2020 Inflation Review

Technical workshop

13 August 2020

Jonathan Seymour, Assistant Director
Robyn Pickering, Director
Warwick Anderson, General Manager, Networks Finance & Reporting

aer.gov.au

Workshop purpose

- Opportunity to model a range of scenarios presented in stakeholder submissions on the treatment of inflation in the regulatory framework.
- Focus discussions on:
  - Outcomes of scenario
  - Impacts on consumers, NSPs and investors
  - Transitional matters
  - Rule change requirements.
- Workshop in no way pre-empts the AER's draft position. This will be released on 30 September.

Agenda

- Process for change
- Modelling of alternatives
  - Base assumptions
  - Estimation approaches (model change)
  - Alternate targets (framework change)
- Questions and issues

Model change or Rule change

- Change to estimation method requires change to PTRM.

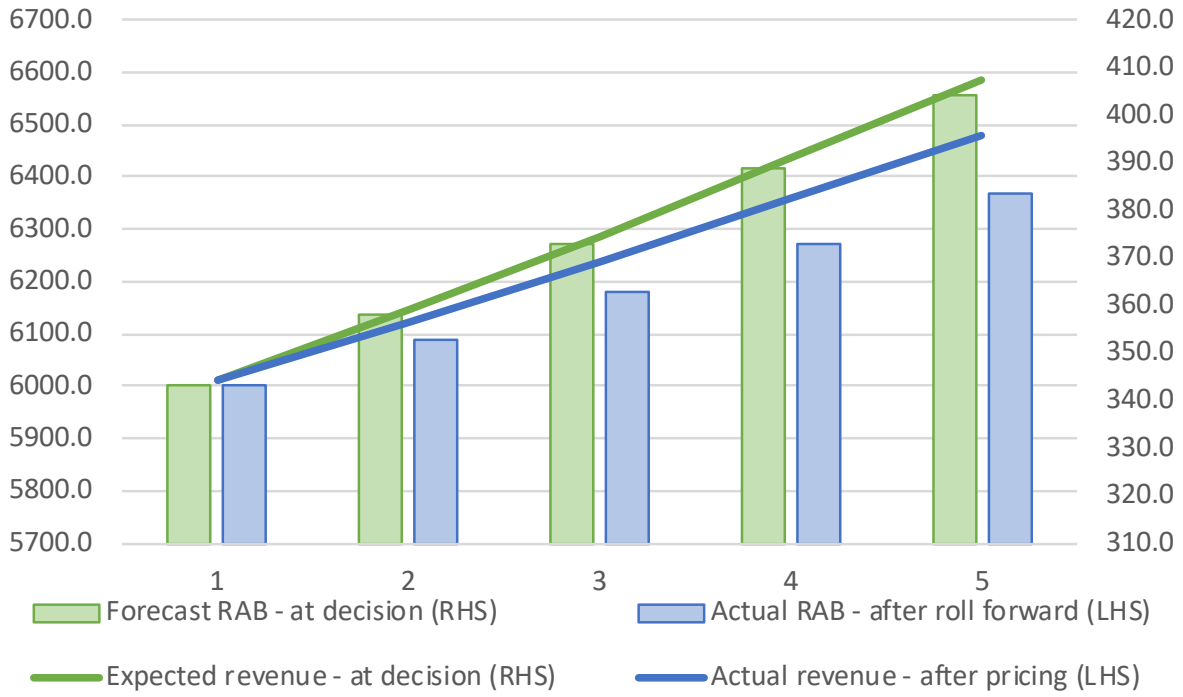
- Framework change (change of target) requires change to NER (and possibly NGR).
  - Amount of rules requiring change depends on the change and how it is applied.

Base scenario

- Current approach to RFM, PTRM and pricing
- PTRM:
  - Nominal rate of return applied to RAB indexed for expected inflation
  - **Expected inflation** of RAB removed from depreciation
  - Real expected rate of return (nominal less expected inflation) drives revenues.
- RFM:
  - Updates the RAB for actual capex and **actual inflation**.
  - Closing RAB forms the base for revenues in PTRM.
- Pricing:
  - Applies CPI-X in each year except first
  - i.e. Real expected revenue updated for actual inflation.

Current approach

- If expected inflation 2.25% and actual inflation was 1.5%



Alternative approaches modelled

- Estimation methods:
  - 5 year estimate (2 years SMP + mid-point)
  - Glide path (linear from year 2 to year 6)
  - Glide path + 5 year (2y SMP, glide to 2.5 at y5)
  - Market estimate (BBIR/ZCIR)
- Framework/target:
  - Hybrid target (nominal RoD, real RoE):
    - Weighted CPI in Pricing and RFM
  - Nominal target
    - Annual update/true-up (no expectation)

Assumptions

- Opening RAB = $6 billion
- Capex to offset depreciation (constant $real RAB)
- No Opex
- Tax lives = RAB lives
- Return on Debt = 4.30% all years
- Return on Equity = 5.00%
- Return on Capital = 4.58% (60% gearing)

Estimation methods

- Below shows the outcomes of applying different RBA-based methods to estimate expected inflation.
- 10y inflation swaps and 5yr glide both around 1.80%

Current AER estimation approach			
Year	Estimate	Source	Outcome
1	1.00%	RBA SMP	2.25%
2	1.50%	RBA SMP	
3	2.50%	RBA mid-band	
4	2.50%	RBA mid-band	
5	2.50%	RBA mid-band	
6	2.50%	RBA mid-band	
7	2.50%	RBA mid-band	
8	2.50%	RBA mid-band	
9	2.50%	RBA mid-band	
10	2.50%	RBA mid-band	

Ex-ante rate of return = 2.28%

5 year RBA approach			
Year	Estimate	Source	Outcome
1	1.00%	RBA SMP	2.00%
2	1.50%	RBA SMP	
3	2.50%	RBA mid-band	
4	2.50%	RBA mid-band	
5	2.50%	RBA mid-band	

Ex-ante rate of return = 2.53%

Linear glide path (2.5 @y6)			
Year	Estimate	Source	Outcome
1	1.00%	RBA SMP	2.10%
2	1.50%	RBA SMP	
3	1.75%	glide	
4	2.00%	glide	
5	2.25%	glide	
6	2.50%	RBA mid-band	
7	2.50%	RBA mid-band	
8	2.50%	RBA mid-band	
9	2.50%	RBA mid-band	
10	2.50%	RBA mid-band	

Ex-ante rate of return = 2.43%

5 year + glide/swaps			
Year	Estimate	Source	Outcome
1	1.00%	RBA SMP	1.80%
2	1.50%	RBA SMP	
3	1.83%	glide	
4	2.17%	glide	
5	2.50%	RBA mid-band	

Ex-ante rate of return = 2.73%

Random inflation (around 2.4% on average)

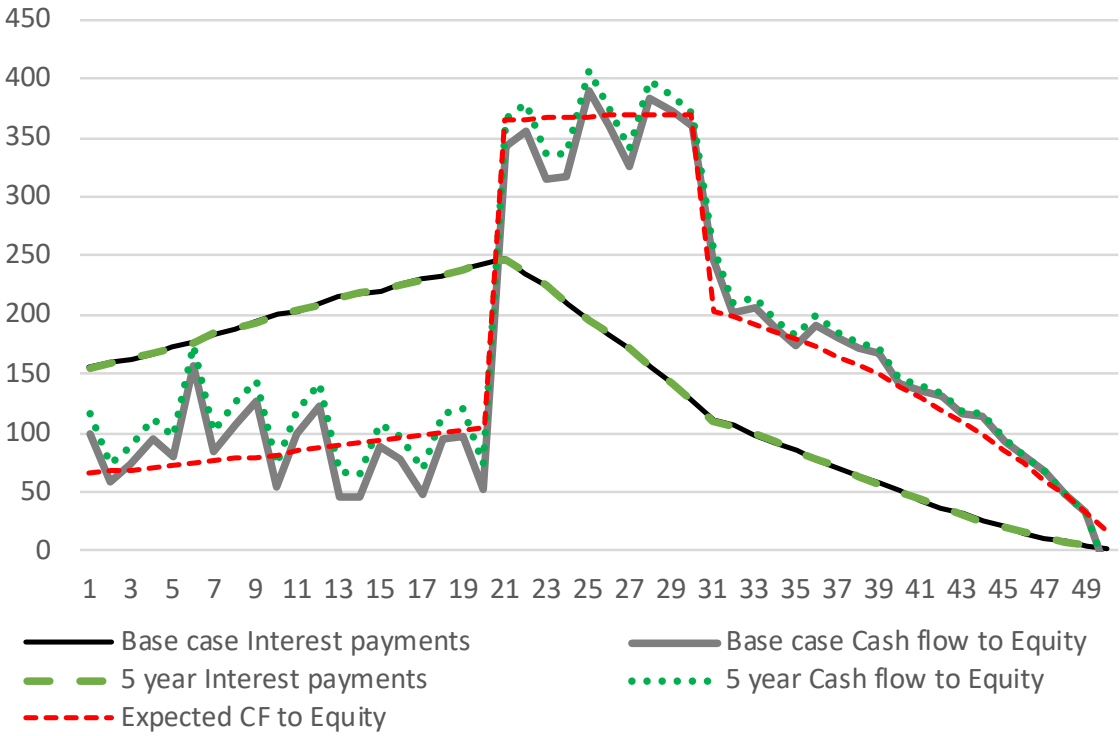
- Ex-ante and ex-post returns:

Rate of return	Nominal ex-ante	Nominal ex-post	Real ex-ante	Real ex-post
Base (2.25%)	4.58%	4.70%	2.28%	2.25%
5 year (2.00%)	4.58%	4.94%	2.53%	2.48%
10y Glide (2.10%)	4.58%	4.84%	2.43%	2.38%
Swaps (1.80%)	4.58%	5.13%	2.73%	2.66%

Return to Equity	Nominal ex-ante	Nominal ex-post	Real ex-ante	Real ex-post
Base (2.25%)	5.00%	5.32%	2.69%	2.84%
5 year (2.00%)	5.00%	5.94%	2.94%	3.43%
10y Glide (2.10%)	5.00%	5.69%	2.84%	3.20%
Swaps (1.80%)	5.00%	6.43%	3.14%	3.90%

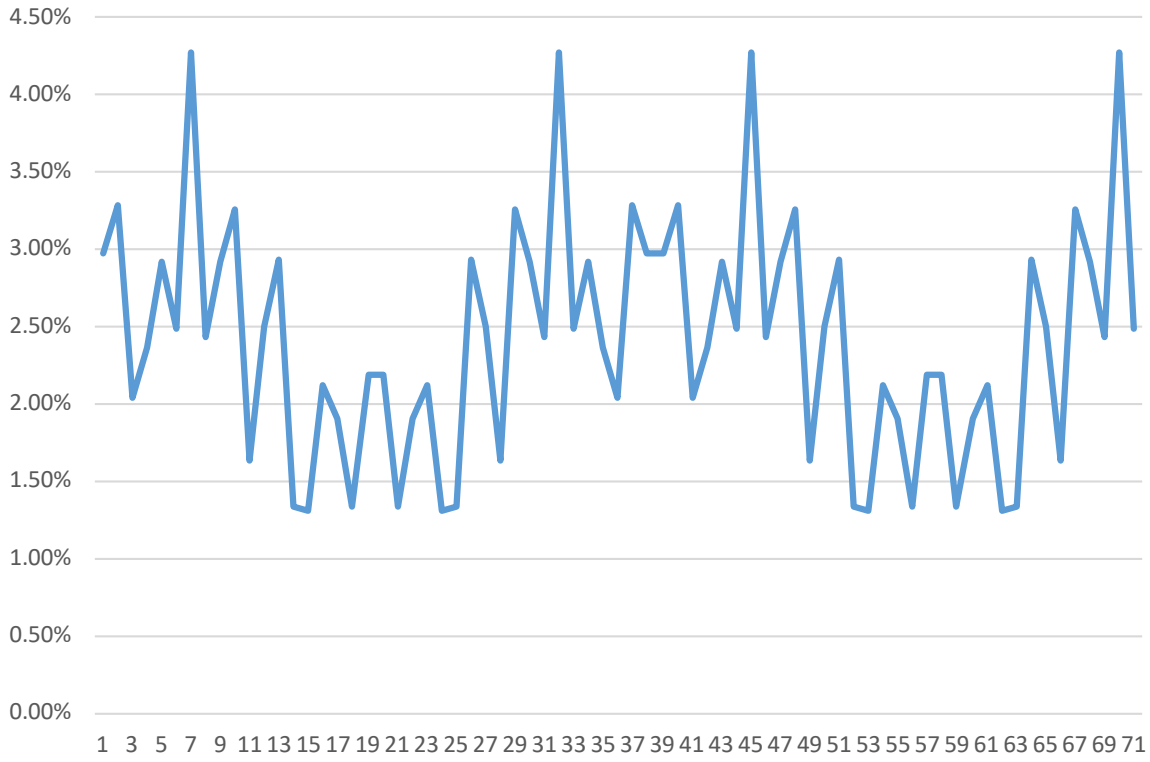
Cash flows to debt and equity

- Assuming random inflation:



Random inflation (not so random)

- Reflects actual inflation from 2002 (post-GST) back then reversed, then forward.



Consistently lower than expected inflation (1.5%)

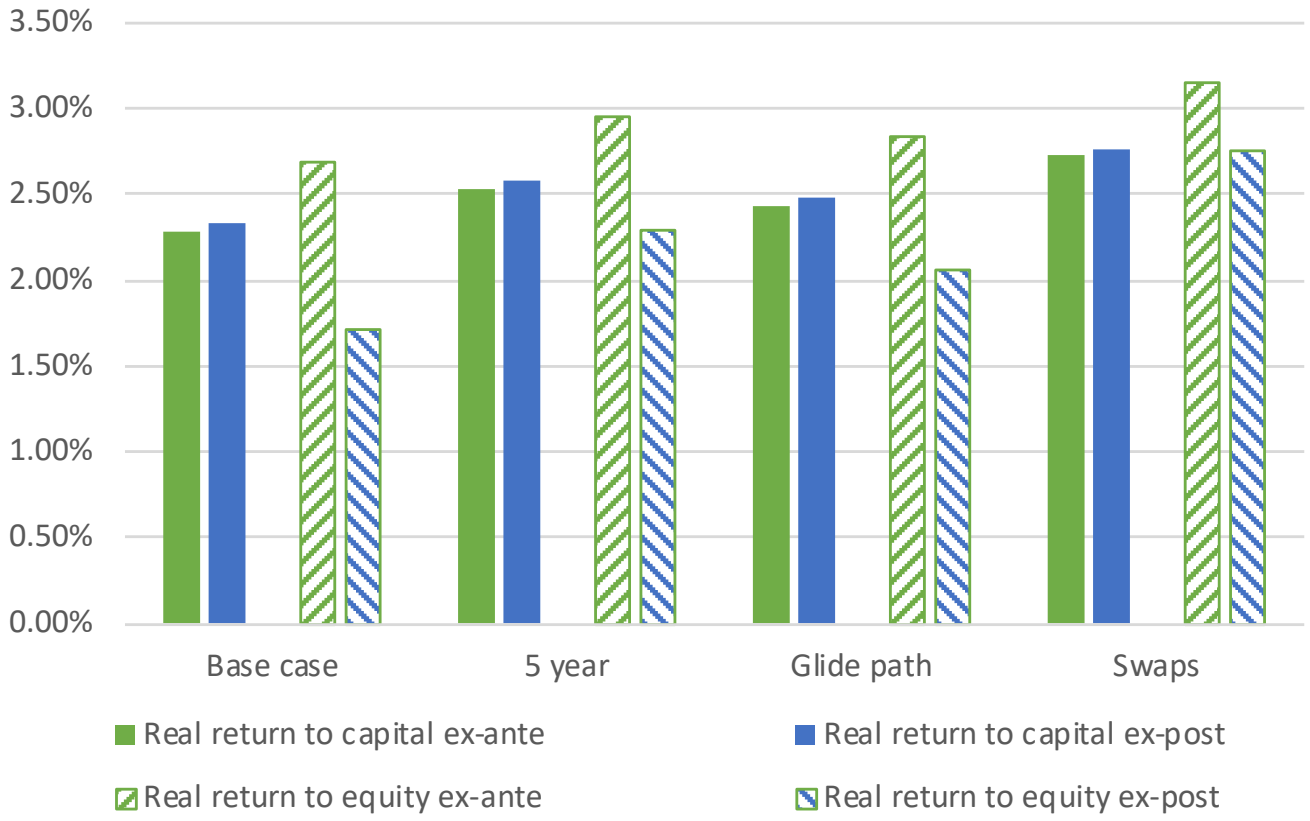
- Ex-ante and ex-post returns:

Rate of return	Nominal ex-ante	Nominal ex-post	Real ex-ante	Real ex-post
Base (2.25%)	4.58%	3.87%	2.28%	2.34%
5 year (2.00%)	4.58%	4.11%	2.53%	2.57%
10y Glide (2.10%)	4.58%	4.02%	2.43%	2.48%
Swaps (1.80%)	4.58%	4.30%	2.73%	2.76%

Return to Equity	Nominal ex-ante	Nominal ex-post	Real ex-ante	Real ex-post
Base (2.25%)	5.00%	3.24%	2.69%	1.71%
5 year (2.00%)	5.00%	3.83%	2.94%	2.29%
10y Glide (2.10%)	5.00%	3.59%	2.84%	2.06%
Swaps (1.80%)	5.00%	4.30%	3.14%	2.75%

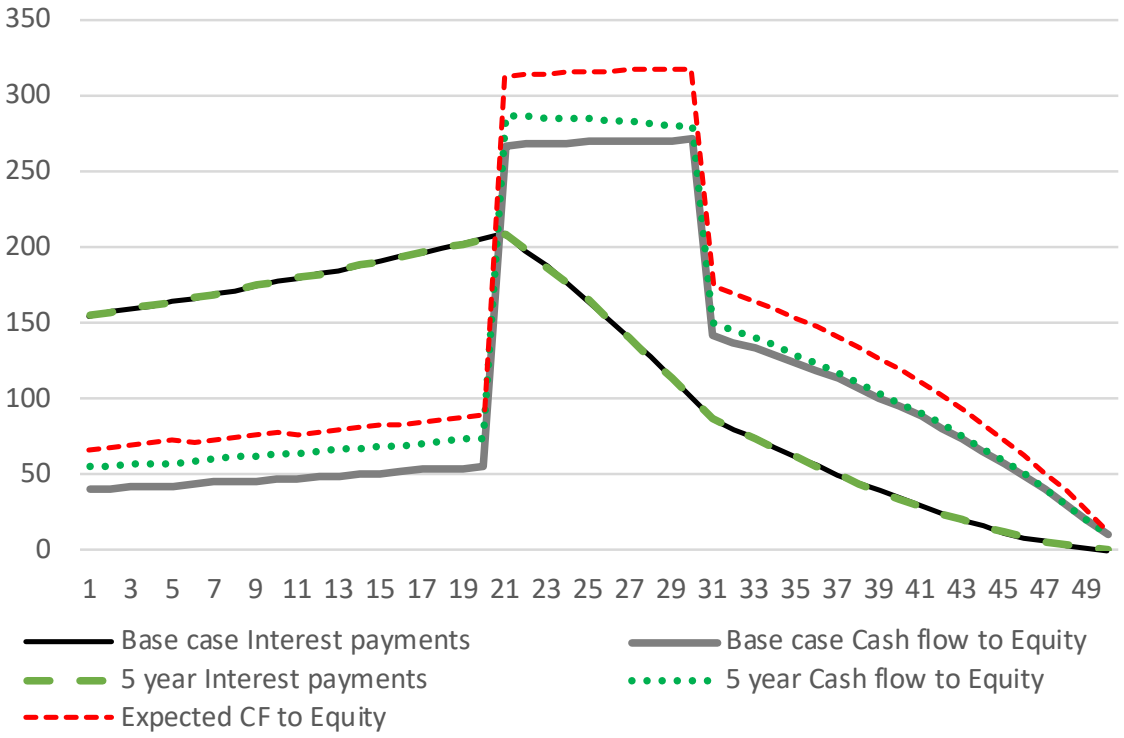
Real returns to capital and equity (1.5% actual)

- Ex-ante and ex-post real returns:



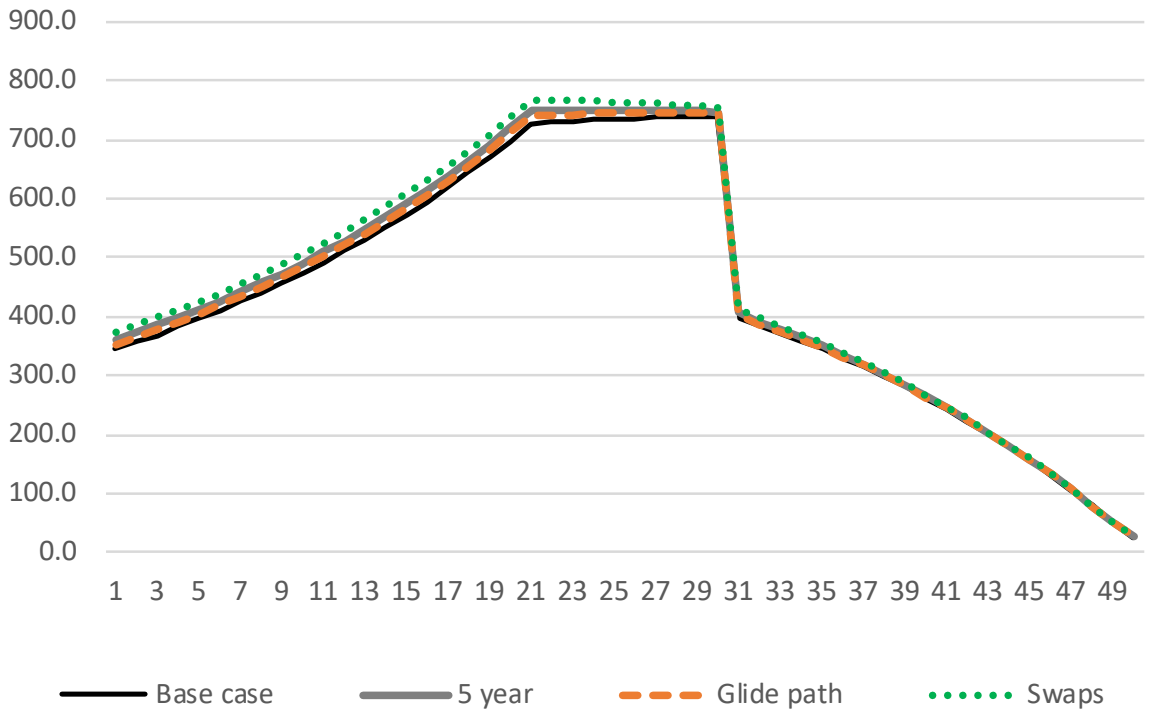
Cash flows to debt and equity

- Assuming 1.5% inflation:



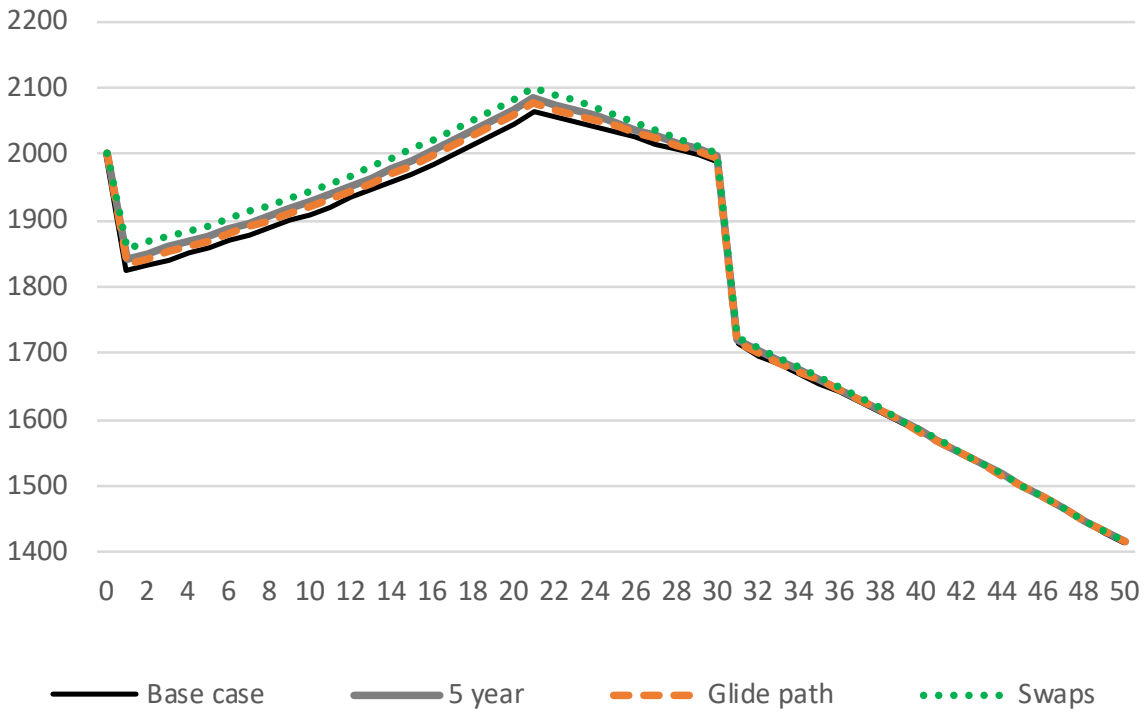
Revenue profiles (1.5% actual)

- Nominal revenues:



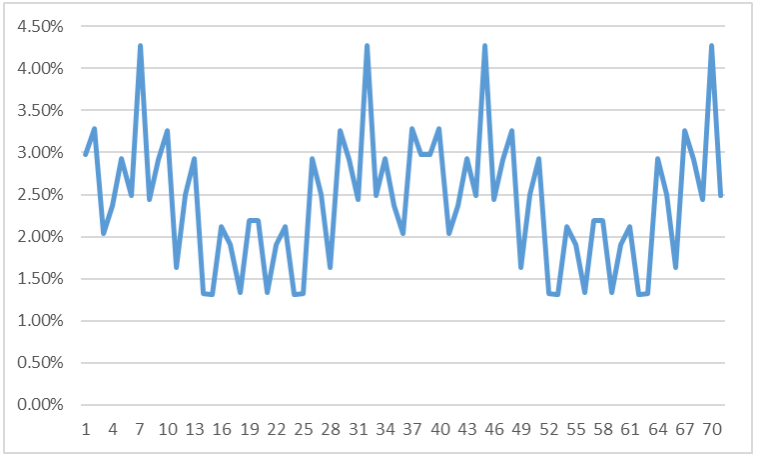
Bill impact (1.5% actual)

- Profile of customer bill ($real)

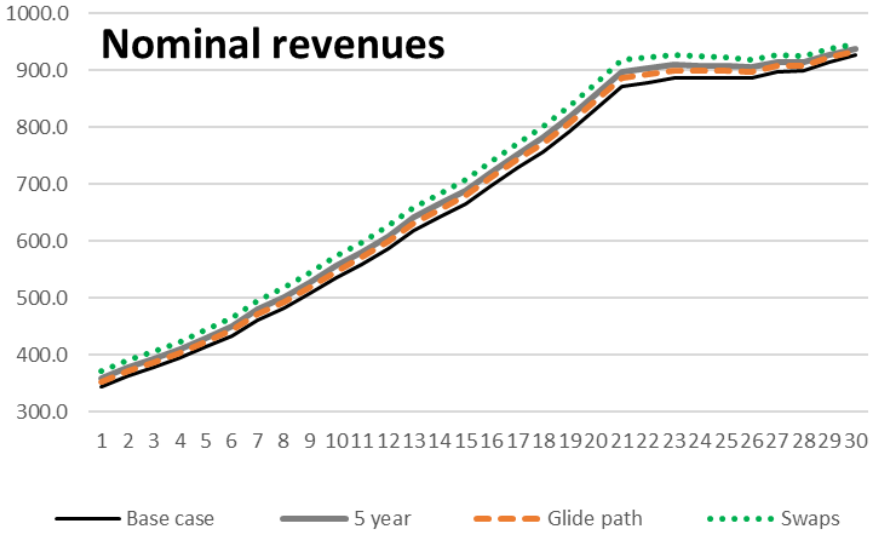


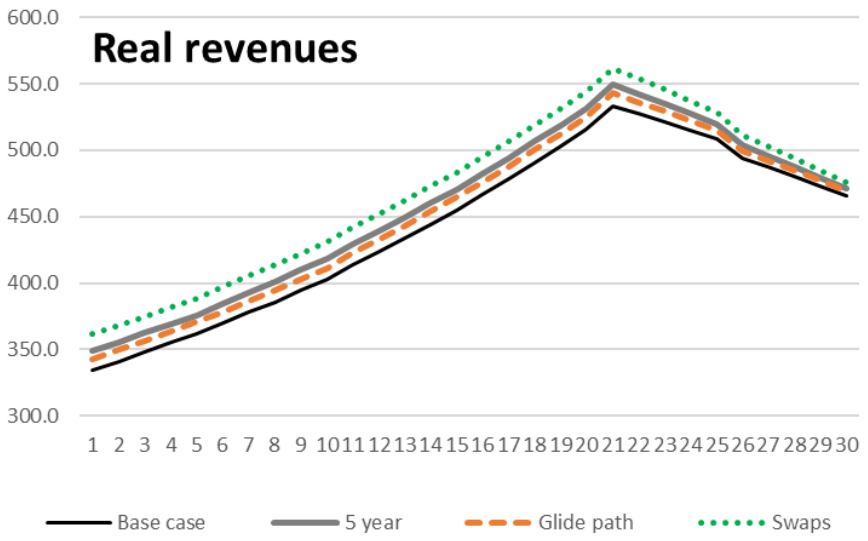
Volatility (random inflation)

- Inflation assumptions:



- Real vs nominal revenue





Impact of annual pricing

- In all scenarios presented the approach to pricing is unchanged (CPI-X).
- First year set equal to PTRM, subsequent years updated for actual inflation.

- Short term actual cash flows therefore do not reflect the PTRM estimate (unless actual = expected).

Impact of Pricing

- If CPI-X is not applied to annual pricing.
- Impact on returns (1.5% inflation):

Rate of return	Nominal			Real		
	Ex-ante	Ex-post	Ex-post No CPI-X	Ex-ante	Ex-post	Ex-post No CPI-X
Base (2.25%)	4.58%	3.87%	3.99%	2.28%	2.34%	2.46%
5 year (2.00%)	4.58%	4.11%	4.19%	2.53%	2.57%	2.65%
Swaps (1.80%)	4.58%	4.30%	4.35%	2.73%	2.76%	2.81%
Return to Equity	**Nominal**			**Real**		
	Ex-ante	Ex-post	Ex-post No CPI-X	Ex-ante	Ex-post	Ex-post No CPI-X
Base (2.25%)	5.00%	3.24%	3.54%	2.69%	1.71%	2.01%
5 year (2.00%)	5.00%	3.83%	4.03%	2.94%	2.29%	2.49%
Swaps (1.80%)	5.00%	4.30%	4.42%	3.14%	2.75%	2.88%

Alternate targets

- Hybrid target
  - Nominal debt target – real equity
  - Can be achieved by applying weighted CPI in Pricing and RFM (60% exp | 40% actual).
  - CEG modelled only change to RFM
- Hybrid + market measure
  - ENA/APGA approach
  - Modelled with same RoD and RoE term.
- Nominal target
  - Updates PTRM for actual inflation impact each year (no need for forecast).
- Multitude of alternate modelling.

Hybrid - Weighted CPI

- If expected inflation is 2.5% and actual is 1.5%:
  - Weighted CPI = 2.1%
  - Pricing applies this rate as CPI-X for each year
  - RFM applies this rate to indexation of entire RAB.
- Issues:
  - RAB not maintained in correct $real terms.
  - Gearing may diverge from 60% if average inflation =/= expected inflation.

Nominal - Updated

- PTRM updated each year (as per debt update) but also for actual inflation for previous year.
- No need to forecast inflation (other than for presentation of nominal revenues).
- Revenues move more year-to-year (may be mitigated somewhat with revenue smoothing)
- No need to apply CPI-X at pricing, just take revenues from PTRM.

Alternate targets - Random inflation

- Ex-ante and ex-post returns:

Rate of return	Nominal ex-ante	Nominal ex-post	Real ex-ante	Real ex-post
Base	4.58%	4.70%	2.28%	2.25%
Hybrid (weighted)	4.58%	4.57%	2.28%	2.13%
Hybrid + swaps	4.58%	4.84%	2.73%	2.38%
Nominal -updated	4.58%	4.58%	1.56%	2.14%

Return to Equity	Nominal ex-ante	Nominal ex-post	Real ex-ante	Real ex-post
Base	5.00%	5.32%	2.69%	2.84%
Hybrid (weighted)	5.00%	5.00%	2.69%	2.54%
Hybrid + swaps	5.00%	5.61%	3.14%	3.12%
Nominal -updated	5.00%	5.01%	1.96%	2.14%

Alternate targets - low inflation (1.5%)

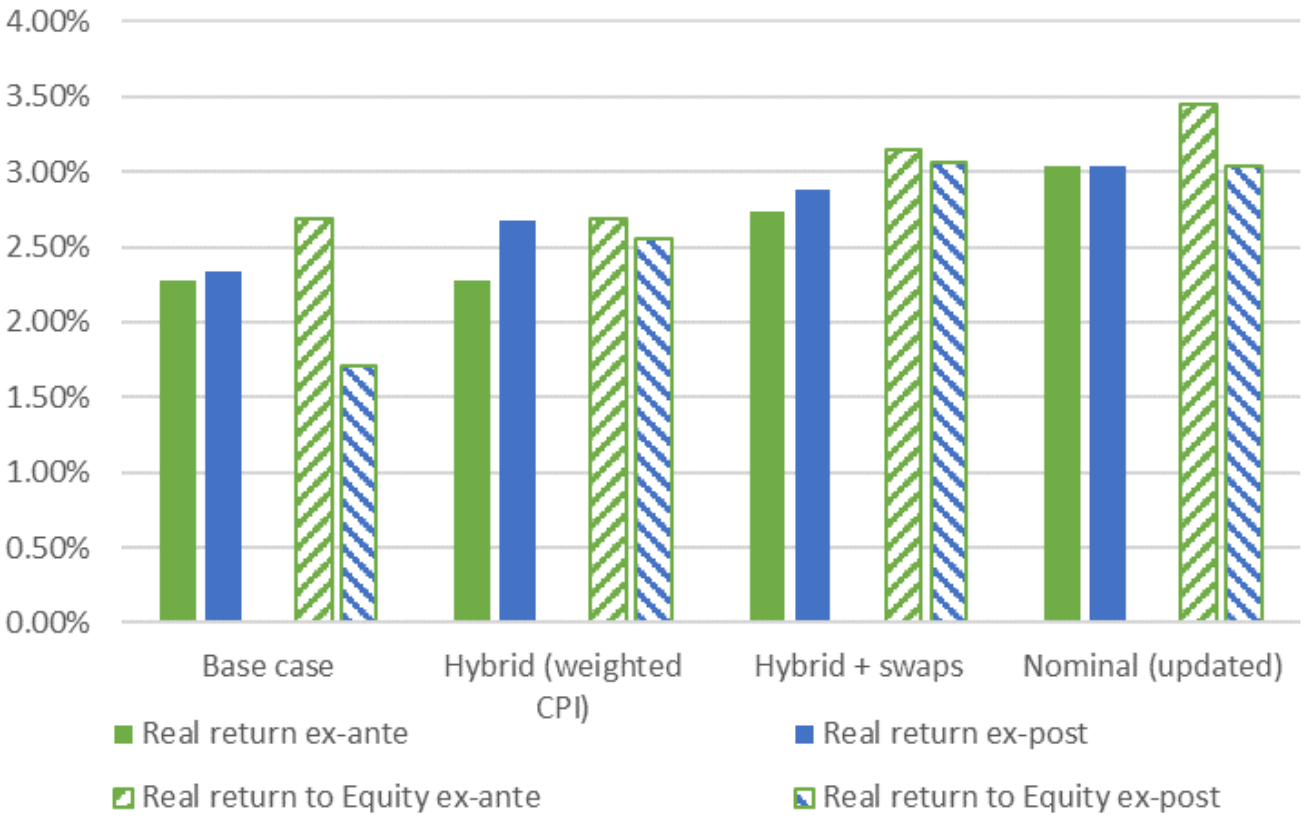
- Ex-ante and ex-post returns:

Rate of return	Nominal ex-ante	Nominal ex-post	Real ex-ante	Real ex-post
Base	4.58%	3.87%	2.28%	2.34%
Hybrid (weighted)	4.58%	4.22%	2.28%	2.68%
Hybrid + swaps	4.58%	4.42%	2.73%	2.88%
Nominal -updated	4.58%	4.58%	3.03%	3.03%

Return to Equity	Nominal ex-ante	Nominal ex-post	Real ex-ante	Real ex-post
Base	5.00%	3.24%	2.69%	1.71%
Hybrid (weighted)	5.00%	4.09%	2.69%	2.55%
Hybrid + swaps	5.00%	4.61%	3.14%	3.06%
Nominal -updated	5.00%	5.00%	3.45%	3.03%

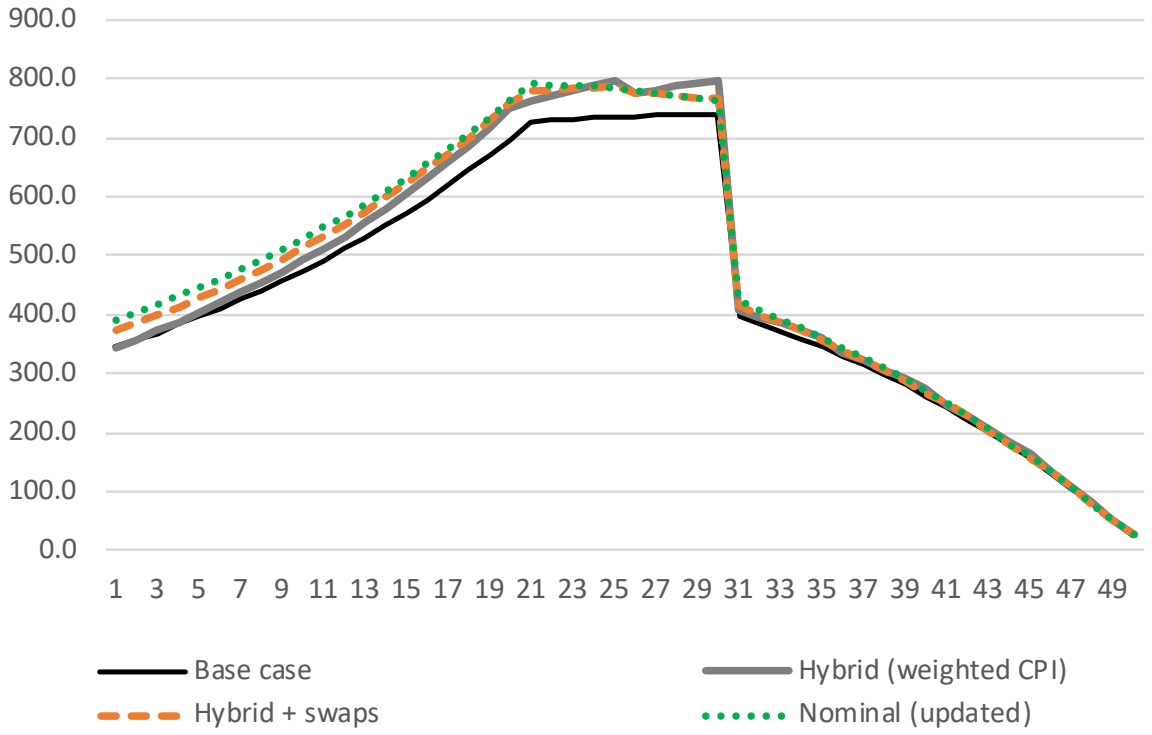
Alternate targets - real returns (1.5% inflation)

- Ex-ante and ex-post real returns:



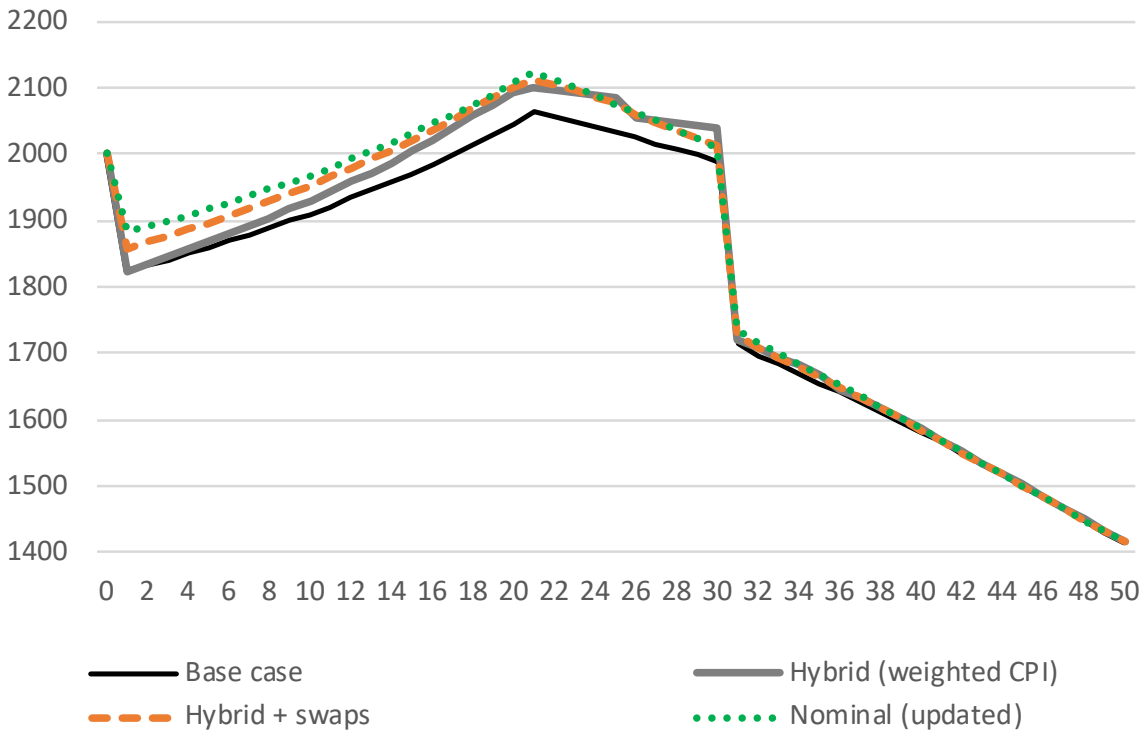
Alternate targets – 1.5% inflation

- Revenues:



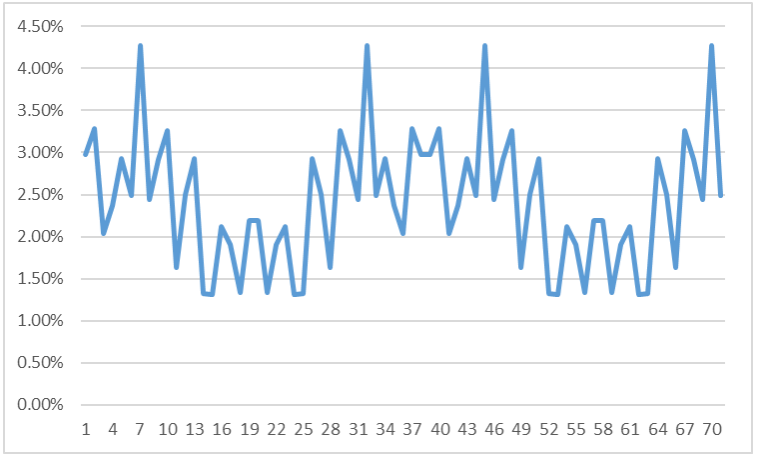
Alternate targets - Bill impact

- $real customer bill profile (1.5% actual)

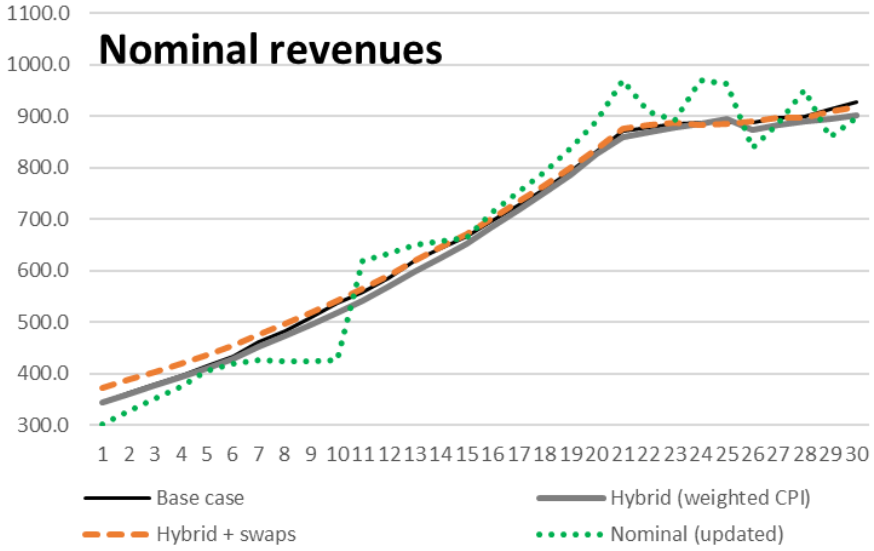


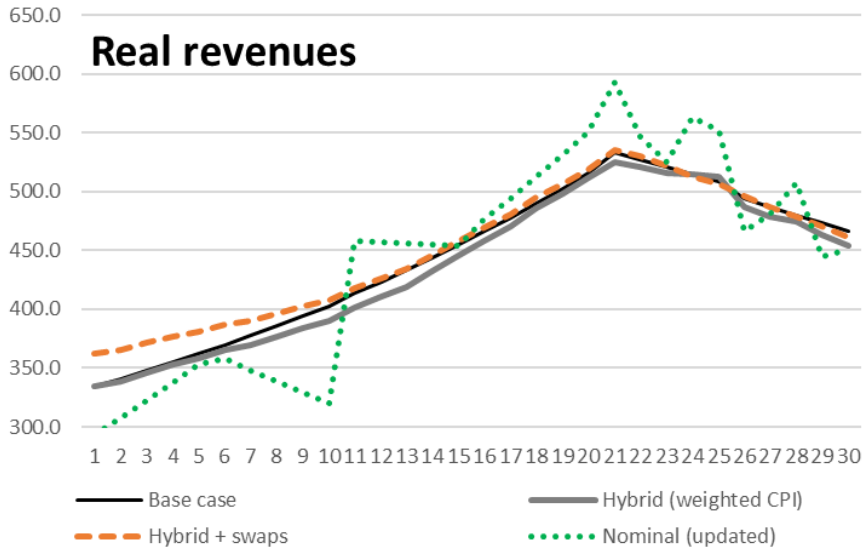
Volatility (random inflation)

- Inflation assumptions:



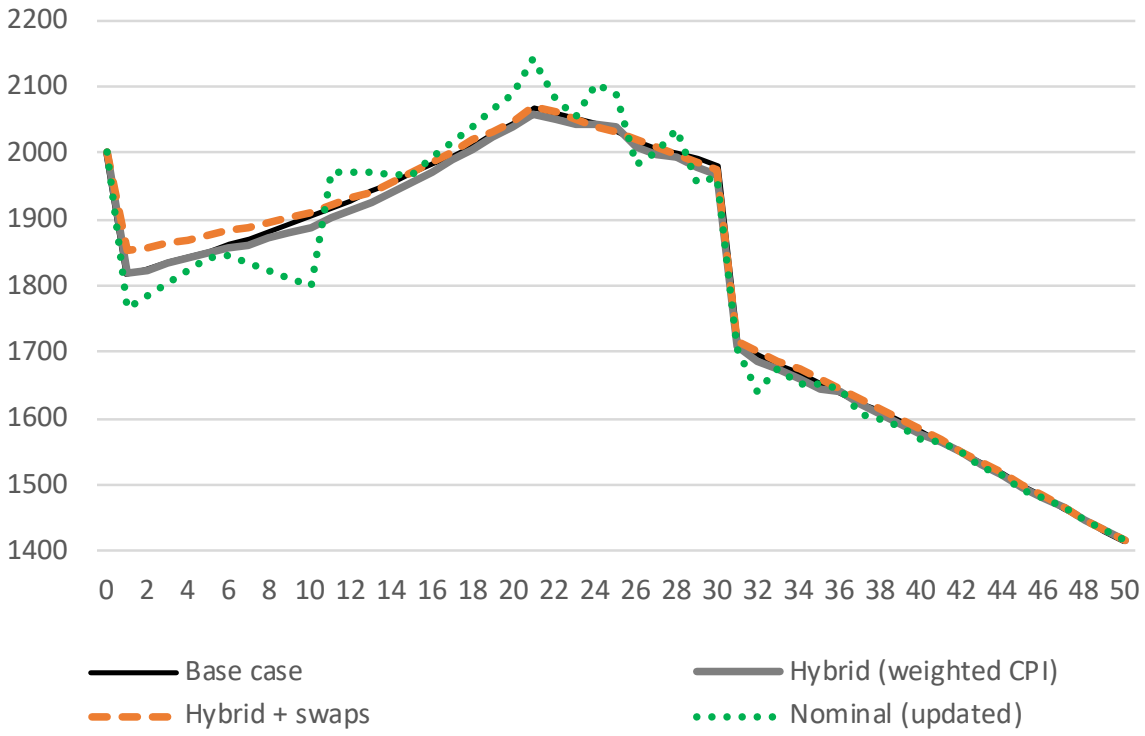
- Real vs nominal revenue





Volatility in bills

- Nominal updated leads to volatility as all revenue updated each year for actual inflation.



Questions?

- Is a transition required if a change is made?
- Should consumers pay for inflation risk premium (CEG)
- We see ‘inflation risk’ as the impact on purchasing power of returns and costs. Maintained under current real target.
  - How does hybrid/nominal change this?
  - NSPs are already compensated for ‘cash flow inflation risk’.
  - How does change to hybrid/nominal change this? Is change to equity beta required as well?

Other questions

- Any follow up questions should be emailed to Inflationreview2020@aer.gov.au.