

---

# Returns on investment for gas pipelines

Dr. Tom Hird

October 2016

# Table of Contents

---

<b>1</b>	<b>Executive summary</b> .....	<b>0</b>
1.1	ACCC treatment of investment IRRs .....	1
1.2	ACCC treatment of historical revenue/costs .....	6
1.3	ACCC treatment of relative prices.....	9
<b>2</b>	<b>Introduction</b> .....	<b>12</b>
<b>3</b>	<b>IRR on incremental investments</b> .....	<b>14</b>
3.1	All new investments have expected returns that exceed the cost of capital .....	15
3.2	IRR's on new investments are typically high (especially for incremental investments).....	18
3.3	Project IRR's are relevant but should not be compared to regulated returns .....	21
<b>4</b>	<b>ACCC views on 'full recovery' of historic costs</b> .....	<b>28</b>
4.1	Summary.....	29
4.2	ACCC valuation methodology is arbitrary .....	31
4.3	DORC reflects competitive outcomes and regulatory practice.....	36
4.4	Regulating on the basis of previously recovered costs would deter investments in pipelines (new and old).....	39
4.5	Regulating on the basis of previously recovered costs would distort the efficient operation of existing pipelines.....	42
4.6	Carpentaria gas pipeline (CGP) as a case study.....	44
<b>5</b>	<b>ACCC treatment of relative prices</b> .....	<b>48</b>
<b>6</b>	<b>Summary</b> .....	<b>52</b>
	<b>Appendix A Importance of intangible assets</b> .....	<b>53</b>
	<b>Appendix B Literature evidence</b> .....	<b>55</b>
B.1	The margin between hurdle rates and WACC .....	55
B.2	Dispersion of project returns within an individual firm.....	59
B.3	Summary.....	61



**Appendix C Regulatory precedent for initial asset valuation..... 63**

## List of Figures

---

Figure 1-1: Normal distribution of IRR and distribution of projects proposed to board of a hypothetical company .....	2
Figure 1-2: ACCC Chart 6.1 with project IRR included.....	5
Figure 3-1: ACCC Chart 6.1 .....	14
Figure 3-2: Hurdle rates vs WACC (JP Morgan) .....	16
Figure 3-3: Normal distribution of IRR and distribution of projects proposed to board of a hypothetical company .....	17
Figure 3-4: ACCC Chart 6.1 with project IRR included .....	22



COMPETITION  
ECONOMISTS  
GROUP

# List of Tables

---

Table 3-1: APA's project costs and IRR.....23

# 1 Executive summary

1. The ACCC's Inquiry into the east coast gas market states that there is evidence of monopoly pricing by Australian pipeline owners. The ACCC also asserts that delivered gas prices in southern states are likely to be raised as a result of pipeline monopoly pricing and/or prices for gas producers are likely to be lowered.
2. The basis for the ACCC's position that there is monopoly pricing is as follows. First, the ACCC concludes, based on an appraisal of the Australian market structure, that there are only a small number of competing pipelines for delivery of gas to/from given locations and, as a matter of theory, it would expect to observe monopoly pricing given this market structure (section 6.2 of the Inquiry report);
3. The ACCC then argues that three separate pieces of evidence tend to confirm a conclusion that monopoly pricing is occurring. Specifically:
  - i. When pipeline businesses propose new investments to their respective board of directors the internal rates of return on those investments are higher than, and sometimes very materially higher than, the regulated rate of return that the Australian Energy Regulator (AER) allows to be earned on pipeline investments;
  - ii. Some pipelines are setting prices above the marginal cost of keeping the pipeline operational even though the ACCC calculates that past revenues have fully recovered past investments; and
  - iii. The prices charged for 'As available', 'interruptible' and 'bi-directional' services (call these "non-firm" services) are higher than firm capacity forward haul prices even though the ACCC believes that:
    - a. 'As available' and 'interruptible' prices would be lower if the regulatory approach to relative pricing of these services in the US and EU were adopted by Australian pipelines;
    - b. Bi-directional' prices would be lower if the regulatory approach to relative pricing of these services for US interstate pipelines were adopted by Australian pipelines; and
    - c. Prices for 'Backhaul' services are higher than they would be if the ACCC's approach to relative pricing from its 2003 for the Moomba to Sydney pipeline decision were adopted by Australian pipelines.<sup>1</sup>

---

<sup>1</sup> The ACCC notes this is likely higher than prices that would be set if they were set in accordance with the views of the EU Agency for Cooperation of Energy Regulators which the ACCC reports as stating that the price for this service should be set to reflect the actual marginal (additional) costs that the pipeline operator incurs to provide this service

4. In our view, the evidence that the ACCC has relied on does not justify the ACCC's conclusion on the existence of monopoly pricing. In fact, were one to look at any industry, including the most competitive industries in the economy, one would find precisely the same 'evidence' of monopoly pricing. Specifically:
  - i. Investment proposals would not be taken to any board, including the board of a company in a highly competitive industry, unless the internal rate of return was materially higher than the cost of capital;
  - ii. Prices set in competitive markets tend to reflect forward looking new entrant costs based on asset replacement cost – a tendency that promotes economic efficiency. This is true irrespective of whether initial costs have been 'fully recovered' (a concept that is simply not meaningful in a workably competitive market). Were the ACCC to apply the same test to CBD office towers it might equally conclude that their current rents reflected monopoly pricing because the initial investment in the building was 'fully recovered'; and
  - iii. Relative prices set in workably competitive markets need not bear any relation to relative prices that regulators might deem appropriate in a particular jurisdiction for a particular service. Moreover, a comparison of relative prices cannot say anything about the level of prices relative to the level of cost. The ACCC has framed the discussion around some prices being set *high* relative to firm capacity prices. However, one can equally frame the same evidence as firm capacity prices being set *low* relative to other prices.

### 1.1 ACCC treatment of investment IRRs

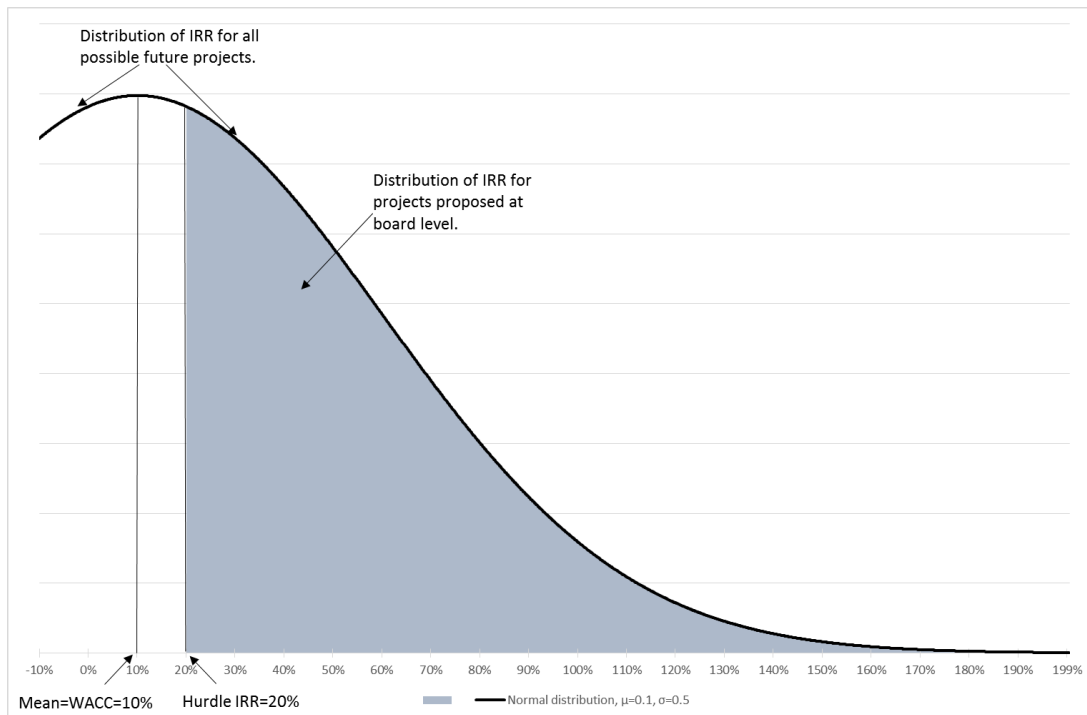
5. The ACCC's interpretation of its IRR analysis is problematic because all firms, even those operating in the most competitive industries, will typically only take projects to the Board if they offer IRR's materially in excess of the weighted average cost of capital (WACC). Consequently, a finding that the forecast IRR on new projects is typically above WACC is, to say the least, unsurprising and is exactly what would be found looking at board papers from the most competitive of industries.
6. Clearly, no projects will be proposed to a Board that have IRR's less than WACC because such projects are value destroying. Few, if any will be proposed that have IRRs equal to WACC because such projects create zero value for the firm. In fact, once account is taken of the fact that both management time and access to finance is limited then taking on a project that only delivers WACC (or marginally more) can be value destroying because it can limit the ability to successfully take on future projects (or prosecute already committed projects) that would otherwise deliver high IRRs.
7. The fact that management time and access to capital markets are not infinitely scalable is the generally accepted conceptual explanation for why it is typical for businesses to require estimated IRR's for new projects that are well above WACC. In this context, JP Morgan has recently reported that the median hurdle rate of return

for S&P500 firms is over double the median WACC and similar findings have been reported by the RBA in Australia who state that:

*Hurdle rates of around 15 per cent are quite common, though the range of rates reported is relatively wide, from a little less than 10 per cent up to 30 per cent.*

8. The RBA goes onto note that projects are sometimes rejected even with IRR's that are in excess of hurdle rates. This discussion can be illustrated graphically. Imagine a firm with a WACC of 10% and a hurdle rate of return of 20%. Therefore, the sample of projects that will be brought to the board in any given period will be drawn from the shaded area of the below distribution – with a lower bound equal to 20%. Further, let all possible future projects that the firm might consider have IRRs that are normally distributed around a mean of 10% with a standard deviation of 50%. In this case, the mean IRR of projects taken to the Board would be 56%.

**Figure 1-1: Normal distribution of IRR and distribution of projects proposed to board of a hypothetical company**



Note that the assumptions underpinning this chart are not intended to necessarily describe reality but simply to provide a well-defined graphical/numerical illustration of the concepts being discussed.

9. Nothing in the above analysis suggests the existence of any monopoly power. It appears that the ACCC has implicitly assumed that, in competitive markets, the IRR on new investments is constrained by competition such that projects with IRR's materially above WACC do not occur (or at best occur with such irregularity that instances of such projects can be ignored). However, this involves a failure to

understand the competitive process generally and, in particular, the role of incremental investments (investments that build on prior investments) in that process.

10. Even the most competitive markets are subject to changes in technology, relative costs and demand. These changes in market circumstances inevitably create the potential for firms to invest in order to earn above normal returns (referred to as “economic rents”). It is the pursuit of these economic rents that drives firms to adapt their business models to changing circumstances in order to gain competitive advantage (i.e., earn the economic rents).<sup>2</sup>

*Various types of competitive advantages emerge when change occurs. The source of the change may be external or internal to the industry (see figure 6.1). For an external change to create competitive advantage, the change must have differential effects on companies because of their different resources and capabilities or strategic positioning.*

11. This pursuit of economic rents is actually the driving force that delivers value to end customers. The first firms to respond efficiently to changed market circumstances can earn substantially more than their cost of capital but it is the knowledge that other firms are competing with them to identify these opportunities that ultimately places a cap on the level of industry wide returns that can be achieved. Very few, if any, industries are so static that changes in market circumstances do not give rise to some high value IRR projects from time to time.
12. It is also important to interpret any reported IRR on new *incremental* investments in the context of the wider activities and past investments of a firm. Firms will commonly earn very high returns, e.g., in excess of 50%, on investments that leverage off past investments in physical and intangible assets (‘know how’).
13. All of the APA projects in the ACCC’s Chart 6.1 involve an incremental build on existing pipelines, and many are relatively small projects compared to the values of the existing pipelines that these investments facilitate use on. Such incremental projects are likely to have higher expected returns than the existing assets as a result of leveraging on both existing assets and accumulated know-how and other forms of intangible capital residing within the organisation. High returns on such incremental investments are the norm - even in the most competitive unregulated market - and provide no evidence of monopoly pricing.
14. A simple example illustrates this concept. Consider a café that is in the position that demand for its services is higher than it had previously experienced or expected. The café owner concludes that if she invests \$5,000 in a new, larger and faster, coffee

---

<sup>2</sup> Murray, Peter A. (2014), *The nature and sources of competitive advantage*. In: Contemporary strategic management: an Australasian perspective, 2nd ed. John Wiley & Sons Australia, Ltd., Milton, Queensland, pp. 187-221.



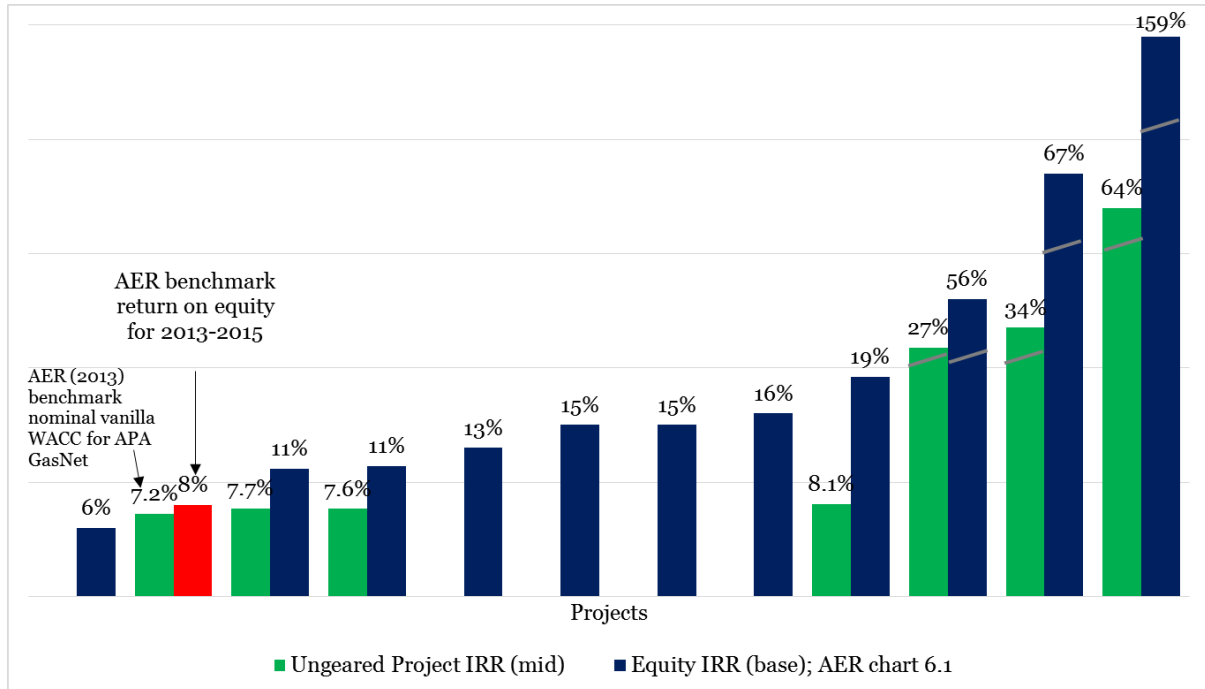
machine she can improve client satisfaction (in terms of reduced average wait time), serve more customers and increase revenues by \$100 per weekday (say, 25 additional coffees). The additional costs, in terms of milk and coffee, may only be \$20 per day. With around 250 weekdays per year this implies an annual incremental increase in profits of \$20,000 and an IRR of 400% on the \$5,000 incremental outlay.

15. However, the existence of an incremental investment offering a 400% return does not imply the café is monopoly pricing. It is simply an example of a business responding to altered market circumstances by making an incremental investment (a new coffee machine) that builds on its prior investments (the entire café fit out) and intangible assets (the ‘know how’ of existing staff and a the development of a client base). The calculation of a 400% return on the incremental investment is misleading because it fails to recognise that the return is only available because of larger and more long-standing investments in both physical and intangible assets. Precisely the same logic applies to APA’s incremental investments which are only able to earn any return at all because they leverage on the existence of APA’s wider pipeline network and its intangible assets (including its technical and market know-how).<sup>3</sup>
16. Finally, the ACCC inappropriately focussed on equity IRR rather than project IRR. This is inappropriate because the prices faced by customers are a function of project returns – not equity returns which will be influenced by the debt funding strategy and costs. Given that the ACCC is claiming to draw a link between IRRs and monopoly pricing, the ACCC should be comparing the project IRR reported in APA’s board papers to the benchmark project IRR.
17. Taking as given the ACCC use of regulatory decisions as a benchmark of comparison (a decision that we regard as problematic in itself), the project IRR should be compared with the overall vanilla WACC allowed in those AER decisions. For APA’s GasNet assets this was most recently set at 7.22%. Figure 1-2 below illustrates, for the 6 APA projects with equity IRRs above the AER benchmark included in the ACCC’s Chart 6.1, the impact of using project returns rather than equity returns.

---

<sup>3</sup> Intangible assets often account for most of the value of a firm and are, in the case of APA, recognised by the Australian Competition Tribunal – which determined that that the payment to APA by Envestra of a ‘network management fee’ (NMF) equal to 3% of Envestra’s total revenue reflected the value of know-how possessed by APA. *Application by Envestra Limited (No 2) [2012] ACompT 3* (11 January 2012), §206. Of course, the same logic applies, with more force, to APA’s investments made on its own behalf. APA has valuable know-how and can be expected to earn a return on this know-how in a competitive market. However, the IRR’s from Board papers that the ACCC relies on are returns on tangible investments only. A correct economic interpretation of these returns would acknowledge that only part of the return is a return on physical assets with a material component representing a return the intangible assets held by APA that make the project possible.

**Figure 1-2: ACCC Chart 6.1 with project IRR included**



Source: ACCC, APA, CEG analysis

18. It can be seen that, for APA projects, the project IRR is substantially lower than the equity IRR. However, the AER regulated project IRR (WACC) is only slightly lower than the AER cost of equity – suggesting that the AER estimate of the cost of equity is only marginally above the AER estimate of the cost of debt (which casts doubt on the reasonableness of both AER estimates).<sup>4</sup> Consequently, the gap between AER estimates and APA estimated returns is reduced dramatically. While data on project IRR’s are not available for the five non-APA projects it is reasonable to assume that these would similarly be much lower than (close to half of) the equity IRR’s reported in board papers.
19. When the correct comparison is made at the project level, what is actually surprising is how low most returns are. Specifically, the fact that three projects are proposed with project returns under 9% might be taken to suggest that APA does not have a hurdle rate of return materially above WACC. However, this would not be a correct conclusion because, as is made clear in each of the relevant Board papers, APA’s

<sup>4</sup> The AER vanilla WACC is equal to weighted average of the cost of equity and debt – where a 60% weight is given to the cost of debt and a 40% weight is given to the cost of equity. The 7.2% vanilla WACC is the weighted average of an 8.0% cost of equity and a 6.7% cost of debt (i.e., only 1.3% separating the AER’s estimate of the cost of each funding source).

proposed investments in these relatively low IRR projects are undertaken in a wider strategic environment.

20. Specifically, with a view to enhancing APA's overall ability to compete with the Eastern Gas Pipeline for northward flows. A closer scrutiny of the board papers suggests that competitive considerations weighed heavily on the decisions made by APA more generally. However, the ACCC fails to acknowledge this context when it extracted the data to create its version of Chart 6.1.

## 1.2 ACCC treatment of historical revenue/costs

21. The ACCC states that some pipelines are setting prices above the marginal cost of keeping the pipeline operational even though the ACCC calculates that past revenues have fully recovered past investments. The basis of the ACCC's empirical assessment, although not fully disclosed, is itself likely to be highly controversial – given the importance of intangible assets as discussed above and the questionable assumption that regulated return is the appropriate discount rate.
22. Putting these issues aside, there are three core problems with the ACCC's approach:
  - First, just as was the case with its use of IRRs, applying the same methodology is likely to result in a finding of 'monopoly power' in the most competitive of markets (e.g., residential and commercial real estate);
  - Second, were the ACCC to actually impose pricing on the basis of marginal cost for pipelines that have 'fully recovered' past capital expenditure then this would inevitably result in the present value of new pipeline investments being negative – with a consequent severe damage to new investment incentives;
  - Third, the efficient operation of existing pipelines would be impaired.

### 1.2.1 Competitive industries charge based on a new entrant's cost

23. In a competitive industry pricing is, in equilibrium, determined by the costs that a new entrant would incur to provide the service. This need bear no relationship to the costs incurred, and revenues earned, in the past from an investment. By way of example, rents in a CBD office tower today are tied to the costs of creating new office space. Rents today are not determined by how much of the original cost of construction for a specific tower has already been recovered.
24. It is in recognition of precisely this fact that regulators, including the ACCC, have historically set the initial value of regulated assets at the depreciated optimised replacement cost (DORC) of those assets. As noted by the ACCC:<sup>5</sup>

---

<sup>5</sup> ACCC, Draft Statement of Principles for the Regulation of Transmission Revenues, May 1999, pp. 39-40.

*The DORC of a network is the sum of the depreciated replacement cost of the assets that would be used if the system were notionally reconfigured so as to minimise the forward looking costs of service delivery. There are two definitions of what DORC attempts to measure:*

- *One interpretation of DORC is that **it is the valuation methodology that would be consistent with the price charged by an efficient new entrant into an industry, and so it is consistent with the price that would prevail in the industry in long run equilibrium.***
- *The second interpretation is that it is the price that a firm with a certain service requirement would pay for existing assets in preference to replicating the assets.*

...

*The two definitions of the DORC methodology stated above suggest that it has a number of attractions from the viewpoint of economic efficiency.*

*First, while the outcomes of competitive or contestable markets do not provide all of the answers, regulators often look to competitive or contestable markets for guidance on efficient decision rules for regulating natural monopoly markets. Such comparisons can provide useful guiding principles for certain regulatory problems. In addition, the establishment of broadly symmetrical pricing and incentive structures across regulated and unregulated markets has attractions on general resource allocation grounds. It is noted in this regard that one of the objectives is to replicate the desirable outcomes of a competitive market. [Emphasis added.]*

25. This logic is precisely why assessment of whether current pricing is consistent with workably competitive markets requires a comparison of revenues with the new entrant costs of the assets. A new entrant would need to recover their construction costs over the life of a new asset which is roughly equivalent, on an annual basis, to recovering DORC over the remaining life of an existing assets (which is why the ACCC links a DORC valuation to a competitive market outcome). By contrast, the ACCC inquiry concludes that past revenues on pipelines (including those commercially negotiated prior to the construction of the pipeline) exceed the revenues that the ACCC now says it would have allowed had the pipeline been regulated. The ACCC appears to believe that its estimate of such 'excess' historical revenues are relevant to a valuation of the asset today if the asset were subject to regulation. Specifically, that the ACCC's retrospective estimate of 'excess' historical revenues should be carried forward (at an interest rate) and deducted from the asset's value today. The ACCC concludes that for some assets this would involve setting a value of the asset equal to zero.

26. Even if it were true and some assets have provided historical returns in excess of those that the ACCC would have allowed were it regulating the asset, this says nothing about whether pipelines are currently pricing above the levels consistent with contestable markets – markets in which prices and assets are determined on the basis of a new entrant’s costs (the current costs of replicating the service spread over the life of a new asset). Moreover, if the ACCC followed its own historical practice (and that of other regulators), then, even if these asset values were to be regulated today, their regulated asset value would be set on the basis of depreciated optimised replacement cost (which is consistent with delivering prices equal to new entrant costs as discussed above). That is, the zero valuation being posited by the ACCC would not occur even if the assets became regulated – at least not without a radical departure from, in our view sound, regulatory precedent.

### **1.2.2 Regulating on the basis of previously recovered costs would deter investments in new pipelines**

27. If a pipeline were required to set prices based on marginal cost once it had fully recovered their initial investment costs then this amounts to retrospective application of regulation. If put into practice, having ‘unregulated’ status would be meaningless because the ACCC would, once a pipeline was successful enough, claw back past revenues by, in effect, using them to set low future prices.
28. Applying this approach on a pipeline-by-pipeline basis would mean that the expected return on a new pipeline was negative (i.e., IRR less than WACC). In effect, the ACCC is proposing to:
- regulate down to marginal cost all of the successful pipeline investments; while
  - leaving all of the unsuccessful pipelines to suffer losses (in NPV terms).
29. This would leave the industry as a whole under-recovering its costs. Equivalently, the expected return on a new pipeline would be negative under such a regime (assuming that it is less than certain that it will be able to recover its initial costs). An implication of the above is that it would deter investments in all but the safest new pipelines.

### **1.2.3 Regulating on the basis of previously recovered costs would distort the efficient operation of existing pipelines**

30. A pipeline has little incentive to minimise costs or maximise throughput if that pipeline anticipates that, once the ACCC deems initial investment costs are fully recovered, prices will be regulated equal to marginal cost. Any benefits that the pipeline would otherwise have achieved by efficiently operating their asset, and thereby raising profits today, will be lost by virtue of bringing forward the date the ACCC requires the pipeline to lower prices down to marginal cost (lowering profits by

an equivalent present value in the future).<sup>6</sup> Put simply, if a business expects regulation to retrospectively claw back any benefits from more efficient operation of their asset they have less incentive to be efficient in the first place.

31. Such an approach to regulation would also cause serious problems in the operation of the market by giving some customers access to existing capacity (and new increments to that capacity) on some pipelines at marginal cost while other users (on the same pipeline and on competing pipelines) have to pay a price that reflects average cost. In particular:
  - shippers with firm contracts on the pipeline in question<sup>7</sup> would need to continue to make their contractually binding payments;
  - the same would be true of shippers on competing pipelines – both for existing and new incremental capacity on those pipelines.
32. The effect of this would be that investment in new incremental capacity would be inefficiently distorted in favour of investment on the pipelines the ACCC deemed had already fully recovered cost – because new users of that pipeline would not have to pay prices reflecting the true market value of the underlying assets. Other competing pipelines may then not find it possible to attract shippers at prices that will allow them to recover their fixed costs (even if this is defined in terms of their historical costs) because they are now competing with pipelines only recovering marginal costs.
33. Similarly, some users may delay usage of the pipeline in order to ensure that they only ‘join’ once costs have been deemed by the ACCC to be ‘fully recovered’. That is, if a pipeline is forecast to fully recover its (ACCC deemed) historical costs in “t” years’ time then potential new shippers will expect a significant price drop at that time. This may sway their decision to delay their entry (and any consequent down/upstream investment) until that time. For example, consider a gas field owner thinking about expanding output from their gas field. Other things equal, it would be rationale to delay that expansion “t” years to take advantage of artificially lower transport costs at that time.

### 1.3 ACCC treatment of relative prices

34. In order to reach a conclusion of monopoly pricing is occurring it is necessary to conclude that the level of prices exceeds a measure of competitive prices/costs. However, the ACCC cites as evidence of monopoly pricing the fact that pipelines set prices for one subset of services (“non-firm” services) higher than for “firm” services. It appears to be the ACCC’s view that “non-firm” services should be priced at, or

---

<sup>6</sup> Only if the pipeline owner is in fear of being unable to fully recover its initial investment does it have any residual incentive to more efficiently operate the pipeline.

<sup>7</sup> These contracts would tend to reflect competitive market (DORC – see above) levels of cost recovery.

below, the prices for “firm” services or, at least, the ACCC has evidence that some regulators have imposed this condition in some jurisdictions.

35. Even if one shared the ACCC’s view that “non-firm” prices should not exceed “firm” prices, one must still ask whether failure to price in this regard is evidence of monopoly pricing. The ACCC’s desired price relativity can be achieved by *raising* prices for “firm” services above those for “non-firm” services. Ultimately the ACCC concern expressed by the ACCC is about price relativities not price levels.
36. The ACCC may be of the view that firm capacity prices negotiated with foundation customers at the time of initial investment represent prices that were deemed sufficient to fully recover the initial investment in the pipeline at the time of its construction. On this assumption, the ACCC may be inferring that any additional revenue derived from “non-firm” services negotiated with customers at a later date represents a source of monopoly profit (because revenue from firm prices already fully recover costs).
37. However, the ACCC provides no evidence to this effect and, in our view, there is no sound basis for reaching such a conclusion. At the time of a pipeline’s construction there can be little doubt that there are strong competitive forces to offer low firm capacity prices to foundation customers; this is, after all, the basis on which a pipeline operator will win the business to supply those customers. In this context, one cannot assume that potential pipeline owners will attempt to recover 100% of their expected costs from foundation customers. A bidder who took this strategy could be profitably undercut by another bidder who offered a lower price to foundation customers on the basis of an expectation of selling some services to non-foundation customers. The operation of competitive forces means that the only reasonable assumption is that the firm prices for foundation customers reflect the expected level of revenues from future customers (including from the sale of non-firm services).
38. Correctly analysed, the strongest case that the ACCC could make would be that actual demand for services from non-foundation customers is materially higher than expected at the time of pipeline construction and that pipeline owners are the, after the fact, beneficiaries of this. However, even if this were correct, and no evidence to this effect is provided, it would not imply monopoly pricing. Rather, it would simply imply that the exposure to risk taken by pipeline owners has turned out to their advantage – noting that the opposite could also have been the case. At one point in the Inquiry report the ACCC accepts that this is the case<sup>8</sup> but, in our view, the ACCC fails to give this fact the importance it deserves in the inquiry overall.

---

<sup>8</sup> On page 107 of the inquiry report the ACCC states:

The Inquiry recognises that a range of factors may result in a pipeline operator being able to ‘over recover’ the cost of construction. Many have **little to do with the exercise of market power**. For example, an



COMPETITION  
ECONOMISTS  
GROUP

---

unexpected increase in demand later in the life of a pipeline may enable it to ‘over recover’ its construction costs even if it faces effective competition. [Emphasis added.]



## 2 Introduction

39. My name is Dr Thomas Hird and I am a Director of CEG Asia Pacific. My qualifications and experience are set out in my curriculum vitae, which is attached to this report. The opinions set out in this report are based on the specialised knowledge that I have acquired from my qualifications as an economist and my experience in the field of regulatory economics.
40. This report has been prepared by CEG for KWM on behalf of APA, in order to assist APA in responding to the ACCC *Inquiry into the east coast gas market* report. In that report the ACCC's concludes that there is evidence of monopoly pricing by Australian pipeline owners.
41. The basis for the ACCC's position that there is monopoly pricing is as follows. First, the ACCC concludes, based on an appraisal of the Australian market structure, that there are only a small number of competing pipelines for delivery of gas to/from given locations and, as a matter of theory, it would expect to observe monopoly pricing given this market structure (section 6.2 of the Inquiry report);
42. The ACCC then argues that three separate pieces of evidence tend to confirm a conclusion that monopoly pricing is occurring. Specifically:
  - i. When pipeline businesses propose new investments to their respective board of directors the internal rates of return on those investments are higher than, and sometimes very materially higher than, the regulated rate of return that the Australian Energy Regulator (AER) allows to be earned on pipeline investments;
  - ii. Some pipelines are setting prices above the marginal cost of keeping the pipeline operational even though the ACCC calculates that past revenues have fully recovered past investments; and
  - iii. The prices charged for 'As available', 'interruptible', 'backhaul' and 'bi-directional' services (call these "non-firm" services) are higher than firm capacity forward haul prices even though the ACCC believes that:
    - a. 'As available' and 'interruptible' prices would be lower if the regulatory approach to relative pricing of these services in the US and EU were adopted by Australian pipelines;
    - b. Bi-directional' prices would be lower if the regulatory approach to relative pricing of these services for US interstate pipelines were adopted by Australian pipelines; and

- c. Prices for ‘Backhaul’ services are higher than they would be if the ACCC’s approach to relative pricing from its 2003 for the Moomba to Sydney pipeline decision were adopted by Australian pipelines.<sup>9</sup>
43. The remainder of this report addresses these contentions and has the following structure.
- section 3 considers how to interpret the ACCC’s IRR evidence;
  - section 4 considers whether it is meaningful or sensible to attempt to identify pipelines that have fully recovered their initial costs;
  - section 5 considers the ACCC’s interpretation of information on relative prices; and
  - section 6 concludes.
44. In preparing this report I have been assisted by my colleague Johnathan Wongsosaputro. Notwithstanding this assistance, the opinions in this report are my own and I take full responsibility for them. I have read the Guidelines for Expert Witnesses in Proceedings of the Federal Court of Australia and confirm that I have made all inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to the best of my knowledge, been withheld.



Dr Tom Hird

---

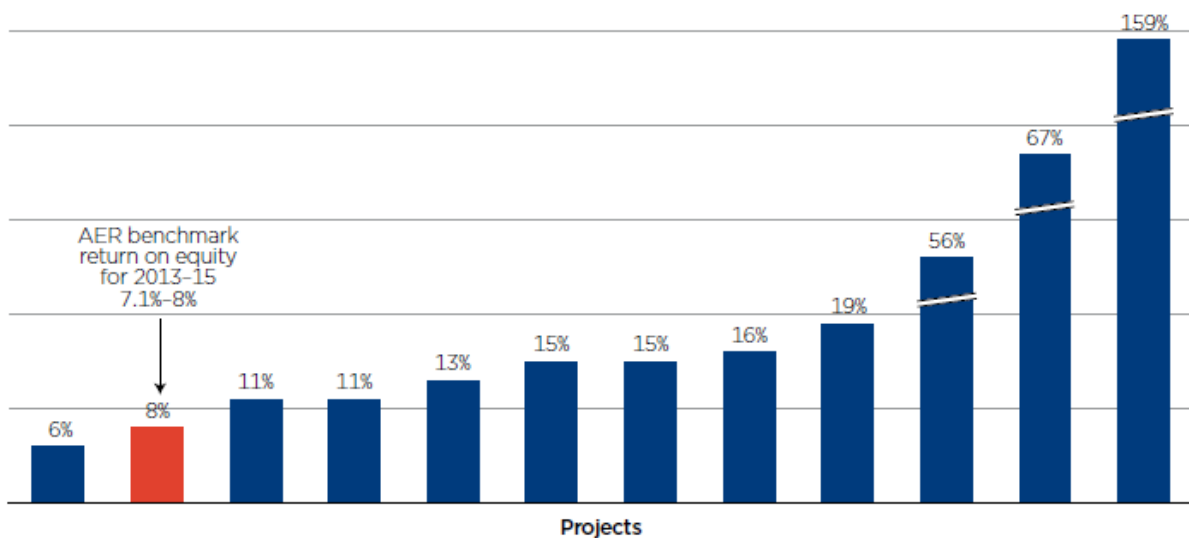
<sup>9</sup> The ACCC notes is likely higher than prices that would be set if they were set in accordance with the views of the EU Agency for Cooperation of Energy Regulators which the ACCC reports as stating that the price for this service should be set to reflect the actual marginal (additional) costs that the pipeline operator incurs to provide this service

### 3 IRR on incremental investments

45. In concluding that gas pipelines in Australia were engaged in monopoly pricing, the ACCC relied heavily on its finding that, based primarily on board papers seeking approval for incremental investments in pipelines, high returns on equity were expected to be earned on those incremental projects. This is illustrated in Chart 6.1 of the ACCC’s report, which we reproduce below in Figure 3-1.

**Figure 3-1: ACCC Chart 6.1**

Chart 6.1: Return on equity expected to be earned on recent incremental projects<sup>121</sup>



Source: ACCC

46. The ACCC’s analysis is highly problematic for a number of reasons:
- First, all firms, even those operating in the most competitive industries, will typically only take projects to the Board if they offer IRR’s materially in excess of the weighted average cost of capital (WACC). Consequently, a finding that the forecast IRR on new projects is typically above WACC is, to say the least, unsurprising and is exactly what would be found looking at board papers from the most competitive of industries;
  - Second, the ACCC analysis fails to understand that it is the pursuit of above normal returns on incremental investments that drives efficient investment in all industries - including the most competitive industries in the economy.
  - Third, it is not economically meaningful to compare returns on *incremental* investments in an *unregulated* market environment with the corresponding allowed returns on the entire asset base in a regulated environment;

- Finally, the ACCC has made serious errors in its comparison of equity returns rather than project returns. Pricing is a function of project level returns and any assessment of monopoly pricing must focus on project returns - not equity returns (which are affected by financing assumptions). This makes a material change to the ACCC's comparison to regulated returns.

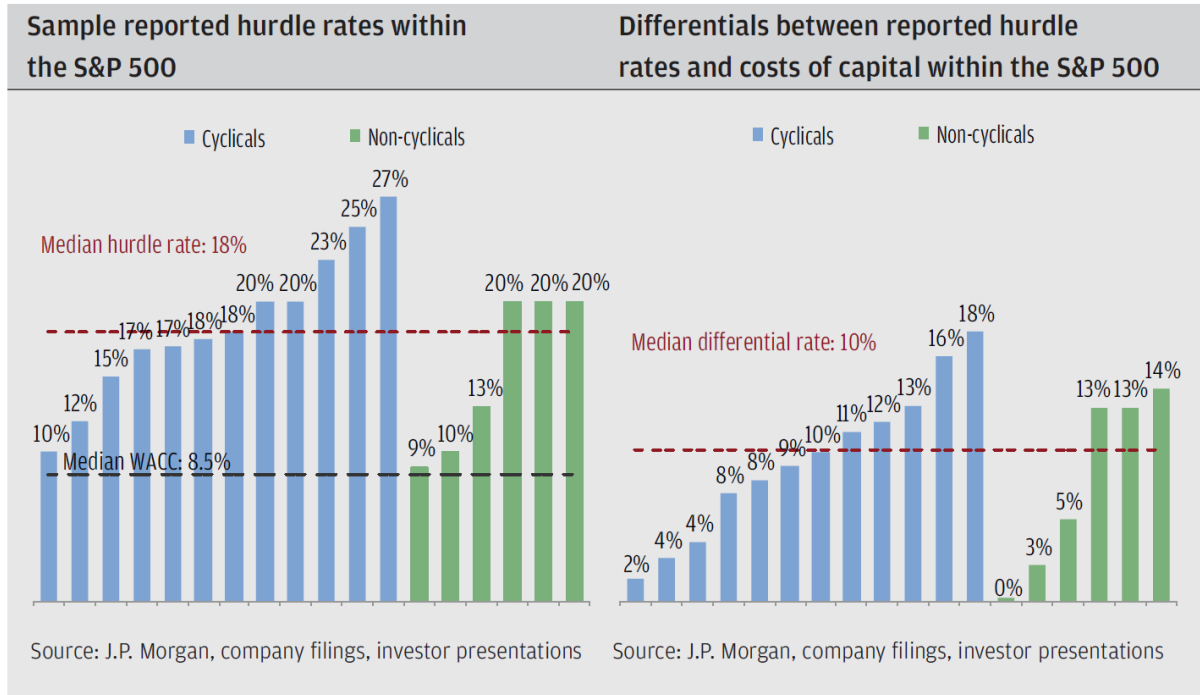
### 3.1 All new investments have expected returns that exceed the cost of capital

47. In order to put the ACCC IRR analysis into context, consider a firm operating in a competitive market where that firm's cost of capital was 10%. Absent strategic (non-project cash-flow) reasons for an investment, staff will not take any projects to the Board that have an IRR of less than 10%. Such projects would be value-destroying and staff who propose them would be sanctioned. So, even if a competitive business were to set the 'hurdle rate' of return for new investments equal to WACC, the ACCC's methodology would reveal that the average IRR on investment proposals put to the Board was greater than WACC (zero proposals below WACC and some above WACC).
48. Moreover, a project that has a return exactly equal to the cost of capital is also unlikely to be taken to the Board because such a project has zero expected value to the company (i.e., has a net present value (NPV) of cash-flows equal to zero). In fact, standard practice in competitive industries is for company policy to require that new investment proposals have IRR materially above WACC before they are considered by the Board. JP Morgan has recently reported that the median hurdle rate of return for S&P500 firms are over double their WACC and similar findings have been reported by the RBA in Australia who state that:

*Hurdle rates of around 15 per cent are quite common, though the range of rates reported is relatively wide, from a little less than 10 per cent up to 30 per cent.*

49. JP Morgan's findings are summarised in the following figure extracted from their report.

**Figure 3-2: Hurdle rates vs WACC (JP Morgan)**



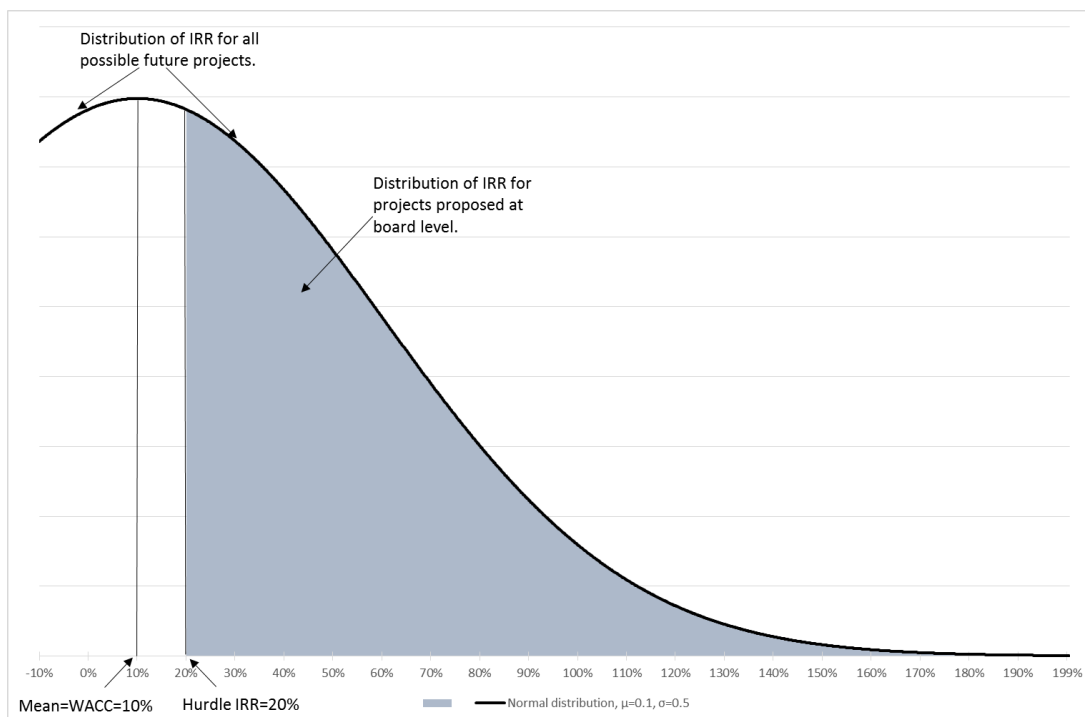
50. The standard explanation for such high hurdle rates is that management time and the firm’s access to finance are not infinitely scalable. Therefore, firms will rationally limit their attention to investments that are expected to deliver IRRs materially in excess of the WACC – so as to avoid tying up scarce management/financial resources on low NPV projects (i.e., projects that have expected returns around WACC).<sup>10</sup>
51. A further reason for a firm to have high hurdle rates of return is that there may be a tendency for project proponents within the firm to over-estimate cash-flows either by virtue of being over-optimistic or by virtue of the difficulty of foreseeing, and assigning accurate probabilities to, negative shocks to the project value. Economic literature attributes this observation to an agency problem, where managers may have an incentive to obtain approval to oversee as many projects as possible. Imposing a hurdle rate in excess of WACC can be used as a means to counteract any inherent upward bias in projected cash-flows. (See Appendix B for more discussion of the literature on hurdle rates of return being set above WACC.)
52. The important point in this context is that the economic logic for, and use of, hurdle rates in excess of WACC applies to all firms – including firms in the most competitive industries. Had the ACCC examined the board papers of firms in any industry they can be expected to have found precisely the same pattern that the ACCC believes it has found for pipelines and which the ACCC attributes to monopoly pricing. That is, absent strategic value not captured in modelled cash-flows, there would be: no

<sup>10</sup> See Appendix B for greater discussion.

projects proposed to the board that had IRR's less than WACC; few projects with IRR's close to WACC, and many projects that had IRR's higher than WACC.

53. The RBA goes on to note that projects are sometimes rejected even with IRR's that are in excess of hurdle rates. This discussion can be illustrated graphically. Imagine a firm with a WACC of 10% and a hurdle rate of return of 20%. Therefore, the sample of projects that will be brought to the board in any given period will be drawn from the shaded area of the below distribution – with a lower bound equal to 20%. Further, let all possible future projects that the firm might consider have IRRs that are normally distributed around a mean of 10% with a standard deviation of 50%. In this case, the mean IRR of projects taken to the Board would be 56%.<sup>11</sup>

**Figure 3-3: Normal distribution of IRR and distribution of projects proposed to board of a hypothetical company**



Note that the assumptions underpinning this chart are not intended to necessarily describe reality but simply to provide a well-defined graphical/numerical illustration of the concepts being discussed.

54. Nothing in the above analysis suggests the existence of any monopoly power. It appears that the ACCC has implicitly assumed that, in competitive markets, the IRR on new investments is constrained by competition such that projects with IRR's materially above WACC do not occur (or at best occur with such irregularity that instances of such projects can be ignored). However, this involves a failure to understand the competitive process generally and, in particular, the role of

<sup>11</sup> Calculated as the mean of a truncated normal distribution:  $TN(0.1, 0.5^2, 0.2, \infty)$ .

incremental investments (investments that build on prior investments) in that process.

### 3.2 IRR's on new investments are typically high (especially for incremental investments)

55. The presumption that IRRs materially above WACC do not occur in competitive markets is clearly inconsistent with the standard practice of firms, including firms in competitive industries, to impose hurdle rates of return.
56. In part, this is because even the most competitive markets are subject to changes in technology, relative costs and demand. These changes in market circumstances inevitably create the potential for firms to invest in order to better serve customers and earn above normal returns (referred to as “economic rents”) in the process. It is the pursuit of these economic rents that drives firms to adapt their business models to changing circumstances in order to gain competitive advantage. As noted by Murray:<sup>12</sup>

*Various types of competitive advantages emerge when change occurs. The source of the change may be external or internal to the industry (see figure 6.1). For an external change to create competitive advantage, the change must have differential effects on companies because of their different resources and capabilities or strategic positioning.*

57. This pursuit of economic rents is ultimately the driving force that delivers value to end customers. The first firms to respond efficiently to changed market circumstances can earn substantially more than their cost of capital but it is the knowledge that other firms are competing with them to identify these opportunities that ultimately places a cap on the level of industry wide returns that can be achieved. Very few, if any, industries are so static that changes in market circumstances do not give rise to some high value IRR projects from time to time.
58. It is also important to interpret any reported IRR on new *incremental* investments in the context of the wider activities and past investments of a firm. Very high returns on incremental investments are commonplace – with reason to expect many incremental investments delivering returns in excess of 100% (especially where those investments are small and leverage off larger past investments in physical and intangible assets (‘know how’)).
59. All of the APA projects in the ACCC’s Chart 6.1 involve an incremental build on existing pipelines. Moreover, many are relatively small projects compared to the

---

<sup>12</sup> Murray, Peter A. (2014), *The nature and sources of competitive advantage*. In: Contemporary strategic management: an Australasian perspective, 2nd ed. John Wiley & Sons Australia, Ltd., Milton, Queensland, pp. 187-221.

values of the existing pipelines upon which these investments facilitate enhanced use. Such incremental projects are likely to have higher expected returns than the existing assets as a result of leveraging on both:

- existing assets (e.g., a small expansion in one part of the network may be required to sign a gas transmission agreement (GTA) that increases throughput on other pipelines (for example, the VTS expansions include returns on the MSP through increased throughput as discussed at paragraphs 74 and 75 below); and
- accumulated know-how and other forms of intangible capital residing within the organisation (for example the know-how in safely operating pipeline assets, modelling gas flows and researching investments necessary to be able to market GTAs).

High returns on such incremental investments are the norm - even in the most competitive unregulated market - and provide no evidence of monopoly pricing.

60. A simple example illustrates this concept. Consider a café that is in the position that demand for its services is higher than it had previously experienced or expected. The café owner concludes that if she invests \$5,000 in a new, larger and faster, coffee machine she can improve client satisfaction (in terms of reduced average wait time), serve more customers and increase revenues by \$100 per weekday (say, 25 additional coffees). The additional costs, in terms of milk and coffee, may only be \$20 per day. With around 250 weekdays per year this implies an annual incremental increase in profits of \$20,000 and an IRR of 400% on the \$5,000 incremental outlay.
61. However, the existence of an incremental investment offering a 400% return does not imply the café is monopoly pricing. It is simply an example of a business responding to altered market circumstances by making an incremental investment (a new coffee machine) that builds on its prior investments (the entire café fit out) and intangible assets (the 'know how' of existing staff and a the development of a client base). The calculation of a 400% return on the incremental investment is misleading because it fails to recognise that the return is only available because of larger and more long-standing investments in both physical and intangible assets.
62. Precisely the same logic applies to APA's incremental investments which are only able to earn any return at all because they leverage on the existence of APA's wider pipeline network and its intangible assets (including its technical and market know-how). Failing to account of the contribution to incremental returns from related physical and intangible assets results in a misleading estimate of the actual returns being earned on incremental investments.
63. Indeed, one of APA's Board papers (used by the ACCC to develop Chart 6.1) notes precisely this point. The highest equity IRR reported by the ACCC is 159% for a very small investment (\$7m) incremental investment aimed at facilitating bi-directional gas flows on the Roma to Brisbane Pipeline. That Board paper notes that when an



adjustment is made for the book value of the existing asset the overall IRR drops dramatically:<sup>13</sup>

*To recognise that the bi-directional service is only possible due to the utilisation of the existing pipeline, the financial assessment has also been assessed by allocating a proportion of the book value of the existing asset. When applied this reduces the post tax project returns in the above two cases to 23% and 51.3% respectively.*

*In the Low Case, the post tax project return is a modest 5.3% (NPV negative \$0.6 million) due to the assumed dilutive impacts of the lower reference tariff.*

64. In our view, the ACCC should have equivalently caveated its assessment of this and other incremental project IRRs. (Similarly, and as discussed below, the ACCC should also have focussed on project IRRs not equity IRRs).
65. It is important that the value of pre-existing intangible assets is also recognised (not just pre-existing physical assets). Intangible assets are a very important source of value and wealth in modern economies.<sup>14</sup> The importance of intangible assets is discussed in more detail in Appendix A, however, we note here that Baruch Lev has concluded that:<sup>15</sup>

*“...about three-quarters of the value of public companies, as perceived by investors, reflects non-physical and non-financial assets, which are absent from corporate balance sheets.”*

66. That APA has valuable intangible assets (‘know how’) in managing pipeline assets has been recognised by the Australian Competition Tribunal. This was affirmed by the Australian Competition Tribunal, when it ruled that it was appropriate for Envestra to continue to pay a network management fee (NMF) to APA for managing its natural gas distribution networks. The NMF reflected, in part, the human capital (i.e., the intangible assets) possessed by APA (that Envestra did not possess) that it employed

---

<sup>13</sup> Item No 9, APA Board meeting, 20 May 2014.

<sup>14</sup> A significant proportion of the value of many – if not most – firms is derived not from physical and financial assets, but from prior and ongoing investments in *intangible* assets, i.e., in human, organisational and relationship capital. Those intangible assets tend not to depreciate over time, which enables firms to earn a positive return on that capital in perpetuity. Indeed, if they did not, they would not have incurred the cost of acquiring those assets in the first place.

<sup>15</sup> Lev, B., (2005), “Intangible Assets: Concepts and Measurement”, *Encyclopedia of Social Management*, Volume 2, p.299.

in the provision of the services.<sup>16</sup> The Tribunal ruled that payment of the NMF (which was disputed by the AER) was an efficient cost:<sup>17</sup>

*“...the NMF is not a one-off cost to improve the efficiency of the management of the network. **It is a fee that must be paid every year in order to have access to the efficiencies offered by APA.** If the NMF is required to be paid in one year in order to access the efficiencies provided by APA, unless circumstances change, the NMF will have to be paid in the following year, and the year after, in order to ensure APA continues to manage the network. **APA may well refuse to operate the network if Envestra ceased paying the fee.**” [Emphasis added]*

67. Of course, the same logic applies even more strongly to APA’s investments made on its own behalf. APA has valuable know-how and can be expected to earn a return on this know-how in a competitive market. However, the IRR’s from APA Board papers that the ACCC relies on are, naturally enough given the commercial purpose of the documents, typically reporting returns on tangible incremental investments only. A correct economic interpretation of these returns would acknowledge that only part of the return is a return on incremental physical assets with a material component representing a return on the already existing physical and intangible assets held by APA that make the project possible.

### 3.3 Project IRR’s are relevant but should not be compared to regulated returns

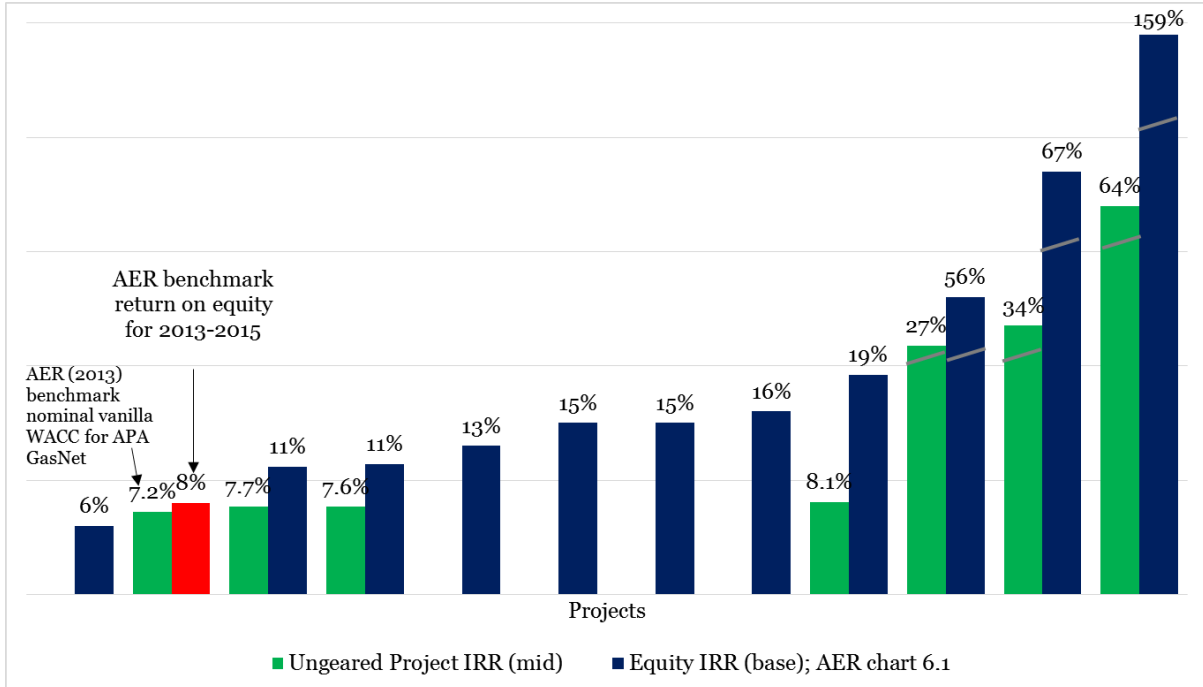
#### 3.3.1 Project not equity IRRs

68. Finally, the ACCC inappropriately focussed on equity IRR rather than project IRR. This is inappropriate because the prices faced by customers are a function of project returns – not equity returns which will be influenced by the debt funding strategy and costs. Given that the ACCC is claiming to draw a link between IRRs and monopoly pricing, the ACCC should be comparing the project IRR reported in APA’s board papers to the benchmark project IRR.
69. Taking as given the ACCC’s use of regulatory decisions as a benchmark of comparison (a decision that we regard as problematic in itself), the project IRR should be compared with the overall vanilla WACC allowed in those AER decisions. For APA’s Gasnet assets this was most recently set at 7.22%. Figure 1-2 below illustrates, for the 6 APA projects with equity IRRs above the AER benchmark included in the ACCC’s Chart 6.1, the impact of using project returns rather than equity returns.

<sup>16</sup> Application by Envestra Limited (No 2) [2012] ACompT 3 (11 January 2012), §206.

<sup>17</sup> Application by Envestra Limited (No 2) [2012] ACompT 3 (11 January 2012), §264.

**Figure 3-4: ACCC Chart 6.1 with project IRR included**



Source: ACCC, APA, CEG analysis

70. It can be seen that, for APA projects, the project IRR is substantially lower than the equity IRR. However, the AER regulated project IRR (WACC) is only slightly lower than the AER cost of equity – suggesting that the AER estimate of the cost of equity is only marginally above the AER estimate of the cost of debt (which casts doubt on the reasonableness of both AER estimates).<sup>18</sup> Consequently, the gap between AER estimates and APA estimated returns is reduced dramatically. While data on project IRR’s are not available for the four non-APA projects it is reasonable to assume that these would similarly be much lower than (close to half of) the equity IRR’s reported in board papers.
71. It is also important to reiterate that many of these projects are very small in size. The highest IRR project (both equity and project) has an investment of less than \$7m. The three projects with the highest returns are all investments in making the pipeline bidirectional. These are relatively low cost investments that deliver material new capacity and value to customers – and are a direct response by APA in serving the demand for changing gas flows. Importantly, a pipeline can only be made

<sup>18</sup> The AER vanilla WACC is equal to weighted average of the cost of equity and debt – where a 60% weight is given to the cost of debt and a 40% weight is given to the cost of equity. The 7.2% vanilla WACC is the weighted average of an 8.0% cost of equity and a 6.7% cost of debt (i.e., only 1.3% separating the AER’s estimate of the cost of each funding source).

bidirectional once such that these returns are unlikely to be repeated in normal incremental investment projects.

72. As can be seen in Table 3-1 below, the only project with a capital outlay of over \$20m where project returns are more than 10% is a \$98m modification to the SWQ pipeline and in that context the project return was only 26.7%.

**Table 3-1: APA’s project costs and IRR**

	Board paper	Project	New costs (\$m)	Project IRR (%)	Equity IRR (%)
i	004.002.0358	Expand Victorian Northern Interconnect	199.6	7.6	11.4
ii	004.002.0430	SWP & VNI Expansion	100.6	7.7	11.2
iii	004.002.0441	Modification of South West Queensland Pipeline	97.5	26.7	55.8
iv	004.004.0398	Bi-directional flow of Moomba Sydney Pipeline	18.3	34.1	66.8
v	004.004.0452	Bi-directional flow of Roma Brisbane Pipeline (incremental)	6.8	63.6	159.4
vi	004.006.0158	Expansion of VNI	172.8	8.1	19.2

Source: APA

73. In any event, when the correct comparison is made at the project level, what is actually surprising is how low most returns are. Specifically, the fact that three projects are proposed with project returns under 9% might be taken to suggest that APA does not have a hurdle rate of return materially above WACC. However, this would not be a correct conclusion because, as is made clear in each of the relevant Board papers, APA’s proposed investments in these relatively low IRR projects are undertaken in a wider strategic environment. Specifically, with a view to enhancing APA’s overall ability to compete with the Eastern Gas Pipeline for northward flows.
74. For example, the 7.7% project return expanding the regulated Victorian network was justified in the following terms:<sup>19</sup>

*Although APA has previously carried out a number of VTS Northern Interconnect expansions, these have been largely to meet APA’s contracted positions for capacity into NSW. APA is therefore not currently strongly positioned to be able to capture further gas supply from Victoria (and therefore into the MSP) to meet the expected increase in demand, due to in part to limited current available capacity on the VNI and an existing strong competitive position offered by the Eastern Gas Pipeline (EGP). As proposed as part of the March Strategy Day, it is therefore strategically*

<sup>19</sup> APA.004.002.0430, p. 2.

*important that APA expands the VNI, albeit at regulated returns, to strengthen APA's competitive gas transmission solution on the east coast.*

75. Board paper APA.004.002.0358 states that one benefit of the project was its potential to capture services from the Eastern Gas Pipeline, which is owned by its competitor, Jemena:

*The proposed regulatory expansion will ... provide an expanded firm north bound service between the VTS and the MSP, capture services currently contracted by the Eastern Gas Pipeline, and reduce the likelihood of an Eastern Gas Pipeline capacity expansion.*

76. Board paper APA.004.006.0158 also makes extensive references to competitive threats from the Eastern Gas Pipeline:

*If APA does not proceed with the proposed expansion of the Victoria Northern Interconnect, then it is likely that the Eastern Gas Pipeline will further expand to support Victorian gas exports to NSW and Queensland.*

77. The same paper goes on to conclude:

*The proposed expansion, consistent with strategy, will provide an expanded firm north bound service between the Victorian Transmission System and the Moomba Sydney Pipeline, and reduce the likelihood of a further expansion of the Eastern Gas Pipeline.*

78. These board papers stress the fact that APA faces strong competition from other pipeline operators such as Jemena, and that the competitive threat is significant enough to have substantial influence on APA's decisions. It is therefore peculiar to take an IRR projection from this paper in support of a view that monopoly power exists when the threat of losing market share and revenue to competitors is at the forefront of APA's decision making process.

### **3.3.2 Comparison to regulated returns problematic**

79. Finally, it is important to note that the adoption of AER cost of capital estimates for regulated businesses as the relevant benchmark in the ACCC's Chart 6.1 is controversial on two important grounds. First, the majority of pipelines are not price regulated and so it is not clear why one would compare their returns to regulated returns. Second, even if a regulated return was accepted as the correct benchmark the AER's estimate of cost of capital is currently strongly contested.
80. By way of example, the AER has reduced its estimate of the cost of equity for APA from 12.3% in 2008 to 8.0% in 2013. The ACCC used the latter value in its Chart 6.1 but many experts, including CEG, consider that this is an underestimate. Similarly, the nominal Vanilla WACC estimated by the AER in 2008 was 10.6% while the most recent 2013 estimate (that we have reported in our project based version of the Chart

6.1) is 7.2%. Whether or not one believes the current AER estimates are accurate, the point remains that these estimates are historically low and that this should be recognised when using them as a point of reference.

81. Moreover, section 6.4 of the ACCC report sets out a detailed review of the adverse effects that it believes that monopoly pricing would have on economic efficiency:

*Monopoly pricing by pipeline operators can adversely affect market participants because:*

- *it results in lower ex-plant gas prices for producers and/or higher delivered gas prices for users*
- *it can cause significant transfers of wealth from producers, users and consumers to the pipeline operators.*

*Monopoly pricing can also have adverse consequences for the efficient operation of the gas market and economic efficiency in upstream and downstream markets, because it can result in:*

- *lower than efficient levels of gas use and investment in downstream facilities*
- *lower than efficient levels of gas production and investment in gas exploration and reserves development*
- *inefficient utilisation of pipelines and potential distortions in gas flows across the market, which can prevent gas from flowing to where it is valued most.*

82. However, the ACCC fails to give equal emphasis to the corollary, which is that regulating a workably competitive industry can also adversely affect economic efficiency. The primary disadvantage of imposing a regulatory framework on a competitive industry is that it blunts the supplier's incentive to pursue high IRR returns by innovating and investing in technology that would increase its efficiency in a bid to earn additional profits. As discussed above, APA was motivated to invest in pipeline upgrades and expansions due, in part, to the fear of ceding market share to the Eastern Gas Pipeline owned by Jemena.
83. Under a regulatory framework, however, APA would have less incentive to carry out further investments since it would not be able to earn profits above the regulatory rate. If the regulatory WACC were set at APA's WACC then APA would be indifferent between investing in new expansions/services and not doing so. APA would certainly have a much blunted incentive to seek out such investments.
84. The ACCC observes that most pipeline operators are responding to changing market conditions, with an estimated \$900 million being invested recently. Under a competitive environment, pipeline operators are incentivised to take steps to one-up

their competition in an effort to gain market share and revenue. As shown in board paper APA.004.004.0452 assessing investment (v) from Table 3-1 above, APA considered pre-investing in pipeline modifications in response to increased demand:

*There are several current prospective customer opportunities for APA to secure additional revenue from the provision of western haul services on the Roma Brisbane Pipeline. To maximise this opportunity, APA needs to position itself to deliver western haul services by mid-2015 as LNG gas demand starts to ramp up. It is therefore recommended that APA pre-invest in the modifications at Wallumbilla ahead of securing western haul gas transportation agreements.*

85. Here APA is taking on risk in order to ensure that valuable services are available in a timely fashion. APA is doing so because, just like any other business in any other market, it perceives that it will be able to make an economic profit by doing so (i.e., earn a return in excess of its WACC) and thereby deliver value to shareholders. Were it regulated to earn WACC it would not have the same incentive to identify and seek out such opportunities. A regulated investment may (or may not) still proceed but not necessarily in the timeliest fashion and with the optimal capacity/configuration.
86. In this regard, in board paper APA.004.002.0430, APA noted the regulatory risks associated with project (ii):

*While APA is not required to complete the SWP or VNI projects as approved by the Australian Energy Regulator, deviations from the Regulator's previous approval would need to be prudent and efficient (as determined by the Regulator). Inclusion of the project into the regulated capital base (as well as realisation of expected regulated revenue) is therefore principally subject to achieving volumes as forecast, and for the capital expenditure solution being the most efficient and prudent option for the volumes actually realised.*

*The AER paid particular attention to the SWP/VNI project in its access arrangement decision, ensuring that the capital option it approved was the most efficient and prudent for the volumes forecast at the time. In contrast, the capital projects proposed in this paper are designed to deliver the most efficient option taking account of potential longer term demand (in particular the proposal to undertake more looping in place of an upgrade in maximum allowable operating pressure). Should the additional demand to support this decision not be realised in the current access arrangement period, APA faces a potential stranding risk for the incremental expenditure associated with its longer term demand investment solution.*

87. Finally, regulation also results in regulatory risks, as shown in APA's assessment of project (v):

*There is however considerable uncertainty associated with regard to how the Australian Energy Regulator (AER) will treat the reduction in demand for eastbound services and the increased demand for westbound services when making its determination on the next Roma Brisbane Pipeline access arrangement for the period between 2017 and 2022.*

88. In summary, while monopoly pricing does have adverse effects on economic efficiency, it is just as important to consider the adverse impact that regulation and the threat of regulation would have on a competitive industry. Caution should therefore be applied before making any attempt to impose a regulatory framework on an industry that is already competitive.



## 4 ACCC views on ‘full recovery’ of historic costs

89. The ACCC has expressed the view that imposing regulation would be likely to materially reduce gas transport tariffs. Other than the evidence surveyed and critiqued in the previous section, the ACCC’s main additional basis for such a conclusion is that:<sup>20</sup>

*On two pipelines that have already recovered their construction costs, pipeline charges were 50–80 per cent higher than a charge based solely on the cost of recovering the forward looking cost of operating and maintaining the pipeline.*

90. Here the ACCC appears to be signalling a view that, if a pipeline owner is estimated by the ACCC to have recovered its initial investment during a period in which it was not regulated, then they should voluntarily set prices to recover only operating costs. The ACCC treats failure to do so as evidence of monopoly pricing.
91. The ACCC appears to also be signalling a position that subsequent regulation should address the perceived monopoly pricing issue by requiring pipeline operators to set prices to only recover the “forward looking cost of operating and maintaining the pipeline”. That is, the regulator should assign the existing pipeline a zero value if/when setting regulated prices.
92. Implicit in this position is an approach to setting the initial capital base (ICB) of a pipeline at the time it becomes regulated equal to:
- the present value of the expenditures on the pipeline up to that date; less
  - the present value of the revenues earned on that pipeline up to that date.

If the latter exceeds the former the ACCC appears to believe that the ICB should be zero (i.e., the ACCC stops short of recommending negative asset values for pipelines that are deemed to have *more* than fully recovered their costs).<sup>21</sup>

93. There are significant problems with the ACCC’s analysis in respect of:

<sup>20</sup> ACCC, Inquiry report, p. 114.

<sup>21</sup> This is a somewhat curious aspect of the ACCC Inquiry report. It is not obvious why it would stop at imposing a zero asset value and not a negative asset value if costs had been ‘more than fully recovered’. Perhaps the ACCC implicitly recognises that the type of incentive problems associated with a zero asset valuation (surveyed in section 4.4 below) would become extreme if a negative valuation was put in place.

- The ACCC's assumption that pricing above operating costs for 'fully recovered' pipelines signals monopoly pricing;
- The ACCC's calculations that lead it to conclude that some pipelines have fully recovered their operating costs; and
- The regulatory approach in respect of the valuation of the asset base that the ACCC's is signalling is required to deliver lower pipeline tariffs (recovery of only operating costs) through regulation.

94. This section discusses each of these problems, and in particular discusses the valuation methodology the ACCC is signalling it believes is appropriate versus the methodology that is, in fact, standard practice for valuing an asset when it becomes subject to regulation. That methodology is valuation based on optimised depreciated replacement cost and it is the methodology that reflects the ACCC's past practice when setting ICBs for gas transmission pipelines (as set out in Appendix C).

## 4.1 Summary

### 4.1.1 ACCC claims pricing in excess of what would prevail in a workably competitive market

95. The ACCC defines monopoly pricing in terms of pricing 'in excess of what would prevail in a workably competitive market'.<sup>22</sup>

*The term monopoly pricing is defined in this context as prices that significantly exceed the long-run average cost of supply for a sustained period, or more simply prices in excess of what would prevail in a workably competitive market.*

96. The ACCC concludes that gas pipelines are monopoly pricing based on two sets of evidence. One is the reported IRR on incremental investments discussed which we have critiqued in section 3 above. The other evidence and reasoning relied on by the ACCC is:

- its calculations that purport to show that some pipelines have recovered their initial construction costs through historic tariffs; and
- a proposition, which it appears to hold as self-evident, that where initial construction costs have been recovered, prices should be set to recover operating costs only.

97. Putting aside the question of whether the ACCC's calculations are reasonable (discussed later in this section), the ACCC's reasoning is inconsistent with its

---

<sup>22</sup> ACCC, Inquiry report, p. 92.

definition of monopoly pricing, namely, that monopoly pricing is pricing in excess of that which would be observed in a competitive market.

#### 4.1.2 What happens in a workably competitive market?

98. In a perfectly competitive industry pricing is, in equilibrium, determined by the costs that a new entrant would incur to provide the service. The revenues earned in the past by firms operating in the industry are irrelevant to such a calculation. Similarly, the costs incurred in the past need not bear a close relationship to the costs that would be incurred by a new entrant. A new entrant would need to charge prices that recovered the current replacement cost of the asset over the life of a new asset. The same, or similar, answer is derived if the prices were set on the basis of depreciated replacement cost with that smaller (depreciated) capital value recovered over a shorter remaining life.<sup>23</sup> In a workably competitive market prices may deviate to some extent, and for some time periods, from those of a perfectly competitive market. However, the costs of a new entrant continue to provide an anchor from which market prices cannot materially deviate.

#### 4.1.3 The ACCC's position

99. The ACCC effectively assumes monopoly pricing by seeking to compare current market prices with prices that it calculated would prevail if a pipeline had always been regulated in a manner that sought to restrict total net revenues to be equal in value to the initial construction costs. In doing so the ACCC assumes that all revenue above what it deems to be the appropriate regulated level of return must be monopoly profit and then uses that finding to show monopoly profit.

100. In doing so it ignores its own findings that:

- Monopoly pricing should be assessed relative to prices that would exist in workably competitive markets (not a retrospective assessment of what prices would be had the pipeline always been regulated in a particular manner);
- Pipeline owners can earn additional revenues in excess of its proposed regulated benchmark in ways that have no relationship to monopoly pricing (p107);<sup>24</sup> and
- tariffs struck through a competitive process cannot, by definition, show monopoly pricing (CGP tariffs are one such example).

101. We note that the ACCC also ignores that the National Gas Rules (NGR) provides for a process by which an access arrangement, including tariffs, may be determined as

---

<sup>23</sup> Noting that in a competitive market, both replacement cost and depreciated replacement costs can vary through time with changes in input costs and changes in technology.

<sup>24</sup> ACCC, Inquiry report, p. 107.

an outworking of a competitive tender process (CTP). Part 5 of the NGR sets out the relevant competitive tender process and rule 29 states that under the competitive tendering rules, parts 8, 9 and 10 of the NGR do not apply to a CTP access arrangement). Embodied in these elements of the NGR is an implicit recognition that the outcomes of a competitive process may deliver a tariff outcome with a rate of return that is different (higher) than the regulator's view of the regulated return.

102. If the ACCC, as it seems to propose doing, takes those pipelines and applies the regulated WACC to them *ex post*, then those pipeline owners would look like they were earning excess profits, even though they are charging competitively determined tariffs set out in an approved access arrangement.
103. In the remainder of this section we describe why we consider that the ACCC's proposed approach:
  - a. Is arbitrary and would actually penalise an efficient pipeline owner more than if they had been regulated over the full life of the pipeline (section 4.2);
  - b. Would result in prices that are inconsistent with:
    - i. the outcomes in workably competitive industries; and
    - ii. with standard regulatory practice and expectations.

See section 4.3. Equally, using the ACCC valuation methodology to make an assessment about the existence/abuse of market power would result in at least half<sup>25</sup> of all firms in competitive industries being found to be abusing 'market power';
  - c. Would, if implemented, destroy investment incentives in new and existing pipelines (see section 4.4; and
  - d. Would distort the efficient operation and use of existing pipelines (see section 4.5.

## 4.2 ACCC valuation methodology is arbitrary

104. For the reasons set out in the following sections we do not consider that regard should be had to historical expenditures or revenues when valuing existing pipelines that were not regulated during the period in question. Doing so would amount to, in

---

<sup>25</sup> Firms only enter an industry when their expected return is at least equal to their required return. However, actual returns will inevitably fall on a distribution around expected returns. Therefore, if firms enter an industry as soon as their expected return equals their required return then half of all firms actual returns will be above (and half below) their required return. In reality, some, and likely most, firms will enter an industry only when their expected return is above their required return. Therefore, most firms' actual returns will exceed their required returns when examined on an *ex post* basis.

effect, attempting to retrospectively apply regulation when no such regulation existed.

105. However, given the ACCC does appear to be proposing such an approach it is useful to note that there are two possible approaches it could have undertaken:

- Estimate the regulatory asset value that a pipeline would have today if it had been subject to standard ACCC/AER regulatory practice from the time it first began operating; or
- Estimate the difference between the present value of past expenditures and past revenues (i.e., what the ACCC's Inquiry report appears to be proposing).

106. Under the first approach, the initial investment in building the pipeline would be depreciated on a straight line basis over its estimated life while, at the same time, adjusting the asset value for inflation. The same approach would be applied to capital expenditure invested in after the initial construction (e.g., investment in compressors/lateral pipelines added after the initial investment). This approach attempts to answer the question:

*If the pipeline had always been regulated what would asset values and prices be today?*

107. This approach involves attempting to set regulated prices today at the same level that they would have been set at if the asset had been regulated from its first construction. This is a questionable objective given that the pipeline asset was not, in fact, regulated.

#### **4.2.1 Arbitrary confiscation of past returns (including past efficiencies)**

108. However, the ACCC's seemingly preferred methodology goes further. It can, mathematically, be thought of as similar to the above approach but which also seeks to remove from today's asset value:

- Any historical efficiencies that the pipeline operator has achieved (including efficiencies that it would have been able to retain had it actually been regulated); and
- Any benefits to the pipeline owner due to the pipeline owner charging a higher price than would have been allowed had the pipeline been regulated historically.

109. It is possible to conceive of a justification for the second dot point (the claw-back of returns to the pipeline owner that it would have been unable to earn had the pipeline been regulated). Such a justification relies on a more extreme implicit objective than simply setting prices where they would currently be if the pipeline had always been regulated. The presumption underlying the second dot point is that, in some sense, the pipeline actually was, or should have been, subject to regulation over its entire life

*and* that any past returns in excess of those that would have been earned by a regulated pipeline should now be confiscated.

110. However, it is extremely difficult, if not impossible, to conceive of a justification for the first dot point. This involves also confiscating past returns that would have been earned and retained by a fully regulated pipeline who achieved operational efficiencies (and adding an interest rate penalty such that the earlier the efficiency occurred the greater the present value reduction in the value of the pipeline today). Equally, the ACCC valuation methodology involves compensating inefficiently run pipelines for the cost of these inefficiencies (and adding an interest rate reward the earlier the inefficiency occurred).
111. In this context, it is important to note that the nature of incentive regulation, generally and in the Australian gas pipeline sector specifically, involves the regulator setting a benchmark level of costs and/or usage and the pipeline operator seeking to beat that benchmark. If the pipeline operator can do so they retain the financial benefits of lower costs/higher sales – at least for a time until the regulator incorporates the observed lower costs/higher sales into future forecasts. (Regulators also commonly include incentive schemes that reward/punish high/low quality of service.)
112. Clearly, historical expenditures will include (be lower as a result of) any efficiencies achieved by the pipeline owner over the life of the asset. This includes any outperformance in the initial construction of the pipeline (where much of the risk for, and potential for added value from, pipeline owners is derived). Similarly, historical revenues will reflect the success, or otherwise, of the pipeline owner marketing the pipeline services to potential users.
113. The fact that efficiencies are embedded in historical revenue and expenditure outcomes means that they are captured by the ACCC's proposed valuation methodology. By failing to distinguish between the base level of revenues and expenditures and the impact of efficiencies, the ACCC method implies the confiscation of the value of all historical efficiencies (including the application of an interest rate penalty to adjust it to present value terms). Equivalently, the ACCC's proposed valuation methodology rewards historical inefficiencies by including the value of these inefficiencies (plus a return on the historical inefficiency adjust it to present value terms) in the asset valuation.
114. The incentive problems associated with this approach to regulation are obvious and are elaborated on in section 4.4. Put simply, the ACCC's proposed approach rewards inefficient historical performance and penalises efficient historical performance. These penalties for efficient operation are above and beyond those that even a fully regulated pipeline would have suffered (with such a fully regulated pipeline being rewarded (penalised) for a share of (in)efficiencies achieved).

115. While the incentive implications of this approach are discussed in section 4.4, such an approach raises the rather obvious issue of ‘equity’ or ‘fairness’. It may offend investors’ standard notions of fairness to retrospectively appropriate profits from an entity that are attributable to nothing other than its own good management. (Including to ‘take back’ from today’s shareholders returns, plus interest, the value of efficiencies earned by past shareholders.) The application of arbitrary discretion that offends standard notions of ‘equity’ can clearly also have an impact on efficiency if investors perceive that one such decision makes future ‘unfair’ decisions more likely.

#### **4.2.2 Arbitrary use of regulated discount rate**

116. The ACCC’s seemingly favoured valuation methodology involves the application of a discount rate to all past revenues and expenditures in order to derive a present value of the difference between these. The final answer will be very sensitive to the choice of discount rate and, indeed, to the assumed variation in discount rates over the life of the investment to date.
117. The ACCC appears to assume, consistent with an implicit thought experiment of assuming the pipeline had (should have) always been regulated, that a regulated rate of return is appropriate for this purpose. However, this is a dubious assumption given that:
- the asset was not regulated;
  - the success of the project, which may be apparent now, was not known at the time the investment was committed (see section 4.4 for an elaboration of this important issue);
  - cash-flows over the entire life of the asset, including the risky feasibility and construction phase, are being discounted.
118. The last dot point is relevant given that almost all regulatory precedent, including for gas pipelines, involves the introduction of regulation decades after the main construction investment has occurred and once the asset has a mature customer base. The ACCC’s thought experiment involves implicit regulation and the application of a regulated discount rate from the point of initial feasibility studies. Even if one believed that a ‘regulated return’ was appropriate there is no relevant precedent of a ‘regulated return’ that is based on returns required by private investors in the early phases of such an investment.
119. Moreover, the AER may have adopted standard regulatory practice of updating discount rates every five years. As a consequence, the ACCC may, following AER precedent, have factored in low interest rates since the 2008/09 financial crisis. However, this would not be appropriate in the context of assessing the return on foundation contracts that were not reset every five years.

120. In summary, the correct selection of discount rates in the context of the ACCC's valuation methodology involves difficult and complex considerations; considerations that the ACCC has not grappled with (at least not publicly).

#### **4.2.3 Arbitrary selection of time horizon**

121. Separately to the question of what discount rate to apply, there is the question of how to capture all the costs of the builder/operator. In this context, it is critical to understand that the builder/operator of any pipeline has valuable know-how that would be rewarded in a competitive market. However, the cost of acquiring this know-how is not included in the ACCC valuation method.
122. By definition, the relevant know-how was invested in prior to the bidding for the pipeline construction. The associated costs are very real and are correctly characterised as costs associated with the construction and operation of the pipeline. However, because the ACCC calculation of historic costs starts only at the point of construction, these are not included in the ACCC calculations.
123. In order to even have a 'seat at the table' when bidding for a major construction project a firm will already have made substantial investments in acquiring expertise (know-how) and a reputation for the ability to deliver on major projects. The costs of acquiring such know-how, and the opportunity costs of deploying it on one project and not another, are large and will demand a return in a competitive market.
124. We have already noted, in section 3.2, that intangible 'know-how' explains much of the observed stock market valuations of firms in the economy. This reflects the fact that know-how is costly to acquire and, in a competitive market, earns a return. However, the ACCC's proposed asset valuation methodology includes no compensation for the deployment of this asset by the successful bidder to own/construct a pipeline.
125. In this context we repeat the finding of the Australian Competition Tribunal (see paragraphs 66 to 67 above) that APA has valuable know-how that allows it to achieve lower pipeline operation costs than other pipeline owners. This finding was in the context of a decision where the Tribunal directed the AER to allow Envestra to recover a margin paid to APA to access that expertise. It would be inconsistent with the economic logic of this Tribunal decision if APA was not allowed to recover the same margin on its know-how when it is applied for the purpose of operating its own pipelines.
126. However, this is precisely what the ACCC's proposed methodology does. In effect, the ACCC methodology confiscates any efficiencies attributable to the prior investments in acquiring the relevant know-how by the successful bidder to own/operate the pipeline. If these efficiencies result in lower initial construction costs, lower operating costs or higher/earlier availability of the services, the ACCC methodology would reflect all of these efficiencies in a lower asset value today.



127. We also note that the ACCC's calculations may not include a return on the costs incurred in bidding for the contract to build and operate the pipeline (including the opportunity cost of unsuccessful bids). Given that bidders will expect to win only a fraction of all projects that they bid for then the correct estimate of costs should include (and would include in a competitive market) a margin to compensate them for the opportunity costs of making bids.
128. In this context it is also relevant to note that the total cost to the Victorian government associated with developing the East-West link contracts is reported at over \$1bn. This is despite construction never actually beginning on the project. \$424m of this reflects the size of the negotiated termination payments paid to East West Connect (EWC).<sup>26</sup>
129. This \$424m payment provides an indication of the magnitude of costs incurred prior to construction. This payment was negotiated under threat of legal action for damages associated with the contract termination. It is reasonable to assume that the \$424m includes compensation not just for the direct costs incurred by EWC in negotiating the contract but also the opportunity cost of devoting scarce expertise and know-how to successfully bid for this contract and not for other contracts. This provides an indication of the perceived value of intangible (i.e., non-construction) investments made in developing and bidding for projects of this.

### 4.3 DORC reflects competitive outcomes and regulatory practice

130. In a competitive industry pricing is, in equilibrium, determined by the costs that a new entrant would incur to provide the service. This need bear no relationship to the costs incurred, and revenues earned, in the past from an investment. By way of example, rents in a CBD office tower today are tied to the costs of creating new office space. Rents today are not determined by how much of the original cost of construction for a specific tower has already been recovered.
131. It is in recognition of precisely this fact that regulators, including the ACCC, have historically set the initial value of regulated assets at the depreciated optimised replacement cost (DORC) of those assets. As noted by the ACCC:<sup>27</sup>

*The DORC of a network is the sum of the depreciated replacement cost of the assets that would be used if the system were notionally reconfigured so as to minimise the forward looking costs of service delivery. There are two definitions of what DORC attempts to measure:*

<sup>26</sup> Victorian Auditor-General's Report, East West Link Project, December 2015

<sup>27</sup> ACCC, Draft Statement of Principles for the Regulation of Transmission Revenues, May 1999, pp. 39-40.

- *One interpretation of DORC is that it is the valuation methodology that would be **consistent with the price charged by an efficient new entrant into an industry**, and so it is consistent with the price that would prevail in the industry in long run equilibrium.*
- *The second interpretation is that it is the price that a firm with a certain service requirement would pay for existing assets in preference to replicating the assets.*

...

*The two definitions of the DORC methodology stated above suggest that it has a number of attractions from the viewpoint of economic efficiency...*

132. This logic is precisely why assessment of whether current pricing is consistent with workably competitive markets requires a comparison of revenues with replacement costs of the assets.<sup>28</sup> By contrast, the ACCC Inquiry concludes that any actual returns above (hypothetically estimated) regulated returns should be reflected in a lower regulatory asset value today and that this implies some pipelines would have zero regulatory asset values – and, consequently, prices would be lower than they currently are if those pipelines were provided with a zero prospective return on existing assets. However, even if this were true, it says nothing about whether current pipelines are pricing above the levels consistent with workably competitive markets – markets in which prices and assets are determined on the basis of replacement cost.
133. The Inquiry report appears to acknowledge this logic in the following passage.<sup>29</sup>

*The Inquiry recognises that a range of factors may result in a pipeline operator being able to ‘over recover’ the cost of construction. Many have little to do with the exercise of market power. For example, an unexpected increase in demand later in the life of a pipeline may enable it to ‘over recover’ its construction costs even if it faces effective competition. Equally the pipeline could ‘under recover’ if demand was unexpectedly low, though the chances of this are reduced by the use of long-term GTAs.*

134. However, in the immediately following paragraph the ACCC makes this claim.

*While this is the case, if the pipeline was subject to full regulation under the NGL and NGR, the scope to charge prices that ‘over recover’ the cost of providing the service would be limited because one of the more fundamental principles in the NGR is that an asset should only be depreciated once over*

<sup>28</sup> Depreciated and optimised to take account of the advantages a new asset might have over an older one (e.g., longer remaining life).

<sup>29</sup> ACCC Inquiry report, page 107.

*its economic life. In effect, this means that once the value of the asset has been recovered from users, regulated prices would be based on the forward looking cost of operating and maintaining the pipeline (including the cost of carrying out any future capital works). This principle was adopted in at least two of the GTAs that were provided to the Inquiry, with provisions in these GTAs providing for prices to fall once the cost of construction had been recovered.*

135. In the first passage the Inquiry report accepts that firms can more than fully recover their initial investment in workably competitive markets (and, equally, can less than fully recover their investment). However, in the second passage the ACCC appears to discount this as a justification for pipelines not reducing prices to marginal cost once their initial construction costs are recovered. The ACCC appears to believe that pipelines in that situation should lower their prices down to marginal costs on the grounds that “if the pipeline was subject to full regulation under the NGL and NGR” it would have to do so.
136. The ACCC estimates the impact of applying such a regulatory outcome on three existing pipelines it believes have fully recovered their costs as follows would be to reduce prices by 50% to 80%.<sup>30</sup>

*Using information provided by the pipeline operators, the Inquiry has estimated what the prices would be if the pipelines were subject to full regulation and prices were based on the forward looking cost of operating and maintaining the pipelines, as the NGR require. This analysis indicates that the prices on the two pipelines that have already recovered their cost of construction are 2–5 times higher than they would be likely to be if they were subject to full regulation.*

137. It is important to note that the ACCC’s logic only applies if regulation applied today would, despite that pipeline having clear economic value, assign a zero asset value to the underlying pipeline. We note that such an approach would be entirely inconsistent with regulatory practice, including the ACCC’s own practice, in the valuation of assets when being subject to price regulation for the first time.
138. If the ACCC followed its own historical practice (and that of other regulators), then, even if these asset values were to be regulated today, their regulated asset value would be set on the basis of depreciated optimised replacement cost (see Appendix C for more detailed discussion of regulatory precedent). This was the asset valuation methodology used by the ACCC for the MSP and RBP pipelines. That is, the zero valuation being posited by the ACCC would not occur even if the assets became regulated – at least not without a radical departure from, in our view sound, regulatory precedent.

---

<sup>30</sup> ACCC Inquiry report, page 107.

#### 4.4 Regulating on the basis of previously recovered costs would deter investments in pipelines (new and old)

139. If it is required, as the ACCC seems to consider appropriate, that prices be based on marginal cost once the pipeline has “fully recovered” its initial investment costs then this amounts to retrospective application of regulation.
140. In effect, the premise of the ACCC’s position is that it is appropriate to assume that an initial regulated capital base was implicitly established at the time of commissioning of a pipeline and was equal to actual construction costs. Notwithstanding the absence of price regulation over the intervening periods, the premise of the ACCC position is that future prices should be set ‘as if’ building block regulation was in place since construction – with any revenues in excess of costs being treated as a reduction in the value of the (implied) regulatory asset base (RAB) today.
141. We do not accept that the ACCC could accurately measure this concept for the reasons set out in section 4.2. However, even it could, this approach means that an extra dollar of revenues earned (costs reduced) under light handed (or no) regulation will result in a reduction in revenues of the equivalent present value post the introduction of heavy handed regulation. That is, any profits earned under light handed (or no) regulation (in excess of the regulator’s retrospective application of a building block calculation) will be clawed-back.
142. If put into practice, having ‘unregulated’ status would be meaningless because the ACCC would, once a pipeline was successful enough, determine that it was monopoly pricing and claw back past revenues by, in effect, using them to set low future prices. Applying this approach on a pipeline-by-pipeline basis would mean that the expected return on a new pipeline was negative (i.e., IRR less than WACC). In effect, the ACCC would be:
- regulating down to marginal cost all of the successful pipeline investments (imposing an NPV=0 outcome); while
  - leaving all of the unsuccessful pipelines to suffer losses (in NPV terms).
143. This would leave the industry as a whole under-recovering its costs. Equivalently, the expected return on a new pipeline would be negative under such a regime (assuming that it is less than certain that it will be able to recover its initial costs). An implication of the above is that it would deter investments in all but the safest new pipelines.
144. In fact, even a pipeline investment that was perfectly safe in a market context, may be deterred by such a regulatory regime given the existence of regulatory risks. A perfectly safe market based pipeline investment is one where it is 100% certain that future demand would be sufficient to recover initial investment costs if the pipeline owner was free to set prices at levels, and with a time profile, that it chose (and which the market would bear). Such a pipeline investment may still be deterred if, for example, the investors were concerned that the ACCC would use too low a discount

rate to assess the point of ‘full cost recovery’ or would fail to include a return on intangible assets (i.e., regulatory risk may deter such an investment).

145. In this context, we refer back to the discussion in section 3 on the fact that investments commonly need to offer IRRs that are materially higher than WACC in order to elicit private investment. If the regulator was expected to use a lower discount rate, e.g., one based on WACC, in its future assessment of ‘full cost recovery’ then investment would be deterred.<sup>31</sup>
146. One might be tempted to dismiss such a concern on the basis that significant investment in maintaining regulated assets to meet services standards does occur even though regulators allow returns on those assets equal to WACC. However, the IRR on investments in regulated assets are typically, and somewhat counterintuitively, higher than WACC. This is because failure to invest puts at risk some, or all, of the regulated revenues already being earned. That is, the return on investment is not just the incremental revenues the regulator will allow but also the safeguarding of the base level of regulated revenues being earned prior to the investment. For example, consider an investment required to prevent an existing pipeline collapsing – the IRR is not driven by the incremental revenues earned on the amount invested but by the value of not losing the entirety of the existing sales on that pipeline.
147. However, the critical point here is that, for a new stand-alone pipeline, the threat of losing pre-existing revenues does not exist and the IRR on that investment will, if it is to be regulated, equal the regulated return. In essence, unlike investments to keep an existing pipeline (with a substantial regulatory asset base) operational, there is no penalty for not spending on a new stand-alone asset.
148. The same logic applies to investments on an existing pipeline if the ACCC were to, as it seems to be threatening to do where it believes ‘full cost recovery’ has already been achieved, assign that pipeline a zero RAB. In that context, the owner of the pipeline does not, in effect, own anything. They have little or nothing to lose if the pipeline ceases to operate because the pipeline has no value. In this context, the pipeline owner would rationally refuse to invest in the continued operation of the pipeline if the regulatory return on incremental investments did not match their hurdle rate for investments.
149. This is, in our view, an important context within which to consider the impact of regulation on new pipelines (and on existing pipelines that would be deemed to have a zero RAB under regulation). If someone has already invested in an asset and that

---

<sup>31</sup> If the ACCC were to use an estimate of WACC as its discount to determine when ‘full cost recovery’ had been achieved then investors would expect to have their IRR capped at this level because the ACCC would effectively claw back any high early returns by forcing prices to reflect marginal costs at an earlier date (i.e., the pipeline would be de facto regulated at the ACCC’s estimate of WACC even if the pipeline was not initially formally ‘unregulated’).

asset subsequently becomes regulated they can, even if the regulated return on maintenance capital expenditure is low, have a strong incentive to maintain that asset provided it has a materially positive RAB. If an asset has not already been created, or has been deemed to have a zero RAB, this is not the case.

150. We are unaware of any major private investments in new stand-alone pipeline assets that have occurred in the context where that pipeline was known to be regulated at WACC from the day of its construction. However, this is precisely what the Inquiry report is at risk of creating, i.e., a perception that regulation will be implemented on successful pipelines ‘as if’ they were regulated since the time of construction. In our view this creates a potentially very significant deterrence to new investment.
151. In any event, even if private investors were confident that regulation would cap returns at their required IRR, the point remains that some pipelines will under-recover target IRR while others will over-recover target IRR. We have quoted the ACCC expressing this view at paragraph 133 above. Yet the ACCC seems to be wanting pipeline owners to give up (or have regulated away) all the ‘upside’ on successful pipelines. Obviously the ACCC cannot regulate away below IRR returns on pipelines that cannot not fully recover their costs (the ACCC cannot force shippers to pay more than the market price for services on such a pipeline).
152. The failure to grapple with this asymmetry is a critical shortcoming of the Inquiry report. In this regard we also note the following passage from the Inquiry.<sup>32</sup>

*In a market characterised by sunk and largely fixed costs, the risk of full or partial asset stranding may impose a constraint on the incentive a pipeline operator otherwise has to exercise market power.*

*While there is some evidence that the decline in GPG on the east coast and changes in the pattern of gas flows across the east coast are exposing some pipelines to partial asset stranding risk, the pipelines that are facing this risk have not reduced their prices to attract more demand to counter this risk. To the contrary, some have actually increased their prices, with one pipeline raising prices by over 90 per cent even in the face of declining volumes. The risk of asset stranding does not therefore appear to be providing an effective constraint on the behaviour of those pipelines facing this risk.*

153. We would have expected that the ‘take away’ insight associated with raised asset stranding risk for some pipelines would be to acknowledge that, where cost recovery cannot be guaranteed, regulating away any upside has the effect of creating a negative NPV industry. Instead, the Inquiry report manages to view exposure to partial asset stranding through a lens such that it too provides evidence of monopoly pricing. This

---

<sup>32</sup> ACCC Inquiry report, page 99.

is because the Inquiry report sees higher current prices in the face of falling demand/higher asset stranding risks as evidence of monopoly pricing.

154. On the contrary, raising prices when demand falls and a business is exposed to stranding of fixed costs is entirely consistent with competitive market outcomes. Falling demand creates precisely the conditions for accelerated cost recovery (i.e., higher prices) and this is likely to be observed in competitive markets. In fact, in a perfectly contestable market,<sup>33</sup> prices would rise by more or less the same proportion that demand fell (and potentially much more if demand were perceived to be on a downward trajectory and/or if it was believed that future demand would be more price sensitive than current demand).

## 4.5 Regulating on the basis of previously recovered costs would distort the efficient operation of existing pipelines

### 4.5.1 Poor incentives for existing pipelines

155. A pipeline has little incentive to minimise costs or maximise throughput if that pipeline anticipates that, once the ACCC deems initial investment costs are fully recovered, prices will be regulated equal to marginal cost. Any benefits that the pipeline would otherwise have achieved by efficiently operating their asset, and thereby raising profits today, will be lost by virtue of bringing forward the date the ACCC requires the pipeline to lower prices down to marginal cost (lowering future profits by an equivalent value to any gain in profits today).<sup>34</sup> Put simply, if a business expects regulation to retrospectively claw back any benefits from more efficient operation of their asset they have less incentive to be efficient in the first place.
156. Consider the \$7m investment in creating bidirectional flows on the Roma to Brisbane pipeline discussed at 63 above. That small incremental investment created material incremental value for users of which APA captured only a fraction (albeit enough to deliver a relatively high project IRR). APA has a strong profit motive to investigate, identify and market such investments on its unregulated pipelines. APA also has an incentive, albeit weaker, on its fully regulated pipelines through the operation of incentive regulation (as discussed in section 4.2.1, incentive regulation allows the pipeline owner to retain, for a period, the benefits of volume increases it is able to achieve). Were APA of the view that any excess profits from such investment would

<sup>33</sup> That is a market with costless entry (no sunk costs) where any pricing above cost would result in a new entrant stealing 100% of the market from the incumbent.

<sup>34</sup> Only if the pipeline owner is in fear of being unable to fully recover its initial investment does it have any residual incentive to more efficiently operate the pipeline.

ultimately be clawed back, with interest, by a future regulator they would have little or no incentive to do so.

157. In addition to losing the incentive benefits from no (or light handed) regulation, the ACCC's seemingly proposed 'claw back' policy would create incentive problems above and beyond those associated with heavy handed regulation. This is because explicit heavy handed regulation deploys mechanisms intended to reduce the negative impact of regulation on incentives. However, the ACCC is positing a regime that imposes heavy handed regulation at a future date with none of the 'rules of the game' for how this would be done clearly set out in advance.
158. For example, as already noted, one of the standard 'rules of the game' under heavy handed regulation is that businesses who achieve higher than forecast volume growth are able to benefit from the associated higher revenues. The same incentives regarding beating expenditure forecasts are explicitly set out 'rules of the game'.
159. The fact that these 'rules of the game' have been explicitly set out before-hand is critical for the creation of efficient incentives. It is not possible to apply such incentive mechanisms retrospectively. As already noted in section 4.2.1, the ACCC's proposed comparison of past revenues with past costs makes no attempt to distinguish between:
  - revenues from sales volumes that should be treated as outperformance relative to benchmark level of sales; and
  - levels of costs achieved, including in the initial construction phase, that should be treated as outperformance relative to a benchmark level of costs.
160. Putting aside the fairness or otherwise of such an approach, the consequence is that an unregulated (or lightly regulated) business that is under threat of imposition of retrospective heavy handed regulation, may have worse incentives to act efficiently than a firm continuously under heavy handed regulation. This is because there is no clear potential for them to benefit from beating benchmarks for sales/costs because there is no meaningful way for such benchmarks to be imputed into any retrospective calculation.
161. Equally, imagine a pipeline owner that expected to be subject to heavy handed regulation in the future and to have its future asset value set on the basis of the difference between the (future) present value of expenditures and revenues. Such a pipeline owner would perceive little reason constrain its expenditures (or serve additional volumes) today. This is because the pipeline owner would expect any additional expenditures (revenues) would be added (subtracted), with interest, to its regulatory asset value once it became subject to heavy handed regulation.



#### 4.5.2 Distortion to competition between users of different pipelines

162. Requiring that prices be set at marginal cost once ‘full cost recovery’ is deemed to occur would cause serious problems in the operation of the gas market. It would give some customers access to existing capacity (and new increments to that capacity) on some pipelines at marginal cost while other users (on the same pipeline and on competing pipelines) would have to pay a price that reflects average cost. In particular, shippers paying lower prices would include:

- all shippers contracting for capacity on a pipeline that the ACCC has deemed to have fully recovered its investment costs including any already existing capacity or newly created capacity;

Shippers continuing to pay higher prices would include:

- shippers with firm contracts on the pipeline in question<sup>35</sup> - who would need to continue to make their contractually binding payments;
- shippers on competing pipelines – both for existing and new incremental capacity on those pipelines.

163. The effect of this would be that investment in new incremental capacity would be inefficiently distorted in favour of investment on the pipelines the ACCC deemed had already fully recovered cost – because new users of that pipeline would not have to pay prices reflecting the true market value of the underlying assets. Other competing pipelines may then not find it possible to attract shippers at prices that will allow them to recover their fixed costs (even if this is defined in terms of their historical costs) because they are now competing with pipelines only recovering marginal costs.

164. Similarly, some users may delay usage of the pipeline in order to ensure that they only ‘join’ once costs have been deemed by the ACCC to be ‘full recovered’. That is, if a pipeline is forecast to fully recover its (ACCC deemed) historical costs in “t” years’ time then potential new shippers will expect a significant price drop at that time. This may sway their decision to delay their entry (and any consequent down/upstream investment) until that time. For example, consider a gas field owner thinking about expanding output from their gas field. Other things equal, it would be rationale to delay that expansion “t” years to take advantage of artificially lower transport costs at that time.

## 4.6 Carpentaria gas pipeline (CGP) as a case study

165. The CGP is one of the pipelines that the ACCC believes has fully recovered its historical costs. We are instructed that at the CGP was developed as a result of competitive process run by the Queensland State Government and that in this process

---

<sup>35</sup> These contracts would tend to reflect competitive market (DORC – see above) levels of cost recovery.

revenues to be earned under foundation contracts were established. Given the competitive nature of this process we consider that it is reasonable to assume that the prices negotiated reflected, amongst other things, the competitively determined:

- commercially required IRR (the higher the commercial IRR the higher the prices in the foundation contracts);
- the expected value of future sales to non-foundation customers (the higher expected value of future sales to non-foundation customers the lower the prices in the foundation contracts);
- an assessment of the risk that the pipeline will not be successful in achieving its required IRR (e.g., due to cost overruns or shortfalls in demand relative to projections).

166. In this context, even if the ACCC is correct that CGP has now fully recovered its historical costs (i.e., putting aside the objections to such a calculation set out in sections 4.2.2 and 4.2.3), the only reason that this can be the case is because circumstances have turned out to be more favourable than expected. That is, at the time of the competitive process for winning the rights to construct and operate the CGP all bidders would have been forced by competition to reflect in their bids their best estimates of the above factors.
167. If CGP has now fully recovered its costs (noting again our objections to the ACCC's conclusion in this regard) then this is, ultimately, simply compensation for the competitively determined stranding risks that it signed up for at the time foundation contracts were bid for. Some or all of these contracts have been commercially renegotiated since that time. In addition, expansions to both capacity and usage have been achieved by APA with the prices for associated usage being commercially negotiated by the pipeline owner and users.
168. One such expansion involved APA Group, in a consortium with AGL, agreeing to use the CGP to supply Xstrata with energy out to 2030. This agreement was struck in October 2011 and in the context of an alternative proposal named 'CopperString' to connect Mt Isa to the National Electricity Market. Success of the alternative project would have substantially reduced the value of the CGP. In March 2011, after APA had opened negotiations but before any contract was signed, APA's CEO, Mick McCormack, was paraphrased in the press as follows:<sup>36</sup>

*The APA Group, which supplies gas to Mount Isa's existing power station, announced in December it would build a new 240 megawatt power station to supply Xstrata's energy needs into the future.*

---

<sup>36</sup> Sydney Morning Herald, "True grit tussle for rich energy dream", Mark Davis, March 26 2011 (accessed 24/2/16). <http://www.smh.com.au/national/true-grit-tussle-for-rich-energy-dream-20110325-1c9yv.html#ixzz414MX7MZA>

*The APA chief executive, Mick McCormack, says this is "unashamedly" a defensive move, reflecting concern CopperString would slash demand for gas from APA's Carpentaria Pipeline.*

*"The Carpentaria Pipeline won't make or break APA but, nevertheless, there is significant investment up there and that investment itself was based on commercial underpinnings without any government support at all," he says.*

169. Following the successful negotiation of an energy supply agreement with Xstrata the CopperString project was put on hold and the following statement released.<sup>37</sup>

*In light of the decisions made by the major energy users in Mount Isa to contract their energy requirements with a new build isolated gas fired power station, CopperString is no longer able to justify the significant investment required to develop a transmission line to connect the North West Minerals Province to the National Electricity Market.*

170. More recently the Government of the Northern Territory has run a competitive process for the construction of a new pipeline project, known as the North East Gas Interconnector (NEGI), that will allow gas to flow through the Northern Territory's Amadeus pipeline to East Coast markets via a connection with the CGP at Mount Isa. The construction of the NEGI may substantially increase the value of the CGP to users.
171. This context is relevant because it illustrates the kind of market risks that the CGP faced since construction – and the competitive forces at play in its negotiation with customers. However, the ACCC's approach simply ignores this and makes a conclusion that, because the ACCC estimates costs have now been fully recovered (using an ACCC determined discount rate), the CGP should lower its prices to marginal costs.
172. Even if the ACCC is right and, *ex post*, full cost recovery has been achieved, it is not reasonable to believe that investors had an *ex ante* view that there was zero prospect of failure – especially when viewed from the highly uncertain position prior to construction (noting the risk of construction cost overruns at that time). Moreover, putting aside general risks that all pipelines face, the history of CGP clearly indicates that it did face material competitive stranding risk from a specific and credible threat in the form of the CopperString project.
173. However, the ACCC ignores such risks and proposes that CGP receive no compensation for these risks because, *ex post*, the ACCC deems that they have not materialised. As already explained, applying this approach on a pipeline-by-pipeline basis would mean that no new pipeline would be built because the best that they could

---

<sup>37</sup> <http://www.copperstring.com.au/> accessed on 24 February 2016.

do is recover their costs (at the ACCC's view of the WACC) while they could do worse (i.e., on an expected basis they will under-recover their costs).

174. It is important to note that the above is true even if the ACCC is right that costs have been, ex post, fully recovered. In our view, this is a highly contentious claim. The ACCC would appear to have used an estimate of regulated WACC as the discount rate and not a commercially determined IRR (which, as discussed in, sections 3 and 4.2.2 will almost certainly be materially higher than estimates of a commercial WACC let alone a regulated WACC). Moreover, the ACCC likely assigned no value to the intangible assets that were deployed in the construction and operation of the CGP (as discussed in section 4.2.3).

## 5 ACCC treatment of relative prices

175. In order to reach a conclusion of monopoly pricing is occurring it is necessary to conclude that the level of prices exceeds a measure of competitive prices/costs. However, the ACCC cites as evidence of monopoly pricing the fact that pipelines set prices for one subset of services (“non-firm” services) higher than for “firm” services. It appears to be the ACCC’s view that “non-firm” services should be priced at, or below, the prices for “firm” services or, at least, the ACCC have evidence that some regulators have imposed this condition in some jurisdictions.
176. Even if one shared the ACCC’s view that “non-firm” prices should not exceed “firm” prices, one must still ask whether failure to price in this regard is evidence of monopoly pricing. In this context, we note that the ACCC’s desired price relativity can be achieved by *raising* prices for “firm” services above those for “non-firm” services. Given that sound evidence of monopoly pricing should not be able to be eliminated by *raising* prices, it would appear that the ACCC’s interpretation of this evidence is problematic.
177. The ACCC may be of the view that firm capacity prices negotiated with foundation customers at the time of initial investment represent prices that were deemed sufficient to fully recover the initial investment in the pipeline at the time of its construction. On this assumption, the ACCC may be inferring that any additional revenue derived from “non-firm” services negotiated with customers at a later date represents a source of monopoly profit (because revenue from firm prices already fully recover costs). Such a view is consistent with the following quote from the Inquiry report.<sup>38</sup>

*As gas flows become more dynamic throughout the east coast the demand for as available, interruptible, backhaul and bi-directional services and other ancillary services is increasing, particularly amongst gas fired generators, LNG projects and producers. Financial data provided by the pipeline operators indicates that this is a growing source of revenue for some pipelines. It is also contributing to a substantial increase in the profitability of those pipelines where the costs **have been underwritten by long-term foundation contracts, because unlike the US where revenue from these services would be used to reduce the firm transportation rate, pipeline operators are retaining the benefit.***

178. In this passage the ACCC implicitly assumes that foundation contracts recover all costs associated with the initial construction and operation of the pipeline and that any positive cash-flow on additional services sold represents pure profit above and beyond a competitive return on investment. Similar sentiments are expressed

---

<sup>38</sup> ACCC Inquiry report, page 108.

elsewhere in the Inquiry report where references are made to investments that “have been fully underwritten by medium - to long-term gas transportation agreements (GTAs) with shippers”.<sup>39</sup>

179. However, the ACCC provides no compelling evidence to this effect and, in our view, there is no sound basis for reaching such a conclusion. At the time of a pipeline’s construction there can be little doubt that there are strong competitive forces to offer low firm capacity prices to foundation customers; this is, after all, the basis on which a pipeline operator will win the business to supply those customers. The ACCC recognises the importance of this competition in the following passage.<sup>40</sup>

*The outcomes of these two competitive processes suggest that ‘competition for the market’ can impose an effective constraint on the behaviour of new pipelines. It is important to recognise, however, that the effect of this competitive constraint will dissipate once the new pipeline has been developed, which is why foundation shippers tend to use competitive tension between prospective pipeline operators to negotiate long-term GTAs that protect their investments over the term of the GTA.*

180. However, the ACCC makes a serious error of economics when it presumes that foundation customers ‘fully underwrite’ a new pipeline and that, therefore, prices above marginal cost are pure profit for subsequent customers (including renegotiated prices with foundation customers at the end of the foundation GTA).
181. It is simply an unreasonable assumption that potential pipeline owners will attempt to recover 100% of their expected costs from foundation customers. A bidder who took this strategy could, and would, be profitably undercut by another bidder who offered a lower price to foundation customers on the basis of an expectation of selling some services to non-foundation customers. The operation of competitive forces means that the only reasonable assumption is that the firm prices for foundation customers reflect the expected level of revenues from future customers (including from the sale of non-firm services).
182. This means that one cannot simply identify the existence of profits from sales to non-foundation customers as evidence of above normal profits. If it were well recognised by all parties that foundation customers fully paid for the pipeline’s construction costs then foundation customers would be irrational not to demand the rights to some portion of future sales on the pipeline. After all, if foundation customers had ‘fully underwritten’ the pipeline construction (in the sense that the ACCC uses the term), they would be giving away value to the prospective pipeline owner by allowing the

---

<sup>39</sup> ACCC, Gas Inquiry report, page 8.

<sup>40</sup> ACCC, Gas Inquiry report, page 97.

owner to keep upside from future sales that the pipeline owner does not need justify the investment.

183. This is, of course, not likely to be the case. The reality is that foundation customers give up any such upside for themselves in return for a lower price in their initial GTA. Similarly, if foundation customers really believed that their initial GTA fully ‘under wrote’ the pipeline costs they would demand the right to extend that GTA at marginal cost beyond its termination date and use that right to either serve themselves or other customers.
184. In reality, foundation customers recognise that they receive a lower price in their initial GTA by leaving some upside for the pipeline owner in future negotiations. In this regard, it is worth considering the following passage from the Inquiry report.<sup>41</sup>

*While some long-term contracts are negotiated prior to a pipeline being developed and built, it is more often the case that shippers must negotiate with the owner of an existing pipeline, because:*

- *a foundation shipper’s contract comes to an end;*
- *a foundation shipper requires a variation of its GTA or requires transportation services in addition to those anticipated at the time the foundation contract was negotiated;*

185. In this passage the ACCC is envisioning that shippers, who arrange for a competitive tender to build a pipeline, nonetheless expose themselves to ‘monopoly pricing’ of the pipeline owner at the end of a GTA (or for variations to it). However, if such monopoly power did exist, then it is the foundation shippers who conferred it on the pipeline owner by failing to specify in their contracts the terms on which GTA’s would be renegotiated and/or variations made. While some variations to the GTA might be difficult to have anticipated and contracted for,<sup>42</sup> many would not and, certainly, the end of the GTA is a foreseeable event.
186. There are only two explanations for why a rational foundation shipper would not, at the time of selecting a pipeline builder/operator, specify the terms on which their GTA would be renewed such that the pipeline operator could not exercise market power at that time. The first is that the shipper did not believe that the pipeline owner would have market power at that time. The second is that the shipper received an advantage in their initial GTA price for exposing themselves to later higher prices.

---

<sup>41</sup> ACCC, Gas Inquiry report, page 97.

<sup>42</sup> Even if the precise nature of variations could not be foreseen - if potential pipeline owners perceived any possibility exploiting market power at that time the value of this would be reflected in the prices that they bid to provide the initial GTAs.



COMPETITION  
ECONOMISTS  
GROUP

Both of these explanations are inconsistent with the ACCC's narrative that foundation shippers pay excessive prices post their initial GTA.



## 6 Summary

187. ACCC summarises its conclusions as follows<sup>43</sup>

*To summarise, there is evidence that a large number of pipelines are taking advantage of their market power by engaging in monopoly pricing, with ten of the 11 pipelines that were investigated having been found to be engaging in some or all of the behaviours outlined above, in addition to other forms of monopoly pricing. The ten pipelines include, in no particular order, the SWQP/QSN, BWP, RBP, CGP, MSP, EGP, SEPS, MAPS, DTS and TGP.*

*As this list highlights, some of the pipelines that were found to be engaging in monopoly pricing are, strictly speaking, subject to some degree of competition (that is, the MSP, EGP and MAPS) while others are subject to full or light regulation (that is, the RBP, DTS, CGP and half of the MSP). This finding reinforces the observation that competition is not posing as an effective constraint on the behaviour of pipeline operators as might be expected and that the gas access regime, in its current form, is also failing to impose an effective constraint on pipeline operators, either directly through regulation or indirectly through the threat of regulation.*

188. However, another alternative explanation exists for the conclusion that 90% of pipelines are monopoly pricing – even regulated pipelines. This is that the test for taking advantage of monopoly power applied by the ACCC is not robust and has a high probability of a ‘false positive’ result (i.e., identifying conduct as monopolistic when it is actually consistent with competitive outcomes). On the basis of the analysis in this report we consider that the alternative explanation is a credible, if not the most likely, explanation.

---

<sup>43</sup> ACCC Inquiry report, page 111.

## Appendix A Importance of intangible assets

189. There have been a number of recent attempts to gauge the importance of intangible assets in the context of the broader economy. In one study, Leonard Nakamura of the Federal Reserve Bank of Philadelphia provided three different measures of the magnitude of intangible assets in the US economy:<sup>44</sup>
- an accounting estimate of the value of the investments in research and development, software, brand development and other intangibles;
  - the wages and salaries paid to the researchers, technicians and other creative workers who contribute to the generation of these intangible assets; and
  - the improvement in operating margins (sales less cost of sales) that he attributes to improvements to intangible factors such as the technical know-how of businesses, e.g., to internet-based supply chains.
190. With all three approaches, he estimated the investments in intangible assets to be in excess of US\$1 trillion in 2000 and the capitalised value of these intangible assets to be in excess of US\$6 trillion in the same year. To put this amount in perspective, the same-year investment of the US manufacturing sector in physical assets (primarily property, plant and equipment) was about US\$1.1 trillion.
191. Baruch Lev also observed that, in October 2003, the market value (stock price times number of shares outstanding) of US publicly traded companies was five times larger than their balance sheet value, which reflected primarily the net worth of physical and financial (stocks and bonds) assets.<sup>45</sup> This caused Lev to conclude that:<sup>46</sup>

*“...about three-quarters of the value of public companies, as perceived by investors, reflects non-physical and non-financial assets, which are absent from corporate balance sheets.”*

---

<sup>44</sup> See: Nakamura, L., (1999), “Intangibles: What put the new in the new economy?”, *Federal Reserve Bank of Philadelphia Business Review*, July/August, pp.3-16; and Nakamura, L. 2001. “What Is the U.S. Gross Investment in Intangibles? (At Least) One Trillion Dollars a Year!” Federal Reserve Bank of Philadelphia Working Paper no. 01-15.

<sup>45</sup> Lev, B., (2005), “Intangible Assets: Concepts and Measurement”, *Encyclopedia of Social Management*, Volume 2, p.299.

<sup>46</sup> *Ibid.*

192. In a similar vein, Lev concluded in an earlier paper that, evidence on the differences between book to market valuations of US companies listed in the S&P 500 index confirmed that, at least at that time:<sup>47</sup>

*“...an amount of value equal to between one-half and two-thirds of corporate market values reflects the value of intangible assets.”*

193. This earlier work was subsequently expanded and verified by the likes of Corrado, Haltiwanger and Sichel (2005),<sup>48</sup> who also estimated the intangible assets in the US economy as being US\$1 trillion in 1999. Since that time, many scholars have studied and confirmed the existence of a gap between firms’ market value and book value. They have concluded that there is significant value unmentioned in financial statements.<sup>49</sup> That value, from which firms derive a substantial proportion of their returns, reflects intangible assets.

---

<sup>47</sup> Lev, B., 2003, Remarks on the Measurement, 2003, Valuation and Reporting of Intangible Assets. FRBNY Economic Policy Review, September 2003

<sup>48</sup> Corrado, C., Haltiwanger, J., & Sichel, D., (2005) “Measuring Capital and Technology: An Expanded Framework”, in *Measuring Capital in the New Economy*, pp.11-46.

<sup>49</sup> *See for example:* Chen, Y., Lin, M. J., & Chang, C. (2006), “The influence of intellectual capital on new product development performance – the manufacturing companies of Taiwan as an example.” *Total Quality Management & Business Excellence*, 17(10), pp.1323–1339; Campisi, D. & Costa, R. (2008), “A DEA-based method to enhance Intellectual Capital management”, *Knowledge and Process Management*, 15 (3), pp.170-183; and Iazzolino, G. & Fortino, A. (2012), “Credit risk analysis and the KMV-Black and Scholes model: a proposal of correction and an empirical analysis”, *Investment Management and Financial Innovations*, 9 (2), pp.54-68.

## Appendix B Literature evidence

### B.1 The margin between hurdle rates and WACC

#### B.1.1 RBA (2015)<sup>50</sup>

194. The RBA runs a business liaison program, in which the RBA's business liaison team meets with contacts in industry on a monthly basis.
195. In its Bulletin for June quarter 2015, the RBA observed that Australian firms set their hurdle rates at levels considerably higher than the WACC:<sup>51</sup>

*Liaison contacts indicate that the hurdle rates used to evaluate business investment opportunities are often several percentage points above the WACC. Hurdle rates of around 15 per cent are quite common, though the range of rates reported is relatively wide, from a little less than 10 per cent up to 30 per cent.*

196. The RBA reasoned that the motivation for imposing a margin between hurdle rates and the WACC might have arisen due to uncertainty regarding cash flow forecasts, particular in terms of an implicit optimism bias:<sup>52</sup>

*Liaison contacts reason that the hurdle rate is often set above the cost of capital to account for uncertainty about the cash flow projections. Contacts also note that there is likely to be an optimism bias in these cash flow projections. As a result, setting a hurdle rate above the cost of capital is likely to improve the chances that investments add value to the firm on a risk-adjusted basis. [4]*

*[4] Adjusting for risk by using a higher discount rate rather than by probability weighting the cash flows introduces a bias against longer-term projects, since the present value of a longer-dated cash flow is more sensitive to changes in the discount rate.*

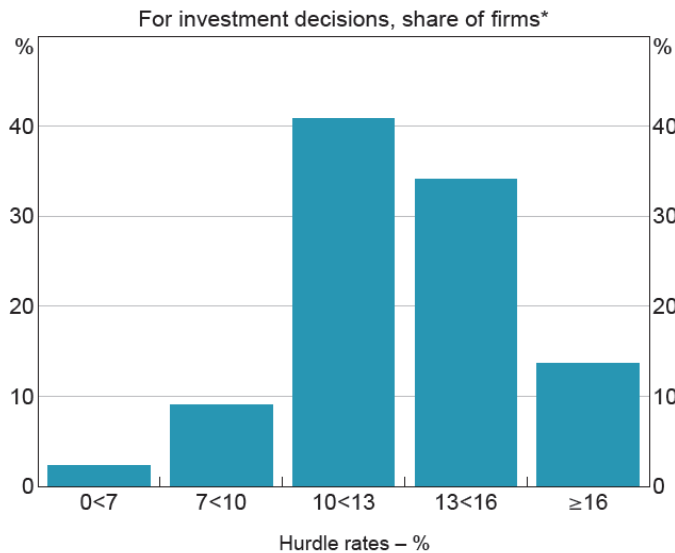
197. The RBA also referenced a CFO survey conducted by Deloitte, which indicated that approximately 90% of Australian firms used hurdle rates greater than 10%, while 50% used hurdle rates greater than 13%. This was shown in Graph 3 of the Bulletin, which we reproduce below.

<sup>50</sup> Lane and Rosewall, Firms' Investment Decisions and Interest Rates, RBA Bulletin, June 2015.

<sup>51</sup> Ibid, p. 3.

<sup>52</sup> Ibid.

### Graph 3 Hurdle Rates



\* Excluding firms that do not use a hurdle rate

Sources: Deloitte CFO Survey; RBA

198. The RBA noted that, for some firms, the hurdle rate was arbitrary, and that many such firms only accepted investments with returns that were much higher than the hurdle, such that the hurdle rates shown in Graph 3 did not necessarily reflect the lowest returns of the projects that firms entered into:<sup>53</sup>

*For some firms, moving the hurdle rate by a percentage point or more would be immaterial to the decision process, since accepted investments tend to have much higher returns. Many contacts report that projects with a rate of return above the hurdle rate were often rejected anyway. This may be because the payback period was too long or because of other considerations.*

199. Another issue addressed in the RBA Bulletin is that Australian firms seldom alter their hurdle rates in response to changes in the interest rate:<sup>54</sup>

*Many liaison contacts also report that hurdle rates are not changed very often and in some instances have not been altered for at least several years. These observations are also reflected in the recent survey by Deloitte; two-thirds of corporations indicated their hurdle rate was updated less frequently than their formal review of the WACC, and nearly half reported the level of their hurdle rate was changed ‘very rarely’.*

<sup>53</sup> Ibid, p. 4.

<sup>54</sup> Ibid, p. 3.

200. Finally, the RBA reported that Australian firms also made extensive use of the payback period when evaluating prospective projects:<sup>55</sup>

*The payback period is used extensively by firms in Australia. In liaison, the most common payback period reported by contacts is three years, though not all contacts that use the method use a fixed value. Some firms have reported a period of less than three years for at least some types of capital expenditure, including target periods of 12 months, implying very high required rates of return for a given capital outlay. In some cases, firms have reduced their maximum payback period in recent years. Contacts often report using the payback period in conjunction with DCF analysis and smaller firms sometimes rely on the payback method exclusively.*

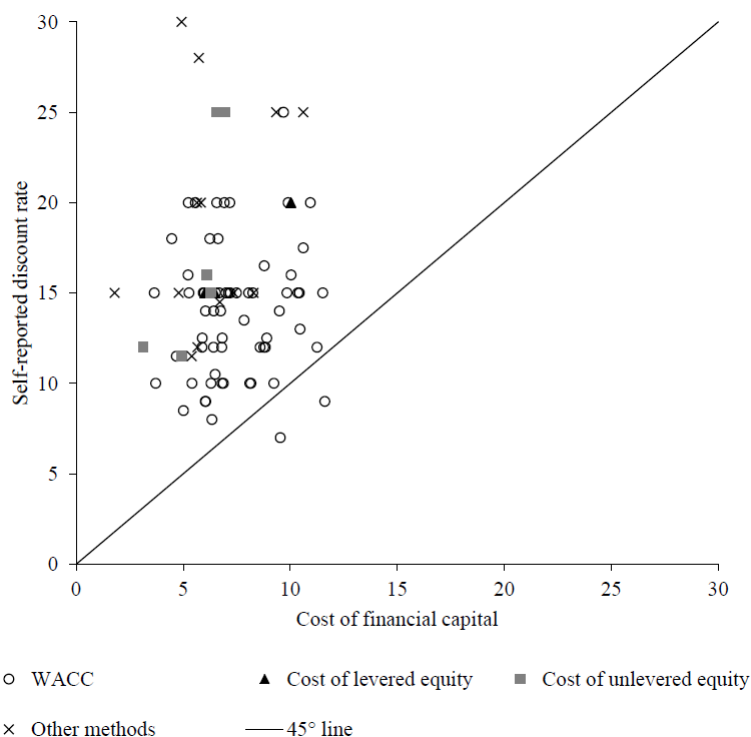
201. Imposing a maximum payback period essentially places a risk premium on longer-term projects for two reasons. First, the shorter payback period means that the larger initial capital outlay of a long-term project will need to be repaid within the payback period, thereby requiring higher returns on long-term projects compared to shorter-term projects. Second, the present value of a long-term cash flow is also more sensitive to interest rate changes, which increases its risk.
202. Since gas pipeline investments tend to feature long-term projects, the RBA's findings suggest that Australian firms carrying out investments of similar nature to APA's projects would also demand even higher returns than those shown in Graph 3.
203. The observations above show that it is common for Australian firms in competitive industries to take on projects with rates of return that far exceed the AER's benchmark return on equity of 7.1% to 8%. It is also important to note that hurdle rates represent minimum expected project returns, below which firms will not follow through with the prospective projects. The average expected project return for each firm will thus be higher than those reported in Graph 3, and it is conceivable that there will be some outlier projects with very high rates of return.
204. The evidence above indicates that the project returns shown in Chart 6.1 of the ACCC report are not out of the ordinary among Australian firms in competitive industries. The ACCC therefore cannot reasonably conclude that gas pipeline operators are engaging in monopoly pricing, unless it is of the view that most Australian firms are doing so as well.

---

<sup>55</sup> Ibid, pp. 4-5.

### B.1.2 Jagannathan *et al* (2016)<sup>56</sup>

205. Jagannathan *et al* (2016) carried out a survey of CFOs in the U.S. and received replies from 127 companies, of which 113 were public firms. The survey included detailed questions regarding the hurdle rates that the respective companies used for evaluating projects, as well as the factors that influenced the hurdle rates for individual projects. These project-specific factors include issues such as the expected life of the project, whether the project is a replacement project or new investment, and the strategic value of the project.
206. The survey showed that firms used hurdle rates that were, on average, double their WACC, and that there was considerable cross-sectional variation in hurdle rates. This is shown in Figure 1 of the paper, which is reproduced below. Unless the firm faced constraints in some way, standard finance theory suggested that a firm would take on all projects with returns exceeding its WACC. Jagannathan *et al* (2006) therefore sought to identify which constraints had statistically significant impacts on firms' choices of hurdle rates.



207. Jagannathan *et al* (2016) considered the following factors that could explain the margin between hurdle rates and WACC:

<sup>56</sup> Jagannathan, Matsa, Tarhan and Meier, Why Do Firms Use High Discount Rates?, *Journal of Financial Economics*, 120(3), pp. 445-463.

- **Managerial optimism**, where managers are perceived to overstate projected cash flows, thereby necessitating a margin to accommodate the possibility that actual cash flows would be less than anticipated;
- **Managerial short-termism**, where myopic managers prefer projects with cash flows that occur earlier, such that they would avoid profitable projects if taking them up resulted in a failure to meet the firm’s consensus earnings forecast in the current quarter;
- **Financial constraints**, where the choice of projects may be mutually exclusive if taking up one project left insufficient financing for another project; and
- **Managerial constraints**, where there was limited qualified management and manpower to handle additional projects.

208. Notably, the first two dot points relate to problems of economic agency, whereby managers face incentives that could be at odds with the short- and long-term aims of their companies. Both of these factors were also referenced in the RBA’s Bulletin, as described in section B.1.1.

209. Of the four factors above, Jagannathan et al (2016) found that managerial optimism and managerial short-termism did not have statistically significant effects on the choice of hurdle rates. Somewhat surprisingly, they found that firms with financial constraints tended to have lower hurdle rates, which suggested that these firms lacked interesting ideas.

210. Finally, managerial constraints had statistically significant impact on hurdle rates:

*Our survey-based measure of managerial and organizational constraints is statistically significant, and is consistent with the view that firms that face tighter organizational and managerial capacity constraints will use discounts rates higher than cost of capital.*

## B.2 Dispersion of project returns within an individual firm

### B.2.1 Kruger et al (2011)<sup>57</sup>

211. Kruger et al (2011) investigated an issue that they term the “WACC fallacy”, in which firms incorrectly assess projects based on a company-wide discount rate instead of tailoring individual discount rates according to the risk profile of each project.

<sup>57</sup>

Kruger, Landier and Thesmar, The WACC Fallacy: The Real Effects of Using a Unique Discount Rate, IDEI Working Paper 629, February 2011.



212. Firms that fall into the WACC fallacy will have distorted investment incentives, since their failure to recognise the variations in the discount rates of individual projects will result in overinvestment in riskier projects and underinvestment in safer projects.
213. The authors cited the example of Anheuser-Busch Companies Inc (ABC), whose sales are diversified among industries including the “Beer and Liquor” industry (81%) and a number of theme parks (11%). The former division had an asset beta of 0.12, while the latter had an asset beta of 0.69. If the firm incorrectly used the same discount rate for both divisions, the theme park business would underestimate the cost of capital by about 4%, assuming an equity risk premium of 7%, resulting in overinvestment.
214. The authors first determine whether diversified firms make use of a firm wide WACC when making investment decisions. This was done by comparing the amount of investment in the non-core divisions of a diversified firm against the investments of similar standalone firms in the same industry. If firms did use a firm wide WACC, there would be a positive relation between investment in non-core divisions and the “beta spread” (defined as the difference between the asset betas of the non-core and core divisions).
215. Based on data obtained from Compustat, the authors find a positive relationship between beta spreads and the rate of investment, which confirms that firms indeed use the same discount rates from their core divisions when evaluating projects for their non-core divisions. They find that such behaviour decreases in circumstances where the non-core division is large, the CEO has sizable ownership of the firm, and the variation in discount rates across the whole organisation is high.
216. Next, the authors evaluated the present value loss arising out of the WACC fallacy. This was done by assessing the market reaction to announcements of diversifying acquisitions when the bidder has a lower cost of capital than that of the target. Firms who have fallen for the WACC fallacy will overvalue the target, which will in turn be reflected by a fall in market capitalisation.
217. The authors estimate that the WACC fallacy results in a 0.7% loss in the bidder’s market capitalisation, which translates to 7% of the deal value on average, or \$14m for each deal.
218. While the methodology used in the paper primarily addresses the use of a single discount rate across different industry divisions within a diversified firm, the authors view their work as a contribution to the “irrational managers” stream of finance literature. This stream of literature includes research into psychological issues such as managerial optimism and short-termism, which was discussed in RBA (2015) and Jagannathan et al (2016) in sections B.1.1 and B.1.2.
219. The authors consider their paper to have implications beyond diversified firms, and warn about the dangers of using simplified calculations such as using a single discount rate for the whole company without taking the relative risks of individual projects into account:

*To the best of our knowledge, the present paper is the first to consider how a simplifying heuristic (using a single company wide discount rate) can have real effects on important corporate policies such as corporate investment and mergers and acquisitions.*

### B.3 Summary

220. The literature reviewed in sections B.1 and B.2 demonstrate two flaws in the ACCC's interpretation of Figure 6.1 of its report:
- It is common practice for firms in competitive industries to apply hurdle rates that exceed their WACC, such that a firm's actual return on investment cannot be compared directly with its WACC; and
  - It is poor practice to apply a single company wide WACC across all projects without factoring in the different relative risks of individual projects.
221. RBA (2015) showed that Australian firms generally apply high hurdle rates on projects, with 90% of firms using hurdle rates exceeding 10%, and 50% using hurdle rates exceeding 13%. These hurdle rates are slow to adjust, and are seldom updated. While the AER's estimates of the benchmark return on equity have decreased in response to the recent fall in interest rates, Australian hurdle rates have not budged.
222. Jagannathan et al (2016) analysed data from CFO surveys and found that the hurdle rates that companies used for evaluating projects were approximately double their respecting WACC. Based on statistical testing of the surveys, Jagannathan et al (2016) concluded that managerial constraints had statistically significant impact on hurdle rates. They also found that firms with less financial constraints tended to have higher hurdle rates, which in turn were associated with strong balance sheets, low leverage, and large cash holdings.
223. Kruger et al (2011) investigated the "WACC fallacy" in which firms applied a single firm-wide discount rate across all projects instead of tailoring discount rates for individual projects. The study showed that many firms engaged in the WACC fallacy, and that the fallacy tended to be less common when the non-core division is large, the CEO has sizable ownership of the firm, and the variation in discount rates across the whole organisation is high. It was estimated that falling into the WACC fallacy resulted in a 0.7% loss in the bidder's market capitalisation, which translated to 7% of the deal value on average, or \$14m for each deal.
224. Overall, the literature reviewed above shows two clear flaws in the ACCC's analysis. The forecast internal rates of return on gas pipeline projects cannot be directly compared with the AER's return on equity estimates because hurdle rates are known to exceed the WACC, both in theory and practice. Furthermore, it is not appropriate to compare the rates of return on individual projects against the estimates for an



COMPETITION  
ECONOMISTS  
GROUP

entire firm since because projects with different risk profiles will have hurdle rates that differ from that of the firm itself.

## Appendix C Regulatory precedent for initial asset valuation

225. The ACCC proposal to, in effect, value some existing pipeline assets at zero on the basis that their costs have been ‘fully recovered’ is inconsistent with regulatory precedent – including its own precedent in valuing existing gas pipelines. This precedent overwhelmingly sets the initial asset value for a newly regulated pipeline businesses based on:

- the depreciated replacement cost of the business; or
- the value that would support current levels of prices in the market (line in the sand).

226. This precedent is summarised in the table overleaf. The following abbreviations are used in this table:

- the depreciated optimised replacement cost (DORC) (also known as ODRC). A distinction is made between DORC with straight line depreciation and depreciation estimated as the different in the present value of building a new pipeline today versus at the end of the existing pipeline’s life (NPV cost based approach);
- depreciated actual cost (DAC) value; and
- optimised deprival value (ODV) which is equal to the lesser of DORC and value of the asset if customers given that they have alternatives to use of the asset (such as having no service from the asset).



**Table 1: Asset valuation methodologies utilised in Australia**

Valuer	Asset/Services	Methodology Adopted	Final Value <i>vis-à-vis</i> DORC
<b>Australia - Gas Pipelines (Asset values determined by relevant regulator having regard to a range of factors and asset valuation techniques specified in the Gas Code)<sup>58</sup></b>			
<b>ACCC</b>	Principal Transmission System	DORC value written down by 3% to ensure consistency with the Victorian Gvt's policy that no customer should face higher prices when retail contestability introduced. In effect, the line in the sand approach.	<b>Final value 3% lower than DORC</b>
	Central West Pipeline	Costs less surplus revenues at the end of the first year of the pipeline's operation, which included an allowance for losses incurred over the first year of the pipeline's life	<b>Final value 11% higher than DORC</b>
	Moomba to Adelaide Pipeline	DORC (straight line)	<b>Final value = DORC</b>
	Amadeus Basin to Darwin Pipeline	ODV (- given "the unique circumstances of the ABDP" based on economic value limb – net realisable value) economic value based on PV of lease payments payable by pipeline operator to June 2011 and other costs not reflected in lease payments.	<b>Final value 25-39% lower than DORC</b>
	Moomba to Sydney Pipeline	DORC using straight line depreciation proposed by ACCC but NPV cost based approach required by the Australian Competition Tribunal	<b>Final value = DORC</b>
	Roma to Brisbane Pipeline	DORC (straight line) – consideration also given to capital contributions made by users but ACCC found that these should be taken into account in the prices negotiated by the relevant users rather than accounting for them in the asset value	<b>Final value = DORC</b>
	Dawson Valley Pipeline	DORC (straight line)	<b>Final value = DORC</b>
<b>ACT (ICRC)</b>	ActewAGL Gas Distribution Network	Actual methodology not specified but regard had to DAC, ODV and Costs less surplus revenues.	<b>Final value 31% lower than DORC</b>
<b>NSW (IPART)</b>	NSW Gas Networks	Actual methodology not specified but regard had to ODV and DHC.	<b>Final value 25% lower than DORC</b>
	Wagga Wagga	Actual methodology not specified but regard had to DAC, ODV and Costs less surplus revenues.	<b>Final value 14% lower than DORC</b>
	Albury	Actual methodology not specified but regard had to DAC, ODV and Costs less surplus revenues.	<b>Final value 7% lower than DORC</b>
<b>Qld (QCA)</b>	Queensland distribution systems (2 businesses)	DORC (straight line)	<b>Final value = DORC</b>
<b>SA (ESCOSA)</b>	Adelaide distribution system	DORC (straight line)	<b>Final value = DORC</b>
<b>Vic (ESC)</b>	Victorian distribution systems (3 businesses, ie, Multinet, Stratus and Westar)	Values established to ensure consistency with Vic Gvt policy that prices would not rise when retail contestability introduced (note that asset values determined before privatisation). Multinet system: DORC (straight line) Stratus and Westar systems: DORC values written down by 4-8% (in effect line in the sand)	<b>Final value values 0-8% lower than DORC</b>

<sup>58</sup> The Gas Code required regulators to have regard to: the depreciated actual cost (DAC) value; the optimised depreciated replacement cost (ODRC) value; the value arising from other well recognised asset valuation methodologies; the advantages and disadvantages of the alternative methodologies; international best practice in comparable situations and the impact on the international competitiveness of energy consuming industries; the basis on which tariffs have been (or appear to have been) set in the past, the economic depreciation of the pipeline, and the historical returns to the service provider from the pipeline; the reasonable expectations of persons under the regulatory regime that applied to the pipeline prior to the commencement of the Gas Code; the impact on the economically efficient utilisation of gas resources; the comparability with the cost structure of new pipelines that may compete with the pipeline in question (for example, a pipeline that may by-pass some or all of the pipeline in question); the price paid for any asset recently purchased by the service provider and the circumstances of that purchase; and any other factors the regulator considers relevant.



COMPETITION  
ECONOMISTS  
GROUP