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Regulation of the MTAS:  
Review of the Commission's  
Draft Report  
Telecom New Zealand

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Public Version

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## 1. Introduction and Summary

The Commerce Commission has issued its draft report on whether mobile termination access services (MTAS) should be regulated (the “Draft Report”).<sup>1</sup> The Commission concludes that there is limited competition in the relevant markets (wholesale MTAS, retail mobile services and retail fixed-to-mobile/toll calling), and that cost-based regulation of the MTAS will promote competition in the retail markets. It supports this finding with a qualitative and quantitative cost benefit analysis of regulation, and makes a draft recommendation that the MTAS become a designated service under the Telecommunications Act 2001.

We have been asked by Telecom to review the rigour of the Commission’s analysis in its Draft Report.

The Commission is proposing the regulation of mobile termination rates (MTRs). A fundamental economic characteristic of mobile termination is that it represents only one side of a two-sided platform – regulatory intervention on one side of the platform will have an impact on the other side of the platform. While the Commission has acknowledged the two-sided nature of mobile telephony, the actual analytical framework it adopts is primarily single-sided (e.g., in respect of market definition), or ad hoc (e.g., quantifying the waterbed effect in respect of mobile subscription prices only).

The effect of MTRs being in excess of mobile termination costs is that mobile operators have a particularly strong incentive to compete for mobile customers, particularly those who receive many calls. Therefore reducing MTRs softens competition for customers. The Commission has assumed that the only variable affected by a waterbed effect would be the subscription price. However, competition for mobile customers occurs on various dimensions, such as calling prices, text prices, coverage, roaming and handset prices. It is possible that the waterbed effect of regulation would impact on some or all of these variables, but the Commission has not estimated the consequent welfare effects.

In fact, the waterbed effect is likely to be complicated, and is likely to affect different customers in different ways. For example, being the least valuable customers, competition for prepaid customers may be particularly affected, and those customers might be the most sensitive to price rises.

The Commission’s analysis of competition in the mobile market is quite narrowly focused. It is of course true that the welfare of consumers is affected by price. But consumer welfare is also a function of other factors, such as network coverage, ability to roam, etc. While we cannot say for sure that the New Zealand mobile market could not be more competitive, it is clear that the welfare of New Zealand mobile consumers has been rising over time, which is consistent with competition.

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<sup>1</sup> Commerce Commission (2009), “Draft report on whether the mobile termination access services (incorporating mobile-to-mobile voice termination, fixed-to-mobile voice termination and short-message-service termination) should become a designated or specified services”, 30 June.

The Commission also seems to downplay the entry of 2degrees, and continually refers to the New Zealand market as only having two mobile network operators (MNOs). Once 2degrees enters, New Zealand will have the same number of MNOs as most other OECD countries.

The Commission's price squeeze test for fixed-to-mobile (FTM) calling is incorrectly specified in light of the Commission's own market definition (i.e., the market includes tolls as well as FTM). More generally, the Draft Report does not provide any strong evidence of a price squeeze occurring.

We also comment on the factual price.

## 2. Mobile Services Market

### 2.1. The nature of competition

Part 2 of the Telecommunications Act, which provides the statutory guidelines for regulation, specifies that its purpose is "to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand". Economists have associated the meaning of "long-term benefit of end-users" with the economic concept of maximizing social welfare or, equivalently, economic efficiency. For example, Katz (2004, p.14) states that "[i]n the long-run, end-users' interests are generally best served by the pursuit of efficiency".<sup>2</sup> Evans (2004, p.247), in the context of the Commerce Act which has a similar purpose statement ("to promote competition in markets for the long-term benefit of consumers within New Zealand"), states that this purpose "is strongly suggestive of a link between the process of competition and the goal of efficiency".<sup>3</sup>

There is a substantial body of evidence in the economics literature that finds that what really matters for maximising long-term social welfare is dynamic efficiency: efficiency in investment and innovation into the foreseeable future. In particular, the welfare gains from improvements to static (allocative and productive) efficiency are small compared to those achieved from improvements to dynamic efficiency. For example, Goolsbee (2006) finds that the dynamic efficiency losses resulting from a hypothetical tax on broadband internet in the U.S. exceed allocative efficiency losses by a factor of 2-3.<sup>4</sup> Romer (1994) compares the allocative and dynamic efficiency losses from an import tariff, and finds that the dynamic efficiency losses (resulting from the loss of new goods that would otherwise enter the economy) can be anywhere from 8 to 20 times the allocative efficiency losses.<sup>5</sup> Solow (1957), in his study of the determinants of economic growth in the United States in the first half of the 20<sup>th</sup> century, found that dynamic economic growth (from investments in research

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<sup>2</sup> Katz, Michael (2004), "Competition, Efficiency, and the Long-Term Benefit of End-Users", Submission before the New Zealand Commerce Commission, 30 November. See also references therein regarding the New Zealand Treasury and Ministry of Economic Development making the same link between long-term benefits and economic efficiency.

<sup>3</sup> 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.

<sup>4</sup> Goolsbee, Austan (2006), "The Value of Broadband and the Deadweight Loss of Taxing New Technology", *Contributions to Economic Analysis and Policy*, 5(1), Article 8, 1-29.

<sup>5</sup> Romer, Paul (1994), "New Goods, Old Theory, and the Welfare Costs of Trade Restrictions", *Journal of Development Economics*, 43(1), 5-38.

and development and education) was approximately 7 times static economic growth (increases in capital and labour).<sup>6</sup> As Gilbert and Sunshine (1995) note, while other researchers disagree about the quantitative effects of research and development spending on economic activity, there is general agreement that such effects are substantial.<sup>7</sup>

Indeed, as an indication of the magnitude of dynamic efficiency gains, particularly as they relate to telecommunications, Hausman (1997) estimates that the gain in consumer welfare from the introduction of cellular telephone services in the U.S. was about US\$50 billion per year (for the period 1989 to 1993).<sup>8</sup>

Fostering dynamic efficiency in telecommunications is particularly important, as it is an industry characterized by high levels of (mainly sunk) investment and innovation in products and services, technology, and networks.

Despite this, the Commission has taken a predominately static view of competition in the Draft Report. It has largely limited its analysis to static measures of competition, such as price and output. While the Commission highlights the competition between Telecom and Vodafone in network technologies (at paragraphs 192-197), it does not recognize this as a form of vigorous dynamic competition. Nor does it give any consideration to other dimensions of dynamic competition (which we consider in the next section of this report).

## 2.2. Evidence of vigorous competition

The Commission's analysis of competition in the mobile services market is based on the premise that the current (facilities-based) duopoly is not sufficient to result in workable competition (paragraph 188). However, the characteristics of the mobile services market suggest that workable competition is possible. The mobile services market is characterized by large fixed and sunk costs of developing a mobile network, and low marginal costs of carrying calls and data on that network. As a result of these features, mobile operators are likely to have an incentive to sell as much output as possible: they have an incentive to fill the available capacity of their networks (and thereby recover as much of the fixed investment costs as possible) and there is a relatively low marginal cost of increasing output to do so. Therefore, there is no reason to assume, *a priori*, that the mere existence of a duopoly indicates that the market is not competitive.

The Commission also seems to downplay the entry of 2degrees, and continually refers to the New Zealand market as only having two MNOs. However, once 2degrees enters, New Zealand will have the same number of MNOs as most other OECD countries, according to Table 12 of the Draft Report.

A judgment on whether the mobile services market is competitive can be informed by an analysis of market activity and outcomes. The Commission has undertaken this to some

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<sup>6</sup> Solow, Robert (1957), "Technical Change and the Aggregate Production Function", *Review of Economics and Statistics*, 39(3), 312-320.

<sup>7</sup> Gilbert, Richard and Steven Sunshine (1995), "Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets", *Antitrust Law Journal*, 63, 569-601.

<sup>8</sup> Hausman, Jerry (1997), "Valuing the Effect of Regulation on New Services in Telecommunications", *Brookings Papers on Economic Activity: Microeconomics*, 1-38.

extent, but has focused narrowly on only three static dimensions of competition: industry concentration, price and call usage.

The data that the Commission analyses shows that mobile prices have been falling while volume has been rising: both of which are outcomes consistent with competition. For example:

- Table 14 shows, and the Commission acknowledges at paragraph 199, that total call volumes have grown over the 2006 to 2008 period. **TRI/VRI**[ ];
- Table 15 shows, and the Commission acknowledges at paragraph 203, that mobile calling prices have decreased over the 2006 to 2008 period. Adjusted for inflation, real mobile calling prices have decreased at an even faster rate than the nominal prices the Commission shows; and
- **TRI/VRI**[ ]

Furthermore, competition in mobile telephony occurs across a number of other dimensions, including (but not limited to) network technology, geographic coverage and roaming. While the Commission has given some consideration to these elements, it has not given any of them much weight as dimensions of competition in the mobile services market.

The Commission presents evidence of the evolution of network technology, but does not recognize this as a form of vigorous (dynamic) competition between Telecom and Vodafone. Indeed, the Commission's analysis at paragraphs 192-197 shows that Telecom and Vodafone have been engaged in a "technology race", where repeated sunk investments are made to provide new or upgraded services to customers.<sup>9</sup> Some of these investments are incremental, such as upgrading the network to provide higher data or connection speeds. Others have been revolutionary, with the introduction of an entirely new network (e.g., Vodafone's 3G UMTS network launched in 2005 and Telecom's XT network launched in May 2009). These investments are an indication of vigorous competition between the two mobile operators, with end-users clearly benefiting through higher speeds and better services.

Similarly, the Commission analyses geographic coverage and national roaming as an entry barrier, but does not recognize the evidence of competition to provider wider geographic coverage. For example, in July 2008 Vodafone announced it would invest \$500m to expand its 3G mobile coverage from 63 percent of New Zealand to 97 percent.<sup>10</sup> There is also evidence of more incremental competition in coverage, with incremental increases in cell sites in many regional centres.<sup>11</sup> The 3G networks of Telecom and Vodafone now offer

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<sup>9</sup> For more on technology races in telecommunications see Quigley, Neil (2004), "Dynamic Competition in Telecommunications: Implications for Regulatory Policy" Commentary 194, C D Howe Institute, Toronto.

<sup>10</sup> "Vodafone commits to \$500 million mobile investment", New Zealand Herald, 4 July 2008, [http://www.nzherald.co.nz/technology/news/article.cfm?c\\_id=5&objectid=10519985](http://www.nzherald.co.nz/technology/news/article.cfm?c_id=5&objectid=10519985)

<sup>11</sup> For example, in July 2007 Vodafone increased the number of cell sites in Invercargill, to compete with the existing 3G coverage offered by Telecom in the city. See "Vodafone launches 3G services in city", The Southland Times, 4 July 2007.

coverage to 97 percent of New Zealand.<sup>12</sup> Interestingly, Valletti (2003) argues that MNOs compete first on coverage, then as firms match each others' coverage (and product differentiation decreases), price competition is intensified.<sup>13</sup>

There is also evidence of competition to provide international roaming coverage. Recent evidence suggests "tit-for-tat" competition between Telecom and Vodafone to increase the number of countries where international roaming is offered.<sup>14</sup> There is also evidence of Telecom and Vodafone competing to provide a more user-friendly global roaming service. For example, Telecom entered a partnership with Hong Kong mobile operator CSL in 2007 to allow global roaming on CSL's network in 180 countries, which allowed Telecom customers to roam without changing phone numbers.<sup>15</sup> Telecom also highlights a key benefit of its new XT network as "a superior roaming footprint".<sup>16</sup>

Since competition occurs across this wider range of dimensions, the Commission's analysis is too narrowly focused on comparing price and call usage in New Zealand with other OECD countries (with all of the difficulties that inter-country benchmarking entails).

Another comparison would be to consider revenue per customer, as this reflects competition across all dimensions (although it does not control for quality differences, and more generally suffers from some of the same issues as inter-country price comparisons).

Figure 1 below, taken from the OECD Communications Outlook 2007, shows that New Zealand mobile operators are not making significant revenues per customer relative to their OECD counterparts. This shows that New Zealand's mobile revenue per subscriber is relatively low within the OECD, and lower than two of the three countries that the Commission considers to be comparable (Norway and Finland, although not Sweden). It is also lower than countries that the Commission identifies (at paragraph 217) as having a high share of pre-paid subscribers, such as Ireland and Germany.

We note that this analysis does not control for costs. It may be that costs are lower in New Zealand relative to other OECD countries, so that despite low mobile revenues, profitability per subscriber is high. However, it seems unlikely that costs are materially lower in New Zealand given our small population, mountainous terrain, etc. Indeed, the Commission's benchmarking exercise is based on the premise that costs in New Zealand are comparable (neither lower nor higher) with other countries (see paragraph 577 of the Draft Report).

An analysis of revenue per subscriber also does not control for the number and type of services offered, or other quality differences between countries.

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<sup>12</sup> See <http://www.telecom.co.nz/mobile/ournetwork/coverage> for Telecom and <http://www.vodafone.co.nz/coverage/> for Vodafone.

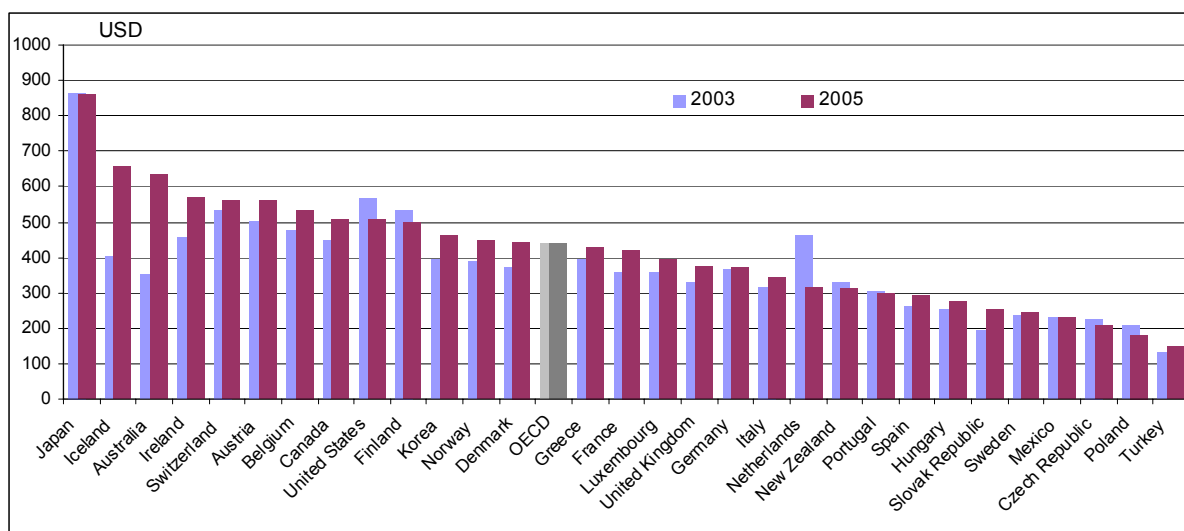
<sup>13</sup> Valletti, Tommaso (2003), "Is Mobile Telephony a Natural Oligopoly?", *Review of Industrial Organization*, 22, 47-65.

<sup>14</sup> See "Vodafone sees Telecom's roaming list; raises it by four countries", *National Business Review*, 14 July 2009, <http://www.nbr.co.nz/article/vodafone-sees-telecom-s-roaming-list-raises-it-four-countries-102564>

<sup>15</sup> "Global roaming just got better", *National Business Review*, 10 September 2007, <http://www.nbr.co.nz/article/global-roaming-just-got-better>

<sup>16</sup> "Telecom on track for mobile launch and in good company", *Telecom Media Release*, 23 February 2009.

**Figure 1**  
**Mobile Revenue per Subscriber**



Source: OECD Communications Outlook 2007

### 2.3. The impact of entry

The Commission’s assumption throughout the Draft Report is that regulating MTRs would remove a barrier to entry, and the resulting entry would increase downstream competition. The Commission’s implicit assumption is that this is desirable for social efficiency (and thus the long-term benefit of end-users). While this implicit assumption is in general a fair one, it is not axiomatic that entry will be socially beneficial. We set out why this is below. We do not go as far at this stage as claiming that two or three MNOs is the optimal number in New Zealand. Rather, our purpose is to raise what we think is a valid issue to be considered, given the small size of the New Zealand economy, mountainous terrain, etc.

Firstly, the economics literature identifies a trade-off between the impact of entry on allocative efficiency and economies of scale. Mankiw and Whinston (1986) model the effect of free entry on social efficiency.<sup>17</sup> They show that entry leads to a “business-stealing effect”, whereby a new entrant steals some business from the incumbent firms (rather than growing the market). Thus, part of the profits earned by the entrant are simply a transfer from other firms. While entry may lead to a lower price and an increase in total surplus, Mankiw and Whinston show that if there are fixed costs of entry then these may exceed the increase in surplus, such that entry is not socially beneficial.<sup>18</sup>

Mankiw and Whinston’s result is based on a homogenous product. If there is product differentiation, the effect of entry on social welfare is ambiguous. With product differentiation, a new entrant might steal business from incumbents by increasing product

<sup>17</sup> Mankiw, N. Gregory and Michael D. Whinston (1986), “Free Entry and Social Efficiency”, *RAND Journal of Economics*, 17(1), 48-58.

<sup>18</sup> For a simple graphical explanation of this result see Cabral, Luis (2000), *Introduction to Industrial Organization*, MIT Press, pp252-253.

variety, rather than stealing profits. However, if the business-stealing effect dominates this “product diversity effect”, there may be more entry than is socially efficient.

Secondly, in the mobile services market where economies of scale appear to be important, new entry might result in a loss of scale for existing operators. This might be particularly the case given the current mature market with a high level of mobile penetration, as a new entrant in the market is more likely to grow by “stealing” output from other operators, rather than growing the market. As a result, the costs of each firm in the industry would be spread over less output, leading to a higher average cost for each firm. This is a variant of the natural monopoly argument, where economies of scale mean that one firm can produce the total output at a lower average cost than two (or more) firms. While we are not suggesting that mobile communications is a natural monopoly (or duopoly), it may well be that there is a natural limit to socially efficient entry, particularly in a small, sparsely populated economy like New Zealand’s.

Indeed, this is supported by Valletti (2003), albeit for different reasons than those we outline here.<sup>19</sup> Valletti shows that the mobile phone industry is characterized by “natural oligopoly”, in the sense that only a limited number of firms can survive in the long-run. Valletti argues that the results of his paper suggest that consolidation may occur in the mobile phone industry. Foreman and Beauvais (1999), who find evidence of scale economies in mobile telephony, come to the same conclusion, and point to increasing consolidation in U.S. mobile phone industries.<sup>20</sup> The announcement of the recent merger between Vodafone and Hutchinson in Australia, which will reduce the number of MNOs from four to three, is also evidence of this.<sup>21</sup>

### 3. FTM and Tolls Market

The Commission makes the argument (at paragraph 686) that the conditions necessary for a vertical price squeeze are likely to be met in FTM calls. The Commission also appears to be suggesting (at paragraph 685) that this vertical price squeeze is a significant barrier to expansion and entry in the downstream retail market for FTM and toll calls.

In assessing whether a vertical price squeeze has occurred, the Commission needs to do so within the relevant market; in this case, the market for FTM and toll calling. A price squeeze test should be performed at the level of aggregation of the relevant market, as its purpose is to determine whether or not an efficient rival can compete in that market. It should not matter that there are some customers in respect of whom the efficient rival cannot make a positive margin, as long as across the market as a whole it can make a normal profit. Therefore the price squeeze test should be applied to the average customer in the relevant market.<sup>22</sup> It is

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<sup>19</sup> Valletti, Tommaso (2003), *op cit.*

<sup>20</sup> Foreman, R. Dean and Edward Beauvais (1999), “Scale Economies in Cellular Telephony: Size Matters”, *Journal of Regulatory Economics*, 16, 297-306.

<sup>21</sup> See “Vodafone and 3G merge in Australia”, New Zealand Herald, [http://www.nzherald.co.nz/mobile-phones/news/article.cfm?c\\_id=261&objectid=10555800](http://www.nzherald.co.nz/mobile-phones/news/article.cfm?c_id=261&objectid=10555800).

<sup>22</sup> See also Bouckaert and Verboven (2004, p.348): “the aggregation level at which a predatory price squeeze test should be carried out must be sufficiently high so that the services constitute a relevant antitrust market”. Jan Bouckaert and Frank Verboven (2004), “Price Squeezes in a Regulatory Environment”, *Journal of Regulatory Economics*, 26(3), 321-351.

therefore not appropriate to apply a price squeeze test to a single customer-type, as the Commission does with respect to business customers (at paragraphs 689-691). Moreover, since, on the Commission's own market definition, the relevant market includes both FTM *and* toll calling, a price squeeze test needs to reflect the ability of entrants to compete across both of these services.

In fact, as bundling becomes more common, it may even be that the market becomes wider than just FTM and tolls, and that it also includes access. In that case, the "left hand side" of a price squeeze test would include the revenue from all three products.

Bouckaert and Verboven (2004) find that a vertical price squeeze requires that "profitable entry is difficult",<sup>23</sup> while Crocioni and Veljanovski (2003) state that a key requirement is that equally efficient downstream competitors are foreclosed from the market by being made unprofitable.<sup>24</sup> However, this does not appear to be the case in the retail FTM and toll calling market, as we have seen what appears to have been sustainable entry from multiple players (the Commission identifies, at paragraph 308, at least eight competitors plus a number of other smaller operators).

Even if the Commission were to (incorrectly) consider the existence of a price squeeze in only the FTM segment of the FTM and toll calling market, the empirical evidence suggests that such a price squeeze has not occurred. While the exact definition of a price squeeze can vary, it essentially amounts to a test of whether the difference between the retail price and the wholesale price exceeds costs.<sup>25</sup> The Commission's data (at Table 40) gives retail FTM prices of 30.66cpm and wholesale MTRs of 16.70cpm; a difference of 13.96cpm. We can make a simple calculation of the remaining retail costs of providing an FTM call using the Commission's cost data (in Table 44).<sup>26</sup> The Commission has estimated the costs of supplying an FTM call as comprising fixed origination (1cpm), transport (1.2cpm) and retail-related costs (1.76cpm), which sums to 3.96cpm. Clearly this is substantially less than the difference between the retail FTM and the wholesale MTR, indicating that there is little evidence of a vertical price squeeze.<sup>27</sup>

#### 4. Benchmarking the Factual Price

The Commission has benchmarked the MTR against the outputs of hypothetical cost model rates rather than actual regulated rates. It argues that to use the latter would not fully identify the benefits flowing from a movement to cost-based rates and would create or preserve

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<sup>23</sup> Bouckaert and Verboven (2004), *op cit.*, pp.321-322.

<sup>24</sup> Crocioni and Veljanovski (2003), *op cit.*, p.41.

<sup>25</sup> See Bouckaert and Verboven (2004), *op cit.* The different approaches to the price squeeze test are based on different measures of costs that can be used.

<sup>26</sup> Our calculation is simple because we do not consider in any detail the appropriate measure of costs. Nonetheless, it serves to illustrate our point that a vertical price squeeze is unlikely.

<sup>27</sup> Even if transport costs are as high as 7cpm, which WorldxChange suggested in the Commission's previous MTR investigation could be the case for smaller operators, there is still a substantial difference between costs and retail less wholesale prices.

distortions in the market. However, as discussed in an earlier report,<sup>28</sup> the reason that at least some countries adjusted their actual regulated rates higher than the cost-modeled rates was to recognise the fact that cost models do not fully reflect reality and the results may actually be harmful to investment. Actual regulated rates reflect the relevant regulator's views on the MTR at which benefits are expected to be maximized, so it is these that the Commission should use.

The Commission makes a valid point that the adjustment to cost modeled rates differs widely across regulators<sup>29</sup> and thus there is no consistent approach to deviations from the cost modeled rate. However, this does not justify setting the factual price at the median of the outputs from cost models, as doing so would be out of step with the approach taken by most other regulators. Given that the cost model benchmark is likely to underestimate the efficient cost of the MTAS, the Commission should apply its own adjustment to the cost-model benchmark to obtain a factual price path. A simple approach to do this would be to use the 75<sup>th</sup> percentile of the cost model sample.

The Commission estimates that its cost-based benchmark will fall by 10% per annum based on a sample of only two countries (the Commission notes in its SMS benchmarking that a sample size of two restricts the robustness, but it does not make this same recognition here and nor does it accordingly use a conservative assumption). It has also not undertaken a sanity check on its 10% figure: this is much larger than any productivity gains the Commission has used in other regulatory decisions (which are usually of the order of 1 to 5%), although admittedly MTAS volumes are expected to increase over time. The Commission also (at paragraph 513) ignores the Swedish regulator's approach of choosing the upper bound and decides to average the upper and lower bounds, on the asserted basis that this better reflects the costs of an efficient operator in New Zealand. But New Zealand has a smaller population than Sweden (with a population of 9.2 million), so it is not immediately clear why an efficient operator would have costs at the midpoint of Swedish costs. The Commission has also not analysed other factors, such as differences in mobile penetration and expected growth in mobile subscriptions between Sweden and New Zealand, which might also affect costs.

The Commission argues that the glide path is an implementation issue only. However, a glide path affects the size of the net benefits of regulation. Furthermore, as we noted in our earlier report to the Commission on its MTAS Comments Letter,<sup>30</sup> an immediate reduction in rates can be disruptive and harmful to investment incentives (although there is a trade-off, as cutting prices too slowly may delay the benefits of lower prices). Therefore the Commission needs to deal with glide paths at this point in the regulatory process, rather than deferring any discussion until "implementation". Most importantly, if the Commission persists with not including a glide path in the factual price, the CBA must include any detriment caused by cutting prices too quickly and disrupting operators' investment plans.

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<sup>28</sup> NERA Economic Consulting (2009), "MTAS Benchmarking – Response to Commission Comments on Undertakings", 6 May.

<sup>29</sup> As evidenced by Tables 25 and 26 of the Draft Report.

<sup>30</sup> NERA Economic Consulting (2009), *op cit*.

## 5. Review of the Commission's Cost Benefit Analysis

### 5.1. Quantification of transfers

The Commission has treated surplus transfers as benefits of regulation. However, transferring surplus from producers to consumers is not necessarily to the long-term benefit of end users. Rather, as Katz (2004, p.14) states, “[i]n the long-run, end-users’ interests are generally best served by the pursuit of efficiency”.<sup>31</sup> In our view, no weight should be placed on the “static price effect” calculations.

### 5.2. Waterbed effect

There are a number of issues with the Commission's analysis of the waterbed effect. The Commission has:

- Assumed that the waterbed effect only operates through subscription prices;
- Ignored the impact of increased competition that it has assumed in other parts of the Draft Report;
- Incorrectly downplayed the relevance of the estimates of the waterbed effect found in the evidence of Genakos and Valletti (2007, 2009)<sup>32</sup>; and
- Not considered how the waterbed effect may impact differently on prepaid versus postpaid customers.

The Commission analyses the waterbed effect by increasing mobile subscription prices only. However, the waterbed effect may in fact impact on a variety of competitive variables. It is important to understand that while regulating MTRs down will result in lower marginal costs for calling and texting, it will also soften competition for customers. As already described in this report, MNOs compete for customers on a variety of dimensions, such as calling prices, text prices, coverage, roaming and handset prices. It is possible that the waterbed effect of regulation would impact on some or all of these variables, which would result in a different welfare impact from that which the Commission calculates.

To take the example of texting, the Telecom average domestic off-net text price in 2008 was **TCOI**[ ] cents while the termination rate was 9.1 cents.<sup>33</sup> This means that Telecom was subsidising off-net texting.<sup>34</sup> Given that mobile users in New Zealand are likely to be heavy

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<sup>31</sup> Katz, Michael (2004), “Competition, Efficiency, and the Long-Term Benefit of End-Users”, Submission before the New Zealand Commerce Commission, 30 November. See also references therein regarding the New Zealand Treasury and Ministry of Economic Development making the same link between long-term benefits and economic efficiency.

<sup>32</sup> Note that while the Commission cites the old version of the paper, our discussion is based on a more recent (April 2009) version of the paper. This paper is available for download at [http://www.sel.cam.ac.uk/Genakos/Genakos&Valletti-Waterbed%20effect%20v\\_2\(core\).pdf](http://www.sel.cam.ac.uk/Genakos/Genakos&Valletti-Waterbed%20effect%20v_2(core).pdf).

<sup>33</sup> Appendix 1, Draft MTAS report.

<sup>34</sup> This is particularly relevant given that Telecom has historically been a net sender of text messages to Vodafone.

users of text messaging,<sup>35</sup> any impact of the waterbed effect on the price of text messages could have potentially significant impacts on welfare.

The Commission points out that the waterbed effect is related to the level of competition in the downstream market (Genakos and Valetti (2009) find this empirically). The Commission then uses this logic to make the following statement regarding the likely strength of the waterbed effect in New Zealand (paragraph 847 of the Draft Report):

*The Commission continues to be of the view for the purposes of this draft Report that the downstream retail mobile market is unlikely to be sufficiently competitive to ensure a significant level of pass-through of lower MTRs into higher retail subscription prices.*

Setting aside for the moment our concerns about the Commission's competition analysis discussed in section 2 above, the Commission's analysis of the waterbed effect assumes that the level of competition does not change over time. This is inconsistent with the Commission's approach in other parts of the Draft Report where it is argued that lower termination rates would increase competition in the downstream market. For example, the Commission makes the following statement at paragraphs 790-791:

*For the reasons given above, the Commission considers that the reduction in MTRs under the factual, to a level that reflects the cost of providing termination services, will remove a significant barrier to expansion by a new entrant mobile operator. A cost-based MTR will promote efficient competition in the downstream market, with entrants and existing competitors competing for subscribers, not on the basis of artificially distorted wholesale prices, but on a competitively-neutral basis. In particular, an efficient entrant should be able to compete with retail on-net prices.*

*The increased competition arising from a greater level of entry under the factual (compared to what would likely eventuate were the undertakings to be accepted) will lead to a range of benefits to consumers of retail mobile services. The Commission has previously referred to the types of likely benefits from greater competition, including greater pressure on operators to reduce prices and improve service quality.*

If the waterbed effect depends on competition, then given that the Commission believes that lowering MTRs would increase competition in the downstream mobile market, the Commission should model the waterbed effect as increasing over time (all else being equal). To take a very simple example, we could follow the approach the Commission uses for pass-through and assume that over the period of control the waterbed effect gradually reaches 100% as competition in the downstream mobile market intensifies. This would give the following profile for the waterbed effect:

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<sup>35</sup> The Commission notes at paragraph 227 of the Draft Report that "SMS usage may be relatively high in New Zealand compared to other countries". The Commission attributes this to high calling prices. However, a potential explanation that the Commission appears to have not considered is that New Zealanders simply prefer to communicate via text messages.

**Table 1**  
**Potential waterbed profile due to increased competition**

<b>Waterbed effect</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
% of $\Delta$ MTR recovered through $\uparrow$ in mobile prices	50%	56%	63%	71%	79%	89%	100%

Using this profile for the waterbed effect, the net benefits from the CBA would change to the following:

**Table 2**  
**Net benefits using modified waterbed profile**

	<b>Consumer Surplus</b>	<b>Total Surplus</b>
	\$18,236,298	\$33,822,060
<b>Linear</b>	(\$111.1m- \$272.1m)	(\$51.3m- \$81.6m)
	-\$11,544,026	\$26,644,768
<b>CED</b>	(\$92.8m-\$275.7m)	(\$55.3m- \$106.9m)

In Table 2 the bracketed numbers represent the Commission's base line figures from Table 5 in the Draft Report. Table 2 shows that in this simple illustrative example, changing the waterbed profile can significantly alter the net benefits of regulation. The consumer surplus figures are particularly affected because they include transfers between producers and consumers. A large waterbed effect implies large transfers from consumers to producers and thus this waterbed effect profile results in a net reduction in consumer surplus using the CED function.

At paragraph 848, the Commission cites a passage from Genakos and Valletti (2007) which discusses the intuition behind the result that the waterbed effect diminishes as market penetration increases. The intuition is that a monopolist operating in a saturated market would price to keep marginal users in the market and therefore prices would be unrelated to the termination rate. The Commission then notes that penetration has increased in recent years and argues that therefore the waterbed effect is likely to have diminished. However, at other points in the report the Commission states that penetration is high because mobile phone users own multiple handsets. The Commission has not considered whether this means that the logic of Genakos and Valetti applies to New Zealand. If saturation is only high because of multiple handset ownership then it may be that firms are not pricing to attract the marginal user. Therefore the Commission's assertion that the recent increase in penetration weakens the waterbed effect may be incorrect.

Notwithstanding this point, if the Commission believes that the market is truly saturated, it has ignored one of the key findings of Genakos and Valletti (2009). The authors predict and empirically confirm that "[t]he effect of competition [on the waterbed effect] is also magnified by market saturation". This reinforces the point we make above that if the Commission believes that lowering MTRs will increase competition in the downstream mobile market, then it must also model the waterbed as increasing over time.

The Commission also downplays the relevance of the estimates of the waterbed effect found by Genakos and Valletti, noting in footnote 394 that:

*However, most of the countries used in their sample had at least 3 mobile networks. Of the 24 countries listed in their Table A6, only New Zealand and the Slovak Republic had 2 mobile networks, according to the OECD Communications Outlook 2007. The waterbed effect identified in their analysis is therefore likely to be greater than the level in New Zealand.*

This observation would be correct if Genakos and Valletti did not control for the number of competitors in their regressions estimating the waterbed effect. However, Genakos and Valletti (2009) do control for the number of competitors in the market in five (out of a total of six) regression models. Regardless, while the Commission is correct that New Zealand has historically only had two MNOs, the Commission needs to estimate the waterbed effect on a forward-looking basis. By the time the Commission’s proposed regulation will begin, New Zealand will have three MNOs. Therefore, for the purposes of estimating the waterbed effect over the proposed period of control, the evidence of Genakos and Valletti is very relevant.

The Commission’s approach in the CBA analyses a range for the waterbed effect of 0-50%, and assumes that the waterbed effect is constant over time. Given the empirical evidence of Genakos and Valetti that the waterbed is “strong but not complete”, it is worth extending the Commission’s analysis to a greater range (while retaining the assumption that the waterbed effect is constant over time). Figure 2 below represents graphically the net benefits from the Commission’s FTM CBA under the various standards (consumer/total surplus and linear/CED utility) over a range for the waterbed effect of 0-100%.

**Figure 2**  
**Net benefits for different levels of the waterbed effect**

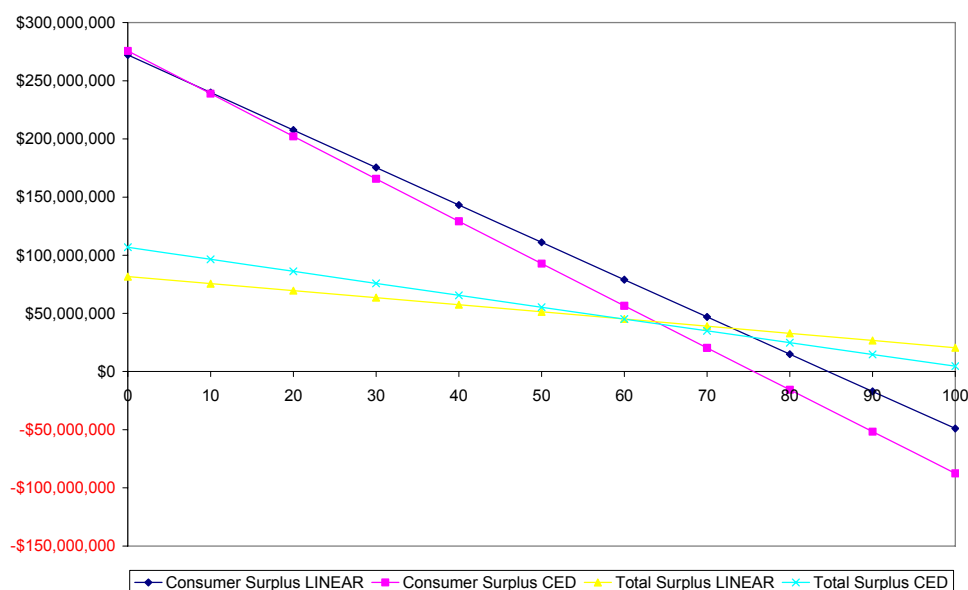


Figure 2 shows that as the waterbed effect gets larger, the net benefit under the consumer surplus standard becomes negative, and the net benefit under the total surplus standard

becomes close to zero. It is therefore important that the Commission gives further consideration to the assumed level (and time profile) of the waterbed effect.

It is our understanding that relative to most mature mobile markets New Zealand has an unusually high proportion of pre-paid customers. That the number of pre-paid customers in New Zealand is a significant issue is illustrated by paragraph 409 of the Draft Report:

*In New Zealand, there are a significant number of pre-pay mobile subscribers. Of Vodafone's total subscriber base of 2.37 million customers as of 2008, 1.75 million (or 74%) are pre-pay subscribers; for Telecom, 1.33 million subscribers out of a total of 2.18 million (or 61%) are pre-pay customers. In aggregate, two-thirds of New Zealand mobile customers are on pre-pay plans. The Commission's preliminary view is that the potential consequences of a move to BAK termination on the pre-pay customer segment could therefore be particularly significant in the New Zealand market.*

While the Commission recognises the significance of the pre-paid sector when expressing concerns about "bill and keep", the Commission does not recognise similar considerations in the CBA. As the UKCC noted<sup>36</sup>, pre-pay customers tend to be net recipients of calls and thus termination revenue is a key factor in determining the profitability of these customers. Therefore it may be that any reduction in termination rates is likely to particularly soften competition for pre-pay customers. On the other hand, Genakos and Valletti (2009) find support for the opposing theory that lowering MTRs will reduce collusion between MNOs in respect of prepaid customers, and so the waterbed effect will be lower for these customers.

It is possible that prepaid customers will have a relatively more elastic demand for subscription than postpaid. However, when examining the reduction in subscriber numbers due to the waterbed effect, the Commission uses the same subscription elasticity for all customers.

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<sup>36</sup> See footnote 387 of the Draft Report.

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