Telecom New Zealand

Derivation of benchmark prices and comparison baskets

1 Introduction

The Australian Productivity Commission has released a pre-publication draft of its international telecommunications benchmarking study. The Commission compares prices in different international telecommunications markets across a stylised residential and various stylised business users. Each class of user is represented by a service basket common across all the markets. Currency conversions are based on OECD PPP exchange rates.

This note addresses the Commission's methodology for deriving benchmark prices and proposes an alternative methodology that will more provide more robust comparison figures.

2 Price measurement and discounting

The Commission estimated the price of the basket of services using the tariff that gave the lowest overall price, having regard to the level of demand in the selected basket. Hence, for example, if the tariff included a volume based discount, the discount selected for the study was the discount that would be applicable to the volume of service in the basket. We understand that the tariff information was gathered by Eurodata.

The Commission did not take into account targeted discount schemes, such as those available to sub-groups of the population, or those that are number or route specific. Furthermore, the methodology fails to take into account the effect of capped calls on the overall price of the basket. These omissions *specifically* disadvantage New Zealand in comparison to the other countries in the sample, because TCNZ's extensive discounts are based on just these types of innovative and flexible schemes. As a result, the Commission excluded *all* the discount plans from its assessment of TCNZ's prices.

We have provided the Commission with an alternative view of prices estimated from actual revenue and actual volume of traffic from TCNZ's residential customers. That is, it represents the *most reliable* view of effective prices to residential customers. We re-constructed the Commission's basket price using this information. The results were significantly different from the Commission's results, and showed that TCNZ's prices were markedly lower than the Commission's estimate.

We understand that the Commission is reluctant to adopt our analysis in the core of its report and that this reflects, in part, a concern that the same approach has not been used for the other markets. This concern is, in our view, poorly founded.

First, there is no question that prices based on actual revenue and actual traffic are the most robust indicator of effective market price. Hence, as a matter of logic, if TCNZ were advantaged relative to the other Telcos in the sample by using the most reliable measure of prices, it suggests that the prices used for the other countries are inherently unreliable indicators of effective market price. If this is the case, the ranking published by the Commission would be robust if and only if the prices used by the Commission deviated from

effective market prices in exactly the same way in each country. Not only would this be remarkably fortunate, it is also contrary to evidence. For example, we understand that Telstra has capped national long-distance calls, the effect of which is not factored into the price baskets, whereas Finland has no such discount scheme.

Second, even if TCNZ were advantaged relative to the rest of the sample, the Commission should still use TCNZ's measures provided it is satisfied that the errors caused by omitting discounts in the case of New Zealand are large in comparison with the errors in other markets resulting from using tariffs rather then measured revenues over measured usage. We estimate that the omission of discounts results in a 16% over-statement of TCNZ prices (when based on the Commission's basket), and approximately 50% overstatement for national long-distance and international calls. These are large errors on the part of the Commission.

We understand that the Commission has worked hard over the last month to correct errors of fact in respect of the tariffs, in part based on material provided by Telstra. Furthermore, in discussion, the Commission presents the view that their measures of prices are reliable. If so, the Commission can have no objection to using a reliable measure of TCNZ's prices. On the other hand, if the Commission continues to prefer its own measures over our more reliable measures, we can only conclude that the errors from using tariffs rather than measured revenues in other markets are likely to be very large. This puts in to question the value of the price comparisons made.

3 Basket composition

The service basket composition has a large impact on the resulting ranking of countries. We understand that this issue was raised at the pre-Christmas workshop, with the result that the Commission is undertaking a sensitivity based on a typical Australian usage basket. However, this is insufficient in our view.

First, we ask the Commission to note that although the report focuses on the Australian market and on Telstra in particular, it will be read more widely, particularly in New Zealand. Accordingly, we would ask the Commission to apply the same rigour in respect of New Zealand as it has in respect of Australia.

Secondly, the Commission must accept that the constitution of the price basket is a function of demography and prices. New Zealand, for example, is an export focused economy with a large immigrant population; international calls are therefore a much more important component of the residential call basket than they would be in most parts of Europe and the US.

Prices are also of considerable importance. New Zealand (like the US) has 'free' local calls. This is a regulatory requirement. This has three major effects:

- monthly rentals are relatively high as they have to contribute to the recovery of the costs of local calls;
- the number of local calls is much higher than in most other markets; and
- demand for partial substitutes, most notably mobile, is reduced, which has the effect of decreasing mobile penetration and usage relative to markets with timed local calls.

Hence, ranking New Zealand with other countries using a basket with too few local calls and too many fixed to mobile calls dramatically over-states the actual costs to New Zealand consumers. This is exacerbated by using too few international calls in the basket.

4 Purpose of the measures

The pre-release draft incorrectly suggests that price differences are the result of productive efficiency differences. The Commission can make no inference in respect of productive efficiency from prices alone. Notwithstanding this, the choice of the appropriate basket in pricing studies depends upon the purpose of the comparison. For example:

- if the Commission wanted to determine whether Australians with their current demand patterns would be better off buying the same basket of services in a different country, then the comparison should be based on the Australian demand basket. Of course, such a comparison has no economic meaning when the good is not freely traded — consumers in Australia cannot choose to buy those same services in France, and if they moved to France they would presumably choose a different basket of services;

- similarly, if the Commission wanted to determine whether Australians would be better off buying a European basket of services in Australia or in a different country, then the comparison should be based on the European demand basket. Again, this comparison has no economic meaning; or

- if the Commission wanted to measure total expenditure, one would select the actual basket of services purchased in each country, but in this case one would probably use market exchange rates rather than PPP. While the results would need to be treated with care, there are useful economic interpretations from such comparisons. For example, to determine whether businesses are advantaged or disadvantaged by telecommunication prices relative to their international counterparts.

In any event, the basket that is used should not be one that is based on an arbitrary basket that mainly reflects price and demographics in European markets (which include some of the slowest national markets to liberalise); demand patterns in Scandinavia, Europe, the US, Australia and New Zealand are fundamentally different.

To the extent that one can draw any conclusion from price comparisons alone, the third of the above examples is probably the only one that has any economic meaning, and then only in respect of intermediate consumers operating in internationally traded sectors. It would suggest that the Commission should use a different basket of services for each country and each customer group, reflecting actual usage patterns. At a minimum, the Commission should explicitly show the impact of using an appropriate basket of services in both Australia *and* New Zealand.

Submission to the Australian Productivity Commission on *International Benchmarking of Australian Telecommunications Services* (Pre-release draft December 1998)

1 Introduction

Telecom welcomes the opportunity to comment on the Productivity Commission's *International Benchmarking of Australian Telecommunications Services* Pre-release draft December 1998.

Regrettably, Telecom did not attend the industry workshop held before Christmas and was provided with the draft report in the New Year. As a consequence, the analysis which follows has been prepared within a limited time frame. Telecom wishes to acknowledge the assistance of the Network Economics Consulting Group in the preparation of this submission.

This preliminary submission contains only analysis of Telecom's residential charging, and does not deal with business or corporate pricing. A further submission dealing with these issues will be provided shortly. Given time constraints, the submission also does not comment on the Productivity Commission's views on regulation and market structure. This should not be taken in any way as agreement with the Commission's analysis of these issues.

Telecom considers that the Productivity Commission's draft report fails to reflect accurately actual residential prices in New Zealand, which have been driven down significantly over several years through vigorous price competition. It appears that the principal reasons for this inaccuracy are problems with the data collected by Eurodata for the Commission and flaws in the methodology employed in relation to representative baskets used for comparative purposes.

Telecom recognises that comparative studies of this type are difficult to conduct. Put simply, it is difficult to make "apples with apples" comparisons when countries have different market characteristics, geographies, population densities and operate different regulatory regimes. Such studies can be useful, but only if conducted in a robust way and the finding interpreted with caution. Methodological shortcomings undermine the value of the comparisons and hence any conclusions which may be drawn from them. This is certainly true of the Commission's treatment of New Zealand – and these shortcomings necessarily affect the validity of any findings about Australian market performance. Further, because it is a comparative study, conclusions **will** be drawn about the relative performance of other countries surveyed. This increases the need to ensure that the nature of the comparisons drawn, with regard to countries other than Australia, are accurate.

It is well known that New Zealand (like several Scandinavian countries) has adopted a "light handed" regulatory approach, placing reliance on general competition law with minimalist industry specific regulation of the sector. The results presented by the Commission in the pre-release draft could be interpreted as suggesting that this regulatory approach has failed to deliver low prices to customers. This is simply, and demonstrably, incorrect.

This preliminary submission outlines some of Telecom's concerns about the Commission's data and approach.

2 Residential PSTN prices

The international benchmarking analysis carried out by the Commission considers a basket of PSTN services including connection fees, access, local calls, long-distance calls, international calls, calls to mobiles and calls to ISPs.[1] The Commission calculates a total price for the basket for nine OECD countries, each of which is expressed in US$ terms using a PPP exchange rate. The local prices for each of the services were supplied by Eurodata. They purported to represent the lowest price tariff available in the market, excluding certain types of targeted discount tariffs. The prices included value-added taxes such as GST.

2.1 Effect of using non-discounted standard prices

We understand that the Commission used Telecom List of Charges (TLOC) as the tariff in the case of New Zealand. In so doing, they have ignored the most innovative discounting arrangements available to consumers, specifically personalised discounts and capped calls.[2] The end result is that the Commission's international price comparisons are distorted and biased against countries that use these types of discount plans extensively. For example:

- capped calls are popular in New Zealand where national long-distance weekend and weeknight calls are capped at $5. Caps are also offered by TCNZ on a range of international weekend and weeknight calls;

- personalised offers are available in New Zealand whereby a customer can pay a monthly fee and receive significantly reduced rates to the national or international destinations that the customer calls most regularly;

- TCNZ offers a discounted scheme, 'Favourite Place,' whereby a customer can specify a place in New Zealand and can, in exchange for a fixed monthly fee, make unlimited calls of any length of time to that destination; and

- Telecom residential customers can join the 'Talking Points' Loyalty program. If a customer spends between $50 and $100 on their monthly bill then they earn talking points at a rate which represents a 2.5% discount on tolls. For any expenditure above $100 on their monthly bill they receive points at a rate which equates to 5% discount on tolls. They can redeem their points in ways other than obtaining free toll calls. (eg. free movie passes, free fax machines etc).[3]

---

[1] The report also looks at bundles of ISDN and mobile services, though these are not analysed in this paper.

[2] The Commission was apparently aware that capped calls were a feature of some of the markets in question. However, the methodology it adopted failed to show that these resulted in any discount over the base tariff, because it failed to account for calls with a duration in excess of 10 or so minutes.

[3] Weighting 2.5% by the percentage of all res. customers that spend on average $50-$100 per month and weighting 5% by the percentage of all customers that spend $100+ on average per month, gives the an overall effective discount of 1.07%. Of course, similar loyalty plans occur in other countries such as the Telstra Visa card, but we would not expect these to be reflected in the Commission's study.

In the presence of such varied and personalised pricing offers, it is obvious that TCNZ's standard TLOC is not a good indicator of the cost of telecommunications services to consumers. However, the complexities of such pricing arrangements require more sophisticated techniques than those adopted by the Commission in order to make international comparisons. Typically price comparisons determine the price of a basket of services using average call duration to estimate the average charge per call. This method will generally fail to capture the effect of capped calls unless the average call duration is specifically reduced such that it represents the average duration for which a call is chargeable. If this is not done, and the average duration does not reach the cap, as is the case in the Commission's analysis of all residential calls in New Zealand, then all calls will be assumed to be priced at standard per minute charge. Detailed information on the distribution of call duration is needed to determine the percentage of calls that would reach the cap, from which to make an adjustment to the average call duration.

Furthermore, a logical consequence of capped calls is that consumers will be more inclined to place longer calls given that the cost of an additional minute over the capped time is zero. The result is that applying a duration distribution from a country that does not have capped calls to charges in a country that does will understate the effective discount that consumers receive. The experience in Sweden, for example, is that volume changes that result from lower usage tariffs (often synonymous with tariff re-balancing) are large, and that the structure of prices is an key determinant of usage. It would not be surprising if the call basket selected by the Commission disadvantages markets were national long-distance and IDD usage charges are low.

2.2 Re-estimation of residential price indices

Given the difficulties associated with calculating the actual costs that customers face in the presence of tailored calling plans and capped calls, revenue yield per minute probably provides the best indication of the effective price that consumers are actually paying, since it already includes the effect of capped calls and discount plans. The following section applies data on TCNZ's revenue per minute to the Commission's assumptions on customer calling patterns.

2.2.1 National long distance calls

The Commission's study calculated the New Zealand price for residential long-distance calls to be $US144 (PPP adjusted). Overall the average price per residential long-distance call used by the Commission is approximately $0.28 per minute. This compares with TCNZ's actual average revenue per minute for national toll calls in February 1998 of approximately $0.16 per minute. The impact of including the correct figure in the Commission's comparison is, not surprisingly, quite large. The ranking of New Zealand for long-distance calls moves from eighth (second most expensive) to fourth (see Figure 1). The impact on a basket of both local and national long-distance calls is also profound. The price index falls by 43% resulting in New Zealand moving from second to first (see Figure 2).

Figure 1: Residential national long-distance price indices

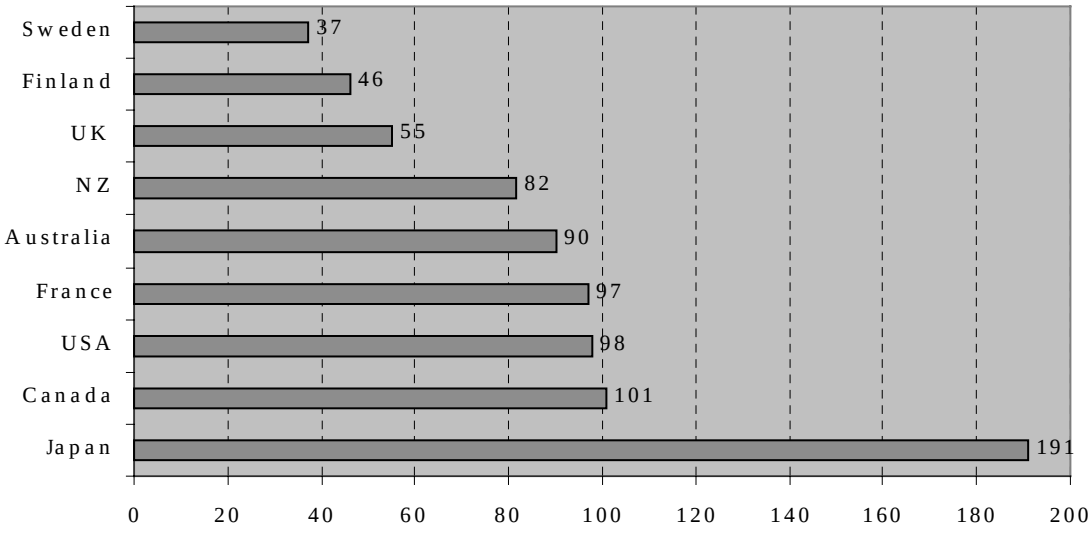
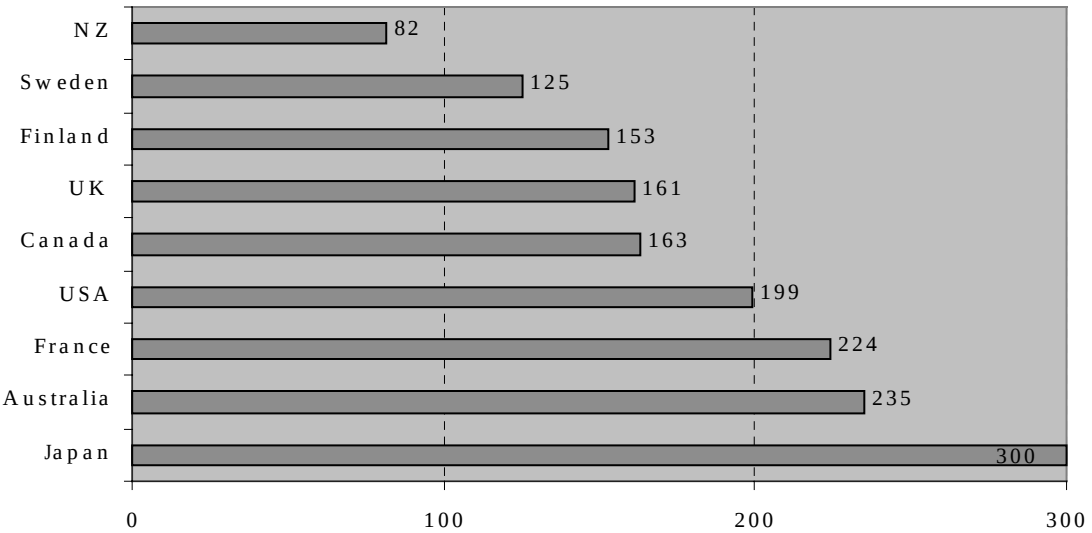


Figure 2: Domestic long-distance and local call residential price indices



In its analysis, the Commission considers a basket of calls with the distribution by distance described in Table 1, and the distribution over time of day as described by Table 2. They have assumed that 32% of call minutes placed by residential customers are during peak hours while 68% are off-peak. This compares with TCNZ actual traffic data that shows that approximately 80% of residential minutes are off-peak. Hence, application of TCNZ's revenue per minute figure to the Commission's assumed distribution would tend to slightly underestimate the resulting price index. On the other hand, use of the Commission's assumed calling pattern would not necessarily reflect the cost to New Zealand residential telecommunications users, because New Zealand calls are more heavily weighted towards off-peak times.

In the limited time available to us, we have not been able to exhaustively compare the assumptions in the Commission's study with the New Zealand patterns of call distance and usage. This would be a very useful next step for the Commission, should it wish to develop a more robust picture of the markets it has chosen as Australian comparators.

Table 1: National call distance distribution

	75km	110km	135km	175km	250km	350km	490km
Long-distance calls and call minutes	22%	13%	11%	9%	9%	7%	30%

Table 2: National call time distribution

	Call Distribution	Minutes Distribution
Wednesday 11.00am	26%	17%
Wednesday 3.00pm	22%	15%
Wednesday 8.00pm	26%	34%
Wednesday 3.00am	3%	4%
Saturday 11.00am	10%	13%
Sunday 3.00pm	13%	17%

Table 3: Price per Minute as used by the PC[4]

Zone	75 km	110 km	135 km	175 km	>+250 km
Wednesday 11.00am	$0.31	$0.31	$0.59	$0.59	$0.67
Wednesday 3.00pm	$0.31	$0.31	$0.59	$0.59	$0.67
Wednesday 8.00pm	$0.13	$0.13	$0.16	$0.16	$0.18
Wednesday 3.00am	$0.13	$0.13	$0.16	$0.16	$0.18
Saturday 11.00am	$0.13	$0.13	$0.16	$0.16	$0.18
Sunday 3.00pm	$0.13	$0.13	$0.16	$0.16	$0.18

2.2.2 International calls

The PC study ranked New Zealand as having the most expensive international call prices of the nine OECD countries studied, a most surprising outcome. The prices that were used are presented in Table 4. These are substantially higher than the actual revenue per minute received by TCNZ. There were also some errors in the Commissions assumptions on the proportion of IDD traffic on different international routes. The residential revenue per minute

[4] These prices are exclusive of GST.

data for the destinations included by the Commission was 58% below the figure in the study.[5] Figure 3 shows that the New Zealand price index when recalculated using the actual revenue per minute figure is significantly smaller than Australia, USA and Japan but reasonably close to that of Finland, UK, Canada and Sweden.

Table 4: International residential call charges from New Zealand

	Aust.	Canada	France	Germany	Japan	Korea	Nether-lands	Switzer-land	UK	USA
Peak charge (PC)	$1.03	$1.77	$2.55	$2.55	$1.91	$2.55	$2.55	$2.55	$1.77	$1.77
Off-peak charge (PC)	$1.03	$1.50	$1.68	$2.55	$1.50	$1.68	$1.68	$1.68	$1.50	$1.50

made available to residential customers. Not surprisingly, this results in a vary large number of local calls. This has two important effects:

- it increases the costs that needs to be recovered from other sources such as access and, to a lesser extent, national calls; and

- it means that the number of local calls and internet calls is likely to be much higher than the number included in the call basket used in the comparions.

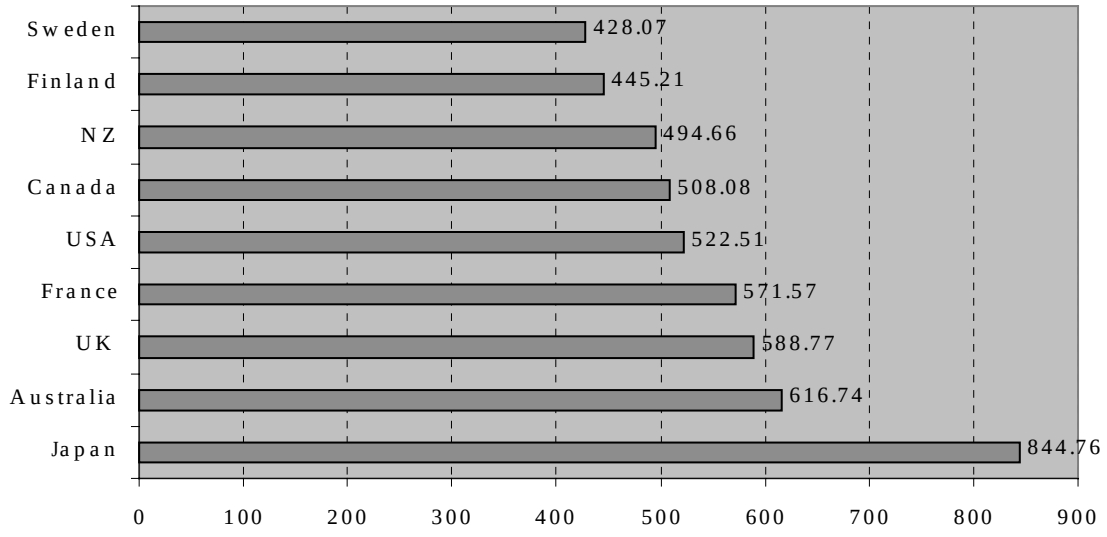
A call basket which has, for example, a low number of local calls per access line, will not accurately represent New Zealand. It will therefore fail to give an accurate picture of the costs faced by residential New Zealand customers, since in New Zealand part of the access revenue covers local call costs. Figure 9 estimates the effect of using a call basket based on the TCNZ call minutes described in Table 6. The result is that New Zealand ranks 3rd behind Sweden and Finland.[6]

Table 6: Number of calls

	Local and Internet Calls	National Tolls	Calls to Mobiles	International Tolls
PC Call minutes	5297	688	180	48
TCNZ Call minutes	7050	1027	63	159
Ratio of TCNZ to PC call minutes	1.33	1.49	0.35	3.28
PC Distribution	86.92%	9.82%	2.57%	0.69%
TCNZ Distribution	84.95%	12.38%	0.76%	1.91%

[6] Note that Australia's index is likely overestimated as the increase in local call minutes in this calculation was applied through an increase in average call duration rather than an increase in the number of calls. As local calls are charged at a fixed rate in New Zealand the former method will result in a higher index than the latter.

Figure 9: Price Indices based on NZ traffic patterns



2.3 Conclusions on residential prices

The foregoing discussion shows that:

- by ignoring residential call discounts, the Commission has overestimated the average price per minute for national long-distance calls by 43% and for international prices by 58%, resulting in a severe bias against New Zealand for the overall basket price;

- New Zealand's ranking is very sensitive to the basket composition, which appears to disadvantage New Zealand, given its price structure;

- prices in New Zealand rank, in fact, not far above the Scandinavian countries of Finland and Sweden, and are lower than those in Australia, the UK and the US; and

- the market structure and regulatory regime in New Zealand has fostered considerable price competition, although this is manifested in discounting arrangements that are specifically targeted.

Business PSTN prices – a preliminary analysis of the Productivity Commission's results

1 Introduction

The Productivity Commission studied several types of business customers with varying purchasing patterns and outlay levels. The largest business customers studied (L1-L4) did not have any PSTN services in their purchasing basket as it was assumed that ISDN services would be used instead. The baskets of Medium (M1-M4) and Small (S1-S2) business customers were priced by the Commission at both PSTN and ISDN rates. This note only considers price indices relating to PSTN services.

2 Business PSTN prices

The Commission applied particular business calling plan discounts to TLOC business rates. Specifically, they assumed that small businesses (S1 and S2) would receive discounts corresponding to the "Brilliant Deductions" discount plan, while medium businesses (M1-M4) would have "Connect" plan discounts applied to their expenditure. Customers of S1 and S2 type may alternatively receive higher discounts through Business Affinity, Association or Chamber of Commerce plans. As the Commission only referred to TLOC prices, it could not take account of commercially negotiated discounting arrangements. This would result in the Commission overestimating the NZ price indices for M1-M4 customers. While the Connect plan is likely to be the plan that is most suited to M1 customers, they may well have additional discounts given to them by Telecom to be applied to the customers total level of spend. It is unlikely that a customer with the demand level corresponding to the M2, M3 and M4 types would have a Connect plan. Instead they would have one of Telecom's 'Corporate' discount plans. Telecom estimates that such a customer could receive an overall discount of 8.5% in addition to the service-specific discounts that it would receive.

3. Re-estimation of business indices

Rather than using TLOC and discount plans, we have used TCNZ's revenue per minute to recalculate NZ's price indices as a means of a "sanity check" on the Commission's results. Revenue per minute for local calls, national long-distance calls, fixed to mobile calls and international calls was used. While we replicated the Commission analysis using their assumptions on national rate steps, we note the Commission did not take into account Intercity rates and thus the price indices will be overestimated.

The revenue per minute data does not include the effect of volume discounts and other discounts that are not applied at a call level. Therefore, after applying the revenue per minute data we then deducted 8.85% from the resulting M4 index. Though we did not apply any further discounts to M1, we note that such a customer may well receive an additional overall discount of approximately 3% or more.

Our analysis found that the Commission has overstated the level of prices in NZ to business customers for PSTN services, especially for larger customer. Figure 1 illustrates the percentage decrease in each business index studied,[7] resulting from applying TCNZ's revenue

[7] Insufficient data on the Commission's assumed calling patterns of M2 and M3 customers prevents us from examining the price indices for these customer profiles.

per minute data to the Commission's business customer baskets and applying a 8.5% volume discount to M4. The decrease is most noticeable for the M4 customer group with the price indices of the S2 customer type also decreasing fairly substantially. Given the discussion above, we would expect that we have underestimated the decrease in price index associated with M1. Figures 2-5 contain the revised estimates of business PSTN price indices when compared internationally. Further, the small business customer basket used in the analysis is likely to overstate the cost of telecommunications services. In Telecom's experience, a small business typically makes fewer calls to mobile phones and many small business users are on the residential tariff.

The PC's original results portrayed NZ as having the most expensive prices for S1-S2, M3-M4 and second most expensive for M1-M2. Our results show that NZ has relatively low prices for larger business customers. The partial adjustments we have made suggests the analysis significantly overstates the price for small business customers.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5