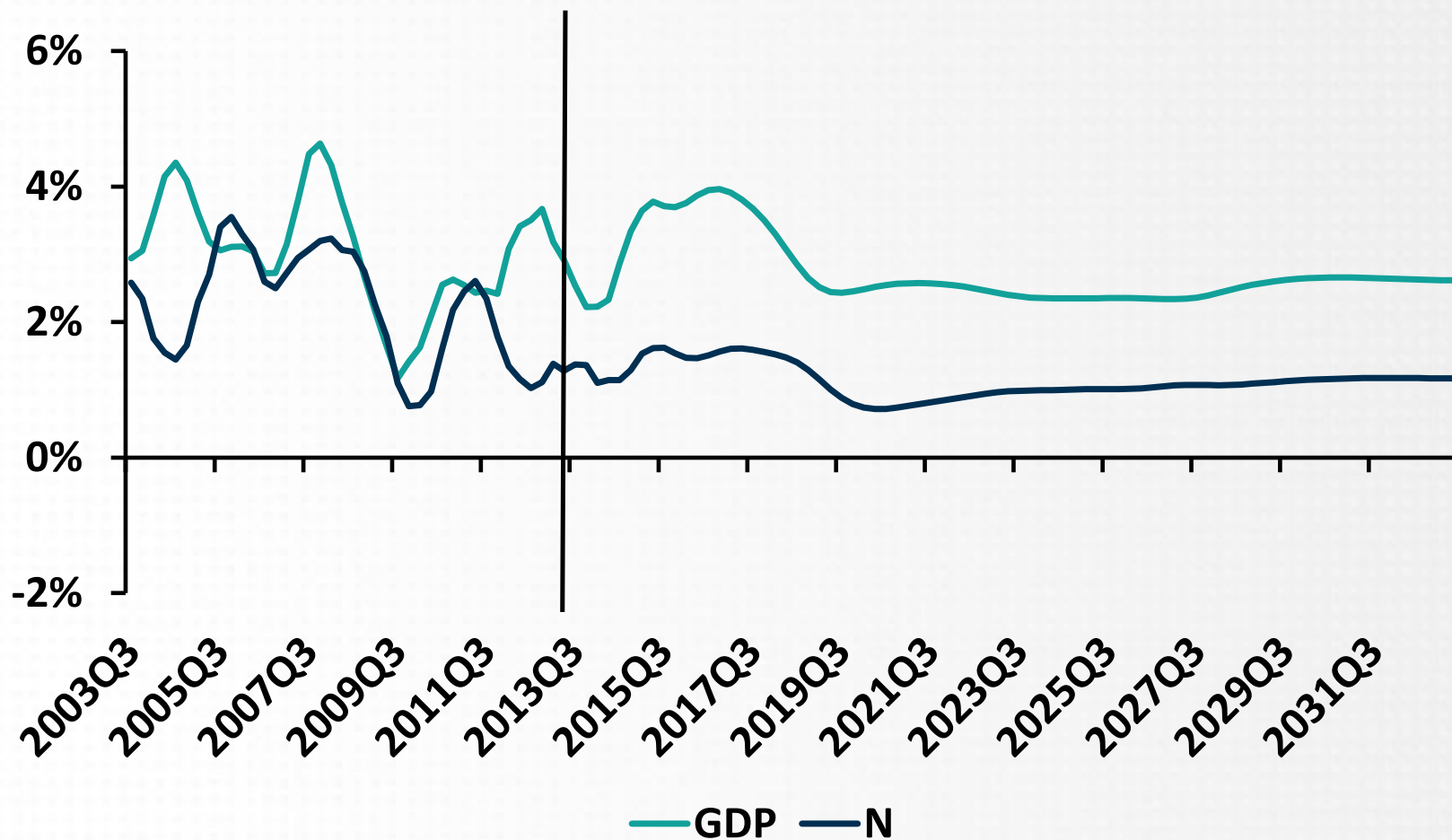
	Independent		Treasury	
	13/14	14/15	13/14	14/15
Consumption	2.50	3.25	2.50	3.00
Housing	5.50	10.00	5.00	5.50
Private Business Investment	-2.00	0.25	1.50	-0.50
Gross National Expenditure	1.50	2.75	2.00	2.00
Exports	6.75	7.75	6.50	7.00
Imports	3.25	3.50	4.00	3.00
GDP	2.25	3.75	2.50	3.00
TOT	-5.75	-5.00	-5.75	-3.75
Unemployment rate	5.75	5.50	6.25	6.25
Inflation	1.75	2.50	2.50	2.00



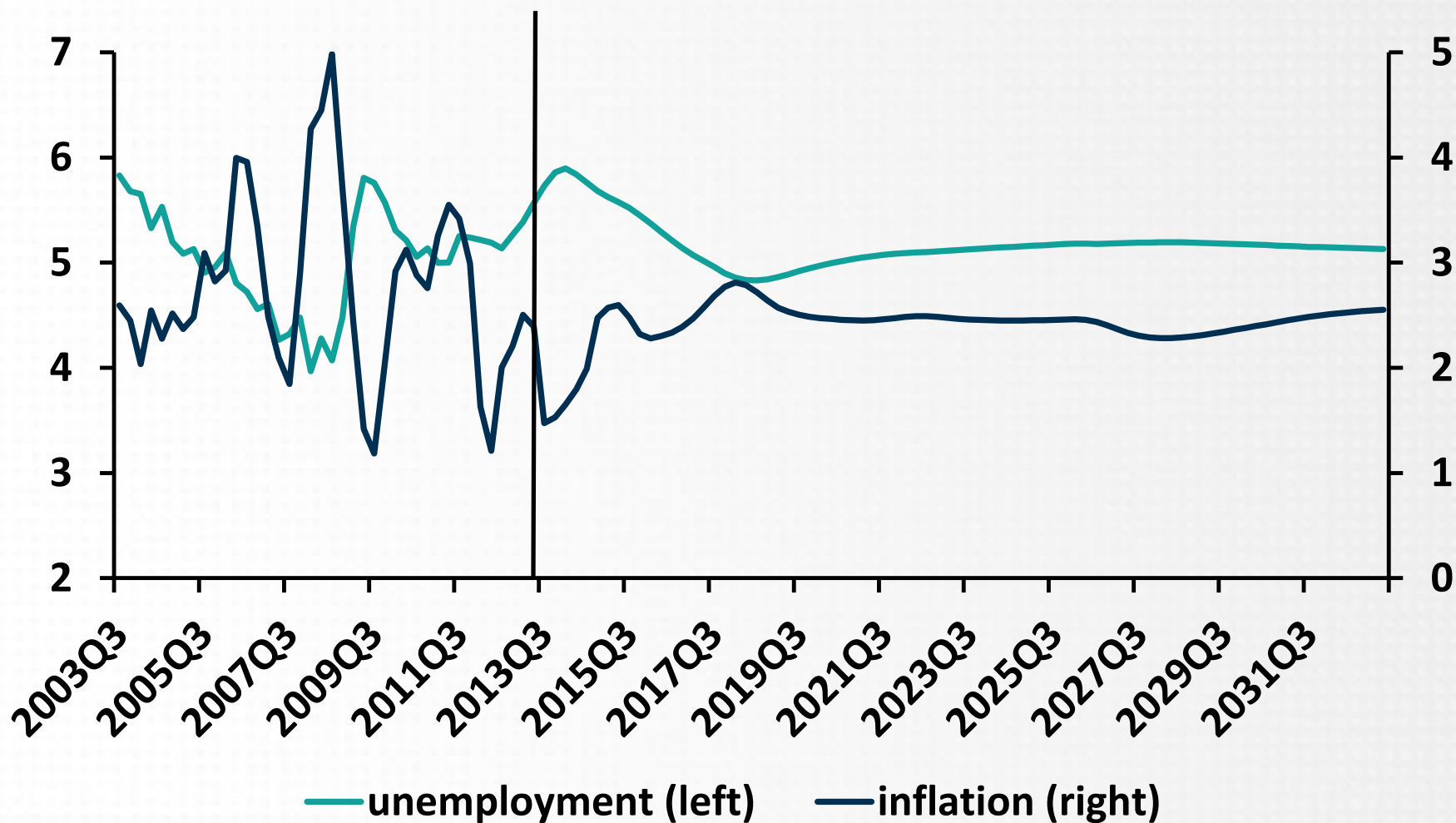
## Long-term forecasts

- In an economic recovery extending for three years from 2014/15, annual GDP growth is close to 4%, while unemployment gradually falls to near 5 per cent.
- Monetary policy moves back to neutral near the end of the recovery phase, with the 90-day bill rate rising to near 5% p.a.
- After the weakness of recent years, manufacturing is expected to share in the recovery, as a supplier to housing and a beneficiary of the fall in the AUD to below parity with the USD.
- The recovery phase will be driven by consumption and housing.
- Mining falls will cancel out other gains in business investment.
- In the long-term, population ageing will bring the normal rate of economic growth down from 3 to 2.5 per cent.

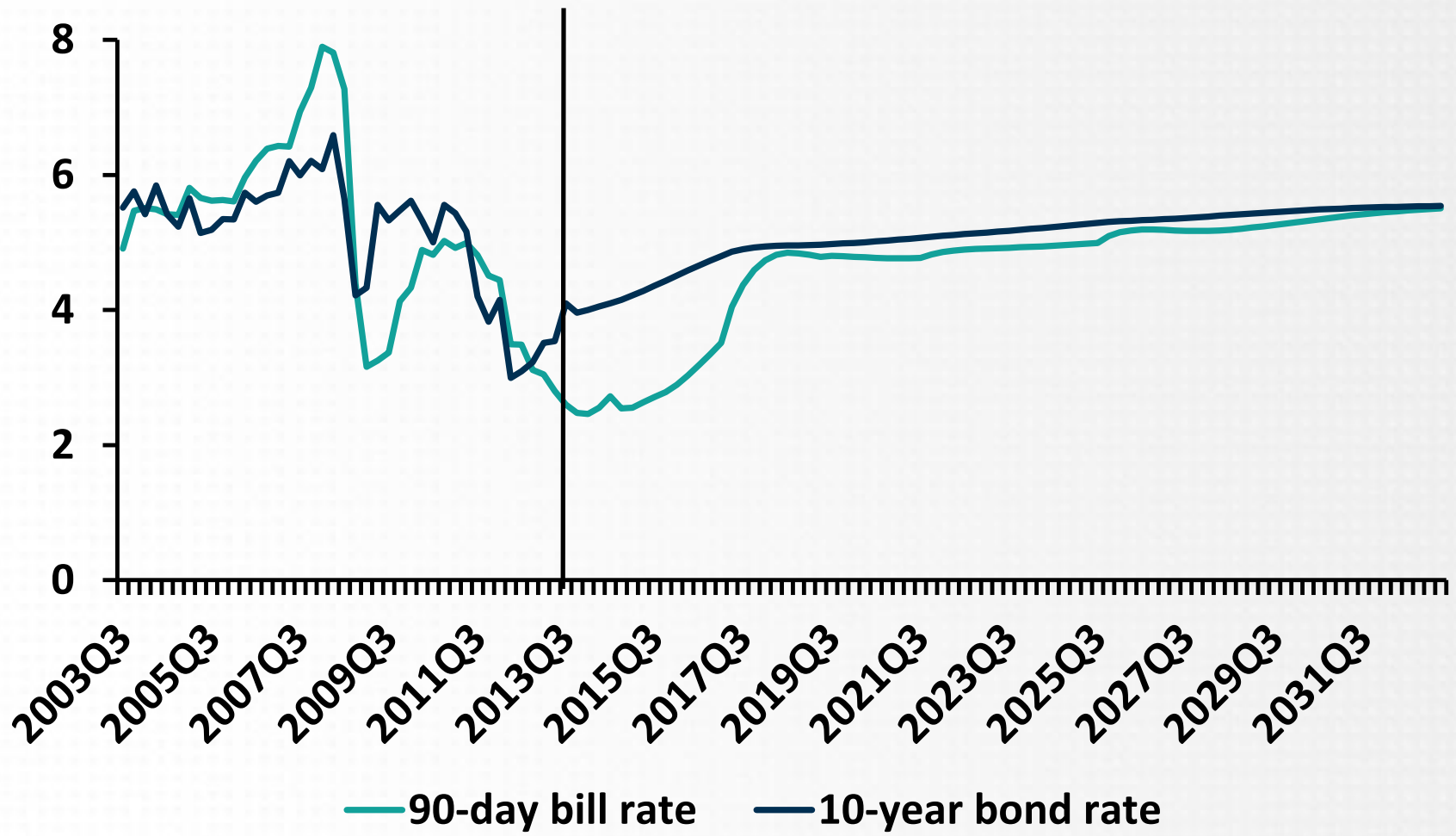
## GDP and employment (% growth, rolling years)



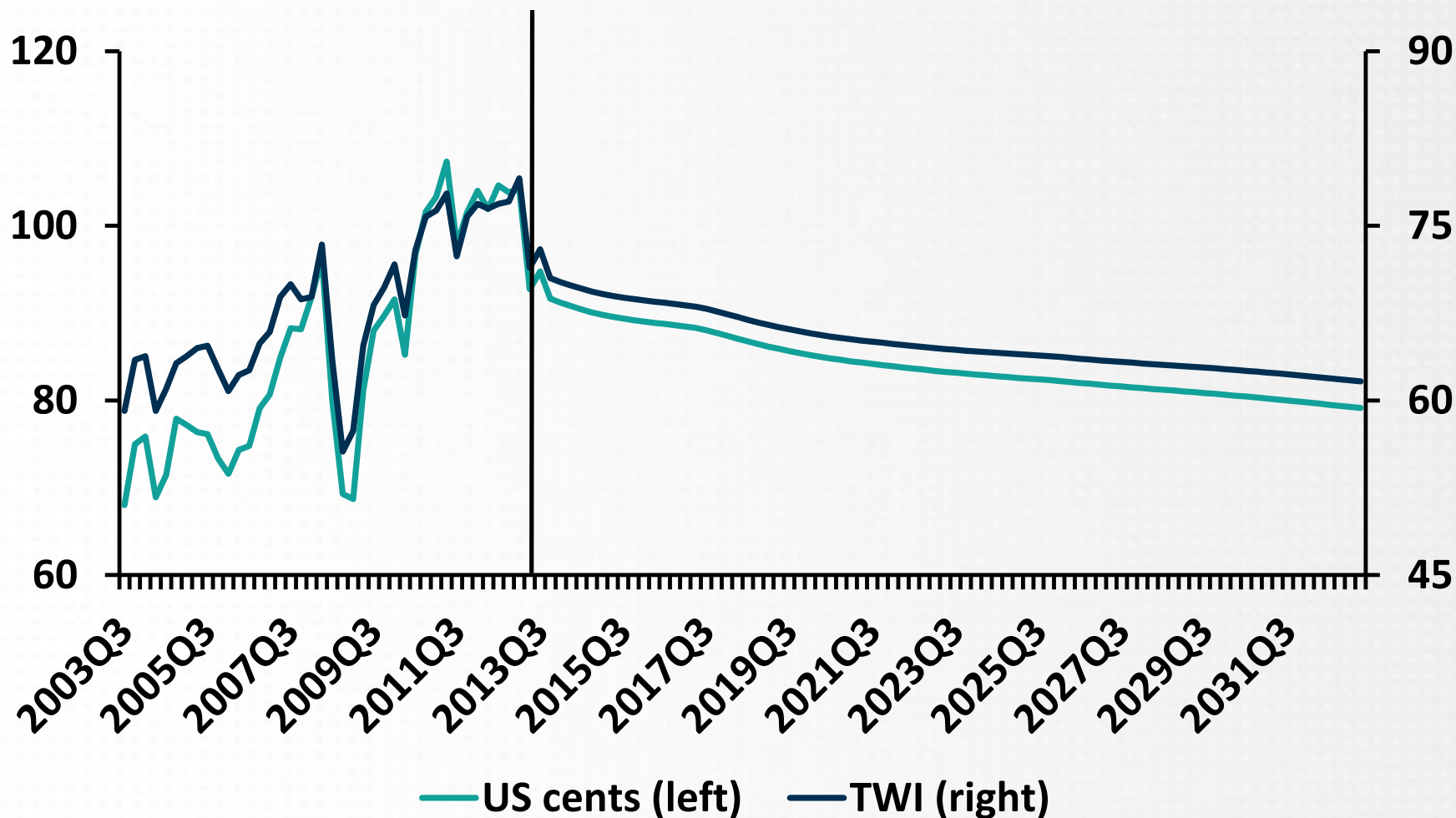
## Unemployment rate and inflation (%)



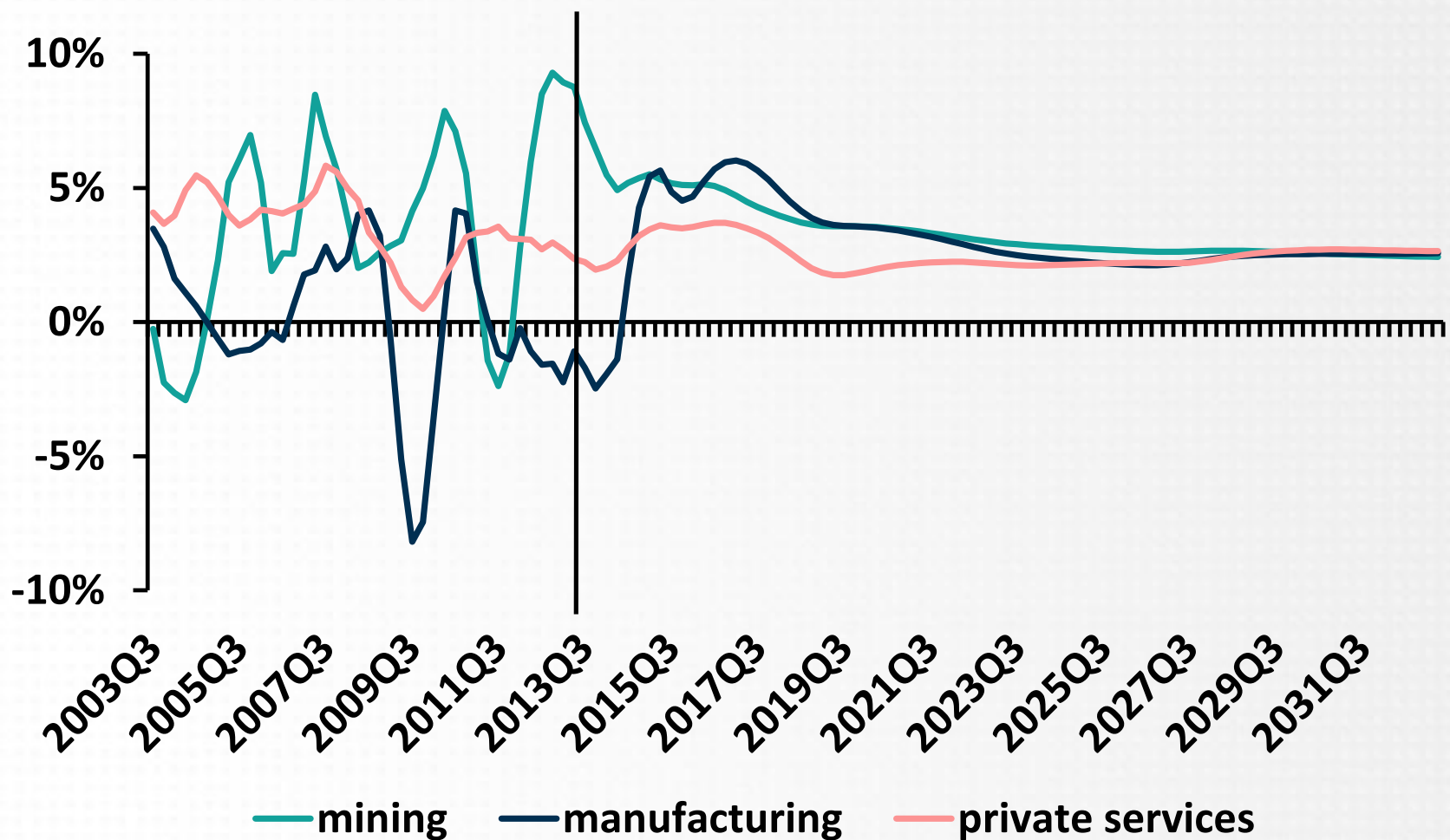
## Interest rates (% p.a.)



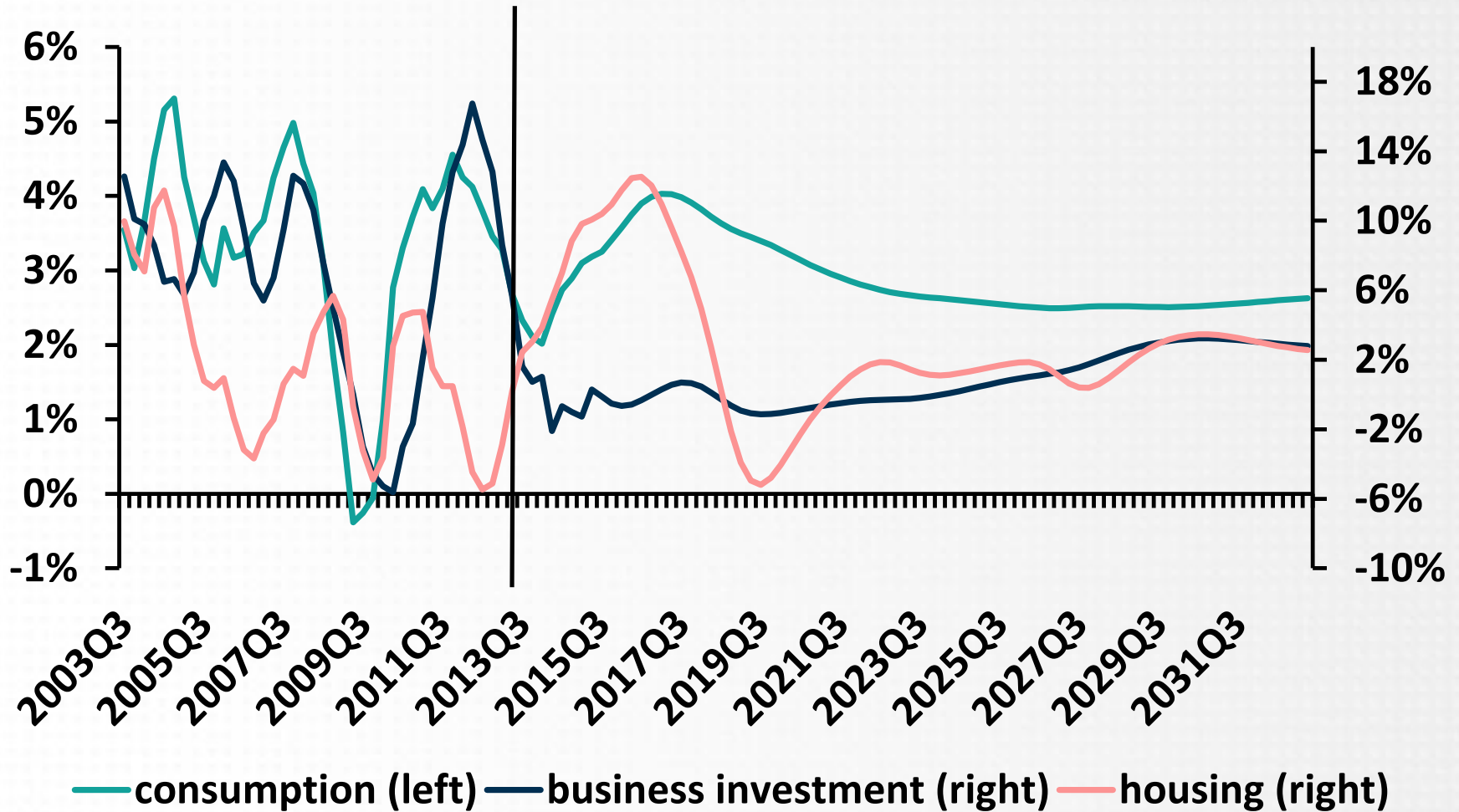
## Exchange rates (US cents/AUD and May 1970=100)



## GDP by industry (% growth, rolling years)



## GDP by expenditure (% growth, rolling years)



# Optimal Macro Policy



## Macro Policy

- Monetary policy is captured in the 90-day bill rate (RS); fiscal policy in the average rate of personal income tax (POLLAB)
- Two alternative policy approaches are available
- Under the **standard approach**, RS and POLLAB follow simple policy rules, based on inflation and deficit targeting respectively
- Under the **optimal approach**, the paths of RS and POLLAB are optimised to minimise the social losses from inflation and unemployment departing from their targets
- The formal details of the optimal approach are set out in the next slide

## Optimal control problem

*Choose policy instrument path:*

**RS(t) and POLLAB(t) for t=1,...,60 (quarters)**

*to minimise social loss L:*

$$L = \sum [1/(1+\delta)^t] \cdot$$

$$\{\alpha_1 \cdot [100 \cdot (\text{PCPI}(t)/\text{PCPI}(t-4) - 1) - \gamma_1]^2 + \alpha_2 \cdot [\text{URT}(t) - \text{NAIRU}(t)]^2 + \alpha_3 \cdot [\Delta \text{RS}(t)]^2 + \alpha_4 \cdot [\Delta \text{POLLAB}(t) \cdot 100]^2 + \alpha_5 \cdot [\Delta(100 \text{ PUBLI}(t) / \text{GDPAZ})]^2\}$$

for t=1,...,80 (quarters)

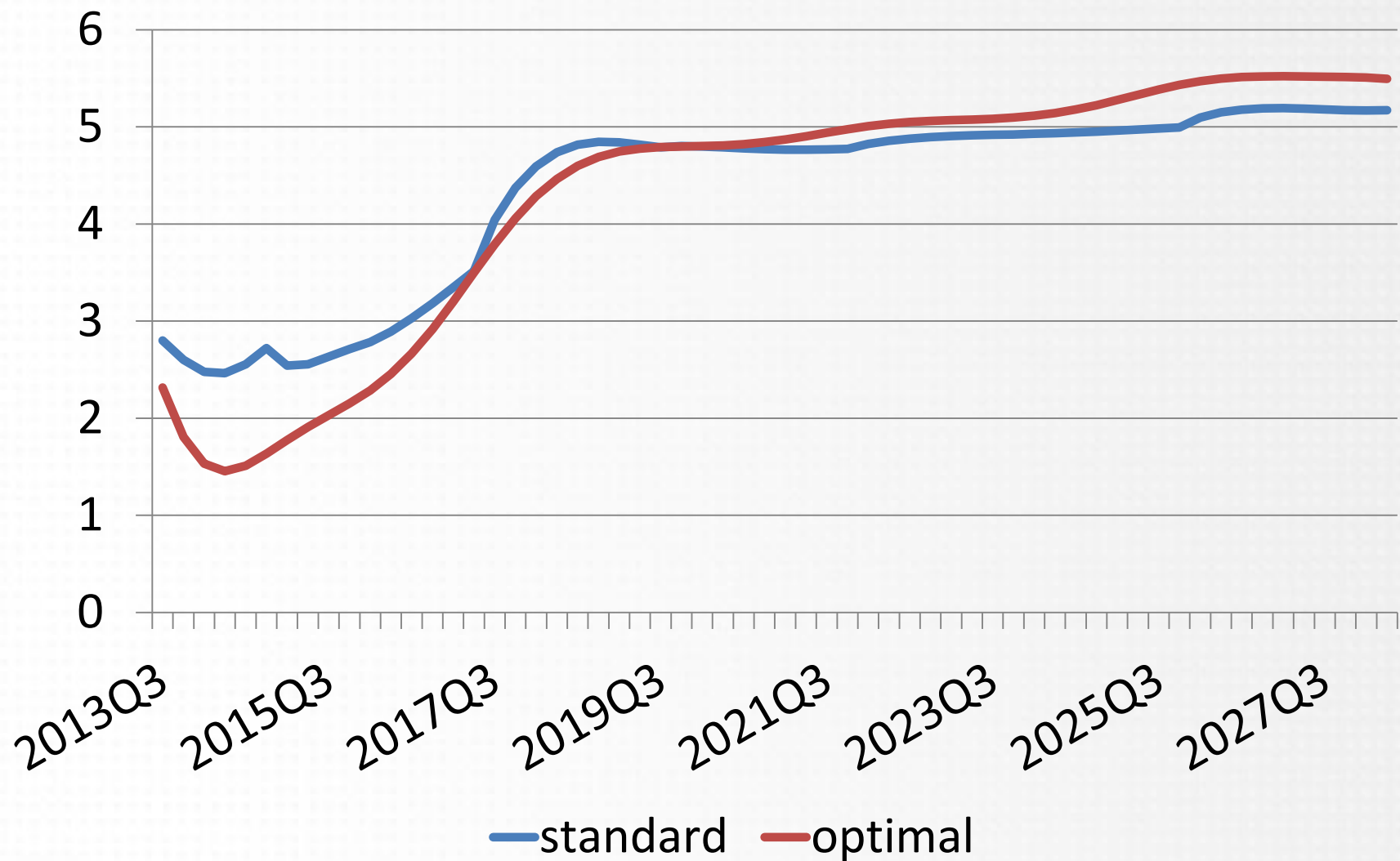
*subject to:*

**equations and model inputs for the Independent Macroeconometric model**

## Current policy stance

- The standard and optimal projections for monetary and fiscal policy are broadly similar, as shown in the following two charts.
- This indicates that the current expansionary stances for monetary and fiscal policy are broadly appropriate.
- This is unsurprising as inflation is below the RBA target of 2.5% p.a. and unemployment is above the NAIRU, estimated at 5.2 per cent.
- However, the charts also show that it would be optimal to slightly vary the current policy mix, to make monetary policy more loose and fiscal policy less loose.

## Interest rate projection – standard vs. optimal (%p.a.)



## Income tax rate projection – standard vs. optimal (%p.a.)

