



**Productivity Commission:
Review of national access regime**

Comment on:

**submission by Professor Johnstone
and
access holidays**

25 July 2001

1. Overview

During the course of the public hearing held by the Productivity Commission (the “Commission”) on 7 June 2001, NECG undertook to revert to the Commission on a number of matters relating to its review of Part IIIA of the Trade Practices Act 1974 (Cth). This paper deals with two of those matters.

In section 2, we respond to Professor Johnstone’s submission to the Commission’s present inquiry entitled *Asset Valuation and Regulation of Energy Infrastructure Tariffs in Australia: The Use and Deficiencies of DORC*. Our views may be summarised as follows:

- Professor Johnstone is correct to express a degree of caution over use of the DORC approach, however he has failed to give sufficient emphasis to the most important considerations for companies and regulators;
- from a theoretical point of view, DORC is an entirely valid basis for regulators to use in valuing the assets of regulated firms; and
- the choice between DORC and a common alternative - (inflation-adjusted) depreciated actual cost (DAC) - turns on whether the relatively higher cost of capital associated with DORC is outweighed by other, offsetting benefits.

We therefore conclude that it is appropriate that regulators reach decisions on the methodology by which they value assets on a case-by-case basis.

In section 3, we provide further comments on the Commission’s proposal to award access holidays to certain types of risky investment. We support the Commission’s proposals in this area, but emphasise that exempting new infrastructure from access regulation for some initial period does not, by itself, constitute the most effective way to reduce regulatory risk. In particular, we believe that any access holiday would need to be accompanied by explicit *ex ante* commitment from regulators with regard to the level at which they will set prices when the holiday expires.

The primary purpose of our submission is to evaluate the costs and benefits of the access holiday proposal. We recognise that there is some potential for access holiday arrangements to distort investment across different types of asset, to raise prices relative to the first-best outcome, and to bring forward the timing of investment in a way that may not be socially beneficial.

However, we believe that these costs are likely to be small relative to the benefits in terms of improved incentives to invest that an access holiday would create. The Commission has itself previously acknowledged that the costs associated with dynamic inefficiency are likely to outweigh any loss of allocative efficiency. We therefore encourage the development of a

'menu' approach to awarding access holidays, and set out brief thoughts on three types of arrangement that appear to be suited to achieving the Commission's objectives.

2. Pricing principles: DAC vs DORC

The Commission has asked us to provide a brief evaluation of a paper written by Professor David Johnstone entitled *Asset Valuation and Regulation of Energy Infrastructure Tariffs in Australia: The Use and Deficiencies of DORC*.

We believe that Professor Johnstone is correct to express a degree of caution about the DORC approach, but we submit that he has not emphasised the most important considerations for regulators and companies. In particular, we would like to stress to the Commission that, from a theoretical point of view, valuing assets at DORC is an entirely valid basis for setting ‘efficient’ access prices. The difficulties with the approach lies, not in the underlying economics, but in the extent to which risk is transferred from customers to investors and in the scope for regulatory error when the methodology is used in real-life situations. However, these concerns may well be outweighed by the benefits associated with DORC’s relationship with the maintenance of the operating capital within a regulated firm, and the assurance for customers that this provides.

2.1 Theory

When regulators set access prices, they have at their disposal a range of different approaches for valuing infrastructure assets and determining the capital costs associated with the provision of network services. Their objective is to arrive at “efficient” prices, where “efficiency” is commonly defined in terms of three related criteria:

- *productive efficiency*—the total charge paid by access seekers should match the total costs of production that would be achieved by a notional, cost-minimising network provider;
- *allocative efficiency*—the price of access to an additional unit of a service should be equal to the cost of the additional resources used to produce that unit; and
- *dynamic efficiency*—over time, prices should be set in such a way as to incentivise network owners to invest in optimal levels of new infrastructure assets.

Both the DORC approach and a common alternative - inflation-adjusted depreciated actual cost (DAC) - are capable of generating ‘efficient’ prices (in all three senses of the word).

Productive efficiency is often pursued by seeking to ensure that only prudently incurred costs are allowed into the regulated asset base (“RAB”). To the extent to which this approach has merit, using DORC, the *ex post* optimisation process can deliver this assurance; with DAC, an *ex ante* prudence test can be used to guard against gold plating. In reality, though, the choice of asset valuation methodology is likely to be a poor way of providing the firm with

incentives to act in line with productive efficiency; rather, more high-powered incentives, such as those associated with price caps, are likely to be more effective.

In terms of *allocative efficiency*, the choice of asset valuation is generally unimportant in the steady state. To ensure optimal use of the infrastructure, regulators must set the unit charge in line with the network provider's incremental, or avoidable, costs. The relevant costs here are only those that would not be incurred if the marginal unit of output was *not* sold to customers and so capital costs (including depreciation and a return on investment) only enter the calculation when the change in output at issue alters the capital stock required (for example, by bringing forward in time the date at which capacity expansion must occur). Instead, these fixed costs can be recovered through two-part or multi-part tariffs, with price discrimination, where practical, to ensure that costs are distributed in relation to customers' willingness to pay.

To achieve *dynamic efficiency*, access prices must at the very least provide investors with a reasonable expectation that they will receive a return of and on new investment, commensurate with the risks involved. Any asset valuation methodology can, in principle, be made consistent with this objective, provided that the allowed rate of return reflects the risk that investors bear from the potential for under- or over-recovery of their initial outlay.

Since, at least theoretically, DAC and DORC are indistinguishable in terms of their ability to deliver productive and allocative efficiency, this last point provides an important basis for evaluating the relative merits of the two approaches. In this sense, we disagree strongly with Professor Johnstone's assertion that the choice of asset valuation is least significant for new investment. In fact, as we explain later, we believe that setting access charges based on DORC asset values may require regulators to set a higher rate of return in order to preserve dynamic efficiency, but that this cost may be offset by other benefits.

Before developing this argument, we briefly review two of Professor Johnstone's main objections to DORC.

2.2 Outcomes in competitive markets

Sections 5 and 6 of Professor Johnstone's paper explain in considerable detail how regulators are wrong to assume that basing prices on a depreciated cost base (DORC or DAC) 'mimics the discipline of a competitive market'. We submit to the Commission that Professor Johnstone's concerns are largely irrelevant, and that it is potentially quite dangerous to

conduct hypothetical and artificial thought experiments of this kind.¹ What really matters, in an economic sense, is whether such comparisons in any way aid the pursuit of allocative, productive or dynamic efficiency.

The ‘competitive markets’ justification for the DORC approach lies in the need to ensure that prices never rise in excess of the cost of building a brand new network. This view has been succinctly put by the Australian Competition and Consumer Commission in the context of its 1998 review of Victorian gas access arrangements:

Another justification for DORC setting the upper limit to valuations comes from what a DORC valuation actually is attempting to measure. This is the maximum price that a firm would be prepared to pay for ‘second hand’ assets with their remaining service potential, higher operating costs, and (old) technology given the alternative of installing new assets which embody the latest technology, generally have lower operating costs, and which will have a greater remaining service potential. Therefore, if prices reflect a value that is in excess of DORC, then users would be better off were the existing system scrapped and replaced by new assets.²

The competitive threat is therefore one that exists only in the mind of a regulator seeking to secure productive efficiency (that is, trying to minimise the total costs of production). Of course, duplication of natural monopoly assets cannot, by definition, be productively efficient. However, benchmarking prices against the assumed cost of brand new assets may provide other benefits as we explain in section 2.6.

¹ We also emphasise here our comments on page 39 of our earlier submission to the Commission: “No valid inferences can be drawn, at least in any simple way, from the workings of contestable markets to those of markets where economic behaviour is shaped by the existence of substantial sunk investments”.

² Australian Competition and Consumer Commission, *Access Arrangement by Transmission Pipelines Australia Pty Ltd and Transmission Pipelines Australia (Assets) Pty Ltd for the Principal Transmission System; Access Arrangement by Transmission Pipelines Australia Pty Ltd and Transmission Pipelines Australia (Assets) Pty Ltd for the Western Transmission System; and Access Arrangement by Victorian Energy Networks Corporation for the Principal Transmission System*, Final Decision, File Number CR97/159, 6 October 1998, 33.

2.3 Windfall gains and losses

In section 7 of his paper, Professor Johnstone argues that valuing existing assets at DORC will mean the owners invariably receive a one-off windfall gain. He goes on to suggest that the choice of initial RAB is largely a distributional matter, and that it may even be appropriate to value assets below DAC depending on how far regulators place the interests of customers over those of shareholders.

We believe that the logic underlying this proposition is incorrect. First, as a matter of fact, it is not inevitable that investors will receive a windfall under the DORC approach. In fact, there is a very strong likelihood that they will suffer a one-off loss as investment becomes ‘stranded’. Consider the two ways in which an ORC-based asset valuation might differ from inflation-adjusted actual cost (leaving aside any discrepancy between depreciation profiles):

- the extent to which asset-specific price indices vary from CPI over time (the “price term” in the revaluation process); and
- the degree of optimisation or rationalisation – that is, the change in the quantity of inputs assumed to be required (the “quantity term” in the revaluation process).

With the first of these components (the price effect), there is no *a priori* reason to assume that the effect on the replacement value of assets will necessarily be positive or negative—indeed, relative to the best forecast, the expected error should have mean zero. By contrast, optimisation (the quantity effect) must always lead to a writing-down of the asset base—if there is a choice between the existing way of doing things and a new alternative, and if the least-cost option must be chosen, then the quantity chosen can never be greater than that currently in place. While it may well be possible to identify some industries where DORC (the product of the price and quantity change) is higher than DAC, Professor Johnstone is quite wrong to give the impression that this will always be the case—recent experience in the telecommunications sector demonstrates very clearly that this is the case.

Secondly, and more fundamentally, Professor Johnstone appears to believe that it is possible to present the calculation of the RAB as an entirely independent matter from the subsequent treatment of new investment. We do not believe that this is credible; rather, we believe that any decision to *deliberately* strand sunk assets by setting the initial RAB at an unreasonably low level might be taken by an investors as a signal that *new* investment might also receive the same treatment when, at a later date, it can also be regarded as sunk. This is why the Gas Code, to give one example, insists that regulators take account of so many factors when setting the initial RAB—it aims to ensure that prices reflect investors’ reasonable expectations at the time their investment was made in order not to deter new investment in new assets.

Put in terms of the efficiency criteria, a regulator that opportunistically seeks to bring about a redistribution of wealth between shareholders and customers would seriously jeopardise its ability to secure dynamic efficiency in the industries it regulates.

2.4 Cost of capital

Professor Johnstone's main objections to DORC are therefore somewhat wide of the mark. When examining this issue, we would suggest to the Commission that the key to the DAC vs DORC debate is really the difference in the cost of capital associated with the two methodologies, and the extent to which any differential is justified in terms of offsetting benefits to customers. We believe that there are two key reasons why, in order to preserve dynamic efficiency, regulators may need to allow a higher rate of return when using DORC.

The first is the scope for regulatory error, which arises when regulators are forced to make literally hundreds of *subjective and arbitrary assumptions* about the cost of an optimally configured network. This is a point that Professor Johnstone develops at length in section 4 of his paper. It is important because, even if one accepts that there will be no systematic bias in the direction of the regulators' error, investors are exposed to significant uncertainty under the DORC approach and have no obvious ability to protect themselves from the resulting risk of RAB re/valuations.

Secondly, and perhaps more importantly, DORC *exposes investors to a greater degree of market risk* than DAC. This exposure comes from two sources:

- the use of asset-specific price indices, rather than CPI, to revalue the RAB from one year to the next; and
- the optimisation process.

In both cases, the prospects of investors receiving the full return of their initial outlay on a new investment are explicitly harmed under DORC. They are exposed to potential holding gains/losses in the event that capital-good price deflators deviate from CPI, and to potential stranding/revaluation in the event that new technologies and changing market conditions cause the optimal configuration of the network to change over time.³ To the extent to which these are predominantly market risks, not firm- or industry-specific risks, they will on any account need to be reflected in a higher beta coefficient and a higher cost of capital in order to preserve incentives to invest (dynamic efficiency). Additionally, if the net expected impact of

³ Unlike Professor Johnstone, we emphasise that there is potential for gains *and* losses for shareholders. In no way should there be any expectation that these unpredictable events will lead to a systematic revaluation of the RAB over time.

reevaluations is negative,⁴ then there must be a corresponding offset in the cash flows if new investment is to occur.

2.5 Offsetting advantages

2.5.1 Operating capital maintenance

Whether or not exposing firms to these risks in customers' interests will tend to differ from industry to industry. To analyse the costs and benefits, it is useful to distinguish between two types of capital maintenance:

- financial capital maintenance (FCM)— investors must anticipate recovering the full value of their initial outlay (in real terms) over the life of the asset in order to commit to new investment; and
- operating capital maintenance (OCM)—for investors in a utility, which have perpetual obligations to provide services to customers, there is also an obligation to maintain the operating capability of the network in tact.

Section 2.4 of this paper sought to argue that the rate of return associated with a DAC-based approach to asset valuation would need to be lower than the cost of capital for firms regulated under the DORC approach in order to secure dynamic efficiency. This is equivalent to saying that an expectation of financial capital maintenance can be provided under either approach, provided that the allowed rate of return appropriately reflects the risk of stranding/revaluation and holding gains/losses.

The importance of then providing for operating capital maintenance, in addition to financial capital maintenance, is likely to differ from industry to industry, from service to service, perhaps even from asset to asset. Generally speaking, maintenance of operating capital is relevant in regulated industries where:

- cost indices have the potential to differ quite substantially from CPI over time;
- technological progress is rapid; and
- assets have finite lives and so must be replaced at some future date.

⁴ That is, if there is bias in the anticipated direction of the asset value change.

In these circumstances, it is possible that the future liability to invest (that is, to replace worn out assets) will exceed the value at which the existing assets were bought. In order to ensure continual provision of service, it is therefore important to customers that the regulator provides the firm with some assurance that the additional costs of replacement investment will ultimately be allowed for—basing the RAB on a DORC valuation is one way in which this assurance can be provided.

2.5.2 Bypass

Although the focus of Part IIIA of the Trade Practices Act 1974 (Cth) is on natural monopoly, several regulated industries compete with other types of service (the best example being competition between rail and road). It is important that regulation does not distort the relative costs of the competing alternatives, and the Commission will be aware that use of the DORC approach in setting access prices helps to ensure that competition between rival services takes place on a level playing field.

This is true because assets will be valued at no more than their economic value—so that assets exposed to by-pass will be written down to the cost of the most efficient by-pass technology. To the extent to which the investment decisions of those who might engage in by-pass reflect current prices, this valuation rule should help prevent uneconomic duplication for so long as the existing assets can serve the market.

2.6 Conclusion

Professor Johnstone's criticisms of DORC seem largely based on arguments that are not compelling on closer examination. This does not mean that use of DORC is necessarily optimal: there are issues, notably with respect to the stranding risk associated with DORC, that need careful consideration.

3. Access holidays

3.1 Introduction

NECG welcomes this opportunity to comment further on the Commission's proposal to award certain investments an 'access holiday' as a mechanism for reducing exposure to regulatory risk. Our view remains that the Commission is correct in according priority to the potential for inappropriate access regulation to have a significant detrimental impact on the incentives for efficient investment, and we support the Commission's efforts to tackle this problem.

We must emphasise, however, that exempting new infrastructure from access regulation for some initial period does not by itself constitute the most effective way to reduce regulatory risk. In particular, we believe that any access holiday would need to be accompanied by explicit *ex ante* commitment from regulators with regard to the level at which they will set prices when the holiday expires. The primary purpose of this short note is to bring to the Commission's attention a menu of three approaches through which this type of commitment can be made, and to outline the circumstances in which each of these individual options would be the most effective way of incentivising new investment.

3.2 The Commission's proposal

According to the Commission's Position Paper:

... investment to provide 'new' essential infrastructure will often be contestable at the construction stage and subject to high specific risks on both the cost and revenue sides ... calculating a rate of return, which provides appropriate balance between the needs of investors and users in these circumstances will be very difficult. For this reason, the Commission has endorsed the concept of 'access holidays' for these sorts of investments ...⁵

In subsequent discussions with the Commission, NECG has been shown a working proposal in which new infrastructure projects that were considered to be contestable should, with relatively few exceptions, qualify automatically for some sort of access holiday. The burden

⁵ Productivity Commission, *Review of the National Access Regime - Position Paper*, Canberra, March 2001, pages 204-205.

of proof would fall on the regulator to demonstrate that granting a holiday would be inefficient, according to some pre-determined criteria.

It is our assumption that, by the word ‘contestable’, the Commission means any capital investment where there is effective *ex ante* competition among a group of potential owners to construct new infrastructure assets. In certain instances, this may involve explicit competitive tendering by a central authority, but we believe that the definition should also be broad enough to include any investment that could equally well have been undertaken by another network provider.

In essence, the Commission’s proposal originates from the idea that contestable investments are also likely to be ‘marginal’ investments (that is, $NPV = 0$). Where there is effective competition for the market, owners of new assets are constrained from earning monopoly rents by the threat of earlier entry by a rival firm, even in circumstances where they might otherwise have substantial *ex post* market power. We therefore believe that the Commission is correct to focus its attention in this area—the type of project that would be covered by an access holiday under these rules would not generally be one that afforded the owner any *a priori* expectation of earning returns in excess of the cost of capital.

Defining contestability in this way also means that there is no need to distinguish between greenfield and brownfield investment, so that investment:

- for major enhancements of existing assets;
- in infrastructure that provides new services to customers; or
- in infrastructure that significantly improves existing services,

and which is contestable, should each benefit from some form of an access holiday (provided, of course, that the cost and/or revenue risk associated with the project is demonstrably greater than that associated with sunk infrastructure assets).

3.3 Concerns

Since the idea of an access holiday was first mooted, the Commission has received a range of comments from interested parties, the majority of which support the Commission’s objectives but raise questions about the precise formulation of the proposal. NECG has highlighted the following concerns with the access holiday concept:

- access holidays would typically be time limited and apply during the early, loss-making period, offering little benefit when the investment is proved and access seekers want to share in the success of the venture;

- it may be difficult to explain to customers why access holidays are appropriate, particularly if one or two projects become exceptionally successful and their owners enjoy very high returns (these difficulties may limit the credibility of the regulatory scheme, as there will be a perceived risk of regulatory opportunism);
- if access holidays result in a small number of downstream firms finding that they are unable to agree terms and conditions for access, there is potential for a loss in downstream efficiency; and
- the proposal may simply be a convenient way to side-step the issue of exactly why the regulatory regime does not properly incentivise new investment.

The Commission's subsequent proposals, which place contestability as the key criterion for granting an access holiday, would also raise questions:

- many enhancements of existing assets with high cost/revenue risk are contestable only in the sense that the network provider can contract out the work—this does not constrain it from setting excessively high prices;
- contestability in greenfield projects is difficult to define and monitor, and it may not always be possible for a regulator to observe whether competition is sufficiently effective to constrain a potential infrastructure owner from earning monopoly profits; and
- the proposal still does not properly address the potential for regulators to tax successful investments when the holiday expires.

Taken together, these points suggest that the Commission needs to undertake a careful cost-benefit analysis to ensure that their final recommendations maximise dynamic efficiency gains, with the minimum possible costs in terms of allocative efficiency. This is consistent with ensuring that eligibility for an access holiday is strictly related to the marginality of the project under consideration, and we would recommend that regulators should be under no obligation to award a holiday if they are able to demonstrate convincingly that the investment is highly profitable *ex ante*.

3.4 Distortions

3.4.1 Different rules for old and new investment

The Commission's access holiday proposals will lead to a situation in which different types of investment by the same firm will be regulated under quite different rules. This is important because:

- the boundaries between investments that do and do not qualify for an access holiday become difficult to define (leading to potential for gaming and the need for enhanced regulatory discretion); and
- there is a cost to discriminating arbitrarily between old and new investment, in a situation where there is a potential for regulatory error in either or both of the regimes.

Paul MacAvoy provides an interesting perspective on this matter in his recent book on regulation in the US gas industry.⁶ In the 1960s, US regulators reacted to a shortage of gas reserves by allowing prices for ‘new’ contracts that were higher than the prices they allowed for ‘old’ customers. The rationale was that this would provide companies with greater incentives to invest in new exploration and production, thereby helping to alleviate the shortages.

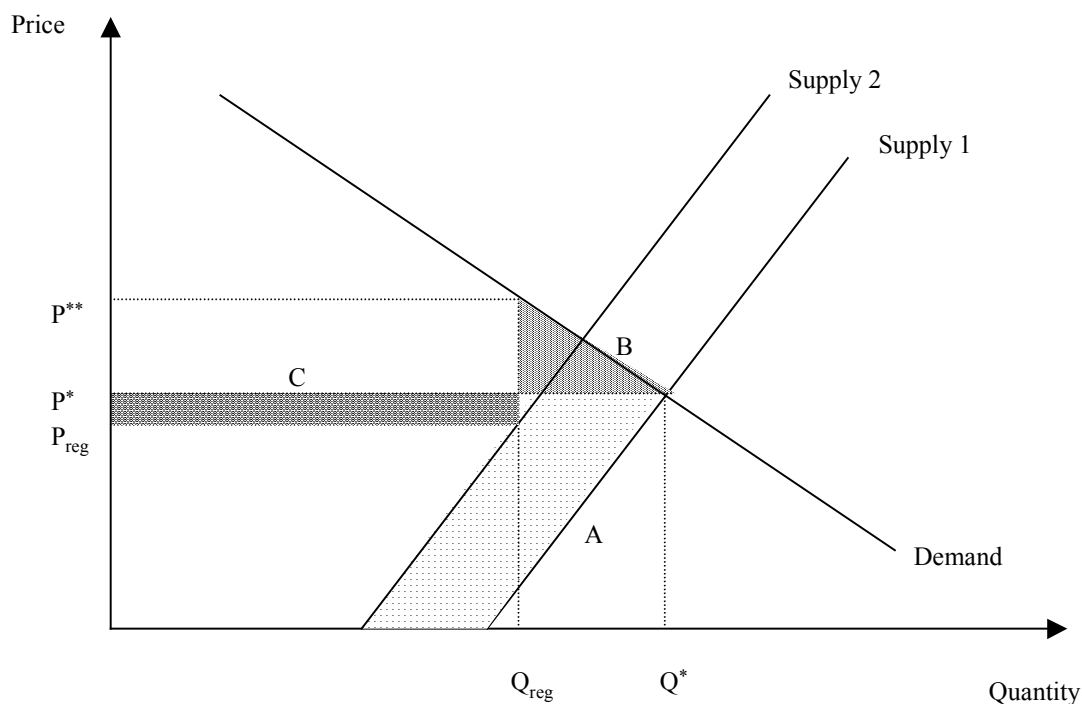
Figure 1 shows MacAvoy’s analysis of the welfare effects of this policy. His basic premise is that the shortage arose in the first place because regulators had sought to hold prices on ‘old’ contracts below the competitive level, P^* . Taken by itself, this would have resulted in a movement down the supply curve and in less investment and lower supply. However, when higher prices were allowed for ‘new’ customers, a far more substantive shift in the supply curve itself took place as companies started to divert investment and even existing reserves to the ‘new’ markets. The effect on ‘old’ customers was unambiguously negative in that supply was restricted further and some customers found that they were no longer served by the producers.

The welfare effects can be summarised as follows:

- a gain for old customers who received actual production at lower prices, depicted as the rectangle C in the diagram below (this is matched by a corresponding loss for producers);
- a loss for consumers doing without service due to restricted production, given by the triangle B; and
- a loss for producers that restricted the quantity they supplied in response to lower prices, shown as area A.

⁶ MacAvoy (2000), ‘The natural gas market: sixty years of regulation and deregulation’.

When MacAvoy calculates the relative magnitude of these effects, he finds that the losses suffered by consumers who experienced reductions in supply considerably outweighed the gains of those who paid lower prices.



In the context of the Commission’s proposal for access holidays, the lesson from this work is that any move to better incentivise new investment without addressing problems in the regulation of existing assets would have the potential to severely distort investment decisions. In particular, there is a very real danger that uncontested investment in renewal and maintenance of assets will be adversely affected as resources are diverted to investment that qualifies for an access holiday.

3.4.2 Timing distortions

During the course of the Commission’s public hearings, several parties have expressed the view that provisions for an access holiday might distort the timing at which investment takes place, pulling forward investment decisions in an inefficient manner. We have some sympathy with this view, but believe it is important to emphasise that the current situation is one in which investment is being deterred and delayed by the existence of regulatory risk. The correct comparison is not with the outcome that might be achievable by a hypothetical, omniscient social planner, but with today’s reality in which the dynamic inefficiency costs associated with underinvestment are likely to be considerable.

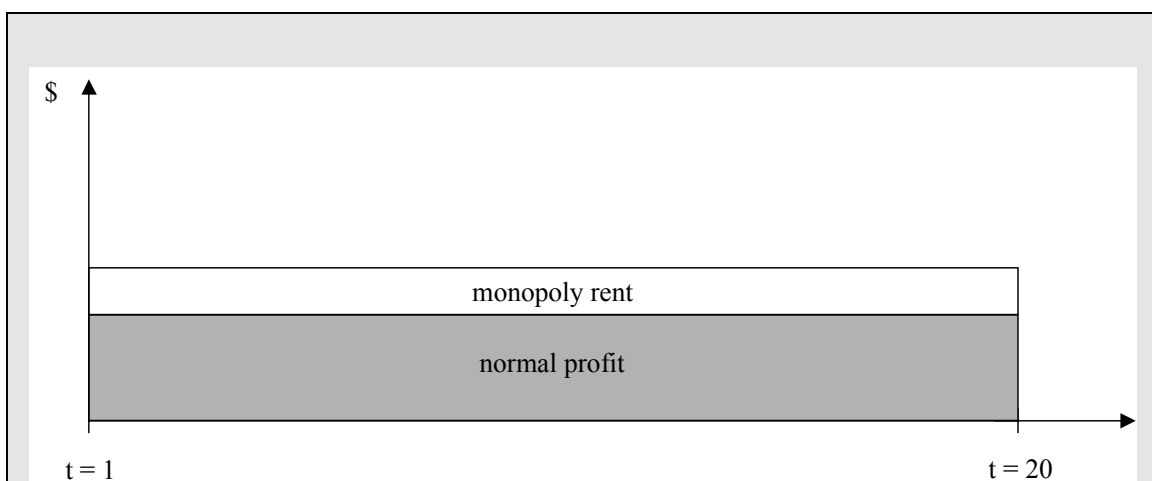
With this in mind, Box 1 teases out the logic underlying the idea that access holidays create distortions compared with the first-best outcome. In a situation where a potential infrastructure owner is offered protection from both *ex post* competition (because of natural monopoly) and regulation of prices (because it has been granted an access holiday), it will be able to project increased revenues from its investment with the anticipation of being able to earn monopoly rents from captive customers in favourable states of the world. Of course, contestability constrains the potential investor from ever actually earning monopoly profits—it must commit to the project as soon as it becomes NPV positive or lose the market to a rival—but the inflation of prices/cash flows derived from the firm’s *ex post* market power remains unchecked. As a result, investment is brought forward and out-turn prices become higher than they would be in a situation where prices were set at first-best efficiency.

It is important to note that matters are considerably more complex when there are small numbers of potential investors and uncertainties as to the timing of investment. Under some circumstances, it is well known that competition among these investors can lead to outcomes that approximate those found in a contestable market; however, more recent work suggests that this result is highly sensitive to the parameter specification used in the capacity pre-emption game.

Box 1: Timing/Pricing Distortions

Suppose that, at date $t = 1$, a new industrial development is to begin operating at a greenfield site. The development has the potential to create a significant market for electricity supply, and the building of a new \$100m extension from the existing network to the site is perfectly contestable.

A potential network provider observes considerable uncertainty surrounding the number of future customers, and shareholders demand that they earn an 8% rate of return as compensation for investing in the project. If the firm seeks to precisely deliver this cost of capital, this generates a price profile in the mean, or base case, scenario for demand labelled ‘normal profit’ in the diagram below.



There is, however, no reason to believe that this is the price that would be charged by a monopolist in an unregulated market. The eventual pipeline owners will have a degree of market power derived from the economies of scale inherent in the project and, using this market power, it is reasonable to suppose that they would anticipate being able to earn a higher rate of return, say 12%, in the base case.

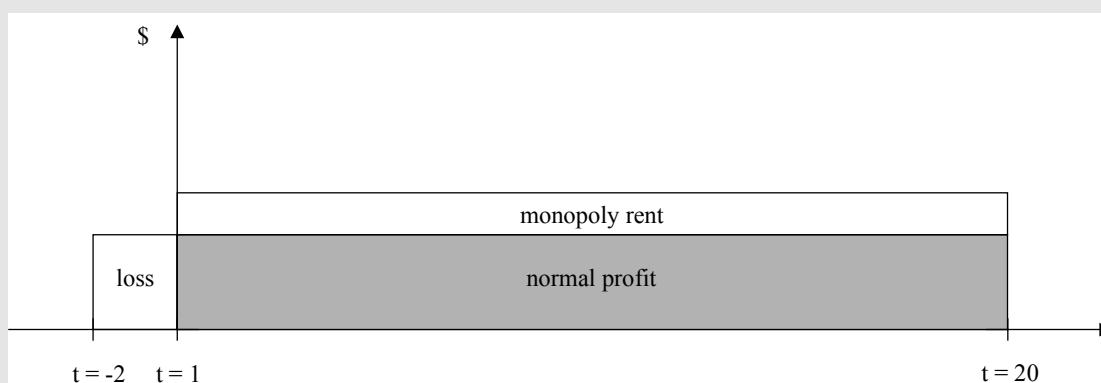
Option One: Regulation

Access regulation seeks to prevent the firm from setting prices high enough to capture these rents. Indeed, the regulator aims to set prices at the 'normal profit' level so that the firm earns exactly its cost of capital.

As the Commission has pointed out, this may not always be achievable. First, it is difficult for the regulator to accurately assess the required rate of return. Secondly, investors will perceive a risk that the regulator will reduce the cost of capital to the level associated with existing assets once investment is sunk. Finally, and perhaps most significantly, investors perceive a risk that the regulator will reduce prices and truncate returns if, *ex post*, it turns out that customer numbers (and revenue) are much higher than anticipated. This regulatory risk serves to increase the cost of capital and, without compensation for investors, deters investment in risky projects.

Option Two: Access Holidays for Contestable Investment

If policy-makers seek to remove this regulatory risk by awarding the investment a 20-year access holiday, it is likely that prices would remain at the 'monopoly' level. This is illustrated in the diagram below.



Difficulties arise because potential network builders' projections of future cash flows would continue to be built around the 'monopoly' prices, which are derived from the firm's ability to exercise market power *ex post*. Viewed at date $t = 1$, this gives the project a positive NPV. However, competition for the market means that it is still profitable to build the network a year earlier. Indeed in this hypothetical example, it is still just profitable to build the pipeline at date $t = -2$. Contestability pushes construction to this time, with the losses for the first three years offset by returns above the cost of capital after date $t = 1$.

This particular investment appears to satisfy all the criteria that the Commission has set out for its access holidays. It is a risky project (in a greenfield location) and it is clearly contestable and marginal, in the sense that its NPV is zero at the time of building. However, it is not necessarily obvious that society benefits from the award of an access holiday relative to some of the alternative suggestions it has received or, indeed, the more standard regulatory approach (if properly applied). Indeed, in this particular example, prices are some 25% higher than they would be if access were regulated by an omniscient social planner.

The lesson that emerges from this illustration is that *ex ante* competition for the market does not necessarily prevent the exercise of *ex post* market power. In circumstances where investment is contestable, monopoly rents are competed down to normal profits, but in a way that affects the timing of the investment rather than the prices paid by customers. It is therefore correct to point out that there is some danger that awarding access holidays to risky, but marginal, projects would serve to both distort the timing of investment and to increase the prices that customers pay.

As we noted in the introduction, this does not necessarily imply that the type of access holiday proposed by the Commission is unwarranted. The correct comparison is not with the outcome that would be achieved by an omniscient social planner, but with the current situation in which regulatory risk is deterring new investment. We therefore recommend that access holidays may be justified in circumstances where:

- genuinely new services are being provided to customers for the first time (since the corresponding consumer surplus is likely to be high) and, given the non-existence of the previous generation of services, making the new services available can only increase consumer surplus;
- the specific cost and/or revenue risk is particularly high (since regulatory risk is likely to act as a strong deterrent to such investment); and
- the number of new network connections is highly sensitive to price (since this will constrain the firm's ability to exercise market power).

This would obviously pose policy-makers a stern challenge when it comes to drafting a set of rules that define which investments do and do not qualify for an access holiday.

3.5 Refinements

In light of these complexities, we believe that there are variations to the Commission's proposals that can better incentivise new investment, but also reduce the impact of these distortions and so remove any need to evaluate, say, the 'riskiness' of the project or whether the services provided to customers are genuinely 'new'.

There are three main criteria that any proposed approach should be measured against:

- investors must be in a position to understand how prices will be set over the full lifetime of the asset (including when the holiday expires);
- prices must be set in such a way as to provide investors with the expectation that they will earn a rate of return in line with the cost of capital for the project; and
- the firm should be prevented from exploiting *ex post* market power to generate uncapped monopoly profits for shareholders.

In its recent submission to the Commission's inquiry into telecommunications competition regulation, Telstra set out three mechanisms which appear to meet these conditions. We believe that there is no 'one size fits all' answer to this problem, but instead that the three approaches will each be suitable in specific circumstances. Moreover, there may also be other mechanisms which meet the same criteria. We therefore suggest that the Commission regard the following as a menu of options:

- an exemption for projects awarded by tendering processes that focus on the prices that firms are able to charge customers;

- pre-determination of benefit sharing for projects that turn out to be profitable *ex post*; and
- pre-determined regulatory rules for investment that will be covered by the more familiar regulatory approach to network services.

Type of Access Holiday	Applicability	Advantages/Disadvantages	Implementation
<p>Access Holiday I: Exemptions for projects awarded by tender</p> <p>The first option builds on the idea that competition for the market can by itself be sufficient, in certain circumstances, to restrict market power and provide an upper limit on prices.</p> <ul style="list-style-type: none"> An exemption from access price regulation should automatically be granted to investments in which an explicit competition could be conducted for the investment. Bids from potential owners would need to specify the prices that they intend to charge once the project is complete. On evaluation of bids, the project would be awarded to the bid that represented the best value for money over the life of the project. <p>Bidders are likely to react to this mechanism by evaluating the internal rate of return that is necessary to justify the investment given its range of possible outcomes, from both a supply and a demand side. Where risk is perceived to be relatively high for a particular project, the rate of return that would effectively be capped by the regulatory arrangements would be correspondingly high.</p> <p>The essence of this mechanism is that potential owners of infrastructure are requested to define just how much “blue sky” they require before committing to the investment. From a theoretical perspective, it facilitates the market mechanism focusing on the most contentious issue (ie the area of greatest complexity), being the nature of the risk associated with the project. This is appropriate given a regulator’s inherent informational asymmetry and its inability to accurately assess the cost of capital associated with risky investment.</p>	<p>Almost exclusively greenfield investment in which infrastructure contracts can be awarded by a central authority at the end of a formal competitive tendering process.</p> <p>The non-price aspects of service provision would need to be tightly defined by the contracting authority.</p>	<p>The main advantage of this approach is that it limits the firm’s <i>ex post</i> market power by placing a cap on the NPV of future revenue streams. It also has the desirable property of focusing the bidders on a specific and objectively comparable variable.</p> <p>A potentially significant limitation of the arrangements is that the circumstances of the tendering will not always be possible. An inevitable consequence of such a tendering arrangement is that the intellectual property associated with identifying an investment opportunity is lost.</p>	<p>The access holiday could be implemented through acceptance of a null undertaking, which would specify that no regulated access would be provided for a designated period.</p>

Type of Access Holiday	Applicability	Advantages/Disadvantages	Implementation
<p>Access Holiday II: Pre-determined benefit sharing</p> <p>Any access holiday must enable the regulator and the firm to reach a common understanding over the terms of access before investment is committed. One of the least intrusive ways to reach this agreement is for the regulator to restrain itself from setting prices <i>ex ante</i>, but to agree in advance what will happen <i>ex post</i> if it turns out that the project is a success and the firm is able to make returns in excess of its cost of capital.</p> <p>A simple benefit-sharing agreement would be very straightforward to apply. The firm and the regulator would need to agree in advance on:</p> <ul style="list-style-type: none"> • the relevant cost of capital for the project under consideration; and • the share of profits that the company should be allowed to retain in the event that the project becomes NPV positive. <p>However, there would be no need for regulatory intervention until such time as the firm had recouped the whole of its initial outlay, including the appropriate return. In this way, the duration of the access holiday is automatically determined according to the period it takes for the project to become NPV positive (which may provide for indefinite exemption from access regulation in the event that the project turns out to be unprofitable). The firm is constrained from exploiting its market power to the full, but much of the regulatory risk it faces under the existing regime is eliminated.</p>	<p>Any discrete project in which it is possible to identify and separate the cashflows associated with the new investment.</p> <p>Particularly suited to projects involving the provision of services to new customers where there is high revenue risk.</p>	<p>This approach would ensure that returns on successful projects would not be truncated at the cost of capital, thereby allowing some 'blue-sky' to offset the losses on projects that are not so successful, but would also allow customers a share in the benefits from profitable investments. It would also preserve intellectual property rights.</p> <p>It does not fully address the difficulty that the regulator faces in observing the cost of capital for a particular project and may lead to protracted disputes between the company and its regulator. The share of profits to be retained by the company would need to be determined by some rule of thumb.</p>	<p>It is an approach that has been used, with some success, in the petroleum industry. The Petroleum Rent Resource Tax (PRRT) applies to offshore petroleum exploration and production, but a tax is not imposed until such time as the NPV of the project, discounted by a factor equal to the relevant cost of capital, is positive. We see no reason why a similar approach could not be incorporated into the TPA.</p>

Type of Access Holiday	Applicability	Advantages/Disadvantages	Implementation
<p>Access Holiday III: Pre-determined regulatory rules</p> <p>The third mechanism addresses more directly the deficiencies in current regulatory practice, rather than attempting to side step the issue entirely by exempting investment from regulation.</p> <p>The essential ingredient in this approach is an <i>ex ante</i> agreement between the firm and its regulator over key parameters in the regulatory model (which provides more transparency around the level at which prices are to be set). This would remove the risk that prices will be set in such a way as to truncate returns when investment is regarded as sunk and the specific risks at the time of investment have begun to disappear.</p> <p>The additional cost and/or revenue risk inherent in the type of project covered by access holiday could be rewarded in one of two ways:</p> <ul style="list-style-type: none"> the regulator could commit to specific values for the firm-specific components in the cost of capital calculations (especially beta and the cost of debt); alternatively, it could commit in advance to allowing new investment into the RAB at projected cost <i>plus</i> a pre-determined premium to reflect the additional risk. <p>It can easily be shown that reflecting additional risk in a cost contingency has identical revenue implications to including the premium in the cost of capital. Which alternative the regulator prefers is less important than the fact that he commits not to revise the terms of the original agreement at a later date.</p>	<p>Any investment in which the regulator believes it is beneficial to retain the ability vary prices over time (eg, because of uncertainty over future OPEX).</p> <p>Particularly suitable for new investment which is to be bundled with existing services and incorporated into an existing RAB, or where cost risk is the major obstacle to investment.</p>	<p>The main disadvantage is that the size of the contingency required for any particular project is almost impossible to determine objectively, and would become the subject of extensive debate between the firm and its regulator.</p> <p>However, since the regulator pre-commits, the firm would be given a 'take it or leave it' offer and could decide whether to proceed with its investment on that basis.</p> <p>Where the investment can be incorporated into an existing RAB, the revenue risk associated with infrastructure expansions can be substantially reduced. In some situations, this will reduce the cost of capital considerably.</p>	<p>Pre-investment acceptance of an undertaking, which would detail the terms and conditions of access for the lifetime of the asset</p> <p>Alternatively, changes to the pricing principles to constrain the regulator from revisiting its initial determination would have a similar effect.</p>

3.6 Implementation

In our previous submission, we emphasised that it will be a significant challenge to construct robust, workable and legally binding changes to the regulatory framework. We do not believe that these difficulties are insurmountable, but we urge the Commission to take great care to ensure that its final recommendations allow the minimum scope for regulatory discretion to come into play at a later date. This means that detailed thought will be required in two areas:

- the criteria that will be used to determine whether or not an investment should be awarded an access holiday; and
- the rules that will be used to determine the length of the holiday.

On the former, we believe that the criteria should place the burden of proof on the regulator, so that it has to demonstrate that a particular project not constituting renewal or maintenance of an existing network asset should *not* qualify for an access holiday. In particular, the onus should be on the regulator to show that new investment is not contestable, according to the definition set out earlier in this section — an exercise that is equivalent to demonstrating that the project affords the possibility of earning returns in excess of the cost of capital.

On timing, all three of the options set out above would appear to be suited to a rule whereby an access holiday would last for at least as long as it takes for the investment to become NPV positive. Under this approach, access regulation only ever becomes relevant when it is appropriate to share some of the benefits associated with successful projects with access seekers, and the potential for opportunistic regulatory behaviour to generate capital losses is eliminated. However, we emphasise again that access holidays should be accompanied by pre-defined rules to govern the basis on which prices are set at the expiry of the holiday (as is the case in each of the three approaches we set out above).