Two questions posed by the AER

1. **For the 2022 instrument, should we continue to use the longest available estimates of beta for our comparator firms to set the equity beta?**
   - The AER should give some weight to estimates derived using different estimation periods.
   - For exactly the same reason, the AER should also give some weight to domestic and foreign comparators (and other sources of relevant estimates).

2. **If the AER moves to a 5-year estimate of the return on equity, does this have implications for the period over which it measures beta? Should the AER place more reliance on estimates of beta from the last 5-years?**
   - No. We want the best statistical estimate of the beta, and the weights given to beta estimates derived using different estimation periods should be chosen with that objective in mind.
   - The rationale for moving to a 5-year estimate of the return on equity is unrelated to the selection of the historical period for beta estimation.

Pros and cons of estimates derived using a short (most recent 5-year) estimation period

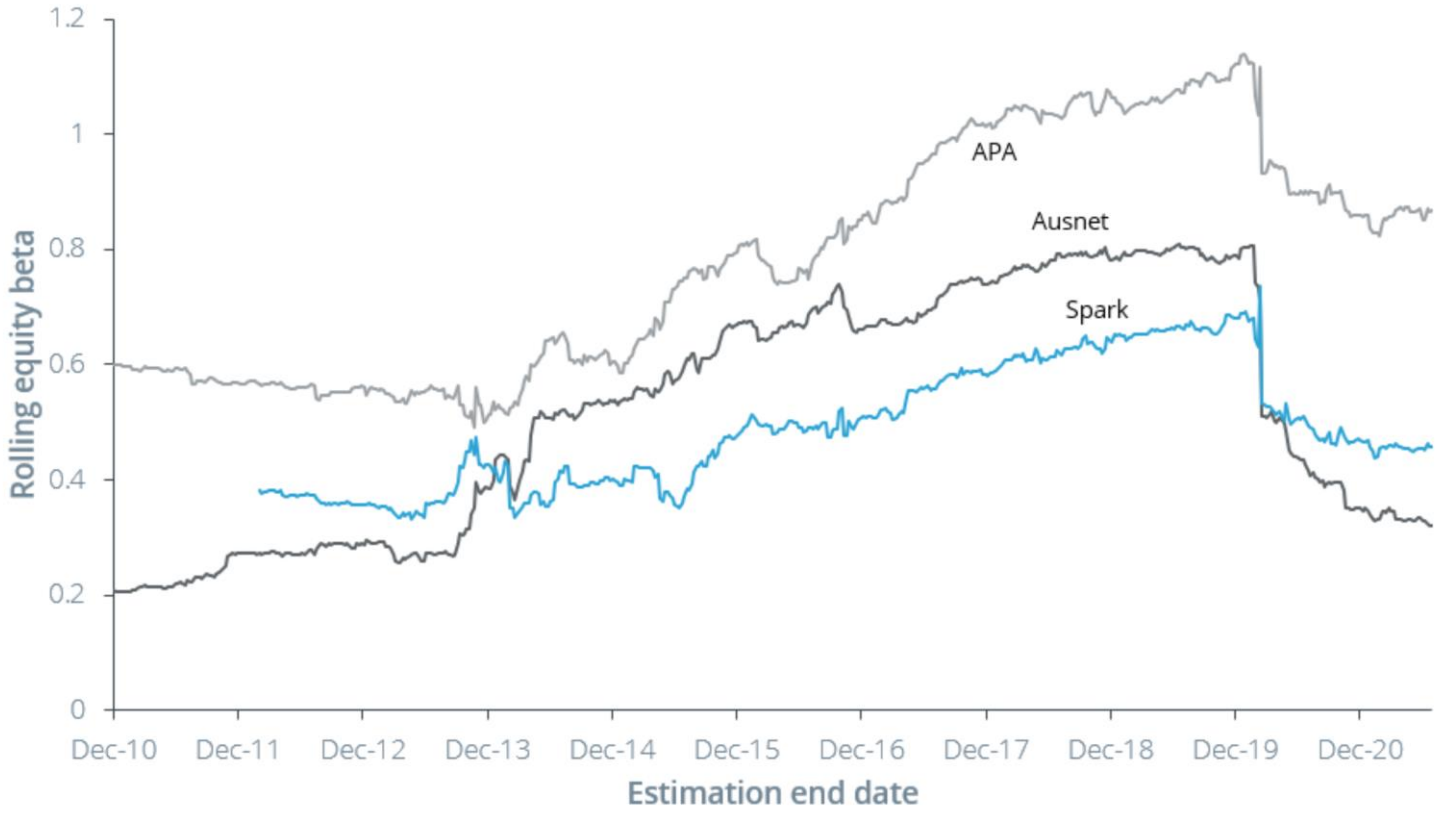
Pros:

- Estimates derived using data that is more reflective of prevailing market conditions.

Cons:

- Smaller number of observations within the shorter estimation window tends to produce more volatile and statistically noisier estimates.
- A few very influential observations can cause very large changes in the estimates – e.g., Covid-19 crisis.
- Those changes in the *estimates* can persist long after the original 'event' has passed.

Figure 20: Rolling OLS beta estimates for the live domestic comparators



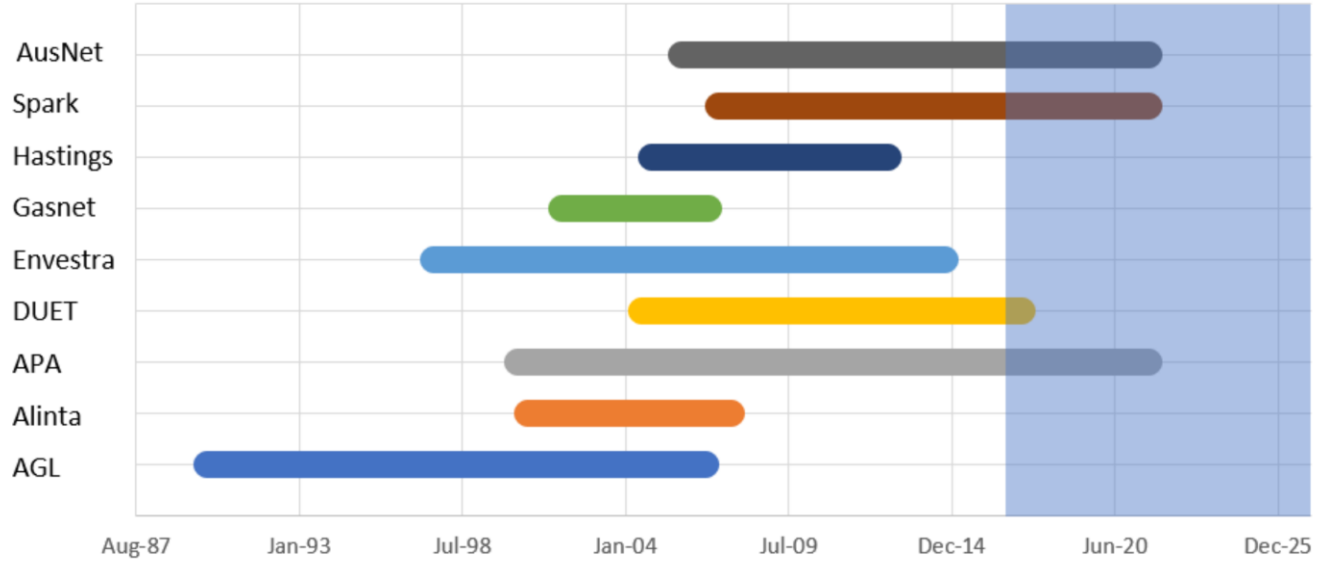
Source: ENA response to AER draft equity omnibus working paper, 3 September 2021, p. 80.

Particularly problematic at the present time to put significant weight on the most recent 5-year estimates

- Estimates will reflect just three domestic comparators.
    - Most of the comparators relied on by the AER have been 'dead' for well over a decade. Towards the end of the 2022 RORI period, some would have been deac for nearly two decades.
- Over the most recent 5-year period:
    - 2 of the comparators (Spark and AusNet) have been the subject of takeovers; and
    - We have had a large, temporary shock to stock markets (Covid-19).

  Both of these factors have will have a significant and lasting effect on beta estimates.
- The AER has raised reservations about the APA Group as a reliable comparator.

Figure 18: Data available for firms in the AER's comparator set



Source: ENA response to AER draft equity omnibus working paper, 3 September 2021, p. 77.

Pros and cons of estimates derived using a very long estimation period

Pros:

- The longer the estimation period, the more likely it is that the random variation in stock and market returns that give rise to beta estimation error will even out – so improved statistical precision in the estimates.

Cons:

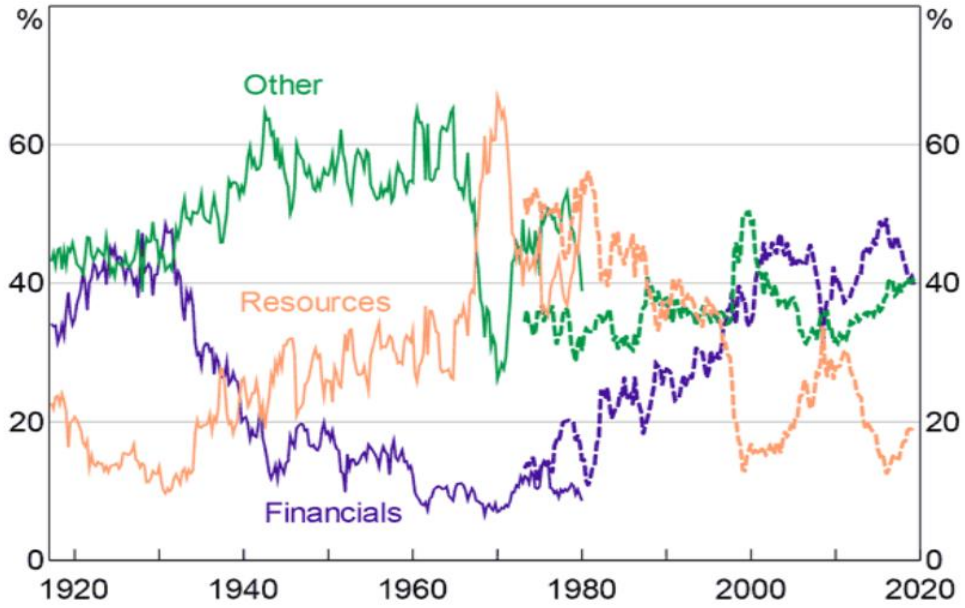
- The further back in time we go, the less relevant the data may be for the purposes of estimating a forward-looking beta.
    - May introduce bias to the estimates.
- AER is reluctant to use overseas comparators due to the risk of introducing bias:

  "International firms do not operate within Australia, and differences in regulatory framework, the domestic economy, geography, business cycles and other factors are likely to drive different equity beta estimates."

  There might be similar concerns associated with estimates derived using very historical domestic data.

Figure 11: Market Capitalisation by Sector

Share of total index



Notes: Solid lines show series calculated from RBA dataset, dashed lines show Datastream series; dates correspond to start of calendar year

Sources: ASX; Author's calculations; Refinitiv Datastream

Source: Mathews, T., A History of Australian Equities, RBA Research Discussion Paper RDP 2019-04, June 2019, p. 16.

So what should the AER do?

- **Important insight from statistics/forecasting literature:** It is possible to reduce estimation error by combining two estimates as long as their errors are not perfectly correlated—even if one of the estimates is materially biased.
  - Same principle as portfolio diversification.
- **Implication:** The AER may reduce estimation error significantly by weighting estimates derived using long and short estimation periods.
  - Appears to be consistent with the AER's preferred position.
- Some further considerations for the AER:
  - Should the AER use the longest estimation period possible, rather than say 10 years?
    - Depends on how large the incremental gain in statistical precision is (relative to the incremental increase in potential bias).
  - AER should explain how it is going to weight the different estimates and why.
  - Exactly the same rationale (combining estimates to reduce scope for estimation error) applies to the choice of comparators.

Two different dimensions relevant to the data to be used for beta estimation

1. Time dimension: What *estimation period* should be used?

Longest period available

More bias, greater statistical precision

Most recent 5-year period

Less bias, worse statistical precision

Two different dimensions relevant to the data to be used for beta estimation

1. Time dimension: What *estimation period* should be used?

Longest period available

More bias, greater statistical precision

Most recent 5-year period

Less bias, worse statistical precision

2. Cross-sectional dimension:

Which *comparators* should be used?

Domestic energy network comparators

Less bias, worse statistical precision

Foreign energy network comparators

More bias, greater statistical precision

Two different dimensions relevant to the data to be used for beta estimation

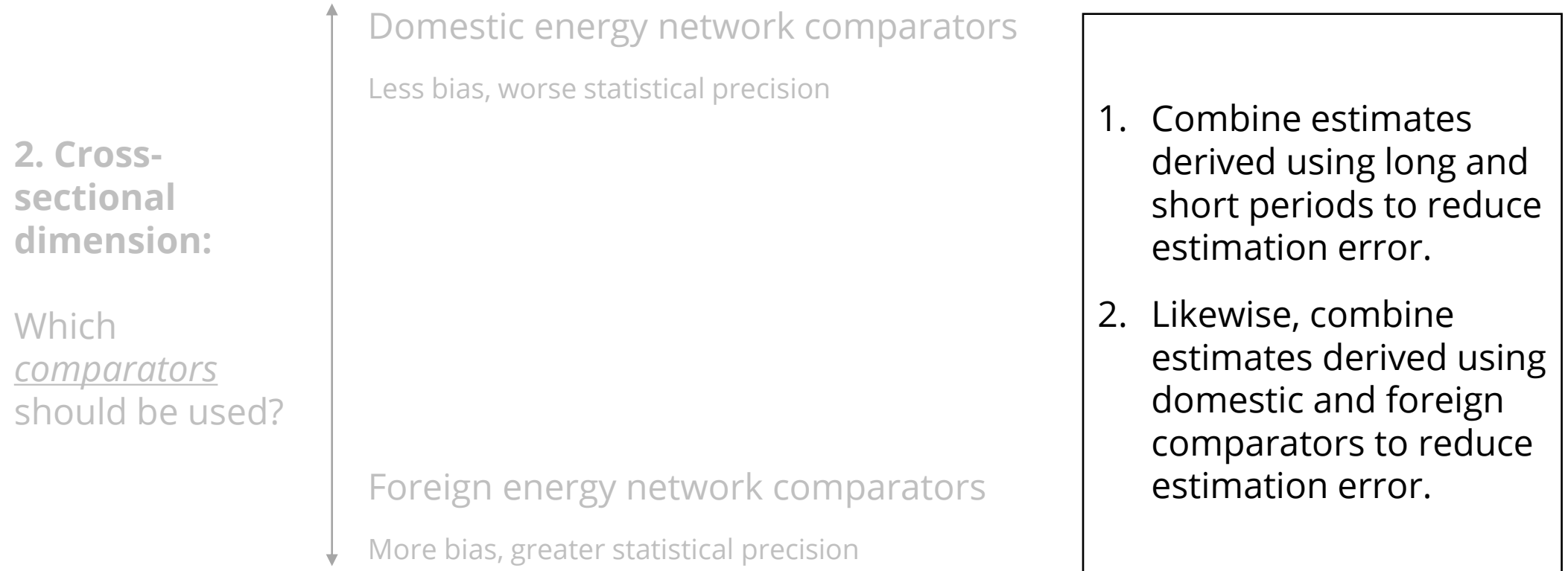
1. Time dimension: What *estimation period* should be used?

Longest period available

More bias, greater statistical precision

Most recent 5-year period

Less bias, worse statistical precision



1. Combine estimates derived using long and short periods to reduce estimation error.
2. Likewise, combine estimates derived using domestic and foreign comparators to reduce estimation error.