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Some Economic Issues

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Abstract

This paper examines some important economic aspects associated with the notion that consistency in the regulation of infrastructure businesses is a desirable feature. It makes two important points. First, it is not easy to measure consistency. In particular, one cannot simply point to different regulatory parameters as evidence of inconsistent regulatory policy. Second, even if one does observe consistency emerging from decisions made by different regulators, it does not necessarily mean that this consistency is desirable. It might be the result, at least partially, of career concerns of regulators.

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Consistent Regulation of Infrastructure Businesses: Some Economic Issues[#]

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Abstract: This paper examines some important economic aspects associated with the notion that consistency in the regulation of infrastructure businesses is a desirable feature. It makes two important points. First, it is not easy to measure consistency. In particular, one cannot simply point to different regulatory parameters as evidence of inconsistent regulatory policy. Second, even if one does observe consistency emerging from decisions made by different regulators, it does not necessarily mean that this consistency is desirable. It might be the result, at least partially, of career concerns of regulators.

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1. Introduction

Consistency is a buzz word in regulatory circles. It has been espoused by many countries as one of the key principles of good regulation.[1] Consistency is also routinely demanded by regulated businesses.[2] Although there is no universal definition of regulatory consistency, the implicit meaning of the term is that one should expect similar regulatory decisions when circumstances are similar. This type of consistency, which is the subject of this paper, can be viewed as a requirement for equitable treatment; two different firms under identical conditions regulated by two different regulators expect to be treated in the same way, regardless of their 'draw' of regulator.

Examples of where consistency is expected include similar regulatory decisions across industries (e.g., gas versus electricity), across state jurisdictions (e.g., gas regulation in the Australian state of Victoria versus gas regulation in the state of Queensland), and across countries (e.g., competition law across different countries). The demand for consistency is not restricted to the regulation of infrastructure businesses. Consistent financial regulation across nations is the main rationale for the Basel II Agreement[3]. Similarly, a great quantity of resources is devoted to the development of environmental regulation in a consistent way across national borders (e.g., bans on the use of certain gases or chemicals)[4].

Bolt (2004) argues that even when different regulatory models are applied, consistency requires that different outcomes should be justified by the circumstances of the industry concerned and any remaining differences should not be sufficiently material as to introduce perverse incentives for companies or investors. It is suggested that consistency is necessary to avoid regulatory arbitrage. That is, to avoid situations where investment decisions and/or management behaviour (or company performance) are driven by differences in regulatory approaches. In addition, regulatory consistency might minimise compliance costs of firms that operate across different jurisdictions or industries by eliminating duplication of efforts.

There is little doubt that consistent regulation can yield considerable benefits. However, consistency cannot be an objective in itself. There is an obvious point to be made that the pursuit of consistency might result in bad regulation that is applied consistently rather

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[1] See, for example, statements available
at http://www.dfes.gov.uk/hegateway/uploads/principles_good_regulation.doc
and http://www.finance.gov.au/obpr/proposal/coag-requirements.html.
[2] See, for example, Energy Retailers Association of Australia (2003), Australian Logistics Council (2006), and National Insurance Brokers Association of Australia (2007)
[3] See Bank of International Settlements, 2004. The Basel II Accord is a recommendation by the Basel Committee on Banking Supervision of the introduction of an international standard for banking regulation.
[4] See, for example the Montreal Protocol, available at http://www.unep.org/OZONE/pdfs/Montreal-Protocol2000.pdf. The Montreal Protocol on Substances That Deplete the Ozone Layer is a global agreement, involving the phasing out or elimination of the production of various substances, believed to be responsible for the depletion of the ozone layer; it has been hailed as one of the most successful examples of international cooperation to date.

than inconsistent regulation that is sometimes good and sometimes bad. It follows that the quest for consistency needs to be examined in greater detail. In this paper I discuss three interrelated facets of regulatory consistency.

First, I explain why it is so difficult to measure regulatory consistency. In particular, I summarise recent research findings that show that despite differences in regulatory parameters and instruments in Australia, regulatory decisions are surprisingly consistent when measured appropriately. Second, I explore some standard mechanisms that might result in consistent regulatory decisions. These include legal appeal, centralized decision-making, and an approach that I describe as pluralistic regulation. Third, I suggest that there might be a downside from a regulatory pluralist approach, where different regulators from different jurisdictions and/or industries pursue different approaches that might result, through a process of learning and selection of good approaches, in consistent outcomes in the long-run

Specifically, I observe that consistent regulatory decisions might arise in a pluralistic approach, not from sound economic reasons about industry fundamentals, but rather from career concerns of regulators. Regulators are faced with the difficult task of making a decision under incomplete information about the regulated firm costs. Therefore, having observed previous decisions, regulators might be concerned about the effects of a wrong decision – and there might be different ways to define what this means – on their own career prospects.

2. How to measure consistency of regulation of infrastructure businesses?

I argue below that a perfunctory examination of regulatory decisions is likely to reveal a large degree of variation across industries and jurisdictions, although the general approach might be similar, namely some variation of price cap regulation.

In Australia, for example, there are several state-based regulators who, until recently regulated a variety of industries such as water, electricity and gas distribution, ports, and rail. There are also federal regulators, including the Australian Competition and Consumer Commission that regulates the post office, telecommunications, and until recently electricity and gas transmission. A new federal regulator, the Australian Energy Regulator has been established, with responsibility for electricity and gas transmission, and in time, electricity and gas distribution, which it will inherit from the various states and territories.

Table 1 below reports on the parameters applied by the various regulators to calculate the weighted average cost of capital (WACC). Perhaps not surprisingly, there is a wide range of parameters across industries and jurisdictions. The true differences, however, are more substantial than Table 1 might suggest.

Table 1: WACC Parameters for Selected Regulatory Decisions in Australia from 2000 to 2006 (Percentage)

Industry	State	Risk Free Rate (Real)	Debt Premium	Equity Premium	Equity Beta	Gearing (Debt/ Assets)	Forecast Inflation	Franking credit (gamma)	"Vanilla" after tax WACC
Water	NSW	2.30 - 2.60	1.15 - 1.22	6.00	90.00	60.00	2.50 - 2.90	40.00	6.00 - 6.50
	Qld.	5.45	1.32	6.00	65.00	50.00	2.69	50.00	8.05
	Tas.	3.32	0.70	6.00	77.25	50.00	2.14	50.00	6.37
	Vic.	2.67	1.16	6.00	75.00	60.00	2.55	50.00	5.20
Electricity Distribution	NSW	3.30	1.00	6.00	110.00	60.00	2.50	50.00	6.70
	Qld.	5.61	1.22	6.00	90.00	60.00	2.76	50.00	8.50
	SA	3.28	1.64	6.00	80.00	60.00	2.44	50.00	6.85
	Tas.	2.90	1.25	6.00	95.00	60.00	2.09	50.00	8.08
	Vic.	2.64	1.43	6.00	100.00	60.00	2.56	50.00	5.90
	NT	5.37	1.20	6.00	89.60	50.00	2.09	50.00	9.67
Gas Distribution	NSW	2.50 - 2.80	1.15 - 1.18	6.00	90.00	60.00	2.80	30.00 - 40.00	6.60 - 7.00
	Qld.	5.25	1.43	6.00	110.00	60.00	2.77	50.00	8.75
	SA	2.49	1.25	6.00	90.00	60.00	3.17	47.50	6.14
	Vic.	3.40	1.70	6.00	100.00	60.00	2.20	50.00	6.80
	WA	2.58	1.38	5.50	90.00	60.00	2.51	45.00	6.18
	ACT	2.77	1.34	6.00	99.50	60.00	2.57	40.00	9.62
Electricity Transmission	Fed.	2.28 - 5.98	0.86 - 1.22	6.00	100.00	60.00	2.04 - 3.15	50.00	8.23 - 10.55
Gas Transmission	Fed.	2.41 - 3.44	0.92 - 1.59	6.00	100.00 - 150.00	60.00	2.16 - 3.21	50.00	6.30 - 10.55
	WA	2.69 - 2.77	1.10 - 1.36	5.50 - 6.00	106.50 - 120.00	60.00	2.55 - 2.69	45.00 - 50.00	6.60 - 6.99
Rail	Fed.	2.26 - 5.21	1.29 - 1.43	6.00	90.00 - 100.00	50.00 - 55.00	2.50 - 3.10	50.00	6.63 - 8.43
Ports	Qld.	5.84	1.30	6.00	100.00	60.00	2.50	50.00	9.02
Post	Fed.	5.50	0.30	6.00	74.00	30.00	3.25	50.00	8.70

Source: This information was collected from the regulators' websites. The full database with detailed information about all regulatory decisions is available at http://www.uq.edu.au/economics/staff/flavio_menezes/Price_Regulation.html.

There are differences in the treatment of efficiency savings – for example, efficiency carryover mechanisms are in use in the state of Victoria but not in other states, the rules for resetting the Regulatory Asset Base change across industries and so do the procedures for the determination of capital maintenance. It should be noted that these are very similar to the *'technical inconsistencies'* identified by Bolt (2004), with respect to regulation of infrastructure businesses in the UK.

I argue however, that it would be premature to conclude that these wide differences in approaches demonstrate a lack of consistency. Instead, the correct method is to determine the inconsistencies that remain after controlling for differences in the circumstances associated with particular decisions. Breunig, Hornby, Menezes and Stacey (2006) attempt to do so. They examined 52 regulatory decisions taken by different Australian regulators from 1998 to 2004 across the water, electricity and gas industries.

In particular, they explore the relationship between firms' revenue requirements and the regulator's allowable revenue determination as a function of variables such as the nature

of the industry, the regulator and the time period. That is, they are mainly interested in the difference between *Y* – defined as a firm's revenue requirements measured in dollars – and *MAR* – the maximum allowable revenue. For this purpose, they define the following unit-free variable:

$$y_t = \frac{Y_t - MAR_t}{Y_t}$$

where *t* indexes time. Note that in one extreme the regulator can set the maximum allowable revenue to exactly cover the firm's revenue requirement claims making $y_t = 0$. At the other extreme, the regulator sets the maximum allowable revenue to zero making $y_t = 1$. The table below is reproduced from Breunig et al.

Table 2: Mean of y by Regulator and Industry

Industry	ACCC	Vic.	NSW	Qld.	WA	SA	ACT	
Electricity Transmission	0.195							0.195
Electricity Distribution		0.146	0.080	0.017			0.093	0.092
Gas Distribution		0.096	0.115	0.088	0.054	0.146	0.137	0.103
Gas Transmission	0.139				0.448			0.221
Water			0.041	-0.040				0.022
	0.175	0.114	0.080	0.041	0.317	0.146	0.115	0.130

Source: Breunig et al. (2006).

The variable *y* is an objective measure of consistency and it is of course of relevance to regulated businesses. The relevant exercise is then to try to explain *y* controlling for the possibility that the behaviour of firms in gas distribution is different from the behaviour of firms in gas transmission, or in electricity, or water. Breunig et al also control for the possibility that different regulators behave differently, and allow their behaviour to change over time. Having estimated *y*, they then test whether they can reject the hypothesis that regulatory outcomes are consistent across industries and across jurisdictions. It turns out that outcomes are surprisingly consistent.

In particular, the authors show that regulatory decisions are reasonably consistent across the electricity and gas distribution industries. Moreover, they fail to reject the hypothesis that the regulatory outcomes in South Australia, New South Wales, the ACT and Victoria are similar. Importantly, more recent research (Breunig and Menezes, 2008) shows that this trend towards consistency has intensified over time and extends to other industries.

In summary, this section has reviewed the existing evidence that despite technical differences in regulation across industries and jurisdictions, regulatory outcomes may be consistent. This raises an important question, namely, what are the mechanism(s) that generate such consistent outcomes? This is discussed in the next two sections.

3. How can consistency be achieved?

There are at least three distinct mechanisms that might lead to consistent regulatory decisions. First, regulatory consistency can emerge from the appeal process. Regulated firms can often challenge regulatory decisions and appeal bodies and tribunals have a useful role to play in establishing some general principles. Whether or not this is achieved in practice is another issue.[5]

Second, regulatory consistency can arise from the merger of existing regulators. This was the approach followed in the UK with the establishment of OFGEM and in Australia with the establishment of the Australian Energy Regulator. Under this approach, given that decisions are made by a single regulator, consistency can be imposed from the top down. Of course, this is not to say that consistency will necessarily follow but simply that it is easier to implement consistency in decision making if the regulator so desires.

Third, consistency can be achieved by the three-step process described by Muris (2003) in the context of global convergence in competition policy. The first step consists of decentralized experimentation at the national or regional level. The second step involves the identification of superior approaches. The third and final step entails opting-in by individual jurisdictions.

I refer to the decentralised experimentation stage of the Muris' process as the pluralistic approach. The basic idea is analogous to the notion of Tiebout competition where jurisdictions decide the mix of public goods they offer in order to attract citizens.[6] Similarly, competition by regulators from different jurisdictions to design good regulation in order to attract investment could in principle lead to efficiency and, eventually, once the process runs its course, to consistent outcomes.

The idea that regulatory competition can lead to better outcomes than forced harmonization has been a subject of intense debate in the context of European integration[7], but it also features in many modern federations. For a general comparison between regulatory competition and directly coordinated harmonisation, the reader is referred to Deakin (2001) and Van den Bergh (1994). My aim here is somewhat different. I identify two basic reasons why a pluralistic approach might produce consistent decisions, but need not necessarily produce efficient outcomes.

The first difficulty in applying a pluralistic approach is that although regulatory decisions are often taken sequentially, there is often not enough time to fully consider the consequences of previous decisions. This follows from the nature of most infrastructure businesses where investment is lumpy and long-lived, demand is often relatively inelastic

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[5] See, for example, Bolt (2004) who discusses the role of the UK Office of Fair Trading and Competition Commission in inducing common regulatory practices. .

[6] Wooders' (1980) seminal paper shows how this type of competition can lead to efficiency in a similar vein to how competitive markets for private goods, in the absence of market failures, can lead to efficient outcomes.

[7] See, for example, Deakin (2001).

in the short to medium term but considerably more elastic in the long-run, and there is a high degree of uncertainty (e.g., driven by weather or rain patterns).

Thus, in practice, by the time a regulator from a regional jurisdiction has to make a decision, he or she can observe past decisions from other regional or industry regulators but not the full consequences of these decisions.[8] This means that a regulator's ability and opportunities to learn from other regulators' mistakes and correct decisions is limited.

The second difficulty arising from the pluralistic approach where many regulators search for the best approach, is that it ignores the incentives faced by regulators who might be self-interested. This idea is not new and dates back to Stigler (1971), in his model of regulatory capture.

Stigler argued that politicians might supply regulation in exchange for votes and money. In the same vein, firms demand regulation to increase profits. This can be accomplished in a number of ways. For example, by imposing taxes on others and using the proceeds to provide subsidies to the firms; by raising the cost of entry to other firms; by regulating producers of substitute products; and by regulating prices to eliminate price competition within an industry. Stigler explained that this process might work because the benefits are large and concentrated with a few firms and politicians and the costs are small and widely distributed among consumers/voters. Thus, even if the costs of regulation outweigh the benefits, regulation might still happen as a result of the inability or the high costs for consumers/voters to organise themselves to oppose it.

Posner (1971) extended the capture theory of regulation by arguing that politicians also use regulation to gain the support of other groups with influence, namely consumer groups and some factors of production (e.g., labour). This is accomplished by the regulatory pricing structure via cross-subsidies.

A major problem with applying the insights from Stigler and Posner – and from more recent approaches (e.g., Noll, 1989) – is that an important feature of the modern post-privatization regulatory environment that is present across countries is the existence of independent regulators. That is, a great deal of effort and time is spent in ensuring that the legal regulatory framework insulates regulators from the political process. This is accomplished by pre-determined terms and making it difficult to remove regulators. Often there are also appeal processes available to regulated firms that are also independent of political influence.

The key point, however, is that although modern regulators might be more insulated from the political process than past regulators, they face other types of incentives. Chiefly among these incentives are career concerns. In particular, regulatory decisions might

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[8] A similar argument can be used to cast doubt on the effectiveness of appeal processes on generating consistent high-quality regulatory decisions. Appeals are few and far between and by the time they are concluded, their relevance might have been diminished.

influence future job opportunities for regulators, which provide the mechanism for self-interested behaviour by regulators.

Note that this does not necessarily lead to a sinister interpretation that regulators might either try to favour regulated firms or to placate politicians in order to obtain a future job with industry or to be reappointed as regulator, respectively. Instead, regulatory decisions might simply provide an indication of the regulator's ability, talent or ideological inclination, which can then influence future employment prospects. What is crucial is that there is a feedback mechanism linking regulatory decisions to regulators' career concerns.

In the next section I summarise recent research that explores the implications for the quality of regulatory decisions when regulators make decisions sequentially, under incomplete information about the firms' true costs and economic environment, and when they are concerned about their future career prospects.

4. Regulators' career concerns and bad consistency

The nature of price cap regulation of infrastructure businesses is such that regulators have to come to a view regarding the regulated firm's appropriate revenue requirements for the next three to five years. As discussed above, regulators make such decisions under incomplete information about firms' true cost requirements and future economic environment. Moreover, regulators often make decisions fully aware of past decisions of other regulators in different regional jurisdictions or across different industries.

This section reviews some recent research that examines the effects on the quality of regulatory decisions when regulators make decisions under uncertainty and are concerned with how these decisions will affect their future career opportunities.

In particular, Menezes and Roessler (2008) examine a situation where two regulators make a decision on similar issues in a predetermined order. The decision is summarized by the choice of a single parameter. The socially optimal parameter is unobserved but both regulators do observe signals that are drawn independently from a known distribution. Importantly, the regulator who moves second can observe the decision and the signal received by the regulator who moves first.

Menezes and Roessler are interested in investigating what happens to the difference between the two decisions under different incentive schemes. That is, the authors want to investigate whether regulators, when faced with the same information, will arrive at the same decision. The benchmark case is that of the "public servant" regulator, who attempts to get as close as possible to the socially optimal decision. This is the case when the regulator that moves last will act in a socially optimal way. In this case, if identical signals are observed, then identical decisions will be taken.

The authors then consider a "copycat" regulator, who is interested in deviating as little as possible from the other regulator's decision, and a "yes man" regulator, who wants to implement a target decision that is favoured by government or interested lobbies. A copycat regulator might emerge when regulators are deemed to have performed well – and, therefore, will benefit from a positive career outlook – if there is no arbitrage between different policy regimes, or if there are public charges of unfairness and formal appeals on such grounds. Regulators who have arrived at the same decision might not be questioned even though that decision might have been the wrong one.

In contrast, a 'yes man' regulator might emerge from the standard revolving-door motivations, where regulators compete for future jobs at regulated firms by being soft. Similarly, a 'yes man' regulator might emerge when he or she wants to please politicians by taking a particular decision such as setting a low price while the optimal social policy might be setting a high price. That is, under both incentive models, bad consistency might arise as a regulator makes a decision not based on his or her information but rather to copy the other regulator or to please an outside party.

The incentives to arrive at the same decisions are mitigated by the threat of a penalty when a regulator's decision is too far from the socially optimal policy. This punishment may be in the form of a reputation loss, a career handicap, or even personal remorse. Hence regulators balance dual objectives. The objective of minimal deviation in decision making is unique to the two incentive models; the other, penalty avoidance, is common to all three models including the benchmark.

Menezes and Roessler show that decisions are more consistent under the "copycat" and "yes man" incentive mechanisms than under the socially optimal "public servant" approach. The intuition is as follows. When regulators try to make socially optimal decisions (public servants), the arrival of new information is likely to change the optimal decision, and the follower is expected to deviate a bit from the leader. When we add an inherent preference for consistency (copycats) or a specific policy (yes-men), the follower has an incentive to ignore new information and match the leader's decision, causing greater consistency. This is a clear manifestation of bad consistency; identical decisions by different regulators arise not because of their information but rather because of the incentives they face in terms of their career concerns.

The overall point is that one cannot be unguardedly optimistic about the observed trend toward consistency, since it is likely to be influenced by career concerns of regulators. Such incentives lead to suboptimal decision making that does not make enough use of the available information and/or is subject to bias. One would like to be able to detect these influences empirically, but identification is not straightforward. This is a line of research that is worth pursuing.

5. Conclusion

There are good reasons for requiring regulatory consistency. These include minimising opportunities for regulatory arbitrage and the resulting efficiency losses from distorted investment signals, and mitigating compliance costs for companies that operate across different industries and/or jurisdictions.

Consistency can be achieved in a number of ways. It can be imposed from the top down by the amalgamation of different regulators or by legislative fiat. The difficulty with this approach is that it requires a good judgement of what constitutes good regulation. A similar concern arises when regulatory consistency is achieved through an appeals process.

Consistency can also be achieved by a process of competition amongst regulators. This process relies on decentralised decision-making by different regulators across different jurisdictions and/or industries and convergence arises from observation of what works and what does not work. Above we summarised recent research that suggests that consistency might have emerged in the regulation of infrastructure businesses in Australia over the last few years.

In this paper we caution against unguarded optimism about the observed trend toward consistency. Recent research reviewed above suggests that such convergence might be influenced by the career concerns of regulators. This indicates that observed consistency might not be the result of the best use of the available information and/or is subject to bias.

The analysis presented in this paper suggests a potential paradox. The inherent difficulty in judging regulatory outcomes results in placing reliance on proxy measures that look at the characteristics of decision-making, where consistency is one of those proxies. However, it is precisely under those circumstances that consistency may not be a good thing as it can disguise other factors.

The overall conclusion is that a pursuit of consistency for consistency's sake should be viewed with caution. Instead, one needs to develop the analytical tools that will allow us to distinguish good from bad consistency in regulatory decisions.

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