VODAFONE NEW ZEALAND LIMITED SUBMISSION TO THE COMMERCE COMMISSION

Schedule 3 Investigation into Regulation of Mobile Termination

Cross submission on submissions on Reconsideration Draft Report

21 February 2006

PUBLIC VERSION

I Summary

1. This document presents Vodafone's views on the issues raised by other parties' submissions on the Commission's Reconsideration Draft Report on the regulation of MTRs.

2. We cover five issues in this submission:

   - Passthrough must be enforced – Evidence from other countries suggests that we will not see passthrough greater than around 80% in New Zealand without rigorous enforcement. We think the Commission's mechanism needs to be strengthened to ensure full passthrough into lower retail FTM prices.

   - Incentives for 3G will be affected – The more aggressive the Commission is on reducing MTR rates and the less effective the waterbed is, the bigger the impact on Vodafone. MTR regulation reduces the returns from investing in 3G, and, without rigorous enforcement of passthrough, regulation favours Telecom and disadvantages Vodafone. The government should be encouraging the building of advanced networks, not putting investors off.

   - Costs of 3G are not the same as 2G – The Commission can not simply assume that 3G unit costs are below 2G unit costs at this stage in our network rollout, and that costs will fall automatically over time. It must add an increment to its costs estimate to cover the higher unit costs of 3G while we build the network and recruit customers.

   - Regulation of MTRs will not promote competition in the FTM retail market. – The Commission's approach to this issue is unduly narrowly focused on a potential price squeeze by Telecom that only applies for a subset of users in a small part of a much wider market.

3. We reiterate that the fastest and most certain means to reduce MTRs and retail FTM prices is to accept the commercial offers from Vodafone and Telecom and rigorously enforce Telecom's offer to passthrough 100% of reductions to its customers.

4. If the Commission still prefers to regulate, it must increase its estimate of 2G costs, add an increment to cover the additional costs of 3G, and strengthen its passthrough mechanism to ensure that there are at least benefits to FTM customers from regulation, even if regulation harms our customers and reduces our ability to compete.

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III Introduction

5. This document is Vodafone's cross submission on the Commission's Reconsideration Draft Report on the regulation of MTRs.

6. Our submission comprises this main submission document, and a short report for Covec that looks at the effects of excluding 3G from the regulatory scope.

7. There is nothing confidential in this submission.

- Section IV looks at the submissions of those who argue that the Commission should not enforce passthrough, and presents some data on passthrough rates from other countries.

- Section V focuses on the costs of termination in New Zealand, and especially the submissions of those who argue that costs will fall inexorably over time.

- Section VI looks briefly at the arguments of TelstraClear that regulation will have no impact on incentives to roll out our 3G network.

- In section VI we respond to one legal issue raised by Telecom that supports arguments we made in our submission on the Reconsideration Draft Report.

IV Passthrough mechanism

8. In this section we look at the submissions on the Commission's passthrough mechanism. We make four points:

    - If nothing else, the arguments of the main fixed operators that passthrough does not need to be enforced or can not legally be enforced should strengthen the Commission's view that enforcement of passthrough should be required. If operators were relaxed about a passthrough requirement, the Commission could assume that they intended to pass MTR reductions through.

    - We agree with Telecom and TelstraClear that clarification on how the mechanism would work is important. We also think that it needs to be significantly strengthened.

    - There are situations in which it is appropriate for the Commission to influence behaviour in the retail markets. There are examples from number portability and from broadband regulation. MTRs are another one of those situations.

    - If it does not enforce full passthrough, evidence from other countries suggests that the Commission should not expect to get more than about 80% passthrough for business customers, with residential well below this.

Submissions for fixed operators support the case for rigorous enforcement

9. Without a high rate of passthrough, there are no net benefits from this regulation. For this reason, certainty of passthrough is central to any decision to regulate. A mechanism to ensure that passthrough takes place is essential to avoid fixed operators just pocketing a large proportion of the extra margins they make as a result of MTR regulation.

10. The two main fixed to mobile operators are strongly against the Commission's proposed passthrough mechanism.

    - Telecom and TelstraClear point out that the mechanism is not clearly defined and its workings are uncertain.

    - Telecom also argues that it is illegal for the Commission to regulate retail prices.

    - TelstraClear argues that enforcement is unnecessary and out of keeping with regulatory practice in other countries.

    - TelstraClear and Ihug both encourage the Commission to rely just on the market to deliver passthrough to end-users.

11. On the other hand, TUANZ and Vodafone both say that the Commission's mechanism is not strong enough.

12. Vodafone's argument is very simple.

    - There has never been 100% passthrough. Telecom dominates the fixed to mobile market and the Commission reports that Telecom's passthrough rate is only 55% over the last eight years.
        - In an environment of steadily falling MTRs, Telecom and other fixed operators have increased their absolute per minute margins on FTM calling.
        - The Commission identified in its original Draft Report that FTM operators are enjoying about a 10 cpm margin over the Commission's estimate of costs.
        - This margin has increased from a lower base over time as MTRs have fallen as a result of commercial negotiation.
    - Evidence from other countries says that passthrough greater than 80% is unlikely even for business customers in the absence of enforcement.
    - So the Commission should not assume 100% passthrough unless it is prepared to rigorously enforce full passthrough by fixed operators.

13. We agree with the fixed operators that retail price control is not allowed under the Telecommunications Act.

    - But the Commission is perfectly able to impose requirements that savings be passed through to end-users as a condition of any determination.
    - The condition is in effect a way to determine the price the access seeker has to pay.
    - The mechanism does not change the TSLRIC for mobile termination at all. It says nothing at all about what the market price for an FTM call should be. What it does influence is whether an access seeker can continue to get access to the regulated price.

14. The submissions of fixed operators suggest that the Commission is heading in the right direction with its passthrough enforcement.

    - There would be no reason for the operators to disagree with enforcement if they actually intended to reduce retail prices in line with reductions in MTRs.
    - So we can conclude from their submissions that the mechanism the Commission proposes will have some effect.

Clarification of how the mechanism would work is important

15. We disagree with Telecom that the Commission has provided "no rationale" for its passthrough mechanism. Indeed, it is obvious why this mechanism is needed, and the Commission explained it in paras 232 to 237 of its Reconsideration Draft Report.

16. We do agree with Telecom and TelstraClear that the mechanism needs to be clarified. As we submitted on the Reconsideration Draft, we also think that the mechanism must be strengthened to ensure 100% passthrough.

It can be entirely appropriate for the Commission to influence retail price behaviour

17. The Commission has seen fit to regulate retail pricing behaviour in cases where it was necessary to ensure benefits from regulation for end-users.

    - In the Local and Mobile Number Portability Determination the Commission thought it necessary to prevent Donor Network Operators (DNO) from levying a porting-out fee on their customers for line set-up costs. The Commission reasoned that a porting-out fee levied by the DNO on its customer was:[1]

      > "not appropriate because if the DNO was able to recover the cost incurred directly from porting customers, it would have a strong incentive to overstate its costs and charge customers an inflated fee in order to deter customers from switching".

    - Similarly, in its Draft Determination on TelstraClear's wholesale bitstream application, the Commission proposed a condition obliging Telecom to refund a jetstream customer for any portion of the relevant billing period which is unused following customer switching.[2] The Commission once again appears to have recognised that, in the absence of such a condition surrounding retail pricing behaviour, Telecom will be in a position to deter customer switching and therefore lessen the ability for the determination to promote competition for the long-term benefit of end-users.

18. We submit that MTR regulation is another such situation where some influence on retail behaviour is entirely appropriate. History should give the Commission little confidence that fixed operators will fully pass through MTR reductions into retail prices unless they are required to.

19. We do not share the view that enforcement of passthrough should be difficult. It will certainly be no more difficult than ensuring enforcement of Telecom's commitment to passthrough 100% of MTR reductions into retail prices if it is not regulated, or of any of the other conditions in other regulated services (such as the roll-out requirements for national roaming).

The Commission can not expect a high level of passthrough without enforcement

20. Those firms that benefit from MTR regulation are typically quite bullish about the prospects for passthrough. The Ihug submission on the Mobile Termination Reconsideration Draft Report is an example. It states:[3]

[1] Draft LMNP Determination, 6 December 2004 at paragraph 90
[2] TelstraClear Bitstream Draft Determination, 21 April 2005 at paragraph 296
[3] Page 2.

"…retail fixed-to-mobile prices have historically dropped in line with changes to mobile termination rates. Ongoing competitive pressure will see this continue."

21. We have compared the Commission's assumed pass through rates under regulation for the future with international data and with historical rates to try to determine whether the Commission's estimates are reasonable. Results are presented in Table 1.

    - The results show that the Commission's assumed pass through rates under regulation are very high for a country where the fixed to mobile retail rate is unregulated, and also very high compared with historical rates.

    - The Factual forecast line in Table 1 is our measure of passthrough for the Commission's forecast data from 2005 to 2011 for the factual scenario.

    - The NZ historical line in Table 1 is our measure of passthrough for 1997 to 2004.

22. This data suggests that that Commission's assumed factual pass through rate is not credible. Without enforcement of 100% passthrough, the chances of MTR regulation benefiting consumers are slim:

    - If passthrough under the factual is 80% in 2010, rather than the Commission's assumed 100%, then the Commission's model shows that MTR regulation is likely to harm consumers overall.

        – The only real effect of MTR regulation would then be to transfer money from mobile consumers to fixed-to-mobile operators.

    - Even 80% is a very optimistic assumption. The data suggests that any more than 80% is unlikely to be achieved for business customers without enforcement. Passthrough rates for residential customers will be even lower.

Table 1: FTM passthrough rates for business customers

Country	Business	Regulatory environment for FTM
UK BT	119%	FTM regulated as part of price cap
UK NTL	114%	None
Switzerland	113%	None
Greece	105%	Regulated FTM mark-up
Italy	94%	Regulated FTM mark-up
Factual forecast	**92%**	
Portugal	92%	Regulated FTM mark-up
Netherlands	79%	Regulated FTM mark-up
Ireland	77%	FTM regulated as part of price cap
NZ historical	**76%**	
Spain	74%	FTM regulated as part of price cap
Australia: Telstra	69%	None
France	55%	Regulated FTM mark-up
Belgium	41%	Regulated FTM mark-up
Denmark	18%	None
Norway	12%	None

Table 2: FTM passthrough rates for residential customers

Country	Residential	Regulatory environment for FTM
Switzerland	113%	None
Greece	105%	Regulated FTM mark-up
Factual forecast	**92%**	
Portugal	88%	Regulated FTM mark-up
Netherlands	85%	Regulated FTM mark-up
Spain	74%	FTM regulated as part of price cap
UK BT	60%	FTM regulated as part of price cap
Ireland	58%	FTM regulated as part of price cap
France	47%	Regulated FTM mark-up
Australia: Telstra	43%	None
Belgium	41%	Regulated FTM mark-up
NZ historical	**30%**	
Denmark	14%	None
Norway	12%	None
UK NTL	2%	None
Australia: Optus	-28%	None

These tables present only the results that are significant at 5% confidence. A full set of results and the methodology is presented in Appendix 1

V The costs of termination in New Zealand

23. This section of our submission covers issues about costs. In particular, we make three points in response to the submissions of TUANZ and TelstraClear:

    - It is appropriate to be conservative in estimating the costs of termination in New Zealand.
    - Costs do not automatically fall over time, but are driven by a number of factors whose future paths are uncertain.
    - The Commission's method for estimating the extent of falls in costs over time is not credible.

It is appropriate to be conservative on costs

24. TelstraClear and TUANZ both argue that the Commission is too conservative in estimating the costs of termination in New Zealand, i.e., actual costs are likely to turn out to be lower than the 15 cpm figure that the Commission has chosen.

25. We say it is very important that the Commission be conservative on this issue.

    - At this point there is no evidence at all on the actual TSLRIC for mobile termination in New Zealand.
    - There is evidence to suggest that the Commission's method of estimating New Zealand costs by reference to overseas cost models is fraught with difficulty.
    - And we have submitted evidence that suggests that New Zealand is likely to be higher cost than the UK, which itself is at the top of the range of the Commission's estimates from other countries.

26. Given that the consequences of setting too low a rate are greater than the consequences of setting too high a rate, we applaud a conservative approach by the Commission on rate setting (although we still think that it chooses too low a number for New Zealand in this case).

27. There is also a broader point related to our submissions on market definition.

    - In a two-sided market there is no reason to think that costs and prices on each side of the market will match up at all.
        – Therefore, the fact that the price of termination exceeds some estimate of cost does not say anything about market power in the mobile services market.
    - Indeed, the two-sided market literature reveals that socially-optimal pricing need not involve setting prices to cost on each side of the market.

Costs do not automatically fall over time

28. TelstraClear and TUANZ both argue that the regulated cost of mobile termination should fall over time.

29. This is a little simplistic. Prices do not just fall as time goes by automatically. General experience suggests that some prices fall, others rise, and some stay much the same over time.

30. There are many influences on the network costs of mobile termination.

    - The costs of the inputs to the service are important. These include the costs of land on which to place sites, the labour to build and run the network, the radio equipment and spectrum that makes services possible, and the cost of the capital required to fund the network.

    - Demand for the service is also critically important. As usage on the network changes, the fixed costs of building the network are spread over a different volume of usage. In simple terms, as usage grows, average costs fall, and as usage falls, average costs rise.

31. In this particular case:

    - Demand is starting to fall for our 2G network and rising for our 3G network, indicating rising unit costs for 2G termination and falling unit costs for 3G termination. However, to set 3G rates, the Commission needs to take a view on future demand for all 3G services. The future path of demand for new 3G data services in particular, is extremely hard to predict.

    - Broadly speaking, land costs and labour costs are rising over time, and radio equipment costs are generally falling (although again the future path of prices for 3G radio equipment is unclear). The implications of spectrum availability are also uncertain, with a move possible from 2.1GHz for 3G to other bands.

32. It is very unclear how these changes in the costs of inputs come together into the costs of termination. We have argued that:

    - 2G unit costs are likely to be rising over time as customers transition from our 2G network, and

    - 3G unit costs are likely to be falling sharply as usage grows but from a high starting point (reflecting the high cost and low usage of our 3G network at this point).

    - It is very unclear how demand for 3G data services will pan out in the future, and therefore it is uncertain how important voice termination revenues will be to the future success of our 3G investment.

    - It is unacceptable to just assume that 3G unit costs will already be below 2G unit costs at this point.

The method for estimating cost declines over time is not credible

33. Telecom has argued strongly that the Commission's estimates of a fall in the regulated MTR from 15cpm to 12cpm by 2010 are unfounded. Given the uncertainties around the development of 2G and 3G services in the future, we have also suggested in our submission that the Commission not make this assumption.

34. We agree with some of the points that Telecom makes in its argument that the evidence supporting the Commission's path down to 12cpm is very unreliable.

35. We also have other concerns:

- The Commission's Table 4 does not seem to allow for a return on the capital invested in previous periods (it simply calculates minutes per dollar invested in each year).
- We do not know how the Commission derived its figures for mobile investment.
- We also do not know where the estimates for FTM minutes or mobile penetration came from. The Commission's predictions of mobile penetration are far more optimistic than Vodafone predictions, as set out in Table 3. New customers typically have lower usage than existing customers, so as penetration grows, minutes of use per customer normally fall.

Table 3: Predictions of mobile penetration

	Commission estimates		Vodafone estimates	
	Customers (m)	Penetration	Customers (m)	Penetration
2005/06	3.82	93%	3.77	91%
2006/07	4.02	98%	3.98	96%
2007/08	4.23	103%	4.10	98%
2008/09	4.45	108%	4.19	99%
2009/2010	4.68	114%	4.27	100%
2010/2011	4.92	120%	4.32	101%

Commission figures in this table are June years, whereas our predictions are for years to March

36. In summary:

- We have many concerns with the method the Commission has used to estimate a path of falling unit costs over time.
- Overall, we think it is reasonable to assume that mobile termination unit costs will fall where demand is growing strongly (as for 3G termination, but from a higher base than 15cpm).
- We do not think that falling unit costs are a reasonable assumption where demand is starting to fall (as for 2G termination).

37. The Commission should chose a higher rate for 2G than 15cpm and have that rate gradually increase over time as customers leave our 2G network. The Commission should also add an increment to 2G unit costs to cover the

additional costs of 3G, although 3G unit costs can be expected to fall quickly over time.

VI Dynamic efficiency

38. In this section we look at TelstraClear's argument that our 3G investment will not be affected by regulation of termination on our 3G network.

39. We also present some evidence to show that if the Commission decides not to exclude 3G from the regulatory scope, there are only extremely low net benefits from regulation that could not support a recommendation to regulate.

Incremental investment will be affected by MTR regulation

40. TesltraClear argues that our incentives to invest in our 3G network will not be affected by regulation.

    - It points out that our 3G investment is already committed, and that new data services are the key driver behind our 3G investment. On this basis, regulation can not affect our 3G investment plans.

41. We have submitted on this point in our submission on the Reconsideration Draft.

    - Voice services still account for by far the greatest proportion of total revenues on 3G, with revenue from new data services still very uncertain.

    - MTRs are still a large portion of total voice revenues on 3G and 2G.

    - So it is easy to see how the returns from our 3G investment will be affected by the Commission's decision on whether to regulate our 3G network or not.

42. TelstraClear also argues that our "incremental investment" is not likely to be deterred by the regulation of MTRs. We disagree.

    - MTR regulation will affect the payoff from our 3G rollout.

    - We agree with TelstraClear and the Commission that we are still going to build a 3G network, with or without MTR regulation.

    - But the extent and timing of that network must be influenced by 3G regulation. To put it very plainly, the more aggressive the Commission is on forcing down termination rates, and the less effective the waterbed is, the less extensive our 3G network build is likely to be.

        – Regulation reduces the returns from investing in 3G.

        – Regulation that does not enforce passthrough will strengthen Telecom against us and prevent us from competing as aggressively as we would like.

        – Regulation gives us less capital to use to fund our network build.

– Regulation of new technologies raises the risks of investing in New Zealand and thereby deters investment by increasing the cost of raising capital. This applies to Vodafone just as much as any other investor.

43. This is why we wanted to provide such detail on our 3G and HSDPA rollout plans in our original submission on the Reconsideration Draft. The decisions at the margin are important in this case. The question of where we do and do not build our 3G and HSDPA network is influenced by termination rate regulation.

44. We understand that the asymmetry in 3G rollout between Telecom and Vodafone makes the Commission's task very difficult.

45. But we remain deeply concerned that the Commission can countenance regulation of termination on our 3G network when it is not fully built, when it has only been in operation for six months, when customer numbers are still low, and when demand for 3G data services is so uncertain. This is especially when the Commission is not allowing an increment to the regulated rate for the extra unit costs of 3G.

Excluding 3G means that there are no net benefits from regulation

46. We have asked Covec to examine what impact excluding 3G voice termination has on the overall case for regulation. Its report is attached.

47. In short, if the Commission decides not to regulate 3G termination, then the benefits of regulation are too small to support a recommendation to regulate, even on the consumer welfare test.

Table 4: Covec calculations of net benefits of regulating only 2G termination (NPV 2006 $m)

	Commission original		Covec revised	
	Consumer welfare	Total welfare	Consumer welfare	Total welfare
Linear demand model	72.1	10.4	8.4	-5.1
Constant elasticity demand model	54.8	1.4	3.6	-7.8

VII Legal framework

48. In this section we support Telecom's argument that regulation of MTRs will not promote competition in the sense those words are used in the Telecommunications Act.

49. Telecom's argument is consistent with our view that MTR regulation is effectively price control, since it can not be expected to increase the competitiveness of the retail FTM and tolls market. Price control can not be countenanced under section 18 of the Telecommunications Act.

50. Telecom also states that any price squeeze opportunity that it has must be of little effect since its rivals in the FTM and toll calling market continue to gain market share at its expense.

51. This point simply emphasises the dangers for the Commission in focusing on one service (FTM calls) to one group of customers (the business segment) and taking an unduly narrow view of what a competitive market would deliver.

    - There is no evidence of price squeeze for residential consumers, where retail margins above MTR seem to be more than healthy.

    - There is no evidence of margin squeeze on toll calls, with the Commission stating that prices are about three times costs.

    - There is evidence of a price squeeze for business customers, with retail prices at or below MTRs in some case, if one takes a narrow view that looks only at FTM calls provided to business customers within the wider FTM and toll calling market.

    - The Commission nevertheless concludes that resolving a potential price squeeze for one segment and one service within the wider FTM and toll calling market could significantly boost competition.

52. The Commission must keep in mind that the New Zealand legislative environment is very different to many of the countries that we compare ourselves with in regulatory terms. For example, the regulators in Australia and the UK are not required to show that regulation will promote competition in a market. We discussed this comparison in our submissions on the Commission's Issues Paper.

VIII Appendix 1 – FTM passthrough data

53. This section explains how we derived the measures of passthrough presented in Table 1.

Description of data

54. The MTR data comes from Vodafone operating companies and is an average for each jurisdiction. It is constructed by weighting individual operator rates, weighting time of day rates, and adding in first minute rates etc for an assumed call distribution.

55. The retail rates are from the Teligen/OECD Residential and Business PSTN Basket extracting the calls-to-mobile spend. These were converted back to local currency and then to a per minute basis using the basket's call profile. These were verified with local Vodafone operating companies, and in cases where there was disagreement the Teligen/OECD data was replaced.

56. The data is half yearly from 2002 to 2005 giving 8 observations for each country.

Description of methodology

57. The methodology used is to define the pass-through rate as the rate of change of retail prices with respect to changes in MTR. This gives the following regression equation

    Retail Rate = a + ß *MTR* + *error*

58. ß is a measure of average pass through over the period. A ß of 1 indicates 100% of the MTR changes are passed through to retail rates. A ß of 0 indicates that no MTR changes are passed through to retail rates.

Results

59. Table One compares the Commission's factual scenario pass-through with the cross country estimates of pass-through for business rates.

    - Countries where there is no regulation of fixed to mobile retail prices are clustered at the bottom of the table with low, or statistically zero, pass through rates. Countries with regulation of fixed to mobile retail prices are clustered at the top of the table with high pass through rates.

    - The two exceptions are UK NTL and Switzerland. UK NTL faces a regulated competitor and may therefore need to meet the regulated price in the market place in order to compete for business customers.

60. Table Two compares the Commission's factual scenario pass-through with the cross country estimates of pass-through for residential rates.

    - Again the countries where the fixed to mobile retail price is unregulated show low, or statistically zero, pass through rates.

- Regulated countries display much higher pass through rates. Switzerland is again the exception. NTL does not seem to follow BT in passthrough in this case.

61. Both tables exclude countries (Germany in Table One and Germany and Austria in Table Two) with statistically significant negative intercepts — a in the regression equation. Looking at graphs of this data, negative intercepts are indicative of very little variation in the MTR over the study period.

    - The intercept term represents the retail price if the MTR rate were zero. Negative intercepts are therefore inconsistent with what we would expect and we have excluded these countries on this basis.

62. Switzerland is an outlier on our data. Late last year, SwissCom voluntarily cut its MTR and its FTM retail rates (it is also a fixed operator) steeply in response to mounting regulatory pressure. This explains why it has a high ß, but still remains unregulated.

Conclusion

63. The data show that the Commission's assumed factual pass-through rate is very high for an unregulated country and high when compared to New Zealand's historical rates.

64. We reiterate our point that unless the Commission rigorously enforces passthrough of MTR reductions in retail FTM prices, a key result of the proposed regulation will simply be a transfer of revenue from mobile customers to fixed operators.

    - From our data, a passthrough requirement is most important to ensure the regulation benefits residential consumers.

65. Without a 100% passthrough requirement, the Commission should lower its estimates of passthrough under regulation. Without regulation:

    - A rate of around 80% would be the highest that could be expected for business customers.

    - The passthrough result for residential customers could be expected to be lower still.

Table 5: FTM passthrough rates for business customers

Country	ß	std error	t stat	p value	regulatory environment
UK BT	1.19	0.02	50.77	0.00	FTM regulated as part of price cap
UK NTL	1.14	0.47	2.45	0.05	None
Switzerland	1.13	0.19	5.87	0.00	None
Greece	1.05	0.19	5.66	0.00	Regulated FTM mark-up
Italy	0.94	0.23	4.03	0.01	Regulated FTM mark-up
Portugal	0.92	0.16	5.60	0.00	Regulated FTM mark-up
Factual forecast	**0.92**	**0.06**	**15.63**	**0.00**	
Netherlands	0.79	0.06	13.08	0.00	Regulated FTM mark-up
Ireland	0.77	0.19	4.02	0.01	FTM regulated as part of price cap
NZ historical	**0.76**	**0.04**	**17.31**	**0.00**	
Spain	0.74	0.09	8.53	0.00	FTM regulated as part of price cap
Australia: Telstra	0.69	0.07	9.55	0.00	None
France	0.55	0.06	8.82	0.00	Regulated FTM mark-up
Belgium	0.41	0.07	6.16	0.00	Regulated FTM mark-up
Denmark	0.18	0.03	6.51	0.00	None
Norway	0.12	0.02	7.67	0.00	None
Countries where pass through coefficient is statistically indistinguishable from zero at 5%					
Austria	1.15	0.97	1.19	0.28	None
Australia: Optus	0.75	0.40	1.89	0.11	None
Luxembourg	0.00	0.00	-2.39	0.05	None
Japan	-5.49	2.46	-2.23	0.07	None
Sweden	1.09	0.83	1.31	0.24	None
Country with statistically significant negative intercept					
Germany	2.10	0.01	266.83	0.00	None

Table 6: FTM passthrough rates for residential customers

Country	ß	Std error	t stat	p value	Regulatory environment
Switzerland	1.13	0.19	5.87	0.00	None
Greece	1.05	0.18	5.72	0.00	Regulated FTM mark-up
Factual forecast	**0.92**	**0.06**	**15.63**	**0.00**	
Portugal	0.88	0.14	6.14	0.00	Regulated FTM mark-up
Netherlands	0.85	0.06	14.40	0.00	Regulated FTM mark-up
Spain	0.74	0.09	8.53	0.00	FTM regulated as part of price cap
Italy	0.69	0.17	4.07	0.01	Regulated FTM mark-up
UKBT	0.60	0.06	10.51	0.00	FTM regulated as part of price cap
Ireland	0.58	0.16	3.61	0.01	FTM regulated as part of price cap
France	0.47	0.06	7.20	0.00	Regulated FTM mark-up
Australia: Telstra	0.43	0.08	5.11	0.00	FTM regulated as part of price cap
Belgium	0.41	0.07	6.16	0.00	Regulated FTM mark-up
NZ historical	**0.30**	**0.08**	**3.72**	**0.01**	
Denmark	0.14	0.02	6.51	0.00	None
Norway	0.12	0.02	7.67	0.00	None
UK NTL	0.02	0.01	3.17	0.02	None
Australia: Optus	-0.28	0.10	-2.98	0.02	None
Countries where pass through coefficient is statistically indistinguishable from zero at 5%					
Luxembourg	0.00	0.00	2.35	0.06	None
Japan	-8.82	3.95	-2.23	0.07	None
Sweden	0.00	0.00	2.36	0.06	None
Countries with statistically significant negative intercept					
Germany	2.10	0.01	266.83	0.00	None
Austria	1.68	0.19	8.64	0.00	None