

managing or commercialising technological innovations, perhaps because until about 1983 the Australian economy was protected from international competition and few politicians were qualified or interested in science or technology. If this continues, Australia will become less competitive.

Other examples of Australian governments' technological policy mismanagement include:

*Digital radio:* now available in UK and US but not Australia except experimentally. Valuable digital spectrum has been given gratis to incumbent radio networks: a sure and certain way of stultifying innovation and new services.

*Digital television:* policy may well have been written by the incumbents. Governments, driven by fear of the proprietors' political influence, have preserved the incumbents' oligopoly, killing consumers' access to new technology and cheaper prices.

*Water resource management:* Governments appear to be much more concerned with the rights of people who possess water entitlements (often obtained for free). There is no sense of overall optimisation or recog-

nition that what happens in headwaters affects downstream residents.

*Old industries:* Governments support old industries with political clout (especially automotive and agricultural). Australia should be manufacturing *lasers and computer chips* not stamping out car parts designed by overseas owned companies.

**HOME OR NODE?**

A FTTH network has essentially infinite capacity and zero marginal cost of use. Social utility will be maximised if the marginal charge for use is zero. Free national phone calls are an obvious benefit for businesses and citizens. Building such a network is technically possible.

FTTN is an unsatisfactory halfway house. The network's speed and capacity is severely restricted by the old, copper technology used to connect premises to nodes. These limitations would make some high bandwidth applications (eg viewing television programs) difficult or impossible. Any FTTN scheme would grant Telstra a monopoly on the 'last mile'.

**Optical Fibre** is a technology that allows digital data to be transferred at very high speeds, facilitating new applications such as YouTube, Facebook, videoconferencing and access to global TV stations.

An Optical Fibre Network.

A **Fibre to the Home** network takes the optical fibre technology directly into the home or the business.

The lingo: **OF**

**OFN**

**FTTH**

# Roadblocks on the information superhighway

*Niloufer Selvadurai, Brent Salter and Peter Gillies* reconsider the telecommunications access regime

In order to maintain effective competition and innovation in the telecommunications sector it is necessary to regulate access to networks and services. To facilitate the entry of new players and avoid the inefficient duplication of telecommunications networks and infrastructure, it is necessary to require incumbent operators to provide access to those sectors of the network that display the characteristics of a natural monopoly. The form, ambit and operation of such regulation is however the subject of intense debate.

Of especial relevance to this discussion is effective access to the 'local loop.' The local loop describes the network operator's infrastructure connecting the local exchange and the premises of the end user. This connection is also termed the 'copper local loop'. Once a service provider has access to the local loop they are able to build their own connections to local exchanges where the copper pairs are terminated. The service provider is also able to invest in the

Telstra would be constrained only by the Australian Competition and Consumer Commission (ACCC).

Unconstrained, Telstra could charge excessive fees and do its utmost to hamper organisations providing services such as VOIP that threaten its revenues. Telstra habitually draws out and appeals legal challenges to its pricing policies and market power. It has been accused of changing its technology primarily to make competitors' complementary technology unworkable. The consequent lack of competition will stifle innovation manifest in new products and services.

The network should be used to give Australians free national phone calls and fast access to the internet. Cheap communication enhances democracy, social welfare, community involvement, and public discussion. Governments should encourage vigorous competition for equipment (handsets, mobiles, modems, PDAs, home networks etc) and services (internet access, e-commerce, movies on-line, video phones, always on telephony, e-education, e-health, mobile commerce, local commerce, VOIP, internet services etc) that use the infrastructure.

**WHAT WOULD IT COST?**

The Australian constitution allows the Federal Government to make laws pertaining to "Postal, telegraphic, telephonic, and other like services" (section 51 v) and "The acquisition of property on just terms from any State or person for any purpose in respect of which the Parliament has power to make laws" (51 xxxi). The latter section ostensibly allows the government to acquire Telstra's infrastructure. Ascertaining the infrastructure's value and "just terms" would be difficult and certainly entail protracted court proceedings. These difficulties would be exacerbated by Australian governments rarely having a majority in the senate (the upper house). A conventional takeover is likely to be cleaner and perhaps less politically hazardous than a compulsory acquisition.

The sums involved are superficially staggering. Telstra has a share market value of about \$A60 billion; the total initial acquisition outlay would comprise that \$60bn, a takeover premium of about \$5-10bn and the \$15-20bn cost of building a FTTH network, a total of \$80-90bn (about 7 per cent of Australia's Gross

A Fibre to the Node network terminates the optical fibre technology at nodes which then service 200 to 300 premises through the coaxial cable or copper wire (twisted pair) presently used to carry telephone conversations and data. Although schemes such as Asymmetric Digital Subscriber Line (ADSL) and ADSL2+ have been used to multiply copper's bandwidth, the number of subscribers and the distance from the node impact on speed.



**FTTN**

necessary switching technology to condition the copper and provide services across those copper wires to the customer.

In Australia, Part XIC of the *Trade Practices Act 1974* (Cth) creates a telecommunications access regime allowing parties to obtain access to declared services for the purpose of promoting interconnectivity and interoperability between carriers and service providers.

The 2005 amendments to Part XIC sought to refine the operation of the access pricing regime and the formulation of the long-term interests of the end users. The efficacy of the regime and appropriate regulation of high-speed broadband infrastructure and services came into question once again in 2007 with the release of the *Guidelines for High Speed Broadband Network and Infrastructure Proposals* by the Department of Communications, Information Technology and the Arts (DCITA).

The election of a new Federal Labor Government at the end of 2007, with its intention to put

broadband at the centre of its policy agenda, provides a further opportunity for the telecommunications access regime to evolve.

The purpose of this paper was to outline the operation of Part XIC of the Act and identify the critical limitations of the present access regime. The operation of the long-term interests of end users principle, the principles underlying the formulation of access pricing and the efficacy of dispute resolution procedures were examined in some detail. Finally, the *Guidelines for High Speed Broadband Network and Infrastructure Proposals* and the new Labor Government policy was examined in order to consider the continuing role of Part XIC in a telecommunications landscape that is set to be dominated by high-speed broadband infrastructure and services.

It is timely for legislatures to reconsider the operation of Part XIC of the *Trade Practices Act* as serious questions remain as to whether this section

National Product). The government might be consoled by arbitrage profits: Telstra's share price has declined appreciably in real terms since some tranches were sold. The estimated \$15-20bn needed to establish the network looks modest compared with Australia's expenditure on roads, highways, and subdivisions which totalled \$38.31bn from 2003 to 2005 inclusive.

The government would sell the retail and wholesale elements of Telstra retaining only the infrastructure. Financial analysts such as Morgan Stanley reportedly to believe that breaking up Telstra would increase its total stockmarket value by 20 per cent, but it is unclear how much each component would be worth.

There would be appreciable savings if all telephony operations (except those in thinly populated areas) were transferred from copper to OF. The copper comprising the old network and Telstra's 5,000 local exchange buildings could be sold. The substantial maintenance costs of the copper network (\$600m per annum) would be eliminated and administrative costs would be reduced.

The capital cost of replacing the Australia copper network with fibre (assum-

ing access to Telstra's ducts) is not precisely known but according to finance journalist Alan Kohler may be estimated to be "...between \$1,200 and \$1,500 per home connected, depending on the density." For commercial operators the cost is critically dependent on the 'take rate' (the proportion of premises that subscribe to the service; we have assumed a 100 per cent take rate because the proposed cost-reducing change will be compulsory, cheap and seamless). Other estimates with a 100 per cent take rate are \$US1,465 and \$US1,200-\$2,400.

Beside the CAPEX, administering and maintaining the network will cost an estimated \$50-\$100 per annum per premise. This is appreciably less than the cost of maintaining Australia's copper network, estimated as \$600m pa. Some administrative functions that, for copper network, require a technician's visit (a 'truck roll') can be performed remotely in a FTTH network.

The government should build the network and maximise public utility by charging a modest annual administrative fee of (say) \$50-\$100 – but *nothing for actual use*. This accords with the zero marginal cost of using the network.

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is fulfilling its objective of balancing the interests of industry and its need for commercial certainty and appropriate returns on investments with the long-term interests of end-users.

The 2005 amendments were a response to a regulatory regime that has been criticised as involving processes that are resource intensive, slow and inefficient, and for being susceptible to regulatory gaming. However, balanced against the desire for efficiency is the need for decision-making to be transparent and considered.

The Bill's focus is on achieving more timely access and affording interested parties adequate procedural fairness. In terms of objectives, the 2005 amendments seek to clarify that the risks involved in investment in infrastructure are relevant in

determining investment incentives. In terms of improving the operation of the telecommunications-specific competition regime in Parts XIB and

XIC of the *Explanatory Memorandum to the Trade Practices Bill* states:

"The key priority for the Australian Government has been to promote an open, competitive telecommunications market as an essential means of providing innovative and cost effective services for Australian businesses and consumers. The telecommunications-specific competition regime has been the primary mechanism for achieving this outcome. The Australian Government has adjusted this regime as necessary so that it keeps pace with changing technology and market conditions."

An entrepreneur building a FTTH would have to charge customers serious money to recover a \$15-20bn investment locking out poorer households, reducing take rates, and thereby increasing the capital cost per customer. Interminable arguments at the ACCC and the courts over competitors' access and what the network owner should charge competitors for network use would continue. It would be especially iniquitous for Telstra to own and control the network while competing with other telephony companies using it; vital infrastructure should be available on equal terms to all potential users. A huge FTTH project would be risky for a private investor as it might conceivably be superseded by a new (wireless?) technology.

Many authors point out that FTTH investments are likely to benefit from as yet unknown 'killer applications' and/or that reliance on wire-based technologies rules out many new applications and opportunities. All authors agree that fibre's operating expenses, comprising maintenance and administrative costs, are substantially less than those of wire or cable. Installing FTTH when housing estates are built is much cheaper than

retrofitting and some new Australian housing estates have been built with FTTH. The successful installation of OF in a greenfields housing estate in Victoria in 2006 reportedly increased the value of homes.

The number of occupied private dwellings in Australia in 2006 was 7,596,000. An unknown number of these are apartments in one building and would not require separate connection to an OFN. In June 2007 there were 2,011,770 actively trading businesses in Australia. Many associated businesses would operate out of one office and one building could contain the offices of many businesses. Assuming that there were 5,000,000 Australian premises and that the cost per premise was \$US1,500, the total cost of the national network would be a relatively modest \$8.5bn assuming that Telstra's ducts were available. This estimate is much lower than others in the public domain.

The exact capital cost of building an Australian FTTH network depends on policy choices and presently unknown costs. A network covering all Australian premises no matter how remote would be prohibitively expensive: connecting between perhaps 95 per cent

Australia's dominant, near-monopoly, telephony provider.

Telstra

Signifies any technology allowing rapid transfer of data

Broadband

In 2005 the government has examined the telecommunications competition regulatory regime again so that it remains adequate and appropriate to support and encourage competition. As a result of this review the government is making amendments to telecommunications-specific competition regulation to encourage greater investment in telecommunications infrastructure and to increase the effectiveness of the regime, through a quicker and more predictable decision-making process and enhanced enforcement options.

Although interim determinations have been possible in Part XIC since 1999, the 2005 amendments attempt to streamline the process. For example, the legislation now provides that it is not always necessary for the ACCC to consult parties when making or varying an interim determination. In addition, interim determinations can be extended by one year. In light of criticism regarding time delays, under the 2005 amendments the ACCC now

has power to make Procedural Rules regarding time frames for ACCC decision-making. Time frame limitations were introduced in 2002 but these recent changes give the ACCC greater discretion and flexibility to structure time frames in a constantly evolving telecommunications environment.

In regard to public inquiries, decision-makers have been able to hold public inquiries since 1997. Under the 2005 amendments, the ACCC has the power to make Procedural Rules regarding public consultation. The amendment allows the ACCC to consider variations to undertakings without having to again conduct a consultation process. The enactment of more discretionary procedures illustrates, as in the context of time frames, that legislators are attempting to be more flexible in order to adapt to industry needs.

It has been suggested that the 2005 amendments reflect the 'inherent tension between the extent of procedural fairness afforded parties and the speed of access decisions' and that the 'amendments to Pt XIC

and 98 per cent is more realistic. The total cost depends heavily on this choice as capital costs per premise increase with declining density. Another imponderable is whether the installer will have access to Telstra's ducts and (if so) Telstra's charges for access and use. Given that VOIP will immediately cannibalise Telstra's cash cow telephony business, the prospects of cooperation seem extremely remote. The initial cost would be reduced if local councils improbably allowed fibre to be strung on telephone poles instead of being buried. The capital expenditure required is declining with technology improvements, components' declining costs and deskilling of installation procedures. Avoiding digging trenches by threading fibre through sewers and/or drilling through suitable soils is sometimes practical.

### TELSTRA'S HISTORY

Until 1997, Australia's telephony was run by a government department that emphasised social goals such as a universal service obligation rather than business goals. Between 1997 and 2002 a conservative government privatised Telstra in stages through three public

offerings of shares. The privatisation was not 'clean'; Telstra remains encumbered by obligations to provide basic services cheaply to poor households and rural communities. In retrospect, the Telstra privatisation was a mistake. The share price has retreated by up to 50 per cent from the first tranche's sale price.

Telephony infrastructure is a natural monopoly; there is a good case for its public ownership.

Had Telstra remained government owned, government decisions on an OFN would have been better informed and less constrained. Australia has been pilloried because, compared with other OECD countries, its telephony and broadband services have higher than average costs (a local call is charged at 20 cents but the marginal cost is assumed to be no more than 1 cent) but lower than average capacities.

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Normally expressed in megabits per second (Mbps) is synonymous with capacity.

## Bandwidth

are largely a triumph of timeliness over procedural fairness.' Indeed, specific amendments regarding time limits and the streamlining of interim determinations and public consultation procedures suggests legislators are directly responding to industry concerns over time delays. It is encouraging that legislators are responding to industry's need to develop a flexible regulatory regime that is able to respond to the changing telecommunications environment.

However, it is still a concern that the 2005 legislative changes continue to adopt a 'targeted intervention' approach, that is, reform which is issue specific rather than comprehensive and industry wide. Proper consideration is yet to be given to the concerns outlined in the paper such as definitional ambiguities in relation to 'long term users,' 'end users' and 'reasonableness' criteria for establishing declaration status, obligations of access suppliers and access pricing principles. The ambiguity of the regulation of such critical issues fosters an environment of

uncertainty among both access providers and seekers. Therefore it is respectfully submitted that it is now appropriate for the government to conduct a detailed analysis of the efficacy and impact of Part XIC.

It is necessary to assess whether competition in the industry has reached a level where it would be appropriate for the industry to be governed by the generic provisions of the Trade Practices Act. If such a review reaches a similar conclusion as to the operation of Part XIC as has been argued, it would be appropriate to legislate to reduce the role of sector specific regulation in the telecommunications sector and allow the sector to be governed by the generic competition provisions on Part III of the Trade Practices Act.

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