

concept economics



REPORT

MTAS: CROSS-SUBMISSION

Public Version

Prepared for:
Two Degrees Mobile
Limited

Prepared by:
Eric Ralph, Emma Lanigan
Date: 18 August 2009

Concept Economics:
27 Jardine Street,
PO Box 5430 Kingston
ACT 2604 Australia



© Concept Economics Pty Ltd 2008
ABN 73 129 990 530

This work is subject to copyright. The *Copyright Act 1968* permits fair dealing for study, research, news reporting, criticism or review. Selected passages, tables or charts may be reproduced for such purposes provided the acknowledgment of the source is included. Reproduction for commercial use requires prior written permission which must be obtained from Concept Economics. Requests and inquiries concerning reproduction and rights should be addressed to the Knowledge Manager, Concept Economics Pty Ltd, GPO Box 5435 Sydney NSW 2001, or by phone to Shirley Carpenter on +61 2 8233 4090 or email shirleycarpenter@concepteconomics.com.au.

For further information on this report, please contact the project manager of this report on +64 3 571 6335 or email emmalanigan@concepteconomics.com.au.

Disclaimer

Concept Economics and its author(s) make no representation or warranty as to the accuracy or completeness of the material contained in this document and shall have, and accept, no liability for any statements, opinions, information or matters (expressed or implied) arising out of, contained in or derived from this document or any omissions from this document, or any other written or oral communication transmitted or made available to any other party in relation to the subject matter of this document. The views expressed in this report are those of the author(s) and do not necessarily reflect the views of other Concept Economics staff.

Table of contents

1.	OVERVIEW	1
2.	THE STATE OF COMPETITION IN THE RETAIL MOBILE MARKET(S)	3
2.1.	ANALYSIS OF PRICING OUTCOMES	3
2.1.1.	Interpreting the OECD retail price comparison	3
2.1.2.	International comparisons of revenue per minute	10
2.1.3.	Domestic pricing trends	11
2.2.	OTHER ASPECTS OF THE COMMISSION'S COMPETITION ASSESSMENT	11
2.2.1.	Market Concentration	11
2.2.2.	Usage levels	12
2.2.3.	Churn	12
2.2.4.	Use of multiple handsets	13
2.3.	DYNAMIC EFFICIENCY	13
3.	MARKET POWER, MOBILE TERMINATION AND THE WATERBED EFFECT	15
3.1.	MOBILE TERMINATION AS A BARRIER TO ENTRY AND EXPANSION	16
3.1.1.	Above cost mobile termination rates allow incumbents to use on-net discounts to prevent successful entry and expansion	16
3.1.2.	If entry has taken place there are no entry barriers	22
3.1.3.	The correlation between mobile termination charges and competition	22
3.1.4.	On-net discounting	24
3.1.5.	Traffic imbalance	25
3.2.	ACCOUNTING FOR THE MARKET'S TWO-SIDES	26
3.3.	THE WATERBED EFFECT	29
3.3.1.	The waterbed effect is, if present at all, weak	30
3.3.2.	A waterbed effect does not imply current rates are right, but if they were, this is unlikely to apply to MTM	32
3.3.3.	The waterbed effect, in any case, is a minor side issue	32
4.	RELEVANT FACTUAL	32
4.1.	PRICING PRINCIPLES AND WHAT PRICES THEY ARE LIKELY TO DELIVER	34
4.2.	THE BAK PRINCIPLE	35
4.2.1.	The effect of low termination charges on subscriptions and usage	35
4.2.2.	Low mobile termination rates/BAK and arbitrage	38
4.2.3.	Conclusion on BAK	39
4.3.	EVALUATING CRITICISMS OF THE COMMISSION'S BENCHMARKING EXERCISE	39



4.3.1.	Cost drivers and comparability	39
4.3.2.	Countries to include in sample	42
4.3.3.	US regulatory estimates of termination costs	42
4.3.4.	Determination of the benchmark rate	44
4.3.5.	Change in costs over time	45
4.3.6.	Cross-checks on cost estimates	46
4.3.7.	Glidepaths	47
4.3.8.	Other divergence from cost	48
5.	RELEVANT COUNTERFACTUAL	48
6.	COST BENEFIT ANALYSIS	49
6.1.	THE RELEVANT TEST: CONSUMER SURPLUS OR EFFICIENCY?	49
6.2.	ESTIMATION OF THE WATERBED EFFECT	49
6.3.	FTM PASS-THROUGH	50
6.4.	MODELLING THE CONSUMER BENEFITS IN THE MOBILE MARKET	50
	APPENDIX A: CALCULATION OF CANADIAN FIXED TERMINATION RATE	51

1. OVERVIEW

2degrees have commissioned Concept Economics to provide comments on the submissions made by Vodafone, Covec, Analysys, Telecom and NERA on the following topics:

- The state of competition in the retail mobile market (see section 2): we find that the OECD mobile retail price rankings are severely misleading as an indicator of the extent of competition in New Zealand. Even though the pricing structure of the plans included in the OECD analysis results in favourable international rankings (likely by design), a more detailed examination which compares them with Vodafone Australia's offerings clearly shows that Australian consumers are provided with substantially more value for similar price levels.
- Barriers to entry due to on-net pricing and high termination rates, two-sided markets and the waterbed effect (see section 3): we explain how on-net discounting coupled with above cost termination rates raises the incumbents' margins at the expense of an efficient entrant. The implications for the regulation of mobile termination of two-sided market analysis and the related waterbed effect are also considered and are largely found to reinforce the need for regulatory reform. In addition, the well-known beneficial effects of entry are likely to swamp any potentially adverse effects that might arise from two-sidedness or the waterbed effect.
- The relevant factual (see section 4): we provide views on the criticisms made by other parties regarding the Commission's mobile termination cost benchmarking and find that: (1) benchmarking should be carried out on the basis of cost rather than price; (2) the Commission's benchmark of 7.16 cpm is very likely to overstate that termination rate that would prevail in New Zealand under regulation; and (3) costs are likely to fall substantially over time due to the economies of scale and scope associated with the impending wide-scale use of mobile broadband services.
- The relevant counterfactual (see section 5): as discussed in our previous reports, entry is likely to be severely restricted or even foreclosed without regulation. This is the key feature of the counterfactual that needs to be considered when assessing the long-term consumer benefits of regulation.
- The cost-benefit analysis (see section 6): some submissions assert that the Commission's assumptions of FTM pass-through are overly optimistic. However, the analysis on which these assertions are based does not account for the fact that fixed service providers compete for the bundle of fixed services and therefore pass-through estimates must be examined in that broader context. More generally, the alternative parameters suggested by Vodafone's consultants perversely imply that the 2-player mobile duopoly is more competitive than the multi-player fixed service market.

We conclude that the material provided in the submissions on the Commission's Draft report would not lead to a change in the Commission's Draft Recommendation that regulation of mobile termination would be in the interests of long-term consumer benefits.

Undertaking an empirical cost-benefit analysis is instrumental to any examination of the effects of mobile termination regulation, and that analysis shows very large gains to consumers. That being said, such analysis requires careful consideration of many points, each of which can be subjected to critical scrutiny. While this in general is valuable and indeed necessary, it is important not to lose sight of the overarching drivers of consumer gain. In particular, there are a number of simple facts that the Commission must take into account in its decision and ultimate recommendation to the Minister, as have been already recognised in its Draft Report:

1. The New Zealand mobile market is far from being effectively competitive – the duopoly market structure has resulted in consumers receiving less value than their international counterparts leading to mobile usage that is less than half the OECD average. While there has been a flurry of MVNO entry (likely prompted by the entry of 2degrees) this only allows competition at the retail layer and is ultimately limited by the commercial agreements negotiated with Telecom and Vodafone;
2. The pricing structures used by Telecom and Vodafone distort competition by discouraging customers from communicating with customers connected to other networks. This has the effect of creating large closed networks where each customer in a calling community subscribes to the same carrier. Customers are effectively locked-in to that carrier's network because, should they switch, people calling them will face high off-net prices, and they will also face high costs of calling their friends. That this creates severe problems for small networks, as is recognised internationally by economists and regulators.
3. Above cost termination rates accentuate this problem. Because of its small subscriber base, on-net pricing by an entrant provides less benefit to new customers than on-net pricing by the incumbents. To compete effectively, an entrant needs to offer low off-net pricing, but this is extremely difficult with above cost termination charges. As the French regulator, ARCEP, pointed out, the combination of on-net discounting and above cost termination charges creates a vicious circle where small networks are unable to offer attractive pricing, and hence unable to gain market share. By our calculations, at the levels of termination charges proposed in the Undertakings and those contained in the commercial agreements, offering attractive off-net pricing will be extremely difficult for 2degrees due to the large traffic imbalance it creates. Initial statistics from the 2degrees network confirm this.
4. As a consequence, while entry has occurred, unless regulation is introduced, the entrant is at best likely to be limited in effectiveness, and may well fail as signalled international and local precedent.
5. International experience, economic theory, and careful modelling leave no doubt that effective and sustained entry will dramatically improve outcomes for New Zealand consumers. In the case at hand, the regulation of mobile termination regulation is fundamental to achieving these outcomes.

2. THE STATE OF COMPETITION IN THE RETAIL MOBILE MARKET(S)

Vodafone makes a number of critical comments on the Commission's analysis of the state of competition in the retail mobile market. In this section, we first examine the points raised by Vodafone in relation to pricing, then discuss Vodafone's comments on other aspects of the Commission's competition analysis and finally consider the NERA's claims on dynamic efficiency.

2.1. ANALYSIS OF PRICING OUTCOMES

On the topic of retail pricing, Vodafone makes the following claims:

- Prices lie toward the top of the OECD rankings (Vodafone submission – heading above para 326);
- The international comparison that the Commission conducted on average revenue per minute (ARPM) is misleading (Vodafone submission para 329-332); and that
- Vodafone's pricing has plummeted (Vodafone Submission para 3).

We discuss each of these points in turn.

2.1.1. Interpreting the OECD retail price comparison

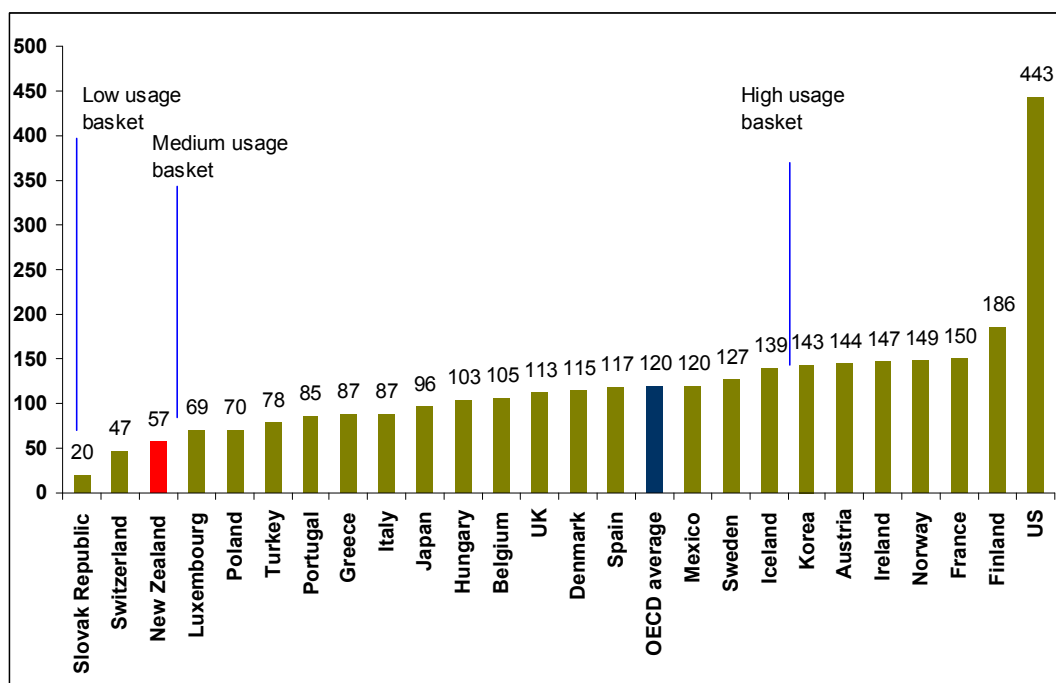
As Vodafone point out, New Zealand prices rank well compared with other OECD countries – for example, the most recent OECD mobile price rankings (based on the Teligen baskets) find that for the low user basket, New Zealand has the 10th lowest price in the OECD; for the medium user basket, the 9th lowest price; and for the high user basket, the 14th lowest price.¹ These results, however, are misleading.

Firstly, the rankings are sensitive to the choice of profile. The usage assumptions employed in the OECD rankings are no longer reflective of typical demand in OECD countries (see Chart 1) which distorts the results. While the average across OECD countries of voice usage is **120** minutes per month, the medium usage basket contains only **65** minutes. The low usage basket contains 30 minutes and high usage basket contains 140 minutes. The OECD has noted that it will be updating the baskets this year to take account of changing usage patterns and tariff structures.²

¹ OECD, *Communications Outlook 2009*.

² OECD Communications Outlook 2009, p. 269.

Chart 1 Mobile usage per month per subscriber in OECD countries, 2007



Source: OECD Communications Outlook, 2009

Because typical usage in the majority of the OECD countries is well above the low and medium usage baskets, pricing packages in those countries will be less oriented towards customers with very low usage (simply because there is little demand for such packages). For example, in the US, average usage is 443 minutes per month, which is driven by pricing plans suited to those volumes. In New Zealand, usage is low with consumers using an average of 57 minutes per month – less than half the OECD average – and so it is more likely that pricing packages will be tailored to low usage profiles. Therefore it is not entirely surprising that New Zealand performs reasonably well for the low and medium user baskets. *Indeed, the very fact that New Zealand average usage is so low is indicative that its prices cannot be particularly competitive when compared with those available in other OECD countries.*

Secondly, the results will be dependent on the specific profile chosen and do not, in our view, properly compare the value that mobile subscribers receive in New Zealand relative to consumers overseas. As an example, we compare Vodafone Australia plans with the Vodafone NZ You Choose plans that are included in the OECD analysis.³ A simple glance at the low-usage plans (see Table 1) reveals that the Australian consumer would be much better off. Although the Australian plan is slightly more expensive (by less than NZD5 per month), the customer receives around 117 extra minutes, 100 free texts and has no contract term.

³ We note that Vodafone NZ and Vodafone Australia have similar add-ons such as BestMates, which makes their offerings easier to compare than cross-operator comparisons.

Table 1: Comparison of low user Vodafone NZ You Choose and Vodafone Australia pricing

	Plan	Monthly fee (local currency)	Monthly fee (NZD)	Included mins	Included texts	Contract term
Vodafone NZ	You Choose 20 – 12 month	\$19.95	\$19.95	22 ^a	0	12
Vodafone NZ	You Choose 20 – 24 month	\$19.95	\$19.95	25 ^b	0	24
Vodafone Australia	\$20 Vodafone SIM Only Cap	\$20.00	\$24.59*	142**	100	0

*Assumes an exchange rate of A\$1 = NZ\$1.23 (prevailing exchange rate as of 17 August 2009)

**The Vodafone Australia plan provides for \$150 worth of free usage. This was converted to calls by assuming a 2 minute duration.

Vodafone recently replaced the You Choose plans with the new “Easy” plans. The timing of the introduction of the Easy plans, being one week prior to 2degrees commercial launch, was presumably a competitive response aimed at pre-empting the entrant’s prices. This has improved the value available to low usage customers – the monthly fee has fallen 15%, 60 minutes of offpeak calling have been added, and 40 texts are now included. Even so, the value available to the Australian customer is still substantially in excess of the for the New Zealand customer:

- the effective price of the included minutes is 17 cents per minute in Australia as compared with 21 cents in New Zealand;
- 75% of the free minutes used on the New Zealand plan must be off-peak while there are no restrictions in the Australian case;
- the Australian customer receives 60 more free texts;
- a 12 month contract is required to access the plan in NZ where as no term commitment is required in Australia.

Table 2: Comparison of low user Vodafone NZ Easy and Vodafone Australia pricing plans

	Plan	Monthly fee (local currency)	Monthly fee (NZD)	Included mins	Included texts	Contract term
Vodafone NZ	Easy 20	\$16.95	\$16.95	20 anytime + 60 offpeak	40	12
Vodafone Australia	\$20 Vodafone SIM Only Cap	\$20.00	\$24.59	142	100	0

Repeating the same exercise for the You Choose 60 plan (used in the analysis of the OECD medium usage basket) shows a similar result: the Australian plan provides much better value than the one available in NZ. The equivalent Vodafone Australia plan:

- is 11% cheaper;
- provides around 100 additional minutes;
- provides 100 additional SMS; and
- provides up to \$130 more in the handset subsidy for a 12 month plan, and up to \$479 more in the handset subsidy for a 24 month plan.

Table 3: Comparison of medium user Vodafone NZ You Choose and Vodafone Australia pricing

Country	Plan	Monthly fee (local currency)	Monthly fee (NZD)	Included mins	Included texts	Handset subsidy (NZD)
NZ	You Choose 60 -12 months	\$39.95	\$39.95	60	0	\$60
Australia	\$29 Cap Contract - 12 months	\$29.00	\$35.66	158	100	up to \$196
NZ	You Choose 60 – 24 months	\$39.95	\$39.95	60	0	\$120
Australia	\$29 Cap Contract - 24 months	\$29.00	\$35.66	152	100	up to \$736
NZ	You Choose 60 – 36 months	\$39.95	\$39.95	60	0	\$150

Again, while the Easy 60 plan recently introduced by Vodafone NZ provides an improved package, the comparable plan offered by Vodafone Australia still seems to provide better value. The price of the Vodafone Australia plan is around \$5 per month more expensive than the New Zealand plan, but Australian customers receive:

- a handset subsidy of up to \$159 per month (no handset subsidy is provided in the New Zealand plan);
- 40 extra texts per month; and
- 38 extra minutes per month, with no limitations on whether the free minutes are peak or off-peak.

The value of the extra texts alone more than off-set the difference between the two plans.

Table 4: Comparison of medium user Vodafone NZ Easy and Vodafone Australia pricing

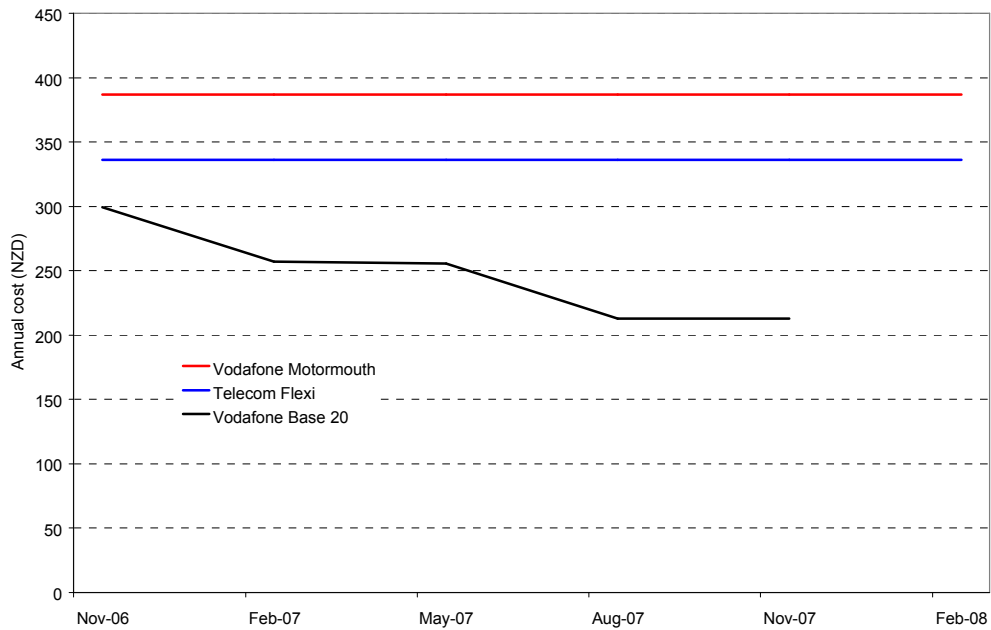
	Plan	Monthly fee (local currency)	Monthly fee (NZD)	Included mins	Included texts	Handset subsidy (NZD)	Contract term
Vodafone NZ	Easy 60	\$29.95	\$29.95	60 anytime + 60 off-peak	60	\$0	12
Vodafone Australia	\$29 Cap Contract	\$29.00	\$35.66	158	100	up to \$196	12

Thirdly, the primary driver of the pricing plans used in the OECD rankings may not have been competition, but rather the threat of regulatory intervention. This provided an incentive to offer plans that improved the OECD rankings, but which did not necessarily improve consumer wellbeing.

As discussed above, the plans that are used in the OECD rankings are the Vodafone You Choose plans (which evolved from the Base Plans). The Base Plans were introduced by Vodafone around 2006, however they had little impact in the market. For example the Base 20 plan was introduced at a price lower than the existing low user plans in 2006, however it did not lead to lower prices for other equivalent plans, and did not elicit a competitive response from Telecom. Following the introduction of Base 20 and even after its price was reduced by around 30%, the prices for other low user plans remained steady (see Chart 2). For example, pricing of comparable plans (that is, Motormouth and Flexi) did not change for two years following introduction of Base 20.



Chart 2 Low user plan pricing 2006-2008

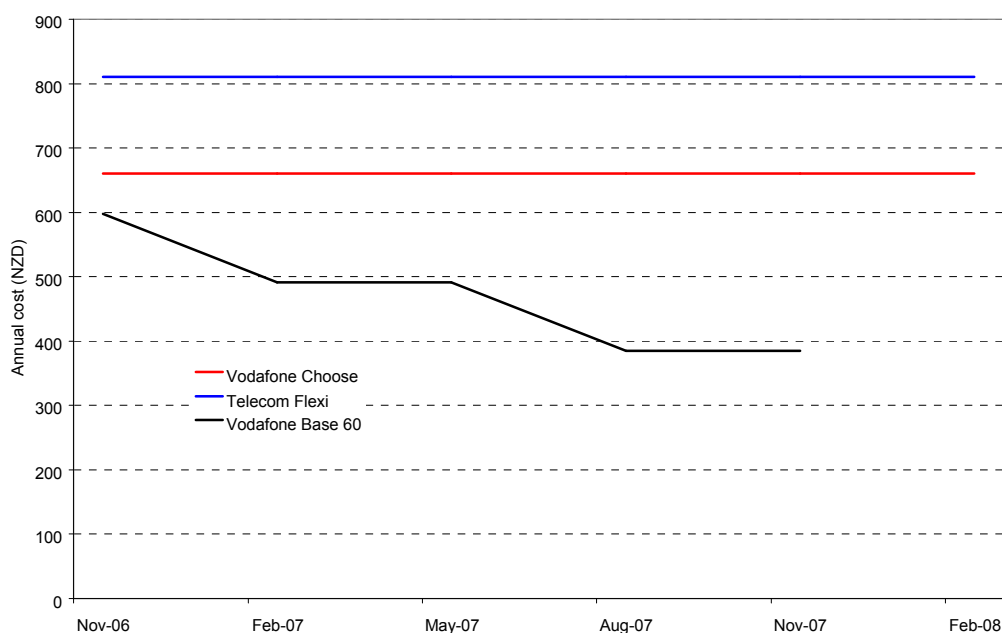


Data source: Commerce Commission

Although the price reductions for the Base 20 plan propelled it into the top half of the OECD price rankings, the other low user plans remained in the bottom third.⁴ A similar observation can be made about the Base 60 plan, which falls into the OECD’s medium user basket. As with the Base 20 plan, the price of Base 60 was reduced by around 30% over the course of 2007. However prices for other medium user plans remained steady, suggesting that the introduction of Base 60 had little market impact. The Base 60 plan ranks in the top half of the OECD tables, while the other medium user plans consistently rank in the bottom 5.

⁴ For example in August 2008, the Telecom Flexi plan, the next cheapest option, ranked 23rd in the OECD (Commerce Commission, 2008 *Telecommunications Market Monitoring Report*, April 2009)

Chart 3 Medium user plan pricing 2006-2008



If the introduction of the Base Plans was driven by rivalry in the mobile market, it would have been expected that it would have been promoted by Vodafone to its customers and that this would have stimulated Telecom to offer an attractive plan in response. However, this did not happen. As the Commission noted in its April 2008 letter to Vodafone, the Base plans had “a plethora of restrictions that, in the Commission’s view, made them unique to New Zealand and unlikely to have attracted a significant number of customers”. The Commission also noted that the You Choose Base plan was not promoted or advertised in store, and when Commission staff enquired about the plan at a CBD Vodafone store the staff said that had not received training on the plan and had never sold one.

Vodafone said it had “bent over backwards”⁵ to meet the Commission’s criteria for the inclusion of its Base Plans in the retail price benchmarking by removing a number of restrictions on the plan.

The Commerce Commission has required Vodafone make a number of changes to its Base plans including:

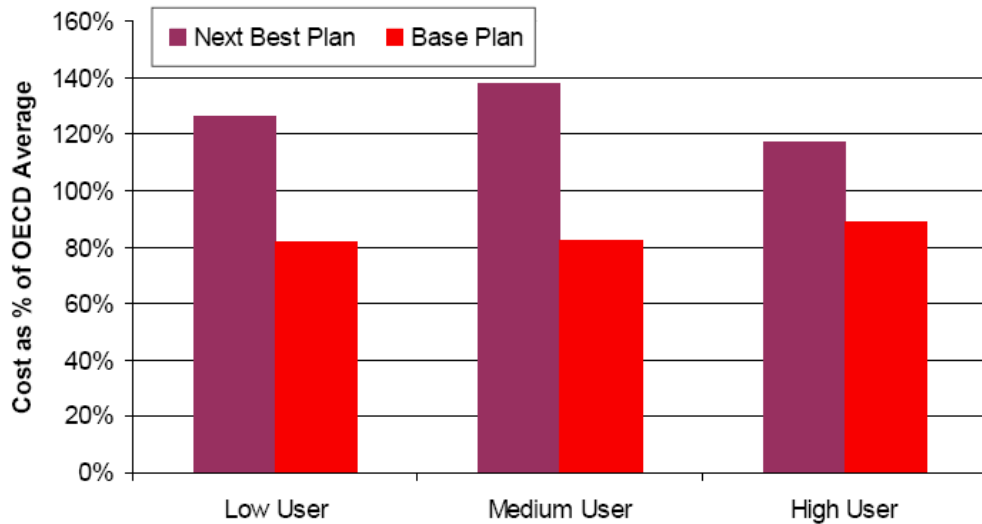
- 20. Reducing the contract term;*
- 21. Introducing international roaming;*
- 22. Reducing the early termination fees;*
- 23. Making them more accessible by putting them online;*
- 24. Making them more accessible in store.*

All of which Vodafone has done. In today’s report the Commerce Commission now finds that the Base plans have a price for out of bundle calls which it deems to be unacceptable.⁶

⁵ Vodafone media release (12 December, 2008) “The Commerce Commission moves the goalposts ... again”:

As further noted by the Commerce Commission, prices for the You Choose Base plans are significantly lower than prices for the next cheapest plans in the market – for example the price of the next cheapest low user plan is around 50% higher than the price of the Base 20 plan (Chart 4).

Chart 4 Price differentials between Base plans and next best plans



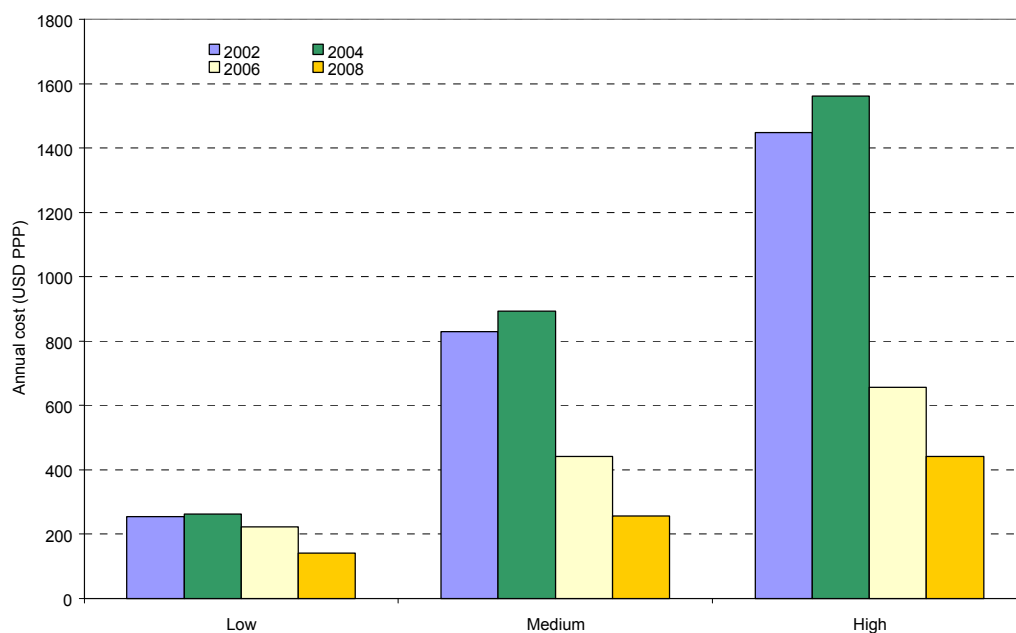
Data source: Commerce Commission, 2008 Telecommunications Market Monitoring Report, April 2009

All this strongly suggests Vodafone’s behaviour in relation to the Base You Choose pricing plan was driven by a desire to improve the rankings of New Zealand mobile prices, rather than as a response to competition or as a means of delivering consumer benefits.

In conclusion, the pricing of the You Choose/Base plans does not reflect pricing in the wider market which remains relatively high by international standards. Since the Base plans are not representative of wider market dynamics, their inclusion in international comparisons is likely to be misleading. Following the introduction of the Base plans in 2006, New Zealand’s ranking in international price comparisons was artificially enhanced. The ‘representative’ price of mobile services in New Zealand dropped dramatically (see Chart 5), despite the fact that the price of most mainstream offerings remained steady (see above).

⁶ Vodafone media release (12 December, 2008) “The Commerce Commission moves the goalposts ... again”:

Chart 5 New Zealand mobile prices included in OECD comparisons



Data source: OECD

2.1.2. International comparisons of revenue per minute

Vodafone has expressed the view that the Commission's international comparison of revenue per minute is incorrect because it is derived from average revenue per user (ARPU), which includes data revenues. We have compared the revenue per minute of Vodafone's international operations with its New Zealand revenue per minute [VRI]

Chart 6: International comparison of Vodafone's average revenue per minute 2007/08, NZD [VRI]

2.1.3. Domestic pricing trends

Vodafone highlights that its average revenue per minute has been falling steadily at a rate of around 15% per annum. [TRI,VRI]

Table 5: Telecom and Vodafone revenue per minute and traffic patterns (VRI, TRI)

	Telecom			Vodafone	
	2006	2007	2008	2007	2008
On-net revenue per min					
Off-net revenue per min					
MTF revenue per min					
On-net as a proportion of total M2M minutes					
On-net as a proportion of total SMS					

Further we note that in considering the extent of competition, a key element is whether there is evidence of strong rivalry between service providers. The Vodafone and Telecom tariffs have been flat over the last few years, with key changes to pricing being limited to the provision of the text bundles and BestMates offers. Rivalry has clearly increased over recent months with the launch of the Telecom XT network and of the 2degrees network. Whether rivalry will be ongoing is, in our view, dependent on the ability of 2degrees to overcome barriers to expansion – this point is discussed in detail later in this report.

2.2. OTHER ASPECTS OF THE COMMISSION'S COMPETITION ASSESSMENT

We now address a number of other points made by Vodafone in relation to the Commission's assessment of competition.

2.2.1. Market Concentration

Vodafone claims that the New Zealand market is less concentrated than the Commission imagines – Vodafone says that the market is becoming less concentrated due to entry by 2degrees and because of expanding presence of MVNOs. As discussed in detail in our submission in on the Commission's Draft Report, although 2degrees has entered, the combination of high termination rates and strong on-net price discounting means that this entry is likely to be constrained, and could potentially be foreclosed entirely. We agree with the Commission's observation regarding MVNOs, that the extent to which they can increase

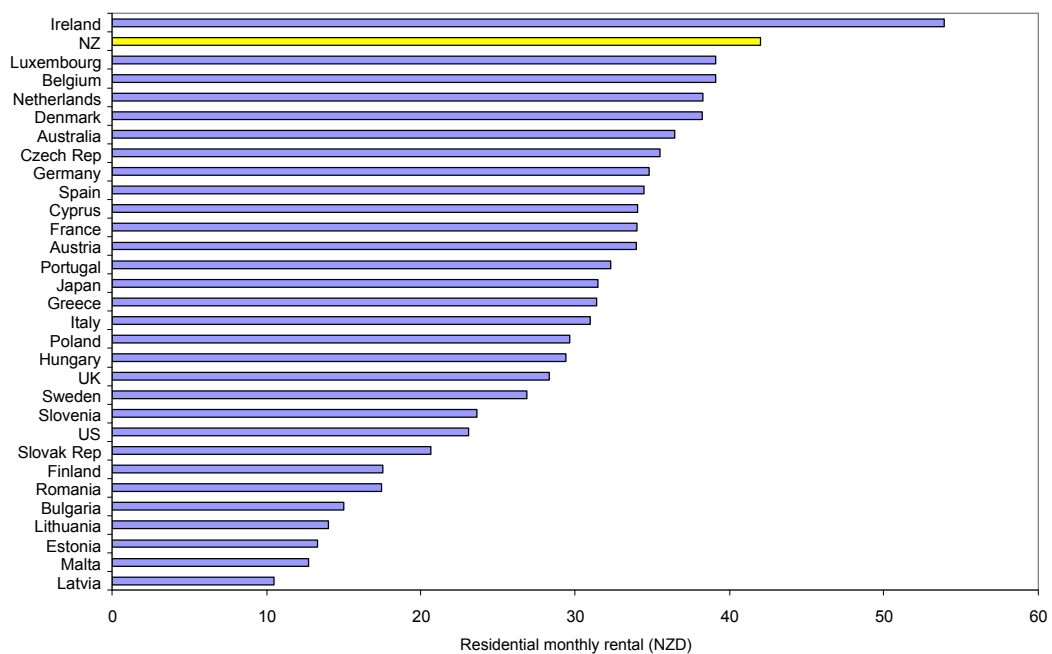


competition is constrained by the terms on which wholesale access is available to them.⁷ Further, the extent to which MVNOs can impact on the market would fall if 2degrees were to exit because this would reduce the incentive for the incumbents to offer attractive pricing to MVNOs – that is, there would be less competition for their wholesale businesses.

2.2.2. Usage levels

Vodafone expresses the view that voice usage in New Zealand, while low, is distorted by the pricing of fixed line services and by the high usage of the short message service (SMS). Vodafone note that voice usage is growing at a rate of 15% per year, and says that the ratio of mobile to fixed traffic in NZ is low because of these same factors. The offering of free local calls in NZ may have a negative effect on mobile voice usage. However, the high monthly rental that results from the KSO opens the door for higher substitution of mobiles for fixed lines (see Chart 7). Moreover, competitive responses can overcome low fixed prices. For example, in the US, fixed local calls are almost universally free, and monthly fixed line rentals are typically regulated to around USD20 or less, yet, despite this, mobile usage is by far the highest in the OECD (the US situation is discussed in more detail in section 4.2.1 below).

Chart 7 Fixed line rental costs, September 2008 (NZD)



Note: Average exchange rate for September 2008 used (NZ\$1=€0.47)

Data source: European Commission, Progress Report on the Single European Electronic Communications Market 2008 (14th Report), Brussels, March 2009, Annex 2; TNZ; Telstra

2.2.3. Churn

Vodafone claims that handset switching costs are not a barrier to entry, and it cites the level of churn as an indicator of this. We expect that the level of churn stated by Vodafone is not an accurate reflection of the percentage of customers switching between Telecom and

⁷ Commerce Commission Draft Report, para 180.

Vodafone. For example, a proportion of the disconnections come from international visitors that purchase a Vodafone SIM in NZ to avoid paying international roaming charges and then abandon that SIM upon leaving. Others will be lost, broken or stolen phones where customers merely pick up a new prepaid package from their existing provider rather than churn per se, or change from a pre-paid to a post-paid subscription or vice versa.

We note that number portability statistics show less than 1% porting in the last year. While porting data will not fully capture churn because customers can switch without porting their number, this rate is extremely low.

2.2.4. Use of multiple handsets

Vodafone claims that penetration is not driven by customers having multiple handsets to take advantage of on-net pricing, but by other factors. While many factors do drive penetration, it is clear that use of multiple handsets is one of them, as Vodafone itself noted in 2007:

We have great offers for both On Account customers and Prepay but our research suggests that heaviest demand will come from people wanting to move from competitors to on-account. The research shows that many prepay customers already have two phones, and that they are less likely to value their number than on-account customers.

As a result, we will initially only be offering porting in for customers wishing to join us On Account. Prepay will come later⁸

The high demand customers have for two handsets merely to avoid off-net pricing harms consumer wellbeing (since, with more efficient prices, they would not need two handsets), and consequently is evidence of market power, rather than competition delivering efficient solutions to customers.

2.3. DYNAMIC EFFICIENCY

The history of the New Zealand mobile market has, if anything, been one of the avoidance of competition rather than of rivalrous dynamic change. The present day duopoly came into existence in 1993 when Bell South began rolling out a digital (2G) GSM network. Telecom initially competed in the digital sphere using the relatively unsuccessful D-AMPS technology. Competition between the two networks was muted due to handset incompatibility. In addition, Bell South chose not to compete with Telecom on geographic coverage.

Vodafone, on purchasing Bell South in 1998, began to extend geographic coverage and by 2000 Vodafone's network covered 25% of New Zealand's landmass and 96% of its population,⁹ the same as Telecom's cellular coverage.¹⁰ However, even this competition was muted. Today Vodafone's and Telecom's networks cover 97% of the population,¹¹ compared with, for example, 99% in Australia¹² and Norway.¹³

⁸ TUANZ blog (3 April, 2007), "Vodafone don't want Telecom Prepay customers to port"

⁹ Ministerial Inquiry into Telecommunications, Final Report, 27 September 2000, p14, <http://www.med.govt.nz/upload/30006/final.pdf>.

¹⁰ Telecom, Form 20-F for the period ending 30 June 2000, filed with SEC on 22 December 2000, p.7.

¹¹ For Telecom, see <http://www.telecom.co.nz/mobile/ournetwork/xt>; for Vodafone, see <http://www.vodafone.co.nz/coverage/>.

¹² Coverage by Telstra—see http://www.telstra.com.au/mobile/networks/network_info/nextg.html.

At the same time, Vodafone also managed to claim market share. Unusually for a long dominant incumbent, and suggestive of a market in which Telecom did not wish to vigorously compete, Telecom responded tepidly and allowed Vodafone to eventually overtake it (in 2003) as the market leader.

In 2001, Telecom launched a CDMA network, which again, by requiring handsets that were incompatible with the GSM network, maintained competition softening product differentiation. The CDMA standard was an unusual choice. It did have some technological advantages over GSM, including rural reach, but it had a much smaller international user base than GSM, and consequently lagged the GSM world in terms of equipment and handsets. As a result, it could not be used in many international locations, though, as with GSM, it could be used in Australia. For the same reason, it has been apparent for some time that the standard would be unlikely to have a 4G successor.

Not only was Telecom's technology choice debatable, but it came late. For example, Telstra launched its CDMA network in 1999, two years prior to Telecom, and shut it down in 2008. Similarly, Vodafone launched its 3G network in 2005, two years after near simultaneous launches in Australia, by Telstra using CDMA and Hutchison using GSM.¹⁴

New Zealand's record in terms of adapting mobile broadband standards has also not been stellar. Telecom began EV-DO service in November 2004, updating the technology in December 2006. Vodafone launched W-CDMA in August 2005 and HSDPA October 2006. In contrast, in Australia, Hutchison launched W-CDMA two years prior to Vodafone's service start, and four carriers were using this technology by the end of 2005. Vodafone's HSDPA launch was matched by two carriers' launches in Australia, and Telstra rolled out HSUPA in 2007 (no Australian carrier had implemented EV-DO as of the end of 2007).¹⁵ Further, the New Zealand service rollout dates are misleading. In our earlier report we showed that New Zealand data speeds lag those in comparable countries.¹⁶

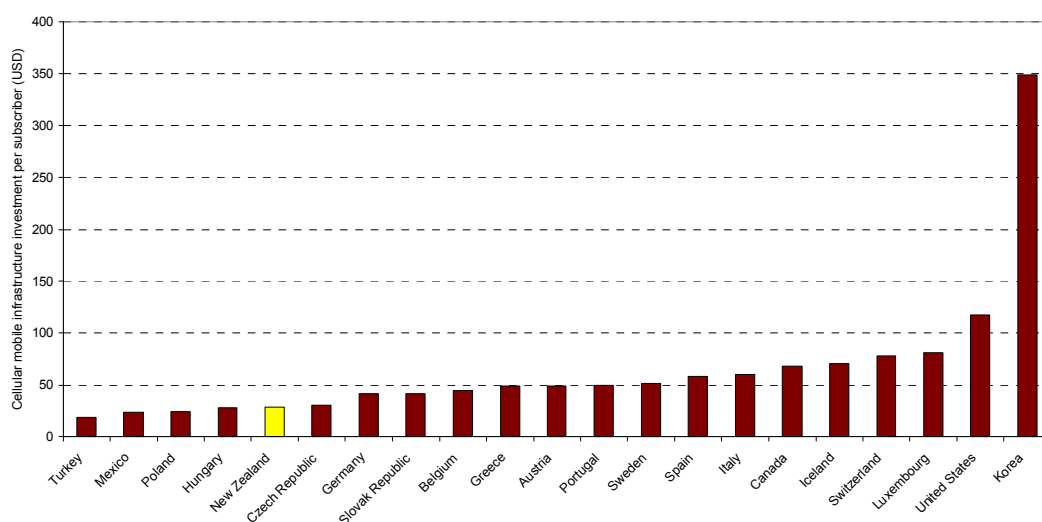
The available OECD statistics also show that the average investment per subscriber in New Zealand is low by international comparison (see Chart 8).

¹³ Source: ITU (2004), *Shaping the Future Mobile Information Society: The Case of the Kingdom of Norway* p. 9. Covoc (¶42) suggest Norway is a comparable country to New Zealand (but see discussion in section **Error! Reference source not found.** below).

¹⁴ <http://www.spamtrap.net.au/company/news/pdf/CD030328.pdf>.

¹⁵ OECD, Mobile broadband: pricing and services 2008, 30 June 2009, Table 1, pp23-24.

¹⁶ Concept, *Assessment of the consumer benefits of mobile termination regulation in New Zealand*, 28 July 2009, pp23-24.

Chart 8 Mobile investment per subscriber, average over the years 2003 to 2007

Data source: OECD, Communications Outlook 2009, Tables 4.11 and 4.18

Vodafone also resisted number porting by refusing to port Telecom numbers to its prepaid service. This tactic, if successful, would have made it harder for customers to switch services, and hence would have maintained the low degree of competition between the duopolists. However, the Commerce Commission instructed Vodafone to allow such number porting.

With 2degrees' entry, a change may have occurred (though whether that can last likely depends on whether mobile termination is effectively regulated). It seems a third competitor was required to bring out a competitive spirit in Telecom. Echoing Telstra's pre-emptive launch in advance of Hutchison's entry, Telecom announced its plan to roll-out a WCDMA network within a few months of 2degrees announcement that it had signed a contract with Huawei and announced that the new network would be ready in 18 months,¹⁷ rolling the new network out ahead of 2degrees commercial launch.

3. MARKET POWER, MOBILE TERMINATION AND THE WATERBED EFFECT

The immediately preceding section found that the historic duopoly has not been effectively competitive. This brings our focus to whether regulating mobile termination rates to reflect costs—perhaps specifically costs as would be estimated through application of the TSLRIC cost standard of the Telecommunications Act—would be to the long-term benefit of end-users. There are two critical elements to this question. First, whether such regulated charges are likely to allow an efficient entrant to effectively compete in mobile telecommunications.

¹⁷ 2degrees (then NZ Communications) announced in March 2007 that it had signed a contract with Huawei to build its new mobile network (<http://www.cellular-news.com/story/22868.php>). At that point, for the purpose of obtaining interconnection, roaming and collocation agreements, 2degrees presented Telecom with substantive evidence of its financial depth and commitment to entry. Just under three months later Telecom announced that it was planning to roll out its XT network (*Telecom future-proofs mobile services with new network investment*, Media Release, 8 June 2007).

Second, whether an efficient entrant so enabled will materially improve consumer welfare. This section addresses the first question (while section 4 to 6 below address the second).

The key finding of this section is that lower termination charges are critical to an efficient entrant being an effective competitor. This point is explained in section 3.1. Telecom and Vodafone have sought to cast doubt on the reasoning that underlies this conclusion. They, for example, doubt whether mobile firms have market power over termination, and whether low termination rates would lower the barriers facing an efficient entrant, and suggest lower termination rates would make the market less competitive, by arguing that the Commission has failed to properly account for the mobile market having two-sides and the related waterbed effect. While it is our view that these arguments are essentially about second order effects when compared with the impact of entry, section 3.2 discusses the implications of two-sided market analysis for efficient mobile termination rates, and section 3.3 considers the relevance and extent of the waterbed effect. In both cases, theory and evidence supports the Commission's view the regulation of mobile termination would be to the long-term benefit of end-users.

3.1. MOBILE TERMINATION AS A BARRIER TO ENTRY AND EXPANSION

Perhaps the central problem facing 2degrees is the barrier to entry and expansion created by the combination of above cost termination charges and on-net retail price discounts. It is, however, asserted, in various ways by different parties, that these two factors together are not a barrier to entry or expansion. For example, it is claimed that entry has occurred so it is self-evident there is no barrier. It is said, that termination charges represent costs, that even if they exceed costs, lower termination charges would reduce (not increase) competition, and that on-net discounting is merely competition at work and in no way prevents entry or amounts to a barrier to expansion. It is also argued that market share differences are not the cause of traffic imbalance, but rather this depends on the kinds of customers a network attracts. Thus, it is said that mobile termination rates coupled with on-net retail price discounts do not constitute for 2degrees a barrier to entry and expansion.

This section broadly deals with all these points. Section 3.1.1 outlines the fundamental problem. Section 3.1.2 disposes of the non sequitur that observed entry means lack of MTAS regulation is not an entry barrier. Section 3.1.3 considers the materiality of the correlation between competition and the level of a termination charge, and whether on-net discounting is merely competition at work. Section 3.1.4 discusses whether on-net discounting can be viewed as merely competition at work, while section 3.1.5 provides empirical analysis of the extent to which traffic might be unbalanced on the New Zealand mobile networks.

3.1.1. Above cost mobile termination rates allow incumbents to use on-net discounts to prevent successful entry and expansion

The Final Report of the Ministerial Inquiry into Telecommunications Regulation noted that in "electronic communications... the strong interdependence between networks and the rapid pace of change... means markets can easily be distorted... [and it] may be economically rational for existing network operators to prevent, delay or add cost to the entry or expansion of competitors."¹⁸ Above cost termination charges exactly provide the foundation on which

¹⁸ Ministerial Inquiry into Telecommunications, Final Report, 27 September 2000 <http://www.med.govt.nz/upload/30006/final.pdf>, page 51.

incumbents can add cost to the entry and expansion of competitors. When termination costs, whether of calls or texts (and texts are critical for entry at the low end of the market), exceed costs, on-net retail price discounts can be used to raise the entrant's costs, thereby preventing the entrant from cutting prices towards more efficient levels, and possibly forcing exit.

In what follows a simple example is developed that focuses on a low demand customer who would be attracted to Vodafone's Starter 2000 plan.¹⁹ Low demand customers are interesting because it is those customers that, given a level playing field, a new entrant is most likely to be able to attract. Such customers are price sensitive, so will be more willing than many other customers to switch for small price differences, and be less concerned that 2degrees is a new carrier without a track record. Moreover, many low demand customers are only temporarily so. For example, their demand will rise as they enter the workforce or gain better paying jobs, and at the same time, become less price sensitive. Thus, not only are such customers often easier to claim, but their future loyalty can be valuable.

The result of the analysis, which is based on mobile termination rates from Vodafone's undertakings, is that the absolute size of Vodafone's margins are more than double those of 2degrees, but for reasons that are fundamentally unrelated to costs. Indeed, Vodafone's margin is still 40% greater than 2degrees' even if the mobile termination rates used are halved. Further, 2degrees margins are sufficiently low to suggest that 2degrees could not profitably supply such customers, even if it used identical resources to those used by Vodafone, a disparity that is inconsistent with competition. Thus, 2degrees might be precluded from competing for customers that are likely to be crucial to its survival. Finally, and most unhappily, this result arises because the mobile termination rates of Vodafone's undertaking (and even those rates halved), when combined with calling patterns that arise from on-net discounting, essentially tax 2degrees and its customers so as to subsidise the entrenched duopolists, Telecom and Vodafone.

The example proceeds as follows. First, a usage profile is developed to represent the average customer using Vodafone's Starter 2000 plan. This allows the calculation of Vodafone's retail revenues, and also of the retail revenues 2degrees could be expected to earn if it offered a plan that was priced to be competitive with the Starter 2000 plan. However, the extent of off-net usage under these plans will differ as between Vodafone and 2degrees, so next, an on-net and off-net usage profile is developed for 2degrees. In all cases, the assumptions made are designed to overstate 2degrees final margins.

Once these calling patterns are in place, wholesale termination fees paid by each carrier, and wholesale termination revenues received by each carrier, can be estimated. Combined with retail revenues, each carriers' margins on customers of the type described can then be calculated and compared with costs.

¹⁹ All prices, terms and conditions from Vodafone's website on 16 August 2009. We focus on Vodafone, assuming symmetry in termination charges and pricing packages because this greatly simplifies exposition. To the extent that termination on Telecom's network was lower than on Vodafone's network, 2degrees would benefit. However, as the sensitivity tests show, at even half of Vodafone's rates, 2degrees is likely to be placed at a substantial disadvantage to the incumbents. The assumption of symmetry is common in models of communications traffic. For example, it is made in most of the academic papers cited in this report, including Armstrong and Wright, Mobile call termination, *The Economic Journal* (2009) 119 (538) pp. F270-F307, which is cited in many of the submissions on the Commission's Draft MTAS Report.



The monthly rate on Vodafone's Starter 2000 is \$29.95. This is Vodafone's second cheapest post-paid plan,²⁰ and while only providing 30 free discretionary minutes per month (and thereafter \$0.89 per minute), allows free calls to one other Vodafone number (a "best mate"), and 2000 free texts to any Vodafone telephone (beyond this texts cost \$0.20 each). It is our understanding that some users make substantially more than ten texts a day, that is, more than 300 texts a month. However, since the lower this number the greater the ease with which 2degrees can provide a competitive counter offer (because it has to provide fewer discounted off-text messages), we assume the average customer that chooses Vodafone's Starter 2000 makes only 100 texts a month, 85 of which are terminated on Vodafone's network (the assumption of an 85/15 split is explained in more detail below). If a higher volume of texting were assumed, the margins available to 2degrees calculated below are reduced. The 15 off-net texts cost \$3.00 (= 15*\$0.20). Additionally, assume such customers on average spend 33 minutes on the phone outside of their Vodafone selected number (the 3 extra minutes cost \$2.67 (= 3*\$0.89), but spend 120 minutes (roughly four minutes a day, which again is deliberately low) speaking to their Vodafone selected number.²¹ This implies per customer retail revenues, for customers of this type, of \$35.62 (= \$29.95 + \$2.67 + \$3.00).

To consider the effects of these prices, assume, as is only likely to occur after several years of operations, that 2degrees is able to claim a 6% market share, with Telecom and Vodafone each having 47% of the market.²² If calling and texting were driven by market shares (as would likely be the case if all carriers had identical prices without on-net discounts), then 53% of calls and texts originating on Vodafone's network would terminate off-net (so, for example, the hypothetical customer discussed above would text off-net 53 times a month²³). However, for customers on the Vodafone's Starter 2000, off-net texts cost \$0.20 while on-net texts are free. Consequently, it is likely that someone who is sufficiently budget constrained to have chosen the Starter 2000 package would limit their off-net texting, and favour free on-net texting. Moreover, this effect is reinforced because on-net pricing leads people in similar communication circles to cluster on the same network. We have, therefore, assumed 15 text messages go off-net, one fifth of the messages that would be sent off-net if they were free. This estimate of 15% of texts going off-net may be high for a budget constrained customer, who may be inclined to avoid off-net texting (so again favours 2degrees in making a competitive response). We also assume that 53% of the 33 discretionary call minutes go off-net. This, however, is an exaggeration, because on-net discounts tend to lead to a clustering

²⁰ Easy 20 is the only cheaper plan listed plainly on Vodafone's website. It costs \$16.95 per month and has per month: 20 discretionary minutes, 60 off-peak minutes and 40 texts, all to any New Zealand phone. The Easy 60 plan also costs \$29.95 a month—see the next footnote.

²¹ Easy 60 allows per month 60 discretionary minutes, twice the number of Starter 2000, plus 60 off-peak minutes (which are not available on Starter 2000) and 60 free texts, all to any New Zealand phone. Consequently, the Starter 2000 plan would only be attractive to someone who sends a lot more than 60 texts, but only to other Vodafone customers, and/or who is likely to get substantial value out of free calling to a single number. For example, a customer who sends 75 texts and makes less than 60 minutes of off-peak calling and 63 minutes of peak calling would face the same monthly bill as the customer described in the main text on Starter 2000. The same applies to a customer that sends 90 texts and makes less than 60 minutes each of both peak and off-peak calling. In this light, 120 minutes per month to a 'best mate' seems reasonable. For example, a customer who expected to make the same discretionary calls (that is, 33 minutes) as the customer in the main text, and to speak to their "best mate" for less 30 minutes at peak, and less than 60 minutes off peak, that is, for less than 90 minutes altogether, would prefer Easy 60 to Starter 2000. Moreover, the zero marginal price for all minutes to the Starter 2000 customer's preferred number would likely induce substantial usage.

²² In reality, Vodafone's share is likely to exceed that of Telecom's. This would increase the discounts 2degrees has to offer to compete with Vodafone (and in a competitive market Telecom would also have to be matching Vodafone), so would harm 2degrees' margins by more than calculated here.

²³ 47% would remain on-net, 47% would go to Telecom and 6% to 2degrees.



of customers who call each other on the same network. Thus, with disproportionately more people in the customer's calling circle on-net than off-net, the customer would make disproportionately more calls on-net. The effect of this exaggeration is to attribute to 2degrees more termination revenues than it would actually receive.

In contrast, if 2degrees offers a comparable package, the "best mate" and text bundle cannot be constrained to on-net customers only (for example, because with 6% of all customers, many "best mates" would not be on 2degrees network and few people would wish to constrain their texting to 6% of all subscribers). Assume, that 12% of customers who buy 2degrees' package choose an on-net best mate (that is, the probability is twice what one would expect if choice was distributed according to 2degrees' market share), and, as before, they call their best mates for 120 minutes every month. Similarly, allow the average low demand customer of the type described here to spend, when buying service from 2degrees, the same amount of time on calls to other numbers and send the same number of texts as the Vodafone customer, but 12% of calls and texts are assumed to be on-net (again, despite the fact that 94% of all customers are off-net). These assumptions are made so as to understate 2degrees' outbound payments, so exaggerate its margin.

Assuming 2degrees can attract customers with equal ease as Vodafone can by offering an equivalent package to Vodafone's, 2degrees would earn on \$35.62 from the average customer that takes up this plan. This, however, is not likely true, so again will overstate 2degrees' margin.

To estimate outbound payments, call termination charges are required. To avoid having to black out this example, we rely on Vodafone's undertaking rates of \$0.15 and \$0.095 to terminate respectively a call minute and a text on Vodafone's network. However, Vodafone has publicly intimated lower rates would in fact apply, though these are not public, so a sensitivity test with the termination rates halved was also conducted. It shows that the fundamental premise still holds.

We first calculate the wholesale fees Vodafone would pay per customer given its competitors impose identical call and text termination:²⁴ \$4.05 ($= 53\% \cdot 33 \cdot \$0.15 + 15 \cdot \0.095).²⁵ Note, since in practice, more calls would be on-net than actually assumed, this exaggerates Vodafone's outbound payments.

In contrast, 2degrees would pay \$28.56²⁶ per customer. This figure is derived by noting, as assumed above, that 12% of customers who buy 2degrees' package choose an on-net best mate, and that 12% of texts are on-net. Thus (100% - 12% or) 88% of both best mate minutes and texts would be off-net. On average for this plan, best mate minutes would require 2degrees to pay call termination fees of \$15.84 ($= 88\% \cdot 120 \cdot \0.15) while the 33 'other call' minutes would require 2degrees to pay call termination fees of \$4.36 ($= 88\% \cdot 33 \cdot \0.15). The 100 texts would require 2degrees to pay text termination fees of \$8.36 ($= 88\% \cdot 100 \cdot \0.095). All told the customer described above would cause 2degrees to pay termination fees of \$28.56 ($= \$15.84 + \$4.36 + 8.36$).

²⁴ Again, for simplicity, we focus on the symmetric case.

²⁵ As a sensitivity test, halving the termination rates gives \$2.03.

²⁶ Halving the termination rates gives \$14.28 ($= (88\% \cdot 120 \cdot \$0.075) + (88\% \cdot 33 \cdot \$0.075) + (88\% \cdot 100 \cdot \$0.0475)$).

Further assumptions are required to measure inbound payments. Since, Telecom is assumed to have the same market share as Vodafone, if it offers more or less the same packages to its subscribers as those on offer from Vodafone, then traffic between the two networks can be assumed to be balanced. That is, even though on-net pricing would lead to traffic flows that could not be characterised by the proposition that any person was equally likely called by any other person, the net flows across the two networks would be similar.²⁷ We then assume Telecom offers packages that are similar to those of Vodafone, including a package that is competitive with Starter 2000. Thus, the internetwork traffic generated by customers that purchase these packages on Telecom's and Vodafone's networks, given those networks are of equal size, is balanced. For similar reasons, we expect the overall traffic between the two networks will be balanced.²⁸

In seeking to identify the margins on a given customer of the type under consideration, we attribute all flows to the customer group (low demand customers who purchase Starter 2000, or the equivalent offered by Telecom and 2degrees). Thus, we focus on competition for the customer group.²⁹ On the basis of the assumed market shares, Vodafone will receive half of the total outbound termination payments that 2degrees must make. Assume, for the purpose of normalisation, that there are 100 customers of the type under consideration. Since 2degrees has 6% of these, it would have 6 such customers, and its total outpayments would be \$171.36 (= 6*\$28.56). Vodafone, having half of the customers that are not on 2degrees' network would collect \$85.68 (= \$171.36/2), or on a per customer basis, \$1.82³⁰ (= \$85.68/47).³¹ That is, Vodafone earns \$37.44 (= \$35.62 + \$1.82) less termination fees of \$4.05, leaving Vodafone with \$33.39³² per customer to cover its network and retailing costs.

In contrast, for every customer 2degrees has, it gains 47%/(47% + 6%) of the per customer outbound payments from both Telecom and Vodafone it has, or \$7.18 (= 2*47/(47+6)*\$4.05). Thus, 2degrees earns per customer, \$42.80 (= \$35.62 + \$7.18), less termination fees of \$28.56, leaving it with \$14.24³³ per customer. Thus, the net per customer termination payments of Vodafone and 2degrees imply 2degrees is subsidising every Vodafone customer.

Without discounting, over a two year contract 2degrees' margin amounts to \$341.86, which must be used to cover its costs. After deducting efficient (say, for argument's sake, measured as incurred by Vodafone) customer acquisition costs,³⁴ this would not likely leave enough to cover network costs, customer service, billing and overheads.

²⁷ In practice, cross network traffic in New Zealand is limited so it is possible any net imbalance would be small in absolute magnitude, even if large relative to total internetwork traffic, and thus would, for practical purposes be balanced.

²⁸ If there are no on-net discounts, then with equivalent pricing on all sides of the market, it is reasonable to assume internetwork traffic is balanced regardless of market shares. With on-net pricing and equal market shares this assumption is also reasonable.

²⁹ Thus, extending the thought experiment for every other pricing package would capture all in- and outbound traffic flows.

³⁰ In the sensitivity test, \$0.91.

³¹ This calculation flows through for any customer group size (for example, if the 6 is multiplied by 1000, then the 47 should be also, and the \$1.82 per customer number still emerges).

³² In the sensitivity test, \$34.07 (= \$35.59 + \$0.91 - \$2.03).

³³ In the sensitivity test, \$24.90 (= \$35.59 + \$3.59 - \$14.28), still leaving a \$10 per customer per month margin between 2degrees and Vodafone, a 40% difference, and hardly suggestive of a competitive market.

³⁴ In the US market, post-paid customer acquisition costs, including handset subsidy, are in the range USD270-420 (<http://www.fiercewireless.com/press-releases/t-mobile-usa-reports-second-quarter-2009-results-1-6-billion->



For these customers, 2degrees' margin before it pays for anything outside of termination is conservatively less than 40% of Vodafone's margin ($\$14.24/\$37.44 = 38\%$). This dramatic margin difference has nothing to do with any resource costs that are incurred to service customers except to the extent that termination fees represent such costs. But the actual resources used to terminate calls and texts are a fraction respectively of \$0.15 and \$0.95, as can be readily demonstrated without a cost model (though costs are discussed in more detail in section 4.3 below). Assume low income customers interested in the Starter 2000 package constitute 5% of the market. If these low demand customers were to suddenly stop using telephone service, it is highly unlikely that the costs that could be saved would exceed \$100 million (the termination costs that are implied by the termination fees incurred in serving these customers³⁵). For example, \$100 million is a little under one fifth of the two year investment Telecom put into its XT network, including retail outlets.³⁶ In slightly different terms, even if origination and termination of a call minute jointly cost \$0.15 per minute, which is half the rate of Vodafone's undertaking, then this would imply that the cost of originating and terminating all call minutes over a year would be more than \$532 million,³⁷ almost equal to Telecom's two year investment in the XT network, implying average termination costs are surely much lower than even \$0.075 per minute. The per minute incremental cost would be even lower again.³⁸

Text costs as estimated by 9.5c (or even 4.75c) are, if anything, even further from actual costs. Tens of thousands of texts amount to a tiny amount of data.³⁹ On a network that carries voice, let alone broadband, the extra bandwidth required to carry texts might literally be zero. But there is a further reason for thinking that the costs of texting are essentially zero. A text is such a small amount of data that it is carried on the network's control channels, rather than being treated like the information carried when a voice connection is made or the customer sends or receives data over the Internet. Such control channels are necessary for virtually any other communication service. Thus, the costs of making the control channels available which are used to make texting possible are by and large incurred regardless of whether texting is provided or not.⁴⁰

In summary, mobile termination charges at least in the range of \$0.075 to \$0.15 per call minute, and \$0.0475 and \$0.095 per text, seem unjustifiable on cost grounds, and when coupled with on-net discounting would make it very hard for even a highly efficient entrant to compete. Indeed, though the example focuses on low income demand consumers, the result

[operating-income-depreci](http://ftp.scansoft.com/nuance/care/cpga_metricreport.pdf), [ftp://ftp.scansoft.com/nuance/care/cpga_metricreport.pdf](http://ftp.scansoft.com/nuance/care/cpga_metricreport.pdf), http://findarticles.com/p/articles/mi_m0EIN/is_2006_Feb_21/ai_n16072670/pg_6/). Pre-paid customer acquisition costs are lower, but not relevant in this example (http://blog.pennlive.com/shoptalkmarketing/2007/07/virgin_mobile_inside_the_numbe_1.html).

³⁵ There are something over 4 million SIM card holders in New Zealand. In 2007, an average of 74 call minutes were made per subscriber per month (http://devdata.worldbank.org/ict/nz_ict.pdf). If the cost of these calls was \$0.30 on origination and termination, then those users would incur costs of 9.18 million ($5\% \times 4 \text{ million} \times 74 \times \0.30) every month. Over two years, that amounts to \$107 million.

³⁶ "Telecom is investing over \$574 million in the new network over a two year period which reflects investment in the core network, retail stores and services, and extensive investment in fibre to ensure an unparalleled customer experience." http://www.telecom-media.co.nz/releases_detail.asp?id=3593&page=2&pagesize=10.

³⁷ $\$532 \text{ million} = 4 \text{ million} \times 74 \times \0.15×12 .

³⁸ To the extent the margin difference is due to scale, it is simply because of the underlying prices and the fact that an entrant's market share must be low. Costs unrelated to termination do not enter into the calculation. Consequently, 2degrees' profitability would be threatened even if Vodafone's unitised costs were used (assuming these are lower than 2degrees' costs).

³⁹ On one estimate, 10,000 texts amount to 137Kbytes of data—<http://gthing.net/the-true-price-of-sms-messages>.

⁴⁰ Randall Stross, What Carriers Aren't Eager to Tell You About Texting, New York Times, 28 December 2008, <http://www.nytimes.com/2008/12/28/business/28digi.html>.

is quite general. On-net discounting, coupled with termination rates that greatly exceed costs, sharply cut an efficient entrant's margins relative to those of the incumbent duopolists. The effect is to force the entrant to subsidise the incumbents, thereby preventing the entrant from competing vigorously with the incumbents, putting downward pressure on prices, and possibly forcing it out of business.

3.1.2. If entry has taken place there are no entry barriers

It has been argued that 2degrees' entry demonstrates that present barriers to entry, whatever their source, are not ultimately relevant to the MTAS decision. That is, since entry has obviously taken place, a failure to regulate MTAS rates could not prevent, and a decision to regulate could not allow, what has already occurred. At least two, perhaps obvious, comments can be made in this respect:

- First, entry perhaps less demonstrates that regulatory reform was irrelevant, and more that it was expected. 2degrees' investors may have recognised that without regulation of mobile termination rates the probability of successful entry was slim. However, we understand that the 2006 Mobile Market Review along with Telecommunications Amendment Act played critical roles in the decisions of investors to fund the business. 2degrees' investors may therefore have believed, and perhaps still believe, that on entering the Commerce Commission and ultimately the Minister would be moved to regulate mobile termination rates to efficient levels, raising the probability of successful entry. Thus, in expectation, 2degrees' investors may have thought entry was a prudent decision. Of course, expectations and their realisation are different things, and it may be that mobile termination rates are not regulated and as a result, 2degrees fails, but an adverse realisation does not invalidate prior expectations.
- Second, a barely surviving entrant would not provide the vigorous competition of a thriving competitor. Even accepting that entry would have occurred if 2degrees were certain prior to making its entry decision that regulatory reform would not be undertaken (and this is clearly false—there was and is a positive probability of regulatory reform), the MTAS rates of the counterfactual would almost certainly prevent 2degrees from effectively competing with Telecom and Vodafone. Thus, while 2degrees might manage to survive in the counterfactual (and it may not), it would likely be confined to niche markets, being unable to expand, and be unable to have an important forward going competitive impact on market prices, services or innovation.

3.1.3. The correlation between mobile termination charges and competition

The primary difficulty with the view that mobile termination charges are positively related to competition, which is based on models of positive network effects,⁴¹ is fundamental: whatever the "holding other things constant" impact of the formal models is, it is essentially trivial as compared with the well-understood impact of bringing an effective new entrant into the market. In particular, if one's goal is the long-term consumer benefits, then mobile termination rates that would allow an efficient entrant to compete effectively are preferable to higher rates that have seen quite weak competition between the present duopolists. However, even putting this aside, the view that mobile termination charges are positively related to competition has several additional and quite serious problems:

⁴¹ See, for example, Armstrong and Wright, 2008, *ibid.*, §2.4 on MTM termination.



- First, it is a position without any rational bound. After all, if higher termination prices are better because they increase competition, and more competition is better, than why not double or triple these. The reality is, as discussed in section 3.2 below, conceptually there is an optimal level for termination charges and to the extent the charge is set above or below this it is inefficient.
- Second, as discussed in sections 3.2 and 3.3 below, it is not obvious how increased MTM, as opposed to FTM, charges play out in terms of firm profits or consumer benefits.
- Third, in any case, it is not clear that higher termination charges “increase” competition (unless competition is not effective to start with). Holding all other things constant, a rise in the termination charge increases the attractiveness of retail customers (because, at least if they receive calls, they generate more revenue for the carrier). In general, of course, all other things are not held constant and changes in mobile termination will feed through to strategic responses, including changes in other retail prices. If competition for customers is fierce, essentially squeezing out extranormal profits, then revenue gains from mobile termination price rises will be lost through strategic changes elsewhere, notably in retail prices. Whether such changes increase retail competition or merely lead to adjustments for new circumstances is more a matter of semantics than substance. In both cases no extranormal profits are possible.

Telecom highlight two international examples that they claim show that mobile termination charges do not form a barrier to entry. However, neither of these hold up to scrutiny.

- **Bulgaria:** Telecom claims that Bulgaria is an example of where entry has been successful despite high termination charges. But Telecom fail to point out that the new entrant mobile operator was in fact the fixed line incumbent. This is a completely different scenario to the case of New Zealand. Upon entering the mobile market, a fixed line incumbent faces less challenges than mobile only players – among other reasons, it already has national brand recognition and reputation, it is able to cross-sell mobile services to its very large existing customer base, it has the benefit of being able to offer bundles of fixed and mobile services and it is likely able to target large business and government customers much earlier than mobile-only entrants because it will already have account management teams and established customer relationships. A fixed line incumbent can also immediately offer on-net discounts for FTM calls creating artificial network effects of its own, an option not available to a new mobile only entrant.
- **BellSouth NZ:** Telecom also point to the entry of BellSouth in New Zealand in 1993 as an instance where entry occurred without regulation. Again, this situation is simply not comparable with the current case. For example, there may have been more profit to claim from the monopolist incumbent than is available from the present duopolists. However, in any case, Telecom appear to entirely miss the point that it is not the high termination rate on its own that is a barrier to entry, but rather the combination of it with on-net discounting. To our knowledge on-net pricing was not widely employed by Telecom at the time.

3.1.4. On-net discounting

It is claimed by Covec⁴² that “On-net discounts can... be viewed as a result of competition, not as a way that networks try to reduce competition between themselves, and changing the MTR will not change the basic incentive to offer such a discount.” On-net discounts may well emerge in an effectively competitive market, but nevertheless also have the potential to have an anticompetitive effect. In New Zealand, the artificial network effects created by on-net discounts greatly soften competition between the duopolists, and will prevent 2degrees from being an effective entrant. For example, market research carried out by Phoenix shows,⁴³ how on-net discounting leads end-users to self-select themselves into network-based calling communities. Thus, it is common for the students of a school or university to be largely on only one of Telecom’s or Vodafone’s networks. This selection into network-based calling communities severely limits the ability of individual customers to switch networks. To do so is to face high (off-net) costs in calling those friends, and to impose on those friends high (off-net) costs if they wish to call back. In fact, to the extent that people are price sensitive, switching networks will reduce the contact one once would have had with those customers left behind on the other network.

Recent analysis by Hoernig (2007), takes into account the potential for cost and demand differences between networks and finds that even where termination rates are regulated, a larger network will tend to charge more for off-net calls to account for the utility received by called parties on the other network (a positive externality that is internalised by higher off-net charges).⁴⁴ Hoernig notes that price differentiation could also be used for anti-competitive purposes, in which case the on-net/off-net price differential would be larger.

A number of papers from 2008 have similarly found that on-net discounts can be used to harm entrants or smaller carriers or prevent entry. Calzada and Valletti consider that “When entry deterrence is the preferred option, incumbents distort the access charge upwards,”⁴⁵ while Armstrong and Wright note, “Mobile networks compete for subscribers, but in the absence of regulation they may charge other networks excessively to talk to their subscribers.”⁴⁶ Stennek and Tangerås describe in detail how incumbent carriers can use on-net pricing to create network effects that prevent entry,⁴⁷ and recommend some light-handed regulatory rules, one of which is the prevention of on-net pricing, to prevent such anticompetitive behaviour.⁴⁸ All these views may be contrasted with those of Telecom, Vodafone and their experts (for example, see Covec ¶¶124 ff, 167).

In the present New Zealand market it is apparent that on-net prices do in fact have an anti-competitive effect. This is because: (1) Telecom and Vodafone have high markets shares,

⁴² Covec submission para 167.

⁴³ Phoenix, 2008 Telecommunications Market Monitoring Report, 14 April 2009, <http://www.nzcomms.co.nz/wa2b31.html?idWebPage=35835&idDetails=174>.

⁴⁴ Hoernig S, ‘On-net and off-net pricing on asymmetric telecommunications networks’, *Information Economics and Policy*, 19(2), pages 171-188, June 2007.

⁴⁵ Calzada and Valletti, Network Competition and Entry Deterrence *The Economic Journal* (2008) 118 (531) pp. 1223-1244.

⁴⁶ Armstrong and Wright. Two-Sided Markets, Competitive Bottlenecks and Exclusive Contracts, *Economic Theory* (2007) 32 (2) pp. 353-380.

⁴⁷ Stennek and Tangerås, Intense Network Competition, (2008) <http://ssrn.com/abstract=1147677>.

⁴⁸ Stennek and Tangerås, Competition vs. Regulation in Mobile Telecommunications, (2008) <http://ssrn.com/abstract=1147677>.

while 2degrees must necessarily start with a very small market share; (2) termination charges greatly exceed the incremental costs of termination; and (3) there is a large differential between on-net and off-net prices. [VRI:

] In fact the differential calculated on the basis of average revenue will hugely understate the differential faced by customers for individual minutes and text messages within bundles for which the on-net price can be low as zero (eg, TXT2000 and BestMates). There may still be incentives for carriers to offer on-net discounts even after MTRs are set to reflect costs, or BAK is adopted (which is why 2degrees has requested rules be implemented to address this), but MTRs that more accurately reflect costs will allow an efficient entrant to profitably offer competitive prices when facing much larger rivals that offer on-net discounts.

3.1.5. Traffic imbalance

Covec expresses the view that market share does not impact on traffic imbalance, but that it is simply the mix of customers each network has that determines net traffic flows. This is incorrect. It ignores that there is a fundamental relationship between price and demand, and the related impact of asymmetric network sizes when on-net pricing is practised. It also ignores the possibility of customer sorting where there are (in this case, artificial) network effects (created by on-net discounting). These points are dealt with below.

Holding all other things constant, and in the absence of on-net discounts, if different carriers set similar prices, then traffic between two networks in general would be balanced, unless some, but not all, carriers have an incentive to seek out customers with different propensities to make or receive calls. However, if outbound prices on one network are lower than on the other, traffic would be expected to become unbalanced (because customers on the cheaper network will make more calls).

Similarly, so long as carriers are symmetric, traffic between their networks would in general be balanced even with on-net pricing (so long as their prices are the same). However, when carriers have different market shares, the same on-net price plans are different because their quality-adjusted prices are different. Thus, a plan with free on-net texts on a larger network is worth more to a consumer than the identical plan on a smaller network. A smaller carrier must provide benefits that are at least as attractive as the offers of its larger rivals, which can mean offering off-net discounts that create the equivalent of the larger carriers' on-net discounts. This in turn creates call and text imbalances such that the smaller carrier has a net outflow of traffic, and thus makes net outpayments. If termination charges are high, this can have a significant impact on the smaller carrier's viability. Indeed, as is well-known in the case of network effects, artificial or natural, a possible equilibrium is market monopolisation.⁴⁹

Another aspect of network effects, however created, is that over time end-users adjust their subscription decision so as to be on the network with the largest group of people with whom they most usually communicate. In the case of on-net discounts, this can lead to network "islands" with artificially limited internetwork communication (contrary to the general principle of any-to-any connectivity), a situation that to some extent characterises New Zealand telecommunications today.

⁴⁹ Armstrong and Wright, 2008, §2.4; Farrell and Klemperer, Coordination and Lock-In: Competition with Switching Costs and Network Effects, Chapter 31 in the *Handbook of Industrial Organization* (2006) vol. 3, Ed by M. Armstrong and R. Porter.

The empirical data available demonstrates the imbalance that arises as a result of on-net pricing by the incumbents. 2degrees' customer traffic patterns may be reflective of early customer demand rather than ongoing usage patterns but so far show large imbalances for both voice and SMS traffic⁵⁰:

Outbound voice minutes to the Vodafone network exceeds inbound minutes by [COI]

Outbound SMS traffic to the Vodafone network exceeds inbound SMS traffic by [COI]

Outbound SMS traffic to the Telecom network exceeds inbound SMS traffic by [COI]

Although it may be hypothesised that the level of imbalance would fall over time, international data shows that a high level of imbalance remains. In Slovenia where, as discussed in our previous report, the entrant Vega faced high termination charges coupled with strong on-net discounting by the incumbent operators, the call imbalance was such that there was 155% more outbound than inbound traffic.⁵¹ In France, a central issue in ARCEP's recent determination of mobile termination rates was on-net pricing discounting and the implications of call imbalance for small networks.

Thus, net outflows of traffic from the entrant to the incumbent as a result of the effects of on-net discounting are a reality, and not merely a theoretical possibility.

We note that Vodafone expresses the view that traffic imbalances are less likely for SMS than for voice because "While a voice communication involves one party calling another and paying for the call, an SMS communication involves two consumers sending messages back and forward to each other and sharing the cost of the communication evenly."⁵² While it is likely that SMS will be more in balance than voice, it is not the case that it will necessarily be completely in balance. If customer A (a Vodafone customer) pays significantly more for off-net SMS than customer B (a 2degrees customer) it is still likely that overall customer A sends less messages to B than he/she receives. We note that the information we have seen so far from 2degrees shows that the ratio of inbound to outbound traffic between the 2degrees and Vodafone networks is [COI]

3.2. ACCOUNTING FOR THE MARKET'S TWO-SIDES

Telecom ([47]) correctly points out that in a two-sided market, first-best efficient prices do not necessarily reflect the marginal private cost of production, but this does not justify setting mobile termination charges above costs, let alone the conclusion that the mobile termination rates of the counterfactual are optimal. In two-sided markets, prices that reflect the *marginal* externalities that each group brings to the other are efficient.⁵³ Thus, for example, if callers value the subscription of a third party, then efficiency could be guaranteed (though it may arise by other means) if the retail subscription price equals the *marginal* private cost of

⁵⁰ This data covers the period from date of launch to August 12. Data on the voice traffic from the Telecom network were corrupted and are therefore unavailable for analysis.

⁵¹ Letter to the Commerce Commission from Trilogy International Partners (27 July 2009).

⁵² Vodafone Submission on Draft Report, p. 79.

⁵³ Bolt and Tieman. Social Welfare and Cost Recovery in Two-Sided Markets. *Review of Network Economics* (2006) vol. 5 (1) pp. 103-117 provides the case with externalities. Without externalities, efficient termination charges reflect incremental costs (with no contribution to shared costs). When FTM and MTM are in play, even assuming a network externality, it has been argued that the case for marking termination charges up to recover fixed costs is weak if the waterbed effect is strong, as Telecom and Vodafone seem to believe (Armstrong and Wright. Mobile call termination. *The Economic Journal* (2009) vol. 119 (538) pp. F270-F307, section 2.4).

subscription less the benefits potential callers would gain if the subscription was undertaken. Such retail prices would internalise the network externality.

The preceding insight suggests setting *retail* prices to reflect marginal social cost (though it does not, on its own, justify such prices), but does not *per se* justify above cost termination charges. Instead, relying on two-sided reasons to justify above cost termination charges requires advancing a second best argument. That is, termination charges in excess of marginal private cost may, though need not, be an indirect (second best) way of taxing callers when they make calls as a means of eliciting their demand for third party subscriptions. With sufficient retail competition (which probably does not exist under the present duopoly), appropriate above cost termination fees would then be passed onto the third party subscribers by subsidising retail prices (the water-bed effect, discussed in more detail in section 3.3 below). End-users' subscription decisions might be directly subsidised, or subscription might be made indirectly more attractive by subsidies on other retail services. If, in the absence of such subsidies, the network externality effect would lead to too little mobile subscription, then such subsidies, appropriately set, could achieve more efficient levels of subscription.

Of course, even if all this were true, it must be demonstrated that such a second best policy is likely to be efficient. That is, to justify above cost termination charges as means of internalising the network externality requires (1) showing there is a material externality; (2) showing that this cannot be directly addressed, but instead is best addressed through above cost termination charges; (3) identifying the efficient extent to which termination charges should be set above cost; and (4) demonstrating that doing this would in all likelihood increase economic efficiency, that is, that errors and unintended consequences process would not ultimately lead to more harm than good. That is, too high mobile termination rates could harm economic efficiency.

In the present case, these points are problematic. First, it is not at all obvious that the network externality is of particular importance in New Zealand today. While mobile penetration rates are clearly a misleading indicator of the percent of people with a mobile phone in New Zealand (for example, because many people have a second mobile phone, while others may have none), present penetration rates suggest there may not be substantial gains from new subscribers. Moreover, targeted subsidies are likely to be a far more effective and efficient means of attaining this aim.

Second, just as first best efficiency in subscriptions can be guaranteed by ensuring subscription charges reflect marginal social cost, the same is true for calling. That is, first best efficiency can be guaranteed in calling if retail calling prices do not reflect the marginal private cost of making a call, but instead that cost is discounted by the marginal benefit that the call recipient obtains. This suggests, but more directly than in the case of the network externality, that, given effective retail competition, as a second best measure, termination rates should lie below marginal private cost. That is, it might be best to reduce mobile termination rates by the extent to which the call recipients value, at the margin, inbound calls. Thus, the network externality aside, efficient mobile termination rates would be set *below* marginal cost.

Third, as noted, the two-sided market literature calls for prices that reflect *marginal* social costs. There is no doubt that the *marginal private cost* of call termination, *rather than the average per minute long run incremental cost of termination as a service*, is virtually zero. That is, virtually no resource costs are incurred to terminate another call minute, or for that



matter a call of a hundred minutes. But it is that zero cost which features in the two-sided models of call termination. Thus, any termination rate that is justified on the basis of the two-sided models of call termination amounts to the second best wholesale “tax” necessary to bring marginal private cost up to marginal social cost. Thus, it must be true that (1) the second best argument of above is justified, (2) the network externality is larger than the calling externality, and (3) the appropriate tax can be calculated.

In the present case, no analysis vaguely along these lines has been undertaken. This raises the question as to whether there is any reason to think the termination charges of the counterfactual would be efficient, that is, would be likely to incorporate the efficient second best mark-up. The two-sided market literature says no: in general even highly competitive mobile firms will not set termination charges efficiently. In particular, unregulated firms set inefficiently high FTM rates, and in the case where MTM rates are set unilaterally, they are also set inefficiently high. Quoting from a paper that Covec repeatedly cites (at ¶¶125, 138, 142) with approval, “If... networks choose... uniform termination charges unilaterally... then the temptation to extract termination profits always dominates the incentive to set a low termination charge... to relax network competition.”⁵⁴ That being said, it should be recognised that the Armstrong and Wright model is extremely simple, notably in its assumptions of vigorous downstream retail competition and symmetric firms, where entry decisions are not being made, and where fixed and mobile service are not jointly supplied. Consequently, parallels to the New Zealand market must be made with great caution.

In this light, it would seem fortuitous indeed if, rather than an inefficiently high price, the appropriate subsidy to internalise the net effects of two unmeasured externalities might have emerged through Telecom’s and Vodafone’s most recent undertakings (or termination agreements). However, even that would leave open the question as to which of Telecom’s and Vodafone’s different prices were in fact optimal.

The preceding also makes it clear that Telecom (¶¶77-79) is incorrect in claiming that two-sided market considerations would not lead the Commission to find substantial market power in termination. In fact, the Commission finds substantial market power in the case of termination on the basis that the terminating network largely has a monopoly over call termination to its customers. This is entirely consistent with the literature on two-sided markets.

In fact, this is one of the great flaws of two-side markets: competitive pressures may not be capable of ensuring efficient pricing. In particular, a standard result of the theory of two-sided markets is that a form of inefficient monopolization arises where one side of the market wishes to reach everyone on the other side (such customers are called multi-homers), but

⁵⁴ Armstrong and Wright, *ibid*, page F272. Some two-sided models, including variations on Armstrong and Wright’s, show that mobile carriers (though apparently not Telecom and Vodafone) would prefer, if coordination were possible, uniformly low MTM rates as a means of reducing network effect competition. However, it is widely recognised that these models seem to miss a key aspect of reality: “This analysis gives rise to a puzzle. Even though the theory predicts that networks will want to set MTM rates that are too low, to the best of our knowledge no regulator has taken seriously such a concern” Armstrong and Wright, *ibid*. Not surprisingly, there are other models that do not find that mobile carriers acting in concert would prefer lower MTM rates. For example, Armstrong and Wright, *passim*, show that wholesale and retail substitution ameliorates this tendency, and other papers generally question whether there is a simple relationship between collusively set termination charges and retail profits (see, for example, Dessein, W. Network competition in nonlinear pricing, *RAND Journal of Economics* (2003) 34(4): 593-611). In any case, in many models high, not low, access charges are often found to allow monopoly profits (see, for example, Poletti, S. and J. Wright, Network interconnection with participation constraints, *Information Economics and Policy* (2004) 15(3) 347-373; Dessein, W. Network competition with heterogeneous customers and calling patterns, *Information Economics and Policy* (2004) 15(3) 323-345; and Hoffer, F. Mobile termination and collusion, revisited (2006) <http://ssrn.com/abstract=925801>).



people on the other side can only be reached through a unique platform (and so are called single-homers). In that circumstance, the platform providing service to the single homers has substantial market power, which models of two-sided markets demonstrate, can lead to substantial economic inefficiencies.⁵⁵

In telecommunications, callers have a generalised desire to be able to call anyone regardless of the platform they are on. However, while it is common in New Zealand for some end-users to have more than one mobile handset many only have one. Moreover, in many cases, a caller is not aware that the party they wish to reach has a SIM card on more than one network, or does not know which phone number belongs to which network (though historically that has been straightforward, that is becoming less and less the case). Consequently, suppliers of SIM cards, who are also the suppliers of call termination on those SIM cards have substantial market power over call termination.⁵⁶

Lastly, but most importantly, as discussed in section 3.1 above, the whole two-sided market focus of Telecom and Vodafone on the effects of different termination rates misses the main story. Further, assume it were the case, holding all other things constant (including market share, the number of active firms, and the degree of on-net discounting), that a higher termination charge would increase firm competition for custom. But that effect will be minor to the effects on competition of setting termination charges to efficient levels so as to enable a new entrant to bring effective competition to a market that lacks any substantial rivalry. Indeed, if anything, the same network externality would call for asymmetric MTM rates which favour 2degrees, so as to increase the size of its platform which in turn would, because of the competitive effects a healthy 2degrees would bring, increase overall subscriptions and network use.⁵⁷

3.3. THE WATERBED EFFECT

In this section we mean, by the waterbed effect, the view that lower termination charges lead to higher retail subscription or other retail charges with the ultimate effect of harming retail demand. In what follows, section 3.3.1 explains why the waterbed effect is, if present at all, likely to be relatively unimportant; section 3.3.2 goes on to note, if the waterbed effect is important, then that fact alone is not sufficient to demonstrate termination rates in the counterfactual are set at optimal levels—they may still be too high—but, in any case, the question of the waterbed effect (as just defined) is essentially confined to FTM rates which can be addressed independently of MTM rates. Section 3.3.3 concludes with the most important of the three points, by pointing out that in the end the waterbed effect, even at its strongest, is a second order effect when compared with the impacts of entry. That is, any

⁵⁵ Armstrong and Wright, Two-Sided Markets, Competitive Bottlenecks and Exclusive Contracts. *Economic Theory* (2007) 32 (2) pp. 353-380.

⁵⁶ This makes it clear that Telecom (¶¶77-79) is incorrect in claiming that two-sided market considerations would not lead the Commission to find substantial market power in termination. In fact, the Commission finds substantial market power in the case of termination on the basis that the terminating network largely has a monopoly over call termination to its customers. This is entirely consistent with the literature on two-sided markets.

⁵⁷ Peitz. Asymmetric access price regulation in telecommunications markets. *European Economic Review* (2005) 49 (2) pp. 341-358; Peitz. Asymmetric Regulation of Access and Price Discrimination in Telecommunications. *Journal of Regulatory Economics* (2005) 28 (3) pp. 327-343, but see also Ralph, Eric K., Boreggi, Claudio and Ergas, Henry, Asymmetric Termination Charges to Support Small Networks (February 3, 2009). Available at SSRN: <http://ssrn.com/abstract=1340718>.

costs associated with it are likely swamped by the benefits of an effectively competitive entrant.

3.3.1. The waterbed effect is, if present at all, weak

There are three reasons why the waterbed effect is weak.

First, if changes in MTM rates have any material impact that is mediated through the waterbed effect, then this would tend to lower, not raise, subscription charges.

So long as MTM traffic is balanced (this is a conditional statement, not an acceptance of that fact), a change in MTM termination rates does not have any obvious waterbed implications. Lowering the MTM rates does not change the net flow of funds from one mobile network to another. For example, consider a world without 2degrees where MTM termination rates fall. Given balanced traffic, and holding all other things constant, neither Telecom nor Vodafone will experience a change in income streams. Of course, other things might not stay constant. For example, outbound retail call rates may decline, and traffic volumes rise, all to the benefit of consumers. However, if this were to occur, it would not obviously lead to on balance higher subscription or other retail charges unless a case can be made that calling prices would decline by more than the decline in MTM termination rates (which seems unlikely, and in any case, could not be said to be due to a waterbed effect). Further, any inbound traffic increases would at least partially offset the reduced termination income. It is also likely that the profit-maximising levels of other retail charges would also change, and in some cases rise. Despite this, if the retail market is as competitive as is made out, the net effect would not be to raise prices in a way that would materially harm subscriptions (as with no profit being allowed and no change in net flows of termination revenues such price changes must largely be revenue neutral). If, however, the duopolists are not effectively competitive then a waterbed effect could arise through subscription or other retail price rises (excluding outbound calls). However, in that case, to hold mobile termination rates up to maintain a current lack of competition, rather than lowering them so 2degrees could successfully enter and put competitive pressure on the incumbents would tend to the perverse. Thus, whatever changes due to a decline in MTM that would occur in the market absent entry by 2degrees would either not likely materially raise retail prices and harm subscriptions or would do so suggesting the urgent need for additional entry.

Now allow entry by 2degrees enabled by lower MTM, but still above incremental cost, rates.⁵⁸ If anything, there will be a net traffic flow outwards from 2degrees (for example, because of on-net discounting by the incumbents). Thus, if one were to hold other things constant, particularly Telecom's and Vodafone's subscriber levels (so 2degrees only created new demand), the effect of lower MTM rates given entry by 2degrees would be to (1) benefit Telecom and Vodafone, and (2) to the extent there is a waterbed effect, to benefit the customers of Telecom and Vodafone who would experience lower subscription or other retail charges.

Of course, in reality, all other things would not be fixed. Most critically, 2degrees will exert competitive pressure, claiming customers from Telecom and Vodafone. As Concept has

⁵⁸ This is likely at the rates presently under consideration for the factual—see discussion of incremental costs in the discussion of two-sided markets (section 3.2) below. If, however, MTM rates were set at costs, then 2degrees' entry would be less likely to subsidise Telecom and Vodafone. However, its competitive impact would be all the more vigorous.



argued at length, this competition will result in end-users facing lower, not higher, prices and will efficiently expand subscription and usage levels (contrary to the waterbed effect argument). As international experience due to entry has shown, it is this effect that will dominate market outcomes.

In short, MTM rates either have no material waterbed effect, or more likely, have an effect because Telecom and Vodafone are not competitive. Moreover, given the likely traffic imbalance between 2degrees and Telecom and Vodafone, lower, but still above cost, MTM rates would lower subscription charges and increase subscription levels on those networks. However, far more important than these more subtle effects, will be the direct impact lower MTM rates will have because they enable competition. That will result in substantially lower prices and higher average usage.

Second, and again start by considering a world without entry, if FTM rates fall, then a waterbed effect might come into play, however, if it did, it would be small. With a waterbed effect, lower FTM rates may reduce the total revenues currently received by Telecom and Vodafone (even though more FTM calls would likely be made) and this may lead to higher subscription or other retail charges. However, even in this hypothetical case, the effect is likely to be small for three reasons: (1) the decline in the FTM price will be at least somewhat offset by increases in FTM call volumes (assuming competition is present in the fixed line market and provides for lower FTM pricing), reducing the extent to which the waterbed effect applies; (2) only a fraction of the loss in FTM revenues will be recovered in increased subscription fees, that is, the waterbed effect is unlikely to involve full pass through. Indeed, given that competition to date between Telecom and Vodafone has been so weak, the extent of pass through in New Zealand may well be quite low; and (3) while higher subscription charges may discourage mobile subscription, higher volumes of inbound FTM and MTM calls, and lower MTM call prices (due to lower FTM and MTM termination charges) will make mobile telephony more attractive, and this will at least somewhat, and possibly entirely, offset the extent to which higher mobile service subscription prices will discourage the choice to subscribe.

Notice that this implies that conventional estimates of subscriber elasticity underestimate end-users' responses to subscription price increases that arise due to the waterbed effect. Those elasticity estimates indicate consumer responsiveness holding all other things constant. However, with the waterbed effect, three relevant matters are not held constant—the increased volumes of FTM calls (due to lower FTM rates), the increased volumes of inbound MTM calls (due to lower MTM rates), and the lower cost of making outbound MTM calls (again due to lower MTM rates). Each of these changes offset the effect of higher subscription charges by making mobile subscriptions more attractive and are not accounted for by conventional elasticity estimates.

Third, even holding other things constant, conventional elasticity estimates are likely to overestimate the decline in subscriptions due to a price rise for another reason. Mobile telephony is an experience good, that is, mobile service is valued more once experienced. As a consequence, subscribers are likely to be less responsive to price increases than potential subscribers are to price decreases. However, since demand elasticity estimates are almost universally made in environments where prices are falling and subscription demand is increasing, they reflect the responsiveness of largely new subscribers to lower prices, rather than of existing subscribers to higher prices (which are rarely observed in practice).

In summary, the waterbed effect on subscriptions from a change in MTM termination rates, if anything, will increase subscriptions, while the effect from FTM termination rates on subscriptions would likely be small.

3.3.2. A waterbed effect does not imply current rates are right, but if they were, this is unlikely to apply to MTM

But even if there were to be a material waterbed effect, there is no evidence that present rates are efficient. The waterbed effect merely says that higher termination charges result in lower retail prices, not that any prices above cost are efficient, and indeed, given the discussion of the preceding section, the expectation is that such prices, when unregulated, are likely to be inefficient. Thus, it is not enough to merely say there is a waterbed effect. The relevant question is what level of above cost mobile termination prices would be efficient. We submit that it is highly unlikely that even if there is a theoretical need to take account of the network externality (which is implausible—see section 3.2 above), the likely costs of attempting to do this via termination charges (and as argued above, this could only apply to FTM rates), would exceed the expected benefits.

More importantly, even if the Commission were to find that there is a material concern about declines in the FTM rate leading to inefficiently lower subscriptions due to the waterbed effect, it can be readily dealt with by regulating the MTM rate only. This would eliminate any problems associated with the waterbed effect (though it would maintain an unduly high termination rate for FTM, and one which would encourage inefficient arbitrage, as it is substantially different from all other termination charges).

3.3.3. The waterbed effect, in any case, is a minor side issue

By far the most important point to be made here is that even if the waterbed effect on subscription prices due to the decline in FTM termination rates is a material concern, it is likely to be small next to the substantial competitive effects from 2degrees' entry. Economic theory, and international experience suggest entry will lead not only to substantially lower prices across the board than otherwise would emerge, but also to more and higher quality services and service bundles (additional factors that conventional elasticity estimates fail to account for). All of these effects are likely to swamp any negative impacts on subscription that might arise from the waterbed effect (see section 6.2).

4. RELEVANT FACTUAL

In considering the relevant factual, the Commission has focussed in detail on what termination rates are likely to be under regulation. It appears that a key reason that the Commission took this approach is because the specific level of the mobile termination price is a central input into the Commission's FTM model. However, as demonstrated in our previous report, the effects of regulation on consumer benefits that arise from strengthening of competition in the mobile market are far more significant, and in our view should play a much greater role in the Commission's analysis than the effects of FTM pass-through. The consumer benefits in the mobile market are an order of magnitude higher than those arising in the fixed market.

Importantly, the benefits arising from strengthened competition in the mobile market are not dependent on the exact level of the termination rate to the same extent that the fixed market benefits are. What is more relevant in respect of the benefits related to the mobile market is whether regulation is likely deliver termination rates for voice and SMS that will remove the barrier to entry and expansion that 2degrees is currently facing. Even just considering this issue at a high level, it is obvious that reducing termination charges so that they are in line with underlying incremental costs will address the fundamental problem of the incumbents selling termination to themselves at a price that is lower than the price at which it is sold to access seekers.

From an empirical point of view, too, this point is clear even without delving into cost modelling. For example, [TRI, VRI:

], as compared with a 3.5c termination charge on the Telecom network and a 9.5c per minute for the Vodafone network.

While 2degrees may still have net outpayments if a traffic imbalance remains, the termination charges payable on imbalanced traffic will no longer exceed the retail revenue it can earn on that imbalance. The terms of the commercial agreement do not permit 2degrees to compete for text bundles based on traffic patterns to date as demonstrated in our submission on the Restricted Information data. Consumer feedback so far shows that the inability of 2degrees to offer text bundles that compete with those offered by the incumbents is substantially limiting the willingness of customers to switch⁵⁹. This indicates that without competitive texting bundles, which 2degrees is unable to viably offer given current termination rates, 2degrees will face extreme difficulty in competing effectively. The end result of this that consumers will miss out on the benefits of having a more vibrant and competitive mobile market.

Regardless of the specific detail of the SMS rate that the Commission eventually determines, it seems highly likely that the underlying costs of SMS provision are low and that this would be reflected in the ultimate regulated rate (see the discussion toward the end of section 3.1.1 above). The reduction of the SMS rate that would occur as a result of regulation would clearly then have a large effect on the ability of 2degrees to compete.

The analysis is similar for voice. A number of the specific issues associated with benchmarking voice termination costs are contentious, as is reflected in the numerous and detailed comments provided by Vodafone, Telecom and their consultants (including at least two consultants' reports which were dedicated solely to the topic) However, these issues are somewhat beside the point, so should not distract the focus from the key issue of whether regulation is likely to deliver rates that will allow 2degrees to compete, which in turn will bring dramatic benefits to end-users. This is what matters and in our view is what the bulk of the Commission's analysis and advice to the Minister should focus on, rather than the nitty-gritty of which countries should be included in the benchmarking survey, the rate costs can be expected to fall, the relevant exchange rates, and so on. We also acknowledge that an assessment of the likely termination rate that will prevail under regulation is more relevant to the Commission's assessment of the Undertakings than some of the preceding, but having recognised that, once the Commission has used its benchmarking analysis to inform its

⁵⁹ See for example, comments at: <http://www.stuff.co.nz/business/industries/2717733/2degrees-slashes-mobile-pre-pay-prices>



decision on the Undertakings, we do not consider that the details of the benchmarking analysis should cloud the fundamental decision on whether or not to regulate.

Notwithstanding this view, we provide in what follows a number of specific comments on the benchmarking study.

4.1. PRICING PRINCIPLES AND WHAT PRICES THEY ARE LIKELY TO DELIVER

In a number of the submissions on the Commission’s Report, the examination of the regulated prices likely to emerge in the factual is focussed on the implementation of the IPP benchmarking principle. It is important to highlight that the benchmarking principle is simply an initial principle and is applied as a proxy for application of the FPP. For example, as discussed in the Ministerial Inquiry final report:

The initial determination would ideally get sufficiently close to the ‘efficient’ price so that both parties accept the determination and decide not to progress to the (longer and more costly) pricing review determination. Initial pricing principles therefore would need to:

- *reproduce as far as practicable the likely results of applying the pricing principles that would apply to any pricing review determination; and*
- *have regard to what is practicable to apply within the timeframe for initial determinations (30 working days, or 50 with public hearings)⁶⁰*

A number of parties have asserted that the Commission should be benchmarking prices rather than costs, according to the IPP.⁶¹ Benchmarking on the basis of price may provide a result that is substantially different from cost, as is apparent from the Covec analysis, and therefore would be inconsistent with the underlying rationale described above. For clarity, it may be wise for the Commission to adopt alternate wording of the IPP so as to ensure that the focus is on cost rather than price.

In any case, to the extent that an access seeker, or provider, considers that the FPP will yield a price that is materially different from the IPP, it is likely that it will request a determination of the FPP price soon after the IPP is implemented. In such a case, the IPP would only be applied in, say, the first year of regulation (depending on how long it takes for the FPP to be implemented), with the FPP price being applied in later years (see Table 6). In the event that the FPP delivers a price that differs from the IPP, the Commission has the discretion to require that FPP be backdated

Table 6: Pricing principle applicable in each year

	2011	2012	2013	2014	2015
MTAS Pricing Principle Implemented	IPP (Benchmarking or BAK)	IPP (Benchmarking or BAK)	IPP (Benchmarking or BAK)	IPP (Benchmarking or BAK)	IPP (Benchmarking or BAK)

⁶⁰ Ministerial Inquiry into Telecommunications– Final Report. (September 2000).

⁶¹ See Covec’s Submission on the Draft Report, Para 44.



		<i>or</i> FPP (Benchmarking or BAK)	<i>or</i> FPP (Benchmarking or BAK)	<i>or</i> FPP (Benchmarking or BAK)	<i>or</i> FPP (Benchmarking or BAK)
--	--	--	--	--	--

4.2. THE BAK PRINCIPLE

The pricing principles proposed by the Commission include Bill-and Keep (BAK). This principle should therefore be examined in considering outcomes under the factual. Indeed, as discussed in our earlier report,⁶² efficient outcomes are more likely to emerge under BAK than the counterfactual. However, it has been argued that BAK, and low termination rates more generally, would inefficiently harm overall subscription levels and/or low income consumers.⁶³ These claims are at best unfounded.

4.2.1. The effect of low termination charges on subscriptions and usage

The argument that low termination rates or BAK limit subscription and usage and harm low income users⁶⁴ is at odds with the experience of the United States.⁶⁵ Further, it remains an open question as to whether receiving party pays (RPP) or calling party pays (CPP) regimes can be claimed to be superior to the other.

In the US, fixed termination charges have fallen significantly over the past two decades.⁶⁶ At the same time, mobile operators charge on a RPP basis and have very low call termination rates (zero for MTM and close to zero for FTM). Despite this, US penetration does not appear to have been harmed. In addition, mobile operators are able to compete effectively with fixed line operators and mobile usage is very high by international standards, suggesting largely zero termination charges and RPP has also not been harmful.

⁶² Concept Economics (December 2008), *Bill and Keep is the mobile termination option most in the long-term interests of end users.*

⁶³ For example, see Covec (¶141). Beyond the claims made by the parties to this dispute, see also Armstrong and Wright, Mobile call termination, *The Economic Journal* (2009) 119 (538) pp. F270-F307. Telecom (¶29) also suggests, without evidence, that call failure rates in US are higher than in New Zealand. To our knowledge is not true.

⁶⁴ *Id.*

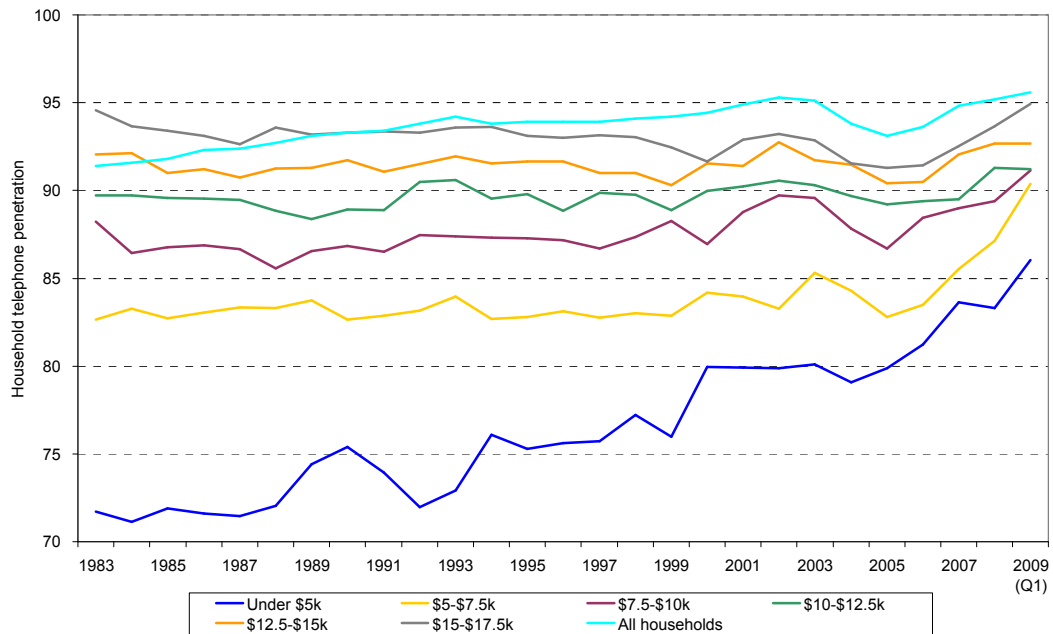
⁶⁵ We believe the discussion that follows also applies to Canada, but were unable to obtain Canadian data in the timeframe available to us. We are not aware of any problems associated with subscription fall off in Canada that can be related to low termination rates (rather than ISP line losses and switching to mobile telephony). We were also unable to carefully examine the case of India, where MTRs are 0.2 Rp or approximately NZD\$0.006. Yet, Vodafone India was willing to make a USD11.2 billion cash plus USD2 billion debt acquisition there and is currently installing over 2,500 base stations a month. This does not suggest low origination charges are harmful to investment incentives (<http://www.ft.com/cms/s/0/7eaf850-b9e3-11db-89c8-0000779e2340.html>, http://www.vodafone.com/static/cr_report09/issues/india.html).

⁶⁶ Claims that mobile termination is unregulated are incorrect. The initial US position was largely no regulation, and this led to BAK between mobile carriers and, on long distance calling, free FTM termination. However, high (so asymmetric) MTF rates were required. The effect was lengthy and ongoing carrier and regulatory disputes. The Telecommunications Act of 1996 also requires reciprocity in interconnection arrangements imposed by local exchange carriers, and any agreement made available to one carrier must be made available to all others. As a result, subsequent to the FCC's 2001 0.07¢ ISP decision, most MTF and FTM local calls were terminated at the 0.07¢ per minute rate.



Chart 8 shows that overall penetration has been rising, and that the proportion of low income households with a telephone has risen more quickly than that for the population generally. Indeed, in the midst of a deep recession, US household penetration has just hit its highest level since measurement began.⁶⁷ This does not suggest that low termination charges harm penetration over all, or penetration among poorer households.

Chart 9: Low income household telephone penetration in the US



Source: Federal Communications Commission, *Telephone Subscribership in the United States*, August 2009

In the US, wireless carriers, who obtain the lowest termination charges of all US carriers and who set RPP prices, appear to be, *even when contesting low income consumers*, highly competitive against regulated fixed line carriers that price on the calling party pays (CPP) principle. Many households in the US are abandoning fixed line services and switching to wireless – in the first half of 2008, 17.5% of US households were ‘wireless-only’.⁶⁸ Today the number appears to be at least 20.5%, and may be as high as 25%.⁶⁹ These trends are reinforced by a 2008 Nielsen survey that found that 17 percent of all homes with a phone relied solely on mobiles (up fourfold in five years).⁷⁰ Moreover, the survey found that the majority of these were low income households and a common reason given for relying on mobile only was cost considerations. That is, effective mobile competition for low income consumers who can choose regulated CPP fixed services indicates that termination charges and RPP are not harmful to efficient subscription choices even among low income users.

This view is reinforced by the fact that wireless penetration in lower income rural households is very similar to that in wealthier urban households – in 2004, 50.5% of rural households had

⁶⁷ http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-292758A1.doc.

⁶⁸ Wireless Substitution: State-level Estimates From the National Health Interview Survey, January-December 2007 <http://www.cdc.gov/nchs/data/nhsr/nhsr014.pdf>.

⁶⁹ America loses its landlines: Cutting the cord, *The Economist*, 13 Aug 2009, http://www.economist.com/displayStory.cfm?story_id=14214847.

⁷⁰ <http://www.nielsenmobile.com/documents/WirelessSubstitution.pdf>.



wireless service, versus 53.5% of urban households.⁷¹ This again appears inconsistent with the view that lower termination charges and RPP would harm low income subscription levels.

Finally, while it is the case that US mobile subscription penetration trails that of CPP countries, there is no evidence that US outcomes are materially worse than those outcomes. As of 2007, US mobile penetration was 85%⁷² and Canada's rate was 62%.⁷³ In comparison, France (in 2007), the lowest of the major EU nations, with a penetration of 87%, while the only other large economy with a low penetration rate was Japan, at 85%. The low level of US penetration is in part due to factors other than RPP, including the relatively late US start in digital service, the fragmented spectrum auctions which took place there, its parochial insistence on relying on any standard but GSM, the high prevalence of post-paid accounts (which also is likely part of the explanation for Canada's and Japan's relatively low penetration rates)⁷⁴ and the fact that some major networks in the US still do not use GSM with its accompanying SIM cards. In contrast, in CPP countries, the high use of essentially disposable SIM cards (for example, by tourists), and in some cases the holding of more than one handset or dual SIM phones to take advantage of on-net pricing, and the use of SIM cards for data connections, leads to exaggerated penetration levels.

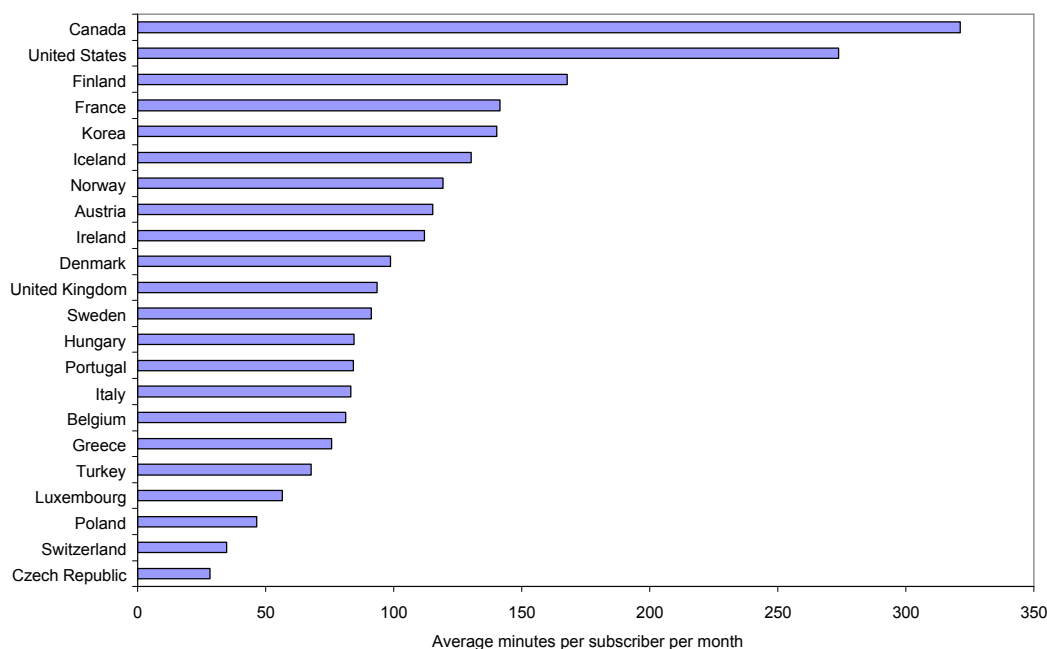
That being said, it remains likely that RPP played some role in explaining US and Canadian mobile penetration rates. However, higher penetration is not per se a good thing (for example, penetration rates of well over 100% typically occur where there are sharp differences between on-net and off-net pricing leading many end-users have two SIM cards), and to the extent that it is, RPP appears to have an important offsetting benefit. Among OECD countries for which mobile *usage* data is available, the two countries with highest usage per subscriber are Canada and the United States. In these countries, average usage per subscriber is in excess of 250 voice minutes per month, compared with 100-150 minutes in most other OECD countries (Chart 10). Whether lower RPP penetration and higher usage or higher CPP penetration but lower usage is the efficient mix of penetration and usage is an open question.

⁷¹ US Bureau of Labor and Statistics—see http://www.ctia.org/advocacy/position_papers/index.cfm/AID/10308.

⁷² In 2008, US penetration reached 87%—see http://www.ctia.org/media/industry_info/index.cfm/AID/10323.

⁷³ All the penetration statistics listed here come from <http://www.crtc.gc.ca/eng/publications/reports/policymonitoring/2009/cmr62.htm>.

⁷⁴ Analysys, in a report commissioned by Ofcom, (Case studies of mobile termination regimes in Canada, Hong Kong, Singapore and the USA, 26 November 2008) considered whether BAK might harm low demand subscribers, but ultimately found this was not an issue due to prepaid offerings from the new entrant Virgin. Prepaid mobile service is also widely available in the US. In the US, Virgin, which runs on the SprintNextel network, allows service maintenance so long as the customers spends \$20 every 90 days, so the customer can start service with \$20, at a minimum, topping up after the first 90 days, thereby incurring a fee of about \$14 a month, but after that the minimum monthly cost falls to about \$7. Virgin's per minute rate is 20¢ (<http://www.virginmobileusa.com/rates/minute.do>). T-mobile's prepaid minutes expire after 12 months if you purchase \$100 of minutes, for a minimum monthly cost of \$8.33; the per minute rate is 10¢ (<http://www.t-mobile.com/shop/plans/prepaid-plans.aspx>). In the US, inbound minutes are priced. These rates are materially lower than the rates Vodafone, ¶32, chose to cite. We looked only at T-mobile and Virgin on the assumption they were likely to be cheaper than the other majors.

Chart 10: Mobile usage (voice minutes) per subscriber in OECD countries (2005)

Data source: OECD Communications Outlook 2007

In summary, the US data does not in any way suggest that low or zero termination charges, or RPP has any bearing on efficient provision of telephony service, whether to the population as a whole, or to lower income customers.

4.2.2. Low mobile termination rates/BAK and arbitrage

It has been argued that bill and keep (see, for example, Telecom, ¶¶29 ff) or sharply lower mobile termination rates would create opportunities for inefficient arbitrage. While this is in fact true, it is even more the case for the present rate structure and any proposed solution will not close off all arbitrage options. Currently, mobile termination rates vastly exceed costs, the FTM rate, and the BAK FTF rate that Vodafone recently obtained.

The need to prevent inefficient arbitrage has two implications. First, the Commission should identify overarching guiding principles for consistently setting termination rates going forward. It is Concept's view that cost, notably long run incremental cost, but recognising accounting for billing and measurement costs may not justify an actual billing process, should be the ultimate standard. Second, the Commission should be looking to a future in which all call types are terminated at the same rate, unless there is a material difference in the cost of terminating a particular kind of call. Concept notes that the US example (see section 4.3.3 below) suggests there are no material differences between the costs of terminating fixed and mobile calls.

In this light, there are two obvious ways forward. The first would be to apply BAK. This would bring mobile rates more closely into line with the MTF and standard FTF rates than they are presently. BAK would also match Vodafone's existing fixed BAK rate for local calls in relation to Vodafone's HomeZone offering. [COI]

. An alternative approach that would have a similar effect would be to set the mobile termination rate equal to the MTF fixed rate (though this would still leave a discrepancy between those rates and existing bill and keep rates). In either case, the Commission could also recommend that future rate reviews would be likely to bring further harmonisation of rates. In Concept's view, since existing bill and keep rates are unlikely to ever be unwound, and these are closer to long run incremental costs (most obviously for SMS, though the FCC's analysis indicate this may also be true for voice), it makes more sense to move all rates to bill and keep, rather than have different rate tiers in the long term, that, as Telecom point out, will encourage inefficient arbitrage.

4.2.3. Conclusion on BAK

Given the above, BAK is an option that the Commission may choose to adopt in the factual for either or both of voice termination and SMS termination. If it was, it would substantially reduce the barriers to entry facing 2degrees, thereby leading to the significant consumer benefits that would result from effective third network entry in the mobile market.

4.3. EVALUATING CRITICISMS OF THE COMMISSION'S BENCHMARKING EXERCISE

A large part of the comments on the Commission's benchmarking exercise have focussed on issues associated with comparability and cost drivers. Cost drivers are complex and there are no simple adjustments that can be made that would properly reflect international differences. Even measures such as population density are not correlated with cost in a simple way – for example, while a low population density can be associated with a high cost, so too can very high density areas of cities. In our view, a full analysis of the cost drivers is simply beyond the scope and implementation timeframe of the IPP as well as the current process. In fact, it would require modelling costs in each of the countries in the benchmark sample (including New Zealand) and it would obviously be better to directly model costs in New Zealand. But this is exactly what using benchmarks was intending to avoid. Given this, a simpler approach is required.

It should also be recognised that any cost comparison that the Commission carries out will be open to criticism. However, but the relevant question is not what is wrong with the Commission's analysis, but rather what is a reasonable approach, bearing in mind that the purpose of the exercise is not to determine what the price should actually be, but rather whether the price should be regulated.

4.3.1. Cost drivers and comparability

How are NZ costs likely to compare?

We have discussed with the 2degrees' Chief Technology Officer, Mike Goss, the issue of how costs of mobile network deployment in NZ are likely to compare with other countries. This section summarises the key points highlighted in that discussion. We note that Mr Goss has built and designed mobile networks in a range of countries including: New Zealand (BellSouth NZ and 2degrees), Australia (Optus mobile), Austria, the US, Switzerland, Croatia, and also had some involvement with a Slovenian network deployment.

Overall, it is not expected that NZ costs would be particularly expensive when compared internationally, and it is reasonable to expect that costs in NZ are probably about on par with Australia, or perhaps slightly less.

Specific factors relating to NZ identified by Mr Goss are

- Infrastructure supply: In NZ, there are around 5-6 infrastructure manufacturers – a higher number than would be expected given the small population – with the result that prices are competitive. For example, a 20m pole in NZ would cost around 20-22k NZD. In Australia, the cost would be around 20-22k AUD, and in the US, approximately 20-22k USD.
- A factor that pushes up the costs of cell site foundations in NZ is the poor holding capability of the soil. However, in Australia dealing with heavy clay in some areas is also expensive.
- NZ networks do not cover many of the high cost areas that are covered in other countries such as Norway and Austria. For example, in the case of Austria building a mobile network was very expensive because it involved covering many small villages at high elevation and so high wind loadings were required, leading to very high foundation costs. Also permafrost meant that network build could only occur during 6 months of the year so there was a longer build time/longer time to market. Although Austria is not included in the Commission's sample, similar challenges would occur in countries such as Norway and Sweden.

In respect of network deployment in cities, Mr Goss highlighted that serving Auckland is much simpler, and therefore less costly, than large cities in other countries. For example, building a network in Sydney was very complex. Many in-building sites were required in the CBD due to the large number of high-rise buildings and the resulting "canyon effect". Network deployment in Sydney also involved the need to provide coverage inside road tunnels and train tunnels, and the build that Mr Goss worked on involved running an optical fibre through the Sydney harbour tunnel. These complexities are typical of constructing mobile networks in many large international cities, but are largely avoided in Auckland due to its lay-out. Mr Goss noted that serving Wellington is much more difficult than Auckland because of the hilly terrain, which increases the cell sites required per subscriber, and that Christchurch is the easiest of the three cities because it is the flattest.

On balance, Mr Goss was of the view that there is no reason to suppose that costs in NZ would be high when compared internationally. Further, Mr Goss considered that the hypothesis set out by WIK-Consult that costs in NZ are likely comparable with, or below, those in Australia, was reasonable. On this point, Mr Goss identified that a difference between costs in Australia and NZ (in addition to those already discussed above) is that in Australia the transport required to carry poles and other infrastructure from the cities to regional areas (due to the fact that, pole manufacturers are located in the cities) was a factor that pushed up costs in Australia.

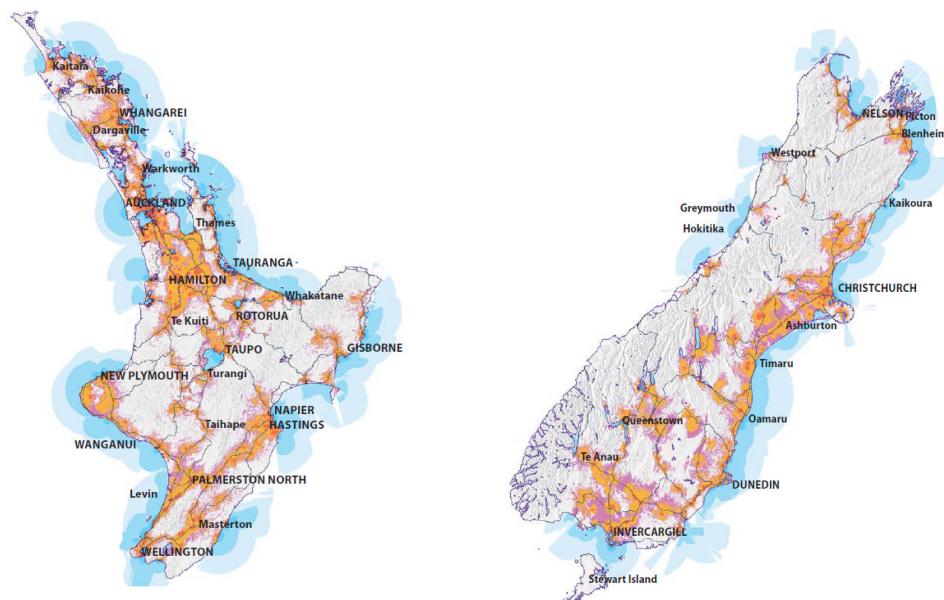
Norway – the Covec suggestion of a comparable country

Covec has suggested that Norway is the most comparable country from the Commission's study. While on the face of it there are similarities in respect of population size, average

population density and land area, digging deeper reveals some stark differences that would indicate that Norway would likely have substantially higher costs than NZ. For example:

- Coverage: The coverage of population in Norway is higher than in NZ: 97% in NZ compared with 99% in Norway⁷⁵. This translates to a significant difference in the extent of geographic coverage: Norway has landmass coverage of 85%.⁷⁶ NZ, on the other hand has much lower landmass coverage. We have not been able to find a precise estimate of the current coverage. In 2000, it was noted that the Vodafone network covered about 25% of the landmass while providing coverage of approximately 96% of the population⁷⁷. Vodafone now covers 97% of the population, but it is difficult to know what increase in landmass coverage would be associated with the 1% increase in population. The Telecom XT network coverage maps below, however, suggest current landmass coverage of less than 50%. The landmass coverage is important to any comparison between Norway and New Zealand, because while both countries have rugged and mountainous terrain, in Norway more of these areas are covered, while in NZ they are not. This would be expected to significantly increase the costs in Norway above those in NZ.

Figure 1: XT network coverage



Source: Telecom website

- Labour costs – These are substantially higher in Norway and the PPP may not properly adjust for this
- Climate – Norway is much colder than NZ which increases the challenges and costs associated with mobile deployment as discussed above in relation to the comments of Mr Goss, and has implications for housing of the equipment.

⁷⁵ Source: ITU (2004), *Shaping the Future Mobile Information Society: The Case of the Kingdom of Norway* p. 9.

⁷⁶ <http://www.telenor.com/en/global-presence/norway/index.jsp>

⁷⁷ Ministerial Inquiry into Telecommunications – Final Report

Given the above, we would not expect the costs in Norway to be comparable with those in NZ, rather they are likely to be substantially higher than NZ costs.

4.3.2. Countries to include in sample

The Commission has requested views on whether there are other countries that should be included in its preliminary benchmarking study. In response, Covec has made the suggestions that:

- France should be excluded on the basis that although a bottom-up cost model was used, the approach was entirely based on historic cost⁷⁸.
- Hungary and Greece should be included⁷⁹.

In respect of France, the regulator ARCEP has used a bottom-up engineering cost model and have populated it with data drawn from the regulatory accounts, which are in historical cost terms. Importantly, however, they have tested the effect of using current costs instead of historical costs and found it only made a 2% difference in their cost estimates. This is, ARCEP believes, because most of the capital stock is of very recent vintage. ARCEP is therefore satisfied that it is reasonable to use historical costs to populate the model, though (as prices move towards costs) they will consider shifting to a forward looking cost approach. Given this, it seems entirely reasonable for the Commission to include France in the benchmark sample.

It is not apparent from the documentation available in English as to whether any analysis of the impact of using historic costs was examined for Greece and Hungary and therefore whether it would be appropriate to include these countries in the sample.

In our view, a surprising omission from the Commission's benchmark sample is the US. We now examine US state public utility commissions' estimates of termination cost.

4.3.3. US regulatory estimates of termination costs

In 1996, the US federal regulator, the Federal Communications Commission (FCC), required the state regulators to estimate interconnection charges on the basis of total element long run incremental cost (TELRIC).⁸⁰ The TELRIC methodology "represents estimates of average, traffic-sensitive forward-looking costs plus an allocation of common cost and overheads" (§254), as is consistent with the TSLRIC approach outlined in the Telecommunications Act.

A number of State public utility regulators have estimated long run incremental costs plus a contribution toward common and overhead costs of various network elements for the purpose of pricing regulated services. Their estimates for the per minute cost of fixed call termination

⁷⁸ Covec Submission, para 49.

⁷⁹ Covec Submission, para 45-48.

⁸⁰ The material in this section to a significant extent relies on, and paragraph citations are from, Appendix A of, FCC, 2008, High-Cost Universal Service Support, Federal-State Joint Board on Universal Service, Lifeline and Link Up, Universal Service Contribution Methodology, Numbering Resource Optimization, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Developing a Unified Inter-carrier Compensation Regime, Inter-carrier Compensation for ISP-Bound Traffic, IP-Enabled Services, WC Docket No.s 05-337, 03-109, 06-122, 04-36, CC Docket No.s 96-45, 99-200, 96-98, 01-92, 99-68, Order on Remand and Report and Order and Further Notice of Proposed Rulemaking, Washington, DC, Appendix A, paragraphs 253 ff. Footnotes are generally omitted from any quotes.



(expressed in USD), which includes a contribution toward common and overhead costs, range from per minute rates as low as \$0.00014 to as high as \$0.01337, with a national average of \$0.00115.^{81 82} As an aside, the rates estimated by the states appeared to be negatively correlated with network size, “indicating scale and scope economies do not significantly effect the cost of termination” (¶254).

However, the FCC’s view as of 2008 is that these cost estimates exaggerate the actual long run incremental cost of fixed call termination for two reasons. First, the approach taken by the states was not formally based on the economic definition of incremental costs, but had that been the case, then “we would expect the cost estimates in the record to be significantly lower” (¶253; see also ¶254). Second, technological change has likely lowered these costs. For example, when the state regulators undertook TELRIC studies to determine interconnection rates “circuit switches and fiber optic transmission were generally considered the ‘least-cost, most efficient’ currently available technology” (¶254). However, the FCC considers positively the suggestion that “the incremental traffic-sensitive costs of modern softswitches are likely to be significantly lower than those of circuit switches and possibly zero” (¶257; see also ¶259). Similarly, the FCC conservatively estimates that on a modern packet-switched network, “the cost, on a per-minute basis, would be 0.00001 cents per minute” (¶261). There is little doubt that forward-looking costing approaches would assume the use of softswitches, and it would be unusual if a new network install was not fully packet-switched.

Of course, these state cost estimates and resulting rates applied to fixed telephony. However, the effect of the FCC’s 2001 ISP order⁸³ has been, among other things, that the vast bulk of local call termination between fixed and mobile networks has been reciprocally terminated at USD0.0007 per minute. While the FCC did not carry out a cost study to determine the USD0.0007 rate, all carriers subject to the rate had, and still have, the option of appealing the rate through cost studies of call termination on their network. However, appeals of this decision by mobile carriers have been at best rare (and we know of no examples). The mobile carriers would have greatly benefitted if they could have shown that the cost of call termination on their networks under the TELRIC plus a contribution to shared costs standard likely exceeded USD0.0007 per minute. Consequently, it seems that the mobile carriers have concluded that a cost study would not be likely to demonstrate that the TELRIC plus a contribution to shared costs would not be likely to result in a rate materially higher than USD0.0007 per minute and might even have led to a lower rate. The US should therefore be included in the Commission’s sample, with the FCC de facto LRIC plus estimate for mobile termination of approximately NZD0.001.

⁸¹ The FCC (¶254) cited evidence from SprintNextel that “the national weighted average price per minute for unbundled local switching was \$0.00058.” The lowest observed rate was \$0.00004 and the highest \$0.0061. Similarly, “the national weighted average price per minute for common transport was \$0.00057” with a range of \$0.00010 to \$0.00727.

⁸² While these rates may seem surprisingly low, rates found by the Canadian Radio-Television and Telecommunications Commission (CRTC) were even lower. In 2006, as part of a new approach to regulating fixed call termination, the CRTC determined the long run incremental cost of call termination including material mark-ups for contributions toward shared costs and overheads. The CRTC expressed this cost as capacity (not per minute) prices, based on the number of trunks between the interconnecting networks. The resulting prices only apply to traffic that is more than 10% out of balance. Using the CRTC’s per trunk cost determinations, we estimate the equivalent per minute cost of call termination to conservatively lie between 0.0002 and 0.0004 NZD cents per minute (see Appendix B below).

⁸³ FCC, 2001, Intercarrier Compensation for ISP-Bound Traffic, CC Docket Nos. 96-98, 99-68, Order on Remand and Report and Order, 16 FCC Rcd 9151, 9171–72.

While state public utility commission estimates place the per minute cost of call termination in the range of NZD0.0002-0.02, with a national average of NZD0.0017, the FCC considers these estimates to be high given network developments.

4.3.4. Determination of the benchmark rate

As is highlighted by Analysys, the Commission's benchmark sample provides cost estimates that cover a wide range of values. This is even more so once the US cost estimate is included, broadening the range to 0.1c to 12.52c. Clearly then the question of how to select a benchmark rate from the sample will be an important aspect of the benchmarking analysis.

The Telecommunications Act does not prescribe how the selection of a benchmark rate should be carried out. However the Ministerial Inquiry report which provided the original recommendation of incorporating benchmarking in the Act for certain designated services, recommended that the judgement of the relevant benchmark be made by the Commissioner "on the basis of his/her best estimate of where New Zealand would fall if a full TSLRIC assessment were undertaken."⁸⁴ The report further pointed out that such an approach is "consistent with the earlier expressed view that the initial pricing principle should be a proxy for the pricing principle to be used in the pricing review determination - see page 47. This is to minimise the difference in resultant prices, both to achieve efficient pricing and to reduce the likelihood of a party seeking a pricing review determination."⁸⁵

There are several reasons national regulators' estimates of the TSLRIC of mobile termination might differ:

- a) a different approach to allocating shared costs is employed;
- b) the sampling error on each estimate is different (for example, even adopting identical approaches to cost sharing, and when the underlying costs are identical, different regulators will arrive at different estimates due to random errors);
- c) efficient costs differ in different countries (for example, because of terrain, population density and differences in non-tradeable factors);
- d) costs differ in different countries, but the regulator's local focus means it does not discover (efficient) costs are lower elsewhere; and
- e) the regulators have different biases in estimating costs, for example, preferring to over, rather than underestimate costs.

If it were simply the case that the variation was driven by sample bias, then the use of an average measure would be appropriate – for example, the use of the median by the Commission. However, it is likely that there are actual differences in the underlying costs as described in (c). As discussed above, there is no apparent reason why the costs in NZ would be high by international standards. Further, the conclusion discussed above that costs in New Zealand are likely to be lower than those in Norway, and especially the observation by cost modellers WIK-Consult, supported by the practical engineering knowledge of Mr Goss,

⁸⁴ Ministerial Inquiry into Telecommunications – Final Report

⁸⁵ *Ibid* p.68.

that costs in New Zealand would be less than those in Australia, indicates that costs in New Zealand are likely to be below the median.

It appears that differences in cost allocation methodology (point (a) above) does play a role of the wide range of estimates in the Commission's sample. Many of the countries included in the sample contain fully allocated network costs. The cost-based principle proposed by the Commission is TSLRIC which is defined as being the incremental costs plus a reasonable allocation of common costs. Fully allocated costs would provide a **ceiling** for the TSLRIC, but the Commission may well determine that the reasonable allocation of common network costs is substantially below the full allocation. Again this indicates that the use of a median rate is conservative.

The 2008 decision by ARCEP, which provided the French termination rate used in the Commission's benchmark exercise, provides an interesting precedent for how a regulator addresses common cost allocation in the presence of the network effects created by on-net discounting. ARCEP discusses at length the distortions to competition created by termination charges that are based on fully allocated network costs given deep on-net discounting, and describes the vicious circle created for small players which makes it extremely difficult for them to increase market share: that is, with low market share it is hard to make attractive retail price offerings, which further weakens market share. Given that the concerns expressed by ARCEP are similar to the Commission's concern that high mobile termination is creating a barrier to entry, it may well be expected that the Commission would similarly come to a view that a cost based on fully distributed costs is inappropriate, and that the relevant cost is one that is much closer to the incremental costs of providing the service.

Given all of the above, we conclude that the median value likely overstates the actual cost likely to be determined in New Zealand.

4.3.5. Change in costs over time

A number of submissions discuss the Commission's approach to estimating the trend in costs over time. For example, Covec says that the Commission should have looked to a broader range of countries to determine the trend in costs.⁸⁶ Covec looks at changes in costs in Australia, Denmark, Israel, Malaysia and Sweden and finds the median (Australia) to be a 4.7% reduction per annum.

Over the period modelled by the Commission in its welfare analysis (2011 to 2015) a key development in the mobile market is expected to be an explosion in the use of mobile broadband⁸⁷. It is typically considered that the uptake of new technologies, such as mobile broadband, follows an S-shaped adoption function. Chart 11 gives an illustrative example of an S-curve – in this case one that Concept estimated in relation to mobile broadband take-up of Australian business customers in the Finance and Insurance sector. The timing of take-up in New Zealand may be delayed (for example, by a few years) because of the later roll-out in New Zealand of high-speed mobile broadband access⁸⁸ Even so, shifting the S-curve in

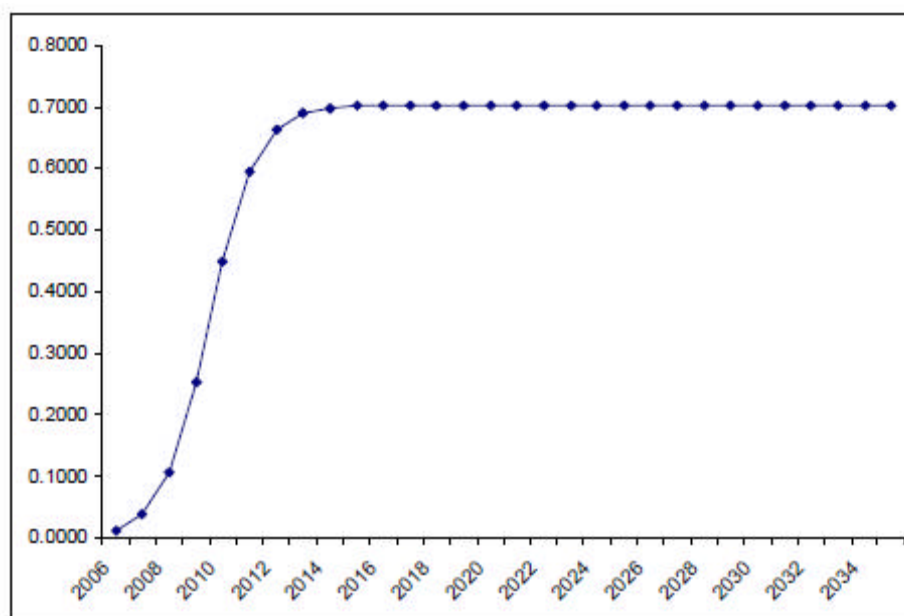
⁸⁶ Covec Submission, paras 71-75.

⁸⁷ For example, see comments made by Rosalie Nelson in: Reseller News (May 19, 2009) "IDC: Mobile broadband market floodgates opened".

⁸⁸ Telstra's NextG network provided speeds of 21Mbps from 2006, whereas speeds in New Zealand have not yet reached that level.

Chart 11 to the right by, say, three years, still puts the period of huge demand expansion squarely in the timeframe relevant to the welfare calculation.

Chart 11: Example of S-curve for broadband data services: Mobile broadband adoption function estimated for Australian Finance and insurance sector



Source: Concept Economics, Next G Productivity Impacts Study, p. 54

There are two key implications of the impending widespread use of mobile broadband:

1. the LRIC of voice termination will become trivial as the traffic-sensitive elements of the network become increasing driven by data requirements – for example, it will be mobile data services, not voice, that will be the key determinant of backhaul dimensioning; and
2. termination charges calculated on basis of fully distributed network costs will fall dramatically due to economies of scale and scope

Historic changes in costs, such as those calculated by Covec for Australia, Israel and Malaysia for the years 2007-2008, 2005-2009 and 2006-2008 respectively, will therefore not be reflective of the expected future cost reductions. The Commission in its Draft Report noted that the Swedish regulator forecast costs going forward to 2012/13. In our view the change in the cost path in Sweden is more informative that the cost path calculated by Covec, because the Covec analysis relies on historic trends.

4.3.6. Cross-checks on cost estimates

The Commission utilises two types of cross-checks in assessing its resulting benchmarks: (1) a comparison with the European Commission's LRIC estimate; and (2) a check against the retail on-net pricing of the incumbents.

Regarding the first of these, Covec notes that the EC's estimate does not include common network costs and attempts to add these back in (using the results of WIK modelling) deriving

a TSLRIC estimate of 6.7cpm⁸⁹. It appears to us that the EC's figures are a fairly rough estimate, and as Analysys notes it is not clear how they were derived. We would expect that a cost estimate that includes only traffic-sensitive costs would be much lower than what the EC has indicated. Even if the EC estimate were in fact based only on traffic-sensitive costs then any adjustment to it to include common costs would depend on what the NZCC considers is a reasonable mark-up, rather than the fully allocated approach suggested by Covec. In our view, given the specific NZ circumstances there are strong arguments as to why the proportion of common costs allocated to termination should be small – particularly for M2M.

Regarding the check against on-net pricing, Covec note that the Commission examine prices of on-net pricing by assuming that customers use all of the minutes and texts in the bundle, but that on average consumers do not do so⁹⁰. This would suggest Vodafone should provide the Commission with the data it requires to do the analysis in the way that Covec suggests. Covec also note that “using plan prices as a cross-check on mobile termination cost benchmarking is extremely difficult, as every bundle includes a number of different components (e.g. voice, text, data, and other services), and the mobile network will price on the basis of the value of the overall bundle as a whole to consumers (including expected termination revenue). This is further complicated by the fact that plans designed to attract closed user groups will be priced depending on the value of the group as a whole, and conducting the analysis at the level of an individual plan will therefore lead to erroneous conclusions about costs.⁹¹” In general, it is not rational for a firm to price a service at less than the incremental cost. Therefore, it could be assumed that an upper bound of the incremental cost of termination is roughly half the on-net retail price.

4.3.7. Glidepaths

Analysys says in its submission that regulators internationally have typically used glide paths and cites: IRG, OFCOM, ARCEP, OPTA, CMT (Spain), NHH (Hungary), and ACCC (Australia)⁹². While (some) regulators in countries where there is well-established competition between 3, 4 or 5 competitors find glide paths to be appropriate, in our view this has little relevance to the NZ situation where the benefits of quickly aligning MTRs with cost are not simply pass-through price reductions but of removing entry barriers to enable competition. In the Slovenian example, the regulator halved the MTR thus allowing a new network to enter successfully where high MTRs had previously been in place. This did not have a negative effect on the market – rather competition flourished.

More importantly, as a matter of principle, reducing excessive profit will have no negative impacts on efficient investment. Investments will be undertaken, at least by competitive firms, so long as their expected return exceeds their costs.

We also note that there is a long-lead time in the process of implementing regulation in NZ. The Commission's issues paper was released in 2008. The Commission estimates that, if mobile termination is regulated, it will not be implemented until early 2011. Therefore, the mobile incumbents effectively will have had more than 2 years within which regulation was

⁸⁹ Covec Submission, para 55-60.

⁹⁰ Covec Submission, para 61.

⁹¹ Covec Submission, para 62.

⁹² Analysys Submission, para

either a possibility (ie, the period up to early 2009) or a certainty (early 2009-early 2010), giving them ample time adjust investment schedules as appropriate.

Notwithstanding the above comments, in the event that it is considered appropriate to adopt a glidepath we would strongly recommend that it is either only applied to F2M, thereby not having a distortionary effect on the mobile market, or that the French precedent be adopted – ie, in recognition of the fact that Bouygues Telecom had a net outflow of traffic, ARCEP set the termination rates such that the rate for termination on Bouygues Telecom’s network was higher so as to compensate it for the fact that it would be paying a price that was above cost due to the glidepath.

4.3.8. Other divergence from cost

Covec notes that the Norwegian regulator and the ACCC set MTRs above cost.⁹³ This does not imply that following suit would be to the long-term benefit of consumers in NZ. In fact, the situation facing the Commission in New Zealand (ie, duopoly with high entry barriers, and attempted but failed entry by the country’s 2nd largest fixed network) is vastly different from the situation faced by other regulators. Indeed, if international regulators were faced with the NZ market conditions their approach to MTR regulation may be very different from what they have decided was appropriate in their own country.

Telecom (paragraph 84) suggests that NERA and Covec, in the past, provided evidence to the Commission of this and that this is set out in the Draft Decision at paragraph 488. In fact what is set out in the Draft Decision (paragraph 488) is the extent to which prevailing MTRs quoted by NERA and Covec exceed the Commission’s benchmark rates in each of the benchmark countries. There is nothing to suggest that these ‘margins’ where they exist (in several cases the calculated ‘margins’ are 0) reflect an allowance for uncertainty or externalities. In most cases these ‘margins’ simply reflect the fact that actual termination rates are yet to reach regulated target rates (that is, some countries are at an early stage of a ‘glide path’). Moreover, (1) whether sensible or not, when it comes to estimating costs, regulators often apply a margin that cuts both ways⁹⁴, so does not raise the regulator’s estimate of cost above the regulator’s expectation of cost, and (2) the externality issue in this case, largely suggest the need to lower call prices, and most especially MTM prices.

5. RELEVANT COUNTERFACTUAL

Covec asserts that “the Commission must consider the presence of 2degrees in the market as part of the counterfactual (and the factual).” As discussed at length in section 3 we consider that the combination of the retail pricing practices engaged in by the incumbent mobile operators together with high mobile termination charges create a formidable barrier to expansion and viable entry. As discussed in our previous report, this combined with the experience from the Slovenian case study where very similar conditions foreclosed entry, and our observation that there has already been one case of failed network entry in New Zealand strongly imply that market foreclosure, or at least a severe restriction on the ability of

⁹³ Covec Submission, para 43.

⁹⁴ *Re Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, paragraph 291; ACCC, *Domestic Mobile Terminating Access Service: Pricing Principles Determination and indicative prices for the period 1 January 2009 to 31 December 2011*, March 2009, p16

2degrees to contest a significant share of the mobile customer base, is very likely to occur in the counterfactual.

With regard to the level of termination pricing in the counterfactual, Covec expresses the view that “if the Commission recommends regulation and the Minister decides to regulate, the existing mobile termination deeds will terminate and the undertakings will not apply.”⁹⁵ Covec consider that because of this the 2010 termination rate (for F2M) will be lower in the counterfactual than in the factual. It is unclear as to whether this is correct, as the wording of the Act may permit the acceptance of an Undertaking, but also a decision to regulate. In either case, whether there is regulation or not does not impact on the commercial agreement terms faced 2degrees in the mobile market, and the mobile market effects have far greater impacts on consumer benefits as discussed in our previous submission.

6. COST BENEFIT ANALYSIS

As discussed in the introduction to section 4, we consider it important that the Commission explore the benefits from a qualitative perspective in addition to the quantitative analysis already undertaken. In what follows, we comment on some of the specific comments made in submissions on the Commission’s cost-benefit analysis.

6.1. THE RELEVANT TEST: CONSUMER SURPLUS OR EFFICIENCY?

NERA discuss the way it interprets the purpose of the Telecommunications Act. This purpose as set out in the Act is: “to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand.” NERA contends that the relevant consideration is efficiency. However, economic efficiency and the long-term interests of end-users are generally consonant, and NERA’s quote from Evans⁹⁶ makes this very clear. The “link between the process of competition and the goal of efficiency” is exactly that competition forces the transfer of producer surplus to consumers. That is, a situation is economically efficient if, among other things, producer and consumer surplus cannot be reallocated without making someone, for example, producers worse off. Consequently economically efficient outcomes may differ according to the extent to which producers rather than consumers gain surplus, and the Act clearly prefers those in which consumer benefits are maximised. Generally, it is exactly competitive forces that ensure such a maximisation.

6.2. ESTIMATION OF THE WATERBED EFFECT

Telecom argues (para 4) that “The Commission... acknowledges that regulation will result in higher mobile retail prices and... will result in approximately 130,000 mobile subscribers dropping off the network.” This is misleading. The Commission calculates in their model that subscriptions will be around 25,000 less in each year from 2011 to 2015 as a result of the waterbed effect. Telecom have added these differences up over the 5 years to get 130,000, but in fact they are not additive. The Commission calculation also assumes the waterbed effect is at the top of the 0-50% range – of course if it is at the lower end of their range, the

⁹⁵ Covec Submission, Para 6

⁹⁶ Evans, Lewis (2004) “The Efficiency Test Under Competition Law and Regulation in the Small Distant Open Economy that is New Zealand”, New Zealand Economic Papers, 38(2).241-264.

subscription impact would be much less than 25,000. This is all in the Commission model spreadsheet ('Waterbed linear' tab).

Concept reiterates that it is of the view that if there were any harmful waterbed effects due to retail price rises, these will be completely overturned by the drop in retail prices more broadly brought about more effective competition.

6.3. FTM PASS-THROUGH

Covec have conducted an analysis of FTM pass-through which looks at the way in which FTM prices have change in relation to changes in the mobile termination rate. Fixed service providers typically compete for a bundle of services, rather than FTM calls alone. Therefore, reductions in FTM termination rates may be passed through to consumers on services other than FTM provided in the bundle. That Covec shows that pass-through to FTM prices has been low, combined with the fact that there are a number of fixed services operators competing for customers (which implies that a high level of pass-through is likely to occur), suggests that other services in the fixed service bundle may have higher elasticities. This is because a firm supplying a bundle of services will pass cost reductions to customers on those services for which the elasticity is highest. If the rate of pass-through is not large for a given component, then that suggests it may have a lower elasticity than other services in the bundle. This, in turn, would suggest that the Commission's modelling approach may understate surplus, because for a given level of total pass-through, reducing the prices of the most price-sensitive components of the bundle will result in higher surplus gains than assuming that all of the pass-through occurs through the FTM price.⁹⁷

We note, and agree with, the DICE Consulting Report view that the alternative parameters suggested by Vodafone's consultants perversely imply that the 2-player mobile duopoly is more competitive than the multi-player fixed service market.

6.4. MODELLING THE CONSUMER BENEFITS IN THE MOBILE MARKET

There were a number of comments by parties in relation to modelling consumer benefits in the mobile market. Our comments in previous sections, (especially 3.1) address many of these issues. We also refer to our previous submission in which we provided our assessment of the benefits relating to the mobile market.

⁹⁷ This requires that firm level elasticities for services within the bundle mimic market level elasticities, which is likely so long as the relevant elements of the bundle are not sold separately.

APPENDIX A: CALCULATION OF CANADIAN FIXED TERMINATION RATE

In 2004, the Canadian Radio-television and Telecommunications Commission (CRTC) Canada provided for a new form of fixed call termination regulation.⁹⁸ In particular, it determined that, going forward, calls to be terminated on an incumbent local exchange carrier's network would largely be interconnected at a shared exchange or point of interconnection (POI) that serviced newly defined, and much larger than past, calling area, called a local interconnection region (LIR). The ILEC and an interconnecting carrier were required to share the costs of the trunks between the interconnecting carrier's network and the POI. Beyond this, so long as traffic between the two carriers was within 10% of being balanced, BAK (or a zero termination charge applied).

However, when traffic imbalances in excess of 10% are observed (which generally arise because of long distance, also called toll, traffic in bound to the POI), a per trunk per month price is applied.⁹⁹ These capacity-based prices are intended to cover the call sensitive costs of the traffic, thus include the incremental cost of switching (¶78), trunk capacity, maintenance costs (capped at 7.5% of total capital costs, ¶84), and the costs of servicing the interconnecting party (¶¶88-90). In addition, a contribution to shared (portfolio) costs¹⁰⁰ over all call types, equal a 48.65% mark-up over unshared variable costs, is allowed as these costs are considered to vary with calls (¶87). Depending on the route, the trunk can include a tandem switch, the costs of which are also included (¶68). Lastly, a 15% mark-up for overheads (¶119) is allowed.

Based on these costs, Appendix A of CRTC, 2006-35 provides a list of cost-based prices per trunk that vary depending on the number of trunks involved and the extent of the traffic imbalance. To illustrate the range of these prices, we focus on two, that for the smallest number of trunks and traffic imbalance, and that for the highest number of trunks and traffic imbalance. For the sake of ensuring costs are not underestimated, we chose the ILECs with the highest costs and hence prices for these two categories (respectively Aliant-NL and Aliant-NS, two carriers in the relatively remote, sparsely settled and poor north eastern provinces of Canada). CAD2.43 and CAD27.73 were the respective highest prices for the lowest number of trunks and traffic imbalance, and highest number of trunks and traffic imbalance. Making conservative assumptions (calculations provided in section 0 below), these prices respectively imply per minute long run incremental cost of termination charges after making a substantial allowance for shared and overhead costs of 0.0001 and 0.0003 Canadian cents per minute.

⁹⁸ CRTC, 2004-46, Trunking arrangements for the interchange of traffic and the point of interconnection between local exchange carriers, Reference: 8643-C25-01/99, 8643-C12-07/01 and Bell Canada Tariff Notice 6597, 14 July 2004, <http://www.crtc.gc.ca/eng/archive/2004/dt2004-46.htm>.

⁹⁹ CRTC, 2006-35, Follow-up to Trunking arrangements for the interchange of traffic and the point of interconnection between local exchange carriers, Telecom Decision CRTC 2004-46, Reference: [8638-C12-200410465](#), [8740-T42-200411182](#), [8740-T46-200411190](#), [8740-A53-200500414](#), [8740-S22-200500464](#), [8740-B2-200500498](#) and [8740-M59-200501678](#), 29 May 2006, <http://www.crtc.gc.ca/eng/archive/2006/dt2006-35.htm>. All the the paragraph numbers in this paragraph, unless otherwise indicated, refer to this decision.

¹⁰⁰ Portfolio expenses are expenses directly related to the development and management of marketing/promotional/sales programs associated with a common group of retail and/or competitor services, which cannot be attributed (as direct/indirect expenses) to any specific service within that group (CRTC, 2004-72, Primary inter-exchange carrier processing charges review, Reference: [8661-C12-200303306](#), 9 November 2004, <http://www.crtc.gc.ca/eng/archive/2004/dt2004-72.htm>, ¶67), but which the CRTC considers vary as a result of these services (see also CRTC 2006-35, ¶87).

The per minute costs of call termination under the Canadian approach

This section outlines how the Canadian per trunk cost estimates were translated into per call minutes cost estimates and is slightly technical. For a reader not interested in these details, it can be omitted without loss of continuity.

Regulators generally use the assumption that 8.5% of the daily traffic volume is in the busy hour.¹⁰¹ A trunk generally refers to a DS-1, which has a capacity of 24 simultaneous voice circuit. Consequently, a DS-1 dimensioned for the busy hour demand could carry 1,440 (= 24*60) minutes of traffic in the busy hour. However, it is not typical for a carrier to assume 100% usage at the peak hour, but rather to leave headroom to prevent call blocking. From a network planning perspective, a very conservative approach would be to leave 40% headroom to accommodate traffic peakiness, implying busy hour traffic on the DS-1 of 864 (= 60%*1,440) minutes. Taking a conservative approach will lead to a higher per minute cost calculation.¹⁰²

If 864 minutes is the total use of the trunk in the busy hour, and if this represents 8.5% of the daily use then the total daily usage volume is 10,165 (= 864/8.5%) minutes. The monthly call volume in minutes per trunk (assuming 30 days) would therefore be 304,941 (= 30*10,165) minutes.

If a CLEC has less than ten trunks terminating at the POI, and it has a traffic imbalance with the ILEC at that POI of between 10 and 20%, then the highest price listed in the CRTC's table is CAD2.43 per month per trunk. To calculate the per minute rate implied by this price requires calculating the number of unbalanced minutes that would traverse the trunk in a month. Assume that the average traffic imbalance in this situation is 15%, that is, lies halfway between 10 and 20%. If H is the monthly minutes of traffic of the carrier with the higher volumes, and L is the monthly minutes of traffic of the carrier with the lower volumes, then $H + L = 304,941$, and $(H - L)/L = 15\%$. Solving these equations simultaneously implies that $H = 163,108$, $L = 141,833$, and most importantly that the traffic imbalance $H - L = 21,275$.

The implied per minute rate then is CAD0.0001 (= CAD2.43/21,275).

Traffic imbalance of between 10 to 20% with up to 10 trunks embodies one extreme of the CRTC's tables. At the other extreme of the CRTC contemplates traffic imbalances of 90% or more with more than 96 trunks. The highest price the CRTC lists in this case is CAD27.73 per month per trunk. Again taking the median, this time 95%, the two simultaneous equations to be solved are, $H + L = 304,941$, and $(H - L)/L = 95\%$. This implies that $H = 201,571$, $L = 103,370$ with a traffic imbalance, $H - L = 98,201$.

The implied per minute rate is then CAD0.0003 (= CAD27.73/98,201).

¹⁰¹ As used by WIK in Australia in 2008. WIK reports that this number has been used in Sweden in 2003, and Norway, Holland and the UK, all in 2006—WIK, 2008, Mobile Termination Cost Model for Australia, page 107.

¹⁰² Dieter Schadt provided the technical information of this paragraph and reviewed the calculations of this section.