Statement by Professor Martin Cave of Warwick Business School, University of Warwick, UK for Mallesons Stephen Jaques on Infrastructure Investment Consideration in relation to Telstra's Request for LCS and WLR exemptions.

1. Introduction

I have been asked by Mallesons Stephen Jaques to prepare a report answering the following question:

> 'would granting Telstra's LCS/WLR exemption be likely to encourage efficient investment in alternative infrastructure for the purposes of Part XIC of the *Trade Practices Act 1974* by removing the scope for reliance in those services?'

I understand that exemption may be made by the ACCC if it is satisfied that doing so will promote the long-term interests of end-users of carriage services or of services provided by means of carriage services, and that in reaching a decision regard must be had to whether an exemption is likely to result in the achievement of the following objectives:

> "(c) the objective of promoting competition in markets for listed services;
>
> ...
>
> (e) the objective of encouraging the economically efficient use of, and the economically efficient investment in:
>
> (i) the infrastructure by which listed services are supplied; and
>
> (ii) any other infrastructure by which listed services are, or are likely to become, capable of being supplied."

I understand that listed services include voice and broadband services.

I will seek to answer the above-noted question by reference to an approach to the analysis of incentives to infrastructure investment known as the 'stepping stones' or 'ladder of investment' hypothesis (the latter term will be used here throughout). According to the positive or descriptive part of this hypothesis, competitors challenge an incumbent by offering services which rely, as their market share rises, less and less on the incumbent's assets and more and more on their own. Thus, competitors progressively build out their networks closer and closer to their customers. This descriptive hypothesis is accompanied by a normative proposition, that regulators should use the instruments available to them to encourage this process. The underlying goal is thus to achieve the maximum feasible level of infrastructure competition, but falls short of encouraging inefficient entry.

The normative component of the 'ladder of investment' has been adopted by a number of regulators and governments: by the European Regulators Group (ERG) and by many national regulators in Europe, and by the New Zealand Government in its 2006 stocktake of telecommunications regulation and subsequent legislation. The ACCC

also has written of the benefits of maximising economically efficient infrastructure competition and of the role of the ladder of investment in achieving that outcome.[1] This is despite the fact that the ladder of investment theory remains no more than a hypothesis, as scientific testing of an imprecise proposition of this kind remains problematic.

In Section 2, I set out the approach in general terms, and in Sections 3-5, I show how it is applicable to the LCS/WLR exemption decision.

2. The ladder

In an earlier paper,[2] I set out how regulators can encourage infrastructure competition by creating incentives (positive and negative) for operators to build out closer to customers, investing in successively less replicable assets. This account is based on the normal circumstances in which access is sought by a competitor which has not already constructed an end-to-end network in the geographical area in which it is seeking access.

In summary, the steps involved – as set out in the earlier paper – are as follows:

Step 1: Rank replicable components of the value chain for relevant products by their ease of replicability as described above. This involves evaluating empirical evidence or modelling of cost structures.

Step 2: Identify where on the ladder all firms (incumbents and entrants) are now located, and choose a point on the ladder which a leading competitor might realistically attain. This imposes on the regulator the task of choosing the point on the ladder at which the intervention should still be applied. This decision will be based on an analysis of the scale and prospects of the operators at various points, with a bias in favour of what might be described as 'leading competitors', defined as those more advanced in their infrastructure building and satisfying a minimum market share criterion. The conventional ladder for broadband services, to which I revert below, is shown in figure 1.

[1] See the ACCC Fixed Services Review, second position paper, April 2007, p iii: '[economically efficient facilities-based competition] allows rivals to differentiate their services and compete more vigorously across the greater elements of the supply chain.'

[2] M Cave 'Encouraging infrastructure investment via the ladder of investment', *Telecommunications Policy*, 2007, pp. 223-237.

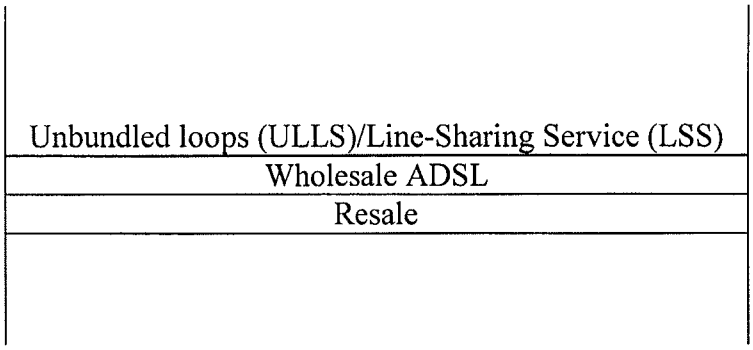

Figure 1.

Step 3: Having identified the rung in the ladder at which intervention should be focused, it is then necessary to determine the likely investment potential of actual and potential entrants at that point. In order to make this determination, the regulator will have to quantify the scale of the investment required by competitors to develop their infrastructure. This will require careful judgement.

Step 4: Choose the mode of intervention, which can be by price or quantity instruments -in other words, either based upon rising access prices (relative to costs), subject to a short transition period where necessary, or upon the projected withdrawal of mandatory access.

There is an extensive economic literature on when price and quantity instruments should be applied, focusing upon the damage which might arise from a mistaken intervention. Where replicability has already been accomplished, or is relatively certain, withdrawal of mandated access may be the better approach.

Step 5: Calibrate the intervention. If mandatory access ceases, that is equivalent to making a change in the price paid to the former, or a replacement, access provider to a commercially negotiated level. This would be infinite if access is not made available. The variable within regulatory control is thus the date on which mandatory access ceases.

If a price-based approach is chosen, this can rely upon the well-understood theory of option pricing, which is an extension of basic investment theory. According to that basic theory, investment will occur when its expected return is at least as great as the project's cost of capital, where that cost of capital includes an adjustment for risk. It may seem that an access charging regime based on long-run incremental cost (LRIC) plus common cost, using an appropriate asset-specific cost of capital, would then send the correct 'make or buy' signals to other operators. However, this ignores the fact that competitors whose access is mandated always have the option of continuing to buy. Undertaking an investment in conditions of uncertainty and sunk costs carries

a risk which makes the option of continuing to buy access more attractive, especially if the access product is available on favourable terms. To persuade a competitor to invest, the access price must cover the competitors' cost of supply and the value of the option.

Step 6: Make a credible commitment to the policy.

It is noteworthy that this approach requires active management by the regulator: it is not a policy of continuous 'easy access', but one of 'tough love' in which competitors are chivvied up the ladder by price incentives or the expectation of withdrawal of the more comprehensive access products corresponding to the lower rungs of the ladder. It is likely to be the case that competitors will have a natural incentive to delay investment as long as possible, particularly if they believe that access prices will continue to improve. Regulators will need to consider whether at some point a decision to cease mandating supply of a regulated access product may prove more effective.

Consistency in the management of the ladder is also important. Incentives to move up the ladder can be muddled if pricing for individual access services (i.e. separate rungs on the ladder) are re-set in isolation with limited analysis of their inter-relationship with the pricing of other services on the ladder.

3. The ladder relevant to voice calls and access

I now go on to show how the approach can be applied to the services for which an exemption is now sought. Most discussion of the policy is in relation to the promotion of infrastructure competition in broadband. However, the same approach can be used with voice calls, where the relevant ladder is as shown in figure 2.[3]

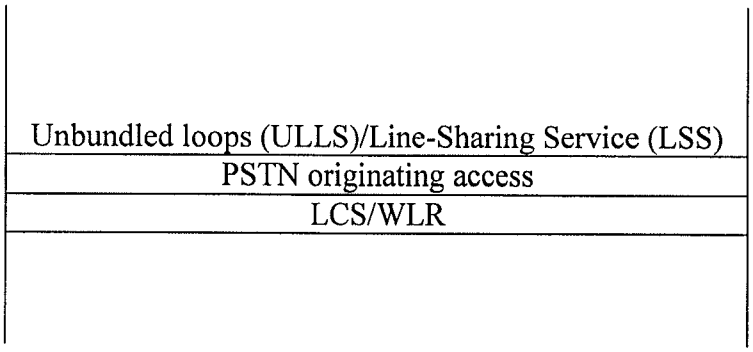

Figure 2.

In this ladder the most replicable activity is that of retailing local calls and access based on the equivalent complete wholesale products LCS and WLR. This supply involves a capability for billing and marketing in respect of which barriers to entry are very limited.

[3] Termination does not figure in this list as in the calling party pays world it is treated as a bottleneck service which a competitor cannot realistically aspire to provide.

The next rung comprises a wholesale PSTN-originating access service. This relates to the carriage of telephone calls from the calling party to a point of interconnection with an access seeker's network. I understand that such a service can be provided in the form of minutes or in the form of capacity. In Australia, the former version is generally utilised.

Alternatively, climbing a rung, a competitor can simply lease an unconditioned local loop service (ULLS) or a line sharing service (LSS). In this event, the access seeker will simply be leasing a passive component from the incumbent and providing the actual components of the origination and conveyance of the call itself. Whereas in some countries (notably Germany), ULLS has been used to provide analogue voice service alone, in Australia, those seeking access to local loops typically offer either an analogue voice service together with broadband, or offer VoIP calls as part of a broadband service provided over high frequency parts of the copper.[4]

Finally, a competitor can install an end-to-end network and become wholly independent of any rival in the provision of access or a call (except in respect of terminating calls on a competing network). The rival network can rely upon a variety of technologies, including HFC, fibre, and fixed and mobile wireless services.[5]

4. The nature of the proposed exemption

The exemption is sought (by two separate sets of applications) for a total of 387 exchange service areas (ESAs), each characterised by the presence within it of at least one ULLS-based competitor which has installed DSLAMs. I understand from Dr Paterson's report of 10 October 2007 that, as of August 2007, the percentage of the 371 ESAs, to which Telstra's original set of exemption applications applied, with at least 2 competitor DSLAMs present was 87%, and the proportion with three or more was 65%.[6]

Dr. Paul Paterson justifies the use of the "one DSLAM competitor" rule in the following way:

> 'I am of the view that there are strong economic grounds for an exemption threshold of one ULLS-based competitor in an ESA. That is, if one or more ULLS-based access seekers have installed a DSLAM at an exchange, then LCS/WLR should be exempt at that exchange....
>
> I come to this conclusion for two reasons:
>
> - The existence of a ULLS-based competitor clearly demonstrates that there are not material barriers to competitive entry by ULLS-based operators; and

[4] Paterson Statement 9 July 2007, p. 19; see also Telstra Submission July 2007, pp. 27-29 and [redacted] Statement, 25 June 2007, pp. 17-22.
[5] See Paterson Statement, 9 July 2007, p. 17.
[6] Paterson Statement 10 October 2007, p. 2.

- Economic analysis leads me to the reasoned conclusion that there are no material barriers to ULLS-based entry/expansion (consistent with the empirical observation that entry has actually occurred).'[7]

5. The proposed exemption viewed from the standpoint of the ladder of investment

The key question is whether competitors to Telstra need access to LCS/WLR in order to provide a level of competitive threat to Telstra in the provision of services to end-users which will protect such end-users from exploitation. The analysis should be made in a forward-looking way. If this condition is satisfied, then there is no need to mandate access as the market for the relevant access product (including self-supply where appropriate) is effectively competitive.[8]

Dr. Paterson's report identifies a number of potential suppliers of local calls and access to end-users.

End-to-end networks in this category include:

-Optus's HFC network, which is capable of providing end-to-end voice service to 195 of the 387 ESAs for which exemption is sought;[9]

-other HFC networks; [10]

-mobile wireless networks, providing 19.7 million lines and covering over 96% of Australia;[11] and

-fixed wireless networks, which have a wide coverage in metropolitan areas, and several of which offer VoIP service.[12]

In addition, a range of stand alone VoIP service providers are available to subscribers with broadband connection.[13]

These providers are in addition to the ULLS/DSLAM-based competitive services noted in Section 4 above.

In my opinion, all of these services are capable of providing a competitive constraint on Telstra as a provider of voice services, from either inside or outside the market.

From the perspective of the ladder, the issue for the Commission can be construed as deciding whether withdrawal of LCS/WLR as a mandated service in the exemption area will or will not impose short-term costs on end-users which outweigh the long-term gains to them to be expected from enhanced infrastructure competition.

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[7] Paterson Statement 9 July 2007, p. 40.
[8] This is one of a number of possible definitions of effective competition.
[9] Paterson Statement 9 July 2007, pp. 25-26.
[10] *Ibid.*, pp. 26-27.
[11] *Ibid.*, pp. 27-28.
[12] *Ibid.*, pp. 29-30.
[13] *Ibid.*, p. 29; see also Paterson Statement, 1 November 2007, p. 3.

In my opinion, while it is possible that in some circumstances, granting the exemption will cause inconvenience to some end-users, whose service may be withdrawn or altered, the retail market for fixed calls and access, and the wholesale markets which underpin it, have reached a stage where those losses are likely to be small, and where effective competition for the retail market can be anticipated with confidence, if the exemption is granted.

Reverting to the question which I am asked to address, I consider that granting the exemption will encourage infrastructure investment in the form of competitors building out to the local exchange and installing DSLAMs there. This will promote competition in voice services, where competitors will climb several rungs of the ladder set out in figure 2. It will also encourage infrastructure competition in the provision of broadband services,[14] as shown in figure 1 above, as the same investment will take competition to the ULLS/LSS rung in both ladders.

I thus conclude that granting the exemption has the capability of enhancing, and can reasonably be expected to enhance, infrastructure competition in the provision of both voice and broadband services.

Martin Cave
20 March 2008

[14] Which I understand are "listed services" under the Trade Practices Act.

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BA, First Class, Philosophy, Politics and Economics, Balliol College, University of Oxford, 1969

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Academic Employment to Date

1971-1974	Research Fellow, Centre for Russian and East European Studies, Birmingham University.
1974-1987	Lecturer and Senior Lecturer, Department of Economics, Brunel University.
1981-1982	Visiting Associate Professor, Department of Economics, University of Virginia.
1987 to 2001	Professor of Economics, Brunel University.
1988 to 1994	Head, Department of Economics, Brunel University.
1989 to 1994	Dean, Faculty of Social Sciences, Brunel University.
1994 to 1996	Pro-Vice-Chancellor, Brunel University.
1996 to 2001	Vice-Principal, Brunel University.
2001 to date	Professor and Director, Centre for Management under Regulation, Warwick Business School, University of Warwick.

Journals

Member, Editorial Board –

Economics of Education
European Journal of Law and Economics

Telecommunications Policy
INFO

Member, Advisory Board - *Communications and Strategies*

Advisory and Consultancy Experience for Government Organisations*

Appointed independent director of **UK Payments Council** (supervising the development of payment systems in the UK) 2007-2010

Appointed by **Department of Communities and Local Government** to conduct independent review of the regulation of social housing. 2006-7

Appointed special adviser to **the European Commissioner for Information Society and Multimedia**, 2006

Adviser to **OFGEM** from 2005

Appointed by **Chancellor of Exchequer** to conduct review of major spectrum holdings, December 2004- November 2005.

Adviser to **Lord Chancellor's Department** on legal deregulation 2004-5.

Vice-Chair, **Guernsey Utility Appeals Tribunal**, from 2004

Ofcom Spectrum Advisory Board (OSAB), Member from 2004.

Ofcom: Economic Advisor, from 2003

DEFRA regulatory task force, member, 2003

OFWAT Non-Executive Advisory Director, 2002 -2006

Appointed by **Chancellor of the Exchequer and the Secretary of State for Trade and Industry** to prepare an independent report on spectrum management, March 2001 – March 2002

Postal Services Commission: Adviser from 2000.

Civil Aviation Authority. Adviser 2000-2003.

Spectrum Management Advisory Group, DTI, member 1999-2003

French Ministry of Finance (1999) Member, Groupe d'Expertise, electricity grid pricing.

Competition Commission Member, (1996-2002).

Office of Utility Regulation (Jamaica) Economic Adviser **(1998-2000).**

OFGAS (1994 – 1999) Member of OFGAS Panel of Economic Experts, to advise the Director General of Gas Supply on a variety of economic issues relating to regulation of the industry.

Office of Fair Trading (1990-1992 and 1995-9) Acted as Broadcasting Adviser to the Office of Fair Trading in matters relating to the regulation of networking arrangements for the television

* Consultancy assignments from firms omitted.

industry (1990 to 1992). Adviser on BSkyB Inquiry (from 1995-96). Expert witness for DGFT (1998-1999).

French Ministry of Posts and Telecommunications (1991)
Member, Groupe d'Expertise – advisory committee on universal service and interconnection.

Ministry of Agriculture, Fisheries and Food (1993-1996). Adviser to the Ministry on appropriate procedures for tendering for the decommissioning of the fishing fleet.

HM Treasury (1986-1990) Economic Adviser undertaking advisory work on a consultancy basis for the Public Enterprise Analytical Unit and the Economics of Industry Division involving participation in the design of regulatory regimes for the water and electricity supply industries during privatisation. Secretary to an Inter-Departmental Group reviewing the discount rate and rates of return in the public sector.

Home Office (1985-1986) Consultant to the Committee on financing the BBC, chaired by Sir Alan Peacock. Advice on cost and revenues.

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