IPA Backgrounder

Telecommunications in Regional and Remote Australia

by Tony Warren

In October of this year, the Telecommunications Service Inquiry report into service levels in the bush was released. The headlines flowing from this report were primarily to do with the implications for the full privatization of Telstra. The report, however, contains valuable insights into the angst that exists in rural Australia about the quality of traditional telecommunications services and access to newer services such as the Internet and mobile telephony.

This Backgrounder examines these service concerns. It suggests that, contrary to common perceptions, Australians living in rural and remote parts of the country have, in general, seen a dramatic improvement in their telecommunications service over the period since deregulation of the industry and the part-privatization of Telstra—although this service is still far from perfect.

The problem is, however, that people in the bush believe that their service levels have not gone up as much as in the cities. In some regions, this is undoubtedly the case. Very low expenditure on telecommunications services and/or very high costs of service, coupled with a host of market-distorting policies, limit the incentives that carriers face to service these markets.

This Backgrounder seeks to pin down the rural telecommunications problem that is causing so much public angst, why this problem exists and what should be done about it. It begins with an analysis of the available data on the country–city divide. Both the supply-side and the demand-side explanations for differences in service levels are examined and the Backgrounder concludes with a discussion of where policy-makers should be focusing their attention.

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INTRODUCTION

In a recent editorial in *The Australian* newspaper, Alan Wood highlighted a feature of modern Australian political life: an obsession with relative rather than absolute gains.[1] He was referring to the fact that middle-income Australians are discontented by the fact that, while their real income has gone up over the past two decades, it has not improved as much as the incomes of Australians at either the top or the bottom of the income scale.

In this Backgrounder, I will suggest that a similar problem is afflicting Australian telecommunications policy. Contrary to common perceptions, Australians living in rural and remote parts of the country have, in general, seen a dramatic improvement in their telecommunications service over the period since deregulation of the industry and the part-privatization of Telstra—although this service is still far from perfect.

The problem is, however, that people in the bush believe that their service levels have not gone up as much as in the cities. In some regions, this is undoubtedly the case. Very low expenditure on telecommunications services and/or very high costs of service, coupled with a host of market-distorting policies, limit the incentives that carriers face to service these markets.

In the lead-up to the next federal election, there is a real fear that politicians will engage in a bidding war to supply ever greater and more expensive advanced communications services to rural Australians. There is no guarantee that bids will remain within the bounds of sensible policy. It is unlikely that politicians will restrain themselves to the provision of advanced services to the needy or to such entities as schools and hospitals. Rather, on present form, we can expect untargeted assistance to everyone west of the Great Divide—be they pauper or billionaire. Such largesse is potentially extremely expensive and will inevitably be funded by people in the cities—rich and poor—through higher prices for telecommunications services.

This Backgrounder seeks to pin down the rural telecommunications problem that is causing so much public angst, why this problem exists and what should be done about it. It begins with an analysis of the available data on the country–city divide. Both the supply-side and the demand-side explanations for differences in service levels are examined and the Backgrounder concludes with a discussion of where policy-makers should be focusing their attention.

IS THERE A PROBLEM?

As this Backgrounder was being written, the Telecommunications Service Inquiry was meandering its way around Australia. In town hall after town hall, the members of the Inquiry were hearing detailed 'war stories' about the failure of the telecommunications industry—primarily Telstra as it is really the only carrier with any presence to speak of outside of the major metropolitan or regional areas—to deliver appropriate service levels.[2]

Putting aside the value of creating policy on the basis of a process which is tailor-made to elicit only problems rather than solutions, it is important to try to identify the systemic issues that underpin the significant level of concern that is apparent in rural and remote Australia.

Many of the complaints are highly specific and relate to failings on the part of individual service personnel. Some of these failings can be quite dramatic, such as an inability to fix a persistent fault for over six months. Other failings are much less serious, such as the common complaint about waiting in call-centre queues for operator assistance.

There are, however, three broad sets of issues that arise with great regularity as the major telecommunications concerns of rural and remote Australia:

- A lack of equivalent levels of access to what is known in the industry as POTS (plain old telephone services) or basic telecommunications services;
- A lack of equivalent levels of access to mobile services; and
- A lack of equivalent levels of access to advanced services such as high-speed data services.

Closer examination of these concerns is warranted. Although there is more than a grain of truth in each of the complaints, the issues appear to have been blown out of all proportion—particularly when the available evidence indicates that, far from getting worse, telecommunications service levels are improving dramatically. The real problem seems to be that expectations are rushing ahead of an ability to meet these expectations in anything like an efficient manner.

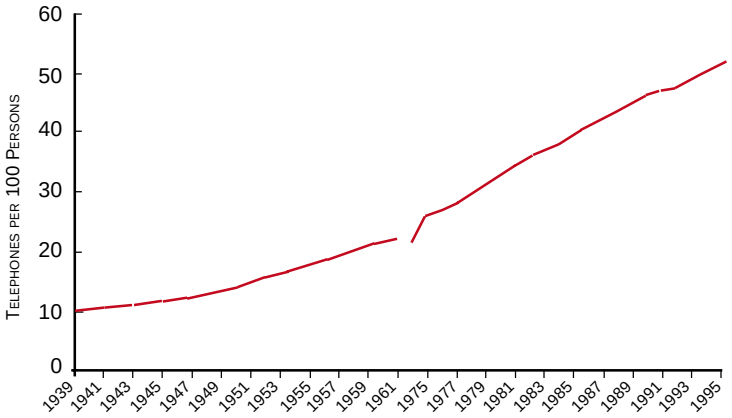
Basic Services: Prices

Basic services, or POTS, are the set of services that most people still think of when referring to telecommunications and essentially encompass access to the network and calling services. This set of services also roughly equates with the services that Telstra provides

subject to a regulatory price-cap and are the subject of increasingly stringent quality-of-service requirements known as Customer Services Guarantees.

People in rural and regional Australia overwhelmingly have access to the same basic services at the same price as their counterparts in urban Australia. The explicit policy goal of a universal telecommunications service was first detailed in Australia with the adoption of the 1960 Community Telephone Plan and has continued in subsection 288(1) of the *Telecommunications Act 1997*. This requires, *inter alia*, that 'the standard telephone service is reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business'. There is not a consistent, publicly available, data series that can be used to test directly whether this commitment has been met. Data from several sources, however, indicate that access to the network has indeed become ubiquitous in Australia (see Figure 1).

Figure 1: Telephones per 100 persons, Australia, historical series



Source: These data are drawn from Postmaster-General annual reports from 1939 to 1961 and from the International Telecommunications Union database from 1970 to 1996. The lacuna in the series 1961-1970 is a function of a change in surveying methodology.

Australia is now in the top 10 per cent of countries in terms of household access to the telecommunications network, with estimates ranging from 93 per cent to 98 per cent of households connected.[3] Interestingly, ABS data indicate that the rest of Australia records penetration rates greater than the capital cities, probably reflecting growth in the number of people in urban rental accommodation who simply use mobile services.

The vast majority of Australians pay identical prices for access and telephony services. They pay $13.85 per month for residential access whether they live in Randwick or Roma, Toorak or Taroom. This is not a function of rational pricing decisions—the costs of service vary by tens of thousands of dollars depending upon where the customer lives around Australia. Rather, identical prices are a function of the extensive price regulation that envelops the Australian telecommunications industry.

Many readers who thought that Australia had a deregulated telecommunications service may be surprised to know that:

> Telstra faces a CPI - 5.5% cap on a basket of eight basic services. It cannot increase prices beyond annual increases in CPI for a basket of line rentals and local calls and a basket of connection services. A sub-cap of CPI - 1% applies to a basket of services for residential customers. Revenue-weights for services in this basket are set at the average for the bottom 50% of residential customers by bill size. Line rentals for the bottom 10% of residential customers must not increase by more than CPI in one year unless the Australian Competition and Consumer Commission (ACCC) is satisfied that products or arrangements are in place to ensure that these customers' bills do not, on average, increase by more than CPI.
>
> Carriers are required to provide untimed local calls to residential and charity customers for all local calls and business customers for local voice calls. Telstra must not charge more than A$0.40 for untimed local calls from payphones or more than A$0.25 for any other untimed local calls. Until 30 June 2001, Telstra must also ensure that the average price for untimed local calls provided in non-metropolitan areas in a fiscal year does not exceed the average price levied in metropolitan areas in the previous fiscal year.
>
> Telstra cannot impose or alter a charge for our directory assistance services without the approval of the Communications Minister.

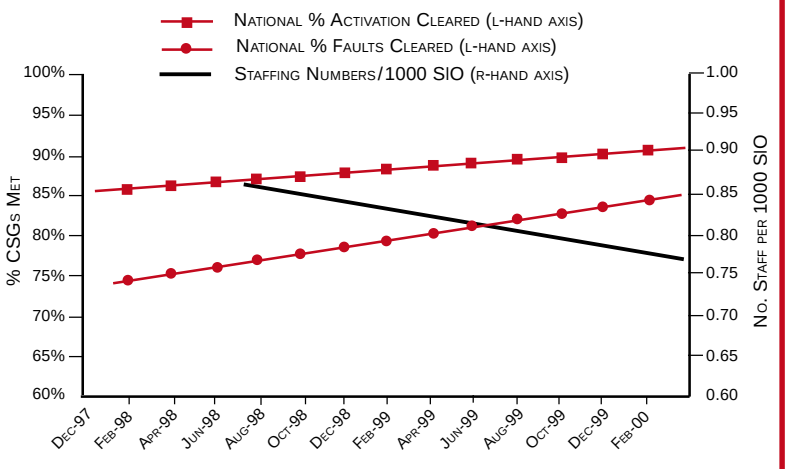
And those are just the retail price controls. The wholesale price control regime is Byzantine in its complexity.[4]

Of course some rural customers can legitimately point to differences in prices. For many years, the very remotest customers—primarily the approximately 30,000 connected to the network by radio rather than wireline—did not have an untimed local call service. Instead the Government provided them with a discounted timed service to nearby communities. This is all about to change, however, with some money from the sale of the second tranche of Telstra (in excess of

$100 million) being used to provide untimed local call services to everyone in Australia regardless of where they live.

Naturally, such regulated pricing has an impact on economic efficiency. The subsidization of rural consumers by urban consumers and of local call and access service by long distance and international services distorts calling patterns and imposes a deadweight loss on the economy. These costs are significant. In 1997, for example, the Productivity Commission estimated that the efficiency gains from rebalancing to be in excess of $400 million per annum.[5]

Figure 2: Trends in Activation and Assurance Performance and Employment, December 1997 to March 2000



Source: from Telstra, 'Submission to the Telecommunications Service Inquiry', 31 May 2000, figure 6.

Basic Services: Quality

So if it is not the price of basic services that is the problem for rural consumers (as opposed to the economy as a whole), what is it? Well, in recent years, it appears to have been quality of service that is the real source of concern. Degradation in service quality has been a hot political issue in Australia since the mid-1990s, with particular angst being expressed since the part-privatization of Telstra. Opponents of competition and/or of the privatization of Telstra argue that service quality in the bush has declined over the 1990s in direct response to the introduction of competition and to Telstra's partial privatization. This problem, they believe, will be exacerbated by the full privatization of Telstra.

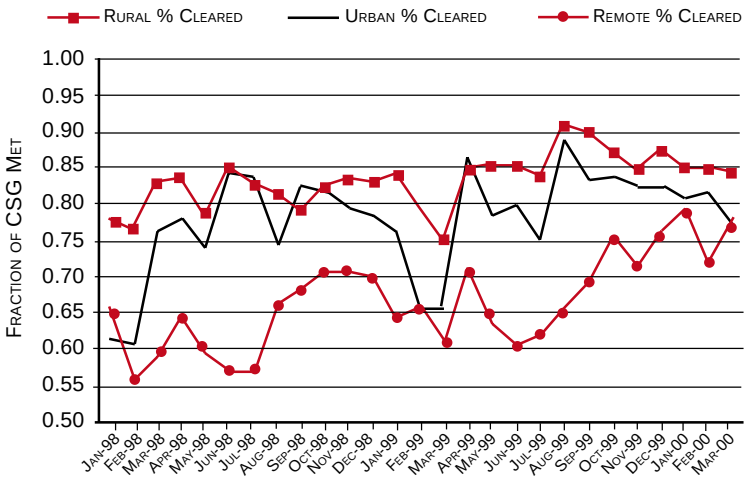
In particular, there is great concern that falling levels of direct employment by Telstra have led to a decline in service quality. This assertion is completely unsupported by the facts. Between January 1998 and March 2000, employment levels in Telstra's field force have been declining steadily with a total fall in staff numbers of approximately 9 per cent. During the period January 1998 to March 2000, the data on measured service quality performance have been trending upwards.

Figure 2 illustrates this fact by superimposing the employment trend line on the regulated performance measures (CSGs) of fault clearance and new service activation trend lines.

It seems that the relationship between service quality and increased competition is not quite as simple as the opponents of deregulation and privatization would like us to believe. Although it is popularly asserted that service quality declines in the face of competition as firms seek to reduce costs, in reality, firms tend to compete on quality as well as price. What does happen, however, is that firms will seek to provide a level of quality that is consistent with what consumers are willing to pay. This can result in lower levels of observed quality after deregulation as some of the network gold-plating that can often be seen in regulated monopolies is removed when competition is introduced.

Nevertheless, in response to sustained political pressure and the need to shore up rural electorates, the Federal government has imposed some of the strictest quality of service standards in the Western world—

Figure 3: Fault Clearance Data by Exchange Type, January 1998-March 2000



Source: from Telstra, 'Submission to the Telecommunications Service Inquiry', 31 May 2000, figure 2.

the so-called Customer Service Guarantees (CSGs). This highly bureaucratic instrument requires all licensed carriers to report quarterly to the Australian Communications Authority (ACA) data on such things as the number of faults cleared and the number of requests for new services connected within regulated timeframes.

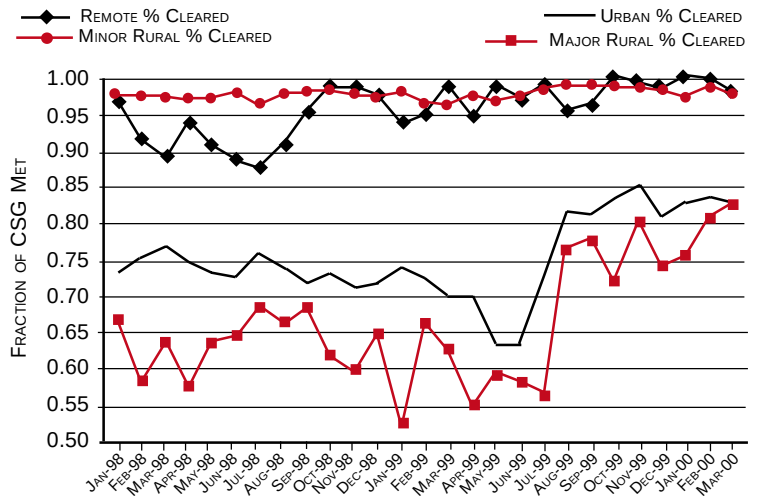
Failure to meet these standards results in penalties that appear quite high, particularly when one considers that residents in Sydney who had contaminated water for a number of weeks received a $15 rebate. Customers in Victoria who were without gas for a matter of weeks received no compensation whatsoever. In contrast, in telecommunications, CSGs are even payable in relation to a failure to connect on time such discretionary features as voicemail.

Given such a regime, it is hardly surprising that performance levels are rising as indicated in Figure 2 above. Importantly, for the purposes of this Backgrounder, the data seem to indicate that the greatest increase in measured performance has occurred in rural and remote exchange areas. Figure 3 details the percentage of faults in the Telstra network cleared within regulated timeframes by exchange type over the period January 1998 to March 2000. All three exchange types have experienced notable improvements over the period, with the most dramatic improvement in performance recorded in remote exchanges, which now equate with urban exchanges in terms of performance levels. Moreover, rural exchanges have consistently outperformed their urban counterparts.

Similarly, Figure 4 details the percentage of new service requests in areas where infrastructure *is not* available, which were met by Telstra within regulated timeframes, by exchange type over the period January 1998 to March 2000. The data indicate that Telstra's performance has been good and improving for minor rural and remote exchanges, with 95 per cent to 100 per cent of connections undertaken within CSG timeframes. Moreover, while average performance has been significantly lower for major rural and urban exchanges, the rate of improvement is high, particularly for major rural exchanges where average performance increased from between 50 per cent and 60 per cent to about 83 per cent.

In summary, the concern in Australia should focus less upon declining service levels in the bush—if anything, they seem to be rising more quickly than in urban areas. Rather, the concern should be at what cost this is being achieved. The CSGs appear to have been set on a purely arbitrary basis with no evidence produced that these standards are achievable under the conditions prevailing in Australia. No less importantly, these standards and the attendant penalties are not based on any systematic cost–benefit analysis, in which the cost of the resources needed to achieve these goals is weighed against the benefits that their achievement would provide. Rather, the CSGs have been set on the basis of administrative and political considerations, with no obvious link or reference to broader efficiency goals.

Figure 4: New Service without Infrastructure Data by Exchange Type, January 1998–March 2000



Source: from Telstra, 'Submission to the Telecommunications Service Inquiry', 31 May 2000, figure 5.

Mobile Services

Moving beyond POTS, another common source of complaints about rural telecommunications concerns access to mobile services. In the early 1990s, as part of its inducement package to get additional mobile operators into the Australian market, the then Federal Government mandated the shutdown of the analogue mobile phone service (AMPS) by 1 January 2000.[6] As a consequence of this folly, Australia lost a technology which is ideally suited for the provision of mobile services in remote geographical locations. Unlike digital services, analogue has significant scope for fortuitous coverage as the signal has a less defined distance cut-off point—the signal just fades rather than stops. Consequently, achieving equivalent geographical coverage with a digital technology requires significant additional investment in mobile base stations—roughly four GSM base stations are required to provide coverage equivalent to one AMPS base station—with negligible offsetting increases in revenue.

Late in the 1990s, a partial technological fix was found in the form of CDMA (or Code Division Multiple Access). CDMA is a digital technology very suited to replacing the AMPS network. The coverage and spectrum efficiency of CDMA minimize the need for additional base sites, making it more cost-effective in remote areas when compared with GSM. The Government duly forced Telstra, as part of its licence conditions, to invest in a CDMA network that would provide equivalent coverage to the AMPS network. Six hundred million dollars later, the ACA has just concluded that equivalent coverage has been achieved—CDMA coverage at least equates with the AMPS network before shutdown.

The problem is, however, that this is still far from ubiquitous coverage. Ninety-six per cent of the population may live within CDMA range, but large chunks of the Australian landmass (about 90 per cent of the total country) and 4 per cent of the population are out of reach. For these customers, satellite mobile services are the only available technology.

Economically, this makes perfect sense. The revenue generated can never justify the costs associated with serving such sparsely populated areas with terrestrial base stations. Achieving coverage of the final 4 per cent of the population using CDMA has not been formally costed. However, given the population densities of these final 4 per cent it could prove very costly indeed, with one base station per customer being required in many instances. It could easily cost more to service the final 4 per cent than it has cost to provide coverage to the 96 per cent of the population who are currently covered. Politically, however, the calls are becoming more persistent—'why can't I sit on my tractor outside Muckadilla and talk to my clients, just like city executives sit in their cars in Kew and talk to their clients?'. In such discussions, commercial reality seldom raises its head.

Data Services

Similar concerns are commonly expressed in relation to access to the Internet. Recent ABS statistics on household usage of the Internet have led to some breathless discussion in the media about a growing digital divide between urban and rural Australia. It appears that people living in non-metropolitan parts of Australia are less likely to access the Internet from home than are their counterparts in the cities (see Figure 5). For many commentators this was further evidence of the abject failure of the telecommunications industry to service regional Australia. Surely it must be failings in the markets for the supply of communications services that are responsible for differential take-up of the Internet?

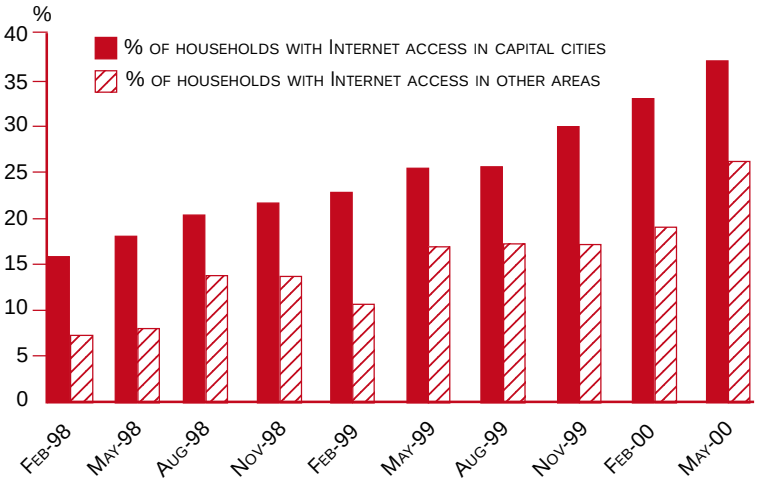
Unfortunately for these commentators, the evidence suggests quite strongly that supply-side issues really are not that important in explaining the digital divide between city and country.

At present, most Australians access the Internet by dialling their Internet service provider's (ISP) local point of presence (essentially a bank of modems). For this service they generally pay a fee to the ISP and an untimed local call charge. Many rural and regional consumers have access to a local point of presence, as there are very few barriers to the establishment of such facilities. Evidence from the United States, for example, suggests that a minimum of 200 subscribers is sufficient to meet efficient levels of scale for a point of presence.[7] While there were only 62 ISPs in Australia in 1995, there are now over 700 with points of presence in hundreds of towns around Australia.

For those rural consumers without access to a local point of presence, several major service providers offer '13' or '019' numbers that incur a local call charge. Access to this local call charge point of presence typically entails a fixed fee that is only marginally higher than that imposed on consumers in metropolitan areas. In short, the price of access to the Internet is not a major determinant of the disparity between rural and urban consumers in terms of Internet usage.

A much more legitimate concern on the part of rural consumers is the speed at which they can download content (or even e-mails). The almost ubiquitous rollout of the fixed telephony network means that virtually all consumers with the appropriate computing

Figure 5: Household Usage of the Internet (% of Total Households by Region)



Source: ABS, *Use of the Internet by Householders*, 8147.0, February 1998 to May 2000, 2000.

facilities can access the Internet using the PSTN. However, the speeds at which data can be transferred from the customer's premises to the local exchange differ radically across the country.

Data transmission is possible over the PSTN up to a theoretical maximum speed of 56 kbps where the customer lives close to the exchange, the network is in optimum condition and there is no congestion. For many consumers in both urban and regional Australia such ideal conditions are rare and actual access speeds below 28.8 kbps are common. The average speed of Internet access in cities is estimated to be just over 20 kbps.

Lower transmission speeds in parts of rural Australia are common and are primarily a function of the distance that some rural consumers are from the local exchange. Put simply, as the length of the access line gets longer, the weaker the signal and the increased possibility for electromagnetic interference from outside sources. There are also a number of access technologies, such as radio systems used in parts of remote Australia, that have much lower maximum data rates than are achievable over the copper pairs used by most Australians.

Replacing the access technologies that limit data speeds is a potentially very costly exercise. The ACA Digital Data Report in 1998, for example, estimated that to make available the technology to allow ISDN services to the 3.7 per cent of the population that currently do not have such access would cost $2.495 billion. Including ongoing costs, the ACA calculated annual costs to be $8,190 per customer. The new high-speed data service (ADSL) which is currently being rolled out in urban Australia encounters similar attenuation problems and again will only be economically feasible in a sub-set of Australian homes.

It appears, therefore, that in data speeds we have an issue where significant differences do exist between some folk in the bush and the rest of the population in the cities and towns of Australia. There is every reason to believe, however, that this problem will disappear over the medium term as access technologies change and more and more consumers migrate to broadband services.

The public network was not designed for data transmission. The access technologies that link all Australians with the network were designed to carry voice traffic only. In many instances, upgrading these technologies for data purposes does not make economic sense. Instead, customers will increasingly migrate to new broadband technologies to achieve the data rates necessary for an increasing number of online services. Carriers are increasingly in a position to offer standardized broadband services to all Australians at standardized prices. The technology may differ—satellite in the bush, ADSL in the smaller centres, cable in the big cities—but the customer will be indifferent.

Moreover, the evidence suggests that supply-side issues are not really the binding constraint on the take-up of Internet services in rural and regional Australia. A recent analysis of the ABS data on household use of information technology confirms the overwhelming importance of socio-economic factors such as education and income as the primary determinants of Internet usage in the home.[8] Rich, well-educated folk are far more likely to use the Internet from home than are their poorer, less-educated counterparts. Importantly, this pattern holds right across Australia, regardless of geography. Internet usage levels are about the same in Bowral as they are in the eastern suburbs of Melbourne. The south-western suburbs of Brisbane display usage patterns that are similar to those of the La Trobe Valley in Victoria.

The reason why we see a digital divide in the average figures between the bush and the city is a simple function of the fact that there are, on average, more poor and less well-educated people in regional Australia than there are in the cities. If these socio-economic disparities were addressed, much of the wind would be taken out of the digital divide sails.

WHAT CAN BE DONE?

It is possible to summarize the above factual discussion by noting that there are some issues in the bush but a close look at the evidence does not suggest that the problems are as dire as some commentators would have us believe. In terms of POTS, concerns about quality seem increasingly misplaced, while rural consumers appear to be the major beneficiaries of price regulation to the detriment of the rest of the economy. In terms of access to advanced services, the vast majority of Australians have access to a terrestrial mobile network and usable dial-up data speeds. For the small number of Australians for whom access to such services is problematic, alternatives in the form of satellite, mobile and broadband data services are now readily available and are increasingly an economically viable substitute.

Faced with these facts, what should policy-makers be doing? Ideally they would focus their attention on reforming the system of regulation that envelops the telecommunications industry. Reform of the system of price regulation would help. In addition to the allocative efficiencies that would be achieved from re-

moving such cross-subsidies, there are likely to be significant dynamic efficiencies as efficient investment is induced by a price system that is allowed to operate freely. There is also significant scope for reform of the service quality regulations that operate as a significant disincentive to competition in regional Australia by increasing the costs of providing services.

In reality, the need to pander to the rural constituency coupled with the politics of Telstra privatization in the Senate mean that such reforms are effectively off the political agenda. Instead there is likely to be significant pressure to deal with the advanced services problem—how can we ensure that the full 100 per cent of Australians have access to mobile services and dial-up Internet access? These are dangerous questions when politicians feel they have a pot of money available from the proceeds from the final sale of Telstra.

As noted above, wholesale upgrades of fixed network access technologies or an extension of the terrestrial mobile network are very expensive propositions. Such responses are also a waste of taxpayers' money. Many consumers who would benefit from such a scheme can afford the commercially available alternatives. Surely we can think of much better ways of spending scarce public resources than giving millionaire cotton farmers a subsidized mobile phone service? How about computers in every rural school? Moreover, for many people in rural Australia such expenditure is completely wasted. At best, only one in four households use the Internet (and they are the richest households at that). The three in four households that do not use the Internet should be less than happy about helping to pay for this subsidy.

If political science has taught us anything, however, it is that irrational policies have a great chance of getting up if the direct beneficiaries are well organized and those that pay the bills are dispersed. Unfortunately, this means that we are more than likely to see huge sums of money splashed around after the next election to deal with a minor problem in an inefficient manner.

Endnotes

1 Alan Wood, 'Envy Perverts Search for Equity', *The Australian*, 20 June 2000, page 13.

2 The final report of this process was released in October 2000 (see www.telinquiry.gov.au)—each of the key issues examined in this Backgrounder was discussed at length in that report.

3 ABS, *Household Use of Information Technology*, 8128.0, 2000.

4 See the Productivity Commission Website, www.pc.gov.au for the issues paper and submissions associated with the Commission's review of the telecommunications access regime. The complexity and associated scope for rent-seeking from this regime are phenomenal.

5 Productivity Commission, 'Telecommunications Economics and Policy Issues', *Staff Information Paper*, March 1997, Chapter 8.

6 In response to concerns about coverage, in November 1999 the Government decided that full closure of the analogue network would be delayed until the end of 2000. Specifically, an announcement was made that, of the 400 analogue base stations that were still in operation:
- 130 would be closed on 31 December 1999 (in effect, those in metropolitan Australia);
- 135 would close on 30 June 2000; and
- the remainder would close on 31 December 2000.

7 S. Greenstein, 'Universal Service in the Digital Age: The Commercialization and Geography of US Internet Access', *NBER Working Paper*, No. 6453, March 1998.

8 See O. Hellwig and R. Lloyd, August 2000, 'Sociodemographic Barriers to Utilisation and Participation in Telecommunications Services and Their Regional Distribution: A Quantitative Analysis', NATSEM, www.natsem.canberra.edu.au/pubs/netaccess-barriers.html.

About the Author

Tony Warren is a principal at the Network Economics Consulting Group, where he has provided economic and regulatory advice on trade practices issues to a range of major telecommunications and transport companies in Australia, New Zealand and South-East Asia. Recently, Dr Warren has provided advice to Telstra on the issues before the Telecommunications Service Inquiry and the Productivity Commission Inquiry into telecommunications specific competition regulation. Dr Warren has a PhD from the Australian National University and a BA (Hons) and BComm from the University of Queensland.

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