

concept economics



**ASSESSING THE EFFECTS
OF M2M TERMINATION
REGULATION ON MOBILE
ENTRY AND ECONOMIC
EFFICIENCY**

Prepared for:
NZ Communications

Prepared by:
Emma Lanigan, Eric Ralph

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



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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.



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1. OVERVIEW

In the context of responding to the Commerce Commission's Issues Paper on mobile termination¹, NZ Communications ("NZ Comms") has commissioned Concept Economics to:

- (1) provide an economic perspective on the counterfactual (the case that M2M termination is not regulated) relevant to assessing the impacts of mobile-to-mobile ("M2M") termination regulation; and
- (2) provide an indicative estimate of the allocative efficiency gains from M2M termination regulation, along with a discussion of the dynamic efficiencies gains.

On the first matter, we find that the combination of current mobile termination charges with heavy on-net discounting being offered by the incumbent mobile networks creates a situation of high risk for a mobile entrant. Analysing what we understand to be two of Vodafone's popular offers, Mega and Supa Prepay, we find that an attempt to lure customers away from Vodafone could well result in the entrant earning significant negative margins. Moreover, this is so even if the entrant is efficient. This is because, to compete with Vodafone's on-net discounts, the entrant cannot merely offer its own on-net discounts as its own subscription base is much smaller than Vodafone's. Instead, it must discount prices for calls that terminate off its own network. This creates a call imbalance that substantially raises the entrant's costs. This is especially so given the very high level of M2M termination rates.

This inability of an efficient entrant to make profits arises without allowing that: (1) the entrant would need to significantly undercut the prices of Vodafone and Telecom rather than simply match them; and (2) the pricing of Vodafone and Telecom would likely drop in response to entry and therefore the pricing that the entrant would need to undercut would be lower than that used in this analysis.

As a result of the high-risk associated with competing head-on with Vodafone's on-net discounts, the counterfactual is likely characterised by either no entry or entry to a limited customer segment. That segment contains only those customers for which: (1) there is a single decision-maker for multiple mobiles, and a high proportion of traffic is between those mobiles; and (2) other closed user groups that are able to coordinate their choice of supplier.

On the second matter, we make some indicative and very conservative (that is, understated) estimates of the allocative efficiencies gains from M2M regulation. We conservatively assume that limited entry by NZ Comms occurs (rather than no entry at all) if M2M charges are not regulated. Under conservative assumptions we find the annual allocative gains associated with regulation to be \$40 million to \$50 million. These are only the gains associated with voice calling. Extending the analysis to other service types could vastly increase this figure. Further, there are substantial dynamic efficiencies to be gained from the increased competitive pressure that would occur with full-scale entry by NZ Comms and/or other mobile network operators.

¹ Commerce Commission, "Telecommunications Act 2001: Schedule 3 Investigation into Regulation of Mobile Termination – Issues Paper", 8 August 2008.



The aim of the report is to provide input into the Commission's examination of whether there are sufficient grounds to warrant further investigation of M2M termination charges. We conclude that this is indeed the case. In carrying out this exercise, we have sought to provide reasonable estimates of a range of parameters, in absence of actual data. These were drawn from publicly available information on NZ mobile customer usage and market shares, international benchmarking, commercial insight and customer survey information from NZ Comms, and our own experience in analysing mobile markets internationally. Where we have made simplifying assumptions, we have generally erred on the side of conservatism (ie, so as to overstate the margins in the counterfactual entry analysis, and understate allocative efficiency in the welfare analysis). Further refinements and extensions to the analysis could be carried out at a later date if the Commission decides to proceed with an investigation.

2. BACKGROUND: MARKET DEVELOPMENTS TO DATE

There are currently two mobile network operators in New Zealand: Vodafone which operates a GSM900, a GSM1800 and a WCDMA network; and Telecom which operates a CDMA2000 network and is in the process of deploying a GSM850 WCDMA network. Vodafone has just over 50% share of mobile subscribers, but a higher share of traffic minutes. Estimates of mobile traffic volumes contained in the Commission's 2007 Telecommunications Market Monitoring Report indicate the market share split between Vodafone and Telecom to be around 60/40.

Spectrum holder NZ Communications has plans to deploy a 2G and 3G network and is in the process of building that network. It has in place a national roaming arrangement with Vodafone allowing customers to roam onto the 2G and GPRS network for voice, SMS and data, and this may be extended to 3G and GPRS on request.² It also has in place a contract with Huawei to supply equipment for the roll-out of a 3G network.

TelstraClear holds spectrum in the 1800 and 2100Mhz frequency and invested in a pilot deployment in Tauranga that was aborted. TelstraClear has since launched services under an MVNO arrangement provision with Telecom. Given these developments, we assume in this report that it is unlikely that TelstraClear will attempt facilities-based entry again in the near future.

3. IDENTIFYING THE RELEVANT COUNTERFACTUAL: MARKET STRUCTURE AND OUTCOMES WITHOUT REGULATION

To examine the welfare effects of regulating M2M termination charges, it is necessary to first define the expected market structure and associated outcomes with and without regulation. In this section we examine the scenario without regulation – that is, the counterfactual.

A key issue is whether network-based entry will occur under the counterfactual and, if so, how vigorous and widespread across customer segments it will be. A major concern for potential entrants in the current market environment is the high risk of facing a price squeeze as a result of having to compete with heavy on-net price discounting in the face of M2M termination rates that are substantially above cost. NZ Communications have informed us

² Vodafone, Press Release: *NZ Communications Ltd and Vodafone NZ sign roaming agreement*, 5 December 2007.



that this is a significant concern for them and is indeed a key remaining issue to be addressed.

3.1. M2M TERMINATION CHARGES AND ON-NET PRICING: THE ISSUE

Mobile termination charges are a substantial component of total costs for a mobile network operator. For example, if an entrant were to achieve a 5% market share it would be paying approximately \$16m per annum in mobile termination payments assuming a termination rate of 16 cents per minute (ie, the current F2M termination charge). With a 10% market share, payments would double to \$32m per annum.

Outpayments are offset to some degree by inbound termination payments. If traffic is balanced and termination charges are symmetric, termination payments between networks cancel each other out completely, and each network incurs the actual underlying cost of terminating inbound traffic on its network. If, however, a network's traffic is imbalanced so that there is a net outflow of traffic then the operator makes net outpayments. If each network has a similar distribution of customer types then it would generally be expected that voice traffic would be in balance. However, pricing constructs influence customer calling patterns and therefore differences in pricing constructs – notably in the on-net/off-net price differentials – can potentially affect the balance of traffic between networks.

In the NZ market, Vodafone in particular (and Telecom to a lesser extent) has been actively promoting plans which offer significantly lower pricing for on-net traffic than off-net traffic. For example, Vodafone offers BestMate add-ons for its on-account and Supa Prepay plans which provide customers with unlimited voice calls, texts, multi-media messages and video calls to a designated Vodafone mobile anytime of day for a monthly fee ranging from zero to \$6. Other Supa Prepay features which provide on-net price discounts include the TXT2000 add-on offer which provides 2000 on-net texts for \$10, a \$2 cap on off-peak on-net calls and free weekend voice and texts when the customer reaches certain spend thresholds.

The extent of on-net discounting is obvious when comparing Vodafone's Mega Plan with the TXTer Plan. Both have a monthly fee of \$39.95. The TXTer plan includes 600 text messages to any NZ mobile and 60 minutes anytime to any national number. In comparison, the Mega Plan provides 200 on-net minutes, 2000 on-net texts and 20 minutes to any NZ number.

Table 1: Examples of plans with discounted on-net pricing

Network	Plan name	Details of plan
Vodafone	Mega Plan	Monthly fee: \$39.95 Includes: 200 Anytime on-net minutes, 2000 on-net texts, 20 National anytime minutes, 1 BestMate (can be upgraded to 2 BestMates for \$4 per month or 3 BestMates for \$6 per month)
Vodafone	Talker Plan	Monthly fee: \$39.95 Includes: Unlimited weekend on-net calls, Unlimited weekend on-net texts, 1 BestMate (can be upgraded to 2 BestMates)



		for \$4 per month or 3 BestMates for \$6 per month)
Vodafone	Supa Prepay	<p>\$2 cap for on-net calls up to 2 hours weeknights and all weekend</p> <p>Free weekends: With spend of \$5 on calls and texts Mon-Fri, the customer receives unlimited free on-net texts during the weekend. If the customer spends \$10 during Mon-Fri, the free weekend is extended to voice calls.</p> <p>TXT2000: 2000 On-net texts for a monthly fee of \$10</p> <p>BestMates: Priced at \$6 per BestMate</p>
Vodafone	You Choose Vodafone Family add-on	For a monthly fee of \$20 charged to one mobile, up to 4 Vodafone mobiles have unlimited voice calls, video calls and text messages to each other.
Telecom	FreeTime125	<p>Monthly fee: \$20</p> <p>Includes: 100 Telecom on-net and M2F minutes, 25 off-net M2M minutes</p> <p>Choice of either: (1) Texts charged at 20c with automatic cap of \$10 for up to 500 texts. (2) Automatic cap of \$10 for up to 2000 on-net texts. Additional on-net texts charged at 10c. Offnet texts charged at 20c.</p>
Telecom	FreeTime300	<p>Monthly fee: \$30</p> <p>Includes: 250 Telecom on-net and M2F minutes, 50 off-net M2M minutes</p> <p>Choice of either: (1) Texts charged at 20c with automatic cap of \$10 for up to 500 texts. (2) Automatic cap of \$10 for up to 2000 on-net texts. Additional on-net texts charged at 10c. Offnet texts charged at 20c.</p>
Telecom	FreeTime600	<p>Monthly fee: \$40</p> <p>Includes: 500 Telecom on-net and M2F minutes, 100 off-net M2M minutes</p> <p>Choice of either: (1) Texts charged at 20c with automatic cap of \$10 for up to 500 texts. (2) Automatic cap of \$10 for up to 2000 on-net texts. Additional on-net texts charged at 10c. Offnet texts charged at 20c.</p>

Source: Telecom and Vodafone websites



As mentioned above, the two incumbent networks have an almost equal share of mobile subscribers. Given that, on average, around half of the mobile phones that either a Vodafone or Telecom customer call are connected to the same network, an on-net discount has significant value to that customer. In comparison, a new entrant that commences business with no customers will be unable to offer value to prospective customers via discounted on-net calls (because there is no one else on-net), except in limited cases where a group of users would consider joining together. The most common example of such user groups are business customers where there is a single decision-maker for a group of mobile numbers. Other specific niches may exist, such as families in situations where there is a single bill payer for multiple mobile connections and where the primary usage of those mobiles is to communicate with each other. However, for the majority of the customer base, there would be little coordination in terms of supplier selection. Further, in some cases, even where two or more customers ideally wanted to join the new network together, if one had an existing contract (which in New Zealand may have a term of up to three years) and could not switch without incurring charges this would mean that the other customer(s) in the group would have a reduced incentive to switch.

The entrant would therefore be in a position of either: (1) focussing its customer acquisition efforts on those customers who are willing and able to switch together and forgo the remainder of the market until it built its market share to a sufficient size (if that is possible); or (2) setting prices in a way that was appealing to customers who communicate extensively with customers on the incumbent networks. In respect of option (2), for the sizeable group of customers that would place little value on an entrant offering discounted on-net pricing, the entrant would be forced to offer discounted off-net prices.

To entice a Vodafone or Telecom customer to switch, an entrant would have to offer the customer a deal which meant that the customer paid no more for its calling than it did when connected to Vodafone. Customer survey results conducted by an independent third party for NZ Comms on prepaid customer use show that on average on-net calling accounts for 70% of total calling, and closer to 80% for Vodafone customers. This means that the entrant would essentially need to offer customers prices equivalent to Telecom and Vodafone's on-net pricing for, on average, 70% of calls (higher for some customers). Given that NZ Comms on-net calling proportion would be very low in initial years of operation, this would effectively mean that it must match the heavily discounted on-net prices of Vodafone and Telecom, but for a large proportion of off-net calls and texts.

An implication of such matching is a traffic imbalance that would favour Vodafone and Telecom. That is, the entrant would have more traffic terminating on Vodafone and Telecom's mobile networks than inbound traffic from those networks. There are two reasons for this. First, when Vodafone or Telecom discounts on-net traffic, more on-net calls are made, but they have no impact on the balance of payments. However, when the entrant make an equivalent offer to its customers, say that all calls to the Vodafone network are charged at Vodafone on-net prices, then calling to Vodafone's network increases and this causes a net outflow of termination payments from the entrant to Vodafone. Second, while the entrant's customer would have a significant number of free off-net voice minutes and text messages towards the Vodafone network, the same would not be true of the Vodafone customers he/she was calling (if they make an off-net call, they still pay off-net prices). The likely result will be some degree of call reversal, as the calling parties coordinate so the entrant's customer replaces some of the Vodafone customer's calls ("Let me call you right



back because it's free for me.) This will further increase the volume of traffic outbound from the entrant's network to Vodafone's network, and reduce the traffic flowing in the reverse direction

This would be even more so in respect of the entrant matching offers such as "BestMates" which provide a zero marginal price because the entrant's customer would have an unlimited amount of free off-net calling to up to three numbers. This would put the entrant in the position of supplying a significant number of free off-net calls and paying 16 cents per minute for them, without receiving any offsetting inbound minute and associated termination inpayment. That is, it would make a loss in excess of 16 cents per minute (once its own network and retailing costs are accounted for) for the traffic imbalance. To investigate this further we carry out a margin analysis to consider whether this effect is likely to have a material impact on an efficient entrant's decisions as to the customers it will contest.

3.2. MARGIN ANALYSIS

To examine this issue in more detail we examine margins available to an entrant when replicating on the Mega and Supa Prepay Plans.

For the Mega Plan, we calculate the margin where for \$39.95, the entrant provides the customer with 220 minutes to any NZ number anytime of day and 2000 text messages to any network anytime of day plus unlimited voice calls, and texts to up to three designated on- or off-net customers. For simplicity we exclude MMS and video calling from our analysis which are also provided free under the BestMates offer. A potentially off-setting assumption is that we exclude margins from international calls and data.

There are a number of inputs required to carry out a margin analysis. Given the nature of the price offerings where "buckets" of calls and text are provided and in some case unlimited calling and/or texts are available, customer usage is clearly very important. In the absence of information on actual customer usage we have had to model a range of different customer usage patterns.

Another important input is the extent of the call imbalance created by an entrant discounting off-net pricing when the Vodafone customer does not have access to the same pricing. We have modelled a range of values for both calling and texting.

For the M2M termination charge, we adopt the rates offered to NZ Communications by Vodafone and Telecom in recent negotiations.

We assume, for the purposes of the current analysis, a 5c average cost of originating or terminating a call, and a 0.05c average cost of originating or terminating an SMS, both of which are conservative (ie, likely under-estimate average costs and therefore overstate margins) given international estimates of costs.³

We assume retail costs per customer to be \$8 per month for postpaid and \$4 for prepaid.

³ For example, as discussion by the Commerce Commission in the 2007 Telecommunications Market Monitoring Report, the WIK model commissioned by the ACCC respectively produced call and SMS termination costs of 6.1 to 6.6 cents per minute (Australian currency) and 0.03 to 0.04 cents per SMS (Australian currency). ARCEP, the French regulator, estimated the SMS termination charge to be higher, at 0.56 to 0.71 eurocents per minute.



As can be seen from Figure 1, even using these conservative costs, the entrant faces a risk of making, potentially very significantly, negative margins depending upon customer usage. The usage profiles we have modelled are:

- (1) a high-usage basket: 200 minutes to any mobile; 1500 texts to any mobile; 20 minutes to any mobile or fixed line; and 400 minutes to any BestMate;
- (2) a medium-usage basket: 200 minutes to any mobile; 500 texts to any mobile; 20 minutes to any mobile or fixed line; and 200 minutes to any BestMate;
- (3) a low-usage basket of: 50 minutes to any mobile; 50 texts to any mobile; 20 minutes to any mobile or fixed line; and 20 minutes to any BestMate.

The margin for the high-usage basket is negative for all scenarios of calling and texting traffic imbalance tested, only being positive when calling and texting are both in balance. The outcome is similar for the margin of the medium-usage basket where the only conditions under which margins are positive are when texting is balanced and voice calling is almost or completely balanced. Only the low-usage basket has a consistently positive margin.

Figure 1: Efficient entrant margin matching Vodafone's Mega plan, balanced texting

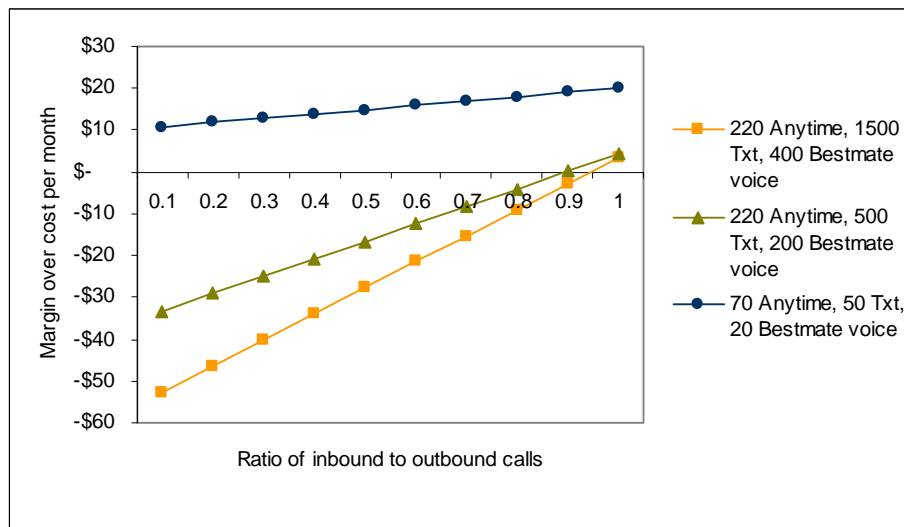
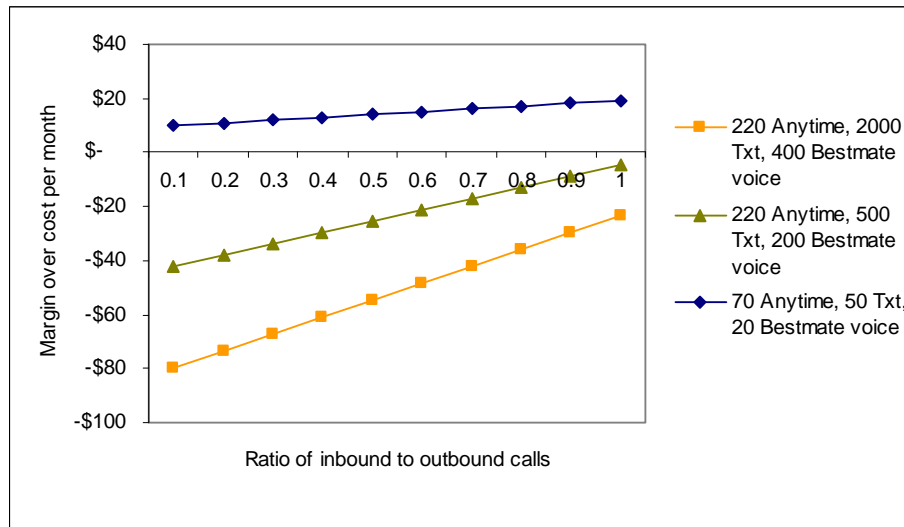




Figure 2: Efficient entrant margin matching Vodafone's Mega plan, 0.8:1 ratio of inbound to outbound texts



We have conducted a similar analysis on the Supa Prepay plan under two scenarios. In the first, the customer spends \$20 per month (arising from 30 texts and 16 call minutes) and therefore receives free text weekends, plus also connects one BestMate for a fee of \$6 per month. In this case, the following two usage profiles are tested: (1) 50 free weekend texts, 50 BestMate calls and 50 BestMate texts; and (2) 200 free weekend texts, 150 BestMate calls and 150 BestMate texts. As is shown by Figure 3, in the first case, the low usage profile consistently produces positive margins. However, the margins on the high usage profile vary according to the traffic balance – assuming a texting imbalance of .8 inbound to 1 outbound the margin is positive with balanced calling traffic, but breakeven or negative otherwise. We have not included the effect of the \$2 off-peak caps also offered by Vodafone.

Figure 3: Efficient entrant margin matching Vodafone's Supa Prepay Plan with free text weekends and a Best Mate, balanced texting

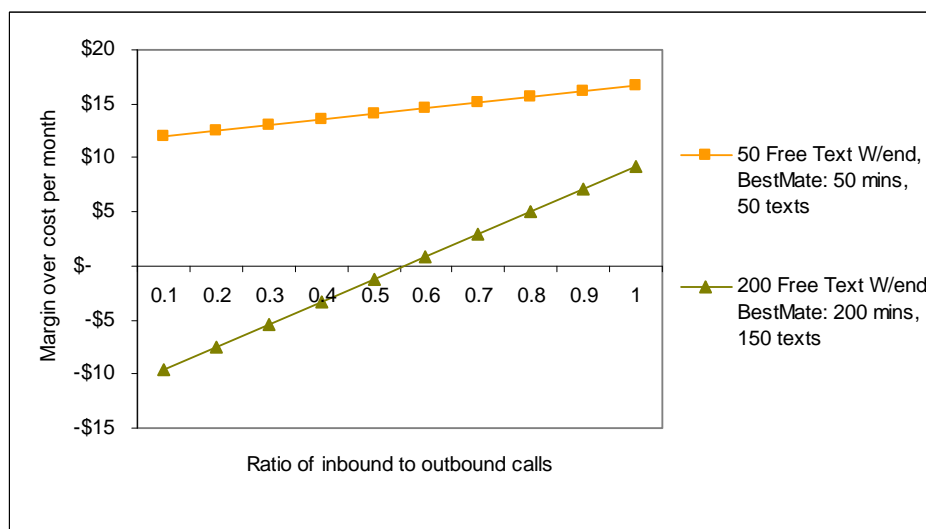
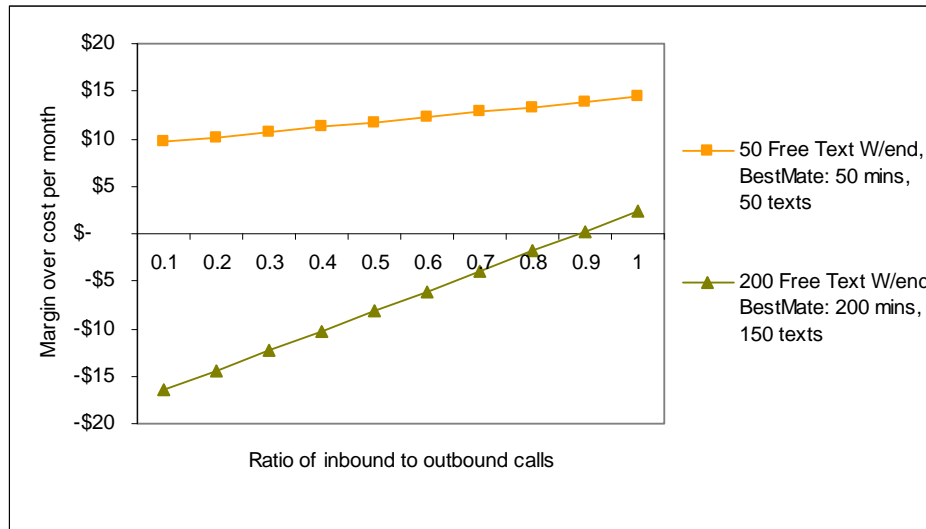




Figure 4: Efficient entrant margin matching Vodafone's Supa Prepay Plan with free text weekends and a Best Mate, 0.8:1 ratio of inbound to outbound texts



In the second scenario, we consider a customer that spends \$10 per month on standard calls (11 minutes), selects the TXT2000 add-on and 1 Best Mate. The following usage profiles are analysed: (1) 200 texts, 100 BestMate call minutes; (2) 500 texts and 250 call minutes; and (3) 1500 texts and 400 call minutes. The ability of an efficient entrant to compete for a customer having either of the latter two call profiles is heavily dependent on the extent of traffic imbalance. In fact, with a texting imbalance of 0.8 inbound texts for every 1 outbound texts, margins for an efficient entrant are negative regardless of the calling balance.

Figure 5: Efficient entrant margin matching Vodafone's Supa Prepay Plan with free text weekends and a Best Mate, balanced texts

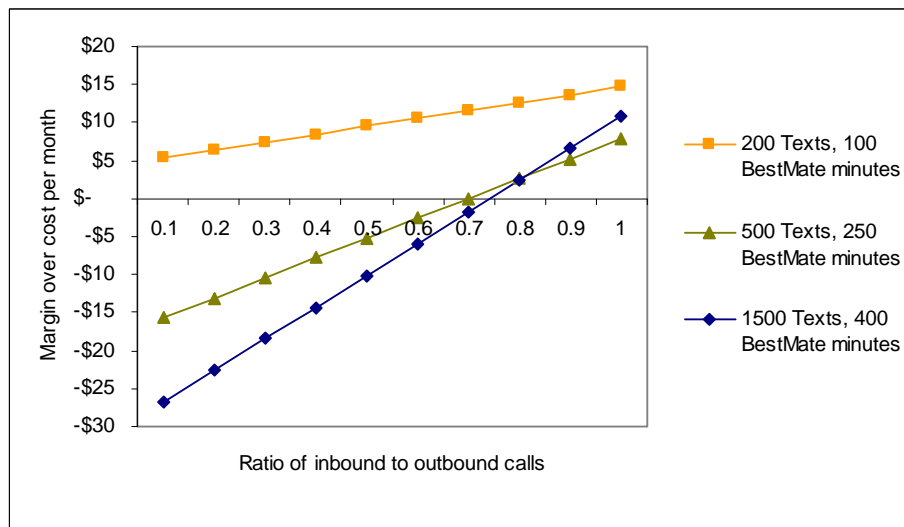
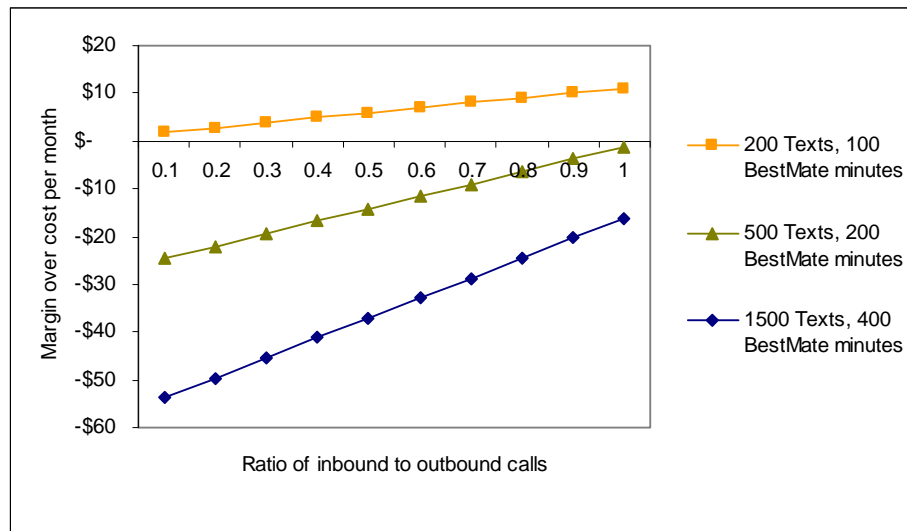




Figure 6: Efficient entrant margin matching Vodafone's Supa Prepay Plan with free text weekends and a Best Mate, 0.8:1 ratio of inbound to outbound texts



The above analysis for the Mega and Supa Prepay offers shows that there are numerous scenarios employing reasonable assumptions under which an efficient entrant is unable to compete with on-net discount prices given that traffic imbalances will occur. In the examples examined, the entrant would only be able to consistently make a positive margin on low-usage customers. The outcome for medium- and high-usage customers is much more sensitive to the traffic imbalance. This indicates a situation of high-risk for the entrant as it is far from certain that it would be able to cover its costs in competing with incumbent offers. It may be that if information on actual customer usage was used it could be demonstrated that margins are sufficient to cover costs – for example, if there are enough low-usage customers who actually adopt these plans to offset the losses on other customers. However, from a new entrant's perspective (who does not have access to this information) the situation is high-risk, with the very real prospect that exit might be forced.

In fact, even if the new entrant was sure that entry was viable given current pricing and usage⁴, there is no certainty that current margins would be retained. It is more plausible that price reductions would occur post-entry (or immediately prior to entry) in reaction to (or in anticipation of) the addition of a third player and thus margins would be lower than those estimated above. In addition, customer usage on these plans may well grow over time increasing the proportion of customers that have medium and high usage and thus reducing margins.

⁴ For example, consumer surveys could be used to this end although they inevitably would suffer from reliability issues.



3.3. IMPLICATIONS FOR NETWORK-BASED ENTRY

As history has shown, facilities-based entry in NZ is difficult, even without the issue of having to compete with on-net discounting in the face of high mobile termination charges.

TelstraClear has abandoned facilities-based entry in favour of using wholesale access to Telecom's network. NZ Comms (and its predecessor EcoNet) has been contemplating entry for a number of years but it is only recently, and as a result of regulatory changes, that entry has become a real possibility. Contributing factors to this decision in addition to M2M regulation would include access arrangements with incumbent networks for other required wholesale services, the small scale of the NZ market and the relatively long contract lengths in NZ compared with other countries.

Clearly, the decision to enter is finely balanced. Thus, the prospect of a price squeeze for a significant proportion of the customer base may tell against entry or in favour of a limited form of entry.

3.4. MVNO ENTRY AND IMPLICATIONS FOR IMPROVEMENTS IN MARKET OUTCOMES

The number of retail service providers in the mobile market appears likely to increase in the near term via MVNO arrangements. This means that the state of competition under the counterfactual will differ from the current scenario in that respect. In particular, MVNO entry will likely lead to some enhancements in customer service, and to some extent (dependent on the specifics of the MVNO arrangements) further competition on pricing terms. Effects on pricing are discussed in more detail in section 4.1.1.

4. WELFARE EFFECTS OF M2M TERMINATION REGULATION

This section assesses the welfare effects of regulation, providing a very conservative estimate of the allocative efficiency gains and a qualitative discussion on the productive and dynamic efficiency implications.

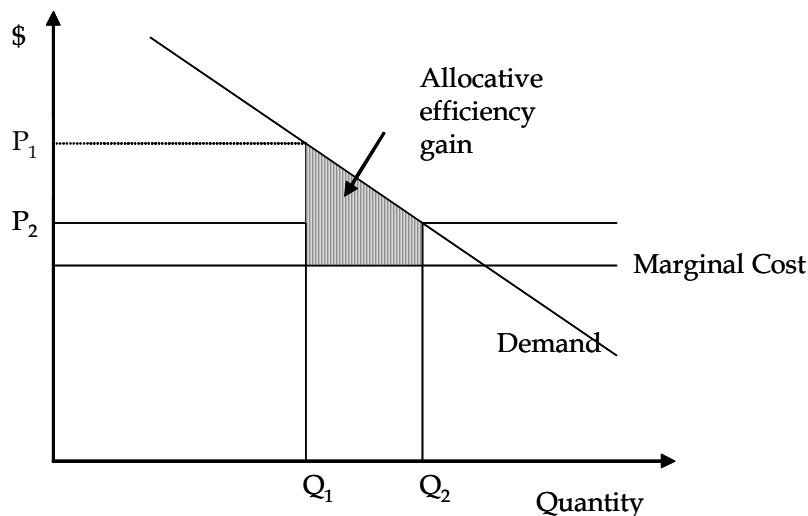
Before discussing in detail the welfare effects of M2M termination regulation, we first provide some brief definitions of the three types of economic efficiency. Allocative efficiency gains occur when consumption decisions better reflect the cost of providing a service, for example, as a result of prices converging to cost. Productive efficiency gains arise when firms operate more efficiently. When incumbents have substantial market power, increased competition increases productive efficiency to the extent that this increases pressure on managers to perform. Dynamic efficiency gains arise when incentives to invest efficiently in higher quality, lower cost technologies improve. The remainder of this section focuses on allocative and dynamic efficiency.

4.1. ALLOCATIVE EFFICIENCY

Allocative efficiency gains will result from the price reductions and ensuing demand expansion for retail mobile services that will be triggered by a decrease in M2M termination charges to a level that is more reflective of costs. Figure 7 provides a graphical representation of these allocative efficiency gains.



Figure 7: Allocative efficiency gains



Key inputs into the allocative efficiency calculation are: the expected change in prices, the demand response (measured by the elasticity of demand); starting volumes; and the assumed cost of service provision. In what follows we discuss each of these key inputs and then present our estimate of the efficiency gains.

We note that the results produced are simply meant to provide an indicative range based on what appear to us to be reasonable assumptions.

4.1.1. Mobile pricing: factual vs counterfactual

Counterfactual

In the counterfactual we adopt for the efficiency assessment, the mobile market suppliers are:

- The two incumbent networks Telecom and Vodafone
- MVNO players
- Entry by NZ Comms, but on a limited basis – that is, restricted to certain customer niches as described above in section 3, with a fairly limited geographic footprint

We assume that the market price will be slightly below current levels. Given the complexities of mobile pricing, it is difficult to determine a representative average price per minute of voice traffic, however, as an approximation we use 25c for the current price which is estimated from Vodafone's reported results.⁵ We note that this would be an underestimate given that the traffic minutes used to unitise revenue are billed minutes which have been rounded up by Vodafone according to its retail pricing tariffs (thereby overstating actual minutes of use).

⁵ This is calculated using information from Vodafone's Interim Management Statement for the Quarter Ended 30 June 2008. Specifically, we first take the NZ ARPU of \$44.8 and use the assumption that 72% is attributable to voice, giving a voice ARPU of \$31.36 per month. The 72% figure is calculated by dividing voice revenues by total service revenues for the total Vodafone Group. Average monthly NZ voice traffic volumes can be



It seems likely that the price under the counterfactual would be lower than the current price level given that the current price does not include effects of MVNO entry or of limited NZ Comms entry. The effect that an MVNO will have on the average market price will depend, among other things, on how broad a customer group they serve and the wholesale price that they have secured. It is likely that MVNOs would target certain niches rather than the entire market. The wholesale price paid by the MVNO to the network operator is not publicly available. In general, it can be said that the network operator would only have an incentive to offer wholesale prices at retail minus avoidable costs. In this case, there would be little potential for MVNOs to impact on the market price. However, other considerations can force the price below this level – for example, the threat of regulatory intervention.

With regard to the impact of NZ Comms on the market price, as described above in section 3, its activity would be expected to be restricted to a limited group of customers, being a proportion of small business customers, and those niches of the residential customer market that are closed user groups, where those customers are not locked in to contracts with incumbent operators. Given the limited customer base, even significant price reductions to those customers would have little impact on the average market price. For example, even if the entrant were to cut prices by say 25%, then if it were only operating in a segment of the market that accounts for, say, 20% of traffic demand (which we believe to be larger than the segment NZ Comms could address in the counterfactual), the total impact on price would be 5% assuming that competitors in the niche matched NZ Comms prices. This is unlikely and therefore the price reduction would be below 5% in this example.

Given the above considerations, we make the assumption that the market prices in the counterfactual will be 3% lower than the current level, however we also carry out a sensitivity analysis on this parameter. We use 25c per minute as an estimate of the current average price for voice calls.

Factual

The next step in the analysis is to consider the pricing that is likely under the factual. We assume that in the factual, either bill and keep or cost-based pricing is introduced and that this allows NZ Comms to contest the full residential market as well as small to medium sized businesses. To estimate the effects of this more intense form of entry we draw on international comparisons of mobile prices to consider what a reasonable assumption on price reductions would be.

Table 2 contains a summary of the average price for each of the three mobile usage baskets costed by the OECD. It shows that the average price of each basket reduces as the number of competitors increases. On average countries with three mobile networks have prices that are 12%, 6% and 9% cheaper for the low, medium and high usage baskets respectively, than countries that have two mobile networks. Ideally, a weighted average of these would be used, but in the absence of information on appropriate weights, we calculate the percentage change in the mean of the three usage baskets, which is 9%. Given prices in New Zealand are relatively high, this probably understates the price fall that an effective competitor would bring to the New Zealand market.

calculated from the figures reported by Vodafone to be 129 minutes per subscriber per month. Therefore, the estimated average voice revenue per minute is 25c.



Table 2: Average prices by number of competitors (USD PPP), August 2006

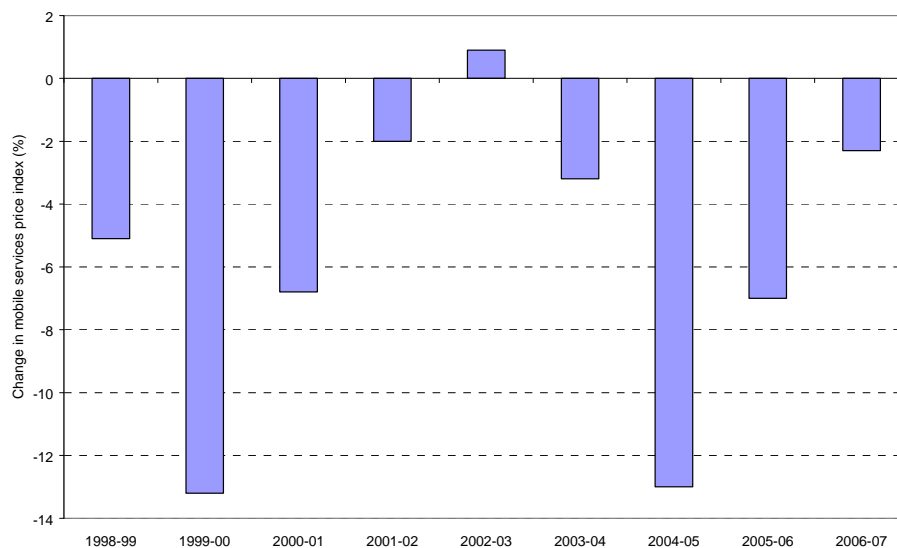
No of competitors	Low usage price	Med usage price	High usage price	Average of basket prices
2	238.39	473.33	803.29	505.00
3	210.49	446.49	729.01	462.00
4	198.45	379.43	606.81	394.90
5	146.86	341.87	467.85	318.86

Source: OECD, *Communications Outlook 2007*; Concept Economics analysis

Another approach, which is likely more reliable, is to consider the impact on market prices in countries where new mobile operators have entered the market. In Australia in 2000, Hutchison entered the market as the fourth mobile network operator. Also around late 1999 and early 2000 One.Tel built its own network to compete with the incumbent operators, however One.Tel collapsed in May 2001. The effect of Hutchison’s entry (and One.Tel’s initial entry) was to reduce mobile charges by 13.2% in 1999-00, the largest annual change in prices over the last decade. Prices fell by a further 7% in 2000-01, before stabilising in 2001-02 (Figure 8). In addition, there were further benefits to consumers in the form of significantly reduced handset pricing that occurred at the time of One.Tel’s entry.

A later price decrease of around 13% occurred in 2004-2005 following the launch of the ‘3’ network. The pattern evident in Figure 8 suggests that a large price reduction in the first year of entry is followed by a reduction of a further 6-7% in the second year, and around 2% in the third year. In other words, the total price reduction is around 20%. We note that there were termination charge reductions occurring at the same time.

Figure 8: Changes in Australian mobile prices



Source: ACCC Telecommunications Reports



4.1.2. Elasticities

Drawing on the international surveys summarised in we consider that a reasonable elasticity estimate would fall into the range of -0.4 to -0.7. That is, a 10% reduction in the mobile price, would lead to a 4% to 7% increase in traffic volumes.

Figure 9: Summary of elasticities estimates for mobile traffic

Study	Country	Elasticity estimates
Dewenter and Haucap ⁶	Austria	-0.2 for prepaid traffic, -0.67 for postpaid traffic
DotEcon ⁷	UK	-0.62
Holden Pearmain Customer Survey ⁸	UK	-.48

4.1.3. Starting volumes

The starting volumes used were the 2006/07 call minute volumes reported in the Issues Paper to be approximately 3 billion.⁹

4.1.4. Cost

Calculation of the allocative efficiency gain requires an estimate of the marginal cost of supply. As the analysis we are conducting focuses on call minutes we use 5 cents as the marginal cost of supplying an end-to-end call minute. Indeed, the true marginal cost could well be much lower than 5c per end-to-end minute so this is likely a conservative assumption – that is, it leads to an understatement of allocative efficiency gains.

4.1.5. Allocative efficiency estimate

Table 1 reports the calculated mobile voice calling allocative efficiency gain from M2M termination regulation. With a 10% reduction in the market price, as may be expected to occur in the first year of competition according to the Australian example of entry impacts, the allocative efficiency gains of voice calling would be in the range of \$21 million to \$38 million per year. With a 20% reduction of price (in the Australian example, this is roughly the total

⁶ Ralf Dewenter and Justus Haucap, *Demand Elasticities for Mobile Telecommunications in Austria*, Ruhr Economic Paper #17.

⁷ DotEcon's study was commissioned by O2. A description is provided in UK Competition Commission (2003), *Vodafone, O2, Orange and T-Mobile: Reports on references under section 13 of the Telecommunications Act 1984 on the charges made by Vodafone, O2, Orange and T-Mobile for terminating calls from fixed and mobile networks*, London, February 2003.

⁸ Commissioned by Vodafone UK. Also described in the UK Competition Commission (2003)

⁹ Issues Paper, p.16.

reduction in price over the first three years of entry) this increases to \$41 million to \$71 million per year.

Table 3: Allocative efficiency gains associated with mobile voice calling

		Price reduction in factual		
		10%	15%	20%
Elasticity	-0.4	\$ 21,830,080	\$ 31,644,986	\$ 40,726,468
	-0.5	\$ 27,287,601	\$ 39,556,232	\$ 50,908,085
	-0.6	\$ 32,745,121	\$ 47,467,479	\$ 61,089,702
	-0.7	\$ 38,202,641	\$ 55,378,725	\$ 71,271,319

We note that the above analysis **only** considers voice. That is, it excludes the impact of a strengthening of competition on other services such as SMS, MMS, video calling and data services. Consequently, the full allocative efficiency gains from M2M termination regulation will be much higher than the figures we have estimated.

4.2. DYNAMIC EFFICIENCIES

Pressing quality-adjusted prices towards costs is only one means of engaging in competition. Much more importantly, firms can invest in innovation, whether this be to reduce costs, increase quality, or to provide new services, including new means of pricing, packaging and delivering these. Over time, the gains from these forms of competition likely greatly outweigh any gains that arise from price competition that is not accompanied by competition to reduce costs.

In telecommunications, such innovation largely comes from facility-based suppliers, in the case of mobile telephony, mobile network operators (MNOs), rather than resellers or mobile virtual network operators (MVNOs). This is so for at least two reasons. First, MVNOs do not control the underlying infrastructure that they use. Thus, in contrast to MNOs, MVNOs cannot seek out network operating efficiencies or vary communication service quality or develop new services. Instead, they can only focus on innovations in marketing, packaging services the MNO chooses to offer through customer service, pricing and billing.

Moreover, incumbents with substantial market power and no threat of entry, have no incentive to engage in fundamental innovation or even network upgrades. Such activities are costly and involve risk (that costs will be higher than expected, and consumer response less than expected). If, instead, cozy duopolists can remain highly profitable by not innovating, then investment in service development may reduce profits, rather than ensure the firms' continued viability, or increase profits. In this light, it is interesting to note how long, as compared with international experience, it took for 3G to be introduced into New Zealand (see Figure 10). Similarly, lack of competitive pressure perhaps also explains why Telecom still operates a CDMA2000 network and is only now deploying a WCDMA, even though the standard offers few attractive roaming options in the Asia-Pacific region, and arguably is declining internationally.¹⁰

¹⁰ The only reasonably developed countries that use CDMA2000 for mobile telephony (as opposed to data) outside of the 450 MHz range, are the US, Canada, Japan, Israel and Taiwan. In Brazil it is being phased out in favour of EDGE. In the Australasian region, the standard is only found in New Zealand and Indonesia. Other large users include China, India, Russia, Ukraine, South Africa, Sri Lanka and Venezuela.



Figure 10: International comparison of 3G network launch

Country	First commercial launch of 3G network
Japan	October 2001 ¹¹
South Korea	January 2002 ¹²
US	October 2002 ¹³
UK	March 2003 ¹⁴
Australia	April 2003 ¹⁵
Ireland	May 2003 ¹⁶
New Zealand	November 2004 ¹⁷

¹¹ <http://news.bbc.co.uk/1/hi/business/1572372.stm>

¹² <http://en.wikipedia.org/wiki/3G>

¹³ http://www.3gnewsroom.com/3g_news/oct_02/news_2644.shtml

¹⁴ <http://www.electronicweekly.com/Articles/2003/03/11/28723/timely-investment-for-uks-first-commercial-3g-network.htm>

¹⁵ <http://www.3g.co.uk/PR/April2003/5240.htm>

¹⁶ <http://www.allbusiness.com/information/internet-publishing-broadcasting/539236-1.html>

¹⁷ <http://www.geekzone.co.nz/content.asp?contentid=3653>