



Australian
Competition &
Consumer
Commission

Public Inquiry to make a Final Access Determination for the Domestic Transmission Capacity Service

Further consultation paper

December 2015
Public Version



Australian Competition and Consumer Commission

© Commonwealth of Australia 2015

This work is copyright. Apart from any use permitted by the *Copyright Act 1968*, no part may be reproduced without prior written permission from the Commonwealth available through the Australian Competition and Consumer Commission. Requests and inquiries concerning reproduction and rights should be addressed to the Director Publishing, Australian Competition and Consumer Commission, GPO Box 3131, Canberra ACT 2601.

Contents

Purpose of consultation	2
1 Inclusion of additional pricing data	3
1.1 Pricing data collation	3
1.2 Submissions on whether to include the additional data.....	4
1.3 ACCC's position	5
2 Clarification of the treatment of GST in DTCS pricing model	7
2.1 GST exclusive pricing	7
2.2 ACCC clarification	7
3 2 Mbps Services	8
3.1 Submissions to the Draft Decision	8
3.2 Economic Insights' analysis of the updated pricing dataset	10

Purpose of consultation

The Australian Competition and Consumer Commission (ACCC) released its draft decision on the primary price terms and supplementary price terms to be included in the final access determination (FAD) for the domestic transmission capacity service (DTCS) on 4 September 2015.

Further consultation

In response to submissions from stakeholders to the draft decision, the ACCC decided to undertake further consultation. In particular, concerns were raised about the predictive capabilities of the proposed benchmarking model in relation to short distance, low capacity transmission services. Submissions suggested that prices for short distance, low capacity services produced by the model were above 2012 DTCS FAD prices and are not reflective of market prices. Alternative approaches were suggested.

The ACCC engaged its consultant, Economic Insights, to undertake further regression analysis in response to submissions. In addition, the ACCC decided to include additional pricing information provided by Optus in July 2015 and has clarified the GST aspect of pricing in the confidential dataset.

The ACCC seeks comment on the options canvassed by Economic Insights in its further analysis of the updated dataset.

Based on the need to undertake this further consultation, the ACCC extended the inquiry making period on 5 November 2015. The ACCC now expects to conclude the inquiry in the first quarter of 2016. The DTCS FAD is proposed to take effect from the date of publication until 31 December 2019.

The ACCC now seeks comment on the following:

- Economic Insights' analysis and options for dealing with prices for short distance, low capacity services, and
- inclusion of Optus additional pricing data.

Questions to guide comments are set out in this consultation paper. The ACCC invites submissions to be sent to DTCS@acc.gov.au by COB 5 February 2016. Attached is a redacted version of the report prepared by Economic Insights. Confidential versions of the consultation paper, Economic Insights' report and the updated confidential dataset will be made available to industry experts under the existing confidentiality regime.

1 Inclusion of additional pricing data

Key Points

- In November 2014 the ACCC requested commercial transmission pricing data from the industry. The pricing information was collated and provided to the ACCC's consultant Economic Insights and industry experts in March 2015.
- Optus provided the ACCC with additional pricing data in July 2015, which had been inadvertently omitted from the data provided in response to the November request. The data were provided as Economic Insights was finalising its report and regression analysis of the dataset following extensive consultation with industry and statistical experts and could not be included in the analysis.
- The ACCC has decided to include the additional pricing data in the regression model.
- Economic Insights has undertaken further regression analysis of the dataset, which includes the additional data.

1.1 Pricing data collation

In November 2014 the ACCC requested commercial pricing data from transmission providers which could be used to benchmark prices on regulated routes as part of the ACCC's DTCS FAD inquiry. The ACCC's information request covered all transmission services supplied by the provider on both regulated and deregulated routes which met the technical requirements of the DTCS service description. The ACCC requested the following information from transmission providers:

- Customer - Name
- A-end and B-end - Site address
- Name of product
- Interface type - Ethernet or SDH
- Distance (km) - radial or actual
- Capacity – Mbps
- Recurring monthly charge - Actual billing amount per month
- Connection charges - Actual one off charge/s not included in monthly billing amount
- Route category - Metropolitan, regional, other
- Type of protection provided
- Service Level – Details
- Date current service contract commenced
- Contract term – Months
- Discounts and rebates

The pricing dataset from transmission providers was given to the ACCC's consultant Economic Insights in March 2015. Access to the dataset was also provided to stakeholder experts of Telstra, Optus and VHA. Workshops for stakeholders and experts were held in April 2015. Further analysis of the dataset was then undertaken by Economic Insights and following consultation with experts, a report was provided by Economic Insights to the ACCC.

On 27 July 2015, Optus and VHA advised the ACCC that additional data had been identified which should have been included in the data provided to the ACCC in response to the November 2014 request. The additional data relates to transmission services provided by Optus to VHA for mobile base station backhaul as part of joint venture arrangements between the parties. The agreement began in 2012 and will end in 2018. Under the agreement Optus will provide VHA with [c-i-c starts] [c-i-c ends] transmission services which are predominantly [c-i-c starts] [c-i-c ends] services. Optus and VHA state that the prices for the transmission services were commercially negotiated. Optus noted that the failure to provide the data had arisen as a result of an oversight when collating its original response to the ACCC's transmission pricing data request.

Optus and VHA asked the ACCC to consider including the data in the inquiry, either through inclusion in the benchmarking dataset or as a check on the pricing outputs from the model.

The ACCC was not able to assess whether the additional data should be included in the benchmarking dataset used in the ACCC's draft decision on 4 September 2015. In the draft decision the ACCC advised stakeholders that it will work with Economic Insights and stakeholders (including experts engaged by industry) on whether it would be appropriate to include the additional information in the benchmarking dataset and any subsequent changes to the benchmarking analysis and pricing model.

1.2 Submissions on whether to include the additional data

Optus and VHA strongly supported the inclusion of the additional data as the parties considered that the additional data:

- will materially improve the DTCS benchmark dataset and will ensure that the benchmark analysis promotes the LTIE, and
- provides important competitive observations which will lead to a more comprehensive and accurate benchmarking process.¹

VHA further submitted that while it acknowledges that there will be another round of consultation on how the additional data should be reflected in the FAD, it requested that the ACCC ensure that the FAD is not delayed as a result.²

Telstra has argued that the additional data should not be considered in the regression analysis as it is not transparent that the data are relevant to the benchmarking exercise.³ Telstra submitted that it is not clear whether the additional data relate to just one part of a broader deal between Optus and VHA and so distort the regression results.⁴ Optus has directed the ACCC to a recent announcement by TPG that it would replace Optus as the supplier of mobile backhaul to VHA sites from 2018 at the conclusion of the Optus deal. Optus argued that this announcement demonstrates that the market for transmission capacity is competitive for the locations, which are the subject of the additional data and the pricing data should be included in

¹ Optus and VHA, Letter to the ACCC: *Additional data for the DTCS benchmark dataset*, 1 September 2015, p.1. Optus, *Submission in response to Domestic Transmission Capacity Service Final Access Determination – Draft Decision* (Public version) (Optus, submission to the ACCC DTCS FAD draft decision - public version), October 2015, p.36.

² VHA, *Final Access Determination: the domestic transmission capacity service, submission in response to the ACCC's draft decision* (Public version) (VHA, submission to the ACCC DTCS FAD draft decision – public version), 9 October 2015, p.2.

³ Telstra Corporation Limited, *Submission to the Commission's Draft Report on the Final Access Determination for the Domestic Transmission Capacity Service* (Public version) (Telstra, submission to ACCC DTCS FAD draft decision - public version), October 2015, pp. 4 & 11-12.

⁴ Telstra, submission to ACCC DTCS FAD draft decision - public version. pp. 4 & 12.

the regression analysis in order to provide a complete dataset on which to set the regulated prices.⁵

In a further submission, Telstra reiterated that it strongly disagreed with any proposal for the additional data to be included in the ACCC's regression analysis.⁶ Telstra submitted that there are questions concerning the extent to which it reflects competitive market prices and that it is unlikely to align with the structure of the pricing formula within the draft FAD. Telstra noted the earlier advice from its expert, Professor Breusch, that the inclusion of the additional data would require a substantial revisit of the empirical work requiring further stakeholder engagement.

In a further submission from VHA and Professor Bartels, VHA noted that while the pricing forms part of a larger deal, this is a common industry practice such as Telstra's modular wholesale agreements which typically represent a deal across a range of services, including transmission.⁷

1.3 ACCC's position

The ACCC considers that additional transmission pricing data provided by Optus should be included in the regression analysis. The ACCC notes the oversight in not providing the pricing information in a timely manner in response to the ACCC's original request in November 2014. However the ACCC considers that the additional pricing data falls within the terms of the ACCC's original data request because the ACCC is satisfied that:

- the services meet the DTCS service description
- the additional pricing data contained the relevant information necessary for the benchmarking exercise, and
- the additional pricing data represent commercial pricing information.

Based on the above points the additional pricing data would have been included in the original benchmarking dataset had the data been provided within the original timeframe.

The ACCC notes, that while the mobile backhaul transmission pricing forms part of a broader joint venture arrangement between the parties regarding mobile infrastructure, the ACCC considers that the transmission component was based on commercial negotiation between the parties, including market testing of alternative transmission providers. The ACCC considers that many transmission services within the dataset form part of broader bundled service agreements. In addition, the ACCC notes that VHA has now entered into an agreement with TPG to replace the arrangements with Optus in 2018. This highlights the competitive environment of the existing pricing arrangements and that the data represent commercially negotiated pricing.

The ACCC further notes that the additional data consists of **[c-i-c starts] [c-i-c ends]** observations and increases the overall size of the dataset by **[c-i-c starts] [c-i-c ends]** per cent; therefore it is of a material nature and should be considered for the benchmarking exercise.

⁵ Optus, submission to the ACCC DTCS FAD draft decision - public version, p.36.

⁶ Telstra Corporation Limited, *Further submission to the Draft Decision regarding the Final Access Determination (FAD) for the Domestic Transmission Capacity Service (DTCS)*(Public version) (Telstra, further submission to the ACCC DTCS FAD draft decision – public version), 6 November 2015, pp.3-4.

⁷ VHA, *Final Access Determination: The Domestic Transmission Capacity Services, ACCC pricing inquiry, Submission on the October expert reports of Professor Breusch and CEG* (Public version), 2 December 2015, p. 2.

The ACCC requested Economic Insights to undertake further regression analysis that included the additional pricing data from Optus. The outcomes of the further analysis are included in the modelling options considered in the report from Economic Insights.

A confidential version of Economic Insights' report will be provided to industry experts for comment. The ACCC considers that further stakeholder engagement on the analysis of the updated dataset is required as part of procedural fairness considerations. The ACCC is seeking views from stakeholders on the ACCC's position that the additional data should be included.

Questions

1. Should the additional pricing information be included in the 2015 benchmarking dataset? Please provide reasons why the data should or should not be included.

2 Clarification of the treatment of GST in DTCS pricing model

Key Points

- In the ACCC's draft decision the draft FAD instrument states that regulated DTCS prices are GST exclusive, while the pricing calculator states that prices are GST inclusive. This inconsistency is an error and will be addressed in the final FAD instrument and pricing calculator to note that the DTCS prices are GST exclusive.
- The ACCC has clarified with data providers whether pricing information submitted to the ACCC is GST exclusive. The dataset has been amended accordingly.
- Economic Insights has undertaken further analysis of the updated dataset as discussed in section 3 of this paper.

2.1 GST exclusive pricing

Optus and CEG identified an unexplained variation to the price input for the data relating to Optus acquired services. Optus observed that the prices for at least [c-i-c starts] [c-i-c ends] services had been arbitrarily increased and understood that it may relate to a GST-related adjustment.⁸

2.2 ACCC clarification

The ACCC notes that the initial pricing data request to transmission providers did not specify whether prices should include or exclude GST. The ACCC acknowledges that the inconsistent treatment of GST in the DTCS FAD was an oversight by the ACCC. Since the release of the draft decision, the ACCC has sought clarification from transmission providers on whether their pricing information includes or excludes GST.

The ACCC confirms that the price terms for the DTCS are to be GST exclusive to ensure a consistent approach of not including tax on the prices in the dataset for analysis. The ACCC notes that the 2012 FAD pricing was priced on a GST exclusive basis. The ACCC has amended the dataset to ensure that GST is treated in a consistent and transparent way before the benchmarking analysis and pricing model is finalised. The ACCC will also ensure the pricing calculator and FAD instrument are corrected in the final decision on the FAD.

⁸ Optus, submission to the ACCC DTCS FAD draft decision - confidential version, p.39.

3 2 Mbps Services

Key points

- Submissions to the ACCC's draft decision raised concerns that the pricing arising from the preferred regression model produced counter intuitive results for 2 Mbps services over short distances, which are above the 2012 FAD and some market observed pricing.
- The ACCC engaged Economic Insights to undertake further analysis of the updated pricing dataset in relation to this issue.
- Economic Insights has developed further modelling in response to submissions as requested by the ACCC.
- The ACCC seeks comments on the options presented by Economic Insights.

3.1 Submissions to the Draft Decision

The ACCC draft decision proposed significantly lower prices for high capacity services when compared to the current 2012 DTCS FAD. However, the draft decision increased proposed regulated prices for low capacity services provided over shorter distances.

Optus, CCC and Nextgen submitted that the draft pricing on metropolitan low capacity routes does not accurately reflect market reality.⁹ In relation to 2 Mbps services Optus stated that the model has a clear upwards bias in the cost of 2 Mbps services, with a mean absolute percentage error of around [c-i-c starts] [c-i-c ends].¹⁰

Optus provided the example that the FAD regression will result in average price uplift [c-i-c starts] [c-i-c ends].¹¹ Optus noted that this might be due to the functional form of the regression or it may be that the variables driving 2 Mbps pricing have not been properly identified.¹² Optus further noted that its expert advisor CEG has identified that:

- Economic Insights has erred in its assessment of the impact of a 2 Mbps dummy, noting that Economic Insights' interpretation is 'nonsensical', and
- inclusion of a 2 Mbps dummy variable has a 'highly significant' impact and indicates that prices should be around 15 per cent lower for 2 Mbps services with a distance of less than 5km.¹³

Optus submitted that pricing anomalies had previously been identified in the 2012 DTCS FAD by access seekers and those problems identified in the last FAD continue to persist in the

⁹ Competitive Carriers Coalition, *Submission to Draft Decision on Domestic Transmission Carriage Service FAD* (CCC, submission to the ACCC DTCS FAD draft decision), October 2015, p.1. Optus, submission to the ACCC DTCS FAD draft decision - public version, p.25. Nextgen Group, *Re: Nextgen Response to the ACCC Public Inquiry to make a FINAL Access Determination for the Domestic Transmission Capacity Service Draft Decision* (Nextgen, submission to the ACCC DTCS FAD draft decision), 8 October 2015, p.1.

¹⁰ Optus, submission to the ACCC DTCS FAD draft decision - confidential version, p.5.

¹¹ Optus, submission to the ACCC DTCS FAD draft decision - confidential version, pp.23-24.

¹² Optus, submission to the ACCC DTCS FAD draft decision - public version, pp. 5 & 25.

¹³ Optus, submission to the ACCC DTCS FAD draft decision - public version, pp.6 & 25. CEG. *Review of the draft decision on DTCS FAD* (redacted), October 2015, pp. 19 & 20.

current FAD inquiry.¹⁴ Optus explained that [c-i-c starts] [c-i-c ends] but once the ACCC issued a FAD the price decline stopped.¹⁵ Optus observed that the regulated price of a 2 Mbps 2km link is now 75 per cent greater than the commercial price in 2011.¹⁶

Optus also observed that there is little relationship between monthly price and distance in the 2 Mbps observations as the vast majority of the links are priced at the same four price points being [c-i-c starts] [c-i-c ends].¹⁷

Optus considered that it may be possible to take into account the structural differences between 2 Mbps services and other services through the use of structural breaks in regression analysis.¹⁸

CCC and Nextgen submitted that the data used in the pricing model are inadequate and that the ACCC should consider widening the scope of the dataset to capture the impact of substitute services.¹⁹ CCC considered that absence of these data means that the model is only relying on data related to the least informed buyers or buyers that have the least bargaining power.²⁰

Telstra strongly disagreed with the criticism that since the draft decision has generated higher pricing for some 2 Mbps services, the entire regression model is critically flawed.²¹ Telstra submitted that the criticism suggests a cherry-picking approach with the intent on accepting only regulated pricing outcomes which are deemed agreeable and excluding as 'exceptional' those not deemed to be agreeable. Telstra stated that its analysis shows that [c-i-c starts] [c-i-c ends].²²

Telstra further submitted that as a matter of good practice, regulatory decisions should apply equally to all stakeholders and considered that the regression analysis is robust and should apply across the entire dataset.²³

Optus and CEG supported the adoption of the Stochastic Frontier Analysis (SFA) method as a method of addressing both outlier problems and averaging problems inherent in ordinary least squares (OLS) regression.²⁴ Optus submitted that, in rejecting the SFA method Economic Insights failed to provide the ACCC with any objective fact-based reasons not to adopt the SFA method since Economic Insights had not attempted to estimate or predict the results.²⁵ Professor Bartels and VHA also support using SFA as an alternative to the benchmarking models developed by Economic Insights.²⁶

Professor Breusch stated that Economic Insights (in its final report) made the correct decision in recognising that SFA models proposed by other experts do not answer the fundamental question of benchmarking against average competitive pricing.²⁷

¹⁴ Optus, submission to the ACCC DTCS FAD draft decision - public version, pp.19-20.

¹⁵ Optus, submission to the ACCC DTCS FAD draft decision - confidential version, p.20.

¹⁶ Optus, submission to the ACCC DTCS FAD draft decision - public version, p. 18.

¹⁷ Optus, submission to the ACCC DTCS FAD draft decision - confidential version, p.24.

¹⁸ Optus, submission to the ACCC DTCS FAD draft decision - public version, p.32.

¹⁹ CCC, submission to the ACCC DTCS FAD draft decision, p.1. Nextgen, submission to the ACCC DTCS FAD draft decision p.1.

²⁰ CCC, submission to the ACCC DTCS FAD draft decision, p.1

²¹ Telstra, further submission to the ACCC DTCS FAD draft decision – public version, p.1.

²² Telstra, further submission to the ACCC DTCS FAD draft decision – confidential version, p.1.

²³ Telstra, further submission to the ACCC DTCS FAD draft decision – public version, p.1.

²⁴ Optus, submission to the ACCC DTCS FAD draft decision - public version, p.30. CEG. *Review of the draft decision on DTCS FAD* (redacted), October 2015, pp. 7-8.

²⁵ Optus, submission to the ACCC DTCS FAD draft decision - public version, p.32.

²⁶ Frontier Economics, *Review of the Draft DTCS Benchmarking Model*, July 2015 (confidential), pp. 18-21.

²⁷ Professor Trevor Breusch, Report on: *Economic Insights Final Report and 2015 DTCS Draft FAD* (Public version), 2 October 2015, p.4.

Optus submitted that regression modelling should not be the sole input into pricing.²⁸ Optus suggested that commercial arrangements could be used as a possible alternative to regression outputs with a price decline on historical arrangements, or as a market test for the reasonableness of the regression outputs.²⁹

3.2 Economic Insights' analysis of the updated pricing dataset

Following submissions to the ACCC's draft decision, the ACCC instructed Economic Insights to undertake further analysis of the updated pricing dataset. The dataset was adjusted to include the additional pricing information from Optus and amended to ensure that all pricing in the dataset was GST exclusive.

Economic Insights performed the following tasks:

- re-estimated the 2015 pricing model from Economic Insights' final report with the inclusion of the additional Optus data and GST clarification
- tested and evaluated alternative methods to deal with 2 Mbps service issues including a separate regression for 2 Mbps services, a dummy variable for 2 Mbps services and piecewise regression³⁰
- tested and evaluated additional methods of dealing with outliers in the dataset
- tested the SFA model as an alternative to random effects (in the current draft model), and
- in testing the models (with the exception of the SFA model), Economic Insights used 10-fold cross validation to test out-of-sample performance.

3.2.1 Re-estimating of previous pricing models with data corrected to be GST exclusive and additional Optus data

Economic Insights re-estimated the three preferred models that were presented in table 5.1 of Economic Insights' final report for the draft decision using the revised dataset which included the Optus data and on a GST exclusive basis. For the remainder of the document, the three preferred models presented in Economic Insights' final report re-estimated with the revised dataset is referred to as the 'base model'.

Economic Insights found that including the Optus data in the dataset results in the model setting the regulated price on average **[c-i-c starts] [c-i-c ends]** than it would otherwise be if the additional data were not included.³¹ The biggest difference in the predicted prices between the two models is for metropolitan and regional services greater than 50 Mbps where the model including the Optus data predicts prices **[c-i-c starts] [c-i-c ends]** than the 2015 draft FAD model.³² There is no change in the predicted prices for low capacity metropolitan and regional services between the two models.

²⁸ Optus, submission to the ACCC DTCS FAD draft decision – public version, pp.5 & 37.

²⁹ Optus, Letter to the ACCC, *Proposed treatment of 2Mbps Transmission Services* (public version), 4 November 2015, p. 1.

³⁰ This piecewise regression model allows different coefficients for the explanatory variables for services below 2 Mbps. It recognises that the explanatory variables may have a different impact on the price of 2 Mbps services than for high capacity services.

³¹ Economic Insights, Memorandum to the ACCC: *DTCS benchmarking Model: Testing Additional Optus Data* – (confidential), October 2015, pp.14-16.

³² Economic Insights, Memorandum to the ACCC: *DTCS benchmarking Model: Testing Additional Optus Data* (confidential), October 2015, pp.14-16.

Section 2 of this paper noted the oversight in failing to clarify the basis for access providers to submit pricing data and the inconsistent treatment of GST between the 2012 DTCS FAD model and the draft FAD model. After correcting for the treatment of GST, the predicted prices using the draft FAD model are lower than the predicted prices using the 2012 DTCS FAD model for all segments of the market. This corrects the issues raised by a number of stakeholders that the 2015 draft FAD model results in an increase in regulated prices from the 2012 FAD model for some segments of the market.

3.2.2 Outliers

In response to the different approaches suggested by CEG in its submission to the draft decision, Economic Insights considered two different approaches in addressing extreme outliers in the dataset. They are:

- to remove the observations with extreme influence from the benchmarking dataset, and
- to use 'robust regression' techniques to estimate the random effects model.

Using the base model and econometrics techniques to find outliers, Economic Insights identified 329 outliers that had the greatest influence on the regression model. Economic Insights' findings show that, after removing the outliers, the 'out-of-sample goodness-of-fit' using 10-fold cross validation is inferior to the base model discussed in the previous section. Economic Insights considers that there does not appear to be any benefit in removing the most highly influential observations and suggests that they should not be excluded from the sample used for estimation.

Economic Insights recommends caution in removing outliers from the sample because a normal distribution curve assumes a certain percentage of outliers and the exercise in identifying outliers is model-specific. This point is reinforced by the fact that Economic Insights has already undertaken a process for identifying outliers using the DAA model specification which highlighted a number of outliers. In this process the ACCC contacted the data providers to clarify if the outliers identified by Economic Insights were data errors. During this process the ACCC took the view that only incorrect data should be removed and legitimate contracts should not be removed from the dataset. In its recent report, Economic Insights expresses a similar view, noting that outliers should not be removed unless it is likely that the outlier reflects a data error or does not contain relevant information.

CEG stated that R, a user-written statistical package, could be used to conduct a robust estimation of the random effects model.³³ Robust regression techniques use algorithms to iteratively down-weight or remove highly influential outlying observations. Economic Insights used these estimation techniques to estimate a regression model robust against possible outliers.

Economic Insights' analysis is set out in Chapter 3 of its report.

Questions

2. Which approach, if any, should the ACCC adopt in dealing with outliers in the benchmarking dataset? Please provide detailed reasoning.

3.2.3 2 Mbps Service Issues

As noted above, after correcting for the inconsistent application of GST, the base model in Economic Insights' additional advice to the ACCC generates lower prices than the 2012 DTCS FAD model for all market segments. This addresses the concern that the draft FAD will

³³ CEG, *Review of the draft decision on DTCS FAD* (redacted), October 2015, pp. 13-14.

increase the regulated price for some market segments. As a result, each of the models proposed by Economic Insights in its additional advice to the ACCC predicts prices lower than the 2012 DTCS FAD model for 2 Mbps services.

However, to address Optus' point that contracts less than 2.5 Mbps make up a different part of the market Economic Insights conducted further analysis to allow prices for low capacity, short distance services to be calculated differently from high capacity services. The three options examined by Economic Insights were to:

- a) split the data into two subsamples; one dataset for services less than 2.5 Mbps and less than 5km and one dataset with services greater than 2.5 Mbps and 5km and re-estimate the base model on each subsample. However, the subsample of services less than 2.5 Mbps and 5 km had insufficient variability to estimate a regression model due to the homogenous nature of the subsample. Economic Insights therefore used the average price of services less than 2.5 Mbps and 5km as the best estimate of prices for this subsample
- b) introduce an indicator or dummy variable for services less than 2.5 Mbps and less than 5km that essentially acts as a discounting factor for these services, and
- c) develop a 'piecewise regression model' that allows services less than 2.5 Mbps to have different coefficients from services greater than 2.5 Mbps for the same explanatory variables.

The ACCC considers that the appropriate criteria for selecting a model to price regulated routes include that the model:

- predicts prices close to or reflective of commercial prices on competitive/deregulated routes from which the model has been estimated
- has good in-sample and out-of-sample goodness-of-fit consistent with the previous point that the regulated price should reflect commercially negotiated prices, and
- is simple enough to be used as a pricing model to set the regulated price on regulated routes.

Economic Insights' findings are discussed at Chapter 4 of its report.

Questions

3. Which options, if any, should the ACCC adopt in addressing the 2 Mbps pricing issues? Please provide details of why these options are preferable.
4. Should the ACCC consider using commercial pricing as a price ceiling?

3.2.4 Stochastic Frontier Analysis method

Economic Insights used SFA techniques to estimate a model on the deregulated dataset (including the Optus data). The SFA approach estimates the cost efficient frontier, rather than finding the average price such as in most traditional regression models. Using the SFA method, any positive disturbances from this frontier are interpreted as being due to inefficient pricing or residual market power.

The SFA model cannot be interpreted using the criteria set out in Section 3.2.3 above because it assumes that any negative out-of-sample forecast bias is due to inefficient pricing in the dataset. The choice to use this approach will come down to economic arguments not statistical tests.

Economic Insights' additional advice to the ACCC found that the SFA approach predicts prices that are on average 46 per cent lower than actual prices on competitive/deregulated routes.

Economic Insights considers that the findings support its previous contention that the SFA model would predict lower prices than the random effects model because the unexplained variation in the data is attributed to inefficiency. Economic Insights noted that, if this method was to be adopted, the ACCC may need to apply a premium to ensure prices were sufficient to finance investment and allow for estimation uncertainty. Economic Insights notes that this premium would need to be derived arbitrarily as there is no method for deriving it.

Economic Insights' findings are discussed at Chapter 5 of its report.

Questions

5. Should the ACCC adopt the SFA method instead of the random effects model used as the benchmarking model in the DTCS FAD draft decision? Please provide detailed reasons including whether a premium should be applied to predict frontier prices and how such a premium would be calculated.