

**Report for the Australian Competition and
Consumer Commission**

International benchmarking analysis

Analysis of WLR, LCS, LSS and PSTN OTA

18 August 2009

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Annex A: Rates for benchmarked products

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1 Executive summary

This document is the report setting out the methodology and results of international benchmarking of the following declared services in Australia:

- wholesale line rental (WLR)
- local carriage service (LCS)
- line sharing service (LSS)
- public-switched telephone network originating and terminating access service (PSTN OTA).

We have investigated wholesale regulated products in fourteen European countries to understand the scope and prices offered as of 1 March 2009. We have developed a methodology to enable us to compare these benchmark prices with those of the declared services.

In commissioning this study, the ACCC identified a number of factors which influence the cost basis of the declared services. The report discusses these factors and we agree that many do have an impact on the cost of declared services. However, we believe that it is difficult to implement reasonable, transparent approaches for adjusting benchmarks for the majority of the factors identified and, therefore have not developed such approaches. We do provide a mechanism for adjusting benchmarks for variations in local input prices, using a purchasing power parity approach.

The report is intended to inform the ACCC in its future reviews of these declared services.

2 Introduction

Analysys Mason Limited has been commissioned by the Australian Competition and Consumer Commission (ACCC) to conduct a benchmarking analysis in relation to the following fixed-line wholesale services (further referred to as ‘considered services’):

- wholesale line rental (WLR)
- local carriage service (LCS)
- line sharing service (LSS)
- public-switched telephone network originating and terminating access service (PSTN OTA).

The ACCC has requested that this report discusses the following factors as important for consideration when undertaking price benchmarking:

- general regulatory framework matters
- population density
- input prices
- different costing methodologies
- different pricing structures
- geographical terrain
- network usage and scale
- technological differences.

Furthermore, the ACCC has identified the Australian Competition Tribunal’s consideration of Optus’s domestic GSM termination access service¹ as setting relevant expectations when benchmarking prices.

The remainder of this document is laid out as follows:

- Section 3 explains our choice of countries for benchmarking and discusses the factors identified by the ACCC as relevant to benchmarking
- Section 4 presents our benchmarking of the wholesale line rental service
- Section 5 presents our benchmarking of the local carriage service
- Section 6 presents our benchmarking of the line sharing service
- Section 7 presents our benchmarking of the PSTN OTA service.

The report includes two annexes of supplementary material:

- Annex A provides the prices collected from the benchmark countries
- Annex B includes supporting country data used in this report.

¹

Re Optus Mobile Pty Limited & Optus Networks Pty Limited [2006] ACompT 8 (22 November 2006)

3 Methodology

This section discusses the methodology employed in this report.

In Section 3.1 we explain the approach taken in choosing the countries to examine in this report.

In Section 3.2 we discuss the factors that the ACCC identified as relevant when conducting international benchmarking. The factors which are included in our benchmarking analysis are discussed in further detail in Sections 4 to 7.

3.1 Choice of countries

The countries chosen for benchmarking the considered services in this report are as follows:

France	Spain
Germany	Sweden
Italy	United Kingdom (UK)
Norway	Austria
Belgium	Denmark
Greece	Ireland
Luxembourg	Netherlands

*Figure 3.1:
Countries selected for
benchmark report
[Source: Analysys
Mason]*

Below we comment on the relevance of the countries chosen, considering the following areas:

- regulatory framework, including transparency of prices
- demographics and geography
- comparable economic development.

Regulatory framework

Following the implementation² of the EU Framework in Telecommunications, regulatory authorities in each of the countries chosen have investigated whether the incumbent operator has significant market power (SMP) in each of a number of wholesale markets. Where SMP is found, regulators have the power to enforce *remedies* – typically some form of price regulation. Therefore we would expect to find that for a number of years, the regulator has mandated the incumbent fixed operator to provide wholesale products to address issues of competitiveness in the retail market. We would expect to find that these countries have a well developed approach to regulation

² As a member of the EEA, Norway is obliged to conform to EU directives and to implement them in Norwegian regulations.

of the considered services, and cost-oriented prices³. These markets are likely to impose an obligation of transparent pricing and therefore to make prices publicly available.

The need to study countries with a developed regulatory framework and transparent pricing has led to a focus on well established members of the European Economic Area (EEA).

In the countries selected, the regulatory framework has allowed a number of cost-based remedies that regulators can use to influence the prices offered. The chosen remedy within each country is presented below in Section 3.2.2.

Demographics and geography

Australia has very few comparables in terms of actual size or population density, as shown in Figure 3.2. At the qualitative level, the inclusion of Norway and Sweden may to some degree reflect the diversity of population density in Australia, and consequent challenges of economic network reach. Finland, which has many similar characteristics to Norway and Sweden was not included as it has no fixed incumbent operating nationally.

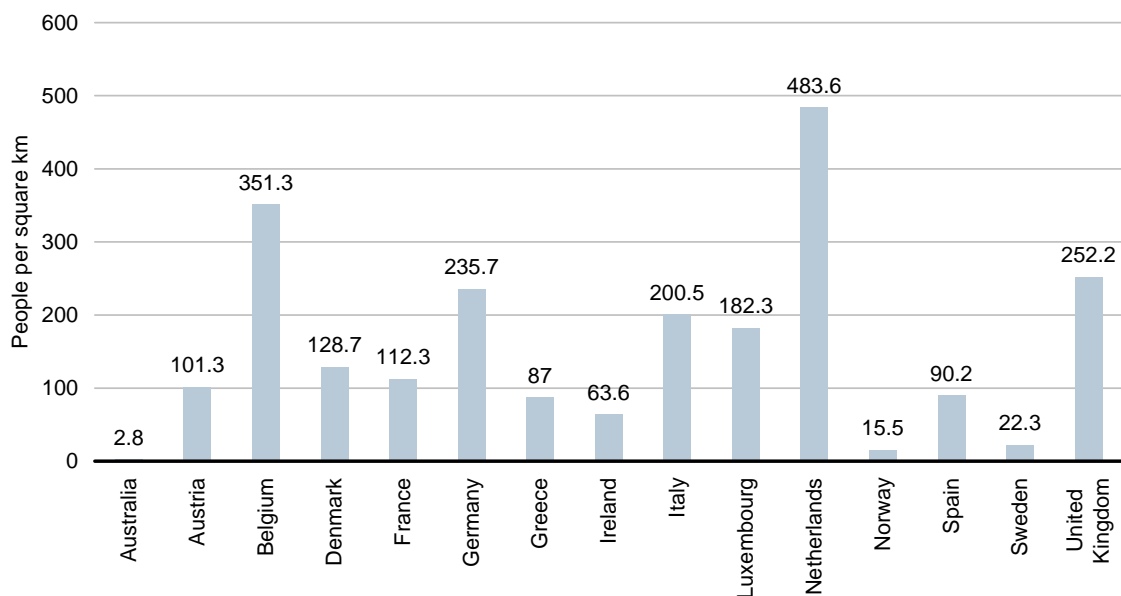


Figure 3.2: Population density of selected countries [Source: Euromonitor]

³ For example, the Open Networks Directive stated “tariffs must be based on objective criteria and especially in the case of services and areas subject to special or exclusive rights must in principle be cost-oriented”. EU Council Directive of 28 June 1990 on the establishment of the internal market for telecommunications services through the implementation of open network provision (90/387/EEC)

Comparable economic development

The countries studied are at a similar level of economic development in terms of GDP per capita in PPP terms, as illustrated in Figure 3.3. Whilst this does not mean that the benchmarked prices from these countries are necessarily comparable, a choice of countries with considerable variations in economic development would be likely to raise questions about whether it was reasonable to draw comparisons between such countries.

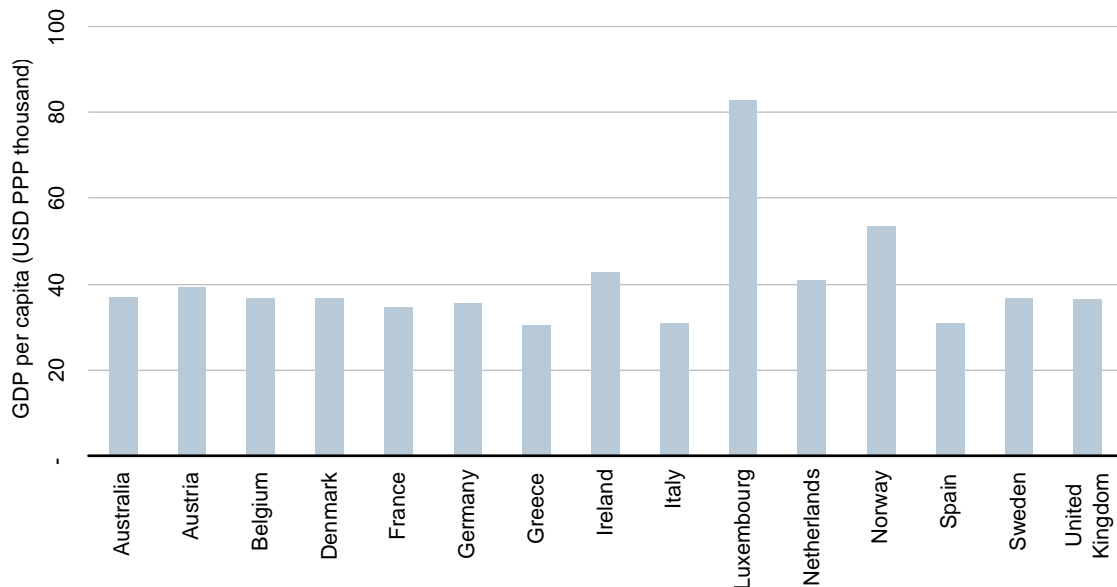


Figure 3.3: GDP per capita of selected countries [Source: Euromonitor]

3.2 Factors identified in comparing benchmarking

The ACCC has identified a number of factors as important for consideration when undertaking price benchmarking. Furthermore, the ACCC has identified the Australian Competition Tribunal's consideration of Optus's Domestic GSM Termination Access Service⁴ as setting relevant factors to adjust when benchmarking prices. We have grouped the issues identified by the ACCC and by the Tribunal under the following headings:

- International currency issues
 - currency exchange method
 - input costs, including:
 - land and labour costs
 - network purchasing power

⁴

Re Optus Mobile Pty Limited & Optus Networks Pty Limited [2006] ACompT 8 (22 November 2006)

- Regulatory framework
 - costing methodology
 - cost of capital
- Geography and demographics
 - population density
 - geographical terrain
- Network issues
 - network usage and scale
 - technological differences.
 - network coverage
 - spectrum allocations
- Service comparison
 - different pricing structures
 - scope of services offered
 - quality of services offered.

Below, we discuss these factors and their applicability to the considered services. Where appropriate, these factors are discussed further in the context of the considered services, in Sections 4 to 7.

3.2.1 International currency issues

Currency exchange method

The benchmark prices we have collected are presented both in their local currency (LCU) and in Australian Dollars (AUD).

Short-term measures of exchange rate (e.g. spot rate, or sub-annual mean) capture currency fluctuations prevailing at a specific point in time. For this reason, they can often make comparisons difficult, or subject to discrepancy, particularly when rates are volatile.

We have therefore chosen to use a ten-year average (arithmetic average of nine previous years and current-year projection) of Euromonitor year-average rates. This is consistent with our previous report⁵ which was used in the Tribunal case. The rates used through this report are shown in Figure 3.4:

⁵ Analysys, *Final Report for ACCC: Examination of mobile termination costs*, 30 June 2004

	<i>Rate to AUD</i>
EUR	0.6069
GBP	0.4000
NOK	4.8138
SEK	5.4966
DKK	4.4897

*Figure 3.4:
Currency exchange
rates used (9+1
approach) [Source:
Euromonitor, March
2009, Analysys Mason]*

Whilst rates have varied over the period of the average (with the value of the AUD changing by up to 29% against the NOK and SEK), a longer-term view of exchange rates seems reasonable given that fixed-line investments are significant and made over a period of years.

Input costs

The cost of inputs needed to provide the considered services can vary by country. It has been identified that land and labour cost may vary between the countries benchmarked. We have therefore considered how these variations in local costs might be accommodated through the use of purchasing power parity (PPP) adjustments.

PPP adjustments allow differences in the relative purchasing powers of currencies across countries to be incorporated into cost comparisons. PPP rates are usually based on a consumer price index for a basket of consumer goods and services within the country, relative to the US dollar over time. They are used to show the relative affordability of products in different countries, and can be considered to reflect the impact of local land and labour costs. We have determined the relative PPP adjustment for local costs based on the PPP exchange rate relative to the actual exchange rate, as shown in Figure 3.5.

	<i>Exchange rate against US dollar</i>	<i>PPP exchange rates against US dollar</i>	<i>PPP effect</i>	<i>PPP effect relative to Australia</i>
Australia	1.2	1.5	1.25	1.00
Austria	0.7	0.9	1.29	1.03
Belgium	0.7	0.9	1.29	1.03
Denmark	5.1	8.6	1.69	1.35
France	0.7	0.9	1.29	1.03
Germany	0.7	0.9	1.29	1.03
Greece	0.7	0.7	1.00	0.80
Ireland	0.7	1.0	1.43	1.14
Italy	0.7	0.9	1.29	1.03
Luxembourg	0.7	0.9	1.29	1.03
Netherlands	0.7	0.9	1.29	1.03
Norway	5.6	9.8	1.75	1.40
Spain	0.7	0.8	1.14	0.91
Sweden	6.5	9.3	1.43	1.14
UK	0.5	0.7	1.40	1.12

Figure 3.5:
Calculation of PPP effect for 2008
[Source: Euromonitor 2008, Analysys Mason]

However, a significant proportion of expenditure on the network supporting the considered services is incurred in international currencies, such as USD or EUR. So it may be appropriate to adjust only a proportion of the cost (and therefore the benchmarked price) by PPP conversion rate.

Within each product, we currently present the full effect of a PPP adjusted rate to show the full effect of PPP adjustments. The data file accompanying this report can be used to test the impact of different PPP adjustments.

The effect of network purchasing power⁶ has also been identified as a potential consideration when comparing benchmark prices. It is quite reasonable to expect that operators' scale will affect their ability to negotiate discounts when purchasing network equipment. However, it is not possible to quantify this effect with public data and so we have made no adjustment for this factor.

3.2.2 Regulatory framework

Costing methodology

For the considered services, Figure 3.6 summarises the costing methodology used in each country.

⁶ Network purchasing power is a concept where certain operators are able to secure more favourable discounts from vendors, due to factors such as their overall level of purchasing.

<i>Country</i>	<i>WLR</i>	<i>LSS (Shared-ULL)</i>	<i>Voice origination & termination</i>
Australia	Retail price minus retail costs	TS-LRIC	TS-LRIC
Austria	N/A	Hybrid LRAIC	Hybrid LRAIC
Belgium	N/A	BU	TD
Denmark	N/A	Hybrid LRAIC	Hybrid LRAIC
France	TD FAC	BU LRAIC	Hybrid LRAIC (for local only)
Germany	<i>Product not mandated</i>	Benchmarking, and possibly cost model	Benchmarking
Greece	Retail minus	LRAIC (<i>TD or BU unknown</i>)	TD LRAIC
Ireland	Retail minus	BU LRIC	BU LRAIC
Italy	BU LRAIC	BU LRAIC	BU LRAIC
Luxembourg	<i>unknown</i>	<i>unknown</i>	<i>Unknown</i>
Netherlands	Retail minus	Wholesale price cap (informed by TD EDC)	Wholesale price cap (informed by TD EDC)
Norway	TD FAC	TD FAC	TD FAC
Spain	Cost oriented	Cost oriented	Cost oriented
Sweden	Hybrid LRAIC	Hybrid LRAIC	Hybrid LRAIC
UK	RPI - X charge control (informed by FAC (CCA))	RPI - X charge control (informed by FAC (CCA))	RPI - X charge control (informed by FAC (CCA))

TS-LRIC: total service – long run incremental costs

TD: top down

FAC: fully allocated costs

BU: bottom-up

LRAIC: long run average incremental costs

Hybrid: combination of top-down and bottom-up model

EDC: embedded direct costs (similar to only incremental costs)

CCA: Current cost accounting

Note that LCS does not have a comparable product in the EEA countries

Figure 3.6: Costing methodology for the considered services [Source: Analysys Mason]

As can be seen in the table, a range of costing methodologies have been employed.

In theory, top-down FAC and bottom-up LRAIC cost models can result in the same answer, assuming current costs and cost causality principles are employed. In addition, the same definition of the service increment and the same treatment of shared and common costs would be required. However, practically top-down models can be more difficult to transparently demonstrate efficiency adjustments whilst bottom-up models are theoretical so it can be difficult to demonstrate that they reflect a real network. Therefore, a move to a hybrid approach have been adopted which attempt to reconcile, or at least understand the differences between, top-down and bottom up approaches.

We do not believe there is a realistic approach to adjust benchmark prices for costing methodologies.

Cost of capital

For prices determined through the use of a cost model, a cost of capital will have been used which may vary between countries. Although unit prices do not vary linearly with the cost of capital, it may be possible to determine the effect through simulations with an existing cost model. However, we would expect that the ACCC's cost of capital range corresponds to the (real-terms) values adopted in recent cost models developed in European countries and other developed nations, and so explicit adjustment for this effect has not been implemented in this report.

3.2.3 Geography and demographics

The following issues have been identified as potentially relevant in the use of international benchmarking.

Population density

Population density – and more importantly the variations in population density – can affect the cost of deploying national telecoms networks. For access line services, such as WLR, the distance from exchange to customer is one of the key drivers affecting costs. For traffic-related services, such as LCS and PSTN OTA, the distances between network nodes and the utilisation of voice switches are key drivers affecting costs. However, for LSS the wholesale rental charges are set to recover the labour and IT system costs incurred when provisioning the service. We do not believe the cost of these vary based on population density.

Although it may be possible to identify simplified cost/volume relationships to allow adjustments for the cost drivers identified above, it is beyond the scope of this report to undertake such a detailed examination.

Within each country, these effects may be partially mitigated through the use of universal service funds to support access obligations. In Australia, for example, the extended call zone agreement provided government financial support to allow the replication of LCS in remote areas.

Geographical terrain

The importance of terrain has been identified in studies relating to mobile networks, and is related to the impact of geographical features (e.g. mountains) on the coverage area of a cell. Whilst radio can be used to provide access to customers in fixed networks, we consider it to be significantly less important than in mobile networks and so have not attempted to adjust for terrain.

3.2.4 Network issues

Network usage and scale

We recognise that network usage, and specifically the utilisation over time of each asset, will affect the cost of services. This can best be understood through the development of network cost models. As noted above, within this report we do not attempt to scale benchmark prices for cost/volume relationships.

Technological differences

We expect that benchmark prices based on network cost models, whether FAC or LRIC, are likely to be based on similar network technologies. For the countries researched, we are not aware of prices being set using a cost model based on next-generation technologies. However, such models are in development and may be expected to set price controls in the future.

For the voice services, therefore, models are likely to be based on a core network with a circuit-switched voice platform on a SDH (synchronous digital hierarchy) or DWDM (dense wave division multiplexer) transport layer. For WLR, access costs will be based on copper and fibre loops from the exchange to customer and again a circuit-switched voice platform.

Network coverage

For the countries studied, the incumbent operators have an obligation to provide connectivity to any location. Therefore, as discussed above, the issue of variations in population density impacting the cost of the access network is the key factor affecting the cost of network coverage.

Spectrum allocations

Spectrum allocation was an issue relevant to mobile termination benchmarking. We do not expect spectrum allocation to be a material issue for benchmarked prices.

3.2.5 Service comparison

Different pricing structures

ACCC indicative prices for PSTN OTA and LCS have a different pricing structure to those benchmarked.

The voice origination and termination prices gathered from the benchmarked countries often vary by time of day or day of the week (e.g. peak or off-peak), which is not the case for PSTN OTA and LCS services. To calculate an average rate for each country we have employed the OECD PSTN Basket definition⁷ for fixed-line time-of-day variation, as shown in Figure 3.7.

<i>Fixed call distribution over time</i>	<i>Wednesday</i>	<i>Wednesday</i>	<i>Wednesday</i>	<i>Wednesday</i>	<i>Saturday</i>	<i>Sunday</i>
	11.00	15.00	20.00	03.00	11.00	15.00
Residential – low usage	30.20%	28.10%	23.60%	0.90%	8.20%	9.00%
Residential – medium usage	27.50%	28.00%	23.00%	2.00%	8.00%	11.50%
Residential – high usage	30.00%	30.40%	20.00%	0.60%	8.50%	10.50%
Business – SOHO	39.50%	39.30%	7.50%	3.60%	5.50%	4.60%
Business – SME	40.20%	40.50%	6.50%	3.40%	4.70%	4.70%

Figure 3.7: OECD price basket definitions – fixed-line time-of-day variation [Source: OECD 2006]

Further discussion of the methodology used to develop benchmarks comparable to the declared services is provided within each product section below.

Scope of services offered

Where information is available, variations in the scope of services studied are noted in each product section below.

Quality of services offered

We believe that the services benchmarked are of a comparable quality. As wholesale services are required to be of equivalent performance to those offered by the incumbent at the retail level, we expect incumbent services across the countries studied to be of similar quality.

⁷

<http://www.oecd.org/dataoecd/56/23/41049579.pdf>

4 Wholesale line rental

The wholesale line rental declared service is described⁸ as follows:

“The line rental service is a line rental telephone service which allows an end-user to connect to a carrier or carriage service provider’s public switched telephone network, and provides the end-user with:

(a) an ability to make and receive any 3.1khz bandwidth calls (subject to any conditions that might apply to particular types of calls), including, but not limited to, local calls, national and international long distance calls; and

(b) a telephone number

except where the supply of the line rental telephone service is within the Central Business District Area of Sydney, Melbourne, Brisbane, Adelaide and Perth.”

The indicative prices proposed by the ACCC⁹ are calculated on a RMRC basis.

Consideration of pricing structure

We compare benchmark prices with the price of a residential WLR line in Australia, as provided by the ACCC in its indicative prices. In certain countries a separate tariff is provided for non-residential end users. In its most recent review of WLR¹⁰, “The ACCC maintains that the appropriate benchmark is Telstra’s unbundled HomeLine Part service”. In line with this, we have selected the residential offer as the benchmark offer.

A product equivalent to WLR in Australia is generally available within EEA countries, except for Austria, Belgium, Denmark and Germany.

In examining the operator’s reference interconnect offer (RIO) or the regulator’s determination in the selected countries, it is common for connection and disconnection costs to be presented. We therefore present a standalone price for monthly rental and a lifetime price (with connection and disconnection costs amortised over three years). However, connection and disconnection costs are not presented in the ACCC’s indicative prices for WLR.

Where other costs of using a WLR service have been identified, we have noted these costs in the data file accompanying this report, but we have not attempted to include these in the lifetime price.

⁸ ACCC, *Local Service Review – Final Decision Appendix D*, July 2006.

⁹ ACCC, *Local carriage service and wholesale line rental – final pricing principles and indicative prices for 2008–2009*, August 2008.

¹⁰ ACCC, *Local carriage service and wholesale line rental – final pricing principles and indicative prices for 2008–2009*, August 2008.

Adjustment for input prices

The benchmark PPP adjusted price shown in Figure 4.1 below assumes a 100% effect, to show the maximum impact of this parameter. Within the accompanying data file, this parameter may be adjusted to test alternative scenarios.

Benchmark prices

The benchmark prices as of 1 March 2009 are presented in Figure 4.1. Detailed tariffs and sources are presented in Annex A.

Country	Basic monthly rental (LCU)	Connection & disconnection charges (LCU)	Basic monthly rental (AUD)	Connection & disconnection charges (AUD)	Average monthly price over lifetime (LCU)	Average monthly price over lifetime (AUD)	Price in PPP-adjusted AUD
Australia	25.57	N/A	25.57	N/A	25.57	25.57	25.57
France	11.70	14.45	19.28	23.81	12.10	19.94	19.39
Greece	10.75	37.17	17.71	61.25	11.78	19.41	24.27
Ireland	18.02	17.47	29.69	28.79	18.51	30.49	26.68
Italy	10.78	26.38	17.76	43.47	11.51	18.97	18.44
Luxembourg	13.91	50.00	22.92	82.39	15.30	25.21	24.51
Netherlands	12.77	N/A	21.04	N/A	12.77	21.04	20.46
Norway	106.10	649.50	22.04	134.92	124.14	25.79	18.42
Spain	11.28	2.23	18.59	3.67	11.34	18.69	20.44
Sweden	83.00	626.00	15.10	113.89	100.39	18.26	15.96
UK	8.39	2.00	20.98	5.00	8.45	21.11	18.85
<i>Average</i>			<i>20.51</i>	<i>N/C</i>		<i>N/C</i>	<i>N/C</i>

Notes:

N/A: price not available.

N/C: not calculated due to incomplete dataset.

Greyed cells show incomplete or questioned results; see notes below.

Figure 4.1: WLR benchmark prices as of 1 March 2009 [Source: Analysys Mason, operators, regulators]

► Notes to benchmark prices

- 1 Indicative prices for Australia do not include connection and disconnection costs.
- 2 Connection charges for Netherlands not identified

- 3 The connection charges identified for Sweden and Norway are relatively high, and are believed to be for customers who do not have an existing line. For other countries, connection and disconnection prices relate to existing lines.
- 4 A one-time fee of SEK250 000 and an annual fee of SEK50 000 are charged to each operator in Sweden using WLR. These have been excluded from the prices.

5 Local carriage service

The declared local carriage service (LCS) is described¹¹ as follows:

“The local carriage service is a service for the carriage of telephone calls from customer equipment at an end-user’s premises to separately located customer equipment of an end-user in the same standard zone. However, the local carriage service does not include services where the supply of the local carriage service originates from an exchange located within a Central Business District Area of Sydney, Melbourne, Brisbane, Adelaide or Perth and terminates within the standard zone which encompasses the originating exchange.”

The indicative prices proposed by the ACCC¹² are calculated on a RMRC basis.

Consideration of pricing structure

In Australia, the LCS is billed on a per-call basis, with the price independent of the call duration.

There is no directly comparable wholesale product in the selected EEA countries. We have therefore constructed two ‘equivalent products’ by adding the origination and termination charges for a local leg or a single-tandem leg to form a full route per-minute price, and then assumed an average call duration to calculate the price on a per-call basis. The specific equivalent product assumptions are as follows:

Select local origination/ termination product

We understand that LCS will likely take one of the following routes through the network:

- Local exchange – LAS – local exchange
- Local exchange – LAS – TNS – LAS – local exchange¹³

Therefore, LCS could be expected to fall between benchmark prices for local origination/ termination and single tandem origination/ termination. We are unaware of public data for the appropriate weighting of the two sets of benchmark prices.

The benchmarked prices will slightly overstate the cost of the LCS product, as interconnect ports are not required at the LAS or TNS level. We have not adjusted the benchmark prices for interconnect ports.

¹¹ ACCC, *Local Service Review – Final Decision Appendix C*, July 2006.

¹² ACCC, *Local carriage service and wholesale line rental – final pricing principles and indicative prices for 2008–2009*, August 2008.

¹³ The use of a TNS is more likely to occur in large cities.

Blend peak/off-peak rates using OECD basket Published wholesale call products have disaggregated prices depending on the time of day/day of the week when calls are made (e.g. peak/off-peak tariffing). Therefore, it is appropriate to assume a distribution of calls based on time of day. We have adopted the time distribution proposed in the OECD basket, selecting the medium residential user. The data file accompanying this report allows different baskets to be tested.

Assume average call duration of five minutes We are unaware of any public data providing an average call duration for LCS in Australia, and have assumed a call duration of five minutes per local call. For this reason, the benchmark prices will be sensitive to this assumption and the ACCC may wish to seek additional data from operators in order to test this assumption.

Adjustment for input prices

The benchmark PPP-adjusted price shown in Figure 5.1 below assumes a 100% effect, to show the maximum impacts of this parameter. Within the accompanying data file, this parameter may be adjusted to test alternative scenarios.

Benchmark prices

The benchmark prices as of 1 March 2009 are presented in Figure 5.1 using local origination/termination prices and in Figure 5.2 using single tandem prices. Detailed tariffs and sources are presented in Annex A.

Based on the local prices, we note that the arithmetic average of the benchmark prices is AUD 0.0737, assuming a five-minute average call duration. If the call duration is increased to 12 minutes, the benchmark average increases to the current LCS indicative price of 17 AUD cents. For single-tandem prices, if the call duration is increased to 8 minutes the benchmark average increases to the current LCS indicative price of 17 AUD cents.

Country	Call setup fee (LCU)	Cost of origination - 5 minutes (LCU)	Cost of termination - 5 minutes (LCU)	Total cost of a 5 minute call (LCU)	Total cost of a 5 minute call (AUD)	Price in PPP adjusted AUD
Australia	N/A	N/A	N/A	N/A	0.1736	0.1736
Austria	0	0.0513	0.0334	0.0848	0.1396	0.1358
Belgium	0.0025	0.0203	0.0203	0.0430	0.0709	0.0689
Denmark	0.0167	0.1111	0.1111	0.2390	0.0532	0.0395
France	0.0009	0.0165	0.0165	0.0338	0.0556	0.0541
Germany	0	0.0247	0.0247	0.0494	0.0815	0.0792
Greece	0	0.0243	0.0243	0.0486	0.0801	0.1002
Ireland	0.0059	0.0112	0.0116	0.0287	0.0472	0.0413
Italy	0	0.0153	0.0153	0.0305	0.0503	0.0489
Luxembourg	0	0.0311	0.0311	0.0622	0.1025	0.0996
Netherlands	0.0052	0.0198	0.0200	0.0450	0.0742	0.0721
Norway	0.0540	0.1633	0.1633	0.3806	0.0791	0.0565
Spain	0	0.0275	0.0275	0.0550	0.0906	0.0991
Sweden	0.0270	0.1469	0.1469	0.3208	0.0584	0.0510
UK	0	0.0102	0.0090	0.0192	0.0479	0.0428
Average					0.0737	0.0706

N/A: price not applicable.

Figure 5.1: LCS benchmark prices for local origination/ termination as of 1 March 2009 [Source: Analysys Mason]

Country	Call setup fee (LCU)	Cost of origination - 5 minutes (LCU)	Cost of termination - 5 minutes (LCU)	Total cost of a 5 minute call (LCU)	Total cost of a 5 minute call (AUD)	Price in PPP adjusted AUD
Australia	N/A	N/A	N/A	N/A	0.1736	0.1736
Austria	0	0.0513	0.0513	0.1026	0.1691	0.1644
Belgium	0.0035	0.0287	0.0287	0.0608	0.1002	0.0974
Denmark	0.0269	0.1546	0.1546	0.3360	0.0748	0.0555
France	N/A	N/A	N/A	N/A	N/A	N/A
Germany	0	0.0414	0.0414	0.0828	0.1364	0.1326
Greece	0	0.0444	0.0444	0.0888	0.1463	0.1829
Ireland	0.0068	0.0173	0.0181	0.0422	0.0696	0.0609
Italy	0	0.0267	0.0267	0.0535	0.0881	0.0857
Luxembourg	0	0.0420	0.0420	0.0840	0.1384	0.1345
Netherlands	0.0069	0.0300	0.0262	0.0632	0.1041	0.1012
Norway	0.0740	0.2689	0.2689	0.6117	0.1271	0.0908
Spain	0	0.0411	0.0411	0.0822	0.1354	0.1481
Sweden	0.0281	0.1643	0.1643	0.3567	0.0649	0.0567
UK	0	0.0145	0.0132	0.0277	0.0693	0.0619
Average					0.1095	0.1056

N/A: price not applicable.

Figure 5.2: LCS benchmark prices for single-tandem origination/ termination as of 1 March 2009
[Source: Analysys Mason]

6 Line sharing service

The declared line sharing service (LSS) is described¹⁴ as follows:

“The High Frequency Unconditioned Local Loop Service is the use of the non-voiceband frequency spectrum of unconditioned communications wire (over which wire an underlying voiceband PSTN service is operating) between the boundary of a telecommunications network at an end-user’s premises and a point on a telecommunications network that is a potential point of interconnection located at, or associated with, a customer access module and located on the end-user side of the customer access module.”

In practice, LSS is used by internet service providers to provide broadband services using their own digital subscriber line (DSL) equipment.

The indicative prices are based on TS-LRIC, and do not include any allocation of the line costs which remain with the voice access service.

Consideration of pricing structure

Shared unbundled local-loop (shared ULL) is the equivalent product commonly found within EEA countries.

In examining the operator’s RIO or the regulator’s determination, it is common for connection and disconnection costs to be presented. Therefore we present a standalone price for monthly rental and a lifetime price (with connection and disconnection costs amortised over three years). Connection costs used are for existing lines, and where available, we also note costs for new lines in the supporting data file.

In a number of countries, the incumbent operator is allowed to recover part of the line rental cost through the shared ULL charge, which is not consistent with the pricing principles for LSS. These countries include Austria, Denmark, Ireland¹⁵, Norway and Sweden, and potentially Luxembourg. Therefore we also present an average price for countries not including a line rental charge, in Figure 6.1.

¹⁴ ACCC, *Review of the Line Sharing Service Declaration Appendix A*, October 2007.

¹⁵ The Irish regulator ComReg has considered removing the allocation of LLU line costs. At the end of 2008 it launched a consultation on the subject, available at http://www.comreg.ie/_fileupload/publications/ComReg08106.pdf

However, we have excluded charges associated with line testing¹⁶. We understand that line testing is usually included in the connection charge¹⁷, and therefore could be recognised as a legitimate cost to recover within the connection fee.

Adjustment for input prices

The benchmark PPP-adjusted price shown below assumes a 100% effect, to show the maximum impact of this parameter. Within the accompanying data file, this parameter may be adjusted to test alternative scenarios.

Benchmark prices

The benchmark prices as of 1 March 2009 are presented in Figure 6.1. Detailed tariffs and sources are presented in Annex A.

¹⁶ Line testing is conducted to understand whether the electrical parameters of the copper loop are suitable for a DSL service before the service is connected. For example in Ireland, the line testing procedure is discussed in the process manual for eircom services: Unbundled local metallic path & Line sharing, http://www.eircomwholesale.ie/dynamic/pdf/LLU%20IPM%20Issue%2012_Final.pdf

¹⁷ The ACCC have confirmed that line testing charges are only incurred in limited circumstances

Country	Includes allocation of line rental	Basic monthly rental (LCU)	Connection & disconnection charges (LCU)	Basic monthly rental (AUD)	Connection & disconnection charges (AUD)	Average monthly price over lifetime (LCU)	Average monthly price over lifetime (AUD)	Price in PPP-adjusted AUD
Australia		2.50	81.80	2.50	81.80	4.77	4.77	4.77
Austria	Y	4.67	31.50	7.69	51.90	5.55	9.14	8.88
Belgium	N	0.52	58.43	0.86	96.28	2.14	3.53	3.43
Denmark	Y	37.08	510.00	8.26	113.59	51.25	11.42	8.46
France	N	2.90	95.00	4.78	156.53	5.54	9.13	8.87
Germany	N	2.43	132.54	4.00	218.39	6.11	10.07	9.79
Greece	N	2.04	70.52	3.36	116.20	4.00	6.59	8.24
Ireland	Y	8.41	86.15	13.86	141.95	10.80	17.80	15.58
Italy	N	1.97	69.15	3.25	113.94	3.89	6.41	6.23
Luxembourg	X	3.20	105.05	5.27	173.09	6.12	10.08	9.80
Netherlands	N	0.19	14.95	0.31	24.63	0.61	1.00	0.97
Norway	Y	54.00	556.00	11.22	115.50	69.44	14.43	10.30
Spain	N	3.00	53.39	4.94	87.97	4.48	7.39	8.08
Sweden	Y	38.33	434.00	6.97	78.96	50.39	9.17	8.01
UK	N	1.30	39.76	3.25	99.40	2.40	6.01	5.37
Average				5.57	113.45		8.73	8.00
Average (excluding those with line rental allocation)	N			3.09	114.17		6.27	6.37

Y: monthly rental believed to have 50% of LLU line rental included in cost

N: monthly rental believed not to have any LLU line rental cost included

X: Allocation of line costs apparently at discretion of incumbent

Figure 6.1: LSS benchmark prices as of 1 March 2009 [Source: Analysys Mason]

► *Notes to benchmark prices*

- 1 Where residential and non-residential charges are presented, we have selected the basic, residential line.
- 2 An LSS churn period of three years is used.
- 3 Line testing charges are not included in the current analysis.

7 Public-switched telephone network originating and terminating access

The declared PSTN OTA service is described¹⁸ as follows:

“An access service for the carriage of telephone (i.e. PSTN and PSTN equivalent such as voice from ISDN) calls (i.e. voice, data over the voice band) to [from] a POI from [to] end customers assigned numbers from the geographic number ranges of the Australian Numbering Plan and directly connected to the Access Provider’s network.”

The indicative prices are based on TS-LRIC.

Consideration of pricing structure

Consider local, single tandem, and double tandem products The PSTN OTA service description¹⁹ requires ‘near-end handover’ for origination and ‘far-end handover’ for termination. This suggests that the Access Seeker is likely to interconnect at the LAS closest to the customer, or at least at the transit switch nearest to the customer. Therefore, in selecting the comparable product from our international benchmarks, we have selected the local and the single tandem origination/termination products.

Consider origination and termination products Where benchmark prices differ for the two product types, we assume a 50:50 distribution between originated and terminated rates.

Blend peak/off-peak rates using OECD basket The benchmark prices have time-varying rates (e.g. peak/off-peak) which we have blended using the time distribution proposed in the OECD basket, on the basis of the medium residential user.

Assume an average call duration of four minutes PSTN OTA prices include a connection charge (‘Flagfall’) and a per-minute charge. To accommodate connection charges in Australia and the studied countries we calculate an average cost per minute based on an assumed four-minute average call duration. This is consistent with the ACCC approach to presenting an average rate.

¹⁸ ACCC, *Declaration inquiry for the ULLS, PSTN OTA and CLLS Appendix 3*, July 2006.

¹⁹ ACCC, *Declaration inquiry for the ULLS, PSTN OTA and CLLS Appendix 3*, July 2006.

PSTN OTA prices are disaggregated by geotype (CBD, metropolitan, rural and remote). We have been unable to identify an equivalent disaggregation in the countries studied, and therefore compare the average rate presented in the indicative prices.

Adjustment for input prices

The benchmark PPP-adjusted price shown Figure 7.1 and Figure 7.2 below assumes a 100% effect, to show the maximum impacts of this parameter. Within the accompanying data file, this parameter may be adjusted to test alternative scenarios.

Benchmark prices

The benchmark prices for local termination as of 1 March 2009 are presented in Figure 7.1. Benchmark prices for single transit are presented in Figure 7.2. Detailed tariffs and sources are presented in Annex A.

<i>Country</i>	<i>Average cost of a one minute call (LCU)</i>	<i>Average cost of a one minute call (AUD)</i>	<i>Average cost of a one minute call (PPP adjusted AUD)</i>
Australia	0.0100	0.0100	0.0100
Austria	0.0085	0.0140	0.0136
Belgium	0.0047	0.0077	0.0075
Denmark	0.0264	0.0059	0.0044
France	0.0035	0.0058	0.0056
Germany	0.0049	0.0081	0.0079
Greece	0.0049	0.0080	0.0100
Ireland	0.0038	0.0062	0.0054
Italy	0.0031	0.0050	0.0049
Luxembourg	0.0062	0.0102	0.0100
Netherlands	0.0053	0.0087	0.0085
Norway	0.0462	0.0096	0.0068
Spain	0.0055	0.0091	0.0099
Sweden	0.0361	0.0066	0.0057
UK	0.0019	0.0048	0.0043
Average		0.0078	0.0075

Figure 7.1: *Local OTA benchmark prices as of 1 March 2009 [Source: Analysys Mason]*

<i>Country</i>	<i>Average cost of a one minute call (LCU)</i>	<i>Average cost of a one minute call (AUD)</i>	<i>Average cost of a one minute call (PPP adjusted AUD)</i>
Australia	0.0100	0.0100	0.0100
Austria	0.0103	0.0169	0.0164
Belgium	0.0066	0.0109	0.0106
Denmark	0.0376	0.0084	0.0062
France	N/A	N/A	N/A
Germany	0.0083	0.0136	0.0133
Greece	0.0089	0.0146	0.0183
Ireland	0.0052	0.0086	0.0076
Italy	0.0053	0.0088	0.0086
Luxembourg	0.0084	0.0138	0.0135
Netherlands	0.0074	0.0121	0.0118
Norway	0.0723	0.0150	0.0107
Spain	0.0082	0.0135	0.0148
Sweden	0.0399	0.0073	0.0063
UK	0.0028	0.0069	0.0062
Average		0.0116	0.0111

N/A: data not available – discussed bilaterally between operators

Figure 7.2: Single transit OTA benchmark prices as of 1 March 2009 [Source: Analysys Mason]

► *Notes to benchmark prices*

1. Residential – the medium-usage call basket from OECD PSTN Baskets is used in this benchmarking analysis.
2. An average call duration of four minutes is used.
3. It is assumed that termination calls are make up 50% of the total number of calls.

Annex A: Rates for benchmarked products

<i>Country</i>	<i>Currency</i>	<i>Service type</i>	<i>Connection</i>	<i>Termination</i>	<i>Monthly rental</i>
Australia	AUD	Home	-	-	25.57
	AUD	Business	-	-	26.93
Austria	EUR		Product not mandated by regulator		
Belgium	EUR		Product not mandated by regulator		
Denmark	DKK		Product not mandated by regulator		
France	EUR	Isolated	4.00	10.45	11.70
	EUR	Group	7.00	20.00	11.70
Germany	EUR		Product not mandated by regulator		
<i>Greece</i>	<i>EUR</i>		9.3	27.87	10.75
Ireland	EUR			17.47	18.02
			-		
Italy	EUR	Residential	14.89	11.49	10.78
	EUR	Business	14.89	11.49	19.80
<i>Luxembourg</i>	<i>EUR</i>			-	13.91
			50.00		
Netherlands	EUR			-	12.77
			-		
Norway	NOK		649.50	-	106.10
Spain	EUR		2.23	-	11.28
Sweden	SEK		606.00	20.00	83.00
UK	GBP	Residential	2.00	-	8.39
	GBP	Business	2.00	-	9.17

Figure A.1: Rates for wholesale line rental services in benchmarked countries as of 1 March 2009
[Source: operators and regulators]

<i>Country</i>	<i>Currency</i>	<i>Connection</i>	<i>Termination</i>	<i>Monthly rental</i>
Australia	AUD	43.1	38.7	2.5
Austria	EUR	31.5	-	4.67
Belgium	EUR	35.31	23.12	0.52
Denmark	DKK	510	-	37.08
France	EUR	60.00	35.00	2.90
Germany	EUR	84.18	48.36	2.43
Greece	EUR	48.46	22.06	2.04
Ireland	EUR	45.00	41.15	8.41
Italy	EUR	35.88	33.27	1.97
Luxembourg	EUR	81.16	23.89	3.20
Netherlands	EUR	14.95	-	0.19
Norway	NOK	556.00	-	54.00
Spain	EUR	32.41	20.98	3.00
Sweden	SEK	434.00	-	38.33
UK	GBP	34.86	4.90	1.30

Figure A.2: Rates for line sharing services in benchmarked countries as of 1 March 2009 [Source: operators and regulators]

<i>Country</i>	<i>Unit</i>	<i>Rate type</i>	<i>Rate level</i>	<i>Peak</i>	<i>Off-peak</i>	<i>Reduced</i>
Australia	AUD/min	Origination/ termination	CBD	0.0035	0.0035	
			Metropolitan	0.0049	0.0049	
			Provincial	0.0068	0.0068	
			Rural	0.0366	0.0366	
	AUD/call	Call set-up	CBD	0.0085	0.0085	
			Metropolitan	0.0084	0.0084	
			Provincial	0.0094	0.0094	
			Rural	0.0206	0.0206	
Austria	EUR/min	Termination	Local voice (local switch)	0.0082	0.0048	
			Regional voice (single tandem)	0.0128	0.0071	
			National voice (double tandem)	0.0225	0.0087	
	EUR/min	Origination	Local voice (local switch)	0.0128	0.0071	
			Regional voice (single tandem)	0.0128	0.0071	
			National voice (double tandem)	0.0128	0.0071	
Belgium	EUR/min	Origination / termination	Local	0.0051	0.0027	
			Intra access area	0.0073	0.0038	
			Extra access area	0.0093	0.0049	
	EUR/call	Call set-up	Local	0.0031	0.0016	
			Intra access area	0.0044	0.0023	
			Extra access area	0.0057	0.0030	
Denmark	DKK/min	Origination / termination	Local voice	0.0281	0.0149	
			ST voice	0.0391	0.0207	
			DT/long distance voice	0.0498	0.0263	
		Call set-up	Local voice	0.0167	0.0167	
			ST voice	0.0269	0.0269	
			DT/long distance voice	0.0422	0.0422	
France	EUR/min	Origination / termination	Local	0.0039	0.0025	0.0017
	EUR/call	Call set-up	Local	0.0010	0.0007	0.0005
Germany	EUR/min	Origination / termination	Local	0.0057	0.0040	
			Single transit	0.0097	0.0065	
			Double transit	0.0097	0.0065	

<i>Country</i>	<i>Unit</i>	<i>Rate type</i>	<i>Rate level</i>	<i>Peak</i>	<i>Off-peak</i>	<i>Reduced</i>
Greece	EUR/min	Origination / termination	Local	0.0052	0.0047	0.0037
			Single	0.0094	0.0087	0.0069
			Double	0.0115	0.0115	0.0090
Ireland	EUR/min	Origination	Primary	0.0028	0.0016	0.0014
			Tandem	0.0044	0.0024	0.0021
			Double tandem	0.0059	0.0033	0.0029
		Termination	Primary	0.0030	0.0016	0.0014
			Tandem	0.0046	0.0025	0.0022
			Double tandem	0.0069	0.0038	0.0033
		Originated call setup	Primary	0.0077	0.0043	0.0037
			Tandem	0.0088	0.0049	0.0043
			Double tandem	0.0099	0.0055	0.0048
		Terminated call setup	Primary	0.0078	0.0043	0.0038
			Tandem	0.0090	0.0050	0.0044
			Double tandem	0.0102	0.0056	0.0049
Italy	EUR/min	Origination / termination	Local	0.0036	0.0024	
			Metropolitan	0.0054	0.0036	
			Single transit	0.0063	0.0042	
			Double transit	0.0100	0.0068	
Luxembourg	EUR/min	Origination / termination	Regional	0.0080	0.0040	
			National	0.0108	0.0054	
	EUR/call	Call set-up	Regional	0.0018	0.0009	
			National	0.0024	0.0012	
Netherlands	EUR/min	Origination	Local voice	0.0053	0.0026	0.002
			Regional voice	0.008	0.004	0.003
			National voice	0.0126	0.0063	0.0047
	EUR/min	Termination	Local voice	0.0053	0.0027	0.0020
			Regional voice	0.0070	0.0035	0.0026
			National voice	0.0090	0.0045	0.0034
	EUR/call	Originated call setup	Local voice	0.0051	0.0051	0.0051
			Regional voice	0.0078	0.0078	0.0078
			National voice	0.0072	0.0072	0.0072
	EUR/call	Terminated call setup	Local voice	0.0053	0.0053	0.0053
			Regional voice	0.0060	0.0060	0.0060
			National voice	0.0075	0.0075	0.0075
Norway	NOK/min.	Origination / termination	Local	0.0380	0.0260	
			Single transit	0.0600	0.0460	
	NOK/call	Call set-up	Local	0.0540	0.0540	
			Single transit	0.0740	0.0740	
Spain	EUR/min.	Origination / termination	Local	0.0067	0.0040	
			Metropolitan	0.0090	0.0054	

<i>Country</i>	<i>Unit</i>	<i>Rate type</i>	<i>Rate level</i>	<i>Peak</i>	<i>Off-peak</i>	<i>Reduced</i>
			Single transit	0.0100	0.0060	
			Double transit	0.0139	0.0084	
Sweden	SEK/min.	Origination / termination	Local	0.0329	0.0250	
			Metropolitan	0.0329	0.0250	
			Single transit	0.0370	0.0277	
			Double transit	0.0380	0.0285	
	SEK/call	Call set-up	Local	0.0270	0.0270	
			Metropolitan	0.0270	0.0270	
			Single transit	0.0281	0.0281	
			Double transit	0.0281	0.0281	
UK	GBP/min	Origination	Local	0.0028	0.0013	0.0010
			Single transit	0.0039	0.0018	0.0014
			Double transit (0–100km)	0.0064	0.0029	0.0023
			Double transit (100–200km)	0.0082	0.0037	0.0029
			Double transit (>200km)	0.0106	0.0048	0.0038

<i>Country</i>	<i>Unit</i>	<i>Rate type</i>	<i>Rate level</i>	<i>Peak</i>	<i>Off-peak</i>	<i>Reduced</i>
UK	GBP/min	Termination	Local	0.0024	0.0011	0.0009
			Single transit	0.0036	0.0016	0.0013
			Double transit (0–100km)	0.0061	0.0028	0.0022
			Double transit (100–200km)	0.0078	0.0036	0.0028
			Double transit (>200km)	0.0102	0.0047	0.0037

Figure A.3: Rates for PSTN OTA in benchmarked countries as of 1 March 2009 [Source: operators and regulators]

Annex B: General information on the benchmarked countries

Country	Area (sq km)	Population density (pop/sq km)	GDP / capita (USD PPP)	PSTN lines (2008)
Australia	7,686,850	3	36,964	9,897,000
Austria	83,870	101	39,313	2,119,000
Belgium	30,528	351	36,721	3,108,000
Denmark	43,094	129	36,824	1,914,000
France	643,427	112	34,358	20,935,000
Germany	357,021	236	35,503	20,300,000
Greece	131,940	87	30,336	4,510,000
Ireland	70,280	64	42,615	1,621,000
Italy	301,230	201	30,931	13,069,000
Luxembourg	2,586	182	83,037	
Netherlands	41,526	484	40,924	3,378,000
Norway	323,802	16	53,508	841,000
Spain	504,782	90	31,106	13,117,000
Sweden	449,964	22	36,748	3,036,000
UK	244,820	252	36,291	18,938,000

Figure B.1: Profiles of benchmarked countries [Source: Euromonitor, Analysys Mason, CIA World fact book]

