

International benchmarking of mobile termination charges

Report for TelstraClear, 16 July 2004

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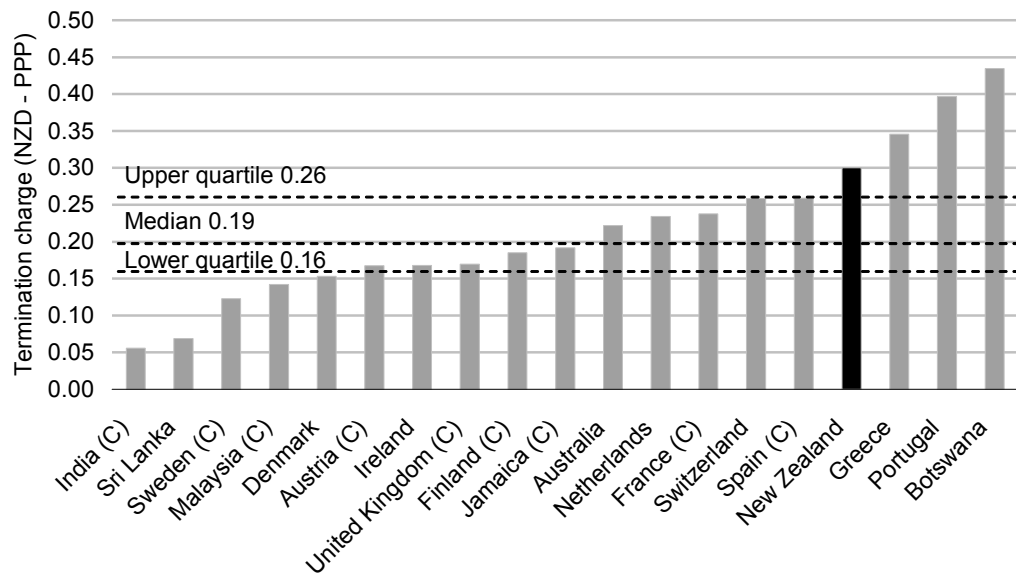
0 Executive Summary

This paper contains price benchmarking results for the wholesale mobile call termination charges levied by mobile network operators (MNOs).

We examined 19 countries from Africa, Asia, Asia-Pacific, Europe and the West Indies. The termination charges in these jurisdictions were based on various methodologies ranging from cost-based LRIC to commercial negotiation.

The results of the analysis using PPP exchange rates are illustrated in Exhibit 1. We note that only Greece, Portugal and Botswana have higher charges than New Zealand. Furthermore, the mobile termination charge in New Zealand is:

- 56% higher than the median charge
- 16% higher than the most expensive cost-based charge
- 77% higher than the median cost-based charge
- 35% higher than in Australia.



(C): cost-based

Exhibit 1: *Per minute benchmark mobile termination charges for sample jurisdictions*
[Source: Network Strategies]

1 Introduction

TelstraClear has asked Network Strategies to undertake a benchmarking study of mobile termination charges. The purpose of this short paper is to describe our approach and to present and discuss our results.

In Section 2 below we explain the benchmarking methodology, and in Section 3 we present and discuss the results of the analysis. Concluding remarks are made in Section 4.

2 Methodology

The main tasks in the benchmarking analysis are:

- selection of benchmark jurisdictions
- data collection
- calculation of standardised per-minute termination rates in a common currency
- analysis of results using a simple comparison and/or benchmark modelling approach.

These points are described in further detail below.

2.1 Selection of benchmark jurisdictions

We selected benchmark jurisdictions based on the availability of up-to-date mobile call termination charges. Mobile termination charges were sourced from operators and regulators.

Exhibit 2 lists the countries which have been included in the study and whether the mobile termination charges are based on long-run incremental cost (LRIC) or other costing standards. Our sample covers a wide range of countries from Africa, Asia, Asia-Pacific, Europe and the West Indies.

<i>Country</i>	<i>Costing standard</i>
Australia	Commercial negotiation. Regulator may arbitrate if requested to do so.
Austria	LRIC
Botswana	Commercial negotiation. Current rates set by regulator after dispute, by benchmarking the average 'current best practise' range of the then 15 EU countries.
Denmark	Commercial negotiation
Finland	Commercial negotiation used to determine prices, but must be non-discriminatory and reasonable with regards to the costs incurred. Regulator may intervene after four month dispute.
France	Historical cost accounting (HCA)
Greece	Commercially negotiation
India	Historical cost accounting (HCA)
Ireland	Commercial negotiation. Regulator may intervene after four month dispute and use cost accounting methods to orientate prices.
Jamaica	Based on OfTel LRIC mobile termination model
Malaysia	LRIC
Netherlands	Commercial negotiation. Regulator may intervene if it believes there is no competition in mobile termination and introduce LRIC based charges.
New Zealand	Commercial negotiation
Portugal	Commercial negotiation
Spain	Historical cost accounting (HCA)
Sri Lanka	Where commercial negotiations fail the regulator may set the rates after an international benchmarking exercise. The regulator reserves the right to introduce cost orientated charging.
Sweden	Fully distributed cost (FDC)
Switzerland	Commercial negotiation. Regulator may set the rates "in accordance with the normal principals governing the market and sector"
United Kingdom	LRIC

Exhibit 2: Costing standards used in countries studied
 [Source: Network Strategies]

North American MNOs have not been included in the sample as a mobile party pays (MPP) system operates in the United States and Canada. With MPP the terminating MNO does not levy a charge on the originating operator but instead charges the called party for incoming calls.

Germany has not been included in the analysis because the mobile termination charge published by the regulator includes a charge for transit across Deutsche Telekom's network¹. The transit charge portion is regulated and based on international benchmarks, but the charge for call termination is not regulated and is commercially negotiated. The regulator does not make the transit charge portion (which is based on varying transit distances) publicly available so it is not possible to quantify the charge payable to the terminating MNO.

2.2 Standardisation of mobile termination charges

Mobile termination tariff structures vary between jurisdictions, and may be simply a per minute rate, or may also include a call set-up fee. They may also be de-averaged by time-of-day. Exhibit 3 summarises the key characteristics of the tariffs for each country considered in our study.

¹ Telekom O.3 service, 28 November 2003. http://www.regtp.de/reg_tele/01434/22/index.html

<i>Country</i>	<i>Per call</i>	<i>Per minute</i>	<i>Peak/Off-peak</i>
Australia	x	✓	x
Austria	x	✓	x
Botswana	x	✓	✓
Denmark	✓	✓	x
Finland	x	✓	x
France	x	✓	x
Greece	x	✓	x
India	x	✓	x
Ireland	x	✓	✓
Jamaica	x	✓	✓
Malaysia*	x	✓	✓
Netherlands*	x	✓	✓
New Zealand	x	✓	x
Portugal	x	✓	x
Spain	x	✓	✓
Sri Lanka	x	✓	✓
Sweden	x	✓	x
Switzerland	x	✓	x
United Kingdom	x	✓	x

Exhibit 3: Structure of mobile termination charges
[Source: Network Strategies]

* In these countries only the 24 hour weighted average termination rates have been made publicly available – operators are free to negotiate specific time-of-day dependent rates.

The benchmarking analysis requires that the tariffs be normalised by calculating a standard per minute rate in a common currency. This required a number of assumptions:

- an average call duration, we used three minutes as this is the standard average call duration used for all calls terminating on mobile networks in benchmarking studies
- a time-of-day distribution²
- PPP exchange rates as determined by the OECD and the World Bank (these rates are provided in Annex B).

Purchasing Power Parity (PPP) is used widely by international and national telecommunications (and non-telecommunications) bodies which undertake international

² This profile is for traffic terminating on the Telstra Mobile network in Australia

price comparisons. It is the ratio of the costs of a basket of goods in two countries each calculated in their own currency units. These costs reflect labour and other input costs, profit margins, indirect taxes and also, indirectly, capital costs. The use of PPP enables us to convert prices to a common currency unit, and at the same, adjusts for average cost differences between countries.

In a number of countries the termination charges are operator-specific. For these countries we have benchmarked the lowest normalised per minute rate on the basis that the lowest rates normally apply to the largest operators and so most traffic will incur these rates. Countries with operator-specific charges include:

- Austria
- Finland
- Greece
- Ireland
- Netherlands
- Switzerland
- United Kingdom.

TelstraClear has requested that Network Strategies also present benchmark mobile termination charges based on the exchange rate methodology used by the Commerce Commission in its Final Determination on PSTN interconnection. The Commission use ten-year average nominal exchange rates, based on nine years of historical data and one year of forecast data. The results of the benchmarking analysis using ten-year average nominal exchange rates are presented in Annex A. The exchange rate data is presented in Annex B.

2.3 Choice of benchmarking approach

Different benchmarking techniques may be applied to compare charges across countries including a simple comparison approach and a benchmark modelling approach. Benchmark modelling is the more sophisticated approach, taking account of country-specific, not company-specific, drivers such as:

- volumes of demand
- traffic distribution
- market maturity
- demography and urbanisation
- systemic input costs.

Network Strategies prefers to only include jurisdictions with cost-based charges in benchmark modelling analyses. This is because non-cost based rates may be subject to other influences such as the negotiating power of operators, expectations of shareholders, government requirements and political pressures which may be difficult to quantify.

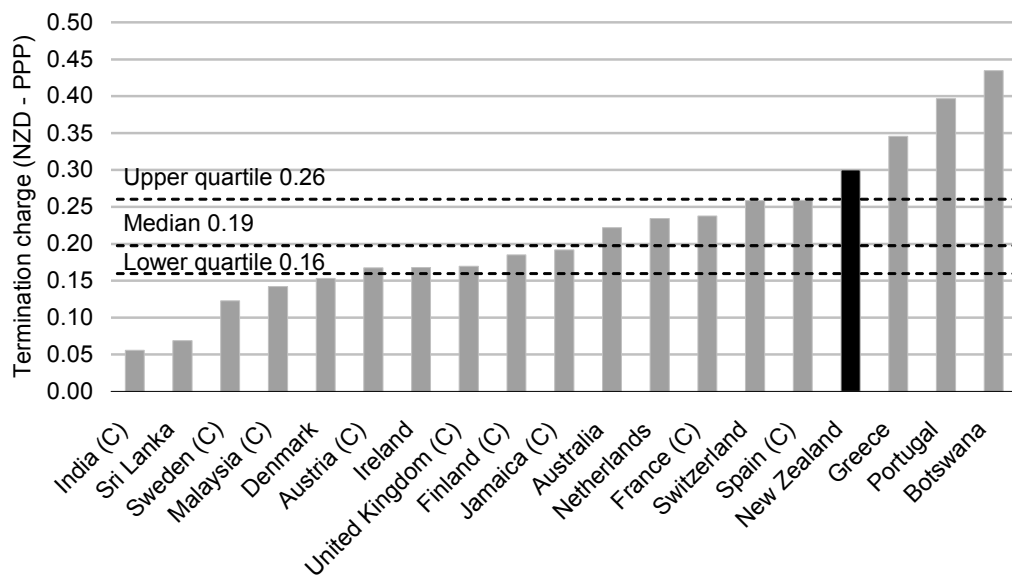
For this study we considered conducting a benchmark modelling analysis with the aim of calculating a New Zealand-orientated termination rate. The benchmark modelling approach would attempt to define the termination charge as a function of several variables (such as GDP/head and population density). The following criteria must be satisfied for benchmark modelling to work:

- availability of a sufficient sample of jurisdictions
- the ability to quantify the various factors or drivers which are expected to influence the rates
- the ability to identify a function, in terms of the above factors, that provides a good fit to the sample data
- the model is such that the effects of the various influencing factors are behaving as expected.

As indicated above, a reasonably large sample would be required in order to estimate the effects of key drivers. Of the nineteen countries listed in Exhibit 2, only nine have cost-based mobile termination charges. It should also be noted that these are not exclusively LRIC-based charges but include other cost-based methods such as fully distributed cost. As only nine jurisdictions in our sample have cost-based charges we opted to apply a simple comparison approach as opposed to benchmark modelling. Our view is that a model with nine observations would not be sufficiently robust to produce reliable results. As such, we recommend that a benchmark modelling exercise not be conducted until more cost-based termination rates become publicly available.

3 Benchmarking results

Exhibit 4 shows that New Zealand has one of the highest mobile termination charges in the sample. Only Greece, Portugal and Botswana have higher charges. It is noteworthy that the charges in these four countries are all based on commercial negotiation. Further, we note of the eight highest charges, six are based on commercial negotiation. Overall the New Zealand charge is 56% higher than the median charge, and is 35% higher than in Australia.



(C): cost-based

Exhibit 4: Per minute benchmark mobile termination charges for all jurisdictions studied
 [Source: Network Strategies]

Exhibit 5 compares in more detail the New Zealand charge with the charges in jurisdictions with cost-based charges. The New Zealand charge is greater than all of the cost-based charges. It is 77% higher than the median cost-based charge and 16% higher than the most expensive cost-based charge.

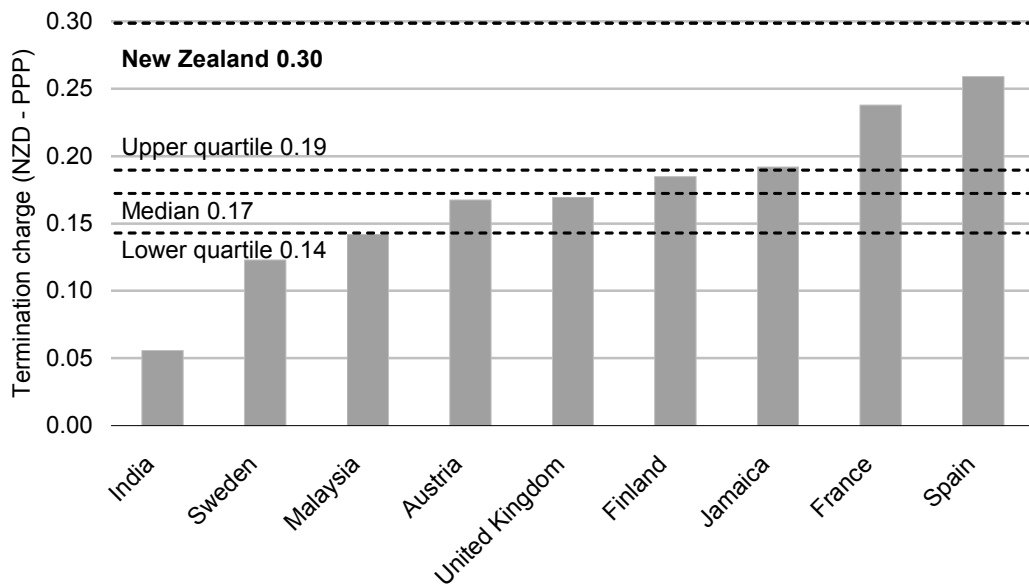


Exhibit 5: Per minute benchmark mobile termination charges for jurisdictions with cost-based charges [Source: Network Strategies]

4 Concluding remarks

The results of the benchmarking analysis using PPP exchange rates show that the mobile termination charge in New Zealand is relatively high. It is greater than all of the cost-based charges from the jurisdictions in our sample. The New Zealand charge is:

- 56% higher than the median charge
- 16% higher than the most expensive cost-based charge (which is also the upper limit of the interquartile range)
- 77% higher than the median cost-based charge
- 35% higher than in Australia.

Annex A: Benchmarking results using nominal exchange rates

The Commission chose to apply a ten-year average nominal exchange rate in its 2002 PSTN interconnection determination. We assume that the Commission may choose to apply this method for other benchmarking exercises. Accordingly we have also presented our results using the Commission's currency conversion method.

Exhibit A.1 and Exhibit A.2 show that the mobile termination charge in New Zealand is greater than all of the cost-based charges when using ten-year average nominal exchange rates as the method of currency conversion. Only Greece, Netherlands, Portugal and Switzerland have higher charges. The New Zealand charge is:

- 19% higher than the median charge
- 1% higher than the most expensive cost-based charge
- 40% higher than the median cost-based charge
- 22% higher than in Australia.

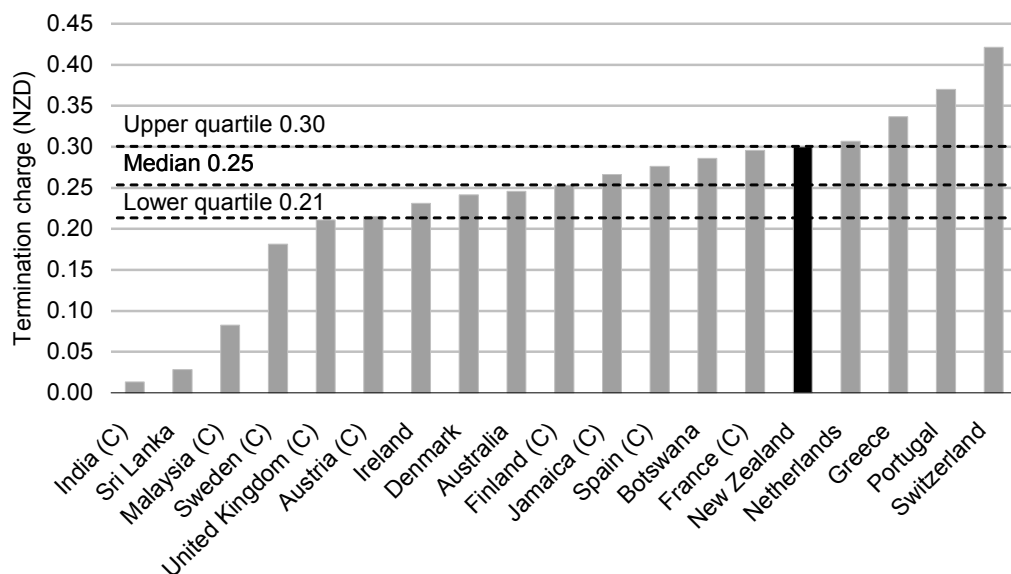


Exhibit A.1: Per minute benchmark mobile termination charges for all jurisdictions studied
[Source: Network Strategies]

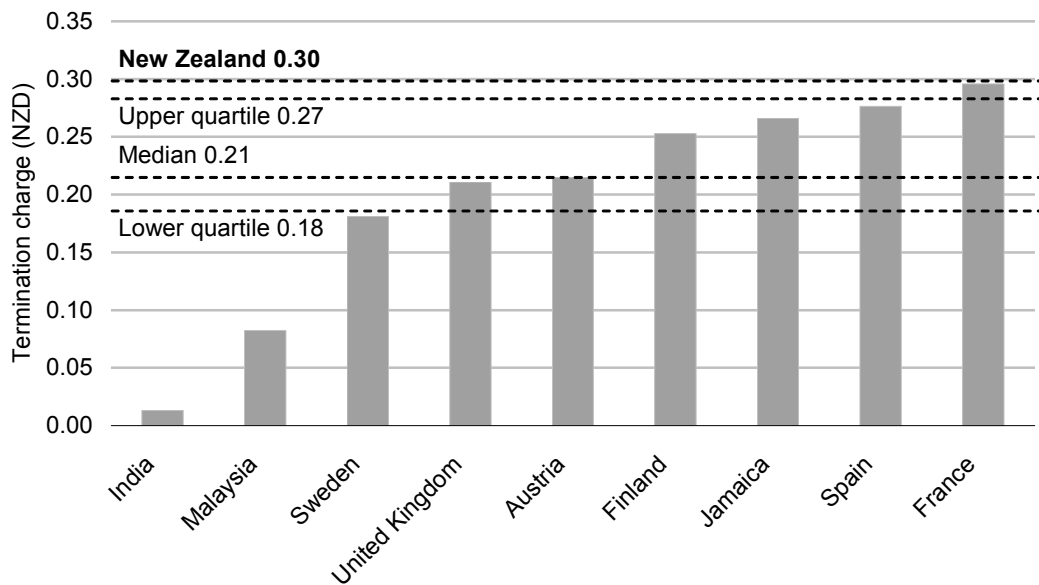


Exhibit A.2: *Per minute benchmark mobile termination charges for jurisdictions with cost-based charges [Source: Network Strategies]*

The alternative method of currency conversion has very little effect on New Zealand's placing in the benchmarking. Using PPP rates New Zealand is the fourth most expensive and using average nominal exchange rates it is the fifth most expensive. However the average nominal rates do bring the upper quartile and median closer to New Zealand's prices as illustrated in Exhibit A.3.

<i>Result</i>	<i>PPP rate value</i>	<i>Average nominal exchange rate value</i>
New Zealand	0.30	0.30
Upper quartile of all jurisdictions studied	0.26	0.30
Median of all jurisdiction studied	0.19	0.25
Upper quartile of those using cost-based charges	0.19	0.27
Median of those using cost-based charges	0.17	0.21

Exhibit A.3:
Comparison of results using both PPP rates and average nominal exchange rates
 [Source: Network Strategies]

Annex B: Exchange rates

The Commerce Commission's International Benchmarking Report of September 2002 used a ten-year average of the quarterly nominal exchange rates. The ten years were made up of nine years of historical data and one year of forecast data. For this study we have used a ten-year average of quarterly nominal exchange rates from 1 January 1995 to 31 December 2004, with forecast rates from 1 January 2004 to 31 December 2004.

The rate for the countries in the Euro zone is calculated slightly differently from non Euro zone countries. The Euro came into affect for financial institutions on 1 January 1999. For January 1995 to January 1999 a Euro-to-NZ dollar exchange rate was determined for each country by dividing the quarterly average nominal exchange rate by the legacy currency-to-Euro exchange rate that was frozen on 1 January 1999. The exchange rates for all the benchmarked countries affected by the Euro were then averaged to determine a Euro to NZD exchange rate for each quarter between 1 January 1995 and 31 December 2004. The ten-year average was then calculated as for the countries outside the Euro zone.

<i>Country</i>	<i>PPP rate (NZD)</i>	<i>Nominal exchange rate (NZD)</i>
Australia	0.947	0.855
Austria	0.648	0.505
Botswana	1.585	2.410
Denmark	5.975	3.785
Finland	0.691	0.505
France	0.628	0.505
Greece	0.492	0.505
India	5.376	22.605
Ireland	0.695	0.505
Jamaica	37.100	22.264
Malaysia	1.103	1.897
Netherlands	0.662	0.505
New Zealand	1.000	1.000
Portugal	0.471	0.505
Spain	0.539	0.505
Sri Lanka	16.197	39.600
Sweden	6.677	4.522
Switzerland	1.295	0.795
United Kingdom	0.439	0.353

Exhibit C.1: PPP and nominal exchange rates, (NZD) [Source: OECD 2003, World Bank 2001, OANDA]