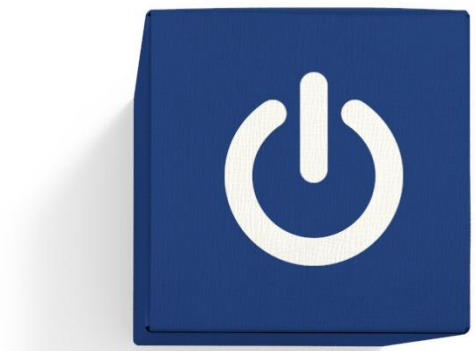
WACC Methodology

ACCC

25 November 2025



FINAL REPORT

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Contents

1. EXECUTIVE SUMMARY

We have been commissioned by the Australian Competition and Consumer Commission (ACCC) to provide advice on an approach to estimate the weighted average cost of capital (WACC) that is suitable for regulated firms in the telecommunications sector and other relevant industries that are subject to ACCC regulation and/or oversight. The advice is sought in the context of three specific services where the ACCC has a role in considering the appropriate WACC – the National Broadband Network (NBN) special access undertaking (SAU), Regional Broadband Scheme (RBS) levy and voice interconnection services.

This is our final WACC methodology report. It provides a response to comments provided by stakeholders in response to our draft WACC methodology report.[1] The draft WACC methodology report provides an explanation of the methods applied and should be read alongside this report.

Any cost of capital review process will be limited in the breadth and depth of issues that can be examined. Our draft report set out the process and analysis we had followed to develop our proposed methodology, including issues that we had chosen not to examine in detail. In response to our draft report, NBN raised a concern that our methodology does not meet the NBN WACC rule, nor did we critically assess the positions we recommended.

We disagree. We explain in this report how our methodology meets the NBN WACC rule which requires that an estimate be "*commensurate with the efficient financing costs of a benchmark efficient entity"*. We also provide a comparison to the WACC methodology endorsed by NBN, demonstrating material concerns which call into question whether NBN's methodology meets the NBN SAU objective of "*producing reliable estimates of the market cost of capital in a wide range of plausible market conditions*".

Market-wide parameters

The market-wide parameters include the **risk-free rate**, **market risk premium (MRP), tax rate**[2] and **gamma**.

On the risk-free rate, Frontier Economics (Frontier) expressed the view that it is inappropriate to combine our risk-free rate estimate with an MRP estimated using an historic excess returns (HER) methodology. Our view is that an adequate proxy for the risk-free rate has been established. We do not consider that issues with estimating the MRP should be resolved by changing the way in which the risk-free rate is estimated. We propose no change to our methodology.

On the market risk premium, several issues were raised by stakeholders.

Firstly, consistent with their view on the risk-free rate, Frontier considered that the combination of our risk-free rate estimate and an MRP estimated using the HER method results in "*internally inconsistent*" estimates. Instead, Frontier has proposed a 'long-term' approach to estimating both the risk-free rate and MRP. NBN view this as better meeting the SAU objectives, with the implication that Frontier's methodology produces 'internally consistent' estimates. The critique of CEPA's proposed method as "*internally inconsistent*" appears to rest on an assumption that the total *nominal* market return is stable. This assumption is not proven. Nor is this assumption in line with what is more typically assumed by those regulators who adopt a total market return framework (i.e., the Wright approach) where the total *real* market return is assumed to be stable. In contrast, FTI did not consider that CEPA's methodology would produce inconsistent estimates.

Furthermore, it is not clear that Frontier's methodology is an improvement upon our recommendation. In this report we call into question whether Frontier's methodology meets the NBN SAU objective of "*producing reliable estimates of the market cost of capital in a wide range of plausible market conditions*". Specifically:

- Frontier's methodology results in a cost of equity below the risk-free rate in plausible market conditions.

[1] CEPA (2025), WACC Methodology.

[2] CEPA has not advised the ACCC on the tax rate assumption.

- Frontier's methodology assumes equity investors' expected returns are almost entirely disconnected from the risk-free rate. This produces an unintuitive relationship relative to other risky assets such as corporate bonds.

Secondly, Frontier viewed our rejection of evidence from dividend growth models (DGMs) as inappropriate. As we noted in the draft report, developing a conditional estimate of the MRP would in principle be superior to an unconditional approach and it is possible that DGMs can provide useful information to inform a conditional estimate.

Nonetheless, placing explicit weight on DGMs in a methodology is risky given a range of issues. For example, in this report we cover one such issue related to lags in Bloomberg data. In particular, due to lags in dividend forecasts, when there is market downturn an MRP estimate based on DGM evidence will be biased upwards. Understanding the mechanics of how platforms like Bloomberg produce their dividend forecasts is crucial to understanding whether DGMs can provide a reliable estimate of the MRP. As we explain this is report, lags are not the only issue.

Thirdly, Frontier consider that our recommendation on DGMs is inconsistent with our advice in the United Kingdom (UK) to regulators such as Ofgem and Ofwat. We agree that regulators in the UK have quoted DGM estimates in the past and that CEPA has provided some of these estimates for consideration (as we did in our draft report for the ACCC). However, in the UK context DGMs have been used as a cross-check, with the result of the Wright approach typically being determinative.

If the ACCC is seeking a methodology with explicit weights, then we would not recommend including DGMs in the estimate. However, if the ACCC is seeking a methodology that allows for judgement, then we consider that DGM evidence can act as a cross-check, provided that there is appropriate examination of and adjustment for the various known issues with DGM estimates. This would be more in line with how Ofgem and Ofwat have viewed DGM evidence in the past.

Finally, CEG suggest that we have inaccurately summarised Australian regulatory precedent with regards to the emphasis placed on the HER approach. To demonstrate this CEG cites two regulatory decisions, one by the QCA in 2018 and one by the ERA in 2016. Both these decisions have been superseded by more recent decisions by the two regulators, and it is these more recent decisions we summarised in our draft report.

No issues were raised with our proposed methodology to estimate gamma.

Sector-specific parameters

The sector-specific parameters include **beta**, **gearing** and **cost of debt**. These values will change depending on the sector and potentially service being regulated. The two services that we are interested estimating a WACC for are NBN SAU and voice interconnection.

Regarding the comparator sample, Frontier disagreed with the inclusion of tower companies. Our view is that as part of a wide telecommunications sample it is appropriate to include tower companies. We also consider that they are sufficiently similar to NBN, in that they provide wholesale telecoms infrastructure services, and so should remain in the sample.

Frontier disagreed with our assessment that investors viewed wholesale service provision as systematically less risky than retail services. In this report we provide additional consideration of the issue and maintain our view that there is evidence that wholesale provision is less risky.

Some stakeholders did not agree with our approach of selecting an asset beta at the bottom end of the estimated range for NBN and the top end of our estimated range for voice interconnection. We consider that when estimating beta any regulatory decision will rely on judgement to some degree. No stakeholder called into question our directional conclusions regarding where NBN and voice interconnection sit within the comparator sample asset beta range. We therefore do not propose to change our approach.

Frontier and CEG argued that we should use the sample median instead of sample mean to summarise our comparator sample's asset beta estimates. It is not obvious that the population median is conceptually superior to the mean in this context. Our view is that it is perfectly valid to take account of the full range of variation within the

comparator sample and that the mean estimate achieves this. Nonetheless, for comparison we provide the median estimates for the ACCC's consideration.

After updating our estimates to a cut-off date of 30th September 2025 (using the same methodology as for the draft report) our recommended asset beta range moves slightly downwards to 0.33-0.38. However, we observe that were we to remove the towers and fixed satellite comparators and adopt the median, as suggested by some stakeholders, the asset beta range would fall further to 0.30-0.36.

Regarding our approach to constructing the comparator sample, we remain of the view that the "developed-economies" filter is a reasonable and proportionate approach to deriving a beta estimate for Australian telecommunication services. At the same time, we recognise that this filter is imperfect and may be less appropriate for other sectors regulated by the ACCC. Although we do not consider it necessary for the ACCC's telecommunications decisions, we have suggested further analysis the ACCC could consider in future.

On gearing, some stakeholders' preferred approach is to measure gearing using gross debt instead of net debt. We observe that the impact of changing the approach is limited. The estimated asset beta range would fall to 0.30-0.36, though as gearing has increased the impact on equity beta is limited (0.51-0.61 relative to 0.51-0.58). Nonetheless, the higher gearing ratio reduces the vanilla nominal WACC from 6.61% and 7.22% for NBN and voice interconnection respectively, to 6.45% and 7.18%. There are conceptual arguments in support of both positions. However, on balance we are of the view that net debt more appropriately represents the reduction in risk from holding cash balances.

The only comments raised on cost of debt were with regards to proposed debt issuance costs. We have considered the evidence presented and this results in a minor uplift from 0.10% to 0.11%.

2. INTRODUCTION

This report provides a response to comments raised by stakeholders as part of the consultations run by the ACCC in relation to the NBN SAU and voice interconnection decisions. This follows our draft WACC methodology report.[3] In addition, we have updated our WACC estimates to 30th September 2025.

To inform this report the ACCC provided us the following documents to consider:

- Frontier Economics (2025), Response to CEPA draft report on a WACC method for the ACCC, 3 September 2025.
- Frontier Economics (2025), Response to RMA Consultation Paper questions on WACC, 18 September 2025.
- NBN (2025), NBN's submission on WACC methodology: ACCC voice interconnection services access determination inquiry, 3 September 2025.
- NBN (2025), NBN's response to ACCC consultation paper, nbn Replacement Module Application for the Second Regulatory Cycle, 19 September 2025.
- CEG (2025), nbn asset beta and WACC, September 2025.
- FTI (2025), NBN's WACC methodology for second regulatory cycle, 19 September 2025.
- TPG (2025), NBN Co Replacement Module for the Second Regulatory Cycle, September 2025.
- A summary of anonymised responses from other stakeholders.

[33] CEPA (2025), WACC Methodology, 1 August 2025.

3. REGULATORY FRAMEWORK

NBN raised concerns that we have not taken appropriate account of the regulatory framework that applies to NBN when considering the various cost of capital issues. These issues relate to the way in which a decision should be made by the ACCC. In this section we summarise the concerns raised by NBN and provide our response.

3.1.1. Summary of submissions

NBN raises two separate concerns with the overall approach we applied to develop our WACC recommendation for NBN:[4]

- We have not set out to determine a WACC that meets the NBN SAU requirements and failed to place adequate weight on the SAU WACC objectives. Specifically, we have not taken account of the NBN SAU WACC rule. This states that the WACC will be determined by estimating a nominal vanilla WACC which is "*commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as nbn in providing the NBN Access Service, Ancillary Services and Facilities Access Service*".
- We have not critically analysed the positions we have recommended and rely primarily on Australian regulatory precedent.

3.1.2. Our response

Our draft report is clear on the approach we adopted to develop a WACC methodology that meets the ACCC's statutory requirements. There is always a limit to the breadth and depth of issues that can be examined as part of any cost of capital review process. We were clear in our draft report how we have chosen to bound our inquiry and why. We also recognised in our draft report that the statutory criteria of other Australian regulators are generally similar to those of the ACCC, in particular the focus on a benchmark efficient entity. The consequences of estimating a WACC above or below the efficient level would have similar consequences regardless of sector. To be clear, we consider our WACC estimate is commensurate with the efficient financing costs of a benchmark efficient entity as required by the NBN SAU WACC rule.

The material difference between NBN's position and our own is the recommendation on the risk-free rate and MRP. NBN is of the view that we have not critically analysed our position on this issue. In the sections on risk-free rate and MRP below we set out a comparison between Frontier's method as endorsed by NBN and our recommendation. Our recommendation on the risk-free rate and MRP meets the NBN SAU WACC rule. Furthermore, Frontier's method produces unintuitive outcomes, such as a cost of equity estimate below the risk-free rate in certain market conditions. Accordingly, we do not consider that Frontier's proposed approach meets the NBN SAU objective of "*producing reliable estimates of the market cost of capital in a wide range of plausible market conditions*."

There are also more minor points on estimation of beta and gearing that have been raised by NBN. For example, NBN criticise the use of judgement to select a beta estimate within the comparator sample range and the use of net debt instead of gross debt to estimate gearing. We also address these points in this report, demonstrating that we have critically assessed our recommendations on each of the material issues.

[4] NBN (2025), NBN's submission on WACC methodology, September.

4. MARKET-WIDE PARAMETERS

4.1. RISK-FREE RATE

4.1.1. Summary of submissions

Stakeholders have raised three material issues with regards to the risk-free rate:

- Our combination of the risk-free rate with an MRP estimated using the historic excess returns (HER) method is inappropriate.
- The HER estimate should only be combined with a 'long-term' risk-free rate estimate.
- Annual reviews of the risk-free rate should be considered due to market uncertainties.

4.1.2. Our response

We have taken the capital asset pricing model (CAPM) as our underlying framework for estimating the cost of equity. None of the submissions questioned whether this was the appropriate framework. The CAPM is focussed on expected returns. Within this framework, we proposed the yield on ten-year Commonwealth Government securities (CGS) as a proxy for the expected return on the risk-free asset. No submissions questioned whether this proxy was appropriate for our analysis.[5]

However, some submissions questioned the period over which historic CGS yields should be observed to derive an estimate of the forward-looking risk-free rate. We observe that a long-term average of historic CGS yields is not the expected return on the risk-free asset today. Consistent with the judgements of most Australian and international regulators, we consider that measuring CGS yields close to the start of the regulatory period gives a reasonable estimate of the forward-looking risk-free rate over that period. We do not consider that using estimates of the risk-free rate from history will provide a better estimate.

This is consistent with our observations in the draft report regarding how a long-term estimate of the risk-free rate aligns with the CAPM framework. None of the submissions attempted to explain how alignment is achieved, nor did they engage with our observation that Frontier's long-term model provides unintuitive results especially for low beta assets.[6] Our view is that the long-term model is not consistent with the CAPM.

The issue of whether we should use the risk-free rate with a market risk premium estimated using historic excess returns is entirely to do with setting the market risk premium. In our view any solutions to this problem should not lead to an adjustment to the risk-free rate, given that a suitable and widely-applied risk-free rate proxy is available.

We have also considered stakeholder comments regarding the application of annual reviews to adjust the risk-free rate during the regulatory period. In relation to the cost of debt, we are recommending a trailing average approach which implicitly includes annual updates. In Australia, regulatory frameworks typically do not index the risk-free rate that is used to estimate the cost of equity, but rather set this in advance and hold it constant for the period. This does have the effect of introducing some risk for both the customers and the regulated firm, depending on the future path of interest rates. While cost of equity indexation has been applied by some international regulators, in Australia regulators have generally not seen this risk as severe enough to introduce indexation. This is potentially an area that the ACCC could explore in the future.

4.1.3. Updates to methodology

We propose no change to our risk-free rate methodology.

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[5] CEG's submission (pages 7 to 9) seems to come close to questioning whether the risk-free rate proxy is appropriate. However, CEG does not explicitly criticise the chosen proxy nor do they suggest an alternative.

[6] See Box 1 in CEPA (2025), WACC Methodology.

4.2. MARKET RISK PREMIUM

4.2.1. Summary of submissions

The primary issue raised by stakeholders relates to the combined effect of our proposed risk-free rate and MRP estimation methods. The stakeholders that disagreed with this approach consider that it results in an "*internally inconsistent*" estimate. However, other stakeholders did not see our proposed combination of methods as a concern.

Some stakeholders thought we were wrong to combine our chosen risk-free rate estimate with an estimate of MRP using a HER methodology:

> *"The primary reason why CEPA's proposed method fails to produce reliable estimates of the market cost of capital in a wide range of plausible market conditions is because it fails to pair together internally-consistent estimates of the risk-free rate and the market risk premium (MRP)"* – Frontier Economics

> *"This inverse relationship between the prevailing risk-free rate and the MRP is consistent with the predictions of finance theory… the problem with combining a historical average MRP with a prevailing risk-free rate is manifest in the above circumstance. Such an internally inconsistent approach assumes that risk premiums in equity markets are constant."* – CEG

> "[…] *it is desirable to give some weight to a prevailing MRP estimate to ensure the WACC is robust and not distorted by day-to-day market fluctuations. The significance of such internal consistency was central during periods of very low interest rates following the global financial crisis, where it was materially inaccurate to combine a prevailing RfR with a very long-term average MRP."* – Anonymised response

However, FTI did not see any issues with combining our estimate of the risk-free rate with an MRP estimated using the HER methodology.

The CEG submission does not provide its own estimates. CEG state that if given the choice between our methodology and Frontier's methodology, they would prefer Frontier's. Accordingly, we focus in this section on Frontier's proposed methodology.

The other material issues raised with our MRP methodology were that:

- Our rejection of dividend growth models (DGMs) is inappropriate.
- We inaccurately summarised Australian regulatory precedent with regards to the emphasis placed on the HER approach for estimating MRP.
- Our recommendation on DGMs is inconsistent with our advice to UK regulators such as Ofgem and Ofwat.

4.2.2. Overview of our response

The issues raised in stakeholder submissions are complex, and we have responded to them in some detail in the following sections. To frame this discussion, it is helpful to recall why estimating the MRP is challenging and what our objectives might be in that context.

The key issue is that – unlike the risk-free rate – there is no directly observable proxy for the MRP. Instead, we need to decide what weight to place on a selection of imperfect estimation methods. Broadly, these can be categorised as **conditional** and **unconditional** methods. A conditional estimate attempts to take account of current market conditions at a particular point in time. Conditional methods include DGMs and surveys. In contrast, unconditional estimates aim to establish a robust long-term estimate of the MRP that apply on average over time, rather than in a particular period. Unconditional estimators include HER and the total market return (TMR, or Wright) approach.

There is broad agreement that conditional methods are conceptually superior, reflecting that the MRP is likely to vary over time. However, it is also widely recognised that in practice, the available conditional estimators have material flaws that limit their ability to produce robust point-in-time estimates of the MRP. While DGMs may attempt to derive a conditional estimate, the evidence suggests that they are not successful. In other words, they are perhaps best viewed as *variable* estimates, rather than an accurate conditional estimate of the prevailing MRP at a point in time. We consider that this critique also applies to the method proposed by Frontier (Section 4.2.3).

Our understanding is that – similar to other regulators – the ACCC's task is to draw on relevant evidence to derive an estimate of the MRP that is defensible, unbiased and predictable. If there was robust evidence on precisely how the MRP varied over time, then it would be reasonable for the ACCC's methodology to place significant weight on this. In the absence of such evidence, we do not consider that a variable estimate should be preferred over a stable unconditional estimate. At most, we suggest that DGM evidence could be considered as a cross-check – provided that the known limitations of these models are taken into account. Despite stakeholder submissions to the contrary, we consider that our position on DGM evidence is consistent with our advice to UK regulators (Section 4.2.4).

This raises the question of which unconditional estimator(s) should be relied on as the primary MRP estimation method. As outlined in our draft report, this represents a choice between the HER and TMR methods. The TMR method embeds one assumption regarding the relationship between the risk-free rate and MRP (perfect inverse correlation) and the HER method another (perfect independence). Contrary to the comments of some stakeholders, we maintain our view that Australian regulatory precedent is largely in favour of HER (Section 4.2.4). However, some international regulators (e.g., in the UK) place full weight on the TMR method, while others consider hybrids that incorporate both methods (e.g., in New Zealand). This diversity of precedent aligns with a lack of conclusive theoretical or empirical evidence in support of either approach.

In that context, we consider that the decision of how much weight to place on the HER and Wright methods comes down to a balance between two factors: stability in the allocation of risk and stability in the cost of equity estimate. Our recommendations in Section 4.2.5 outline how the ACCC might interpret these factors and highlight considerations for specific regulated services.

As indicated in the summary above, we have structured the detailed discussion below into three parts:

- A discussion of the method proposed by Frontier, and why we do not recommend placing weight on it (Section 4.2.3).
- Consideration of other issues raised by stakeholders, including Australian regulatory precedent and CEPA's advice on DGM evidence in the UK context (Section 4.2.4).
- Our recommendations on the MRP in light of this analysis (Section 4.2.5).

4.2.3. Our response to Frontier's proposed method

As we outline in this section, we do not consider that Frontier's proposed method is suitable for estimating the MRP. Our concerns relate to three fundamental issues:

- **Issue #1:** In plausible market conditions, Frontier's proposed method can lead to an estimated **cost of equity that is below the risk-free rate**.
- **Issue #2:** Frontier consider that the HER method, when combined with a spot risk-free rate, can at times produce unintuitive cost of equity estimates – for example, during the 2008 financial crisis. However, examining other periods indicates that Frontier's method can also produce cost of equity estimates that are **disconnected from current market conditions**. This reflects that, similar to the TMR or Wright approach, Frontier's method embeds an assumption that the **total market return is largely stable** and that **investors are not influenced by risk-free rate movements**.
- **Issue #3:** Frontier's approach **does not resolve fundamental issues with DGM evidence**.

Overall, we find that Frontier's method does not offer advantages over the TMR or Wright approach, while being considerably more complex.

Overview of the Frontier method

Frontier's MRP estimation approach places equal weight on a 'prevailing' and 'long-term' MRP:

- The prevailing MRP is based on dividend growth models (DGM). Frontier pair this with a risk-free rate estimated close to the start of the regulatory period.
- The long-term MRP is estimated using the HER method, with the point estimate based on data from 1988 to 2024. Frontier pair this with a long-term average risk-free rate measured from 1993 onwards.

DGMs estimate the total equity market return as the discount rate at which the present value of forecast dividends is equal to the current stock market value. To estimate the prevailing MRP, Frontier consider evidence from four DGM specifications. These are the three models used by IPART (Damodaran – 2023, Bank of England – 2002 and Bank of England – 2010) and a specification previously considered by the AER, all estimated using a 'calibrated' approach developed by Frontier.

The calibrated DGM sets the long-term dividend growth rate assumption such that over a given historic period, the average MRP estimate produced by the DGM is equal to the average MRP derived from the HER method. Frontier consider that this feature address two concerns raised in relation to DGMs: (i) that DGM estimates of the MRP may be systematically biased upwards; and (ii) that there is uncertainty around the appropriate long-run divided growth rate assumption that is required to implement a DGM.

Frontier derives a calibrated estimate for each of the four DGMs, then takes the average as the prevailing MRP estimate.

Issue #1 – Cost of equity below risk-free rate

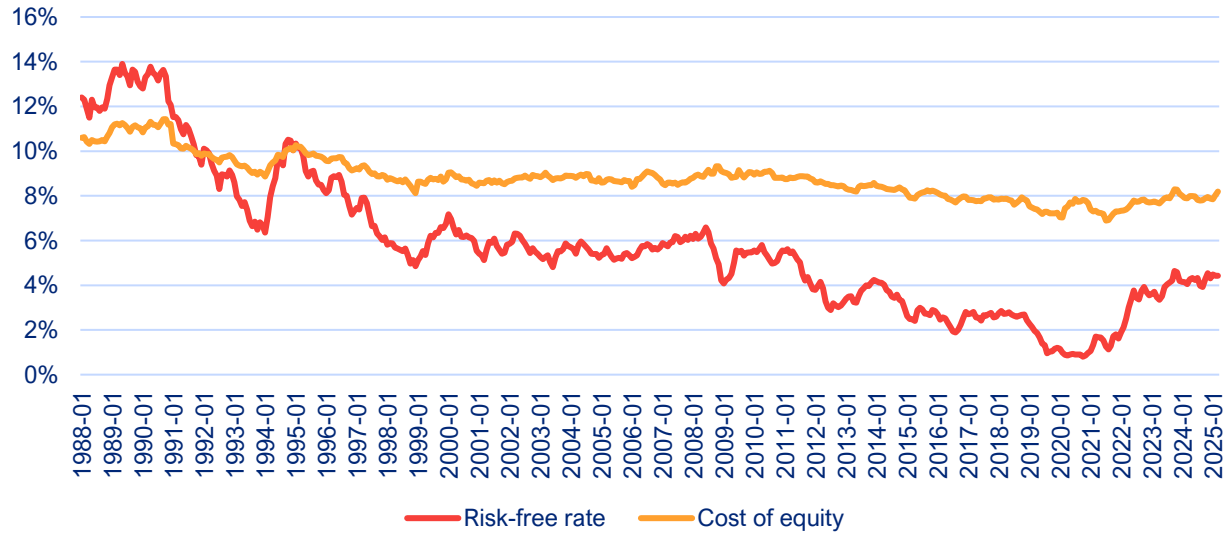
We conclude that Frontier's proposed method fails to provide "*reliable estimates of the market cost of capital in a wide range of plausible market conditions*." We have come to this view because:

- A reliable estimate of the market cost of equity must be strictly above the risk-free rate.
- Plausible market conditions include those that Australia has historically experienced.

The figure below shows estimates of the cost of equity using Frontier's methodology, which is an average of their long-term and prevailing methods.[7] This shows that the cost of equity falls below the risk-free rate when the latter is high relative to the historical period being assessed. It is entirely plausible that in the future Australia faces higher risk-free rates than at present. If this were to occur, there is a very real possibility that Frontier's methodology would produce a cost of equity that falls below the risk-free rate. This effect can be seen in Figure 4.1 in relation to the periods 1988-1992 and briefly in 1995.

[7] To demonstrate this, we have assumed an equity beta of 0.54.

Figure 4.1: Risk-free rate and cost of equity, nominal (Frontier's methodology)



Source: CEPA analysis of data provided by Frontier

Issue #2 – Cost of equity disconnected from market conditions

When historical data is used to develop MRP estimates, typically one of two assumptions is applied:

- **The market risk premium is assumed to be stable**, sometimes referred to as the Ibbotson approach or historic excess returns (HER) approach. There is no relationship between the risk-free rate and MRP.
- **The total market return is assumed to be stable**, sometimes referred to as the Wright approach or total market returns (TMR) approach.[8] There is a perfect inverse relationship between the risk-free rate and MRP.

The HER methodology embeds the first assumption, that the market risk premium is stable. As outlined above this assumption is heavily criticised by both Frontier and CEG. We can characterise both models proposed by Frontier (i.e., the prevailing model and long-term model) as reflecting the second assumption. The long-term model does this mechanically while, as explained below, the prevailing model embeds this assumption indirectly.

As outlined in our draft report, there is no evidence that conclusively demonstrates that either assumption is correct. However, there are advantages and disadvantages to each approach. We expand on these points below.

Frontier's method assumes that the total market return is (largely) stable

By design, the combined effect of Frontier's long-term risk-free rate and MRP methods – which apply long-term averages of both the risk-free rate and MRP – is a stable total market return.

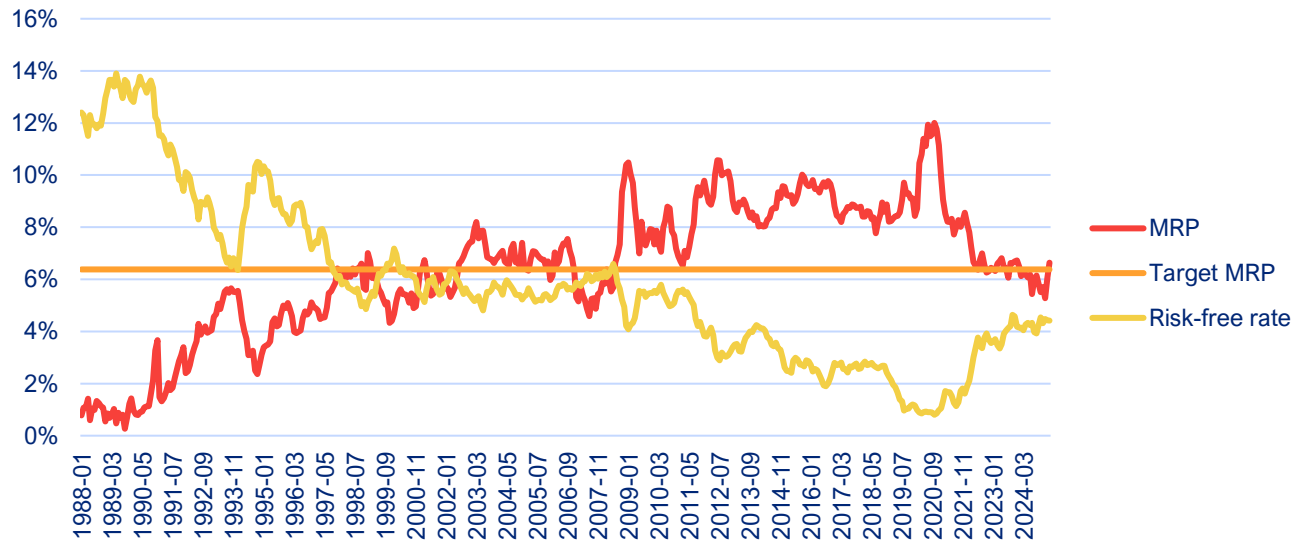
At first glance it is not obvious that the prevailing method also embeds an assumption that total market returns are stable. However, if we assess Frontier's prevailing model performance over time it becomes clear that the main determinant of the MRP result is the risk-free rate position relative to history. This is because Frontier's calibration sets the result of the model such that the *average* MRP produced is 6.38% (i.e., in line with the estimate produced by the HER method). If all other inputs were held equal, then achieving this would require the MRP to mechanically increase as the risk-free rate falls and vice versa.[9]

[8] The Wright approach assumes that *real* total market returns are stable.

[9] In Frontier's current MRP model, all other inputs are not held constant in each period. The index level and short-term forecast of dividends vary in the model. However, the single most material determinant of the result, that is the long-term growth rate of dividends, is constant in each period.

The figure below demonstrates this relationship using Frontier's current model. The model produces a low MRP (as low as 0.27%) early in the period. This does not reflect insights about market rates during that period, but is simply because the risk-free rate was high relative to the rest of the calibration period. Similarly, Frontier's proposed prevailing MRP result of 6.2% for 2024 is almost entirely determined by the risk-free rate today relative to history. As mentioned above, this relationship does not precisely hold for any single period's estimate and there is some variability. But over the estimation period, the relationship between the historic and current risk-free rate is determinative of the MRP estimate.

Figure 4.2: Risk-free rate, target MRP and estimated MRP, nominal (Frontier's current methodology)



Source: CEPA analysis of data provided by Frontier.

A stable TMR assumption can also produce unintuitive results

We can demonstrate the issues that arise from assuming stability in either total market returns or the market risk premium by comparing model results to the yields on corporate bonds. This is because we might expect the yields on risky assets such as equities and corporate bonds to move together. The figures below show the total expected market return implied by the HER model, the Wright model and that implied by Frontier's proposed model (average of current and long-term). This is compared to the yield on BBB corporate bonds. The second figure indexes the values to January 2005 to clearly show relative differences over time.[10]

The figures show an *approximation* of the total equity market return that each of the three models (HER, Wright, Frontier) would have produced in each year. This is because the models are all calibrated for data to 2025 – i.e., including data that would not have been available on each estimation date. For example, in periods before 2025, the estimation period and the Frontier method's calibration period would have been shorter. This is unlikely to make a significant difference when considering trends over time. This is because both the HER and Wright MRP estimates remain substantially the same as we move forwards in time.[11] Regarding Frontier's models, it is possible that as risk-free rates were higher earlier in the period, Frontier's result may sit above the level shown in the figures below. For these reasons, the figures should only be used to consider trends over time and do not represent the exact estimate that each method would have produced in the past.

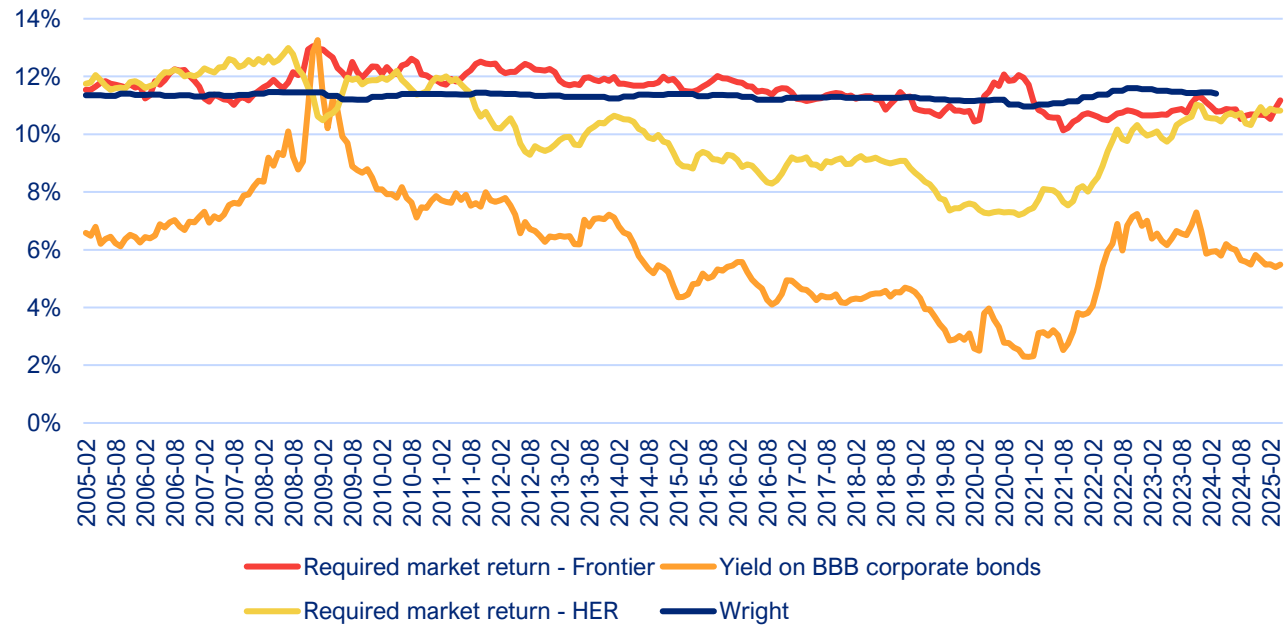
This analysis illustrates the potential shortcomings of all three models, in terms of their ability to generate MRP estimates that reflect intuitive responses to market conditions. Relative to the yield on corporate bonds, the HER

[10] We have chosen to start this analysis in January 2005 as this is the first month of corporate bond yield data available from the Table F3 published by the Reserve Bank of Australia (RBA).

[11] We have used data from the RBA for historical inflation forecasts which feed into the Wright model estimate. The relevant data file only includes history to February 2024, which is why the Wright line ends early in the figures below.

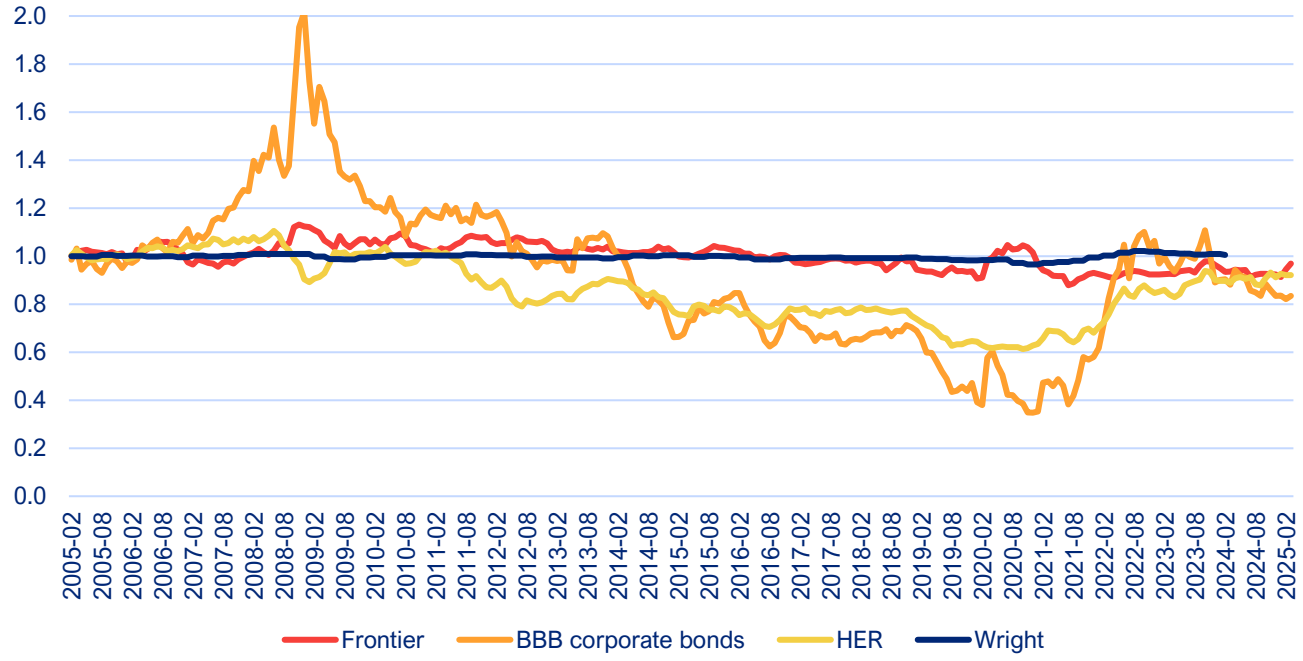
model does not provide an intuitive MRP estimate at the onset of the 2008 financial crisis. In particular, the HER estimate falls while corporate bonds yields increase. This is a demonstration of the criticism that Frontier and CEG have raised. However, this behaviour is for a relatively brief period, and we must also consider what happens for the much longer period between 2009 and 2020. During this period corporate bond yields fell materially. The HER model follows the corporate bond yields down and we consider this to be the intuitively correct direction. Like the Wright approach, Frontier's proposed model disconnects from the trajectory of bond yields, and we do not observe a significant adjustment downwards.

Figure 4.3: Required equity market returns and yield on BBB corporate bonds, nominal



Source: CEPA analysis of RBA data and data provided by Frontier

Figure 4.4: Required equity market returns and yield on BBB corporate bonds (indexed)



Source: CEPA analysis of RBA data and data provided by Frontier

Note: All values indexed to their January 2005 value.

The Frontier and CEG submissions emphasise that the HER method's assumption regarding the relationship between the risk-free rate and MRP is not consistent with financial theory and market evidence. However, this ignores evidence that points to the impact of the risk-free rate on equity investor's decisions. This was much commented on by central banks during the period of relatively low risk-free rates between 2008 to 2020. For example:

"The very low policy rates and unconventional monetary policies implemented around the world over the past decade have contributed to yields on government bonds falling to exceptionally low levels. As a result, prices for a broad range of assets, including equities, corporate bonds and commercial real estate, have risen because ***risk-free interest rates are central to their valuation****."* – Reserve Bank of Australia (2018), Financial Stability Review.

This reflects a that risk-free rates are an important factor that drives equity investor's required returns. Frontier's methodology either entirely ignores (long-term model) or almost entirely ignores (current model) this insight.

Issue #3 – Frontier's approach does not resolve fundamental issues with DGMs

Frontier consider that the calibrated approach addresses concerns raised with DGMs in other regulatory processes. However, we are not persuaded that this is the case.

We observed above that Frontier's DGM can almost be reduced to an observation that if the risk-free rate is low the MRP must be high. As such, the relative position of the current risk-free rate to history becomes the predictive indicator. To our knowledge, the predictive properties of this indicator have not been adequately established in the academic literature or elsewhere. Neither Frontier nor CEG have provided such evidence in support of the Frontier model.

CEG also appears to question whether Frontier has adequately calibrated their DGM. CEG state:

"I am also asked to comment on whether the calibration of the DGMs to historical realised returns helps address any concerns regarding the use of DGMs. My answer to this question is "yes" subject to the caveat that the calibration period is, in the relevant senses, "representative…" Specifically, to the extent that the realised returns in the calibration period were consistent with expected returns and that current expected long term earnings growth rates are similar to historical long term expected earnings growth."

CEG appear to be saying that the calibration of DGMs to long-run returns could potentially be helpful, but only if two conditions hold:

- Firstly, that realised returns in the calibration period were consistent with expected returns. However, CEG does not explain whether Frontier achieves this, nor set out how this might be achieved.
- Secondly, that current expected long-term earnings growth rates are similar to historical levels. Again, CEG does not explain whether Frontier achieves this, nor set out how this might be tested. Given that the DGM result is so heavily determined by this assumption, this appears crucial for assessing Frontier's results. Frontier's method makes no attempt to provide an estimate of what a reasonable long-run dividend growth rate might be. Indeed, each of Frontier's calibrated DGMs embeds a different long-run dividend growth rate depending on the outcome of the calibration process.

We have more general concerns regarding the implementation of DGMs, beyond Frontier's calibrated versions, as outlined in Section 4.2.4.

Assessment of Frontier's method

One of the key issues raised by NBN is that combining an estimate of the risk-free rate with an estimate of the MRP achieved using the HER approach results in "*internally inconsistent*" estimates. In this context, we understand the words "*internally inconsistent*" to reflect an assumption that the total market *nominal* return is in some way stable.

However, as explained in detail in our draft report, it is not clear that the total market return *is* stable.[12] Furthermore, the critiques put forward by NBN can apply equally to Frontier's proposed method.

Drawing on Frontier's June 2025 report, NBN summarises the issues it perceives with combining a "*prevailing risk-free rate and a long-term MRP*". In their view, this method will:

- *"Result in a figure which does not clearly represent the state of the equity market at any point of time – and accordingly that result will have no obvious economic interpretation and not be economically meaningful;*
- *Not account for the potentially inverse relationship between the risk-free rate and MRP (and the resulting stability in the cost of equity) – and instead will result in a volatile cost of equity that moves in synchronicity with the risk-free rate for a given level of equity beta;*
- *Produce implausible outcomes over time, such as by suggesting that the cost of equity falls during financial crisis."*

With similar language, we can summarise the issues with Frontier's proposal as follows:

- Results in a figure which does not clearly represent the state of the equity market at any point of time – Frontier's 'long-term' model mechanically disconnects from the risk-free rate which is a directly observable indicator of current market conditions.
- Enforces an almost perfect inverse relationship between the risk-free rate and MRP – resulting in a cost of equity inappropriately disconnected from market conditions which can be demonstrated with a comparison to other risky assets such as corporate bonds.
- Produces implausible outcomes over time, such as suggesting that equity investors are not influenced by the risk-free rate and produces estimates of the cost of equity below the risk-free rate in certain market conditions.

The underpinning assumptions of Frontier's model are similar to the Wright approach. This is clear from the figures above where the Wright approach tracks Frontier's results. However, the Wright approach has the advantage of passing through more of the risk-free rate reduction to the MRP estimate when the equity beta is below 1.[13] This is because Frontier's long-term model uses an average risk-free rate from history while the Wright model uses the risk-free rate at the time of estimation. Frontier's model is also more complex than the Wright approach, while providing similar results.

This raises the question of whether this increased complexity produces more reliable results relative to Wright:

- Our view on the long-term model is no, as explained under Issues #1 and #2 above.
- Our view on the current model is also no, as explained under Issue #3 above.
- By extension, an average of the two is also not an improvement upon Wright.

4.2.4. Our response to other MRP estimation issues

Below, we discuss other issues raised by stakeholders in relation to the MRP.

In particular, we address:

- Concerns that we have inappropriately rejected DGM evidence.

[12] We observe that in other regulatory contexts, for example in the UK where the Wright approach dominates, the assumption is that the total *real* market return is stable. This is different from the nominal assumption proposed by Frontier.

[13] See Box 1 in CEPA (2025), WACC Methodology.

- Concerns that we inaccurately summarised Australian regulatory precedent with regards to the emphasis placed on the HER approach for estimating MRP.
- Concerns that our recommendation on DGMs is inconsistent with our advice to UK regulators.

Reliability of DGMs

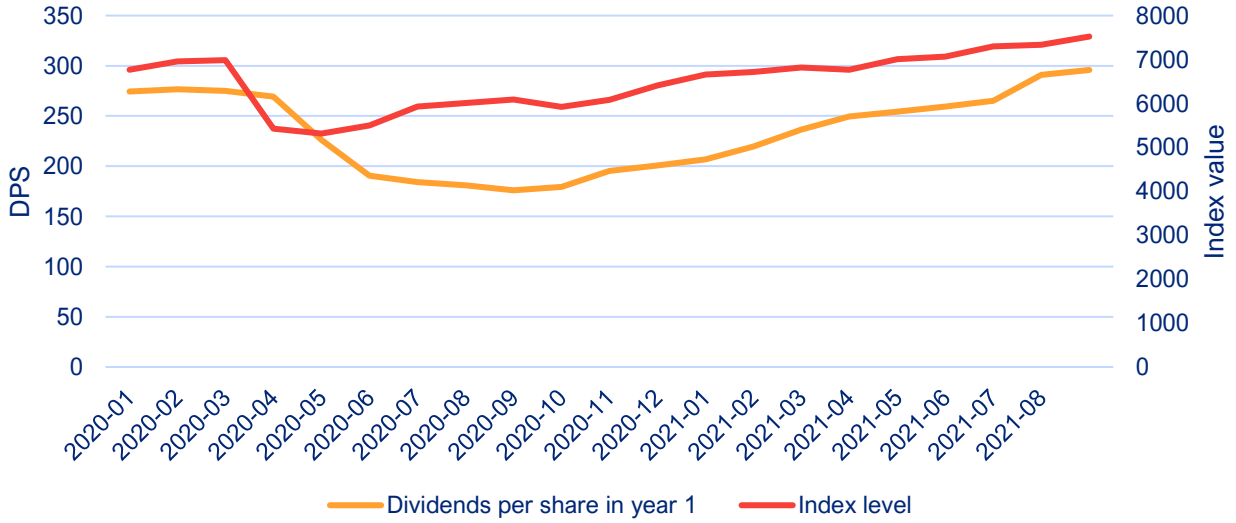
We consider that a robust conditional method for estimating the MRP would be superior to an unconditional approach. We agree with CEG that there is an extensive literature that "*demonstrates market risk premiums vary through time"* and that they do so in a "*relatively predictable manner*" though the level of predictability is certainly open to debate. In short, the literature finds that certain market indicators are predictive about future market returns. By extension, these indicators can also inform a view on expected returns.

However, we remain sceptical that the available methods, including the DGMs proposed by Frontier (see Section 4.2.3 above), are sufficiently robust. Our concerns relate to practical issues around the implementation of DGMs. One of these issues is data lags. The question the DGM is trying to answer is how much of the change in the equity market valuation is because of a change in the discount rate rather than a change in expected future income. When market events occur, such as at the beginning of Covid, equity markets respond almost instantly. However, the published dividend forecasts that are used for DGM estimation are not updated anywhere near as quickly – even though investors are likely to have updated their internal forecasts for dividend yields.

Bloomberg data seems to show significant lags both in the time taken for analysts to update their estimates and for Bloomberg to take account of this information. The figure below shows the beginning of the Covid period. The ASX 200 equity index falls materially between March 2020 and April 2020. However, dividend forecasts through to April look stable.[14] A DGM estimated in April would attribute the entire drop in equity valuations to a change in discount rates and as risk-free rates were broadly stable, this would be attributed to an increase in the market risk premium. However, by June 2020 the expected dividends per share had also dropped materially. Attributing the entire drop in April to a change in market risk premium would appear to have been an error.

Although this is not unique to the Covid period, we can see the issue clearly because of the significant change in the equity index. However, in practice DGM estimates in every period are impacted by this issue.

Figure 4.5: Index level and DPS forecast for year 1



Source: CEPA analysis of data provided by Frontier.

Understanding the mechanics of how platforms like Bloomberg produce their dividend forecasts is crucial to assessing whether they are providing a reliable estimate. Lags are not the only issue. A range of other issues (that appear to remain unexamined) include how Bloomberg aggregates various forecasts and the conditions under which an estimate is considered 'stale' and drops out of a forecast.

Despite these issues, DGMs are one tool available to calibrate the cost of capital estimate. For example, during a market stress event (for example the 2008 financial crisis or the onset of the Covid pandemic) the DGM result may have provided evidence that the HER result was not intuitive, and an adjustment may have been required. However, given the various issues explained above, we do not recommend placing explicit weight on DGM MRP estimates. This would be more in line with how Ofgem and Ofwat have treated DGM evidence historically.

Use of HER by other Australian regulators

In our report, we noted that "*[c]urrent Australian regulatory precedent is largely in favour of primarily, if not exclusively, adopting the HER methodology. A notable exception is IPART, who place 50% weight on the HER estimate and the remaining weight on DDM and other market indicators*."

CEG stated that we inaccurately summarised the preferences of regulators for using HER. Our conclusion is that our representation of the regulatory preferences is accurate.

In its report, CEG cited two Australian regulatory decisions:

- **Firstly**, the QCA's 2018 draft decision on the access undertaking for Aurizon Network which placed greater emphasis on the Cornell DGM and Wright estimates. However, the QCA's September 2024 Rate of Return review update states it will not retain the Wright method and will consider DGM results only in a qualitative manner.[15] In our view, drawing on the most recent precedent from the QCA is appropriate.
- **Secondly**, the ERA's 2016 final decision on *Proposed Revisions to the Access Arrangements for the Dampier to Bunbury National Gas Pipeline 2016-2020* stated that the ERA will, based on relevant information, use its discretion to determine a point estimate of the MRP at the time when the decision is made. In the 2016 decision, the ERA placed some weight on DGMs to derive an MRP estimate which was higher compared its HER estimate. Our draft report referenced a more recent decision that outlines the ERA's current position. In that decision, the ERA noted that "*while DDMs have the benefit of taking the current economic outlook into account, the ERA considers that this method is unreliable on its own, due to its upward bias, and its sensitivity to the form of the model. Consequently, the ERA does not place a large reliance on DDMs.*"[16]

In our draft report, we reported MRP approaches adopted by nine Australian regulators, of which six placed majority weight (≥ 80%) on HER estimates. Of the remaining two regulators, ESCOSA place 50% weight on HER estimates and 50% weight on regulatory precedent, while IPART place 50% weight on HER estimates and 50% weight on a combination of 'short-term' estimates. The explanations provided by each regulator on their rationale for adopting these methods were summarised in our draft report.[17]

Based on this evidence, we consider that our summary of Australian regulatory precedent on MRP is accurate.

CEPA advice in the UK

Both NBN and Frontier outline that CEPA has provided DGM model estimates as part of regulatory processes in the UK. We also provided DGM model estimates as part of our draft report. We agree that DGM estimates have been presented as part of regulatory processes in the UK including by CEPA, for example in cost of capital determination processes by Ofwat and Ofgem. However, these estimates have generally played a limited role in informing the cost

[15] QCA (2024), Rate of return review – Version 4 p. 75-76

[16] ERA (2022), Explanatory statement for the 2022 final gas rate of return instrument, p. 146

[17] See Section 3.2.1. in CEPA (2025), WACC Methodology.

of equity decision, typically acting as cross-checks. Instead, the result of the Wright (TMR) approach has been determinative. Indeed, the quote from a previous CEPA report provided by Frontier makes this clear:

> *"Our preferred approach is to assume that the TMR is largely stable, but to reflect that there is still some movement in the level of the TMR. Under this approach, we consider market cross-checks on the TMR specifically, such as DDM inputs, investment manager forecasts, price-to-earnings yields, and results from the additive ERP approach"* – CEPA (2018), Review of cost of capital ranges for Ofgem's RIIO-2 for onshore networks.

As this quote indicates, in the UK context – consistent with long-established precedent in that jurisdiction – CEPA's WACC estimation approach has applied the TMR method. We do not see this as inconsistent with our draft advice that the ACCC retain the HER method. In both contexts, our view is that selecting the preferred MRP approach should not ignore past regulatory decisions. Where the true forward-looking MRP is unobservable – and evidence on the RFR-TMR relationship is not definitive – stability and predictability are also desirable properties of regulatory decision making.

By extension, adopting the TMR method (or HER method) does not require a conclusion that there is a perfect inverse relationship (or no relationship) between the risk-free rate and the MRP. Rather, the principle is that consistently treating the two parameters a certain way can produce a reasonable long-term (or unconditional) estimate over time.

4.2.5. Updates to methodology

After careful consideration of the issues raised by stakeholders, we do not propose to alter our recommended methodology for the MRP. However, we do think it is helpful to draw out some nuances where the ACCC may wish to apply its regulatory judgement. In particular:

- The decision of how much weight to place on the HER and Wright methods comes down to a judgement on two factors, and how these apply in the context of specific regulated services.
- Although we do not recommend placing explicit weight on DGM evidence, we consider that they could be included as a cross-check – provided that appropriate consideration is given to the known limitations of these models. Although we do not think it is necessary at this point in time, the ACCC may wish to further explore how such cross checks could be applied.

Weighting of the HER and Wright methods

We concluded in our draft report that the relative merits of the HER and Wright approaches are balanced, due to the absence of conclusive evidence in support of the risk-free rate/MRP relationship that each model assumes. In this context, we see two key considerations that can inform a decision between the two methods.

Firstly, we consider that when regulators shift methods, this also produces a change in the risk allocation between the regulated firm and consumers. Such shifts can lead to windfall gains and losses for regulated companies (and consumers), depending on the economic conditions when a shift is made. By extension, we consider maintaining some level of status-quo bias in regulatory decision making to be important. If a newly proposed method is not clearly superior to the existing method, then a methodological shift produces an arbitrary reallocation of risk without an offsetting benefit in terms of improved accuracy. In the context of the ACCC seeking a general WACC methodology, the ACCC's previous position has been to use the HER method.

We note that NBN disagrees with this framing in the context of NBN – suggesting a need for the ACCC to consider how this principle should apply in that context.

Secondly, we consider the NBN SAU "*objective of promoting stability in the rate of return over time*". Wright approach estimates have historically produced more stable return on equity estimates compared to HER, and this is likely to be the case going forward given the properties of each method. Promoting stability may point towards the Wright approach. However, unlike Frontier's 'long-term' approach, the Wright approach passes through some of the reduction risk-free rate when equity beta is below 1. It is possible that the historic stability of the Wright

approach could be challenged in the future were expected inflation to become unmoored from the RBA's inflation target midpoint.

With regards to voice interconnection, the SAU objective does not apply. This suggests full weight should be placed on the first consideration. In future applications of the WACC method to other regulated, the ACCC may also need to consider the relevance of this second factor in light of the specific statutory objectives that apply.

A potential alternative to relying entirely on one method would be to place weight on both HER and Wright. This would be a more partial shift in the methodology, relative to the status quo. It would move the assumption of no relationship between the risk-free rate and MRP to one where there is a partial inverse relationship. We have not recommended this approach – and maintain our recommendation that the ACCC retain the HER method at this point in time – because we consider that:

- Placing weight on both methodologies would still be a material shift from the status quo and in conflict with the first factor (stable risk allocation).
- As the Wright approach has not been implemented in Australia historically, it would be appropriate to undertake further analysis to inform a view on the appropriate weighting for this method (if any). For example, this might include:
    - Further backwards- and forward-looking testing of its impact should be undertaken to understand how it can be expected to perform in the context of the second factor (stable estimates), but also with respect to other market indicators (e.g., movements in corporate bond rates).
    - Further consideration of the appropriate method for estimating expected inflation, which is a required input to the Wright method.

We provide estimates from both methods for the ACCC's consideration below. We have applied the AER's method for estimating expected inflation to develop the Wright estimate.[18]

Applying DGMs as a cross check

It is possible that DGMs can provide useful information regarding the current MRP. However, our view is that placing explicit weight on DGMs in a methodology is risky given the issues outlined above. Given the choice between:

- mechanically placing weight on one or more DGMs, for example 50%, or
- not placing any weight on DGMs,

we would recommend not placing any weight on DGMs.

However, we consider that DGMs can be used as a cross-check, where the methodology allows for a comprehensive examination of the issues associated with DGM-based estimates. This would be more in line with how most Australian regulators, Ofgem and Ofwat have treated DGM evidence historically.

Developing a formal methodology to apply DGM evidence as cross check would require several steps including:

- identifying and (to the extent possible) resolving data concerns of the type identified in Section 4.2.4 (i.e., data lags, the underlying mechanisms of Bloomberg's 'best' dividends per share forecast, stale data, etc),
- determining the appropriate DGM specifications, and
- developing (non-mechanistic) guidance on how the results of the chosen models would be taken into account.

[18] Specifically, the geometric average of ten years with the first two years applying RBA's inflation forecast and then remaining years at the RBA's inflation target midpoint of 2.5%.

Although the ACCC may wish to explore this in future, we do not consider that it is necessary at this time given the results suggested by a range of DGMs. In particular, we note that relative to the HER approach, the DGM models we estimated at present point to an MRP below the historic average, while the DGM's estimated by Frontier point to an MRP close to the historic average.

Updated MRP estimates

We have updated the various MRP estimation method results for a new cut-off date of 30th September 2025. These estimates are shown in the table below.

Table 4.1: MRP estimates

Method	Estimate
Historical Excess Returns (HER)	Average of 1988-2024 period: **6.37%** Average of historical periods (1883, 1937, 1958, 1980, 1988): **6.45%**
Wright Method (TMR Approach)[19]	Average of 1988-2024 period: **7.23%** Average of historical periods (1883, 1937, 1958, 1988): **6.97%**
Dividend Discount Model (DDM)[20]	ERA 2-Stage Model**: 4.75%** Average of IPART's three non-proprietary DDMs: **5.80%** Estimates from IPART's three non-proprietary DDMs: Bank of England (2002): **6.15%** Bank of England (2010): **5.60%** Damodaran (2013): **5.65%**

Source: CEPA analysis.

[19] Estimated based on the AER's method. Described here. This estimates the Wright approach assuming real returns are stable and then applies an inflation rate assumption of 2.56% to convert back to nominal. We derived the inflation assumption by estimating the geometric mean of a 10-year inflation forecast series, which integrates the most recent inflation projections from the RBA's Statement on Monetary Policy (August 2025) with the midpoint of the RBA's 2–3% target range.If we instead assume nominal market returns are stable instead of real returns the average of the period 1988-2024 results in a market risk premium of 7.42%.

[20] Bloomberg data extracted on 27 October 2025.

4.3. GAMMA

There were no material issues raised with our approach to gamma.

In our draft report, we recommended estimating gamma by deriving the distribution rate from financial accounts and theta via the equity-ownership approach. This is the approach applied by the AER and we proposed adopting the AER's gamma estimate of 0.57 from the 2022 Rate of Return Instrument. However, we noted that we might revise this estimate to reflect more recent data. The AER's 2024 annual update reaffirmed a gamma estimate of 0.57.[21] Based on this, our estimate remains unchanged.

4.3.1. Updates to methodology

There are no changes to the methodology. The gamma estimate for our final WACC estimate continues to be 0.57.

[21] AER (2024), Rate of Return Annual Update, p.5

5. SECTOR-SPECIFIC PARAMETERS

5.1. BETA

5.1.1. Summary of submissions on beta

Below, we present a summary of the key points raised by CEG and Frontier on beta and the comparator sample in their consultation responses:

- Frontier disagreed with our inclusion of tower companies.
- Frontier made several comments on our relative risk assessment for NBN SAU and voice interconnections, and on the extent to which our methodology relied on judgement.[22]
- Both Frontier and CEG support the use of the sample median when summarising the comparator sample's betas, rather than the sample mean. This reduces the impact of outliers, and points to a slightly lower beta estimate.

We address these and other points, including our choice of geographic filter, below.

Alongside this report we have provided a spreadsheet which shows the comparators remaining at each stage of our proposed filtering process. This should provide the required transparency and allow replication if required.[23]

Inclusion of tower companies

Stakeholder arguments on the inclusion of tower companies

Frontier considers that tower companies are not suitable for inclusion in the comparator sample for NBN Co, given that:

- Tower companies do not supply broadband connectivity on a regular subscription basis,
- Tower company revenues are generally earned under long-term contracts, providing them with greater revenue certainty than NBN has.

Frontier also notes that tower companies in our sample generally reflect higher betas than the overall sample, and attribute this to "statistical noise."

CEG, on the other hand, supports the inclusion of tower providers as part of a wide sample.

CEPA response on the inclusion of tower companies

We acknowledge that there are difficulties in interpreting beta estimates for the tower companies in our comparator sample:

- There are relatively few comparators, so a subsample consisting of solely tower providers may not be large enough to be statistically robust.
- There are differences in operational profile and contracting arrangements between the towers sample companies, NBN SAU, and voice interconnection services.
- The towers comparators in several cases earn revenue from systematically riskier downstream sectors such as broadcasting, and earn significant shares of revenue in developing markets.

[22] Frontier Economics (2025) *"Response to CEPA draft report on a WACC method for the ACCC.",* p. 33

[23] We note that, due to changes in the underlying Bloomberg equity screening results, we have not sought to present some of the first filtering steps.

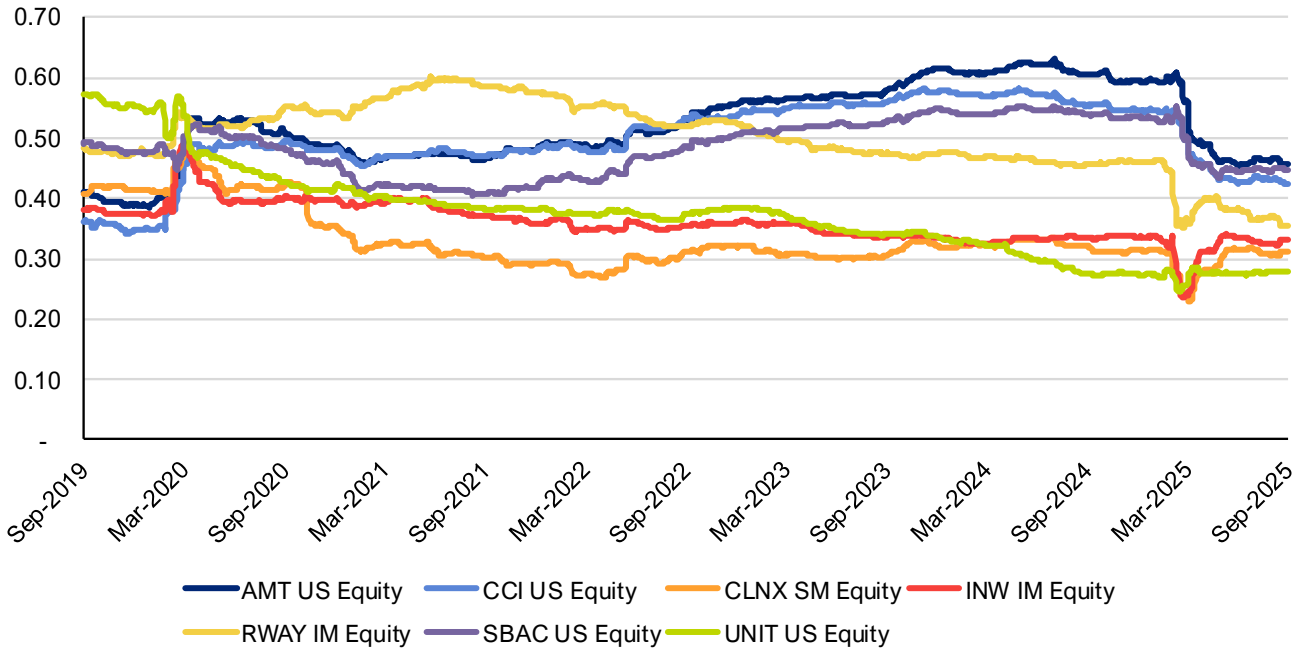
- As noted by Frontier, there is a tension between the generally higher asset betas estimated for the tower comparators and our *a priori* relative risk assessment, under which we expect wholesale service provision to exhibit lower systematic risk exposure. This may be related to the point above.

However, we continue to agree with CEG that the tower companies are suitable for inclusion as part of our wide sample, noting the following relevant points:

- Under our proposed methodology, tower companies only impact the proposed range insofar as they contribute to the full sample. We have not sought to rely mechanistically on subsamples of our wider comparator sample when setting our beta proposals.
- A wide range of plausible betas for wholesale services (spanned by the towers, wholesale fibre, and fixed satellite comparators) may be consistent with the degree of statistical uncertainty surrounding the systematic risk profile of these services.
- While tower companies are not perfect comparators for NBN, we continue to consider that they bear similar systematic risk exposure to NBN by virtue of their wholesale provision of telecoms infrastructure services to other telcos and broadcasters.

Furthermore, while the average asset beta for the tower companies is high relative to the broader sample, this masks substantial cross-company variation. The chart below suggests that, on a spot basis, the tower companies span a wide range from 0.28-0.46.

Figure 5.1: Rolling 5-year weekly asset betas for telecom tower companies, 2019-present



Source: CEPA analysis of Bloomberg data

This analysis also suggests that there has been a divergence between three American firms (American Tower, Crown Castle, and SBA Communications) and the remainder of the companies, with the former drifting upward from late 2021, while the asset beta estimates for the latter have steadily decreased.

We have not sought to fully explain this divergence, but given that NBN itself owns a fixed wireless network including tower infrastructure, we do not consider it defensible to exclude these companies from the sample.

That said, we present a sensitivity to our core results below which excludes both the telecom tower companies and the fixed satellite companies (Eutelsat and SES) from the calculation.

Relative risk analysis and application of judgement more broadly

Stakeholder arguments on the relative risk analysis

Frontier argues that NBN faces similar risks on average to the wide sample of firms in the comparator sample, and that our approach of using relative risk analysis to distinguish between the betas for NBN SAU and voice interconnection services relies too heavily on judgement.

In particular, Frontier focuses on our argument that NBN SAU may be less exposed to systematic counterparty risk than retail providers, noting the following:

- Retail Service Providers (RSPs) may be expected to face a greater frequency of smaller retail bad debts, while wholesalers may face a lower frequency of larger retail bad debts, and no evidence has been presented as to the overall counterparty risk exposure.
- RSPs employ sophisticated credit management strategies to mitigate the risk of retail bad debts.

Similarly, CEG expresses its preference for more quantitative approaches to deriving relative risk adjustments within a wide sample.

CEPA response on the relative risk analysis

We discuss each of these issues in turn.

Results of our relative risk analysis

In the first instance, we disagree with Frontier's characterisation of our relative risk analysis as being mainly focused on systematic counterparty risk. Regarding systematic demand risk exposure, we stated that:

- In general, wholesale service provision may be more heavily contracted than retail services, though we understand this may not be the case for NBN, which earns revenues on a month-to-month basis, paid in advance.
- While NBN offers differentiated speed tiers at the wholesale level, it is possible that RSPs offer a greater degree of product differentiation (i.e., providing more scope for retail customers to switch to a lower cost service, compared to RSPs ability to downgrade the wholesale services they purchase from NBN). While it is possible that a significant share of the systematic demand risk faced by RSPs can be passed through to NBN, it is not clear that all such risk can be passed through.
- It may be argued that NBN faces slightly lower levels of counterparty risk from bad debts than the RSPs that connect to its network.

We also stated that NBN's systematic risk stemming from growth opportunities was likely to be similar to the rest of the sample, and that in terms of operating leverage NBN is likely to sit between the wholesale providers and the vertically-integrated providers.

Regarding counterparty risk, we continue to consider that:

- Systematic counterparty risk may be a concern for service providers whose revenues are highly-contracted – in the event of a systematic downturn, customers may be more likely to default on their contracted payments.
- Given that a large share of NBN's revenues are not contracted, it is possible that NBN faces less systematic counterparty risk than its retail-facing RSP customers.

In the event of a systematic downturn that causes retail consumers to default on contracted payments to their RSPs, it is possible that not all of this risk can be passed to NBN by RSPs in the form of reduced demand for NBN's services.

We would expect that, at best, such fluctuations in retail demand would flow to NBN with a lag, and possibly not at all, given that:

- RSPs may not immediately disconnect services for accounts with past-due payments, and may in some cases take more than a month to do so[24].
- RSPs may face restrictions around the deactivation of consumer accounts, including requirements to serve notice, consumers' rights to dispute and the requirement that service continue while under review[25], and further protections for retail consumers facing financial hardship[26].
- Some consumer accounts with past-due balances may resolve with late payments, rather than default.

To the extent that RSPs continue to provide service to accounts with delinquent payments for some time, it is plausible that they maintain their monthly payments for wholesale service from NBN – in this case, RSPs may bear the counterparty risk, and can pass this risk to NBN with a lag (in the case of retail default), or not at all (in the event that the retail account becomes current before service is disconnected).

In either case, this should in principle be beta-reducing for NBN relative to the rest of the comparator sample, many of which are retail-facing RSPs.

For example, we present below a comparison of the aging profile of trade receivables for Telstra with our two listed wholesale comparators, Chorus Ltd and Netlink NBN trust.

Table 5.1: Aging profile of trade receivables for selected comparators, as of 2025[27]

AUD, Million	Chorus	Netlink	Telstra
Not past due	82	34	3,850
past due 1-30 days	2	-	296
past due 31-60 days	1	1	105
past due 61-90 days	1	-	56
past due 91+ days	-	-	245
Total past due/not past due	**4%**	**3%**	**18%**

Source: 2025 Annual reports for Chorus, Netlink, and Telstra, xe.com, CEPA analysis

While not comprehensive, this evidence suggests that Telstra is exposed to substantially more delinquent trade receivables than either of the wholesale comparators.

As a further cross-check, we have conducted further analysis of available Bloomberg data on bad debts for the companies in our sample, which is set out in Appendix E.

On balance, we do not consider that the evidence submitted by stakeholders changes the results of our relative risk analysis, and we continue to consider it appropriate to set the point estimate for NBN SAU at the bottom of the empirical range and voice interconnection services at the top.

Application of judgement more broadly

On the more general point surrounding the application of judgement in our methodology, we consider that:

- Given the number of methodological choices available when estimating beta, and the range of estimates that derive from these, robust regulatory decisions on beta necessarily rely, to some degree, on judgement.

[24] For example, Telstra's 2024 annual report (available here, pp.136) states that Telstra makes a 91% provision for balances where the payment is overdue by more than 90 days and the customer's services have been deactivated.

[25] See the Australian Telecommunications Industry Ombudsman on Restriction and disconnection for non-payment (here).

[26] See the Australian Communications and Media Authority (here).

[27] Local currencies were converted into Australian dollars using the spot exchange rate as of 1 January 2025. For NZD, this was 0.90, and for SGD, this was 1.18. Foreign exchange rate data sourced from xe.com.

- There is no single "correct" mechanistic approach to determining a forward-looking beta for a regulated company and attempts to reduce the scope for applying judgement heighten the risk of estimating beta with error.
- Indeed, any single methodology for arriving at a regulatory beta is intrinsically an exercise in judgement, insofar as it necessarily focuses on certain methodological approaches at the expense of other, equally valid approaches that may give a different answer.
- The beta methodology proposed in our August report does not rely inappropriately on the application of judgement, and is largely in agreement with the methodological preferences of stakeholders, including CEG and Frontier.

Perhaps the key area of contention among stakeholders concerns our approach to setting the beta proposal for NBN SAU at the bottom of our estimated range, and the beta for voice interconnection services at the top.

We consider that this approach, while judgement-based in the sense of not being explicitly quantitative, is robust:

- We do not consider that stakeholder responses have materially called into question the directional conclusion of our relative risk analysis for NBN SAU and voice interconnection services.
- Instead of separately estimating an explicit, quantitative relative risk adjustment (which is unlikely to be free of error), we use the directional implications of our relative risk analysis to triangulate within the range suggested by our sample-wide estimates of beta.

We do not agree with the suggestion that our proposed lower-bound estimate for NBN SAU is too low on the basis of how we have applied our relative risk adjustment – in particular, our proposal for NBN SAU is anchored to a plausible estimate of the systematic risk exposure of the comparator group as a whole. Likewise, we consider that our proposed point estimate for voice interconnection services is consistent with the overall risk exposure of our comparator group.

We therefore do not propose to change our approach to distinguishing between NBN SAU and voice interconnection services.

Cross-company aggregation approach

Stakeholder arguments on aggregation approach

CEG and Frontier both argue that we should use the sample median, rather than the sample mean, to summarise asset beta estimates across companies. CEG argues that our sample of beta estimates has properties that make the sample median preferable, namely:

- Our sample is relatively symmetric; and
- Our sample has relatively thick tails.

CEG argues that, under these conditions, the population mean and median coincide, and the sample median will converge to that value more quickly as the sample size grows – therefore the sample median should be preferred over the sample mean in our finite sample.[28]

CEG presents analysis of our published estimates relating to these points:

- Our sample's excess kurtosis suggests that, on average, our sample has relatively thick tails (though this is mainly driven by the weekly estimates).[29]

[28] In other words, CEG argues that the sample median should be preferred for its greater statistical efficiency.

[29] CEG (2025) Table 4-8 presents an average excess kurtosis of 3.4. For reference, the standard Laplace distribution, which is a common example of a fat-tailed distribution, has an excess kurtosis of 3.

- The Pearson median skewness test suggests that, on average, our sample features *"moderate [upward] skewness."*[30]

CEPA response on aggregation approach

On a first-principles basis, it is not obvious that the population median is conceptually superior to the population mean in this context. We agree with CEG's interpretation of the underlying population-level parameters:

- The population median asset beta reflects the systematic risk exposure of the "typical" company in the comparator sample.
- The population mean asset beta reflects the expected systematic risk exposure of a randomly-sampled member of the comparator sample.

Given that our comparator sample reflects a diverse range of companies with different operational and business risk profiles, it is not clear that there is an advantage to trying to define a single "typical" company, rather than taking into account the full range of variation within our wide comparator sample.

Further, CEG's analysis and findings do not appear to be internally consistent:

- CEG's finding that our sample features upward skewness appears consistent with the fact that the sample mean gives a slightly higher asset beta than the sample median.
- Despite this, CEG concludes that "[t]*he approximate symmetry of the CEPA sample indicates that both median and mean are accurate in predicting the population mean."* [31]
- CEG therefore appears to attribute any differences between our sample mean and sample median estimates to measurement error, rather than to a difference in the underlying population-level parameters.
- However, CEG does not provide any evidence to suggest that our wide sample of 54 companies is too small for the sample mean to converge towards the population mean. CEG is also supportive of the large size of our comparator sample.

In summary, we are not convinced by CEG's argument that any difference between the two estimators is driven by estimation error, rather than being genuinely informative about the distribution of the underlying population. More generally, we are not convinced that the sample median is unequivocally more correct than the sample mean for purposes of identifying a regulatory beta.

In updating our results, we provide estimates on the basis of both the mean and the median, but continue to place sole weight on the sample mean.

Other points on comparator selection

Placing weight on alternative third-party classification systems

In our August report, we relied on the Bloomberg Industry Classification System (BICS) as part of our comparator selection process. CEG states a preference for relying on more than one industry classification system, and considers it good practice to construct the long-list from comparators that are identified by all three of GICS[32], BICS, and ICB[33].

We consider that BICS is a reasonably robust and transparent source of industry classifications. Given that this choice of industry classifications primarily serves to deliver a longlist of relevant comparators, which are then

[30] CEG (2025), para 149 states that "values between -1 and -0.5 or +0.5 and +1 indicate moderate skewness." Table 4-9 indicates an average skewness test statistic of +0.6.

[31] CEG (2025), para 157.

[32] Global Industry Classification Standard, developed by MSCI and S&P Dow Jones Indices.

[33] Industry Classification Benchmark, developed by FTSE Russell.

subject to further filtering criteria, the additional complexity of multiple classification systems does not add substantial value.

Application of geographic filtering

Stakeholder responses on geographic filtering

As part of the comparator selection process outlined in our August report, we applied a geographic filter such that the companies in our sample are listed in North America, Europe, and Developed Asia Pacific, as classified by Bloomberg. We referred to this as the "BICS developed economies filter," and it constituted an expanded version of the geographic filter applied by Frontier on behalf of NBN in its WACC assessment. [34]

Given the similarities between our approaches, Frontier did not criticise our use of a geographic filter.

CEG, on the other hand, disagreed with the filter we applied, stating:

- Our focus on specific geographic areas "overweights" the systematic shocks experienced by those specific areas when setting a forward-looking beta for NBN; and
- Equity beta, as a measure of relative risk within a market, is 1 on average in every stock market, so betas are comparable across countries.

CEPA response on geographic filtering

On balance, we consider that our "developed-economies" filter, while imperfect, facilitates a reasonable and analytically proportionate proxy for the expected risk profile of telecoms infrastructure in Australia. We have had regard to the following points when selecting the appropriate geographic filter:

- It is plausible, though difficult to show conclusively, that telecoms companies in emerging markets might be less reflective of the expected risk profile of Australian telecoms infrastructure than those from developed markets. We provide more detail on the available evidence in Appendix D.
- There are substantial practical difficulties associated with adopting a larger sample – with a wider sample it becomes less proportionate to determine that comparators are robust and relevant, especially given that some companies in emerging markets do not regularly publish English-language disclosures.
- Our approach to comparator sampling is consistent with Frontier's for NBN itself, and Australian regulatory precedent, which favours the use of developed economies for comparator sampling.[35] Both CEG and Frontier have been supportive of the large size of our sample, even without including the developing markets.
- Inclusion of developing-market comparators nearly doubles the sample size to 105 from 54 and adds roughly 0.15 to the upper and lower bounds of estimated asset beta range (under our preferred approach[36]), pointing to a range of 0.48-0.53. We stress that the number of additional companies makes it challenging to robustly verify their suitability as comparators to the same extent as for our core sample of 54 developed-market comparators. Accordingly, we consider this estimate to be less reliable than our preferred range of 0.33-0.38.

[34] Frontier Economics (2022), *"Return on capital and inflation"*, available here. Frontier's geographic filter is similar to ours, but includes only New Zealand, Japan, Singapore, and South Korea among the Developed Asia Pacific countries.

[35] Refer to Table 4.7 of our August report for a review of Australian regulatory precedent on this issue. We note that most regulators have favoured developed economies – even IPART, which permits some developing economies, excludes companies listed on African stock exchanges.

[36] These figures reflect our preferred liquidity filter based on bid-ask spreads, but no further detailed review of company disclosures to ensure the suitability of the additional comparators.

- No stakeholders have suggested that such a material increase in the asset beta for NBN is plausible, and this range is significantly higher than most recent asset beta determinations by other telecoms regulators around the world. [37] We consider such a range to be inconsistent with the view that telecoms infrastructure is becoming increasingly "utility-like"[38,39].

We appreciate that applying a filter that is based on developed and emerging country classifications – rather than a risk assessment that is specific to the services – will inevitably be somewhat arbitrary. In particular, the issues discussed above surrounding cross-country differences in equity market structure and telecoms infrastructure landscapes cannot in all cases neatly be characterised along the lines of developed and emerging markets.

Accordingly, it is possible that our comparator sample could be marginally improved with more detailed analysis of the emerging-market comparators. For example, CEPA's advice to Qantas as part of Airservices Australia's 2023 price notification set out a detailed review of the academic and industry literature regarding differences in demand risk across markets.[40] Based on this review, rather than a broad geographic filter based on country classifications, we proposed to filter the comparator sample with reference to metrics that directly capture the identified cross-market differences in the demand for air travel. A similar exercise could be undertaken for telecommunication or other services that the ACCC is responsible for regulating.

Indeed, our draft report for the ACCC set out a partial analysis of this type. However, we do not consider it necessary to undertake an exhaustive review for telecommunications services at this time. Rather, the above points demonstrate that our approach is a defensible, reasonable, and proportionate approach to proxying the systematic risk profile of a telecommunications sector in Australia and NBN and voice interconnection specifically.

Nonetheless, this is an area that the ACCC could consider exploring further in future – and it may be more important in the context of other regulated services, where geographic filtering is more contentious. Our report in relation to Airservices Australia indicates how we would recommend going about such a review.

5.1.2. Updates to methodology

On the basis of the discussion above, we do not consider it necessary to change the approach we adopted for our August report.

Our previous report proposed an asset beta range of 0.35-0.40, based on the min-max range of the average 5-year and 10-year weekly and four-weekly betas across the comparator group, and a spot cutoff date of 31 March 2025. Asset betas were computed on the basis of net debt gearing, and assumed a debt beta of zero.

We have updated that methodology to a spot cutoff date of 30 September 2025, and present the results below.

[37] In the UK, Ofcom has recently set an asset beta of 0.46 for BT Group, based on CEPA's estimated range of 0.42-0.48, empirical gearing of between 44%-62%, and a 0.075 debt beta. In Europe, BEREC's most recent update to the European Commission's approach to calculating the WACC for legacy telecoms infrastructure has indicated an asset beta of 0.36, based on 47% gearing and a zero debt beta.

[38] For example, we can compare this range against recent decisions on the asset beta for regulated airports, which might be expected to have greater exposure to systematic demand risk than NBN. In a UK context, this range overlaps significantly with the CAA's H7 determination for Heathrow Airport, of 0.44-0.62, and is nearly as high as Heathrow's recent H8 business plan proposal of 0.58-0.62. See page 179 of Heathrow's H8 business plan, available here. In 2023, the NZCC set an asset beta for airports of 0.67 (see page 149 of the NZCC's decision). In 2022, Swiss Economics estimated an asset beta of 0.56 for Dublin Airport, on behalf of the CAR (see page 4 of Swiss Economics' report)

[39] For example, see Bloomberg Intelligence, *"North America Telecommunications 2025 Midyear Outlook";* Bloomberg Intelligence, *"Telecoms Somewhat Shielded from Tariffs, Though Still Vulnerable";* or Fierce Network (2024) *"Telcos are becoming utilities. Is that really a bad thing?"* Available here

[40] CEPA (2024), *Airservices Australia: asset beta, gearing and credit rating*, 31 January 2024.

Table 5.2: 5- and 10-year asset beta estimates (local market indices, net debt gearing)

	Four-weekly beta	Weekly beta	Daily beta
5-year asset beta			
Towers	0.39	0.37	0.34
Wholesale Fibre	0.29	0.29	0.30
Fixed Satellite	0.24	0.22	0.24
All wholesale comparators	0.35	0.33	0.31
Fixed Telecommunications	0.39	0.36	0.33
Mobile Telecommunications	0.31	0.31	0.29
All Comparators	0.34	0.33	0.31
10-year asset beta			
Towers	0.39	0.42	0.42
Wholesale Fibre	0.32	0.32	0.32
Fixed Satellite	0.37	0.30	0.31
All Wholesale Comparators	0.37	0.38	0.38
Fixed Telecommunications	0.40	0.40	0.40
Mobile Telecommunications	0.36	0.38	0.38
All Comparators	0.37	0.38	0.39

Source: CEPA analysis of Bloomberg data

We further present the implied asset beta ranges under sensitivities relating to the use of cross-company medians and the exclusion of towers and fixed satellite companies in Table 5.3 below:

Table 5.3: Sensitivities on updated beta ranges

Comparator group	Sample mean	Sample median
All Comparators	**0.33-0.38**	0.31-0.37
Wholesale Fibre, Fixed Telecommunications, and Mobile Telecommunications only	0.32-0.38	0.30-0.36

Source: CEPA analysis of Bloomberg data

A straight roll-forward of the approach applied at our August report suggests a slightly lower asset beta range of 0.33-0.38, driven by updated market data.

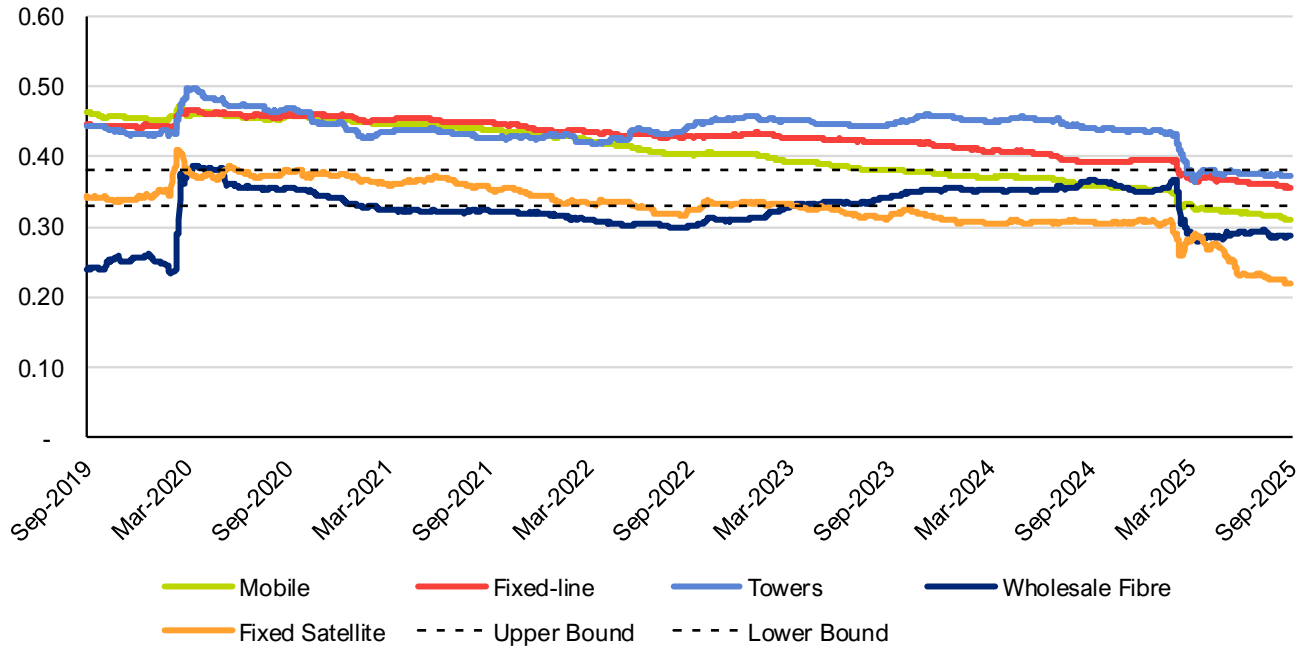
At the same time, both adopting the sample median and the exclusion of tower and fixed satellite companies is beta-reducing. Adopting both stakeholder suggestions could point to a range of 0.30-0.36.

As we have previously argued, the asset beta for network utilities (such as electricity transmission and water), which do not face demand risk, could be expected to serve as a lower bound for the asset beta of a telecoms service provider[41], even in the face of investor perceptions that telecommunications infrastructure is increasingly "utility-like."

[41] All ranges presented in Table 5.3 exceed the AER's benchmark asset beta of 0.26.

This increasingly "utility-like" systematic risk profile could help explain the consistent trend of steadily-declining empirical telecoms betas that we have observed in recent years, and present in Figure 5.2 below.

Figure 5.2: Rolling 5-year weekly asset betas for the comparator groups, and the proposed asset beta range (figures refer to the average across the comparator group), 2019-present



Source: CEPA analysis of Bloomberg data

Following the discussion above, we consider that a broad asset beta range of **0.33-0.38** is balanced overall, and captures the prevailing parameter uncertainty across the comparator sample and over time.

Likewise, we continue to consider it appropriate to calibrate point estimates for NBN SAU and voice interconnection services as follows:

- We propose a **point estimate for NBN SAU of 0.33**, on the basis of the bottom of our range.
- We propose a **point estimate for voice interconnection services of 0.38**, on the basis of the top of our range.

We consider that these proposals are reflective of NBN's expected systematic risk exposures, relative to the available benchmarks, and are conservatively high, given that stakeholders' suggestions have largely had the effect of reducing our estimated range.

5.2. GEARING

5.2.1. Summary of submissions on gearing

There was a single material stakeholder response commented on our approach to measuring gearing. We discuss this below.

Use of net or gross debt

Stakeholder arguments

Frontier states its view that firms' holdings of cash and cash equivalents are generally ear-marked for operational purposes, and may not be available to pay down debt – therefore, Frontier views gross debt as the appropriate measure of gearing. Frontier notes that the impact of this change is a small reduction in the estimated asset betas, which is consistent with the results presented in our August report.

CEPA Response

We presented a detailed discussion of this issue in our August report, where we presented an argument in favour of using net debt gearing to unlever firms' betas. Specifically, our preference is to use net debt because it clarifies the impact of a firm's equity buffer on its perceived level of systematic risk exposure[42].

We consider that either approach is correct in principle, and the implications for the cost of capital are unlikely to be material, given that:

- As long as the same debt measurement is used to both unlever and re-lever, the impact on the final re-levered equity beta should be very small.
- Consistent with the implications of the Modigliani-Miller theorem, we expect the impact of gearing on the cost of capital to be very small or zero.

We present a sensitivity to our core results based on gross debt, instead of net debt, in Appendix C. This drives a 0.02-0.03 reduction in our estimated asset beta range, to 0.30-0.36.

5.2.2. Updates to methodology

We do not propose to make any adjustments to our approach on gearing on the basis of stakeholder responses, but we do present sensitivities relating to the use of cross-company medians and the exclusion of towers and fixed satellite companies.

In our August report, we proposed a gearing estimate 35%, based on the mid-point of the overall average 5-year and 10-year gearing estimates across the comparator sample.

We present updated estimates under this primary approach below.

[42] Note that, where cash and cash equivalents are available to pay down debt, cash-covered debt should have a much lower equity risk contribution than uncovered debt.

Table 5.4: 5- and 10-year average gearing estimates

	5-year gearing	10-year gearing
Towers	35%	30%
Wholesale Fibre	29%	30%
Fixed Satellite	52%	46%
All wholesale comparators	37%	33%
Fixed Telecommunications	41%	37%
Mobile Telecommunications	36%	32%
All vertically-integrated comparators	37%	34%
All comparators	37%	34%

Source: CEPA analysis of Bloomberg data

Rounded to two decimal places, the average gearing estimate remains 35%.

We further present the implied gearing ranges under sensitivities relating to the use of cross-company medians and the exclusion of towers and fixed satellite companies in Table 5.5 below:

Table 5.5: Sensitivities on updated gearing ranges

Comparator group	Sample mean	Sample median
All Comparators	**35%**	38%
Wholesale Fibre, Fixed Telecommunications, and Mobile Telecommunications only	35%	39%

Source: CEPA analysis of Bloomberg data

We therefore retain our earlier gearing point estimate of **35%**.

5.3. COST OF DEBT

5.3.1. Summary of submissions

The only comments raised on cost of debt were with regards to proposed debt issuance costs. The ACCC also requested we consider how the trailing cost of debt allowance would interact with the NBN's return on debt true-up mechanism.

Debt issuance costs

Frontier argued that we had made a number of errors in interpreting regulatory precedent with respect to the debt issuance costs.

Frontier stated that *"*[i]*n its most recent determinations for water corporations, the ESC in Victoria has adopted an allowance for efficient debt issuance costs of 0.15% per annum."*

Here, Frontier refers to the ESC's guidance paper for Melbourne Water's 2026 price review, published in November 2024. Since then, Houston Kemp provided an updated cost of debt for the Port of Melbourne which was published by the ESC in May 2025, which we referenced in our draft report. After considering Frontier's proposal, we agree that the 0.15% estimate reported by the ESC in the guidance paper is also relevant recent precedent. However, we consider that the estimate used for the Port of Melbourne also remains relevant, as it is the most recent published ESC decision. Hence, we support using both the values reported by the ESC. The table in following section now includes both estimates.

Further, Frontier noted that we had excluded the debt issuance cost allowance set by IPART. However, we did include IPART in our list of regulatory precedent.[43]

Frontier questioned the inclusion of the AER's allowance, noting that it varies with the debt proportion of the RAB and the AER's allowed WACC, unlike allowances set by other regulators. In our view, differences in approach do not render the AER's estimate irrelevant, as it reflects the same underlying cost components.

Based on the discussion above, if we continue to include the AER estimate and consider both estimates reported by ESC, our median estimate is 0.10% and the average comes to 0.11%.

NBN's regulatory framework and the trailing average

The trailing average cost of debt indexes 10% of the cost of debt allowance each year. Clause 2G.2.6 of NBN SAU sets out an adjustment for a return on debt true-up. If the adjustments are NPV-neutral, there seems no issue with either having prices within period adjust to changes in cost of debt or having an NPV-neutral adjustment at roll-forward.

5.3.2. Updates to methodology

There is no change in the methodology. The median and mean debt issuance costs derived from previous regulatory decisions can be found in the table below.

[43] See Table 4.22 in CEPA (2025), WACC Methodology.

Table 5.6 Debt issuance cost midpoints using regulatory precedent

Regulator	Debt raising costs
OTTER	0.08%
AER	0.0827%
ESC (Port of Melbourne)	0.10%
ICRC	0.10%
QCA	0.10%
ESC (Melbourne Water)	0.15%
ESCOSA	0.125%
IPART	0.125%
ERA	0.165%
ACCC	Not stated
Median	**0.10%**
Mean	**0.11%**

Source: CEPA analysis of regulatory precedent.

6. SUMMARY OF UPDATED WACC ESTIMATES

We have updated our WACC estimates for a new cut-off date of 30th September 2025. These are shown in the table below.

Table 6.1 Summary of updated WACC estimates

Parameter	NBN SAU	Voice interconnection	Formula
Gearing	35%	35%	A
Risk-free rate	4.33%	4.33%	B
Market risk premium	6.40%	6.40%	C
Asset beta	0.33	0.38	D
Equity beta	0.51	0.58	E = D * (1+(A/(1-A))
Cost of equity (post-tax nominal)	**7.58%**	**8.07%**	**F = B + (C * E)**
Credit rating	BBB	BBB	
Debt yield	4.70%	5.54%	G
Debt raising costs	0.11%	0.11%	H
Cost of debt (pre-tax nominal)	**4.81%**	**5.65%**	**I = G + H**
Tax rate	30%	30%	J
Gamma	0.57	0.57	K
Cost of equity (pre-tax nominal)	**8.70%**	**9.27%**	**L = F / (1-J*(1-K))**
Nominal vanilla WACC	**6.61%**	**7.22%**	**M = (I * A) + (F * (1-A))**
Nominal pre-tax WACC	**7.34%**	**8.00%**	**N = (I * A) + (L * (1-A))**

The table below provides a sensitivity if gearing were estimated using gross debt instead of net debt.

Table 6.2 WACC estimates gross gearing sensitivity

Parameter	NBN SAU	Voice interconnection	Formula
Gearing	41%	41%	A
Risk-free rate	4.33%	4.33%	B
Market risk premium	6.40%	6.40%	C
Asset beta	0.30	0.36	D
Equity beta	0.51	0.61	E = D * (1+(A/(1-A))
Cost of equity (post-tax nominal)	**7.58%**	**8.24%**	**F = B + (C * E)**
Credit rating	BBB	BBB	
Debt yield	4.70%	5.54%	G
Debt raising costs	0.11%	0.11%	H
Cost of debt (pre-tax nominal)	**4.81%**	**5.65%**	**I = G + H**
Tax rate	30%	30%	J
Gamma	0.57	0.57	K
Cost of equity (pre-tax nominal)	**8.71%**	**9.45%**	**L = F / (1-J*(1-K))**
Nominal vanilla WACC	**6.45%**	**7.18%**	**M = (I * A) + (F * (1-A))**
Nominal pre-tax WACC	**7.11%**	**7.89%**	**N = (I * A) + (L * (1-A))**

Appendix A REGULATORY DECISIONS

Regulator	Decision
Australian Energy Regulator (AER)	2022 Rate of Return Instrument – Explanatory statement (Feb 2023) Applies to energy networks
Australian Competition and Consumer Commission (ACCC)	ACCC's decision on Australia Post's Letter Pricing 2024 – Review of the Draft Price Notification (March 2024) ACCC's decision on public inquiry into Final Access determinations for Fixed Line Services (2015) ACCC's final report on public inquiry on the access determination for the Domestic Mobile Terminating Access Service (2020) ACCC's consultation paper on proposed variation to the NBN Co Special Access Undertaking (2023)
Economic Regulation Authority (ERA) – Western Australia	Explanatory statement for the 2022 final gas rate of return instrument (Dec 2022)
Essential Services Commission (ESC) – Victoria	Interim commentary – Port of Melbourne Tariff Compliance Statement 2023–24 (Dec 2023) Port of Melbourne – 2024-2025 (May 2024) Tariff Compliance Statement Melbourne Water Price
Essential Services Commission of South Australia (ESCOSA)	SA Water Regulatory Determination 2024 – Final Determination: Statement of reasons (Jun 2024)
Independent Pricing and Regulatory Tribunal (IPART) - NSW	Review of our WACC method (Feb 2018) Applies to water companies
Independent Competition and Regulatory Commission (ICRC) – Australian Capital Territory	Regulated water and sewerage services 2023-28: Report 3 of 2023 (May 2023)
Office of the Tasmanian Economic Regulator (OTTER)	Investigation into TasWater's prices and services for the period 1 JULY 2022 to 30 June 2026 – Final report (May 2022)
Queensland Competition Authority (QCA)	Rate of return review Feb 2024 Applies to water companies
New Zealand Commerce Commission (NZCC)	Part 4 Input Methodologies Review 2023 – Final decision, Cost of capital topic paper (Dec 2023)

Appendix B PROPOSED COMPARATORS

Table B.1: Final comparator set

Wholesale service providers			Vertically integrated service providers	
Fibre providers	**Telecommunication tower companies**	**Satellite Operators**	**Wireline Telecoms**	**Wireless Telecoms**
• Chorus Ltd. • Netlink NBN Trust	• American Tower Corp • Cellnex Telecom SA • Crown Castle Inc • Infrastrutture Wireless Italiane SpA • RAI Way SpA • SBA Communications Corp • Uniti Group Inc	• Eutelsat Communications SACA • SES SA	• BCE Inc • BT Group PLC • Cable One Inc • Charter Communications Inc • Chunghwa Telecom Co Ltd • Cogent Communications Holdings Inc • HKT Trust & HKT Ltd • Liberty Global Ltd • Lumen Technologies Inc • NOS SGPS SA • Superloop Ltd • Swisscom AG • Tele2 AB • Turk Telekomunikasyon AS • WideOpenWest Inc.	• 1&1 AG • AT&T Inc • Deutsche Telekom AG • Digi Communications NV • Elisa Oyj • Gamma Communications PLC • Hutchison Telecommunications Hong Kong Holdings Ltd • Koninklijke KPN NV • KT Corp • LG Uplus Corp • Orange SA • Proximus SADP • Rogers Communications Inc • Shenandoah Telecommunications Co • Singapore Telecommunications Ltd • SK Telecom Co Ltd • StarHub Ltd • Telecom Italia SpA/Milano • Telefonica SA • Telekom Austria AG • Telenor ASA • Telephone and Data Systems Inc • Telia Co AB • Telstra Group Ltd • TELUS Corp • Turkcell Iletisim Hizmetleri AS • Verizon Communications Inc • Vodafone Group PLC

Source: CEPA

Table B.2: 5-year asset beta and gearing estimates, net debt gearing, comparator detail

Comparator Group	Comparators	Asset Beta			Gearing
		Daily	Weekly	Four weekly	Net Debt
Towers	American Tower Corp	0.38	0.46	0.54	30%
	Cellnex Telecom SA	0.31	0.31	0.34	38%
	Crown Castle Inc	0.36	0.42	0.50	33%
	Infrastrutture Wireless Italiane SpA	0.32	0.33	0.29	30%
	RAI Way SpA	0.34	0.35	0.27	5%
	SBA Communications Corp	0.39	0.45	0.51	34%
	Uniti Group Inc	0.27	0.28	0.29	75%
Fixed Satellite	Eutelsat Communications SACA	0.20	0.15	0.09	59%
	SES SA	0.28	0.29	0.39	45%
Wholesale Fibre	Chorus Ltd	0.45	0.40	0.39	44%
	NETLINK NBN TRUST	0.14	0.18	0.19	14%
Fixed-line	BCE Inc	0.19	0.26	0.32	40%
	BT Group PLC	0.39	0.48	0.52	57%
	Cable One Inc	0.38	0.41	0.28	44%
	Charter Communications Inc	0.36	0.41	0.39	55%
	Chunghwa Telecom Co Ltd	0.14	0.09	0.11	-1%
	Cogent Communications Holdings Inc	0.50	0.48	0.49	30%
	HKT Trust & HKT Ltd	0.10	0.08	0.09	36%
	Liberty Global Ltd	0.22	0.24	0.24	71%
	Lumen Technologies Inc	0.20	0.15	0.10	79%
	NOS SGPS SA	0.31	0.35	0.31	46%
	Superloop Ltd	0.64	0.77	1.37	4%
	Swisscom AG	0.25	0.26	0.25	25%
	Tele2 AB	0.28	0.29	0.34	28%
	Turk Telekomunikasyon AS	0.69	0.64	0.65	36%
	WideOpenWest Inc	0.38	0.43	0.34	57%
Mobile	1&1 AG	0.31	0.42	0.37	26%
	AT&T Inc	0.16	0.19	0.16	51%
	Deutsche Telekom AG	0.17	0.23	0.23	56%
	Digi Communications NV	0.31	0.33	0.30	59%
	Elisa Oyj	0.31	0.36	0.42	14%
	Gamma Communications PLC	0.56	0.56	0.60	-6%
	Hutchison Telecommunications Hong Kong Holdings Ltd	0.32	0.33	0.47	-96%
	Koninklijke KPN NV	0.13	0.17	0.14	33%
	KT Corp	0.21	0.17	0.14	41%
	LG Uplus Corp	0.17	0.20	0.20	54%
	Orange SA	0.09	0.12	0.15	53%
	Proximus SADP	0.26	0.25	0.28	49%
	Rogers Communications Inc	0.21	0.30	0.37	53%
	Shenandoah Telecommunications Co	0.62	0.54	0.41	11%
	Singapore Telecommunications Ltd	0.68	0.66	0.68	18%
	SK Telecom Co Ltd	0.20	0.18	0.15	41%
	StarHub Ltd	0.30	0.34	0.31	27%
	Telecom Italia SpA/Milano	0.21	0.23	0.24	76%
	Telefonica SA	0.25	0.31	0.32	63%

Comparator Group	Comparators	Asset Beta			Gearing
		Daily	Weekly	Four weekly	Net Debt
	Telekom Austria AG	0.18	0.24	0.30	34%
	Telenor ASA	0.22	0.20	0.13	36%
	Telephone and Data Systems Inc	0.22	0.23	0.11	65%
	Telia Co AB	0.20	0.19	0.14	41%
	Telstra Group Ltd	0.36	0.34	0.35	26%
	TELUS Corp	0.28	0.33	0.42	40%
	Turkcell Iletisim Hizmetleri AS	0.77	0.71	0.69	20%
	Verizon Communications Inc	0.14	0.16	0.16	47%
	Vodafone Group PLC	0.31	0.37	0.39	63%

Source: CEPA analysis of Bloomberg Data

Table B.3: 10-year asset beta and gearing estimates, net debt gearing, comparator detail

Comparator Group	Comparators	Asset Beta			Gearing
		Daily	Weekly	Four weekly	Net Debt
Towers	American Tower Corp	0.51	0.48	0.44	27%
	Cellnex Telecom SA	0.38	0.35	0.32	32%
	Crown Castle Inc	0.47	0.46	0.42	30%
	Infrastrutture Wireless Italiane SpA	0.35	0.35	0.30	18%
	RAI Way SpA	0.43	0.47	0.51	3%
	SBA Communications Corp	0.48	0.46	0.39	34%
	Uniti Group Inc	0.34	0.33	0.32	67%
Fixed Satellite	Eutelsat Communications SACA	0.24	0.21	0.23	52%
	SES SA	0.39	0.39	0.51	40%
Wholesale Fibre	Chorus Ltd	0.40	0.41	0.35	46%
	NETLINK NBN TRUST	0.24	0.24	0.28	14%
Fixed-line	BCE Inc	0.38	0.33	0.31	36%
	BT Group PLC	0.46	0.45	0.44	46%
	Cable One Inc	0.49	0.52	0.42	29%
	Charter Communications Inc	0.39	0.46	0.45	50%
	Chunghwa Telecom Co Ltd	0.18	0.12	0.12	-2%
	Cogent Communications Holdings Inc	0.59	0.50	0.37	24%
	HKT Trust & HKT Ltd	0.14	0.11	0.11	34%
	Liberty Global Ltd	0.18	0.18	0.19	77%
	Lumen Technologies Inc	0.24	0.21	0.18	72%
	NOS SGPS SA	0.44	0.47	0.48	38%
	Superloop Ltd	0.68	0.82	1.17	4%
	Swisscom AG	0.42	0.38	0.30	25%
	Tele2 AB	0.43	0.42	0.37	25%
	Turk Telekomunikasyon AS	0.65	0.64	0.64	38%
	WideOpenWest Inc	0.33	0.39	0.44	65%
Mobile	1&1 AG	0.55	0.62	0.59	16%
	AT&T Inc	0.31	0.29	0.25	44%
	Deutsche Telekom AG	0.27	0.30	0.30	51%
	Digi Communications NV	0.26	0.30	0.29	58%
	Elisa Oyj	0.43	0.39	0.32	15%
	Gamma Communications PLC	0.43	0.54	0.55	-6%
	Hutchison Telecommunications Hong Kong Holdings Ltd	0.45	0.53	0.72	-94%
	Koninklijke KPN NV	0.32	0.31	0.27	35%
	KT Corp	0.25	0.25	0.23	40%
	LG Uplus Corp	0.25	0.29	0.27	46%
	Orange SA	0.26	0.27	0.23	47%
	Proximus SADP	0.34	0.31	0.31	34%
	Rogers Communications Inc	0.36	0.31	0.31	45%
	Shenandoah Telecommunications Co	0.65	0.51	0.38	20%
	Singapore Telecommunications Ltd	0.69	0.65	0.67	17%
	SK Telecom Co Ltd	0.25	0.29	0.28	33%
	StarHub Ltd	0.44	0.44	0.40	24%
	Telecom Italia SpA/Milano	0.25	0.26	0.26	72%
	Telefonica SA	0.37	0.37	0.38	60%

Comparator Group	Comparators	Asset Beta			Gearing
		Daily	Weekly	Four weekly	Net Debt
	Telekom Austria AG	0.24	0.28	0.30	37%
	Telenor ASA	0.38	0.34	0.20	30%
	Telephone and Data Systems Inc	0.36	0.38	0.33	52%
	Telia Co AB	0.35	0.30	0.22	37%
	Telstra Group Ltd	0.41	0.36	0.38	26%
	TELUS Corp	0.40	0.35	0.40	37%
	Turkcell Iletisim Hizmetleri AS	0.72	0.69	0.68	20%
	Verizon Communications Inc	0.24	0.21	0.19	41%
	Vodafone Group PLC	0.41	0.44	0.43	51%

Source: CEPA analysis of Bloomberg Data

Appendix C RESULTS BASED ON GROSS-DEBT GEARING

Table C.1: 5- and 10-year asset beta estimates (local market indices, gross debt gearing)

	Four-weekly beta	Weekly beta	Daily beta
5-year asset beta			
Towers	0.39	0.37	0.33
Wholesale Fibre	0.28	0.28	0.29
Fixed Satellite	0.18	0.17	0.19
All wholesale comparators	0.33	0.32	0.30
Fixed Telecommunications	0.36	0.34	0.32
Mobile Telecommunications	0.28	0.28	0.26
All Comparators	0.31	0.30	0.28
10-year asset beta			
Towers	0.38	0.41	0.41
Wholesale Fibre	0.30	0.31	0.31
Fixed Satellite	0.31	0.25	0.26
All Wholesale Comparators	0.35	0.36	0.37
Fixed Telecommunications	0.38	0.38	0.38
Mobile Telecommunications	0.33	0.34	0.35
All Comparators	0.35	0.36	0.36

Source: CEPA analysis of Bloomberg data

Table C.2: 5- and 10-year average gearing estimates, gross debt

	5-year gearing	10-year gearing
Towers	**36%**	**32%**
Wholesale Fibre	31%	33%
Fixed Satellite	**62%**	**53%**
All wholesale comparators	40%	36%
Fixed Telecommunications	43%	40%
Mobile Telecommunications	44%	40%
All vertically-integrated comparators	44%	40%
All comparators	43%	39%

Source: CEPA analysis of Bloomberg data

Appendix D FURTHER EVIDENCE ON THE SUITABILITY OF EMERGING-MARKET COMPARATORS

In the main body, we argued that it is plausible that empirical evidence from telecoms companies in emerging markets might be less reflective of the expected risk profile of Australian telecoms infrastructure than those from developed markets.

Given the global scale and relatively theoretical nature of this question, it is challenging to robustly evidence this claim in a way that is proportionate to the context of the present ACCC WACC review. However, in coming to this view, we have considered a range of academic and empirical evidence.

First, it is well-accepted in the empirical literature that there are material differences between developed and developing equity markets:

- Segojane and Ndlovu[44] present evidence that "there are significant differences in beta values between emerging and developed markets, which contribute to the inaccuracy of developing-market betas."
- Segojane and Ndlovu attribute these differences to "the inherent heterogeneity of emerging markets, their greater information asymmetries (Lim and Brooks 2010)[45] and low liquidity (Nishiotis 2002)[46], and structural differences in terms of their micro and macro foundations, which have contributed to difficulties in attaining reliable betas (Bekaert and Harvey 1997)[47]."
- Bekaert and Harvey note four distinguishing features of emerging market returns: "average returns are higher, correlations with developed market returns are low, returns are more predictable and volatility is higher."
- Kim and Song [48] note that, while capital controls in developing markets have become less common since the late 1980s and early 1990s, indirect investment barriers remain in the form of "differences in information, accounting standards, and investor protection, as well as from emerging-market specific risks, which include political risk, macroeconomic instability, and liquidity risk."
- Ghysels et. al.[49] suggest that emerging markets may attract particular investor profiles, and in particular those seeking lottery returns, stating "In emerging markets, skewness [of stock market returns] is mostly positive and idiosyncratic, and significantly relates to a country's financial and trade openness and balance of payments… Investing in emerging markets seems to be about expectations of a higher upside than downside, consistent with recent theories."

While a more detailed academic literature review may be required, we consider that these academic references express a plausible view that risk pricing in emerging markets may be, on balance, less suitable as a proxy for risk pricing in Australia than that of other developed markets, and that cross-country differences in capital market

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[44] Mabekebeke Segojane and Godfrey Ndlovu, *"An Investigation of the Beta Anomaly in Emerging Markets: A South African Case,"* (2022), available here.

[45] "Kian-Ping Lim and Robert D. Brooks, *"Are emerging stock markets less efficient? A survey of empirical literature."* (2010) Available here

[46] George P. Nishiotis, "*Investment Barriers and International Asset Pricing: Evidence from Closed-End Country Funds"* (2002)

[47] Geert Bekaert and Campbell R. Harvey, *"Emerging equity market volatility"* (1997), available here

[48] Jang-Chul Kim and Kyojik "Roy" Song, *"Investment barriers and premiums on closed-end country funds"* (2010), available here

[49] Eric Ghysels et. al. *"Why Invest in Emerging Markets? The Role of Conditional Return Asymmetry,"* (2016), available here

characteristics may suggest that the sensitivity of emerging-market equities to systematic shocks may differ materially from those of developed economies.

We do not disagree with CEG that, since beta is a measure of relative risk of firms within the same market (such that the average equity beta is one in every market), absolute risk differentials across countries in the form of a country-specific risk premium in both the market index and the individual stock does not make international beta estimates less comparable. However, we note that cross-country differences in the composition of the market index could plausibly lead to bias in international betas (insofar as telecoms service provision may be relatively less risky in some markets than in others with a different composition).

As part of our August report, we also presented evidence that the profile of demand for telecoms services, and the state of telecoms infrastructure, may differ materially between developed and emerging markets. In particular, we presented evidence that:

- Mobile networks in emerging regions are exposed to significantly higher numbers of pre-paid than post-paid subscribers, which may indicate a greater degree of systematic demand risk exposure for mobile providers in these jurisdictions.
- There is a difference in the composition and volume of broadband penetration between emerging and developed markets, with emerging markets generally having higher mobile broadband penetration relative to fixed-line penetration. Coupled with the above, this may indicate a greater overall systematic demand risk exposure for telecoms network providers in emerging markets.
- The lower overall level of broadband penetration in emerging regions may indicate differences between emerging and developed markets in terms of their position within the roll-out cycle for new infrastructure.

We did not receive stakeholder responses on the points we presented above.

Appendix E FURTHER EVIDENCE ON COMPARATOR BAD DEBTS

As a further supporting cross-check to the discussion on counterparty risk in the main body, we have conducted analysis that suggests:

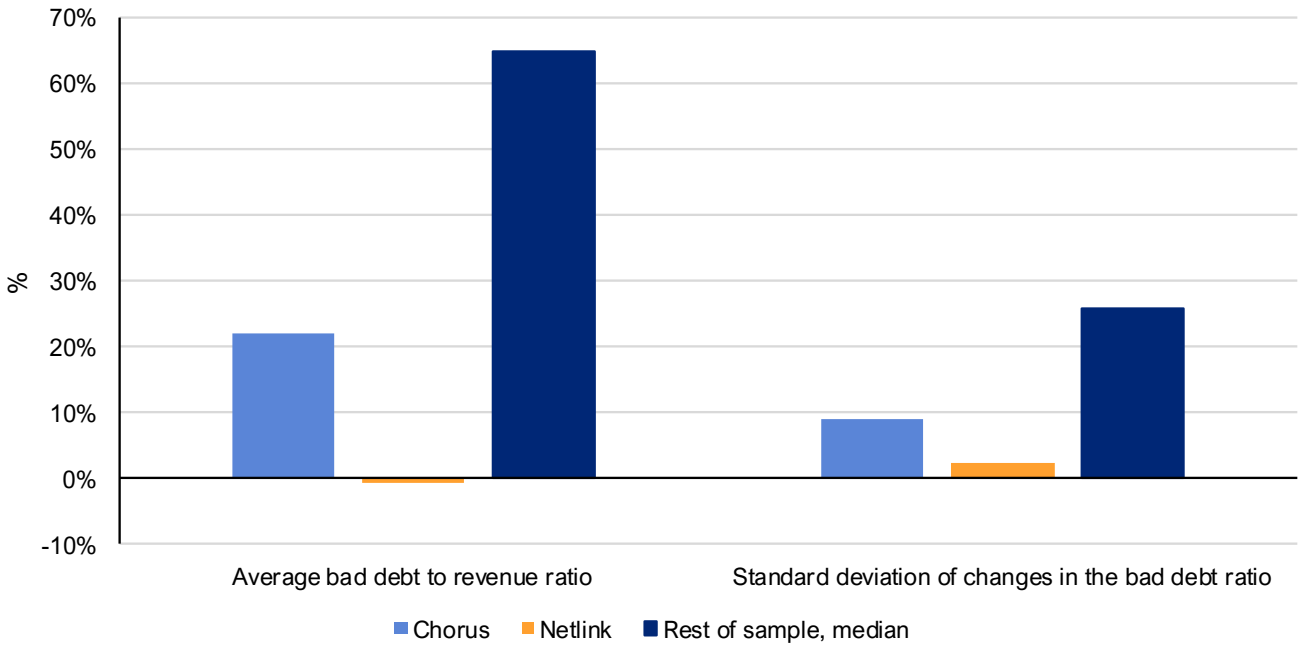
- The listed wholesale providers in our sample are exposed to a lower degree of counterparty risk from bad debts than the rest of the sample, and
- This risk could be at least partially systematic.

Data on our comparator sample's exposure to bad debts is available through Bloomberg[50], including:

- Provision for Doubtful Accounts[51], a proxy for bad debt costs.
- The ratio of bad debt costs to net revenues.

Figure E.1 below presents both the average ratio of bad debt costs to net revenues and the volatility of bad debt costs for the comparators.[52] We focus on the post-COVID period for reasons of data availability, and respecting that this period may be more reflective of forward-looking conditions for telecoms firms.

Figure E.1: Level of and risk around comparator bad debts, post-COVID.



Source: CEPA analysis of Bloomberg data

While this indicative analysis is limited by the quality of the underlying data on comparators' bad debts, it suggests that:

[50] Historical data is collected through Bloomberg's BQL API, missing daily observations were imputed on the basis of the last daily observation, and annual averages are inferred from the available daily data. We were able to collect reasonably robust data for 12 of the 54 companies in our sample, including both listed wholesale providers.

[51] Field code IS_PROVISION_DOUBTFUL_ACCOUNTS, described as "Expense made for the expected uncollectible outstanding trade and notes receivables, net with provision for written back during the period."

[52] We measure this volatility using the standard deviation of year-on-year changes in the comparators' bad debt ratio.

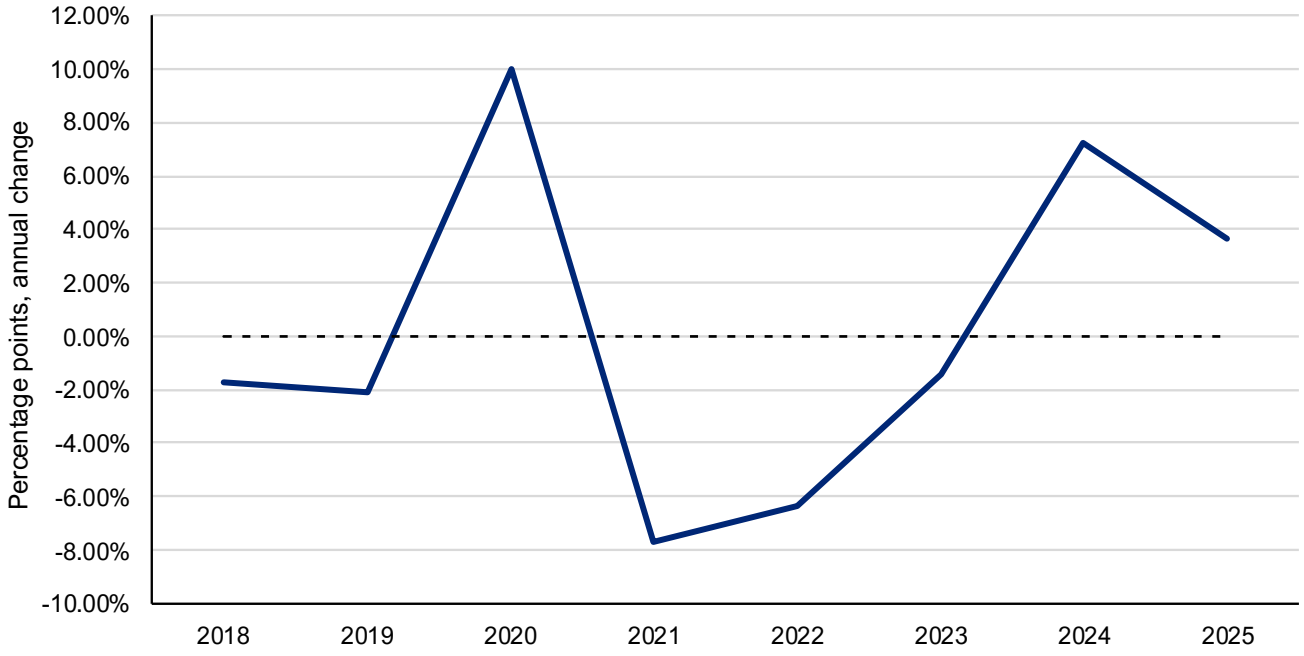
- The wholesale comparators may face smaller bad debt costs[53] than the sample as a whole, after controlling for revenues, and
- The wholesale comparators may face lower volatility in their bad debt costs than the sample as a whole, post-COVID.

Although there are limits to the weight that can be placed on this evidence, we note that it supports our expectation that counterparty risk from retail customers is likely to be much greater than from wholesale customers (i.e. other telcos).

Furthermore, we do not consider it implausible that these bad debt costs are, at least partially, systematic in nature. The frequency and magnitude of bad debts (and hence counterparty risk for RSPs) is likely to be correlated with systematic shocks, insofar as a reduction in aggregate income is likely to increase the rate at which retail consumers default on their contracted payments.

Evidence for this view can be seen in the median year-on-year change in the bad debt to revenue ratio for the ten retail comparators included in this analysis, from 2018 on:

Figure E.2: Median year-on-year change in the bad debt to revenue ratio for the sample companies



Source: CEPA analysis of Bloomberg data

We observe a significant increase in the median bad debt to revenue ratio in the year of the COVID-19 pandemic, as well as a rise in more recent years.

This is consistent with the view that the COVID-19 pandemic, as a significant systematic shock that reduced households' aggregate income, may have led to an increase in defaults on contracted telecoms service charges.

[53] On average, Netlink's bad debt costs were negative over the period.

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