

RESPONSE TO OPTUS AND TELSTRA CRITIQUES

On 16 June 2017, Norton Rose Fulbright submitted a report (produced by Frontier Economics) to the ACCC, which estimated the consumer impact from domestic roaming¹. Subsequently, Optus has commissioned Analysys Mason to produce a critique of Frontier's report². Telstra has also submitted a critique of the Frontier report³. This note provides a response to both the Analysys Mason and Telstra critiques.

CONTEXT

Frontier Economics Limited was instructed to prepare a report identifying likely mobile retail price movements (and consequently the likely welfare benefit to Australian consumers arising from those price movements), if the ACCC were to declare a wholesale domestic inter-carrier roaming service in regional Australia that achieved an equalisation of mobile coverage between the three mobile network operators.

The context for this instruction was that the ACCC indicated in its draft decision that it had not received sufficient evidence/analysis in relation to the likely impact of the declaration on prices and consumers. Notably, the ACCC said:

*"The ACCC also considers there is insufficient evidence to support the view that declaration, by increasing retail choice for consumers who value coverage, would improve overall competition in a way that would benefit consumers. We consider that the effect of declaration on retail prices is uncertain."*⁴

Whilst there has been significant evidence and submissions provided to the ACCC from all parties in relation to the possible impact of a declaration, the ACCC did not consider these were sufficient to allow it to reach a conclusive view on the impact of the declaration on prices. The aim therefore of our report was to seek to address this omission by:

- Assessing the current market structure, and the relative position of the different MNOs in the Australian market,
- Coming to an informed and evidence-based view as to the reasons that explain the difference in the relative market position of the MNOs in the Australian market, and notably the role of Telstra's superior geographic coverage, and

¹ Frontier Economics - "The consumer impact from domestic roaming (15 June 2017)"

² Analysys Mason – "Review of a report by Frontier Economics estimating the consumer benefits from declaring a domestic mobile roaming service in Australia" (24 July 2017)

³ Telstra – "Annexure 1: Concerns with the Frontier Report" (6 July 2017)

⁴ Page 4, ACCC Domestic mobile roaming declaration inquiry draft decision (May 2017) – VHA version

- In the light of the above, undertaking appropriate and robust modelling/analysis, based on the evidence available, to come to a view on the likely impact on prices and consumer welfare of a declaration.

The rest of our response is structured as follows:

- First, we explain the key facts of the Australian mobile market that should be taken into account in any analysis of the impact on prices and consumer welfare from a domestic roaming declaration;
- Second, we present our analysis of the key facts;
- Third, we set out how the key facts enter into our modelling;
- Fourth, we discuss the key issues with the AM and Telstra critiques;
- Fifth, we respond to the specific critiques raised by AM; and
- Sixth, we respond to the specific critiques raised by Telstra.

KEY FACTS/FEATURES OF THE AUSTRALIAN MOBILE MARKET

We consider that any modelling of the possible impact on prices and consumer welfare from a domestic roaming declaration needs to take into account the following (we assume non-contentious) facts.

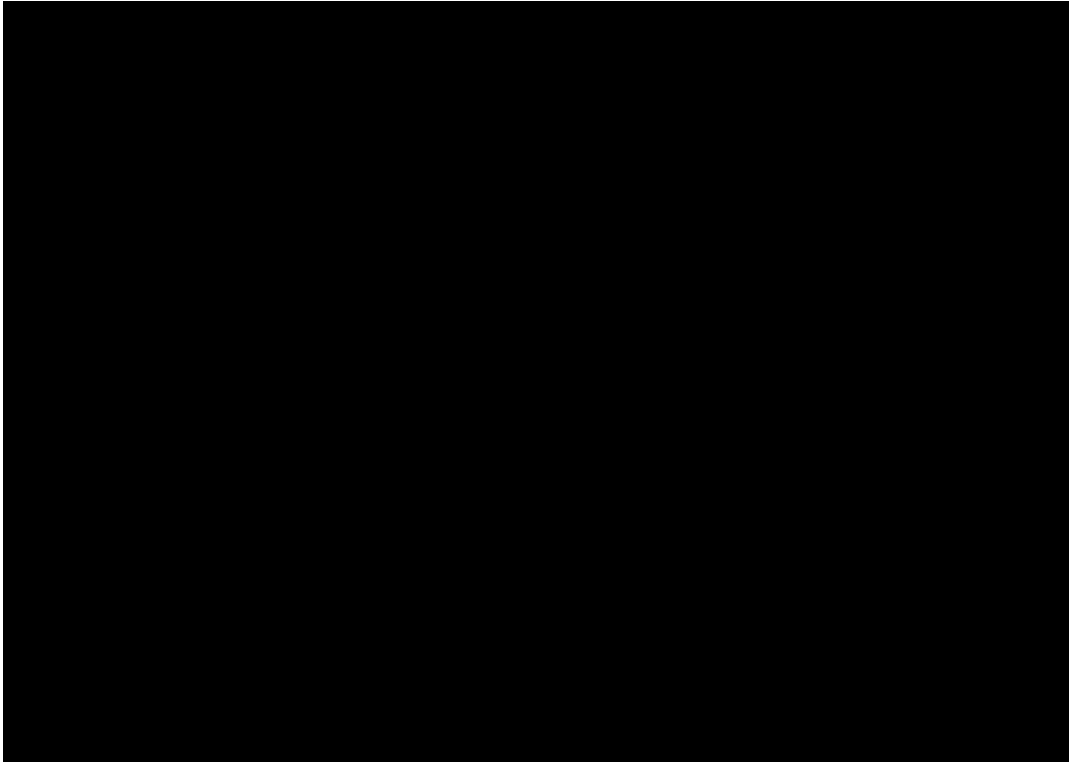
Large differences in geographic coverage

At present, Telstra is the only mobile network operator able to offer ‘nationwide’ geographic coverage on all of its retail products. Given the more limited reach of the networks of VHA and Optus, they are only able to offer products with a significantly lower level of geographic coverage (2.4 m km² for Telstra, 1.0 m km² for Optus and 0.9 m km² for VHA⁵). Telstra has substantially and persistently higher geographic coverage than the other MNOs.

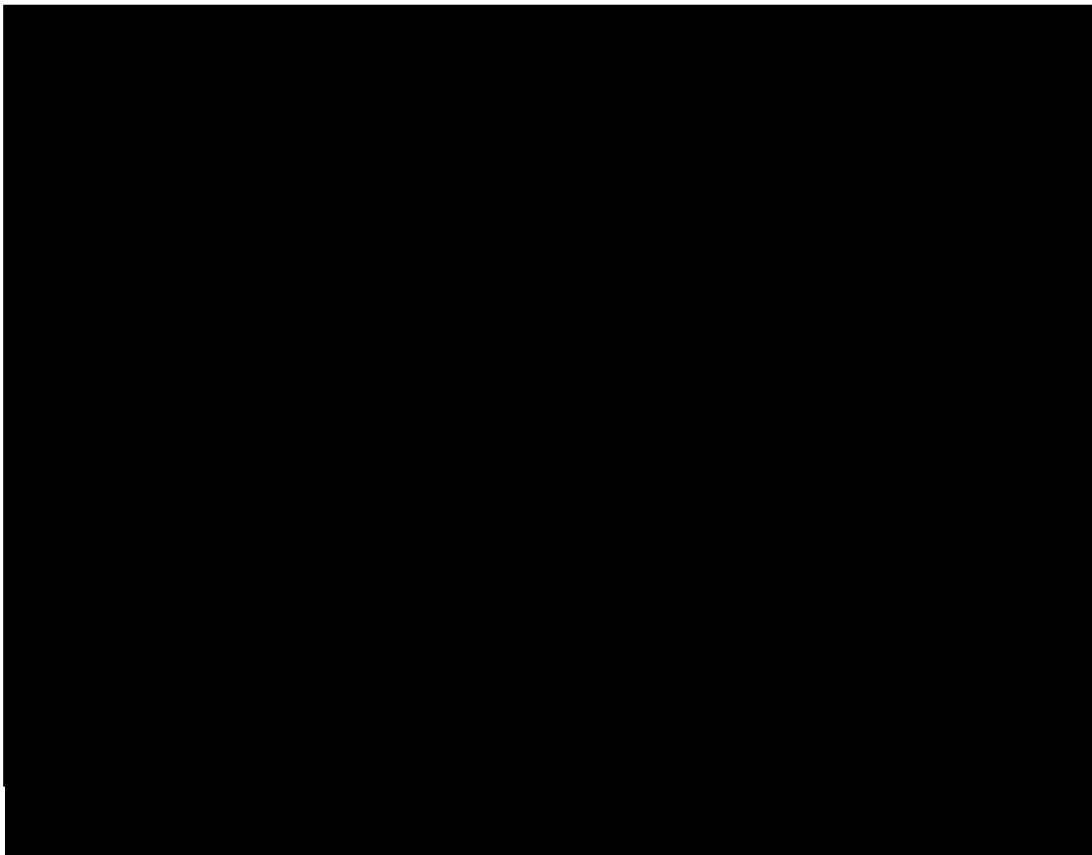
Very significant differences in Telstra’s market share between urban and regional areas

The available evidence on market shares in urban and regional areas shows that Telstra has a significantly higher market share in regional areas than in urban areas, even though Telstra offers the same products in urban and regional areas. This is a characteristic of the Australian mobile market which is unusual.

⁵ This includes its national roaming deal with Optus.



Telstra's overall market share is ~50% of subscribers when excluding MVNOs (45% of subscribers when MVNOs are included). The following figure shows how much higher Telstra's market share is in regional areas compared to urban areas (████ compared to █████).



Telstra's pricing premium

Evidence has been provided indicating that Telstra enjoys a pricing premium over its rivals. The ACCC has found price premia for data plans ranged from c. 300% for low cost plans (under \$25), to +42% for medium cost plans (\$40-\$59).

OUR ANALYSIS OF THE KEY FEATURES/FACTS OF THE AUSTRALIAN MOBILE MARKET

Telstra's superior geographic coverage is likely to be the main reason for its much higher market share in regional areas compared to urban areas

An analysis of the impact of declaration should seek to reflect and explain the above facts. As explained in our report (section 2.1.2), the available evidence supports the hypothesis that geographic coverage is an important driver of subscriber decisions for a significant number of subscribers; and that this is even more the case for subscribers in regional areas (and is therefore the main reason for Telstra's persistent regional market share advantage):

- The ACCC reports that Telstra itself submitted evidence that coverage is an important factor for consumers when selecting a mobile service provider, and significantly more so in regional areas “

[REDACTED]

- The ACCC has recognised that more extensive coverage is an important factor in explaining Telstra's higher market share in regional areas, even where all three operators are present: ⁸

[REDACTED]

- The ACCC also reports that: “...Telstra also considered that consumers have a high willingness to pay for services as they move around and travel. ...”

[REDACTED]

⁷ Page 30, ACCC Domestic mobile roaming declaration inquiry draft decision (May 2017) – Telstra version

⁸ Page 38, ACCC Domestic mobile roaming declaration inquiry draft decision (May 2017) – VHA version

[REDACTED]
[REDACTED]
[REDACTED]⁹. And, at Page 31 of Telstra's response to the ACCC's Discussion Paper on the declaration of a wholesale domestic mobile roaming service (Dec 2016), Telstra said [REDACTED]
[REDACTED]
[REDACTED]

- Telstra also advertises its *geographic* coverage, unlike the other MNOs, who advertise *population* coverage. Telstra successfully obtained an injunction against Optus for advertising relating to network coverage that were found to be misleading customers into believing Optus's geographic coverage was close to Telstra's.¹⁰
- The ACCC quotes also two pieces of research¹¹ (by ANU and Ovum) which indicate that geographic coverage ('*deficiencies in network coverage*' or '*better network coverage*') is the second most important driver of switching or choice of service provider, after price (or value for money).

Whilst Telstra may enjoy other competitive advantages (such as a stronger position in business/post-pay market as a result of being a first mover, and superior content, etc.), no evidence has been provided that would explain how or why such factors would explain Telstra's significant market share advantage in regional areas versus urban areas. In the absence of such evidence, we think it reasonable to assume that differences in network coverage account for a significant proportion of the differences in operator market shares that we observe between urban and regional areas.

An operator is likely to earn economic rents if it has advantage that is difficult to replicate

As we explain in section 2.2 of our report, where geographic competitive conditions differ, and providers choose to compete with geographically uniform prices, then the resulting national price will be expected to reflect the 'average' level of competition across the different geographic areas that a provider competes in. It is correct to consider that competition in urban areas will constrain the nationally uniform price of Telstra's offers. Nevertheless, as long as Telstra is not facing effective competition in regional areas (and for a significant share of subscribers that value wide geographic coverage), the nationally uniform tariff will be higher than the (relevant) competitive benchmark. The higher the share of subscribers for which Telstra does not face effective competition for, the higher the difference between the nationally uniform tariff and the competitive benchmark.

The materially and persistently higher market share of Telstra in regional areas, the large number of subscribers that live in such areas, and the evidence that Telstra maintains a pricing premium above the other MNOs, are consistent with

⁹ Page 31, ACCC Domestic mobile roaming declaration inquiry draft decision (May 2017) –VHA version

¹⁰ <https://www.lexology.com/library/detail.aspx?g=48733e66-ef01-46f4-bdd1-2464c06546c9>

¹¹ Page 35, ACCC Domestic mobile roaming declaration inquiry draft decision (May 2017) – VHA version

Telstra being able to earn significant economic rents from its superior geographic coverage.

The movement of share prices also supports this. As explained in section 4.4.3 of our report, the change in the Telstra's share price at the time of the ACCC's draft decision would be expected to reflect, inter alia, losses of profit for Telstra reflecting consumer switching and a loss of price premium. The change in price implied indicates that the decision was worth around \$1.4bn to \$2.0bn depending on whether the comparison point is the Monday or the Friday close.

VHA and Optus matching Telstra's geographic coverage is likely to have a significant impact on competition and therefore consumers

On the basis of the above, we conclude that declaration would enable Telstra's rivals to compete much more effectively in regional areas, allowing them to narrow Telstra's market share advantage (relative to its advantage in urban areas) in these areas. This intensification of competition would then be expected to lead to lower prices in both regional and urban areas, compared to a continuation of the status quo. This is the mechanism that our modelling exercise has captured to enable the quantification of the impact of declaration on prices and consumer welfare (which to our knowledge, has not been identified or assessed to date).

THE FRONTIER MODELING REFLECTS THE KEY FEATURES OF THE AUSTRALIAN MOBILE MARKET

To estimate the consumer impact from the introduction of domestic roaming, we needed to use a modelling approach that was robust, tested, and capable of reflecting the key features of the Australian mobile market we have described above. We therefore decided to use an approach (a differentiated Bertrand model) that has previously been used by the European Commission to assess the likely impact of significant changes in market structure that are anticipated as a result of mobile mergers. The approach helps to capture the differentiated nature of mobile markets (in which firms compete across a range of variables, including but not limited to coverage, which different consumers value to differing degrees), allows us to base our model on real-world data and captures how different operators respond to price changes by other operators, and how market outcomes might be expected to change as a result. This therefore allows us to estimate a new 'equilibrium' for the mobile market after domestic roaming has been introduced.

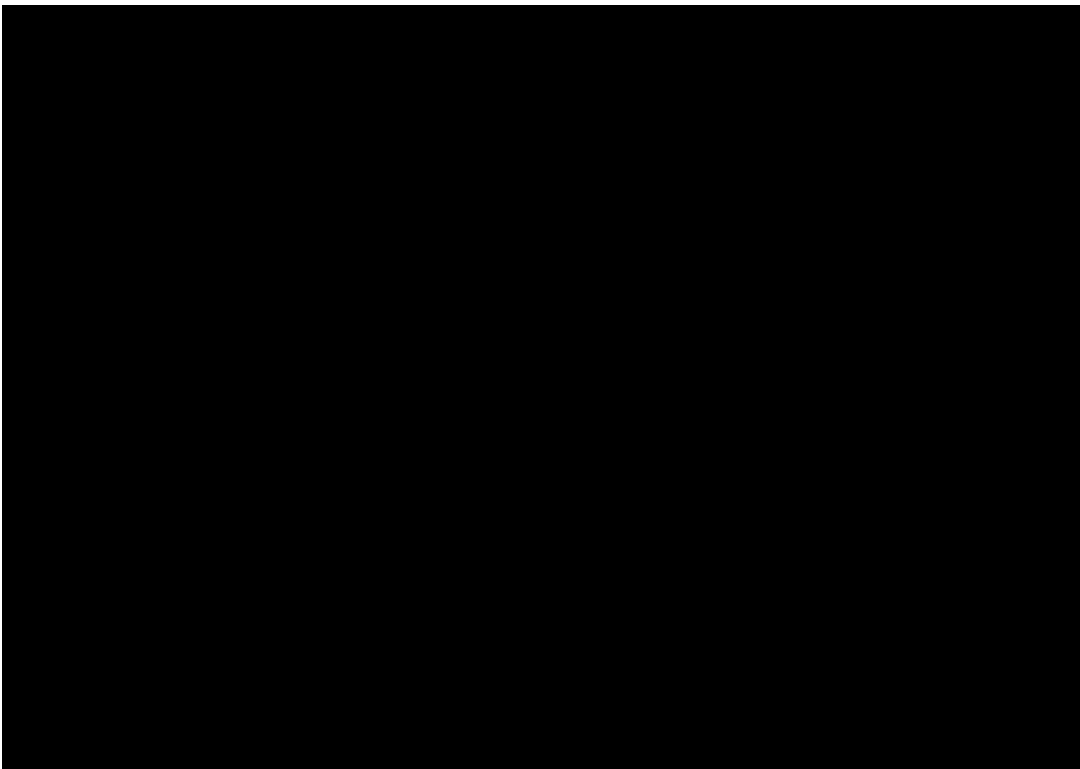
As we explain in section 3.2 of our report, the modelling approach allows us to capture a number of different effects that could arise from a declaration:

- **The impact on Telstra's incentives** – due to facing stronger competition from VHA and Optus for national products and due to making a wholesale margin on national products sold by VHA and Optus.

- **The impact on VHA and Optus' incentives** – VHA and Optus will benefit from the ability to offer national products, but will also face more aggressive pricing from Telstra, and they will have to take into account the substitutability between the different products they each sell.

The main features of today's market, including Telstra's pricing premium and market share are captured as inputs to the model. Further, the proportion of customers who would switch to Optus and VHA following declaration is based on the difference between the national market shares and the market shares observed in regional areas. This is consistent with the hypothesis that an important driver of Telstra's regional market share advantage (relative to its urban market share advantage) is its significantly superior geographic coverage. In effect, we assume that once Optus and VHA begin to offer national products, competition in regional areas would more closely resemble competition in urban areas. To the extent that Telstra retains a market share advantage in both urban and regional areas, this would then reflect non-coverage related advantages (which we assume do not change).

We have also recognised in our modelling that Telstra's market share advantage in regional areas may be the result of other non-coverage advantages which are specific to those areas (and do not apply in urban areas), although as noted earlier we have seen no evidence to suggest what those are or how we might quantify them. We also recognise it may simply take time for Telstra's market share to be eroded. This is reflected in the assumption that declaration would enable VHA and Optus to 'close' only 60% of the market share advantage of Telstra in regional areas relative to the market share difference in urban areas.



It is also important to note that our modelling assumes that declaration would not lead to any direct reduction in Telstra's market share in urban areas, although we

have evidence that some urban consumers value coverage and might be expected to switch to VHA or Optus. This means we provide a conservative estimate of consumer benefits.

HIGH-LEVEL ISSUES WITH THE AM AND TELSTRA CRITIQUES

No explanation of why Telstra's market share is so much higher in regional areas

A key issue with the critiques of AM and Telstra is that neither party provides any evidence for why Telstra's market share is so much higher in regional areas than urban areas. As already discussed, given our understanding that Telstra offers the same product in urban and regional areas, and the evidence that indicates that regional consumers value geographic coverage much more highly than urban customers, we consider that by far the most likely reason for this difference in market shares between regional and urban areas is that Telstra has such a significant advantage in geographic coverage.

Put another way, both AM and Telstra seem to imply that the difference in Telstra's market share in regional versus urban areas is the result of *some non-coverage advantage* that causes regional consumers to value Telstra services more than urban consumers value the *same* Telstra service, without providing any evidence or even indications as to what that advantage might be.

All the evidence we have seen to date from Telstra suggests that it believes that coverage is an important driver of mobile subscription decisions. In addition to the evidence mentioned above, in Telstra's submission to the ACCC, they state:

- *"Customers choose their mobile service provider based on a range of factors, but coverage and price are the two most important."*¹²
- *"Not only do customers value coverage, but a substantial proportion of mobile customers are willing to pay more for coverage to enable them to consume content and use applications on their mobile devices as they move around and travel."*¹³
- *"The high willingness of customers to pay for coverage is reflected in the sustained variation in average revenues per user (ARPU) between the MNOs, largely reflecting different network quality and coverage perceptions"*¹⁴

Nevertheless, we have now undertaken some further sensitivities to reflect an assumption that the superior geographic coverage of Telstra explains less of the regional market share advantage than we have assumed in our report.

¹² Page 30, Telstra Corporation's response to the ACCC's Discussion Paper on the declaration of a wholesale domestic mobile roaming service (Dec 2016)

¹³ Page 33, Telstra Corporation's response to the ACCC's Discussion Paper on the declaration of a wholesale domestic mobile roaming service (Dec 2016)

¹⁴ Page 33, Telstra Corporation's response to the ACCC's Discussion Paper on the declaration of a wholesale domestic mobile roaming service (Dec 2016)

As can be seen in the table below, even under a lower degree of convergence (i.e. **less** than the 60% originally assumed) of regional and overall market shares, we still find significant consumer welfare benefits from declaration.

We consider also that, on the basis of the evidence presented, it is also plausible that Telstra's geographic coverage advantage accounts for a bigger part of Telstra's regional market share advantage and that declaration would reduce the gap by **more** than 60%. We show results for this as well.

Figure 3 Sensitivities on market share convergence

Degree of market share convergence	Overall price change	Consumer welfare change (AUD)
90%	-7.22%	880,769,985
80%	-6.77%	825,006,233
70%	-6.25%	759,983,016
60%	-5.64%	685,253,202
50%	-4.95%	600,311,543
40%	-4.17%	504,589,838
30%	-3.29%	397,451,382

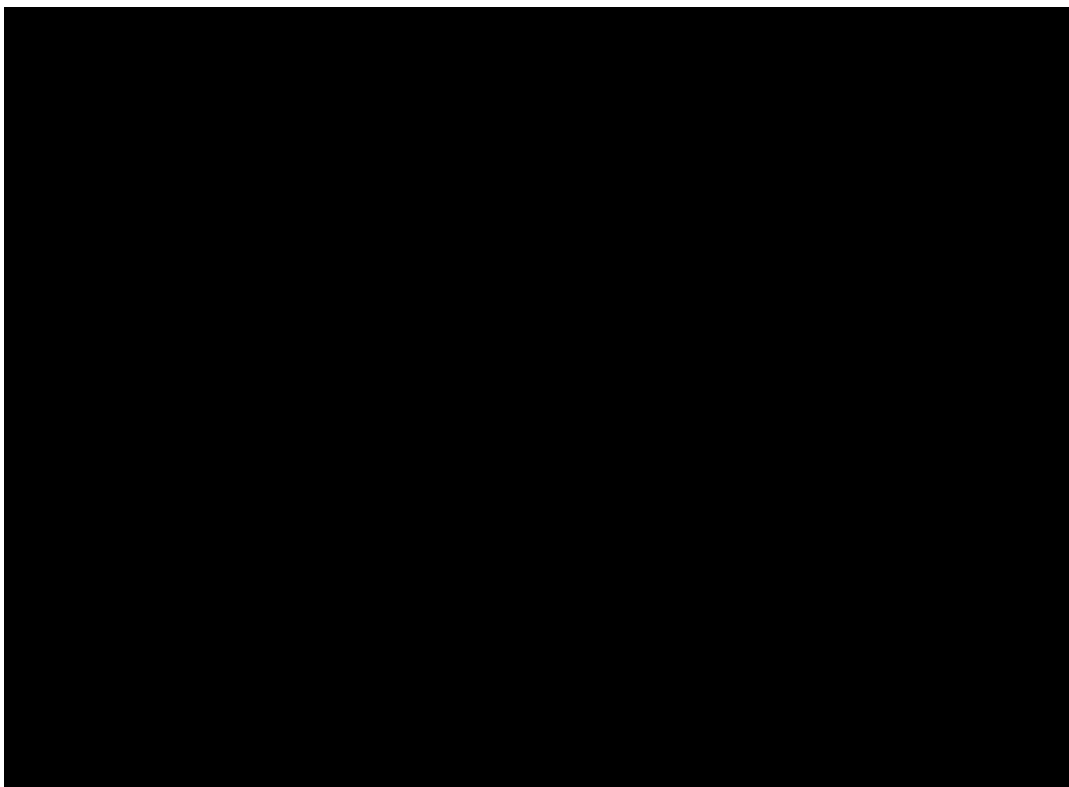
Source: Frontier

Lack of materiality

Both AM and Telstra critique the ARPUs that we have used, particularly to the extent that they inform the ARPU premium Telstra has over VHA and Optus. They suggest that Telstra has a lower ARPU premium than what we have used in our modelling. We acknowledge that there are challenges involved with estimating a consistent set of ARPUs across all three operators¹⁵. We note that if we reduce the ARPU difference, then this would actually imply a lower domestic roaming charge under a retail-minus approach. This would therefore increase the size of the consumer benefit in our modelling.

Alternatively, if we keep the domestic roaming charge unchanged, and reduce Telstra's ARPU premium, there is minimal impact on our results. In the figure below, we show the impact of using the blended ARPUs for 2016 provided by AM (this implies a Telstra ARPU premium of ~AUD7) and show the outcomes under a range of domestic roaming charges. This indicates that the results do not differ greatly if the ARPUs are slightly different and the ARPU differential is reduced.

¹⁵ AM suggests that we have incorrectly included mobile broadband customers within our ARPU for VHA. If we were to exclude mobile broadband customers from VHA's ARPU, then this has minimal impact on the ARPU. VHA estimates that its ARPU would increase by around 1AUD if mobile broadband were excluded.



Lack of actual evidence

AM and Telstra have criticised the estimate of economic rent that Telstra is making due to its coverage advantage used in our analysis¹⁶. This estimate is not a direct input into our modelling. Instead, it is used to inform our estimate of the domestic roaming charge. Although we use an assumption of economic rent to form an estimate of the roaming charge, we also present sensitivities on the roaming charge in acknowledgement of the uncertainty around this estimate (see above).

We could also have estimated the domestic roaming charge based on an estimate of costs. However, this information is confidential to Telstra. We have seen no evidence provided by Telstra that indicates that our domestic roaming charge is incorrect.

Impact on investment

Both AM and Telstra state that a domestic roaming declaration could have an adverse impact on operators' incentives to invest in geographic coverage. We note in our report that we were not asked to explicitly consider investment incentives. However, if the roaming charge was set appropriately then this should still allow Telstra to earn a sufficient return on investment and lead to the correct build-or-buy signals for operators such as Optus. As such, declaration should not be expected to have an impact on incentives to undertake efficient investment.

¹⁶ As mentioned earlier, a company that sells a service under geographically different competitive conditions will charge a uniform price that reflects these conditions. If it faces weak rivals in some geographies, it will be able to earn an economic rent, even if it faces strong competition in other areas. We also understand that no evidence has been provided by Telstra or others in relation to the level of economic rent/profits earned by Telstra in the mobile market.

Related to the above point, Telstra's critique seems to also argue that a comprehensive cost-benefit analysis could result in any estimated consumer benefits by our analysis being outweighed by the costs of the declaration, through its presumed detrimental impact on investment incentives. As a result of the process followed in Australia, it is necessary for the ACCC to decide on the introduction of declaration prior to deciding/setting the roaming charge. It is therefore correct that it is challenging to undertake an accurate cost-benefit analysis at this stage, without access to information that is confidential to Telstra. Nevertheless, our analysis can inform this cost-benefit comparison, as it can provide the estimates of consumer benefits under a range of assumed levels of the roaming charge.

As a general principle, the incentives to invest in expanding geographic coverage for Optus and VHA would be expected to be stronger, the higher the level of the roaming charge. The incentive of Telstra to invest in maintaining its regional network would also be expected to be higher, the higher the related future returns.

Our analysis has shown that under a range of sensitivities around the level of the wholesale roaming charge, the benefits of declaration are expected to be significant and positive. Criticisms relating to the potential costs of declaration have not provided any evidence that the impact on investment from declaration could outweigh these estimated benefits.

Misinterpretations/understandings of our approach

There are a number of areas where Telstra and AM seem to have misunderstood our approach. For example, AM and Telstra seem to think that we are attributing the entirety of Telstra's current market share lead to its geographic coverage advantage. As explained earlier, this is not the case. Instead, we have assumed that both coverage and non-coverage reasons explain Telstra's market share lead, meaning we expect that Telstra would continue to have a market share lead with a domestic roaming declaration. We have highlighted areas where AM and Telstra have misunderstood our approach in more detail below when we respond to the specific critiques of AM and Telstra.

RESPONSE TO AM POINTS

AM's main point, as set out in its report, is that other competitive advantages contribute significantly to the Telstra premium, and therefore the impact of national roaming should not be as significant as our results suggest. This conclusion does not appear consistent with the facts of the market, as we have explained above, and AM does not present sufficient evidence to refute the assumptions underlying our modelling. We now address each of AM's individual criticisms in turn.

AM Critique 1 - "First, we show that Frontier's economic model is a complicated way of passing an assumed rent to a consumer surplus"

AM suggests that the Frontier modelling is a "complicated way" of taking assumed rent for Telstra and passing it on to consumers. With this conclusion, AM demonstrates that it has misunderstood our modelling approach. As we explain above and in our report, the model does not attempt to estimate economic rent attributable due to coverage advantages, but instead considers the impact of the intensification of competition caused by the declaration on mobile prices, taking into account the (optimal) competitive reactions of Telstra, VHA and Optus to the introduction of national roaming.

AM estimates that a domestic roaming charge consistent with costs should be lower than the estimate we have used. Below, we demonstrate that the consumer benefit would be even higher with AM's suggested domestic roaming charge.

Telstra's economic rent due to coverage and our estimates of the consumer benefit should not in general be expected to be the same because:

- **VHA and Optus also change its prices.** Our model shows how other operators will optimally react to a change in their competitive position (through being able to introduce national products which match Telstra's coverage). Since this will result in lower priced national products, the model predicts Telstra's competitive reaction to this, which results in a lowering of its price given they have a pricing premium. The extent to which they lower its price is **not** equivalent to the proportion of their premium which is related to their coverage advantage, as AM seem to assume. It is in fact a function of their overall competitive position based on a differentiated product, the variable margin it makes and reactions to competitors' prices. The overall welfare change is a result of customers facing lower prices from Telstra and VHA and Optus due to the change in competitive dynamics.
- **The estimated consumer surplus relies on competitive dynamics.** Although there will be a relationship between profit and consumer surplus under a linear demand curve, our model estimates consumer surplus given the competitive dynamics in the market, reflected by the diversion ratios and margins observed in Australia. As these competitive dynamics would change as a result of the introduction of national roaming, the resulting consumer surplus would **not** be expected to be equivalent to a static estimate of the existing economic rent from coverage.

- **There is currently a distortion in the market**, given Telstra's market power, causing a deadweight loss. We do not model the impact of the removal of the deadweight loss (as we model the impact before switching¹⁷). However, this would also mean that we would **not** expect the economic rent to be equivalent to the consumer benefit, as the removal of the deadweight loss would increase the consumer benefit beyond what we have modelled.

AM Critique 2 - "Second, we explain that there is no evidence for the claimed excess profit of AUD616 million"

AM's critique is based on its interpretation of the implications of our use of Richard Feasey's estimate of economic rent of AUD2.1bn as an input assumption for the calculation of an estimated roaming cost. The critique results from AM incorrectly interpreting our modelling as estimating the size of the economic rent from coverage. As we have explained above, this is not the purpose of our modelling.

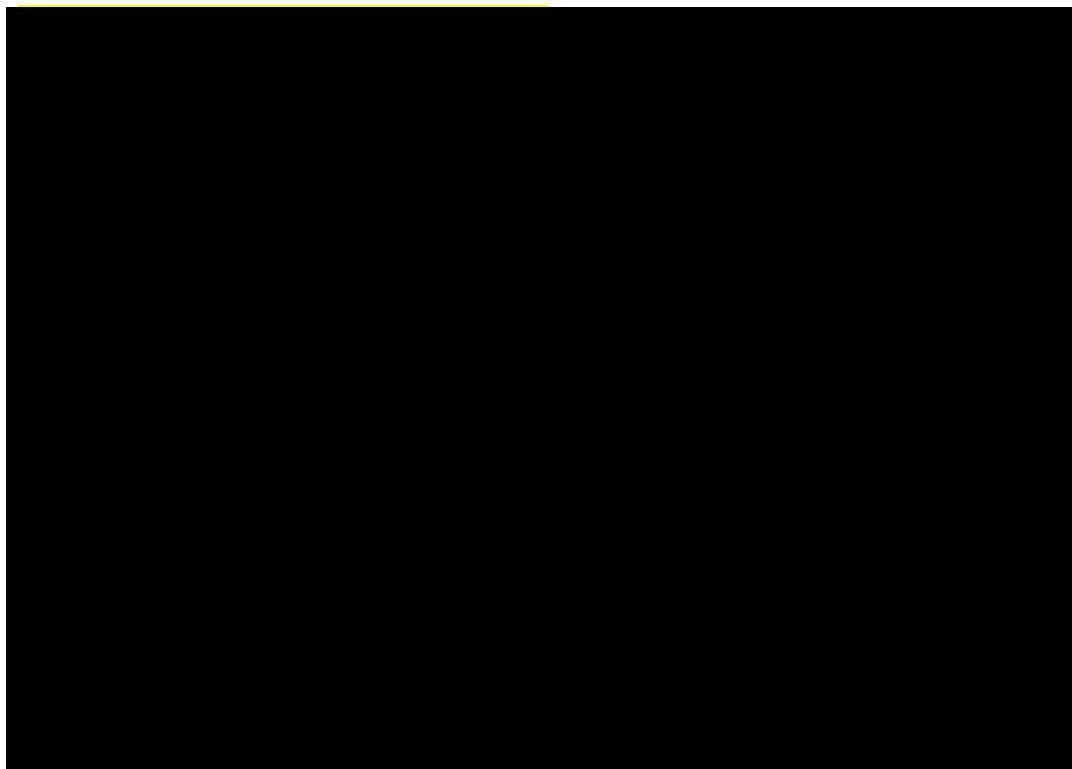
The AUD2.1bn is an input to the methodology used to derive the domestic roaming charge. As noted above, an alternative method to estimate the domestic roaming charge is based on costs. We present a range of sensitivities on the value of the roaming charge to illustrate that significant consumer benefits are not contingent on the precise value we have used. We chose to anchor our assumption around the AUD2.1bn estimate rather than using a cost based approach, as the cost based approach would require detailed information on Telstra's costs.

AM concludes its critique of this approach by suggesting that the domestic roaming charge should be smaller than the AUD5 used, because some share of the premium will relate to other factors of differentiation and because of uncertainty relating to the ARPU differential. As already discussed, AM misinterprets the calculation of this assumption as implying the **only** differentiating factor between Telstra, VHA, and Optus is coverage. This is incorrect; our modelling does not remove any pricing premium for Telstra and maintains other non-coverage differentiating factors through the overall difference in market shares and demand functions for each of the products. Our approach allows Telstra to keep any rent relating to other advantages excluding coverage. The ARPU premium is based on the latest available data at the time the modelling was undertaken; there is uncertainty regarding the size of the premium, however our sensitivities illustrate that there are considerable consumer welfare benefits under a range of sensitivities regarding the access charge.

We note that a smaller domestic roaming cost (all else equal) would increase the consumer welfare benefits. For example, if we used AM's suggested 1.25AUD roaming charge, our model predicts an overall price reduction of 7.19%

¹⁷ We are interested in estimating the nominal price changes as a result of the declaration. The declaration will lead to some subscribers continuing to consume the same product as before the declaration at a lower (nominal) price, and some subscribers switching to more 'expensive', but higher quality, national products or switching within segment to other providers. We are interested to estimate the nominal price change – i.e. isolating it from the additional effect that the declaration will have for some subscribers that will switch to national products that have become cheaper as a result of the declaration. As such we estimate the impact using the original volumes, as if no consumers switch products as a result of declaration.

(compared to 5.64% with a 5AUD charge), and consumer welfare change (before switching) of AUD869mil (compared to 685mil with a 5AUD charge). As we stated in our original report, our standard approach is to take a conservative approach where we have an option to do so. The sensitivities on the roaming charge (and within-segment uplift) are shown in the figure below.



AM's view that a smaller roaming charge should lead to a lower welfare result is based on the incorrect interpretation that our model links the size of the economic rent related to coverage to the size of the impact on consumer welfare. As we have explained, the model considers the optimal competitive reaction to the price change of competitors and change in competitive position due to national roaming. If VHA and Optus face a lower roaming charge, they are in a better position to charge even lower prices for national coverage. Telstra will have to react more strongly to this to maintain market share.

AM Critique 3 - "Third, we demonstrate that the market evidence contradicts the connection between geographic coverage and market share"

AM highlights that consumers outside of urban areas must also purchase from VHA and Optus, and hence criticise our modelling on the basis that we describe VHA and Optus products as "urban" products. AM's critique illustrates that it has misunderstood what we mean by urban-only and national products. As we explain in our report, we characterise the different products in this way to illustrate that there are customers who place a high value on national coverage and customers who do not value national coverage sufficiently to pay the premium – i.e. Optus and VHA's current customers. These customers are likely

to value other differentiating factors of VHA and Optus’s products and find mostly urban coverage sufficient, rather than placing a high value on national coverage.

AM has misunderstood how we modelled the market share impact, a calculation which relies precisely on the difference between market shares in regional and urban areas. AM suggests that the only assumed differentiating factor in our model is coverage. As we have explained in our report and earlier in this note, we assumed that without coverage differentials, regional market shares would converge to urban market shares. As relative market shares in urban areas also reflect differentiation (coverage is only one element of differentiation) between operators, the differentiation is still captured in the model. In addition, we only reduce the market share differential by 60%, to allow Telstra to maintain other non-coverage differentiating factors which may exist in regional areas (even though we have no evidence as to what those might be). If regional market shares move to mirror urban market shares after declaration (see, e.g. the ‘90%’ assumption in figure 2 above), then consumer welfare benefits are substantially higher.

AM also argues that there is no correlation between the evolution of geographical coverage and retail market shares over time. AM aims to present this as evidence which contradicts our conclusions regarding the importance of coverage. AM’s argument is contradicted by the evidence of the importance of coverage in the Australian mobile market, as identified in the ACCC’s draft decision and in stakeholder submissions to which we referred to earlier in this note. AM’s argument also contradicts various submissions made by Optus¹⁸ that carriers compete on coverage.

AM Critique 4 - “Fourth, we highlight that even if there is 'excess profit', the model used by Frontier is the wrong one”

Reasons for using a differentiated Bertrand model

As we have described above and extensively in our report, the differentiated Bertrand model is the most appropriate model for modelling the mobile market in Australia:

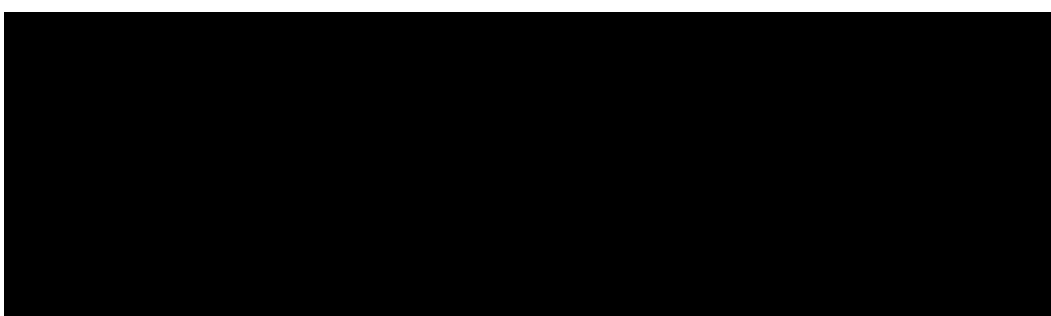
- We observe price differences between the operators, meaning price is a choice variable for operators in the market;
- There is evidence that operators offer differentiated products – they offer different packages, quality and brands; and
- The model is not purely theoretical as it relies on actual market data rather than a large number of assumptions and has been used widely in EC decisions.

Substitutability between products

AM criticises the “two-way substitutability” in the model as it suggests that although national products would be a substitute for urban-only products, they believe the reverse is not true. AM does not appreciate the extent to which this is captured in the diversion ratios used. The model includes diversion ratios which capture switching between products. As these diversion ratios are not symmetric,

¹⁸ For example, Optus – “Domestic Mobile Roaming Declaration Inquiry Public Version (June 2017)”

this allows us to capture differences in closeness of competition and allows differences in substitution in different directions. We specifically include an adjustment factor to capture the fact that switching is more likely to occur within segments. The diversion ratios in the model capture the fact that some customers will not value national coverage, and the degree to which customers will consider alternative products as substitutes on the basis of what they currently consume. The diversion ratios used imply that a larger proportion of customers consuming “urban-only” products would switch to national products than the reverse (i.e. customers consuming national products are less likely to switch to urban products). It is rational that there is some two-way substitution, as all customers will care about factors other than coverage. This means that if the price premium for national coverage was sufficiently high, they would consider switching to an urban-only product. We present the diversion ratios used below



Reasons for not using a Stackelberg model

AM’s suggestion of a Stackelberg model as a superior approach would not work in practice:

- **Telstra has largely already determined its geographic coverage.** A Stackelberg model is a model of Cournot type competition where output is the choice variable and one operator commits to a level of output (the first stage) before others in the market choose their own output given what the leader has done (the second stage). AM proposes that under this approach, Telstra would be the leader and VHA and Optus are followers. It suggests that the impact of national roaming could be modelled by considering that the cost function of the followers’ changes so that they “expand their output more profitably”, and that Telstra (the leader) would take account of this in its output decision. If in the model output is synonymous with coverage, then this has no relationship with reality. In reality, Telstra has already chosen its coverage; there is no value in it reducing coverage in reaction to VHA and Optus having lower costs. Therefore as we are not in the first stage of the game (Telstra is already pre-committed to its coverage), the followers have no ability to influence Telstra in its reaction, and hence in the modelling exercise, this would not result in a new equilibrium unless Optus and VHA are not rational. Since modelling using Stackelberg limits the choice variable to output – in this case coverage – then that implies Telstra has no means to react.
- **Lack of differentiation.** Stackelberg assumes operators choose output and that there is market level demand. The products are not differentiated so Telstra only has market power in the sense that it makes the first move. This implies customers do not consider any other differences between the

products, and prices equalise as the leader chooses output and the followers take the residual demand. This does not resemble the market we observe. AM itself states that differences in coverage cannot explain all the differences in market shares and our model captures that; Stackelberg focuses only on the coverage aspect. AM also highlights that Telstra has market power for reasons other than coverage, which is not captured by the proposed Stackelberg modelling approach.

- **Difficulty in modelling the wholesale-level.** Using a Stackelberg model would not allow Telstra to take account of wholesale revenues earned on Optus' and VHA's national products, which would be expected to impact on its optimal pricing decisions.

AM Critique 5 - “Finally, we note that if coverage was as important as Frontier assumed, the economic benefit would allow Optus and VHA to invest themselves without needing national roaming”

AM argues that the estimated roaming charge of AUD5 would support nearly 4000 sites and states that this indicates the roaming charge is too high. As we have described above, a lower domestic roaming charge in our model would lead to higher consumer benefits than those estimated currently.

AM argues that our modelling implies that VHA and Optus would have an incentive to expand coverage absent a domestic roaming declaration. It makes this argument in two ways:

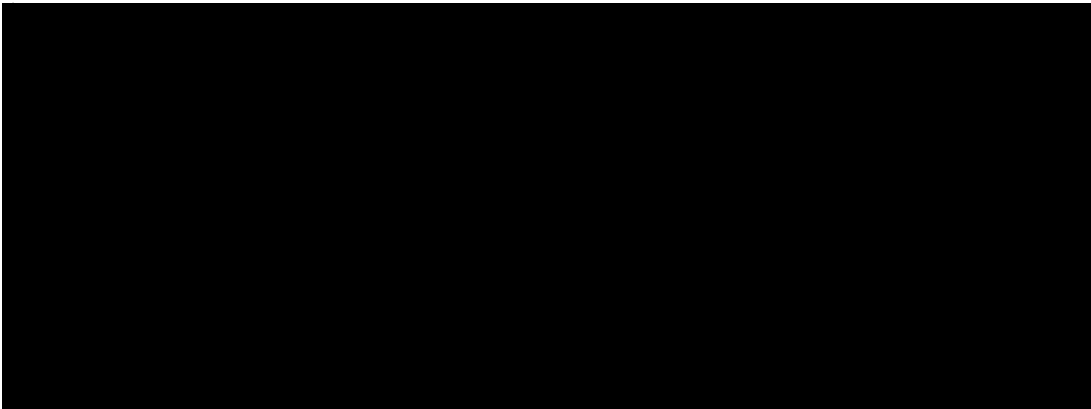
- It argues that if the welfare gain is as large as what we have estimated, then Optus and VHA would have an incentive to expand their geographic coverage; and
- It compares the cost of the wholesale payments (AUD108 million) for the combined customers of Optus and VHA in our modelling with the cost of deploying 600 sites (AUD101 million).

The first point is a misleading argument, as the welfare gain calculated in our model does not equal the benefit to VHA and Optus – the overall welfare gain is materially higher than each operator's benefit. This is not a meaningful comparison of the relative gains to other operators from expanding coverage.

On the second point, we note that the wholesale payment is only slightly above AM's estimate of the costs of expanding coverage (AUD108m vs AUD101m), so only small changes in one of these estimates would render AM's argument invalid. This is an issue given the problems that we highlight with AM's calculation below:

- A higher number of base stations would be required than AM's estimate. AM used Telstra's assumed cell radius in order to calculate the number of sites needed for Optus and VHA to match Telstra's coverage. As Optus and VHA have less low frequency spectrum than Telstra, they would likely need more base stations as they would be relying on spectrum with lower propagation characteristics. They could be expected to incur considerably higher costs.

- Telstra’s submission dated 2 December 2016 states that Telstra has approximately [REDACTED] mobile facilities¹⁹; VHA’s own estimates of the disparity in site numbers indicates a much greater gap in site numbers than the 600 sites suggested by AM. Although operators may have different site densities in areas where they have coverage, this nevertheless indicates that VHA and Optus would likely require a materially higher number of new sites to match Telstra’s geographic coverage i.e. much more than just 600 sites.



- Since both Optus and VHA would likely have to roll-out their own networks, they would both have to incur the costs of roll-out, and as such, the costs would not be less than the total wholesale charge. In particular, based on AM’s estimates, each operator would incur costs of AUD101m, which would be higher than the wholesale payments for each of VHA and Optus, as the AUD108m would be split between them.
- Further, AM considers the number of sites relevant to cover 1 million KM². In reality the coverage difference is closer to 1.4 million KM²; meaning AM does not compare like for like when it considers coverage with roaming and coverage if Optus/VHA rolled out their own networks.

AM therefore cannot conclude on the basis of the evidence presented that the importance of coverage would imply that Optus and VHA could invest themselves without needing national roaming. The ACCC themselves concluded in their draft determination on the basis of submissions by all operators, that it would be unlikely that Optus or Vodafone would be able to close the coverage gap with Telstra: “*The ACCC finds that, to a large extent, Telstra will retain its coverage advantage*”²⁰.

¹⁹ Page 41, Telstra’s Response to the ACCC’s Discussion Paper on the declaration of a wholesale domestic mobile roaming service (Dec 2016)

²⁰ Page 45, ACCC Domestic mobile roaming declaration inquiry draft decision (May 2017)

RESPONSE TO TELSTRA POINTS

Telstra’s main concern, as set out in their note, is that the costs of declaration will be high. This is set out as both in terms of the potential impact on their own investment incentives and in terms of the cost of coverage which would translate into the roaming charge. Below we address each of Telstra’s individual criticisms in turn.

Telstra Critique 1 – “The Frontier Report ignores the welfare loss that declaration will cause”

We have already addressed this point when we discussed the high-levels issues with the AM and Telstra critiques.

Telstra Critique 2 – “Frontier has made over simplistic and erroneous assumptions about mobile services and mobile markets in developing its economic model”

Telstra suggests that the only assumed differentiating factor in our model is coverage. This is incorrect. As we have explained in our report and the upfront section of this note, we assumed that without coverage differentials, regional market shares would converge to urban market shares. Telstra (and Optus) has not provided evidence to the contrary.

Telstra suggest that our model assumes that Optus and Vodafone offer products with the same geographic coverage without declaration. The coverage of different operators is not an input into our model. As we describe above, the model takes account of differentiation between operators including but not limited to coverage differences. The differentiated Bertrand model takes the existing ARPUs and subscriber numbers and the diversion ratios between the products, and estimates the demand functions for the individual products from the existing equilibrium. This therefore captures the degree of differentiation between operators as a composite effect influencing the own price elasticities and cross price elasticities for the different products. This captures differences in coverage between Optus and Vodafone along with other differentiating factors. The impact of determination on Optus and Vodafone differs because it is based on existing market shares of these operators and their own reaction is based on the individual demand functions which capture differentiation.

Telstra suggests a number of features of the market that have not been included in the model, namely:

- The fact that Optus and Vodafone are actually competing suppliers at the wholesale level; and
- Boost’s low-cost, “national” product offering; and
- the pending entry of TPG.

None of these would explain why there is disparity between the market share of Telstra in urban areas compared with its market share in regional areas in circumstances where Telstra supplies the same service.

Including all features of the market in the model would add a significant level of complexity to the modelling exercise without improving the accuracy of the

results. The modelling exercise relies on the most important current features of competition as a starting point from which we can then estimate the impact of declaration using the degree of competition and nature of competitive reactions determined from the current equilibrium to understand the optimal competitive reaction of all operators to declaration.

The ACCC in its draft determination found that *“Accordingly, while services from Boost are a potential alternative for price-conscious consumers seeking wide geographic coverage, the ACCC considers that the availability of Boost may not be having a significant impact on the prices paid by consumers who require or value regional coverage.”*²¹

This implies that including Boost in the model would not be expected to have a significant impact.

Since there is a significant degree of uncertainty about what impact TPG might have on the market, a significant number of assumptions would need to be made which would require us to abstract from the current market data. This could result in a less, not more accurate depiction of the impact of determination, and would not likely make much difference.

Telstra Critique 3 – “Frontier’s Differentiated Bertrand model has not been appropriately calibrated”

Telstra claims we have “made no attempt to calibrate its model to provide for the testing of multiple factors of differentiation” and again incorrectly suggests geographic coverage is the only differentiating factor in the model. Telstra has misunderstood the approach used; in fact one of the key advantages of our approach is that it is calibrated to the existing market outcomes.

As we note in section 3.2 of our report, one of the advantages of this modelling approach is that it is not necessary to have detailed information on the nature/shape of demand for each mobile operator’s products, as this is derived (indirectly) based on:

- Prices;
- Incremental costs; and
- Diversion ratios.

This information allows the model to reflect the current situation in the Australian mobile market. This is referred to as the ‘factual’ case. It is then possible to model the impact of changes in the industry structure and/or incremental costs (this is the ‘counterfactual’ case).

The modelling exercise uses the information from the ‘factual’ scenario to derive the demand parameters which are used to inform the ‘counterfactual’ scenario. The model assumes that firms are profit maximising and therefore that firms are looking to find prices that maximise profits, as a function of quantities, ownership, costs, and demand curves. The inputs into the factual scenario (prices, incremental costs, diversion ratios and subscriber numbers), based on the actual market outcomes in Australia, allow us to derive the demand parameters which result in the current equilibrium. The model captures all factors of differentiation

²¹ Page 42, Domestic mobile roaming declaration inquiry Draft Decision (May 2017)

that result in the current position and pricing of the products in the market. As a result, the ‘counterfactual’ which models the impact of determination is modelled based on the demand parameters which are derived from the factual scenario, and the new equilibrium is based on optimisation using real world data to reflect the specifics of competition in the Australian market. Telstra fails to recognise this important factor which influenced our choice of modelling approach precisely to allow a close resemblance to the market we aimed to model.

Telstra Critique 4 – “There is no evidence that Frontier’s Differentiated Bertrand model results in equilibrium”

Telstra criticises the Frontier approach for not demonstrating that the outcome is an equilibrium state of the market. We agree it is important to find the equilibrium outcome from the differentiated Bertrand model – this is precisely what our modelling exercise does. As we describe above, the modelling approach specifically relies on an assumption of equilibrium prices in the factual scenario to derive the demand parameters. Through re-optimisation using the demand parameters from the factual scenario, and the changes resulting from determination, the new prices are found as equilibrium prices based on all operators setting prices to maximise their profits²².

Telstra Critique 5 – “Frontier’s calculation of the domestic roaming charge of \$5 per subscriber has no reference to the cost of supplying a mobile network in regional and rural Australia and relies on an unsubstantiated estimate of Telstra’s “economic rent””

Magnitude of the domestic roaming charge

Telstra argues that our approach for estimating the domestic roaming charge is likely to “drastically” understate the wholesale charge as it is not based on costs. As we have consistently stated, our approach is to use publically available information where available and to make conservative assumptions where information is more limited. Telstra’s further submission (published by the ACCC on 15 September 2017) suggests that it has a view on what the appropriate wholesale charge for roaming is. If Telstra is willing to supply the relevant information, we would welcome an opportunity to examine the “cost of supplying a mobile network in regional and rural Australia” and revise the domestic roaming charge in our model as appropriate.

We note that as described in the previous section, AM argues that the roaming charge should be significantly lower than the AUD5 we have used, whilst Telstra argues it should be higher. We present a range of sensitivities in our report on both sides of our estimate, which indicates that on either side of our central estimate, we still find significant consumer welfare benefits from declaration.

Structure of the domestic roaming charge

As we note in our report, there are a range of ways in which the domestic roaming charge could be structured. Telstra argues that we provide no reason for

²² In practice the model does this by solving a set of simultaneous equations, which ensures that each operator is profit-maximising after domestic roaming has been introduced.

why a cost per subscriber fee is more suitable in this instance compared to a usage based charge. The approach used in the model could be interpreted as a per usage basis if the charge used in our model is assumed to reflect the average usage per subscriber. As such, the results should not be interpreted as limited to a scenario of a per subscriber change.

Estimate of economic rent due to coverage

Telstra further criticises the use of Richard Feasey’s estimate of economic rent of AUD2.1bn as an input assumption for the calculation of an estimated roaming cost. Telstra describes Richard Feasey’s estimate as fundamentally flawed but we are not aware of any evidence being provided on the magnitude of the economic rent it currently earns.

As we have explained, estimating the economic rent from coverage is not the purpose of our modelling. The AUD2.1bn is an input to the assumption on the domestic roaming charge. We do not offer an independent opinion on Telstra’s economic rent. As noted above, and as Telstra themselves argue, we could also have estimated the domestic roaming charge based on costs. Telstra describe the approach used to arrive at an estimate of the roaming charge as “unconventional”. This is a misleading statement as a retail-minus approach is often used in wholesale price setting. We chose to anchor our assumption around this estimate rather than using a cost based approach, as this would require detailed information on Telstra’s costs that were not available to us.

Telstra Critique 6 – “Frontier’s estimation of Telstra’s ARPU is incorrect”

We have already addressed this point when we discussed the high-levels issues with the AM and Telstra critiques.

Telstra Critique 7 – “There are inherent difficulties in analysing the consumer welfare impact of declaration on the basis of share prices”

Telstra notes the range of limitations that make quantifying the consumer impact of declaration on the basis of changes in share prices difficult. We acknowledge that speculation and uncertainty would create difficulties in forming an opinion on the precise impact of declaration from share price changes. However, we would expect that a share price change could understate the impact of domestic roaming as it will reflect the change in the stock market’s expectation about the likelihood of there being a domestic roaming declaration following the ACCC’s draft decision. The share price change would not reflect the full impact of domestic roaming, as we expect the stock market would not have been certain that there would be a domestic roaming declaration prior to the ACCC’s draft decision.

Although estimates based on share price changes may not be entirely reliable, the changes are an indicator that the stock market views Telstra’s coverage advantage as an important factor, and indicates that declaration can be expected to have a significant impact on Telstra’s expected profits. We note that our results do not rely on the share price analysis, and it was only included in our report as a cross-check of our results.

Telstra Critique 8 – “Vodafone has not made Frontier’s model available and so Telstra has not been able to verify any of the inputs or the calculations”

Frontier has provided both the model and an explanatory note setting out a detailed explanation of the modelling approach to the ACCC and its consultants (RBB Australia) to answer specific questions regarding the model.