

Final Report

Profitability Impacts of Mobile Termination Regulation

Prepared for

Vodafone New Zealand

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PUBLIC VERSION

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Executive Summary

This report presents the results of a modelling exercise we have carried out to estimate the effects on the profits of fixed-to-mobile and mobile operators following regulation of mobile termination rates. We model the impacts on Vodafone, Telecom (including separate effects on Telecom Mobile and Telecom fixed-line operations), TelstraClear, and other operators.

We have constructed a model that mimics the structure of the New Zealand fixed-to-mobile and mobile markets, and predicts fixed-to-mobile call flows between all of these operators. Given the data that we have available, this model appears to explain historic quantities of fixed-to-mobile minutes relatively well.

We use this model together with various counterfactual (without regulation) and factual (with regulation) projections of the quantity and average price of fixed-to-mobile calls to estimate the effects due to regulation on the profits of each firm.

In all cases what we estimate is the *change* in the profits of each firm due to regulation. We do not attempt to estimate the total profits that each firm makes from fixed-to-mobile origination or termination.

We use the counterfactual and factual scenarios given by the Commerce Commission in its Draft Report and used for its quantitative analysis, as well as alternative counterfactual and factual scenarios that we have developed.

Table 1 shows the net present value of the best and the worst impacts on profits over all scenarios for each operator for the period from 2006 to 2010. In almost all scenarios, fixed-line operators benefit from regulation while mobile operators are made worse off.

Table 1 Summary of Impacts of Regulation on Profits (NPV, 2004 \$m).

Operator	Best Case	Worst Case
Vodafone	[]	[]
Telecom Mobile	[]	[]
Telecom Fixed	[]	[]
Telecom Group	[]	[]
TelstraClear	[]	[]
Others	[]	[]

All VNZRI

1. Introduction

This report, prepared by Covec for Vodafone New Zealand, presents the results of our analysis into the effects of mobile termination regulation on the profitability of firms in the mobile termination and fixed-to-mobile origination markets. This analysis has been undertaken in response to the *Draft Report on the Schedule 3 Investigation into Regulation of Mobile Termination* (the Draft Report) issued by the New Zealand Commerce Commission (the Commission) on 2 November 2004.

The Draft Report recommends regulating the termination rate charged by mobile operators to 16 cents per minute from 2006. Regulation of mobile termination rates will reduce revenues that mobile firms receive from terminating fixed-to-mobile calls. As costs are unlikely to decrease following regulation, this reduction in revenues corresponds directly to a reduction in profits.

Regulation will also benefit firms that provide fixed-to-mobile services because it reduces their costs. To the extent that cost reductions are not fully and immediately passed through to consumers in the form of lower fixed-to-mobile retail prices, this represents a profit gain for such firms.

In addition, an integrated firm that operates both a mobile network and a fixed network may be better or worse off as a whole, depending on a number of factors including its market shares in both markets and the rate of pass-through to retail prices.

In this report we estimate the effects of the Commission's proposed regulation on the profits of all firms in the fixed-to-mobile and mobile markets to quantify all of the gains and losses identified above. We assess the relative impacts on the different operators, and estimate the size of the inter-firm transfers. As we will show, even under very optimistic assumptions about pass-through of lower termination rates into lower fixed-to-mobile retail prices, the result of the regulation is to make Vodafone significantly worse off relative to its integrated competitor (Telecom) and in many cases will confer substantial benefits to other firms in the fixed-to-mobile market, such as TelstraClear.

Much of the analysis and results in this report are based on restricted information, some of which we have obtained from the restricted version of the Draft Report, and some of which has been supplied to us by Vodafone directly. All restricted information is enclosed in square brackets ([]) and designated as either CCRI (Commission-designated restricted information) or VNZRI (Vodafone-designated restricted information), pursuant to the Commission's "confidentiality order for mobile termination investigation" dated 16 July 2004. Where a designation of CCRI or VNZRI appears at the bottom of a table, this means all the data *enclosed in square brackets* in that table is subject to that designation.

2. Methodology

In this section we describe the methodology that we have used to estimate the profitability impacts on the different firms. Our model mimics the structure of the New Zealand fixed-to-mobile and mobile markets. In the fixed-to-mobile market there are a number of operators. We have modelled the effects on Telecom and TelstraClear, and an 'Other' category that includes the smaller operators such as ihug and CallPlus. In the mobile market there are two operators: Vodafone and Telecom Mobile.

Our model is based on estimating the flows of fixed-to-mobile call minutes between the different firms. In section 2.1 we explain how we have estimated these minutes based on the origination and termination market shares of the firms. In section 2.2 we show how the average fixed-to-mobile retail prices charged by the different operators can be computed from the available information on their revenue and volume market shares. Then in section 2.3 we show how we combine our estimates of minutes and prices and information about costs to model the profit impacts on each of the relevant firms.

In section 3 we will use this model to calculate the contribution to profit that fixed-to-mobile operators make for each firm. We compare this contribution under factual (with regulation) and counterfactual (without regulation) scenarios to determine the net impact that regulation has on each individual firm.

2.1. Modelling Fixed-to-Mobile Minutes

We model the call flows in terms of the number of fixed-to-mobile minutes per annum between the various operators. Figure 1 shows the basic structure of the model. The model is designed to predict each of the call flows as indicated by the arrows in the diagram.

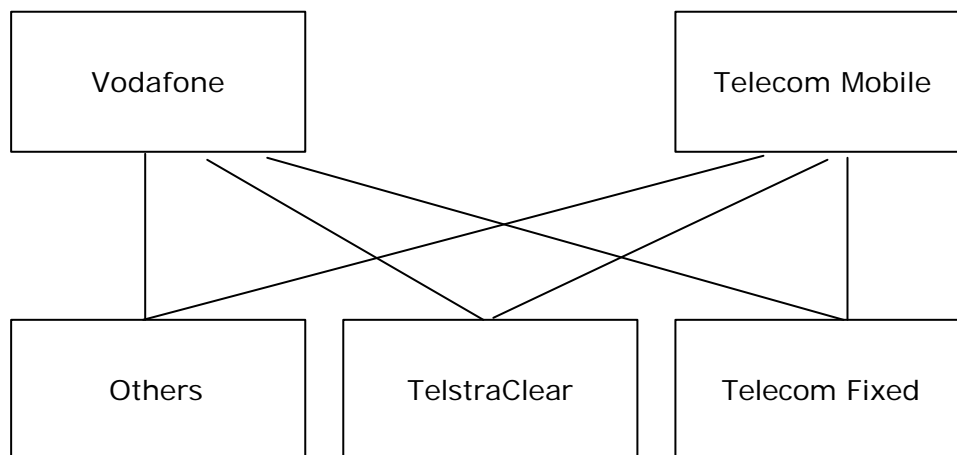


Figure 1 Fixed-to-Mobile Call Flows.

For any given scenario, the total quantity of fixed-to-mobile minutes per annum is given. For example, table 15 of the Draft Report gives the fixed-to-mobile quantities under the Commission's counterfactual and its two factual scenarios.

The individual flows are calculated from the total number of fixed-to-mobile minutes in each year using a 'balanced calling pattern' assumption. Under this assumption, the number of minutes of calls that a firm's customers make or receive is proportional to the firm's market share in either the origination or termination market.

For example, if there are 1 billion total fixed-to-mobile minutes in a year and Vodafone's share of the mobile termination market is 50%, then we assume that 500 million minutes of fixed-to-mobile calls terminate on Vodafone's network. Similarly, if TelstraClear has 60% share in the fixed-to-mobile origination market then 600 million minutes originate from TelstraClear's network.¹

By taking the products of the origination and termination market shares, we are able to calculate the individual flows between operators. Using the above example, the number of minutes that originate on TelstraClear's network and terminate on Vodafone's network will be $0.5 * 0.6 * 1 \text{ billion} = 300 \text{ million minutes}$.

To implement this model, we need data on the origination shares of the fixed-to-mobile operators and the termination shares of the mobile operators. Table 3 of the Draft Report provides the market shares in the fixed-to-mobile and tolls market of Telecom, TelstraClear, and other operators annually for 2000 to 2004.² As long as customers of any of these firms do not systematically make more fixed-to-mobile calls than toll calls, we believe that these market shares will also be good estimates of the fixed-to-mobile origination shares of these firms. Accordingly, we use the volume shares given in Table 3 of the Draft Report as the fixed-to-mobile origination shares of the fixed-line operators. The relevant information is reproduced in Table 2.³

Table 2 Fixed-to-Mobile Origination Shares.

	2000	2001	2002	2003	2004
Telecom Fixed	[]	[]	[]	[]	[]
TelstraClear	[]	[]	[]	[]	[]
Other	[]	[]	[]	[]	[]

All CCRI

Source: Draft Report, Table 3.

¹ The market shares given in these examples are purely hypothetical.

² All years throughout this report are to June, to be consistent with the time periods used in the Draft Report.

³ Note that there is a slight discrepancy between the 'Other' share in Table 2 and that of Table 3 of the Draft Report. We have calculated the 'Other' share as 100% minus Telecom's share and TelstraClear's share. This is because, in our model, it is necessary that the shares add to 100%.

Data on the termination shares of Vodafone and Telecom Mobile is not given in the Draft Report. However, the Commission has provided to us its historic estimates of total fixed-to-mobile minutes and Vodafone has provided to us its total incoming fixed-to-mobile minutes for the same time period. From this data we have calculated the market shares. The results of this calculation are shown in Table 3.

Table 3 Fixed-to-Mobile Termination Shares.

	2000	2001	2002	2003	2004
Total FTM Minutes (mil)*	629	726	795	836	901
Total Vodafone FTM Minutes (mil)**	[]	[]	[]	[]	[]
Telecom Mobile Share of FTM	[]	[]	[]	[]	[]
Vodafone Share of FTM	[]	[]	[]	[]	[]

All VNZRI

* Source: Commerce Commission (nonconfidential)

** Source: Vodafone

The period of analysis in the Draft Report is from 2005 to 2010 inclusive, with regulation applying from 2006. We therefore require forecasts of the origination and termination shares over this period. Given the available data, it is very difficult to predict quantitatively how firms will respond in terms of their prices to regulation (if it occurs) and how this will translate into market share differences. We have therefore based our forecasts of the shares on the historic trends, and use the same forecasts for all counterfactual and factual scenarios that we consider.

We have forecast the origination shares by fitting linear trends to the historic shares of Telecom and TelstraClear.⁴ [

] **CCRI**. The origination share forecasts are shown in Table 4.

Table 4 Forecast Fixed-to-Mobile Origination Shares.

	2005	2006	2007	2008	2009	2010
Telecom Fixed	[]	[]	[]	[]	[]	[]
TelstraClear	[]	[]	[]	[]	[]	[]
Other	[]	[]	[]	[]	[]	[]

All VNZRI

We have forecast the mobile termination shares using a logarithmic trend rather than a linear trend [

] **VNZRI**. The termination share forecasts are shown in Table 5.

⁴ The 'Other' share is then calculated as 100% minus the sum of these.

Table 5 Forecast Fixed-to-Mobile Termination Shares.

	2005	2006	2007	2008	2009	2010
Telecom Mobile	[]	[]	[]	[]	[]	[]
Vodafone	[]	[]	[]	[]	[]	[]

All VNZRI

To test the accuracy of this model, we have generated the predicted number of fixed-to-mobile minutes terminated by Vodafone from each of the fixed-line operators for 2000 to 2004, which can be compared to actual data provided to us by Vodafone. The results of this comparison are shown in Table 6.

Table 6 Actual Versus Modelled Vodafone Incoming Fixed-to-Mobile Minutes.

	2000	2001	2002	2003	2004
Actual Minutes (mil)					
From Telecom Fixed	[]	[]	[]	[]	[]
From TelstraClear	[]	[]	[]	[]	[]
From Other Operators	[]	[]	[]	[]	[]
Modelled Minutes (mil)					
From Telecom Fixed	[]	[]	[]	[]	[]
From TelstraClear	[]	[]	[]	[]	[]
From Other Operators	[]	[]	[]	[]	[]
Error					
From Telecom Fixed	2.3%	5.3%	4.3%	-2.3%	0.1%
From TelstraClear	-19.7%	-15.5%	-2.2%	15.1%	-5.5%
From Other Operators	-91.1%	-82.2%	-69.8%	-55.0%	24.6%

All VNZRI

From Table 6 we can see that the performance of the model is relatively good, [

] **VNZRI** This is likely due to the [

] **CCRI**. On the whole, we believe that this model generates reasonably accurate predictions for the majority of fixed-to-mobile minutes.⁵

2.2. Estimating Relative Fixed-to-Mobile Prices

To calculate revenues from fixed-to-mobile operations, we require estimates of the prices that were received. For mobile operators this is straightforward – the price is the mobile termination rate, which will be specified in the counterfactual or factual scenario under consideration.

For fixed-to-mobile operators we need to know their average fixed-to-mobile retail price. Historic industry average prices are given in Table 11 of the Draft Report.

⁵ The performance of the model could be improved by using additional data on the origin of minutes terminated by Telecom Mobile, which is not available to us but the Commission may have access to.

However, we can obtain better estimates of the prices charged by the individual operators by using the volume and revenue share information from Table 3 of the Draft Report. This is because, everything else equal, a firm that has above-average prices will have a higher revenue share than its volume share, and vice versa. Given the revenue and volume shares, it is possible to calculate the average price of each operator.

To see this, let P_i and Q_i be the average price and total quantity respectively of fixed-to-mobile minutes of firm i . The total fixed-to-mobile revenue of firm i is therefore $R_i = P_i Q_i$. If there are N firms in the industry, the ratio of the revenue share of firm i to its volume share is given by:

$$\frac{\frac{P_i Q_i}{\sum_{j=1}^N P_j Q_j}}{\frac{Q_i}{\sum_{j=1}^N Q_j}} = \frac{P_i Q_i}{\sum_{j=1}^N P_j Q_j} \times \frac{\sum_{j=1}^N Q_j}{Q_i} = P_i \times \frac{\sum_{j=1}^N Q_j}{\sum_{j=1}^N P_j Q_j} = \frac{P_i}{\frac{\sum_{j=1}^N P_j Q_j}{\sum_{j=1}^N Q_j}}$$

Thus the ratio of the revenue share to the volume share of a firm gives the ratio of its price to the industry average price. We then multiply this ratio by the industry average price as given in Table 11 of the Draft Report to determine the historic average prices for each firm. The results of this calculation are shown in Table 7. Note we assume from this point on that TelstraClear and the 'Other' firms set the same average price.

Table 7 Average Fixed-to-Mobile Prices.

	2000	2001	2002	2003	2004
Ratio of Price to Industry Average Price					
Telecom Fixed	[]	[]	[]	[]	[]
TelstraClear & Others	[]	[]	[]	[]	[]
Industry Average Price (cpm)	47.71	46.35	44.96	43.99	42.21
Firm-Specific Average Prices (cpm)					
Telecom Fixed	[]	[]	[]	[]	[]
TelstraClear & Others	[]	[]	[]	[]	[]

All VNZRI

We also require forecasts of the ratio of the price for each firm to the industry average price for 2005 – 2010. The ratio of Telecom's price to the average price has []
CCRI. We therefore assume that Telecom's fixed-to-mobile price [] **CCRI** in the forecast period.

Given knowledge of Telecom's fixed-to-mobile price, the industry average price, and the fixed-to-mobile origination shares (volume shares) in any given year, it is possible to calculate the price for TelstraClear and Others. The industry average price is given by:

$$\bar{P} = \frac{\sum_{j=1}^N P_j Q_j}{\sum_{j=1}^N Q_j}$$

This can be rewritten as:

$$\bar{P} = \sum_{j=1}^N \left(P_j \frac{Q_j}{\sum_{k=1}^N Q_k} \right)$$

That is, the industry average price is a weighted average of the prices of the individual firms, where a firm's weight is its volume share. Thus if P_T is Telecom's price, P_O is the price of other firms, and a_T is Telecom's volume share, then:

$$\bar{P} = a_T P_T + (1 - a_T) P_O$$

Which can be rearranged to give:

$$P_O = \frac{\bar{P} - a_T P_T}{1 - a_T}$$

We use this equation to determine the price charged by TelstraClear and Others in each year in the forecast period.

2.3. Modelling Profitability Impacts

Having modelled quantities and prices, we are now in a position to model the profitability of each firm's fixed-to-mobile operations. Our general approach is to determine the contribution that fixed-to-mobile operations (either origination or termination) make to the overall profitability of the businesses.⁶ Given the different structure of the firms, this requires separate sets of assumptions for each, as described below.

Note that, in all cases, what we are trying to do is calculate the *change* in a firm's profits due to regulation of termination rates. We are not trying to calculate the actual profit that each firm makes from fixed-to-mobile origination or termination. To do so would require more detailed information about costs than is available to us.

⁶ We therefore assume that the firms' other operations will be unaffected by regulation of mobile termination rates relative to what they would do absent regulation.

2.3.1. Vodafone

For Vodafone, we calculate total revenues from fixed-to-mobile termination and assume that a dollar of lost termination revenue corresponds to a dollar of lost profit. We argue that the change in revenues is equal to the change in profits, because regulation of termination rates is unlikely to have any impact on Vodafone's costs. If anything, Vodafone's costs are more likely to increase rather than decrease, because regulation will cause an increase in the quantity of fixed-to-mobile calls that Vodafone has to terminate. To the extent that this does occur, our estimates of the impacts on Vodafone will be underestimates of the true impact on profits due to regulation.

2.3.2. Telecom Mobile

In calculating the impacts on Telecom Mobile, we must distinguish between on-net calls (those originated by Telecom Fixed) and off-net calls (those originated by other fixed-line networks).

For on-net calls, we assume that Telecom Mobile does not charge a transfer price to Telecom Fixed for terminating these calls. There is therefore no termination revenue associated with such calls, and no impact from regulation of regulation associated with these calls aside from the fact that regulation may result in lower retail prices on these calls.

For off-net calls, Telecom Mobile charges the relevant termination rate to the originating fixed operator. In this case we calculate the change in profit as the change in termination revenues, in the same way as for Vodafone.

2.3.3. Telecom Fixed

Again for Telecom Fixed we must distinguish calls that terminate on-net and terminate off-net. For calls that terminate on-net we assume that Telecom Fixed pays no transfer price to Telecom Mobile. The only costs incurred by Telecom Fixed for these calls are the fixed-line origination, transit and retailing costs as given in Table 9 of the Draft Report (5.82 cents per minute in total).

For calls that terminate off-net (i.e. on Vodafone's network) we assume that Telecom Fixed pays the relevant termination rate, plus the 5.82 cents per minute of other costs. The profit that Telecom Fixed makes on these calls is calculated as the retail revenue minus these costs. Regulation therefore may increase the profit on these calls, depending on the pass-through of termination rates to retail prices.

2.3.4. Telecom Group

We also calculate change in profits for Telecom Group, which is the sum of the effects on Telecom Mobile and Telecom Fixed.

If Telecom Mobile actually does charge an internal transfer price to Telecom Fixed for mobile termination, we will have understated the impacts on Telecom Mobile from

regulation and overstated the impacts on Telecom Fixed. However, the overall impact on Telecom Group will be unchanged as a result of transfer pricing.

2.3.5. Other Fixed-to-Mobile Operators

The impacts on other fixed-to-mobile operators including TelstraClear are calculated in the same way as for off-net calls of Telecom Fixed. That is, we calculate profit as the total retail revenue from fixed-to-mobile calls and subtract costs, which are the sum of the termination rate and the 5.82 cents per minute other costs. This calculation is the same regardless of whether calls terminate on Telecom Mobile or Vodafone.

2.4. Counterfactual and Factual Scenarios

To generate results from the model requires specifying counterfactual and factual scenarios. In particular, in addition to the share forecasts already presented above, we need to specify projections for 2005 to 2010 of:

- ❖ The mobile termination rate
- ❖ The average fixed-to-mobile price
- ❖ The total number of fixed-to-mobile minutes

We must forecast the future paths of all of these without regulation (the counterfactual) and with regulation (the factual). In the next section we consider a number of scenarios. First, we use the counterfactual and two factual scenarios provided by the Commerce Commission in its Draft Report. Second, we use the alternative counterfactual and factual scenarios that we have generated using our own analysis of the fixed-to-mobile market.

3. Results

In this section we present the results of our modelling in terms of the impacts on the profits of all the relevant firms using the methodology described above. All results are presented in millions of dollars. The net present value (NPV) figures are given in 2004 dollars and assume a 6% discount rate.⁷ In all cases we assume that the mobile termination rate is reduced from its counterfactual level to 16 cents per minute from 2006 onwards.

3.1. Commerce Commission Scenarios

We first give our results using the price and quantity scenarios given by the Commission in its Draft Report and used for its quantitative analysis.

3.1.1. Counterfactual

In the Commission's counterfactual, the mobile termination rate falls 1 cent per minute per annum and the average fixed-to-mobile retail price falls 4% per annum. The counterfactual quantities are found by assuming a demand elasticity of -0.6 for fixed-to-mobile calls. The relevant prices and quantities are given in Table 7 of the Draft Report and summarised here in Table 8.

Table 8 Commerce Commission Counterfactual Scenario.

	2005	2006	2007	2008	2009	2010
Average Price (cpm)	40.49	38.83	37.25	35.73	34.27	32.87
Quantity (mil. minutes)	922.79	945.41	968.58	992.32	1,016.64	1,041.56

3.1.2. Factual 1

Under the Commission's factual 1, the fixed-to-mobile retail price is assumed to fall to cost by 2010. This gives prices and quantities as shown in Table 15 of the Draft Report and reproduced here in Table 9.

Table 9 Commerce Commission Factual 1 Scenario.

	2005	2006	2007	2008	2009	2010
Average Price (cpm)	40.49	35.78	31.62	27.94	24.69	21.82
Quantity (mil. minutes)	922.79	990.05	1,056.46	1,122.12	1,187.16	1,251.69

Using our model, we have predicted the impacts on profits of all firms under this factual relative to the Commission's counterfactual scenario. The results are shown in Table 10.

⁷ We use a 6% discount rate to be consistent with that used in the Draft Report. However, in calculating the present value of their individual impacts, risk-taking firms are likely to use a higher discount rate.

Table 10 Impacts of Regulation under the Commission's Factual 1 (\$m).

	2006	2007	2008	2009	2010	NPV
Vodafone	[]	[]	[]	[]	[]	[]
Telecom Mobile	[]	[]	[]	[]	[]	[]
Telecom Fixed	[]	[]	[]	[]	[]	[]
Telecom Group	[]	[]	[]	[]	[]	[]
TelstraClear	[]	[]	[]	[]	[]	[]
Others	[]	[]	[]	[]	[]	[]

All VNZRI**3.1.3. Factual 2**

The Commission's factual 2 is constructed by assuming an instantaneous rate of pass-through and calculating factual prices relative to the counterfactual price in each year according to the difference in the termination rates between the factual and the counterfactual. The relevant prices and quantities are given in Table 15 of the Draft Report and are reproduced in Table 11.

Table 11 Commerce Commission Factual 2 Scenario.

	2005	2006	2007	2008	2009	2010
Average Price (cpm)	40.49	32.33	30.73	29.28	27.98	26.87
Quantity (mil. minutes)	922.79	1,040.36	1,070.24	1,099.81	1,128.53	1,155.65

The profitability impacts under this factual relative to the Commission's counterfactual are shown in Table 12.

Table 12 Impacts of Regulation under the Commission's Factual 2 (\$m).

	2006	2007	2008	2009	2010	NPV
Vodafone	[]	[]	[]	[]	[]	[]
Telecom Mobile	[]	[]	[]	[]	[]	[]
Telecom Fixed	[]	[]	[]	[]	[]	[]
Telecom Group	[]	[]	[]	[]	[]	[]
TelstraClear	[]	[]	[]	[]	[]	[]
Others	[]	[]	[]	[]	[]	[]

All VNZRI

3.2. Alternative Scenarios

In our report on modelling the fixed-to-mobile market⁸ we argued that the Commission's scenarios are excessively optimistic with regard to pass-through of lower termination rates to fixed-to-mobile retail prices, for a variety of reasons that we shall not repeat here.

As also described in our other report, we have developed a relatively more sophisticated statistical model of the fixed-to-mobile market based on historical data that appears to explain both the price and quantity in this market very well. We have used this model to generate an alternative counterfactual projection, as well as factual quantities based on alternative pass-through assumptions, as described below.

3.2.1. Alternative Counterfactual

In our alternative counterfactual we forecast future mobile termination rates based on the historic rate of decline, and also incorporate the effects of projected increases in the mobile penetration rate on demand for fixed-to-mobile calls. This produces fixed-to-mobile prices and quantities as shown in Table 13.

Table 13 Alternative Counterfactual.

	2005	2006	2007	2008	2009	2010
Average Price (cpm)	40.72	39.36	38.03	36.73	35.46	34.20
Quantity (mil. minutes)	985.62	1,030.75	1,065.98	1,094.15	1,117.51	1,137.70

3.2.2. Alternative Factual 1

In our first alternative factual scenario, we assume there is 100% pass-through by 2010. The fixed-to-mobile price falls by the amount of the reduction in the mobile termination rate, by 2010. This gives prices and quantities shown in Table 14.

Table 14 Alternative Factual 1.

	2005	2006	2007	2008	2009	2010
Average Price (cpm)	40.72	38.44	36.29	34.26	32.34	30.53
Quantity (mil. minutes)	985.62	1,041.85	1,087.03	1,124.03	1,155.13	1,182.00

The profitability impacts under this scenario are shown in Table 15.

Table 15 Impacts of Regulation under Alternative Factual 1 (\$m).

	2006	2007	2008	2009	2010	NPV
Vodafone	[]	[]	[]	[]	[]	[]
Telecom Mobile	[]	[]	[]	[]	[]	[]
Telecom Fixed	[]	[]	[]	[]	[]	[]

⁸ *Modelling the Effects of Regulating Mobile Termination Rates*, Covec Ltd, November 2004.

Telecom Group	[]	[]	[]	[]	[]	[]
TelstraClear	[]	[]	[]	[]	[]	[]
Others	[]	[]	[]	[]	[]	[]

All VNZRI**3.2.3. Alternative Factual 2**

Under alternative factual 2 we assume there is 65% pass-through by 2010. The fixed-to-mobile price falls by 65% of the reduction in the mobile termination rate, by 2010. This gives prices and quantities shown in Table 16.

Table 16 Alternative Factual 2.

	2005	2006	2007	2008	2009	2010
Average Price (cpm)	40.72	39.30	37.93	36.61	35.33	34.10
Quantity (mil. minutes)	985.62	1,031.48	1,067.23	1,095.67	1,119.03	1,138.92

The profitability impacts under this scenario are shown in Table 17.

Table 17 Impacts of Regulation under Alternative Factual 2 (\$m).

	2006	2007	2008	2009	2010	NPV
Vodafone	[]	[]	[]	[]	[]	[]
Telecom Mobile	[]	[]	[]	[]	[]	[]
Telecom Fixed	[]	[]	[]	[]	[]	[]
Telecom Group	[]	[]	[]	[]	[]	[]
TelstraClear	[]	[]	[]	[]	[]	[]
Others	[]	[]	[]	[]	[]	[]

All VNZRI**3.2.4. Alternative Factual 3**

Under alternative factual 3 we use our econometric model of the fixed-to-mobile market to endogenously generate the response of fixed-to-mobile operators to a reduction in the termination rate. This gives the prices and quantities shown in Table 18.

Table 18 Alternative Factual 3.

	2005	2006	2007	2008	2009	2010
Average Price (cpm)	40.72	36.83	35.82	34.80	33.79	32.78
Quantity (mil. minutes)	985.62	1,061.32	1,092.75	1,117.45	1,137.63	1,154.87

The profitability impacts under this scenario are shown in Table 19.

Table 19 Impacts of Regulation under Alternative Factual 3 (\$m).

	2006	2007	2008	2009	2010	NPV
Vodafone	[]	[]	[]	[]	[]	[]
Telecom Mobile	[]	[]	[]	[]	[]	[]
Telecom Fixed	[]	[]	[]	[]	[]	[]
Telecom Group	[]	[]	[]	[]	[]	[]
TelstraClear	[]	[]	[]	[]	[]	[]
Others	[]	[]	[]	[]	[]	[]

All VNZRI