

**Report for Optus**

A critique of the expert  
report prepared by Dr  
Derek Ritzmann for  
Vodafone Hutchison  
Australia

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# 1 Executive summary

Analysys Mason has been commissioned by Optus to prepare a response to “Domestic Mobile Roaming Declaration Inquiry, Expert Report” by Dr Derek Ritzmann, as provided as Annex 1 to Vodafone Hutchison Australia’s (VHA’s) submission to the inquiry being held on this matter by the Australian Competition and Consumer Commission (ACCC). This paper sets out our response to Dr Ritzmann’s submission, and provides our critique of its key arguments.

Central to Dr Ritzmann’s submission is his view that 20% of the Australian population (those in the least densely populated areas), lives in areas that are a natural monopoly for the provision of mobile telecoms services. He also argues that a further proportion of the population live in areas that, while not natural monopolies, are likely to be non-contestable for a second infrastructure-based operator. This is because, although an existing operator with sufficient scale and an established market share could operate a viable business in these areas, a new operator would not generate sufficient cashflow to cover the risks, fixed costs and investments required to reach a viable scale. Dr Ritzmann uses a discounted cashflow model that calculates, for each SA3, whether a new mobile entrant could launch a service with a positive net present value. He uses cost and revenue assumptions based on VHA’s historical costs and revenue per customer.

We disagree with Dr Ritzmann’s methodology, assumptions and conclusions. First, we disagree with his use of SA3 areas as the unit for analysis. SA3 areas are large, and number approximately 330 across the whole country. Dr Ritzmann’s assumption that the entire population of an SA3 is a natural monopoly if his calculation finds investment to be unviable results in an overstatement of the Australian population which lives in natural monopoly areas. An example of this is the Goldfields SA3, which includes the town of Kalgoorlie. Dr Ritzmann finds this SA3 to be a natural monopoly and extends this conclusion to the ‘last’ 10% of the population, despite both Optus and Vodafone having sites, retail shops and customers there.

We also disagree with several assumptions made in his modelling:

- It is not appropriate to use VHA’s historical costs as a basis for calculation. In practice, Optus and VHA would most likely invest in partnership, thus reducing the cost of investment
- VHA has a lower average revenue per user (ARPU) than the rest of the market and so it would be more appropriate to use an average ARPU (or even that of Telstra, given it should command a premium to recover the costs of providing remote coverage)
- It is not appropriate to assume investment by a new-entrant operator. In reality, all three Australian network operators have established businesses, with some presence in each SA3.

The result is that, whilst Dr Ritzmann finds that 20% of the population live in a natural monopoly area, in reality, according to statistics provided in VHA’s submission, only 1% of the population have coverage only from Telstra.

Dr Ritzmann argues that the existence of a single national price means that a Telstra monopoly in remote areas will reduce competition in metropolitan areas. That is, there is a group of metropolitan customers for whom remote coverage is so important that they face a Telstra monopoly when buying a mobile service. Dr Ritzmann has effectively defined two separate mobile telephony markets – people for whom remote coverage is absolutely necessary, and people who are prepared to forego remote coverage (i.e. decline Telstra’s greater coverage entirely, since remote coverage is not a customisable element of Telstra’s mobile offering) for lower price or other factors.

We disagree with this conclusion. There are many reasons for selecting a particular MNO, including coverage, and customers make decisions based on a combination of factors. These include extent and depth of network coverage and quality in metropolitan areas, price, data speed, brand strength, and bundling with other services such as fixed broadband or TV. We show that a significant proportion of Telstra’s market-share advantage coincides with the loss of customers by VHA when it experienced network quality issues from 2010 and 2011.

Finally, Dr Ritzmann discusses the impact of regulating national roaming. He argues that national roaming regulation will result in improved allocative efficiency, with Telstra’s rural network becoming better utilised, as the claimed increase in competition in remote areas will bring new customers into the local market. He also argues that regulation will result in improved dynamic efficiency, as roaming will make it possible for other operators (“new entrants” in the local area) to build up sufficient scale to make an infrastructure-based investment feasible. This effect is referred to as a “ladder of investment”.

We disagree with both of these points. First, it is not correct to say that national roaming regulation will improve allocative efficiency in remote areas. Australia has a mobile penetration well over 100%. As a result, it is likely that there are no potential new customers within or near the footprint of Telstra who are yet to join the market. National roaming regulation would most likely simply increase churn at the retail level, as existing customers switched between networks.

Second, the “ladder of investment” argument does not hold if national roaming regulation is perpetual or has a realistic likelihood of being extended in a future declaration review. An irrevocable sunset clause to the regulation would be required for an access seeker to definitely plan for its own investments (or agree a commercial roaming agreement) in order to maintain service for its customers using roaming. An access price set at a low level today, sufficient for access seekers to earn a margin on national roaming compared to national-average retail prices, will always be less than the cost to invest and self-supply. Evidence from the European Union (EU) fixed broadband market bears this out. In the EU, local loop unbundling (LLU) regulation has been in place for many years, requiring incumbents to provide alternative operators with wholesale access to the monopoly copper last mile. In most countries, alternative operators have entered the market, investing in local exchange electronics and core networks, but none has invested in copper access infrastructure. However, more recently, alternative operators have invested in next-generation access infrastructure, encouraged by the lighter-touch ‘margin-squeeze’ regulatory regime recommended by the European Commission (EC) for next-generation wholesale broadband access.

## 2 Introduction

The ACCC is currently running a declaration inquiry into national roaming, a wholesale service where the customers of one mobile operator use the radio access network of another mobile operator in certain areas of the country. The ACCC is soliciting industry views on whether national roaming should become a declared service.

Analysys Mason has been commissioned by Optus to prepare a response to “Domestic Mobile Roaming Declaration Inquiry, Expert Report” by Dr Derek Ritzmann, as provided as Annex 1 to Vodafone Hutchison Australia’s (VHA’s) submission to the ACCC’s inquiry. This paper sets out our response to Dr Ritzmann’s submission, and provides our critique of its key arguments.

In this paper, we frequently refer to the geography of Australia and its relationship to mobile network economics. In doing so we use the following terms:

- *Metropolitan* areas are defined as the six state capitals plus Darwin and Canberra, and surrounding suburban areas.
- *Regional towns* are defined as towns outside the defined metropolitan areas with a population greater than 1000 inhabitants
- *Remote* areas are defined as any location not falling into the previous two categories.

The remainder of this document is laid out as follows:

- Section 3 provides our critique of Dr Ritzmann’s discussion of natural monopoly
- Section 4 provides our critique of Dr Ritzmann’s discussion of spillover effects
- Section 5 provides our critique of Dr Ritzmann’s discussion of the impact of declaration
- Section 6 includes a CV for our key contributing expert.

### 3 The discussion of natural monopoly is flawed

Central to Dr Ritzmann's argument is his view that a proportion of the Australian population lives in areas that are a natural monopoly for the provision of mobile telecoms services. In this section, we examine this view in detail and conclude that Dr Ritzmann's argument, methodology, and findings are flawed.

#### 3.1 Dr Ritzmann's argument and methodology rely on a financial model provided by VHA

Dr Ritzmann identifies four categories of geographical area, based on the economics of building and operating a mobile network:

- areas where no operators are viable, where the density of demand is so low and costs so high that "not even a single monopoly supplier would be economically viable and profitable"
- natural monopoly areas, where "a single firm can serve that market at lower cost than any combination of two or more firms"
- areas "where a second infrastructure-based operator may be viable to operate, once that operator has reached sufficient scale and market share, but where competitive entry is nevertheless unlikely or will be limited". This definition reflects Dr Ritzmann's view that although an established operator with sufficient scale and market share would be viable, the fixed sunk costs associated with infrastructure-based investment, combined with the time horizon and uncertainty of reaching a minimum viable market share, mean that entry is unlikely, even if it might be economically viable in the longer term
- areas that are contestable and have sufficient demand density to support multiple mobile operators.

Dr Ritzmann concludes that 20% of the population of Australia live in areas of natural monopoly, primarily based on application of the economic model applied to just two SA3 areas in Australia. Dr Ritzmann also concludes that a proportion of the population live in the third category – that is, areas where a second infrastructure-based operator may be viable, but entry is unlikely due to the high fixed sunk costs required. He does not quantify this population.

Dr Ritzmann uses a financial model built by VHA to justify his argument. This model is understood by us to be a traditional discounted cashflow model. It calculates the viability of a new entrant operator rolling out coverage in each SA3 area. It does this by making several assumptions about the new entrant and market development in the SA3, and calculating the free cashflows of the investment on a standalone basis. This model makes several broad assumptions:

- Assumptions of market-share growth are taken from benchmarks of *new* entrants in comparable markets. There is no assumption that the broader business of the operator can support the investment in the SA3 until it reaches sufficient scale to be profitable on an SA3 level.
- The average revenue per user (ARPU, driven by a combination of price and customer usage) is assumed to be based on VHA's comparable revenue in comparable circumstances.
- The capital and operating costs of the new investment are based on VHA's historical costs.

### 3.2 Dr Ritzmann's methodology and conceptual arguments are flawed and lead to an incorrect conclusion

There are flaws with Dr Ritzmann's methodology that invalidate his argument and the results of his analysis. These include:

- his use of SA3 areas as the basis of the calculation, and the assumption that the competitor would have to provide coverage of the SA3 that fully matches Telstra's coverage
- several incorrect assumptions used in the model itself.

We discuss each of these in turn below.

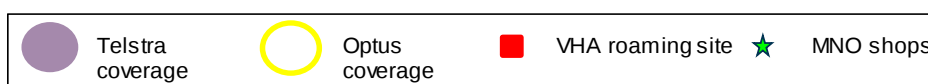
#### 3.2.1 The use of SA3 areas as the basis for calculation

The use of SA3 areas results in an overstatement of the extent of uneconomic areas, for several reasons. The most important is that Dr Ritzmann assumes that if his model calculates that an SA3 is uneconomic, then 100% of the population of that SA3 is considered to be uneconomic to serve for a competitive operator. This creates an inaccurate result, given the size of SA3s, and the fact that there are only around 330 SA3s across the entire country. This means that the resulting analysis is not sufficiently granular to produce an accurate result.

This effect of overstating the uneconomic population due to analysis at the whole SA3 level is easy to demonstrate. We do this by examining the Goldfields SA3, which includes the town Kalgoorlie. This SA3 is used by Dr Ritzmann as an example of an area that is a natural monopoly. In reality, however, there is a significant level of competition in this SA3, with all three operators having commercially active businesses. We demonstrate this by looking at the locations of mobile network sites in the area. Figure 1 shows the approximate coverage of Telstra and Optus across the entire SA3.

*Figure 1: Mobile network site locations and indicative coverage in the Goldfields SA3 [Source: Optus, Analysys Mason, 2017]*

[C-I-C]



Whilst Telstra does have broader coverage in the SA3, Optus and VHA (via its commercially negotiated national roaming deal) both provide good coverage in the towns of Kalgoorlie, Coolgardie and Norseman. This is where the majority of the population of the SA3 lives. This in-town coverage is illustrated in more detail in Figure 2.

Figure 2: Coverage in Kalgoorlie and Coolgardie [Source: Optus, Analysys Mason, 2017]

[C-I-C]



This is further illustrated by looking at the number of sites each operator has in the SA3. Figure 3 shows the number of sites operated by each of Optus and Telstra, and the number of sites to which VHA has access via its commercial roaming agreement with [C-I-C].

| Telstra sites | Optus sites | VHA roaming sites |
|---------------|-------------|-------------------|
| [C-I-C]       | [C-I-C]     | [C-I-C]           |

Figure 3: Site count in Goldfields SA3 by MNO  
[Source: Optus, 2017]

We conclude that this SA3 is not a natural monopoly (or indeed a monopoly at all), as it has three competing operators present which cover more than 75% of the population in the SA3 (Kalgoorlie town website<sup>1</sup> specifies a population of 33 000, compared to a population of 42 000 for the whole of Goldfields SA3). Optus and VHA (via its commercial roaming agreement) both provide coverage in the three main towns in the SA3. Telstra does have coverage in areas where Optus and VHA do not. However, these are largely highways and mine sites. This is likely to give Telstra a competitive advantage in this SA3, but it is not evidence of natural monopoly. This means that most of the population of the SA3 is viable for competition, despite Dr Ritzmann's conclusion that the entire SA3 is a natural monopoly.

The viability of the area for competition is further demonstrated by the fact that both Optus and VHA have full-scale retail outlets in Kalgoorlie, as illustrated in Figure 4 and Figure 5 below. Both shops are full-sized premises. Indeed, the Optus and VHA shops are a similar size to Telstra's and occupy positions of equal prominence in the town. All three are in the same shopping street (Hannan Street in central Kalgoorlie), and are close to one another. It is also worth noting that Telstra does not have stores in either Coolgardie or Norseman, the two other towns of significant size in the SA3.

<sup>1</sup> See <http://www.ckb.wa.gov.au/Your-Council,-Your-City/City-and-community/City-profile/Population-profile.aspx>

Figure 4: Optus retail outlet in Kalgoorlie [Source: Google Street View, 2017]



Figure 5: VHA retail outlet in Kalgoorlie [Source: Google Street View, 2017]



These factors combine to produce a local market that is contestable and competitive without the need for competitors to duplicate Telstra coverage, and not at all monopolistic. This is proven by examining the number of Optus customers locally. The 6430 postcode includes the town of Kalgoorlie. This postcode has a population of approximately 23 000.<sup>2</sup> There are [C-I-C] Optus customers in this postcode, or [C-I-C] of the local population.<sup>3</sup> We conclude that this is a viable part of the business of Optus.

### 3.2.2 The assumptions made in VHA's financial model

The model itself relies on several assumptions which are inappropriate in the context of the national roaming investigation. These include:

- the assumption of a new-entrant operator rolling out total coverage equal to that of Telstra
- the use of VHA's cost and revenue per customer as inputs for the calculation, and
- the model's failure to account for spillover effects beyond the SA3, and their impact on the business case for investing in coverage in the SA3.

The market share of a new entrant (i.e. 0%) is not the correct starting point for analysis. Neither alternative operator (Optus or VHA) is a new entrant, as both have established businesses with an existing infrastructure presence from which to add incremental coverage. Both also have a presence in most regional towns and so already have a customer base in each SA3. Optus and VHA have sites, or access to sites via commercial national roaming, in all 327 SA3s in Australia.<sup>4</sup> In effect, investment by Optus or VHA in further coverage is investment in coverage extensions from a base that already exists in the regional town. We believe that Optus and VHA would immediately see new traffic (and therefore, within a short time, new revenue) after building an additional site near their existing coverage in the SA3.

The capital and operating costs incurred by VHA are not an appropriate benchmark for this calculation. Use of these figures is likely to overstate the cost of providing coverage and therefore over-estimate the chance of an SA3 being categorised as a natural monopoly. This is because VHA currently operates the smallest network, and so it is less likely to have access to necessary nearby infrastructure in remote areas such as fibre backhaul and backbone networks. In practice, Optus and VHA are likely to invest together, using a network-sharing agreement (similar to what they have previously commercially agreed) and thus reduce costs. The two companies already have site-sharing arrangements in certain areas, and a commercial roaming deal in other areas. As an alternative to co-investment, the business case for investing in further coverage in the SA3 should take into account the additional wholesale opportunities for the investing operator – i.e. when considering an Optus investment in the area this could include additional wholesale revenue from VHA customers (from Optus opening up the new site to VHA national roaming); conversely, a VHA

<sup>2</sup> Source: 2011 Census.

<sup>3</sup> Source: Optus, ABS.

<sup>4</sup> There are 351 SA3 areas in total. Exclusion of migratory areas, 'no address' areas and other territories results in 330 SA3s. Three further SA3s are excluded in our analysis: Blue Mountains South (national park, population 7), Illawarra Catchment (national park, population 13) and Lord Howe Island. Source: Optus.

investment in the area could involve a wholesale arrangement where VHA permitted Optus customers to roam on the site (giving additional wholesale usage revenue).

In addition, it is not appropriate to use the ARPU experienced by VHA. VHA is the smallest operator with the lowest ARPU of the three infrastructure-based operators.<sup>5</sup> We believe that customers in Australia are aware that it has the smallest remote and regional coverage. VHA has also experienced network quality issues in recent years (discussed further in the next section). We therefore believe it is more appropriate to assume a higher ARPU, such as the average ARPU of Optus and VHA (to reflect a combination of Optus and VHA investing in partnership), or the market-average ARPU (to reflect the Telstra customers who may churn to the ‘new’ entrant).

Also, the cashflow model does not account for spillover effects which, if they exist, improve the business case for investing in these remote areas. We discuss spillover effects more in Section 4. However, to the extent they exist, the customers in metropolitan areas who also require coverage in remote areas would be attracted by this investment and should be factored into the cashflow business case on a state-wide or nationwide basis. The spillover effect claimed by Dr Ritzmann means that increasing coverage in remote areas will increase revenue and profits in metropolitan areas. This incremental revenue should improve the business case for investing in remote areas. Given Dr Ritzmann places a strong emphasis on the impact and size of spillover effects (which we dispute), it is surprising that he does not consider them in his estimation of natural monopoly areas. This oversight would again result in an over-estimate of the extent of natural monopoly areas.

These mistaken assumptions and incorrect methodological decisions combine to produce a result that is in our opinion highly inaccurate. Dr Ritzmann concludes that 20% of the Australian population lives in areas of natural monopoly. The proportion of the population covered only by Telstra is only 1%, far below Dr Ritzmann’s estimate. This is shown in Figure 6 below, which is based on numbers from VHA’s own submission to the ACCC.

|                           | Telstra                    | Optus                             | VHA                                  |
|---------------------------|----------------------------|-----------------------------------|--------------------------------------|
| Total population coverage | 99.2%                      | 98.2%                             | 95.6%                                |
| Incremental coverage      | 1% covered only by Telstra | 2.6% covered by Optus and Telstra | 95.6% covered by all three operators |

*Figure 6: Proportion of population covered by each operator [Source: VHA submission, operator data, 2017]*

Finally, we disagree with Dr Ritzmann’s idea that there are areas that are economic for investment, but not contestable because of sunk costs and timing effects. This argument only makes sense for a new entrant which is considering a binary decision to either enter or not enter a market. However, Optus and VHA are not new entrants. As illustrated in Section 3.2.1, they each already have existing businesses in regional towns in each SA3, with existing networks and retail presence. An extension of coverage can build on this set of assets, as well as on each operator’s existing market share. Also, sunk costs, up-front investments and ongoing fixed costs are already included in the modelled

<sup>5</sup> Source: company annual reports.

discounted cashflow calculation, and so Dr Ritzmann is double counting them when he claims that they contribute to an additional uneconomic area beyond the claimed natural monopoly area.

## 4 We disagree with Dr Ritzmann's assessment of spillover effects

Dr Ritzmann argues that the existence of a single national price means that a Telstra monopoly in remote areas will reduce competition in metropolitan areas. This argument rests on the assertion that there exists a group of metropolitan customers for whom remote coverage is so important that they effectively face a Telstra monopoly when buying a mobile service. In other words, Dr Ritzmann has defined two separate mobile telephony markets – one made up of people for whom remote coverage is absolutely necessary, and one made up of people who are prepared to forego remote coverage (i.e. decline Telstra's greater coverage entirely, since remote coverage is not a customisable component of Telstra's retail proposition) for a lower price or other factors.

It is our view that this assertion is incorrect and that Telstra's subscriber base does not represent the people for whom remote coverage is necessary and who would therefore pay the claimed monopoly price premium. It should be noted that Telstra's subscriber base across Australia amounts to 80% of the population over the age of 7<sup>6</sup>, which appears to be an implausibly large proportion of the population who, it is claimed by Dr Ritzmann, must take a Telstra subscription. There are many reasons to choose a particular mobile operator, in addition to remote coverage. These include:

- price
- brand image
- network coverage and quality in metropolitan areas
- bundling with TV and fixed services
- retail footprint
- size of corporate sales force for business customers.

Whilst important for some customers, we believe that remote coverage alone does not explain Telstra's market-share advantage. We believe that current market shares are largely a result of the competitive market reacting to customers' experience of VHA's network problems in 2010.

In addition, it would not be profit maximising for Telstra to pursue the strategy described by Dr Ritzmann. Given that there is no regulation requiring Telstra to offer a national price, a better strategy for Telstra would be to price discriminate (assuming that the claimed compete spillover effect and market separation actually existed). That is, Telstra could charge a high price for customers requiring remote coverage, and a lower price in metropolitan areas to capture more customers from Optus and VHA who do not require remote coverage.

Below we present evidence of some of the most important factors (other than remote coverage) that we believe influence Telstra's market-share advantage.

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<sup>6</sup> There are 21.6 million people over the age of 7 in Australia. Telstra has 17.4 million subscribers. Source: ABS, TeleGeography.

#### 4.1 Telstra's network in metropolitan areas and regional towns

The discussion around Telstra's larger network coverage should not just consider the overall landmass covered. Telstra also has a greater number of sites in metropolitan and regional areas. This is illustrated in Figure 7 below. Telstra has [C-I-C] more sites than Optus and [C-I-C] more sites than VHA in metropolitan areas. This difference is particularly acute when compared to VHA: We calculate that VHA has fewer than 79% of the number of metropolitan SA3 sites of Telstra.

Figure 7: Total number of sites deployed by operator [Source: Analysys Mason, based on Optus information, 2017]

| Area              | Telstra | Optus   | VHA     |
|-------------------|---------|---------|---------|
| Metropolitan SA3s | [C-I-C] | [C-I-C] | [C-I-C] |
| Regional SA3s     | [C-I-C] | [C-I-C] | [C-I-C] |
| Total sites       | [C-I-C] | [C-I-C] | [C-I-C] |

In addition, we suggest that a significant proportion of Telstra's market-share advantage is attributable to network quality and other problems experienced by VHA, beginning in 2010 and 2011. During that period, the Telecommunications Industry Ombudsman (TIO) began to receive a large number of complaints regarding VHA, while complaints about Optus and Telstra remained broadly constant. This, along with concurrent changes in market shares, is illustrated in Figure 8.

Figure 8: Complaints against each operator, and their market shares [Source: TIO, GSMA, 2017]

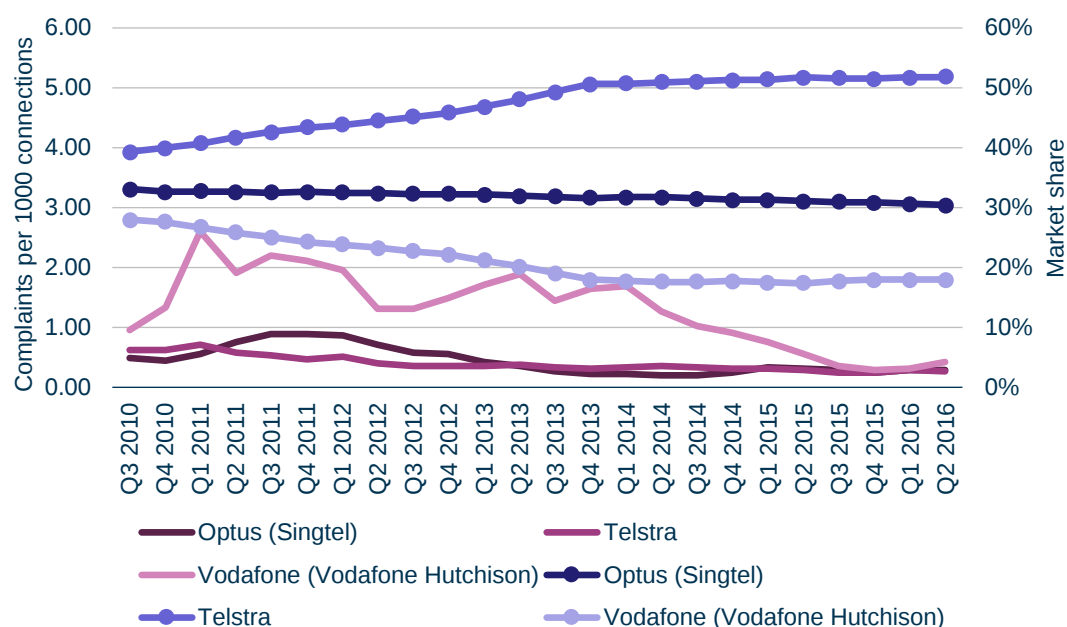
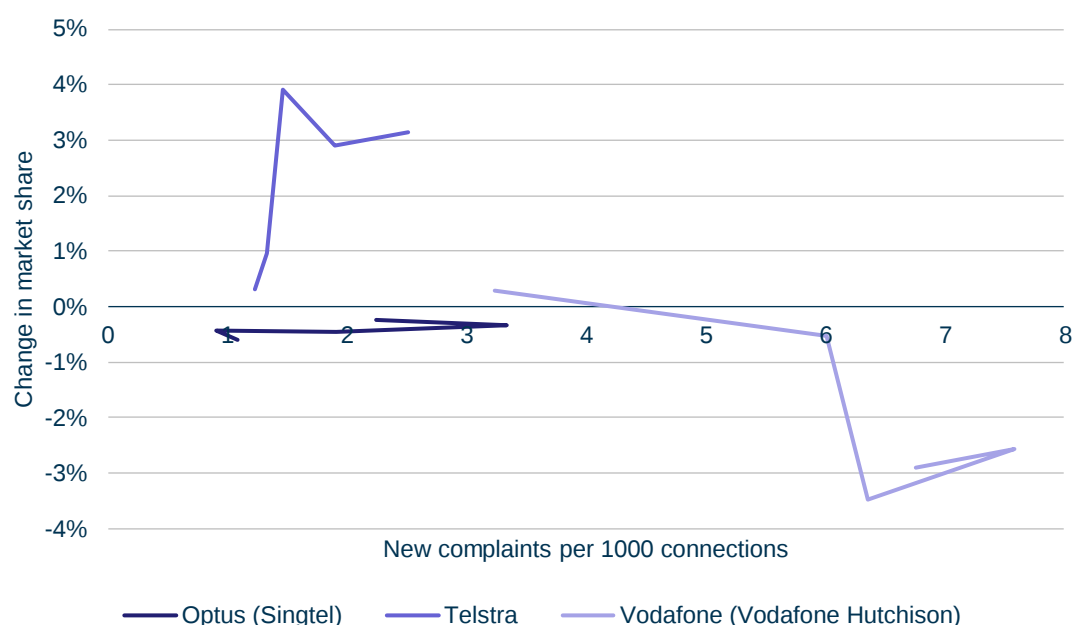


Figure 9 shows this link more directly. For each operator, it charts the total number of complaints per 1000 customers in each year against the change in market share in the subsequent year. In the years following those when VHA received more than 4 complaints per 1000 customers, market share declined. In the year after complaints against VHA fell below 4 per 1000 customers, its market share

stabilised. The main beneficiary of VHA's increase in complaints appears to be Telstra, which received a low number of complaints (similar to Optus), and received significant market-share gains, of almost 4% in its peak year.

Figure 9: New complaints in one year per 1000 connections vs. change in market share in the subsequent year [Source: TIO, GSMA, Analysys Mason, 2017]

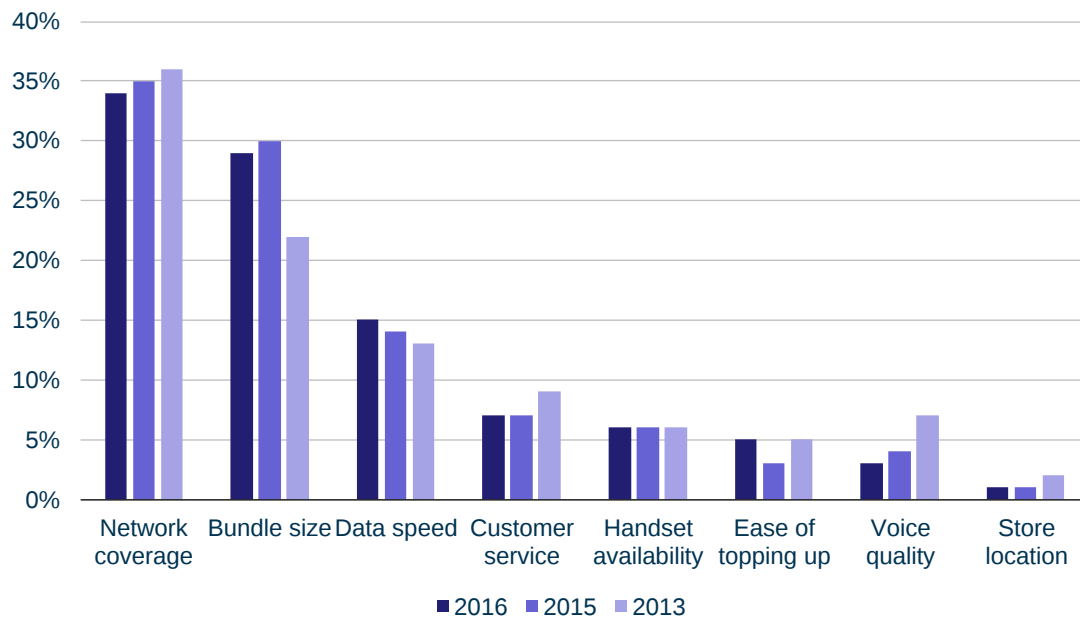


During the period of elevated complaints between Q3 2010 and Q3 2015 (after which complaints against VHA returned to levels comparable to those of Telstra and Optus), VHA's market share declined by ten percentage points. In 2010, VHA's market share was close to 30% (almost identical to that of Optus), while Telstra had less than 40%. Between Q3 2010 and Q3 2015, Telstra's market share increased by just over ten percentage points. This gain (and therefore half of Telstra's market-share advantage over VHA) appears to us to be the result of VHA's quality problems nationwide, and unrelated to the extent of operators' remote coverage.

## 4.2 Other factors influencing Telstra's market-share advantage

In addition to superior network quality and depth of coverage there are many other reasons why customers in Australia choose Telstra. Figure 10 shows the results of a survey of 523 consumers across Australia, conducted by Bernstein in July 2016. Whilst network coverage is the most important factor for the largest number of customers, there are many other factors that are important for other customers, with the size of the bundle (i.e. call minutes and data allowance) being the second most important, and data speed the third. It is worth noting that network coverage here refers to *overall* network coverage throughout Australia, not specifically remote coverage. Also, we note that network coverage has been declining in importance, with data speed becoming consistently more important.

Figure 10: The most important reason for selecting an MNO [Source: Bernstein, 2017, n = 523]



We conclude that there is insufficient evidence for the existence of a large enough group of customers who are driven entirely by Telstra's remote coverage so as to effectively face a Telstra monopoly. We also conclude there is insufficient evidence that Telstra's market share and market-share advantage results in a monopolised market due to differences in remote coverage, which cannot be contested by other operators that do not offer identical remote coverage.

Even though customers do care about coverage, we believe they care about breadth and depth of coverage across the entire country. They also care about many other factors, giving all operators an opportunity to differentiate their services to target different customer types. Dr Ritzmann's conclusions regarding the impact of spillover effects are therefore not supported by the evidence.

## 5 We disagree with Dr Ritzmann's assessments of the impact of a declaration

Dr Ritzmann argues that the declaration of national roaming as a service will have several impacts.

First, he argues that regulated national roaming will improve allocative efficiency. That is, national roaming regulation will ensure that Telstra's network is utilised more efficiently in rural and remote areas. This is because Dr Ritzmann believes that national roaming regulation, by introducing competition into rural and remote areas, will bring new customers into the market, thereby increasing the utilisation of Telstra's network assets, making them more efficient. Dr Ritzmann also argues that national roaming regulation will incentivise Telstra to reduce the cost of its network, if the wholesale price is set at a low enough level (although an actual investigation of the most appropriate wholesale price is beyond the scope of Dr Ritzmann's work).

Second, Dr Ritzmann argues that regulated national roaming will improve dynamic efficiency. That is, regulated national roaming will ensure that efficient investment in remote coverage is maximised. According to Dr Ritzmann, this is because there are areas which, whilst not natural monopolies, are not contestable because a new-entrant operator faces high fixed and sunk costs that must be recovered. This creates a "ladder of investment" effect where the new operator's costs to enter the market are reduced because of national roaming. At a later point the operator would then invest in its own network.

We disagree with Dr Ritzmann's arguments on both points, as explained below.

### 5.1 National roaming regulation and allocative efficiency

In our view, Dr Ritzmann's arguments regarding allocative efficiency do not hold. First, the existing market already delivers allocative efficiency in rural areas. We believe the remote network is already utilised efficiently, as mobile penetration is well over 100% and all subscribers who value Telstra's remote coverage are already Telstra customers and occupy that network capacity when they are in remote areas. There are very few potential new customers (current non-subscribers) being offered Telstra's existing coverage who would only take up a service if choice was increased in remote areas which are already covered by Telstra. Roaming would not improve allocative efficiency; it would simply create churn away from Telstra's existing customers to access seekers.

This means that there would be no additional incentive for Telstra to invest in remote coverage if national roaming was introduced. Telstra would lose its retail margin on those Telstra customers who churned to Optus and VHA and then used (wholesale) roaming on its network; Telstra could potentially seek to be compensated for the loss of retail profit in the wholesale prices charged to access seekers. Telstra's incentive to invest would therefore be *at best* the same as it is today (and only if wholesale prices were set at a level that gave Telstra sufficient compensation for the loss of its current retail margin). A wholesale price that allowed Optus and VHA to compete effectively in

national roaming areas would reduce Telstra's incentive to invest, as any further investment, site upgrades or replacement investment would be less profitable than it is today.

In addition, we disagree with Dr Ritzmann's claim that low access prices would encourage Telstra to reduce costs in its network in order to maintain a retail advantage. This incentive already exists for Telstra, because cost reduction in the network would already realise higher profits for Telstra, even without national roaming. If Telstra is sharing a remote site with access seekers, any benefits it gains from cost reduction would be less than or equal to the benefits of the same cost reduction made in the absence of national roaming regulation. Indeed, this suggests that national roaming regulation could have the opposite effect and reduce Telstra's incentives to invest in cost reduction (because Telstra could seek to justify higher wholesale prices).

## 5.2 National roaming regulation and dynamic efficiency

In our view, Dr Ritzmann's arguments regarding dynamic efficiency do not hold. Dr Ritzmann's central argument relies on the concept of a "ladder of investment", as described earlier. First, the "ladder of investment" argument relies on the existence of areas that are not natural monopolies, but are nevertheless likely to be non-contestable due to sunk and fixed costs. In Dr Ritzmann's view, national roaming regulation overcomes these barriers by allowing a new-entrant operator to grow until it reaches sufficient scale to invest in its own network. As explained in Section 3 earlier, we disagree with the existence of these areas.

Second, the "ladder of investment" requires access seekers to eventually invest in their own infrastructure and replace mandated wholesale national roaming with self-supply. However, this will not happen if:

- national roaming regulation is perpetual, or has a realistic likelihood of being extended in a future declaration (and the first declaration will have the effect of entrenching the current coverage difference between Telstra and the other network operators, removing the counterfactual incentive for other network operators to invest in additional remote coverage)
- national roaming prices are set at a low level, sufficient for access seekers to earn a margin on national roaming compared to national-average retail prices (because remote networks are always deployed in high-cost, low-density areas where expected unit costs for self-supply will be higher than the national average or metropolitan average).

We can see evidence of the effects of granting access to monopoly access-network infrastructure by looking at the past regulation of fixed broadband via the unbundling of local loops (regulation whereby access seekers can use the incumbent's physical last-mile copper cables, which they can then connect to their own active exchange-based network equipment). Last-mile copper cables are the fixed-network equivalent of the mobile last mile over which mobile roaming is provided. Dr Ritzmann's argument in favour of mobile roaming is that mandated roaming (i.e. regulated access to the mobile network last mile, in areas where there is one infrastructure) will result in access seekers investing in their own last-mile mobile network assets in the same coverage area, thereby

removing the need for roaming in future. LLU has been regulated across Europe for many years. We have looked at the larger European countries, considering the number of alternative network operators (altnets) that offer DSL services using LLU, and how many of them have used the “ladder of investment” to construct their own access networks and thus replicate the incumbent’s local loop. The fact that *none* of the altnets has used LLU as a rung on the ladder to build its own copper loops counters the claim that regulated wholesale mobile roaming access would lead to access seekers investing their own sunk capital in infrastructure to provide the same service.

With the advent of next-generation access (NGA) technologies using fibre, altnets have considered investing in their own access fibre.

However, this new fibre investment must be viewed alongside the prevailing regime for regulated access to the incumbent’s own NGA network. The EC set out the approach to be followed by national regulatory authorities in its 2010 ‘NGA’ recommendation,<sup>7</sup> which considered the application of (lighter-touch) margin-squeeze regulations as opposed to (stricter) cost orientation for wholesale broadband access. Forbearance from easy access regulations can make third-party wholesale access to incumbent fibre services less attractive than its own investment.

This approach of lighter-touch regulation of the incumbents in the EU has supported the “ladder of investment” business case for operators to invest in fibre access, rather than altnets relying on regulated cost-oriented access to the incumbent’s deployments. This is illustrated in Figure 11.

| Country        | Number of altnets known to have invested in their own copper loops | Number of altnets known to have invested in fibre local loops |
|----------------|--------------------------------------------------------------------|---------------------------------------------------------------|
| Germany        | 0                                                                  | 0                                                             |
| United Kingdom | 0                                                                  | 3                                                             |
| France         | 0                                                                  | 3                                                             |
| Italy          | 0                                                                  | 3                                                             |
| Spain          | 0                                                                  | 4                                                             |
| Sweden         | 0                                                                  | 4                                                             |
| Denmark        | 0                                                                  | 3                                                             |
| Portugal       | 0                                                                  | 2                                                             |
| Austria        | 0                                                                  | 0                                                             |
| Netherlands    | 0                                                                  | 5                                                             |

*Figure 11:  
Investment in local  
loops by altnets in  
the EU [Source:  
TeleGeography,  
2017]*

These issues have also been studied over the years by Professor Tommaso Valletti of Imperial College<sup>8</sup> (and now the Chief Competition Economist of the EC).

<sup>7</sup> EC (2010), *Commission recommendation of 20 September 2010 on regulated access to Next Generation Access Networks*.

<sup>8</sup> Source: Presentation to ACM Conference on Impact Assessment: Assessing (some) digital policies, Amsterdam, 16 November 2016; see <https://www.acm.nl/nl/download/publicatie/?id=16735>

- The problems of access pricing and investment incentives were recognised nearly two decades ago by Valletti.<sup>9</sup> In a survey of the phases of market opening and access pricing, he highlighted that the development of effective competition is closely linked to the way in which access pricing is enabled and priced. Although the scope of market competition was very limited, just voice calling, two aspects that are still relevant today were set out by Valletti
  - Firstly, unbundling does not promote entrants' investment in the local loop since they can rely on the incumbent's assets
  - Secondly, long-run incremental cost-based network price caps create tensions for investment in the long run, as the incumbent cannot expect to obtain anything other than normal economic profits.
- More recently, Valetti also found that LLU regulation in the UK has *not* increased broadband penetration (i.e. take-up) and so has not increased the efficiency of local-loop assets. He found that LLU has increased fixed broadband speeds, however. This finding that unbundling has increased speed is because the capacity of a physical copper line is limited only by the choice of equipment installed at each end, whereas a mobile channel is inherently limited by the amount of radio spectrum a mobile operator has available for all concurrent users, including potential national roaming users.<sup>10</sup>

Finally, Dr Ritzmann discusses the standalone incentive to invest (that is, the trade-off between earlier profits and lower investment costs). He states that “absent strategic effects, firms would choose investment timing by trading off earlier gains in profit against lower investment costs later.” This does not apply in the case of investing in remote coverage, because investment costs do not decline over time. The cost of a mobile site (especially in remote areas) is largely driven by the cost of civil works to build the tower and connect the site to the backbone network, rather than the (much smaller) cost of the electronics themselves. These civil deployment costs are more likely to *increase* over time, due to inflation and rising wages. Hence there is no timing effect of choosing to invest – it is purely a strategic choice to invest in remote coverage (the effect which Dr Ritzmann specifically ignores). The “pre-emption” incentive therefore applies equally to all operators. Whoever moves first benefits from being the only operator covering the resident population and being able to offer other residents the incremental coverage.

Evidence from the Australian market demonstrates that VHA has won black-spot coverage programme funding in certain locations<sup>11</sup> and Mobile Phones on Highways funding,<sup>12</sup> indicating that

<sup>9</sup> Valletti (1999), “The practice of access pricing: telecommunications in the United Kingdom”, *Utilities Policy*, 8(2), pp.83–98.

<sup>10</sup> We note that the spectrum which Vodafone and Optus hold in their uncovered remote areas is effectively unused: these operators have not transferred their remote spectrum to Telstra in order to facilitate increased capacity (in return for roaming) and subsequent productive efficiency gains for the network provider, nor returned it to the ACMA for another party to use in remote areas.

<sup>11</sup> See <https://www.communications.gov.au/what-we-do/phone/mobile-services-and-coverage/mobile-black-spot-program>

<sup>12</sup> Source: <https://ministers.treasury.gov.au/DisplayDocs.aspx?doc=pressreleases/2002/042.htm&pageID=003&min=phc&Year=2002&DocType=0>

VHA has adopted the strategy of gaining the first-mover advantage in areas that currently have no coverage from any operator.

## 6 Key contributing expert

Our key contributing expert is Ian Streule, a Partner at Analysys Mason. His CV is provided on the following pages.

# IAN STREULE

Partner



Ian joined Analysys Mason in 1997, and has executed, managed and directed a comprehensive range of strategic, regulatory, costing and pricing consultancy projects.

As a Partner, Ian is responsible for a significant proportion of our work in the area of mobile sector regulation, fixed service costing, long-run incremental costing (LRIC), accounting and economic costing, and ultimately strategic regulatory advice to operators and regulators. Ian has also led our work in the postal sector providing advice to postal services regulators.

Contact him at [ian.streule@analysysmason.com](mailto:ian.streule@analysysmason.com)

## Expertise

Ian has assisted leading regulators with mobile and/or fixed service costing and regulation, including Ofcom (UK), the ACCC (Australia) and OPTA (the Netherlands). He has also delivered regulatory projects in Malta, Sweden, Denmark, Norway, Ireland, Belgium, France and Greece.

Ian has also completed numerous regulatory and strategic projects for operators and industry groups, including in South America, Africa, the Caribbean, Oceania, the Middle East, East Asia, Iceland, East Europe, the UK and Scandinavia.

## Specialist skills

- mobile network and service costing, LRIC and mobile sector regulation including MNO merger case support
- 3G and 4G mobile broadband costing, spectrum and service planning
- M2M, MVNO and national roaming wholesale costing and pricing
- fixed access and core network modelling, service costing and regulatory investigations
- regulatory accounting, separate accounts, transfer prices and accounting compliance
- wholesale access and reference offer development
- the economics of two-sided markets, network externalities and price regulation
- industry presentations, conference training workshops, and expert witness legal support

|                  |                                                                                                                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Career</b>    | 1997 to present: Analysys Mason (now Partner)                                                                                                                                                                                          |
| <b>Education</b> | <ul style="list-style-type: none"> <li>• M.Phys. Degree in Physics, First Class Honours (Keble College, University of Oxford, UK)</li> <li>• M.Sc. Degree in Applied Economics, Distinction (University of Strathclyde, UK)</li> </ul> |
| <b>Office</b>    | Cambridge, UK                                                                                                                                                                                                                          |
| <b>Languages</b> | English                                                                                                                                                                                                                                |

## Notable projects

Ian has led many projects, including:

- Project Director on a study to investigate mobile network costs for a new MVNO, so that the MVNO's management could consider its strategic options in the light of an expected host network operator merger. We considered network spectrum and technology evolution of the host network, and the impacts of post-merger network rationalisation on our MVNO's growth prospects and wholesale costs
- Provided assistance with appeals on regulatory decisions regarding fixed voice services and fixed and mobile termination rates, this involved providing expert opinion and written statements
- Directed a study for a Western European regulator to assess its options for refarming the 900MHz and 1800MHz GSM bands, in anticipation of the EC's withdrawal of the GSM Directive
- Supported three different mobile operators in their wholesale strategies, including regulatory data submissions, strategic advice, consultation support and detailed modelling on mobile service costs including national roaming access
- Project Director on a study for ACM, the Dutch telecoms regulator, to update its bottom-up LRIC models for the calculation of FTRs and MTRs, which had originally been developed in 2009/2010 and updated in 2012/2013. The project included industry consultations on the approach to updating the models and on the draft models. Our work involved data collection from Dutch industry parties, as well as modelling activities related to updating the demand module, enhancements to the network design (including modelling of 4G, VoLTE and Ethernet backhaul), and updating the costing calculations
- Led the development of mobile LRIC models used by the three Scandinavian regulators, as well as those for France and the Netherlands, to set wholesale mobile voice interconnection charges in their regular national consultations from 2002 to 2013