Presentation to AER Board
Rate of Return Guideline Review
Consumer Challenge Panel CCP16
24 May 2018

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Overview

1. Context for the review, and overall approach of CCP16
2. Example of an AER decision framework using our suggested approach
3. Assessment of individual parameter values in the current context

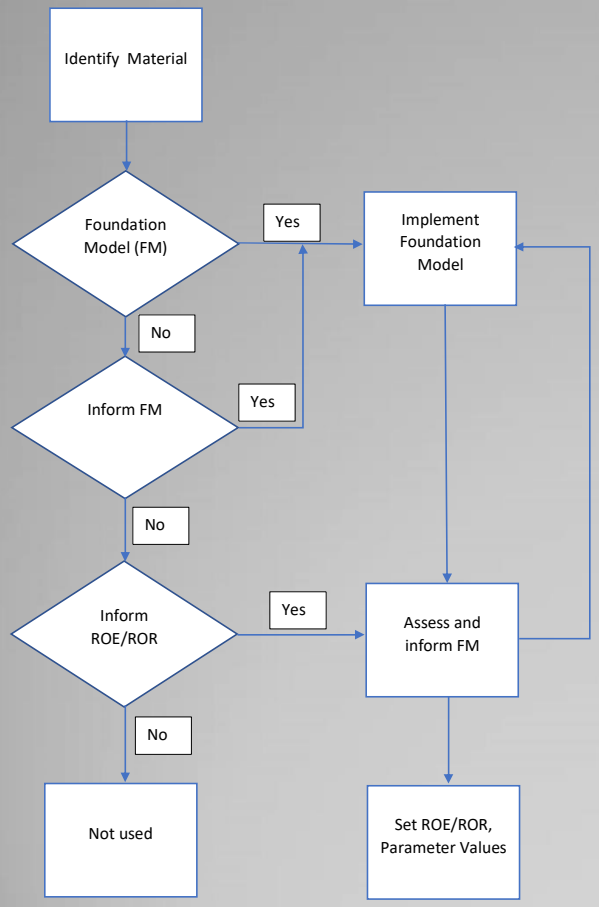
1. Context and overall approach

- Five-yearly review
  - Legislation for a binding instrument
  - Incremental review
- Overall approach
  - Support foundation model
  - Reduced role for Black CAPM and Dividend Growth Model
  - Process for considering other evidence
  - Weight to be given to various factors is driven by context

Context and overall approach

- The context in 2018 differs from 2012
  - 2012 was close to the GFC, with demand increasing and perceived risk of under-investment
  - 2018 has a more stable economy, flat or declining load, historically low interest rates, low wage growth, affordability risks for individuals, and consumers care more about affordability and risk of over-investment
- WACC x RAB and impact of changes
- Balanced approach
  - Long term view – supports ongoing investor confidence
  - Proposes a reasonableness check within the current approach
  - Parameter values, and how AER should exercise discretion

2. Decision framework



1. Assess info against criteria
   a) Include RAB multiples
   b) Reduce weight for DGM and Black CAPM
2. Determine range and initial point estimate for each parameter
   a) Reduce conservatism in current estimates
   b) Move point estimate towards mid point of range
3. Review against cross-checks; e.g. RAB multiples.
4. Iterate back to parameter estimates, if necessary
5. Set ROE and ROR and parameter point estimates.

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RAB multiples: assessment against information criteria

Criteria	Assessment
1) Economic and Finance Principles; market info	Yes - Based on Tobin's Q Ratios, widely used
2) Fit for Purpose	
a) Consistent original purpose	Yes – used to assess value and identify market rents
b) Simplicity preferred	Data and analysis is simple, but requires assumptions
3) Good Practice implementation	Yes – extensive precedents
4) Models are:	n.a.
a) Robust, not too sensitive to change	
b) Avoids data filtering without good rationale	
5) Market data:	
a) Credible, verifiable	Yes – ratios verified, analysis can be tested
b) Comparable and timely	Dependent on timing of transactions
c) Clearly sourced	Yes
6) Reflects changing conditions, new info	Yes.

Indicative range and initial parameter value

Parameter	Indicative Range	Initial value	Summary of Reasoning
Inflation		2.4%	Existing methodology
RFR		2.4%	Existing methodology
MRP	5-6.0%	5.5%	Range based on HER estimate (5-5.5) and analyst practice (6.0) Less weight on DGM
Beta	0.5-0.6	0.6	Majority of long term estimates 0.5-0.6. Beta at upper end has regard to Black/low beta bias.
DRP	1.5-1.75%	1.68%	Average of Chairmont estimate and existing methodology.
Gearing		60:40	Existing methodology
Gamma	0.5-0.55	0.5	Increased weight on firm/industry distribution ratio and market utilisation ratio

Initial estimation of ROE and ROR

Parameter	Current	Proposed
RFR	2.4	2.4
MRP	6.5	5.5
Beta	0.7	0.6
ROE	6.95	5.7
RFR	2.4	2.4
DRP	1.75	1.68
CoD	4.15	4.08
Gearing	60:40	60:40
WACC	5.27	4.73

Note: for simplicity, debt is calculated using the 'on-the-day' rate

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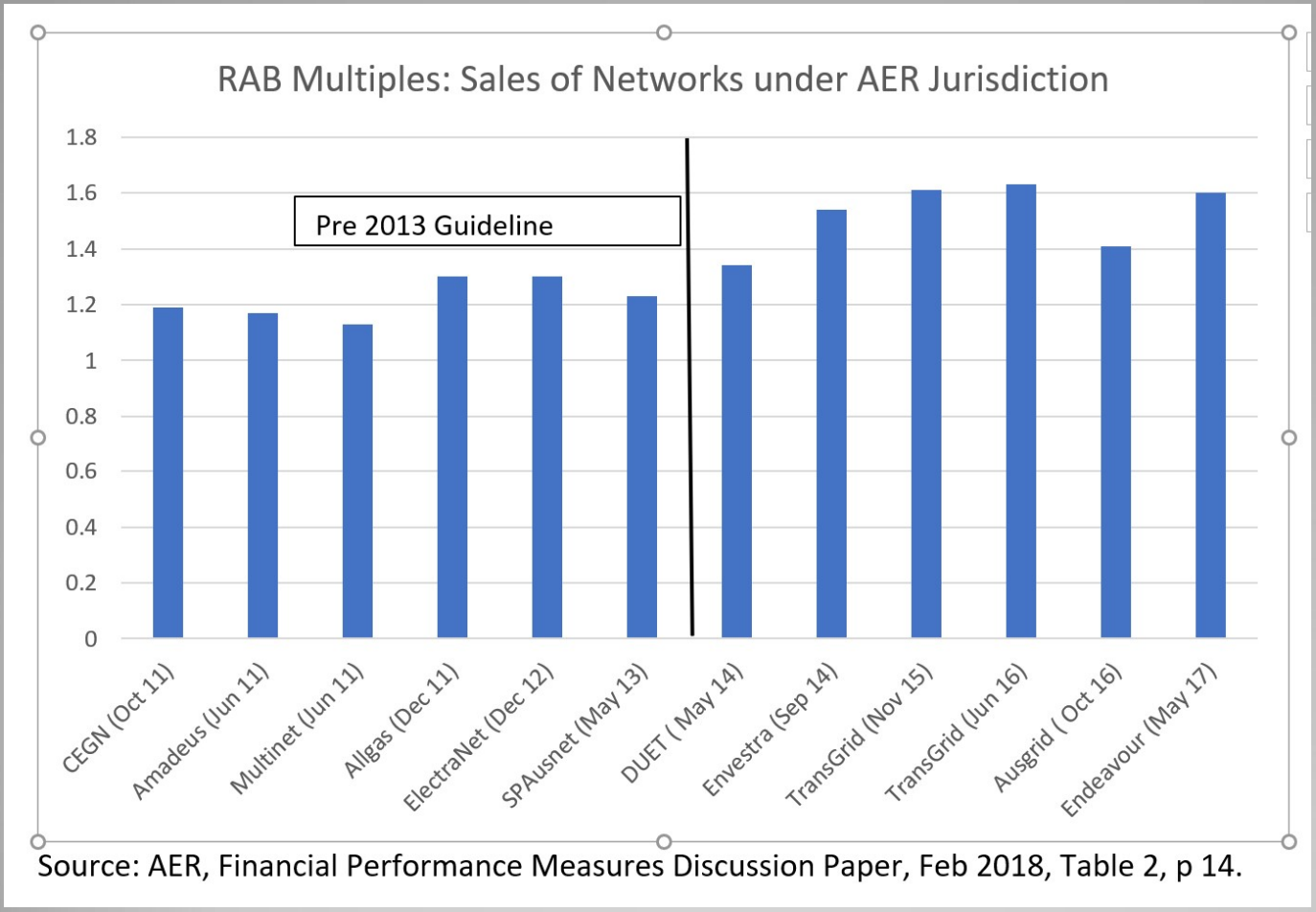
Role of cross-checks

- Current foundation model provides for 'cross-checks'
  - Wright, valuation reports, broker estimates of ROE, other regulators' decisions, comparison with debt
- How would RAB multiples be used?
  - Establish reasonable range
    - Biggar suggests 0.9-1.3, quotes analysts' range up to 1.2
    - Consistent with approach of other regulators – NZ Commerce Commission; UK CAA, Ofwat
  - Value outside that range suggest a directional change in ROE / ROR
  - Analyse data to identify broad magnitude of change
    - Consistent with advisors' and analysts' reports
      - Credit Suisse report on Transgrid, CEPA report on UK gas

Application of RAB multiples – directional

- Since 2013, RAB multiples have exceeded 1.3, and have been increasing
- Suggests:
  1. Directional change in ROE / ROR: i.e. adjustments in models / parameters should result in reduction in ROE / ROR
  2. The gap between expected and allowed returns
     a. has grown as investment climate has improved
     b. is substantial – RAB multiples are large compared to those in other sectors / jurisdictions

RAB multiples observed



Source: AER, Financial Performance Measures Discussion Paper, Feb 2018, Table 2, p 14.

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RAB multiples – analysis

- Analysis of RAB multiples can provide a guide to the magnitude of the change required.
  1. Identify potential sources of value – e.g. expected value of performance incentives, tax and debt differences, unregulated income
  2. Estimate range for these (e.g. Credit Suisse, CEPA and Frontier Economics reports) and:
     a. Calculate NPV (range) of each at allowed WACC, sum and deduct from transaction value to calculate range for 'unexplained value'
     b. Adjust forecast cash flows (range) based on regulatory decision for these factors, calculate range for implied ROE.

Application to decision

- The proposed parameter values result in a significant reduction in the ROE from 6.95% to 5.7%
- This is consistent with the directional change indicated by the RAB
  - And that the change should be significant
- Hence, there is no need to review the parameter values again
- *If the existing parameter values had been used*, the ROE would have been inconsistent with the RAB multiples, triggering a review of parameter values.

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3. Individual parameters

- Return on Equity
  - Equity Beta
  - MRP
- Gamma
- Return on Debt
- Conclusion:

The AER has the opportunity to revisit each of these parameters and to exercise its discretion in the current context to achieve a more balanced outcome between investment incentives and consumer prices

Equity beta: CCP16 assessment: beta <=0.6

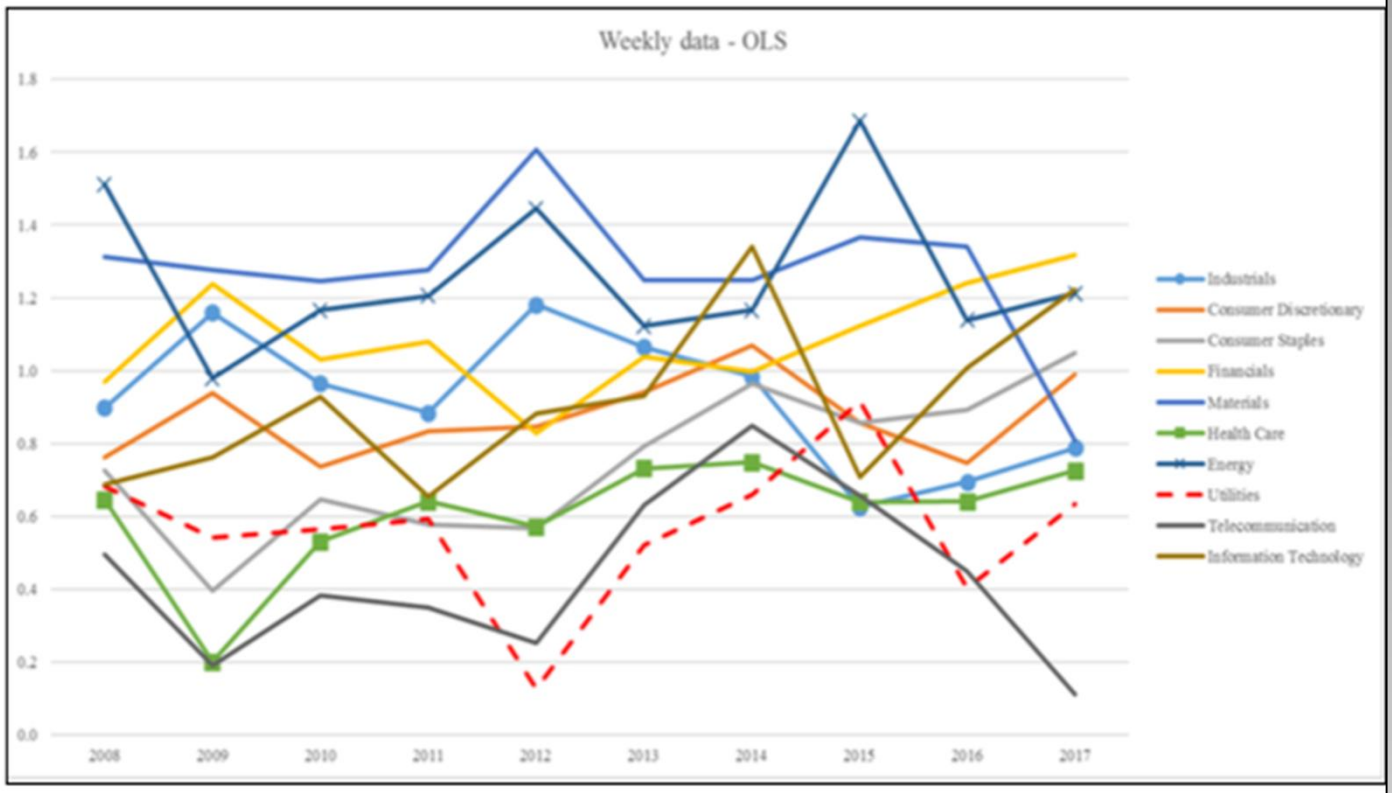
- CCP16 generally supports AER's existing approach, but considers 0.7 beta overly conservative
- Updated empirical analyses support beta range of 0.5-0.6
- Claimed empirical evidence of upward trend is not convincing
- Little basis for multiple betas
- ***Recommend that AER place very limited weight on:***
  - International comparator data
  - Australian 'infrastructure comparator firms'
  - Black CAPM theory
  - 'disruptive technology' argument
- ***Recommend that AER place more weight on:***
  - Empirical analysis of 5 networks + Individual company trends (e.g. APA)
  - Bloomberg *Utilities Index*
  - Concurrent financial & economic evidence
- ***Overall, CCP considers a value of around 0.6 is preferable***
  - Consistent with the empirical data (above)
  - Reflects the low level of risk in the utilities industry generally
  - And the extent of increased cash flow protection under the regulatory umbrella

Equity beta: challenges for the AER

- Declining data set of relevant networks providing regulated services
  - Inclusion of Australian infrastructure businesses (no?)
  - Inclusion of businesses with low % regulated assets
  - Complexity of establishing an international comparator set
  - Annual volatility requires longer sampling period
  - Weekly sampling to reduce standard errors
- Further testing of leverage and other processes
  - Concerns with current assumptions and approach
    - If comparator set expanded, raises new issues in leverage
  - Credit ratings improved independently of gearing?
  - Are asset/debt betas relevant?

Equity beta: Bloomberg Utilities Index

Figure 4: Australian industry beta, weekly data, OLS, 2008-2017 (AER analysis)



Source: AER, *Equity Beta Discussion Paper*, March 2018, Figure 1, p 41.

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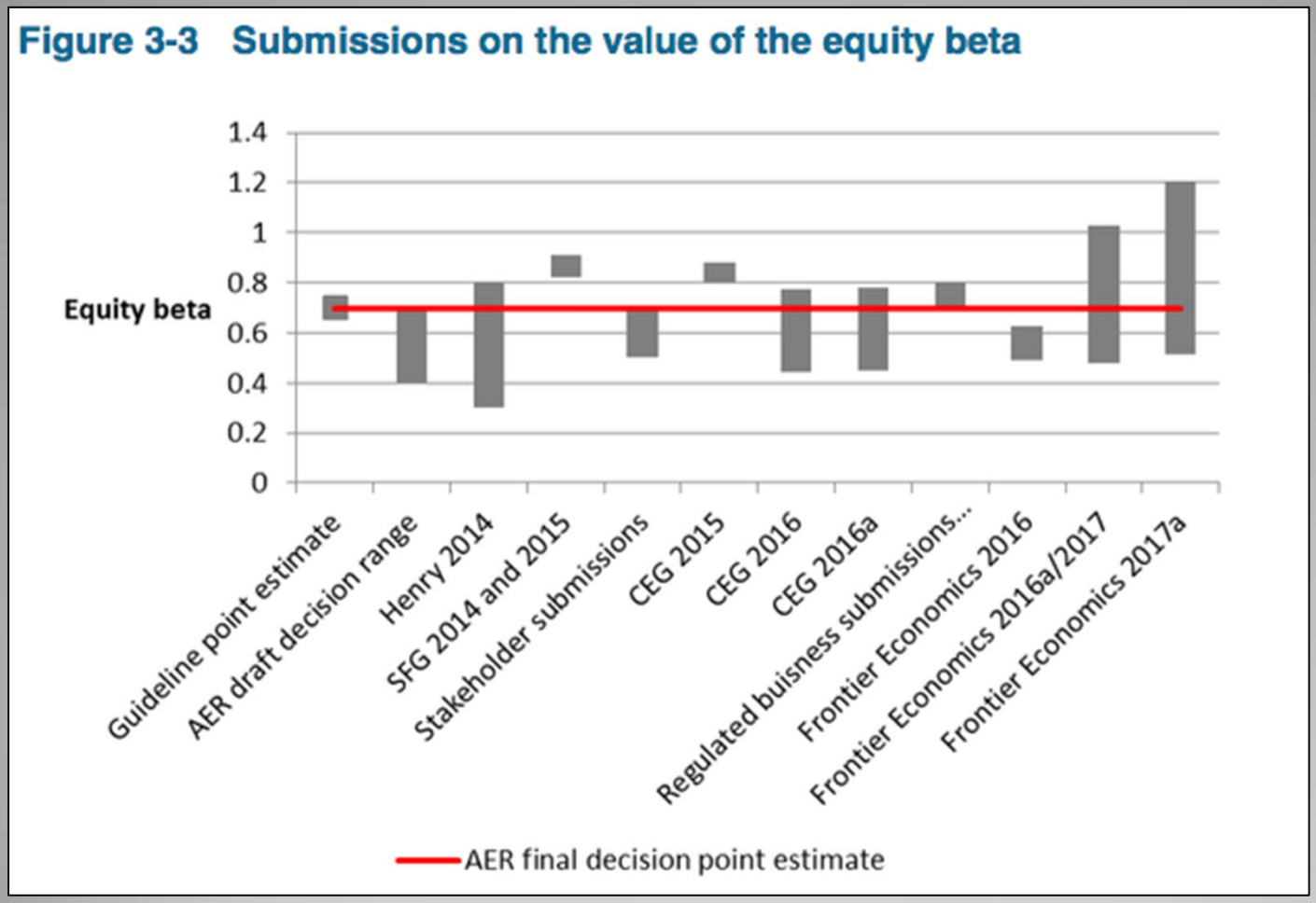
Equity beta: exercising regulatory judgment

Figure 3-3 Submissions on the value of the equity beta



Source: AER, Final Decision, APA VTS Access Arrangement, Attachment 3, Nov 2017 Fig 3-3, p 3-67

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Equity beta: exercising regulatory judgment

Gearing has been declining. What are implications for beta and leverage?

Company name Envestra	Ticker	5 year Avg Gross debt	10 year Avg	5 year Avg Net debt	10 year Avg
		(Gross debt)		(Net debt)	
Envestra	ENV AU	54%	65%	54%	65%
APA group	APA AU	48%	55%	47%	54%
Duet	DUE AU	64%	70%	62%	69%
Ausnet	AST AU	58%	60%	56%	59%
Spark	SKI AU	60%	64%	60%	64%
Average		**56.71%**	**62.87%**	**55.76%**	**62.04%**

Net debt	Envestra	APA group	Duet	Ausnet	Spark
2007	65%	58%	66%	54%	60%
2008	77%	72%	74%	59%	71%
2009	75%	68%	78%	70%	71%
2010	74%	60%	79%	61%	67%
2011	66%	52%	77%	64%	64%
2012	63%	44%	71%	59%	61%
2013	53%	46%	69%	54%	63%
2014	47%	45%	62%	56%	56%
2015		49%	61%	56%	58%
2016		48%	49%	55%	
5 year average	**54%**	**47%**	**62%**	**56%**	**60%**
10 year average	**65%**	**54%**	**69%**	**59%**	**64%**

Source: AER spreadsheet on gearing, 'summary' page. See AER letter to ENA, 8 Feb 2018

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MRP: CCP16 assessment: MRP <=6%

- CCP16 supports the AER's overall approach, but considers 6.5% is overly conservative
  - Note: before 2013 Guideline, 6% used (other than at peak of GFC)
- Historic excess returns (HER) support MRP lower than 6%
- ***Limited weight should be placed on:***
  - The DGM analyses (as currently specified)
  - Claimed increase in MRP (using current DGM analyses by Gray et al)
  - Proposals to 'weight' competing theories of 'stable MRP' & 'stable RoE'.
- ***More weight should be placed on***:
  - HER geometric averages (given volatility of annual returns of 17.7%)
  - Possible downward trend in the MRP estimated from HER (Bianchi et al)
  - External financial, economic & survey/market data including contingent variables
  - Longer term (+50 years) versus shorter period (HER data)
- ***Overall, CCP16 considers a MRP value no greater than 6% is reasonable***.

MRP: challenges for the AER

- Role of geometric averages in HER estimates given volatility of annual returns:
  - See studies by Dimson et al & Damodaran et al studies
- Alternative approaches to the DGM
  - See Damodaran et al & Fenebris using 10-year bonds & a variable growth rate
  - If viable, does that lead to greater weight for DGM
- Evidence from HER for declining trend in the MRP?
- Relationships between the MRP and the DRP?
- Does the result make sense: contingent variables & other data
- If and how MRP should vary within fixed Guideline period (e.g. fixed formula linked to objective criteria)?

MRP: HER analysis

Table 6: Components of Returns, Sub-samples (Australian equities)

Sample Period	Stocks Geometric Mean (%)	Bonds Geometric Mean (%)	Bills Geometric Mean (%)	Stocks Arithmetic Mean (%)	Bonds Arithmetic Mean (%)	Bills Arithmetic Mean (%)	Inflation (%)	ERP vs Bonds (%)	ERP vs Bills (%)
Panel A: Nominal									
1946-2014	11.4	6.3	5.9	13.6	6.9	6.0	5.2	5.1	5.5
1975-2014	13.5	9.9	8.1	15.7	10.5	8.2	5.2	3.6	5.4
1995-2014	9.9	8.9	5.1	11.4	9.4	5.1	2.7	1.0	4.8
Panel B: Real									
1946-2014	5.9	1.1	0.7	8.1	1.7	0.8		4.8	5.2
1975-2014	7.9	4.5	2.8	10.0	5.1	2.9		3.4	5.1
1995-2014	7.0	6.1	2.3	7.6	5.6	2.4		0.9	4.7

Source: Dimson, Marsh and Staunton (2015); Authors' own calculations.

Source: Bianchi, Drew and Walk, *The (un)Predictable Equity Risk Premium*, 2015, Table 6, p 20.

Note: ERP vs .Bonds, and ERP vs. Bills are calculated using the geometric returns of stocks, bonds and bills

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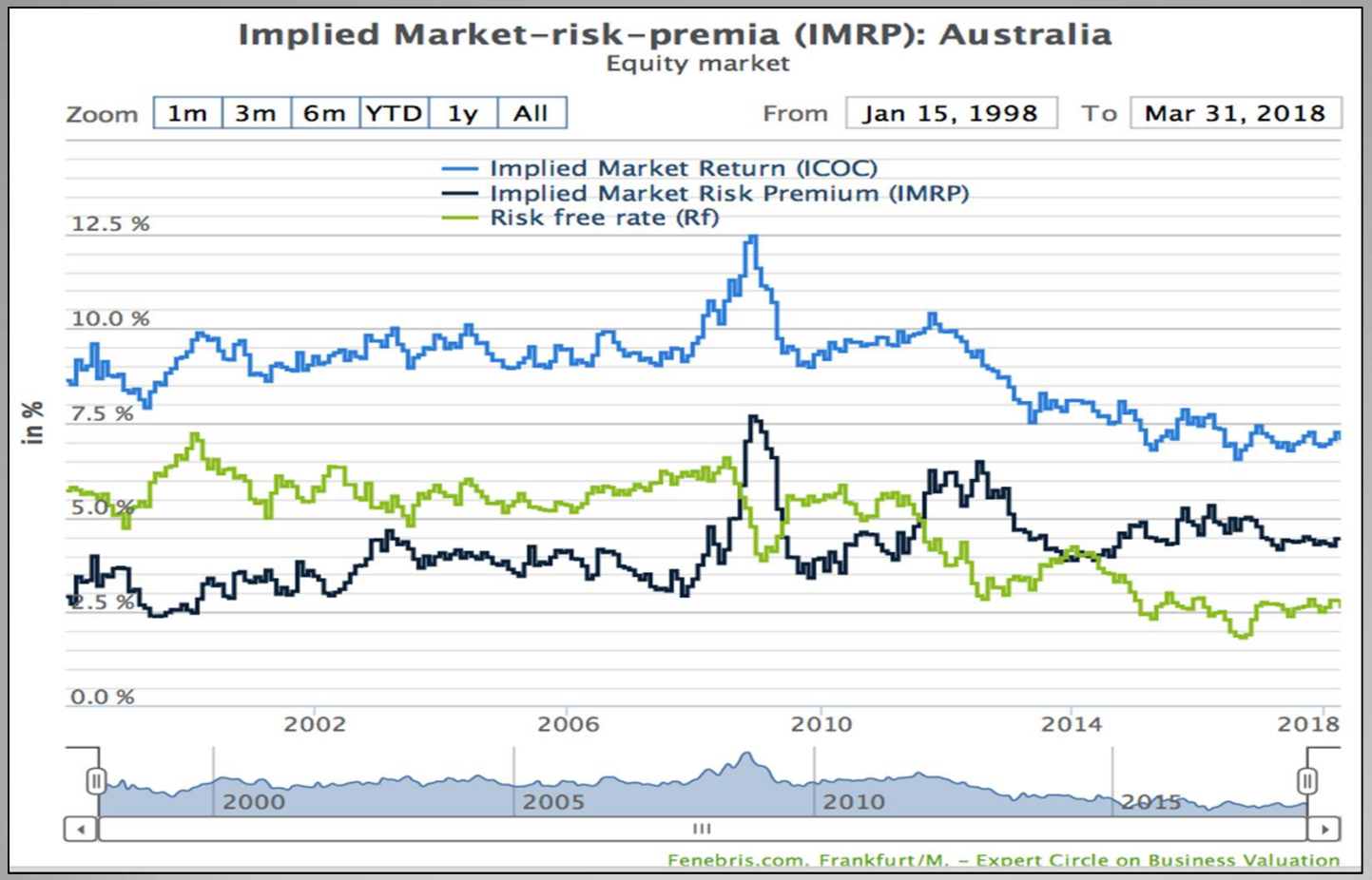
MRP: DGM – Fenebris Analysis



Extract dated 20 May 2018

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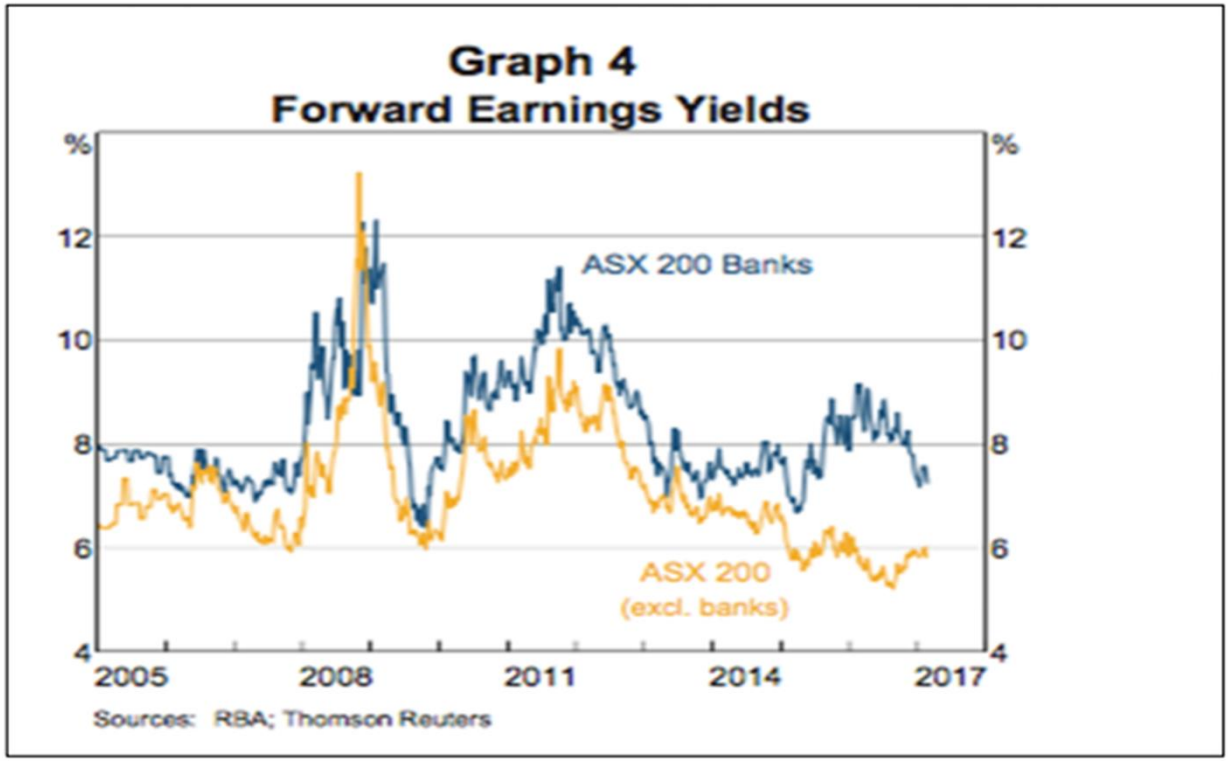
MRP: forward earnings yields and market composition

Figure 12: Forward Earnings Yield ASX 200 Banks versus ASX (excluding banks)



Source: David Norman, *Returns on Equity, Cost of Equity and the Implications for Banks*, RBA Bulletin, March Quarter 2017, Graph 4, p 54

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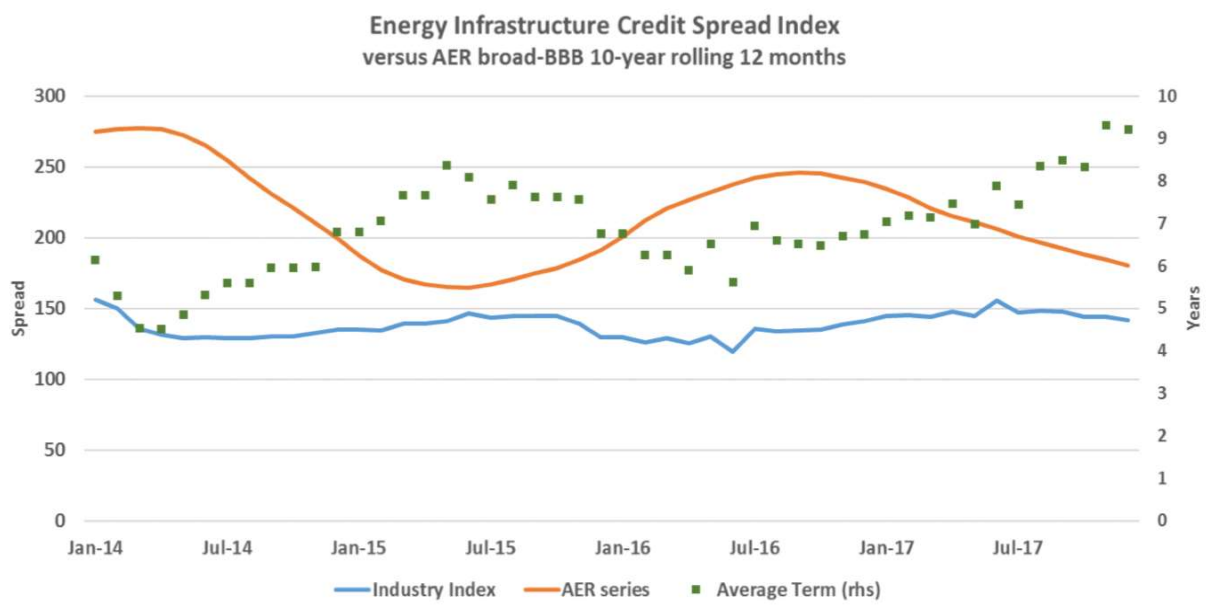
Return on debt

- CCP16 is finalising response to recent AER paper on cost of debt
- In response to the AER's Issues Paper, CCP16 concluded:
  - Continue to use the 10-year benchmark term for debt. However:
    - Recognise that this is conservative and requires extrapolation
    - Evidence: yields for utilities may be lower for the same credit rating
  - Allow averaging period of 12 months
  - Continue to apply the transition to the trailing average (TA)
  - Recognise the reduction in risk in the return on equity
  - Continue to monitor additional bond yield curves (TR and S&P)
    - But yield curve must be relevant and add information
    - Issues around 'weighting' of different curves, automatic update and managing contingencies
    - Using BBB curves will overestimate cost of debt for BEE
    - AER develop own sample of bonds?

Debt – new assessments

- Chairmont study of DRP based on actual debt costs shows more stable, lower DRP

Figure 2 The current AER approach compared against EICSI[39]



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Debt – new assessments

- Strength of new series (EICSI)
  - Provides benchmark based on actual costs
  - Allows for active debt management consistent with incentives
  - More stable DRP
- Issues/weaknesses
  - Limited observations
  - No defined rating or maturity
  - Lack of transparency, need to test inclusion/exclusion criteria
- Further testing needed? In interim, may be possible to give some weight to EICSI
- Option to use average of broad BBB and A series?
  - Would that be closer to EICSI?
  - Sensitivity of A – BBB spread to economic conditions. Does utility perform more like “A” than current “BBB”.

Gamma: CCP16 assessment: Gamma =>0.5

- CCP16 supports the AER's overall approach, but considers gamma is overly conservative
- ***Limited weight should be placed on***:
  - Tax statistics (absent further explanation by the ATO)
  - Proposed 'reverse engineering' creates other issues
- ***More weight should be placed on***:
  - Lally's approach to the distribution ratio (given it is a firm or industry specific parameter)
  - 'all equity' ownership data on utilisation rate (given it is a market wide parameter)
- ***No weight should be placed on***:
  - Market based estimates, as inconsistent with the Officer model
  - ATO estimates of the *distribution ratio* based on 'all equity'
  - The need to use the same assumptions for the distribution and utilisation rates
- ***Overall, CCP considers a gamma of 0.5 to 0.55 is more consistent with both theory and relevant observations***
  - Distribution ratio of 0.75-0.83, and utilisation rate of 0.65
  - 'Effective' tax rate of around 15% (30% * (1-0.5))

Gamma: challenges for the AER

- Resolving conflict between the Officer CAPM assumption of a fully segmented market, and the reality of Australian equity market (partial segmentation)
  - Any role for international CAPM?
- Using the ATO data – can it be improved
  - Is Hathaway's analysis of ATO data fundamentally flawed (see Lally)?
  - ATO has significant doubts if ATO data 'fit for purpose'
- Can Lally's analysis of distribution ratios be revisited using a comparator set closer to the BEE?
  - AER will need to obtain better data from the networks, given Lally's assessment of publicly available data
  - How to assess observed distribution ratios >1?