



FINAL REPORT

Mobile Termination Regulation CBAs - A Review and Reconciliation

Submitted to

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1. INTRODUCTION

1. Marsden Jacobs Associates (MJA)¹ and Covec² have both filed reports with the Commerce Commission critiquing the Commission's cost benefit analysis (CBA) of mobile termination (MT) regulation.
2. The Commission now has before it five quantitative analyses of the impact of MT regulation:
 - The Commission's own model;
 - Our adaptation of the Commission's model, as described in our earlier report;³
 - The analysis of Professor Jerry Hausman;⁴
 - MJA's adaptation of the Commission's model; and
 - Covec's adaptation of the Commission's model.
3. The purpose of this report (cross-submission) is two-fold:
 - We attempt to reconcile the various quantitative analyses, or at least point out in an accessible way the key reasons for their differing results; and
 - We review the MJA and Covec analyses.

¹ Marsden Jacobs Associates (2004) *Review of the Cost-Benefit Analysis of Fixed to Mobile Termination*, 23 November. MJA was engaged by TelstraClear.

² Covec (2004) *Modelling Regulation of Mobile Termination Rates*, 29 November. Covec was engaged by Vodafone.

³ Charles River Associates (2004) *Mobile Termination - Review of Commerce Commission's Modelling*, 30 November. We are engaged by Telecom.

⁴ Hausman, Jerry A. (2004) *Economic Analysis of Regulation of CPP*, 29 November. Professor Hausman is also engaged by Telecom.

2. RECONCILIATION OF CBAS

4. The first crucial point to note is that, because each of the models of CRA, Covec and MJA are critiques of the Commission's model, they all suffer from the flaw of being limited to analysing the fixed-to-mobile (FTM) "market".⁵ While MJA argues that this is appropriate, both CRA and Covec note that a comprehensive CBA would quantify the full range of effects of MT regulation. The rational reaction of any mobile network operator to MT regulation (regardless of the level of mobile competition) is to raise other prices (e.g., subscription and origination), the so-called "waterbed effect".
5. Professor Hausman has quantified these effects, and he demonstrates that the costs of MT regulation would significantly outweigh the benefits, leaving consumers significantly worse off.
6. To be more specific, Professor Hausman estimates:
 - The loss of consumer surplus arising from reduced mobile penetration (compared to the factual), and therefore fewer mobile subscribers for fixed subscribers to call; and
 - The loss of consumer surplus arising from higher mobile subscription prices.
7. In its 30 November 2004 submission, Telecom compared Professor Hausman's figures to the (Factual 2) consumer surplus benefits calculated by the Commission, before costs (see paragraph 316). Professor Hausman has since extended that table, and we set it out below (Table 1).

⁵ We place the word "market" in speech marks because, as the Commission has found, there is no FTM market; rather, FTM calls fall within a wider market that also includes toll calls.

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Table 1: Quantification of the Waterbed Effect⁶

\$m	2006	2007	2008	2009	2010	NPV ⁷
Consumer surplus gain due to FTM price decrease ⁸	64.5	66.5	67.4	67.5	65.9	263.5
Consumer surplus loss due to mobile price increase	-61.4	-63.2	-64.0	-64.0	-62.5	-250.3
Consumer surplus loss due to lower mobile penetration	-12.3 to -46.5	-12.8 to -49.9	-13.2 to -53.0	-13.5 to -56.1	-13.8 to -58.9	-52 to -208.7
Net consumer surplus	-9.2 to -43.4	-9.5 to -46.6	-9.8 to -49.6	-10 to -52.6	-10.4 to -55.5	-38.7 to -195.5

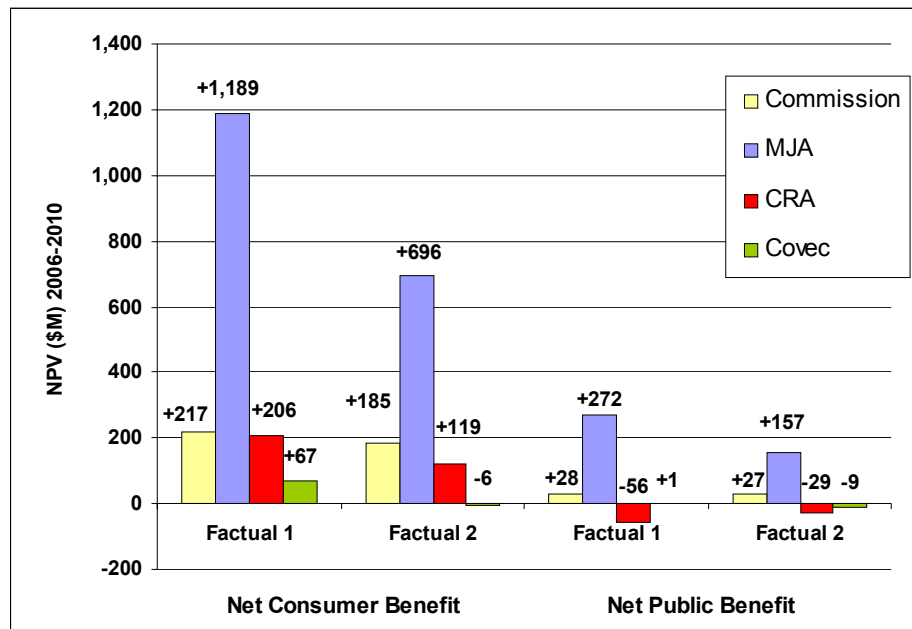
8. Two effects of MT regulation are striking from Table 1:
- The transfer of surplus between consumer groups (although there will of course be a large overlap between these group); and
 - The net reduction in overall consumer welfare.
9. Returning to the Commission's analysis of just one effect of MT regulation, and the adaptations to it, Figure 1 compares the results of the modelling by the Commission, MJA, CRA and Covec.

⁶ There are some discrepancies with the Commission's consumer surplus figures due to rounding.

⁷ Discounted at 6 percent.

⁸ Source: Table 19 of Commission's draft report, before costs (i.e., the *Total benefits* row).

Figure 1: Comparison of FTM Net Benefits⁹



10. As can be seen, MJA’s model represents an outlier in the sample. There are three key drivers for the significantly higher net benefits calculated by MJA. These drivers and our views on them are as follows:

- MJA calculates a “terminal value” for the net benefits post 2010. In our view, this approach is inappropriate, because:
 - Of the uncertainty over costs and benefits so far out, as the Commission itself notes at paragraph 348 of the Draft Report; and
 - MT regulation would not result in any enduring competition benefits beyond the 5-year regulatory period.

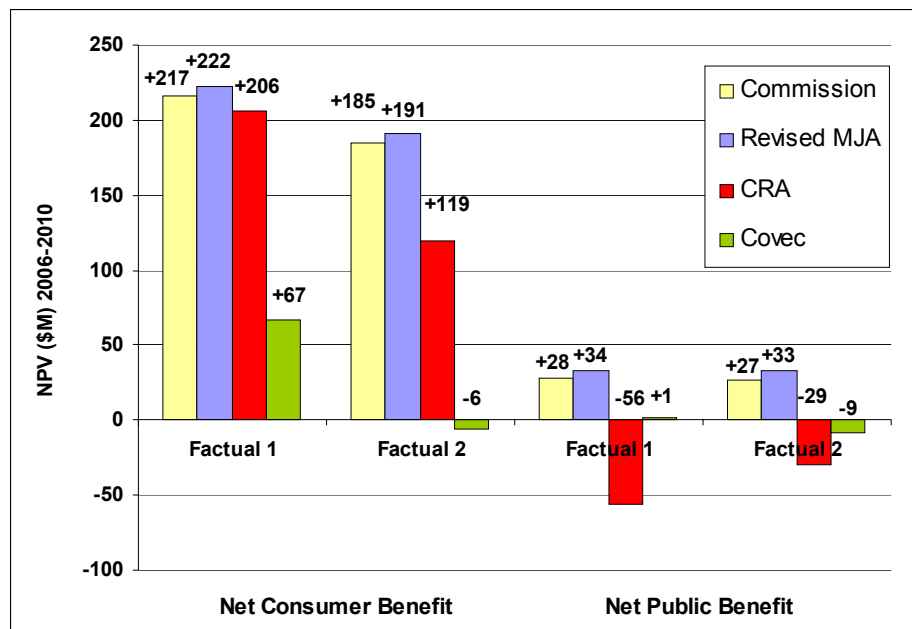
Furthermore, MJA makes a significant error in three out of four of its terminal value calculations, by discounting the net benefits at zero percent.

- MJA makes adjustments to the counterfactual MT rate path, and therefore to the counterfactual FTM price path, but no adjustments to the calculation of the factual price paths, resulting in a significant increase in the divergence between the counterfactual and factual prices, increasing the calculated benefits from regulation. In our view, MJA’s adjustments to the counterfactual price paths are based on a poor interpretation of the data and are inappropriately selective.

⁹ We have not presented the results of Covec’s Factual 3 here, but note that both the net consumer and public benefits arising from it fall between Covec’s Factual 1 and 2 calculations.

- Using the MT rate benchmarking carried out by Network Strategies,¹⁰ MJA argues that the median price rather than the 75th percentile should be adopted as the factual MT rate. In our view, it is quite appropriate for the Commission to adopt a percentile higher than the median when it is considering whether it should regulate private firms, as the costs of regulatory error in setting the MT rate are asymmetric.
- Adjusting for these inappropriate adaptations to the Commission’s model, and others that we discuss in this report, results in the revised MJA net benefit calculations in Figure 2. These results are similar to those of the Commission’s original model. If we corrected the MJA model for the critiques that we have of the Commission’s original model, as per our original report, the results would of course be reduced even further.
 - We discuss the drivers of the differences in the other calculations later in the report.

Figure 2: Comparison of FTM Net Benefits – Adjusted MJA Results¹¹



¹⁰ Network Strategies (2004) *Estimating the Cost of Mobile Termination - A Review of the Commerce Commission's Benchmarking Study*, 18 November 2004. Network Strategies was engaged by TelstraClear.

¹¹ We have not presented the results of Covec’s Factual 3 here, but note that both the net consumer and public benefits arising from it fall between Covec’s Factual 1 and 2 calculations.

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13. We note that many of the critiques of the Commission's CBA made by Covec are the same as ours. While we have not carefully reviewed Covec's econometric analysis, our overall view is that the Covec model provides a far more appropriate basis for analysing the efficacy of MT regulation than either of the models of the Commission and MJA. However, we do note that we disagree with Covec's qualitative analysis of competition in the FTM "market".
14. Having reviewed the reports of both Covec and MJA, we remain of the view that the net public benefits of MT regulation would be negative, even if the focus is limited to the impact on FTM services.
15. We re-emphasise that the results depicted in Figure 2 do not represent a complete CBA of MT regulation, as they do not include the other effects of MT regulation. As Professor Hausman and ourselves demonstrated in our original reports, and as Covec also notes (page 34), it would take only a relatively small waterbed effect to completely offset the Commission's claimed benefits of MT regulation.

3. THE MARSDEN JACOB ASSOCIATES CBA

3.1. INTRODUCTION AND OVERVIEW

16. As noted above, the MJA CBA results in significantly larger net consumer and public benefits from MT regulation than the Commission's model. There are three key drivers of these results:
 - MJA calculates a "terminal value" for the net benefits post 2010. In our view, this approach is inappropriate, because:
 - Of the uncertainty over costs and benefits so far out, as the Commission itself notes at paragraph 348 of the Draft Report; and
 - MT regulation would not result in any enduring competition benefits beyond the 5-year regulatory period.

Furthermore, MJA makes a significant error in three out of four of its terminal value calculations, by discounting the net benefits at zero percent.

 - MJA makes adjustments to the counterfactual MT rate path, and therefore to the counterfactual FTM price path, but no adjustments to the calculation of the factual price paths, resulting in a significant increase in the divergence between the counterfactual and factual prices, increasing the calculated benefits from regulation. In our view, MJA's adjustments to the counterfactual price paths are inappropriately selective.
 - Using the MT rate benchmarking carried out by Network Strategies, MJA argues that the median price rather than the 75th percentile should be adopted as the factual MT rate. In our view, it is quite appropriate for the Commission to adopt a percentile higher than the median when it is considering whether it should regulate private firms, as the costs of regulatory error in setting the MT rate are asymmetric.
17. We expand on these points below, and comment on various other aspects of the MJA modelling.
18. In short, we believe that the majority of MJA's changes are inappropriate. After correcting them, we reach an adjusted number that is not significantly different to the original calculations of the Commission. Even then, the revised MJA model is still subject to the same critiques that we made of the Commission's model in our original report.
19. We summarise our corrections alongside MJA's changes in Table 2 and show the overall corrected MJA net benefits calculations compared with the Commission's original calculations.

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20. Table 2 also includes a row labelled “Compounding of Changes.” This shows the total effect of each additional change on the other changes. For instance, including MJA’s terminal value increases the net benefit effect of lowering the MT cost input assumption. Therefore, the total effect of both of these changes is greater than the sum of the individual effects.

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Table 2: Correction of MJA FTM Net Benefit Calculations

		Factual 1		Factual 2	
		Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Terminal Value	MJA Change	Add 247.9	Add 27.3	Add 141.5	Add 5.2
	Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Counterfactual MT and FTM rates	MJA Change	Add 135.4	Add 34.3	Add 32.5	Add 16.3
	Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Growth in FTM Calls	MJA Change	Add 17.7	Add 2.8	Add 13.1	Add 2.4
	Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
MT Cost Input	MJA Change	Add 137.1	Add 44.9	Add 123	Add 43.1
	Corrected Change ¹²	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Accounting for GST	MJA Change	Add 14.2	Add 2.4	Less 0.4	Add 0.3
	Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Discount Rate	MJA Change	Add 19.8	Add 2.6	Add 14.5	Add 2.1
	Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Direct Costs ¹³	MJA Change	Add 5.7	Add 5.7	Add 5.7	Add 5.7

¹² Using an MT cost input of 16 cents per minute.

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		Factual 1		Factual 2	
		Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Costs¹³	Corrected Change	Add 5.7	Add 5.7	Add 5.7	Add 5.7
Compounding of Changes	MJA Change	Add 394.3	Add 123.8	Add 181.0	Add 54.3
	Corrected Change¹⁴	Add 0.0	Add 0.0	Add 0.0	Add 0.0
MJA Level		1,188.8	271.7	695.9	156.7
Corrected Level		222.4	33.6	190.7	33.0
Commission Calculation		216.7	27.9	185.0	27.3

21. In the remainder of Section 3, we provide the reasoning for each of our changes along with tables showing the effects of each of our corrections. We also make a comment on MJA's FTM price elasticity discussion.

3.2. CALLING EXTERNALITIES

22. MJA discusses the concept of calling externalities, and argues "welfare may be improved by lowering termination rates in order to encourage calls" (page 4). MJA does not attempt to quantify these benefits, but rather argues that the Commission should note "that our conclusions on the CBA ... understates (sic) the net benefits of designating MT" (page 5).
23. The concept of a calling externality is correct. However, we believe that MJA overstates its importance. For instance, Brown and Sibley state:

¹³ Due to lack of time we have not been able to confirm the size of direct costs. As a result we will rely on MJA estimates. We should not be taken to be agreeing that the figure proffered by MJA is correct.

¹⁴ Since only one change is made to the Commission's model following our corrections, there is no compounding of changes.

The call externality is probably not too important. It only involves two people and can probably be easily “internalized”. For example, two frequent callers could arrange to share the cost of calling. Furthermore, not all call externalities are positive externalities; there are certain phone calls that one is annoyed to receive. Since the telephone company cannot be expected to distinguish between positive and negative call externalities, it is probably not useful to incorporate them into pricing formulas. For this reason, and because call externalities can probably be internalized fairly well, they do not provide a strong case for call price reductions.¹⁵

24. Furthermore, we find it to be inconsistent for MJA to place weight on calling externalities, while seemingly discounting network externalities. MJA states that (page 5):

Further, [calling externalities] are important as they involve interactions among all consumers (not just marginal consumers as is the case of network externalities).

25. It is incorrect to imply that network externalities somehow only affect “marginal consumers”. A network externality is the benefit that other subscribers receive when an additional subscriber joins a network and that is not reflected in the marginal subscriber’s decision to join. In other words, it is the *infra-marginal* consumers that benefit when a marginal consumer joins the network.

3.3. STUDY PERIOD

26. MJA highlights that the CBA does not take into account potential welfare gains for periods subsequent to 2010 and excludes a terminal value. MJA notes that (page 6):

We assume that this relates to the five-year sunset clause for regulated services in the Telecommunications Act. The effect, however, is that the Commission is implicitly assuming (in the Factual) that designation of MT would not extend beyond the initial five year period (i.e. the Commission would recommend against continuation of the designation of MT after the initial five years).

27. MJA appears to see value in designation after 2010 resulting from improvements in competition.
28. MJA uses the term “Terminal Value” to refer to an arbitrary calculation of net benefits outside the period of 2005 to 2010. Briefly, MJA calculates the “terminal value” to be net benefits after 2010 which linearly decrease from the 2010 value to zero by 2015 (that is, specific prices, volumes, surpluses and costs were not calculated after 2010).

¹⁵ Brown, S.J. and D. S. Sibley, *The theory of public utility pricing*, Cambridge University Press, 1986, p.197.

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29. Whether or not the Government regulates for the 5-year period 2006 to 2010 (the “first period”), the Government will always have the option of regulating for the 5-year period 2011 to 2015 (the “second period”), i.e., this option exists under both the counterfactual and the factual. It would only be appropriate to estimate residual net benefits from MT regulation for the first period only if that first period regulation would affect the net benefits of regulation in the second period. We do not see how this could be anticipated.
30. In our view, MJA’s approach is inappropriate, for the following reasons:
- We consider the following statement by the Commission to be very reasonable (paragraph 348):

A five year period balances the need to make an assessment over the long-term against the increasing degree of uncertainty from adopting a longer period.

There are significant uncertainties associated with estimating long-term benefits and costs, particularly in an industry as dynamic as mobile communications. Particular uncertainties affecting the (2G) FTM “market” arise from:
 - Inter-modal competition including the development of new mobile (e.g. 3G) technology and the development of VOIP; and
 - More generally changing calling patterns (e.g., substitution of mobile origination for fixed origination).Assumptions about costs and benefits beyond 2010 are in our view simply speculative, and in this context MJA’s approach is arbitrary.
 - As we note in our original report, the benefit of MT regulation for FTM consumers would not arise from some sort of step-change improvement in competitive dynamics. Rather, the benefit would arise from a forced decrease in the marginal cost of providing FTM calls. We do not agree with MJA’s argument that MT regulation will somehow result in enduring competition benefits.
31. We do not believe, therefore, that the inclusion of costs and benefits after 2010 is appropriate.
32. Furthermore, as with the rest of MJA’s analysis, the calculated terminal value does not account for the impacts of MT regulation on other services, particularly mobile subscription and origination. These effects are more likely to be enduring. More generally, the long-term impacts of regulation of a dynamic sector such as mobile communications are unclear, but must be risky.

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Table 3: Correction of MJA Terminal Value Approach

	Factual 1		Factual 2	
	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Commission Calculation	216.7	27.9	185.0	27.3
MJA Change	Add 247.9	Add 27.3	Add 141.5	Add 5.2
Corrected change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Corrected Level	216.7	27.9	185.0	27.3

33. Even if the addition of a terminal value were appropriate, the calculations within MJA's model are incorrect:
- For each of the net benefits calculations a separate series of formulae are used to calculate the net benefits resulting from the entire 2005-2015 period. However, in three of the four calculations, the formulae incorrectly assume a discount rate of 0%;
 - MJA fails to correct the discounting error in the Commerce Commission's original model (Cell K20 in 'FTM CBA model results' sheet), slightly reducing net public benefits;¹⁶ and
 - MJA incorrectly applies its own methodology in cell M41 of the "FTM CBA model results" sheet of the Factual 2 model, slightly reducing net public benefits in the Factual 2 case. Direct costs are set to \$2.4 million in 2011, when they should in fact be set to \$1.92 million. This error also has the effect of increasing direct costs in 2012-2014.
34. Table 4 sets out the correction of these errors (using a 6% discount rate in the case of the incorrect discount rate assumption error).

¹⁶ See Section 2.5 of our original report.

Table 4: Correction of MJA Terminal Value Formulaic Errors

	Factual 1		Factual 2	
	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Commission Calculation	216.7	27.9	185.0	27.3
MJA Change	Add 247.9	Add 27.3	Add 141.5	Add 5.2
Corrected Change	Add 114.3	Add 12.2	Add 58.9	Add 7.3
Difference	-133.6	-15.1	-82.6	2.0
Corrected Level	331.0	40.1	243.9	34.5

3.4. THE COUNTERFACTUAL

3.4.1. Pass-Through

35. MJA notes that the counterfactual pass-through exceeds 100% because of the Commission's assumptions about the counterfactual MT and FTM price paths. They argue that the counterfactual FTM and MT rates should be internally consistent. Furthermore, they argue that the counterfactual pass-through should reflect historical pass-through.
36. Accordingly, MJA revises the counterfactual pass-through methodology by modelling the counterfactual FTM rate based on a pass-through of 65% of changes in the counterfactual MT rate.
37. While MJA's methodology for the counterfactual case (but not the factual) is similar to our own modelling of pass-through, its application is different. MJA uses its pass-through approach to calculate an average annual decline in the counterfactual FTM rate, which is an input in the Commission's original model. Our approach involves constructing the counterfactual and factual FTM rates from changes in the counterfactual and factual MT rates, respectively, in each year.
38. We note that MJA has not applied either its pass-through methodology or the historical pass-through of 65% to the factual. MJA persists with the Commission's approach to the calculation of the factual FTM rates. We deal with this issue in our earlier report.

3.4.2. Counterfactual MT Rate

39. MJA argues that:

- Rises in MT rates are not impossible and provides data for a selected group of European countries where MT rates are claimed to have risen (although MJA footnotes that on average MT rates have fallen slightly in Western European countries);
- The threat of regulation may have played a role in past reductions; and
- The Commission's estimate of a 1cpm decline in MT rates appears to reflect the expectations for 2005 and 2006 of Vodafone.

40. MJA concludes that:

In our view, the Commission has been too aggressive in its determination of the likely reductions in the MT rates in the counterfactual scenario. Accordingly, we suggest that the Commission adopt a 1cpm reduction for 2005 and 2006, and no reduction thereafter or a 0.5 cpm reduction in the next five years. In our evaluation of the net benefits we have modelled the former.

41. We do not agree with this position:

- MJA's presentation of the European data contains several important mistakes that have the effect of misrepresenting MT rate trends in the countries selected by MJA. In fact, MT rates have risen in only one country over the four-year period chosen by MJA; and¹⁷
- We find it hard to believe that the historical drops in the MT rate can be fully explained by the threat of regulation. Furthermore, it is arguable that the regulatory threat is stronger today, and will continue to be so post-inquiry, than it was prior to the introduction of the Telecommunications Act 2001.

42. We expand on these points below.

European MT Rate Data

43. MJA presents, in Table 3 of its report, data that purports to show price increases in MT rates in five European countries, using European Commission report information.¹⁸ We have reviewed the cited reports and have four major criticisms of the data presented in MJA's Table 3 that significantly affect the conclusions that may be taken from it:

¹⁷ In addition, MJA does not provide any theoretical rationale for rising MT rates.

¹⁸ Source: Commission of the European Communities (2000 – 2003) *Implementation of the Telecommunications Regulatory Package*, 6th, 7th, 8th and 9th reports.

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- The table compares the 2003 MT figure for Portugal with earlier data, despite the European Commission's 9th report expressly warning against making such comparisons;¹⁹
 - The table appears to include additional (more expensive) players in 2002 and 2003, which has the effect of increasing estimates for these years relative to 2001 and 2002 for the Netherlands, Italy, Belgium and Austria;
 - The table appears to exclude certain players in 2002 and 2003, which has the effect of increasing estimates for these years relative to 2001 and 2002 for Italy and Austria (including, in the case of Italy, a company defined as having significant market power "SMP"); and
 - The simple averages presented for 2001-03 do not control for market shares and so may lead to incorrect conclusions about the average trend in MT rates.
44. Table 5 represents MJA's Table 3 using what we believe to be corrected data, based on the discussions in Appendix A to this report. We note that, of the countries considered, only the Netherlands has had an upward trend in mobile termination rates of the one company considered in the whole period 2000-2003, based on this recalculated data.
45. We note that we have not adjusted the data in Table 5 for the market share problem described above and so it should not be seen as conclusive information about the trends in MT rates in the countries considered.

¹⁹ The 9th report is not clear on why such comparisons should not be made.

Table 5: Recalculated European Mobile Termination Rates (€ c/m)²⁰

Country	2000	2001	2002	2003	CAGR	MJA's Original CAGR ²¹
Portugal	23.7	23.7	20.7	19.0	-7.03%	4.00%
The Netherlands	15.7	15.7	19.0	21.0	10.09%	8.70%
Italy	18.6	22.8	19.4	16.4	-4.07%	2.70%
Belgium	n/a	16.9	16.9	16.4	-1.58%	5.40%
Austria	13.8	13.8	13.8	13.6	-0.40%	1.20%

46. Based on weighted (by subscriber number) average data presented in the 9th Report,²² the EU average termination charge of SMP operators declined by 11.9% p.a. between 2001 and 2003.²³ Although this figure represents an average across a variety of regulatory environments, it is significantly greater than the average decline p.a. of our logarithmic counterfactual MT rate of 4.7% between 2004 and 2010.

Regulatory Pressure

47. MJA argues that the threat of regulation may have played a role in past MT rate reductions in New Zealand.
48. It is certainly plausible that regulatory threat can affect firm behaviour. However, we have the following reactions to MJA's full statements in paragraph 39 of its report:

²⁰ This table should be read in conjunction with the discussion in Appendix A.

²¹ We note that MJA's original CAGR calculation under-stated the actual CAGR because it incorrectly assumed that increases were spread over four years rather than three years in the cases of Portugal, The Netherlands, Italy and Austria.

²² Only the weighted averages themselves were presented, rather than the raw subscriber data, preventing a complete country-by-country analysis.

²³ Weighted average data was not presented for 2000.

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- According to the Commission's data, the MT rate dropped significantly in the late 1990s. However, the Ministerial Inquiry led by Hugh Fletcher was not constituted until 2000. Furthermore, as far as we can ascertain the issue of MT regulation was never a significant one for the Inquiry, and the Inquiry did not recommend regulation of it (although it did recommend monitoring);²⁴
- As far as we can ascertain, MT regulation has really only been widely regarded as a regulatory issue this century. Crandall and Sidak (2004)²⁵ review global regulatory investigations into MT regulation, and the only mention of regulatory interest in the 1990s is in respect of Italy. However, we do note that the MT rates of two of the four UK mobile operators were first regulated in 1999/2000;
- In fact, it would be surprising if New Zealand industry participants in the late 1990s would have expected regulation of the type now being considered by the Commission to be applied to an industry populated by new entry and new and changing technology;
- MJA provides no rigorous analysis of the relationship between historic MT rate drops in New Zealand and regulatory pressure; and
- A decision by the Commission not to recommend MT regulation at this point is unlikely to suddenly relieve the threat to Telecom and Vodafone. In fact, with the regulatory apparatus set up by the Telecommunications Act 2001, it is arguable that the regulatory threat is now stronger than it was previously.

Counterfactual MT Rate Summary

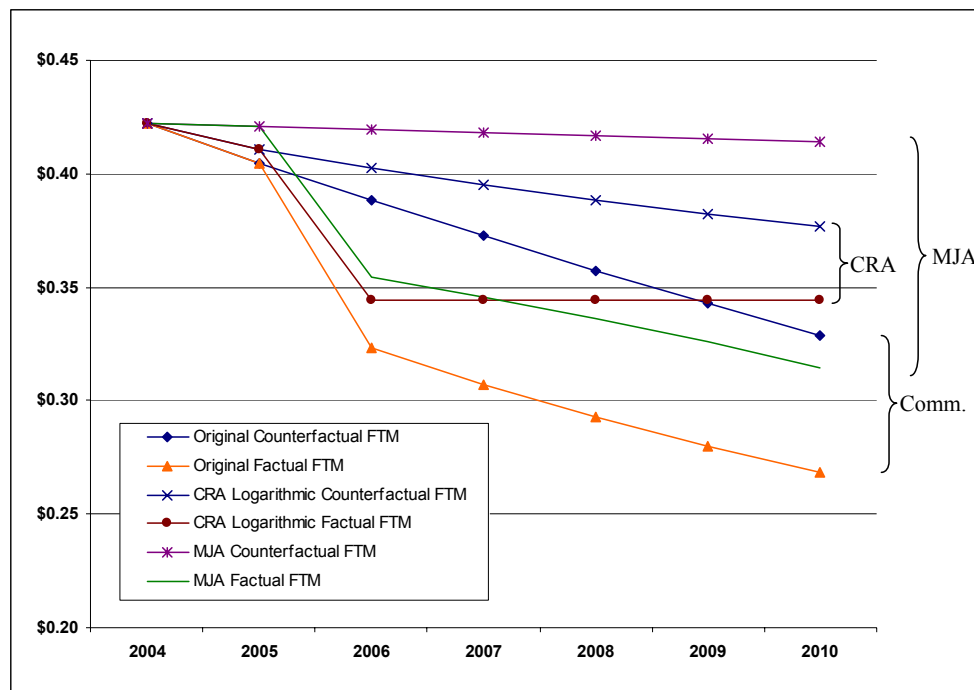
49. In sum, MJA's approach to the MT counterfactual, and therefore the FTM counterfactual, is based on poor interpretation of data and is inappropriately selective – our approach to the counterfactual rate path (and Covec's) is more rigorous.

²⁴ Source: Ministerial Inquiry into Telecommunications Draft Report, June 2000, page 43.

²⁵ Crandall, R W and J G Sidak (2004) "Should Regulators Set Rates to Terminate Calls on Mobile Networks?", *Yale Journal on Regulation*, 21, 261-314.

50. The results of MJA’s counterfactual modelling imply a significant increase in net consumer and public benefits over those calculated by the Commission. This increase is effectively driven by a much larger divergence between the counterfactual and factual FTM price paths. Figure 3 shows the counterfactual and factual FTM price paths calculated by the Commission, by ourselves (using our logarithmic MT rate) and by MJA, in the Factual 2 case. The distance between the counterfactual and factual prices in 2010 is marked in each case. This divergence is caused by the modifications that MJA makes to the counterfactual calculations whilst making no adjustment to the factual calculations.

Figure 3: A Comparison of Factual 2 FTM Price Paths



51. Following its changes to the counterfactual MT rate, MJA notes that it uses a - 0.31% p.a. growth rate for its counterfactual FTM price. This growth rate is chosen so that in 2010 65% of the counterfactual MT rate changes between 2005 and 2010 have been passed-through. However, we believe that MJA is wrong in ignoring the 1-cent drop in the MT rate in 2005. Accordingly, implied pass-through between 2004 and 2010 is only 39%. In other words, the FTM rate doesn’t fall as far as it should, increasing the net benefits of regulation.
52. We note that MJA’s changes to the counterfactual FTM and MT rates, when combined with the Commission’s approach to calculations of the factual FTM rate, result in the implied pass-through in the factual being below 100% but above the historical figure of 65%.

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Table 6: MJA's Implied Factual 2 Pass-Through Rates

	2004	2010	Change
MT Counterfactual (\$)	0.2800	0.2600	-0.0200
Price (P0) (\$)	0.4221	0.4143	-0.0078
Implied Pass-Through			39%
MT Factual (\$)	0.2800	0.1600	-0.1200
Price (P1) (\$)	0.4221	0.3143	-0.1078
Implied Pass-Through			90%

3.4.3. Summary of MT and FTM Paths

53. For the reasons set out in Section 3.4.2, we find MJA's approach to the counterfactual MT rate to be based on a poor interpretation of the data and to be inappropriately selective. Accordingly, we consider MJA's adaptation to be inappropriate.²⁶ Table 7 sets out the changes to the net benefit calculations resulting from correction of this adaptation.

²⁶ An alternative approach for present purposes would be to maintain MJA's adaptation of the Commission's FTM calculation methodology, but to apply it to the Commission's MT price path. While we see some merit in MJA's adaptation, we do not agree with the remainder of MJA's counterfactual and factual MT and FTM framework (or the Commission's). Accordingly, we do not see merit in incorporating part of MJA's approach without dealing with the issues raised in our earlier report in respect of the other price paths.

Table 7: Correction of MJA Counterfactual FTM and MT Approach

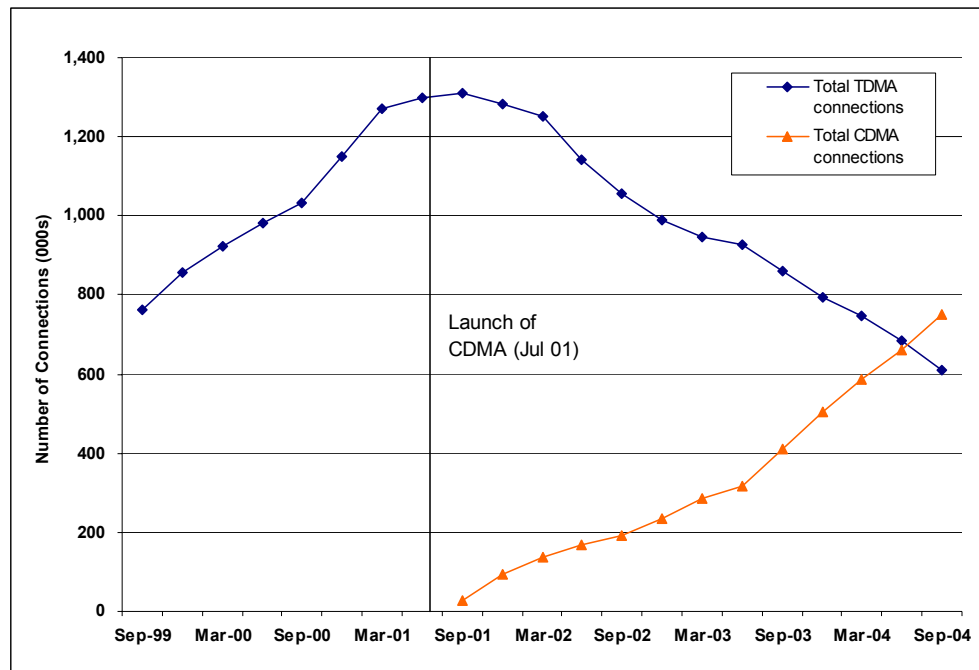
	Factual 1		Factual 2	
	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Commission Calculation	216.7	27.9	185.0	27.3
MJA Change	Add 135.4	Add 34.3	Add 32.5	Add 16.3
Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Corrected Level	216.7	27.9	185.0	27.3

3.4.4. Growth in FTM Calls

54. MJA argues that it is inappropriate for the Commission to assume that the growth of FTM calls is solely driven by the changes in price. MJA argues that FTM call volumes will increase with mobile penetration.
55. MJA applies a 1.7% p.a. growth rate to counterfactual FTM volumes (which are then used to calculate factual volumes), which is based on an assumption that FTM volumes will increase by 80 million minutes between 2005 and 2010 for non-price related reasons. MJA justifies this growth rate using an 'S'-shaped curve in FTM volumes (see Figure 2 of its report).
56. We note that Covec's modelling also incorporates growth in FTM calls due to its modelling of growth in the mobile penetration rate. If price changes are excluded from their econometric model, the model indicates an increase in volume of 73 million minutes between 2005 and 2010.
57. Because the growth rate increases the FTM quantities, the modelled benefits of regulation are increased (at least in MJA's modelling) even though the growth rate applies to both the counterfactual and the factual.
58. We have two criticisms of this approach:
 - The 'S'-shaped curve used by MJA shows no absolute decrease in quantities as consumers switch to 3G. As we will discuss below, this assumption seems inappropriate.
 - As we pointed out in our original report, as the penetration of mobile phones increases, we would expect to see more substitution from FTM to mobile-to-mobile (MTM) calls.

59. As noted in our original report and as demonstrated by Professor Hausman, MT regulation will itself adversely affect mobile penetration growth and therefore FTM and MTM growth.
60. We believe that MJA has neglected to consider that the CBA is conducted for fixed to 2G mobile calls only. As Vodafone and Telecom introduce 3G networks, customers will start switching from 2G to 3G.²⁷ Figure 4 shows the changes in TDMA connections following the launch of Telecom’s CDMA network.

Figure 4: Connections to Different Telecom Networks²⁸



61. A reduction of 2G subscribers is likely to reduce the volume of fixed-to-2G calls. Therefore, MJA’s application of a growth rate of 1.7% p.a. between 2005-2010 is likely to overstate organic growth in fixed-to-2G mobile calls.

²⁷ We note that Telecom recently launched its 3G network, but the current features offered are a subset of the features likely to be on offer in the future.

²⁸ Source: Telecom Quarterly Management Commentary, September 2000 – September 2004. Note that connection figures are likely to include some inactive connections and so the TDMA trend above is likely to understate the rate of switching to other networks. Furthermore, there have been some changes in the presentation of connection data over time (specifically, the breaking out of internal Telecom connections more recently representing 5,000 connections in September 2004) although this is unlikely to materially affect the trends set out in Figure 4.

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62. There is, however, significant uncertainty over what the organic growth path for fixed-to-2G mobile calls should be. The quality improvements between 2G and 3G are different to the quality improvements between TDMA and CDMA, reducing the usefulness of the TDMA/CDMA experience for forecasting 3G switching. While Telecom has launched a 3G network, it has yet to offer the complete set of 3G services that are likely to become available. We understand from media reports that Vodafone is looking at introducing a 3G network in 2005.
63. Accordingly, we believe it is very difficult to make an accurate forecast of organic growth. While there may be some positive growth in fixed-to-2G mobile calls in the short-term, this will likely be replaced by negative growth further down the track. Accordingly, we consider that the Commission's assumption of no organic growth over the entire 2005-2010 timeframe is the more appropriate one to use. Table 8 sets out the net benefit effects of this correction.

Table 8: Correction of MJA Counterfactual and Factual FTM and MT Approach

	Factual 1		Factual 2	
	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Commission Calculation	216.7	27.9	185.0	27.3
MJA Change	Add 17.7	Add 2.8	Add 13.1	Add 2.4
Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Corrected Level	216.7	27.9	185.0	27.3

3.5. THE FACTUAL

3.5.1. Mobile Termination Cost Input

64. MJA refers to the work of Network Strategies on the calculation of the MT cost input. MJA also makes comment on the use of the 75th percentile of the range of benchmarked MT rates. MJA argues that it would be appropriate to use the median rate because:
- This would result in greater net benefits to end-users;
 - This would reduce the gap between the pre-control and competitive prices – a concern that the Commission has expressed in relation to indirect costs;

- The MT cost should be the best estimate of the TSLRIC price that would be calculated under the final pricing principle; and
 - The value of none of the variables involved in the analysis can be observed, but rather has to be predicted. In the current case it is not possible to estimate the probability or likelihood of the appropriate termination price, hence the degree of risk cannot be quantified. In such cases it is appropriate to select an average or a median point as the best estimate.
65. MJA recommends that the Commission select the median price, based on the Network Strategies PPP-adjusted rates, of 11.29cpm. This compares to the 16cpm used by the Commission in its modelling.
66. We struggle to understand the arguments that MJA makes in favour of adopting the median price, particularly the second and fourth ones. If we do correctly understand what MJA means by the first bullet point, we find this extraordinary. The purpose of a CBA is to analyse whether a policy would result in an improvement in welfare – that purpose is defeated if assumptions are chosen in order to favour a particular outcome.
67. Regardless, in our view it is quite appropriate for the Commission to be conservative in considering whether or not it should regulate private firms. The costs of regulatory error in setting the MT rate are asymmetric: while setting a regulated price that is “too high” might result in lost opportunities to increase allocative efficiency and transfer surplus, setting a regulated price that is “too low” would result in significant dynamic efficiency losses through undermining investment incentives.
68. We have not reviewed the Network Strategies paper, and so make no comment on it. Table 9 sets out the effect on the net benefit calculations of using 16 cents per minute (the original Commission calculation) and 12.56 cents per minute (the 75th percentile of the PPP adjusted Network Strategies range).
69. Given we are not able to form a view on the appropriateness of the Network Strategies figure, we present the original Commission calculations in our summary table at the beginning of Section 3 (Table 2).

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Table 9: Correction of MJA's 50th Percentile Approach to the MT Cost Input

	Factual 1		Factual 2	
	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Commission Calculation	216.7	27.9	185.0	27.3
Recommended MJA Change ²⁹	Add 137.1	Add 44.9	Add 123.0	Add 43.1
Corrected Change 1 (16 cpm)	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Difference	-137.1	-44.9	-123.0	-43.1
Corrected Level	216.7	27.9	185.0	27.3
Corrected Change 2 (12.56 cpm)	Add 99.3	Add 31.3	Add 90.3	Add 30.3
Difference	-37.8	-13.6	-32.7	-12.8
Corrected Level	316.0	59.2	275.3	57.6

3.5.2. Price Elasticity of Demand for FTM Calls

70. MJA discusses at length the various estimates of FTM price elasticities of demand. MJA recommends a range of -0.2 to -0.8 and notes that, while a value of -0.6 is above the mid-point of this range, it does not recommend a change from it.

²⁹ Note that the figures presented in this row have not been corrected for the transcription error discussed in Section 3.6.3.

71. In addition to the estimates provided in our earlier report, MJA gives estimates of -0.491 for France from Aldebert (1999)³⁰ and -0.3 to -0.5 for Australia from Francis (2000)³¹. MJA also notes criticism of the Holden Pearmain survey and repeats a number of market analyst estimates given in the ACCC decision.
72. Once again, we note that the only point estimates above -0.5 (ignoring the disputed estimate attributed to Telecom) are the market analyst estimates. The range given in the DotEcon paper is based on separate estimates provided for daytime, evening and weekend calls. For the purposes of this analysis, it is only defensible to use the weighted average elasticity of -0.43 . Therefore, we continue to believe that -0.4 is likely to be the most appropriate baseline assumption for modelling purposes, with -0.2 and -0.6 being used for sensitivity purposes.

3.6. OTHER ISSUES

3.6.1. Treatment of GST

73. MJA states (paragraph 133-134):

The Commission appears to have underestimated the surpluses achieved by excluding the GST from prices. GST should be excluded for estimates of productive surpluses since the GST is a transfer payment; however, it is not correct in the calculation of allocative surpluses.

For example, assume that a FTM call sells for \$1 with a 12.5% GST in the counterfactual and for 50 cents with GST in the factual. Using a linear demand curve, the average per unit consumer gain is $(\$1 - \$0.5)/2 = \$0.25$. Excluding GST, gives an average consumer gain of $\$0.25/1.125 = \0.22 . This is incorrect.

74. Standard cost benefit analysis seeks to assess the effect on aggregate welfare of some decision. It is generally conducted on a pre-tax basis because then there is no distinction being drawn between consumers and producers and the government in the allocation of net benefits. (The efficiency effects of taxation may be incorporated.) Whether this is appropriate under the Telecommunications Act depends upon the interpretation of the “long term benefit of end users”. End users, be they firms or individuals, are taxpayers and so will be affected by the tax take. We consider that there is a strong case for adopting standard cost benefit analysis under the Act.

³⁰ Aldebert, Marc; Ivaldi, Marc and Chantal Roucolle (1999) *Telecommunications demand and pricing structure: An econometric analysis*

³¹ Francis, Derek (2000) *An Economic Analysis of the Welfare Effects of Price Regulating Mobile Services*, Cable & Wireless Optus, paper to the 2000 Communication Research Forum, 4 October

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75. However, transfers have to be measured post-tax in order to assess the amount, incidence and the feasibility of them. Plainly GST has two effects: first, being a value added tax it reduces any producers' surplus by the amount transferred to government; and second identifying who benefits from the amount transferred to government is problematic, to some extent resting on the definition of long term and end users.
76. It is not clear from MJA's discussion what the rationale for their approach is. Using GST-inclusive prices would generally have the effect of completely excluding GST revenue from the CBA (assuming producer surplus calculations correctly excluded GST). Since the end-users are also taxpayers and tax beneficiaries and the Government itself might be considered an end-user, we do not see strong reasoning for completely excluding GST revenues from the analysis.
77. Furthermore, even if we did agree with MJA's inclusion of GST, MJA has failed to properly account for the impact of GST in its net public benefit calculations. When GST is included, the calculations within MJA's model raise not only prices, but also costs by the GST rate (multiplied by its incidence). Accordingly, MJA's calculation of producer surplus is inappropriate as it multiplies the difference between GST adjusted price and GST adjusted cost by quantity, rather than multiplying the difference between the GST exclusive price (which is what the producer receives) and unadjusted cost (which is what the producer pays) by quantity. We note, however, that this error does not have a significant effect on the net benefit effects of the inclusion of GST.
78. Since GST revenue may be viewed as benefiting consumers, we believe MJA's decision to include GST in prices is incorrect, and the Commission's approach is correct. While some case might be made that end-users do not fully see the benefits of GST revenue, we believe it is wrong to completely exclude GST. Making some adjustment for partial benefit would be of little importance to the overall CBA and so not worth further consideration here. Table 10 sets out the net benefit effects of correcting this error.³²

³² We ignore the distorting effects of GST.

Table 10: Correction of MJA's GST Conclusions

	Factual 1		Factual 2	
	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Commission Calculation	216.7	27.9	185.0	27.3
Recommended MJA Change	Add 14.2	Add 2.4	Less 0.4	Add 0.3
Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Corrected Level	216.7	27.9	185.0	27.3

3.6.2. Discount Rate

79. In regard to discount rates, MJA argues (paragraph 137):

The choice of discount rate in a CBA is potentially a very contentious issue. Lind (1990) provides an overview of problems that may arise. However, in the simplest theories, the choice of a discount rate is straightforward: it is the consumer's rate of time preference equal to the marginal productivity of capital, in which case the market rate of interest is the appropriate rate of discount.³³

80. MJA then argues that a discount rate of 6% is inappropriate and a rate of 4% should be used because the Commission's assumption:

- Appears to be based on the pre-tax return on Government bond rates, when the consumer rate of time preference is more accurately estimated using a post-tax interest rate (a pre-tax interest rate of 6% equates to a post-tax figure of 4% assuming a marginal tax rate of 33%); and
- May need to be adjusted from a nominal figure to a real figure (4% assuming an inflation rate of 2%) because the benefits may be in real terms.

81. There are two major reasons for believing that a discount rate as low as 4% is inappropriate:

³³ Lind, R. (1990) "A Primer on the Major Issues Relating to the Discount Rate for Evaluating National Energy Options", in R. C. Lind, ed., *Discounting for Time and Risk in Energy Policy* (Washington, D.C., The Johns Hopkins University Press).

- The decision to regulate is based on the proposition that competition is inadequate in some sense. In competitive markets, however they are defined, commercial decisions yield outcomes that under the Commerce and Telecommunications Acts would be satisfactory. Commercial decisions are made on the basis of commercial opportunity cost or hurdle rates and no argument has been advanced that these “competitive industry” rates should be lowered because a CBA is being conducted or whether or not to force a price change. Indeed, were it the case that the Commission evaluated the investments of any telecommunications firm it would not be sensible to use a discount rate that the firms in that industry could not support as investment would be adversely affected. In competitive markets, all decisions are taken at commercial discount rates and if regulation is to mimic competition, so should it use these rates. Plainly 4% does not satisfy this test.
 - A discount rate of 4% is not adjusted at all for risk³⁴ and would only be appropriate were it applied to those benefits and costs that were also risk-free (sometimes referred to as certainty-equivalents). We find it very difficult to believe that the benefits and costs valued in the CBA model are without risk and we also believe that they may be correlated with the market portfolio³⁵ – hence some (upwards) adjustment for risk seems appropriate.
82. For these reasons, we believe that choosing a discount rate lower than 6% is plainly inappropriate. In fact, we have question marks about using 6% itself. However, since we do not believe there are net public benefits from regulation using a discount rate of 6% we do not believe it important to review the case for using a higher discount rate, even though one may be justified.
83. Table 11 sets out the net benefit calculations of our correction for the 4% discount rate assumption.

³⁴ Nor is the calculation adjusted for the opportunity cost of capital.

³⁵ If the returns of a project are correlated with the market portfolio then investors cannot use diversification to reduce this component of risk. Accordingly, investors will require a higher return to compensate for bearing such risk.

Table 11: Correction of MJA's Discount Rate Conclusions

	Factual 1		Factual 2	
	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)	Net Consumer Benefits (\$m)	Net Public Benefits (\$m)
Commission Calculation	216.7	27.9	185.0	27.3
Recommended MJA Change	Add 19.8	Add 2.6	Add 14.5	Add 2.1
Corrected Change	Add 0.0	Add 0.0	Add 0.0	Add 0.0
Corrected Level	216.7	27.9	185.0	27.3

3.6.3. Spreadsheet and Transcription Errors

84. We have discussed above a number of spreadsheet errors made in the MJA model. In addition to these we note:
- MJA have fixed none of the errors calculated in the Commission's model that are summarised in our earlier report. These include:
 - Fixing the NPV error in cell K20 of the 'FTM CBA model results' sheet (also replicated in Cell K40 in the Factual 1 model and Cell K41 of the Factual 2 model);
 - The inconsistencies in the model's demand curve assumptions (see Section 2.5 of our earlier report); and
 - The incorrect functioning of the sensitivity analysis of elasticity in the Commission's model (see Section 2.5 of our earlier report).
85. MJA have also made two errors in transferring the results of their modelling to their report.
- In their Table 4, which summarises the effects on the net benefit calculations of the counterfactual MT and FTM rate assumption changes, the correct 'change' is shown, but the wrong 'level' for the Factual 2 entries. The correct levels should be \$217.5 million and \$43.6 million for net consumer and public benefits, respectively, rather than \$167.9 million and \$33.9 million.

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- In their Tables 7 and 8, 'changes' and 'levels' for the last row (which is labelled "Median price with NS correction using PPP (11.29cpm)") shows the net benefits 'changes' and 'levels' when the MT cost is set to 11.34 cpm.

4. THE COVEC CBA

86. Many of the critiques of the Commission's CBA made by Covec are the same as ours, viz:
- The Commission inappropriately dismisses the “waterbed effect”, and therefore its CBA is too narrow. Covec argues that, “... only very small increases in prices for mobile services will result in detriments in the mobile market that will offset all of the gains in the fixed-to-mobile market” (page 34);
 - Factual 1 is an inappropriate factual (Covec states that, “It is our opinion that Factual 1 should be discarded entirely ...” (page 17));
 - The Commission's Factual 2 pass-through methodology is “biased towards generating positive net-benefit numbers” (page 18);
 - The Commission is overly “optimistic” in its assumptions about pass-through rates, and MT regulation is unlikely to increase competition;³⁶
 - The Commission's approach to modelling indirect costs is inappropriate, and the Commission makes an error in its calculation; and
 - The counterfactual MT rate time series should be developed by fitting a logarithmic trend to the historical data.
87. Covec estimates econometric models of the demand and supply sides of the FTM “market”.³⁷ We note that the:
- Independent variables in Covec's demand equation are consistent with:
 - Those in Professor Hausman's model; and
 - The point we make in our earlier report at paragraph 67 that the demand for FTM is a function of, among other things, the quantity of mobile subscriptions; and
 - Covec finds that the FTM price is a function of, among other things, the MT rate, which is what we argued in our earlier report.

³⁶ Although we disagree with Covec's view that there are barriers to entry to the FTM “market”.

³⁷ We use quote marks because of the Commission has correctly identified, there is not a FTM market – rather, FTM services are provided in a broader calling market.

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88. Covec uses its econometric model to determine counterfactual FTM price and quantity paths, based on a logarithmic MT price path. It then constructs three factualls:
- Factual 1 assumes that 100% of the change in the factual MT rate is passed through to the FTM rate by 2010;
 - Factual 2 assumes that 65% of the change in the factual MT rate is passed through to the FTM rate by 2010; and
 - Factual 3 uses Covec's econometric model to determine the factual FTM price path using the factual MT rate.³⁸
89. While we have not carefully reviewed Covec's econometric analysis, our overall view is that the Covec model provides a far more appropriate basis for analysing the efficacy of MT regulation than either of the models of the Commission and MJA. However, we do note that we disagree with Covec's qualitative analysis of competition in the FTM "market".
90. Comparing the results of Covec's model to ours:
- Covec predicts smaller consumer gains than us, because its counterfactual FTM price path is lower than ours, reducing the distance between the factual and the counterfactual and thereby producing lower consumer benefits. Covec's counterfactual FTM price path is lower than ours because Covec models the FTM price as being partly dictated by a linear time trend (which their econometric modelling predicts to be a \$0.01 decrease per year assuming there are no MT rate changes). Accordingly, Covec's FTM price continues to fall, relative to ours, even when the rate of decline in its (logarithmic) counterfactual MT rate slows; and
 - We predict greater negative public "benefits" than Covec, because we have used the consumer benefits estimate of indirect costs. Were we to use the Commission's public benefits indirect cost estimate in our public benefits estimate, then we would find greater net public benefits than Covec.

³⁸ In all three cases, the factual FTM quantities are calculated using the econometric model.

APPENDIX A: EUROPEAN MT RATE DATA

91. MJA presents, in Table 3 of its report, data that purports to show price increases in MT rates in five European countries, using European Commission report information.³⁹ We have reviewed the cited reports and have four major criticisms of the data presented in MJA's Table 3 that significantly affect the conclusions that may be taken from it:
- The table compares the 2003 MT figure for Portugal with earlier data, despite the European Commission's 9th report expressly warning against making such comparisons;⁴⁰
 - The table appears to include additional (more expensive) players in 2002 and 2003, which has the effect of increasing estimates for these years relative to 2001 and 2002 for the Netherlands, Italy, Belgium and Austria;
 - The table appears to exclude certain players in 2002 and 2003, which has the effect of increasing estimates for these years relative to 2001 and 2002 for Italy and Austria (including, in the case of Italy, a company defined as having significant market power "SMP"); and
 - The simple averages presented for 2001-03 do not control for market shares and so may lead to incorrect conclusions about the average trend in MT rates.
92. Table 12 represents MJA's Table 3 using what we believe to be corrected data, based on the following discussions. We note that, of the countries considered, only the Netherlands has had an upward trend in mobile termination rates of the one company considered in the whole period 2000-2003, based on this recalculated data.
93. We note that we have not adjusted the data in Table 12 for the market share problem described above and so it should not be seen as conclusive information about the trends in MT rates in the countries considered.

³⁹ Source: Commission of the European Communities (2000 – 2003) *Implementation of the Telecommunications Regulatory Package*, 6th, 7th, 8th and 9th reports.

⁴⁰ The 9th report is not clear on why such comparisons should not be made.

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Table 12: Recalculated European Mobile Termination Rates (€ c/m)⁴¹

Country	2000	2001	2002	2003	CAGR	MJA's Original CAGR ⁴²
Portugal	23.7	23.7	20.7	19.0	-7.03%	4.00%
The Netherlands	15.7	15.7	19.0	21.0	10.09%	8.70%
Italy	18.6	22.8	19.4	16.4	-4.07%	2.70%
Belgium	n/a	16.9	16.9	16.4	-1.58%	5.40%
Austria	13.8	13.8	13.8	13.6	-0.40%	1.20%

94. Based on weighted (by subscriber number) average data presented in the 9th Report,⁴³ the EU average termination charge of SMP operators declined by 11.9% p.a. between 2001 and 2003.⁴⁴ Although this figure represents an average across a variety of regulatory environments, it is significantly greater than the average decline p.a. of our logarithmic counterfactual MT rate of 4.7% between 2004 and 2010.

Portugal

95. The data presented in MJA's Table 3 for Portugal between 2000 and 2003 has the following sources:
- 2000 (23.7 € c/m) – Data for "incumbent's mobile subsidiary";
 - 2001 (23.7 € c/m) – Data for TMN (defined as the country's leading operator);
 - 2002 (20.7 € c/m) – Data for TMN, Telcel (Vodafone) and Optimus (who all had the same charges); and
 - 2003 (27.8 € c/m) – Simple average of TMN, Vodafone and Optimus (with charges of 25.77, 25.84 and 31.67 € c/m, respectively).

⁴¹ This table should be read in conjunction with the discussion in this Appendix.

⁴² We note that MJA's original CAGR calculation under-stated the actual CAGR because it incorrectly assumed that increases were spread over four years rather than three years in the cases of Portugal, The Netherlands, Italy and Austria.

⁴³ Only the weighted averages themselves were presented, rather than the raw subscriber data, preventing a complete country-by-country analysis.

⁴⁴ Weighted average data was not presented for 2000.

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96. The 9th Report (2003), however, states:

The figures for Portugal published in the 8th report are not comparable with the 2003 figure; moreover, the NRA has estimated an average decrease of 8% since last year.⁴⁵

97. Furthermore, the 8th Report (2002) had earlier noted:

Tariffs for Portugal are valid until 30.09.2002. Then, according to a NRA's decision they will be progressively reduced to 18.7 cents/min.

98. We find it extremely surprising that MJA would present the data for 2003 despite such explicit warnings. We present recalculated data in Table 12, using the average decrease of 8% mentioned in the 9th Report to calculate the 2003 figure.

The Netherlands

99. The data presented in MJA's Table 3 for the Netherlands between 2000 and 2003 has the following sources:

- 2000 (15.7 € c/m) – Data for "incumbent's mobile subsidiary";
- 2001 (15.7 € c/m) – Data for mobile operator with SMP, estimated by European Commission services on basis of figures provided in Aug 00;
- 2002 (21.3 € c/m) – Simple average of KPN (19.0 € c/m) and O2, Dutchtone, Vodafone (all 22.0 € c/m). KPN is defined as having SMP in the national mobile market; and
- 2003 (22.0 € c/m) – Simple average of KPN, O2 (both 21.0 € c/m) and Dutchtone, Vodafone (both 23.0 € c/m). KPN is defined as having SMP in the national mobile market.

100. Assuming that KPN is the company used in 2000 and 2001 (since it is defined as having SMP in the national mobile market in 2002 and 2003), the inclusion of the other operators in the 2002 and 2003 data has the effect of skewing the estimate of mobile termination rates upwards. We present recalculated data, using solely the KPN rate in 2002 and 2003 in Table 12.

Italy

101. The data presented in MJA's Table 3 for Italy between 2000 and 2003 has the following sources:

- 2000 (18.6 € c/m) – Data for "incumbent's mobile subsidiary";

⁴⁵ The 9th Report does not give any further information on why the figures are not comparable.

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- 2001 (22.8 € c/m) – Simple average of TIM (22.88 € c/m) and Vodafone Omnitel (22.62 € c/m). These companies are defined as having SMP in the national market for interconnection;
 - 2002 (21.3 € c/m) – Appears to be a simple average of Wind (23.6 € c/m) and Vodafone Omnitel (18.9 € c/m). Appears to be missing TIM (19.9 € c/m). Vodafone Omnitel and TIM are defined as having SMP in the national market for interconnection; and
 - 2003 (20.7 € c/m) – Appears to be a simple average of Wind (23.55 € c/m) and Vodafone Omnitel (17.89 € c/m). Appears to be missing TIM (14.95 € c/m). Vodafone Omnitel and TIM are defined as having SMP in the national market for interconnection.
102. We believe the apparent inclusion of Wind in the simple average and the apparent exclusion of TIM biases the data presented in MJA's Table 3 upwards, particularly when compared with 2000, when Wind was likely to be excluded (on account of it not being defined as having SMP), and 2001, when Wind was excluded.
103. We have recalculated the data for Italy in Table 12 using a simple average of TIM and Vodafone Omnitel in 2001-2003.

Belgium

104. The data presented in MJA's Table 3 for Belgium between 2001 and 2003 has the following sources:
- 2001 (16.9 € c/m) – Data for mobile operator with SMP;
 - 2002 (20.0 € c/m) – Appears to be a simple average of Base (20.3 € c/m), Mobistar (23.0 € c/m) and Belgacom (16.9 € c/m), with Belgacom defined as having SMP in the national interconnection market and Mobistar SMP in the national mobile market; and
 - 2003 (18.8 € c/m) – Simple average of Base (20.27 € c/m), Mobistar (19.72 € c/m), Belgacom (16.38 € c/m), with Belgacom defined as having SMP in the national interconnection market and Mobistar SMP in the national mobile market.
105. Since the 2001 figure (16.9 € c/m) is the same as Belgacom's 2002 figure and Belgacom is defined as having SMP in the national interconnection market, we assume that the 2001 figure is for Belgacom.
106. Therefore, we present recalculated data in Table 12 for Belgium using solely the information for Belgacom. Additionally, we note that the rates for the three operators fell or appeared to remain constant between 2002 and 2003.

Austria

107. The data presented in MJA's Table 3 for Austria between 2000 and 2003 has the following sources:
- 2000 (13.8 € c/m) – Data for "incumbent's mobile subsidiary";
 - 2001 (13.8 € c/m) – Data for mobile operator with SMP;
 - 2002 (15.5 € c/m) – Appears to be a simple average of Tele.ring (19.6 € c/m) and Mobilkom (11.3 € c/m). Appears to be missing One and T-Mobil (both 13.8 € c/m); and
 - 2003 (14.5 € c/m) – Simple average of Tele.ring (19.62 € c/m), Mobilkom (11.11 € c/m), One (13.80 € c/m) and T-Mobil (13.49 € c/m).
108. The apparent exclusion of One and T-Mobil in 2002 biases the simple average upwards. Furthermore, the inclusion of Tele.ring in 2002 and 2003 may have the effect of biasing the averages for these years upwards, if it is the case that Tele.ring was not included in the 2000 and 2001 estimates.
109. None of the operators are defined as having SMP in 2002 and 2003, however, we note that Mobilkom was the incumbent operator when the market was first opened to competition.⁴⁶
110. Since the European Commission reports do not provide an indication of which company's data may have been used in 2000 and 2001 we adopt a conservative approach and present in Table 12 recalculated data using the median of the four players in 2002 and 2003.
111. Additionally, we note that the rates for the four operators fell or appeared to remain constant between 2002 and 2003.

⁴⁶ Source: Espicom Business Intelligence, available:
http://www.espicom.com/web.nsf/structure/tel_bksmaustria?OpenDocument