

Regulated FTR Benchmarking Analysis

A Report for BT 16 April 2013

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Glossary

Acronym	Definition
ANO	Alternative Network Operators
Agcom	Autorità per le Garanzie nelle Comunicazioni (Italian regulator)
ARCEP	Autorité de Régulation des Communications Électroniques et des Postes (French regulator)
BU	Bottom-Up
CC	Competition Commission
CCA	Current Cost Accounting
CMT	Comision para el Mercado de las Telecomunicaciones (Spanish regulator)
ComReg	Commission for Communications Regulation (Irish regulator)
Recommendation	European Commission, "Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU", 2009/396/EC
EC	European Commission
EU	European Union
FTR	Fixed Termination Rate
IBPT	Institut Belge des Services Postaux et des Télécommunications (Belgian regulator)
IP	Internet Protocol
LRIC	Long Run Incremental Cost
МСТ	Mobile Call Termination
MDF	Main Distribution Frame
MGW	Media Gateway
MNO	Mobile Network Operator
MTR	Mobile Termination Rate
NGN	Next Generation Network
NRA	National Regulatory Authority
Ofcom	Office of Communications (UK regulator)
SMP	Significant Market Power
TD	Top-Down
TDM	Time Division Multiplexing

1 Introduction

1.1 Ofcom narrowband market review

On 17 May 2012, Ofcom published a "Call for Inputs" into its "Fixed Narrowband Market Review and Network Charge Control" consultation. Ofcom invited opinions on the proposed scope of the review, the approach Ofcom should adopt in assessing competitive conditions in fixed narrowband markets and how these markets have changed since the last review in 2009. Following this initial call for inputs, Ofcom had further discussions with BT and other stakeholders on the implementation of the proposed regulatory remedies imposed on SMP operators.

On 28 September 2012, Ofcom published a consultation entitled "Narrowband Market Review – Consultation on possible approaches to cost modelling for the Network Charge Control for the period 2013-2016".¹ In the consultation, Ofcom proposed changes in the modelling methodology compared to previous price control. BT provided comments on the implication of the changes and the modelling approach.

On 5 February 2013, Ofcom published its "Review of the Fixed Narrowband Services Markets", a further consultation on the proposed markets, market power determinations and remedies². Ofcom proposed that the fixed termination rate (FTR) charged by BT should be based on the long run incremental costs (LRIC)³ of providing this service. The proposed NCC is based on the outputs from an NGN BU-LRIC model that Ofcom has developed. Ofcom compared the fixed call termination rates generated by this model against those being proposed by national regulatory authorities (NRA) in a number of other EU countries. It was found that Ofcom's estimate of the LRIC for wholesale call termination was amongst the lowest in the range.

1.2 This report

BT are concerned that in setting the proposed FTR Ofcom made a comparison with FTRs set by other European NRAs that do not properly take account of differences in input costs⁴. Whilst Ofcom is not bound by how other NRAs have implemented their charge controls or to match the regulatory solution proposed, it is important to assess if Ofcom's proposed rate is reasonable, particularly in the light of country specific costs differences.

In considering this objective, this report provides:

- A summary of LRIC and LRIC+ FTRs in selected benchmarking countries in the EU that have introduced NGN BU-LRIC based FTRs;
- Comparison between the EU and UK rates, taking into account country specific input cost differences; and

¹ <u>http://stakeholders.ofcom.org.uk/binaries/consultations/narrow-band-market-review/summary/condoc.pdf</u>

² <u>http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/summary/NMR_Consultation.pdf</u>

³ Ofcom proposed the NCC to be set at a pure-LRIC basis, where mark-up for common costs are to be recovered from wholesale call origination rate

⁴ See A12.206 to A12.207 of the Review of the fixed narrowband services markets, Ofcom, 5 February 2013

• A summary and discussion of the results of the adjusted benchmarking.

2 Approach

This section sets out the approach adopted within this report to provide an adjusted FTR benchmarking analysis. This approach identifies the cost stack that forms BT's FTR costs. It seeks to adjust each cost item for differences in country specific factors. Telecommunications equipment is, typically, globally traded, leading to the same international asset prices. However, other elements of the cost stack for the delivery of these services, particularly labour costs, vary considerably across different countries. By adjusting for the differences in these costs a fairer comparison of the FTRs proposed in different European countries can be made.

2.1 Ofcom FTR cost stack

The initial step required to conduct an adjusted benchmarking exercise is to identify the cost elements that comprise the FTR in Ofcom's NGN BU LRIC model. As in other BU models, the Ofcom model contains input assumptions on capital expenditure (capex) and operating expenditure (opex). The model applies economic depreciation to calculate the unit costs of each network components. The resulting FTR is the sum of the unit costs of the network components that are used by the wholesale termination calls.

Analysing costs into the constituent elements from Ofcom's economic depreciation calculations is virtually impossible since each cost category has a different utilisation assumption. However, the FTR cost stack can be derived by controlling for each of the three most relevant input assumptions. Specifically, the model assumes that:

- The labour cost in 2011/12 is £275 per man day;
- The cost of power is £0.05 per kWh; and
- Opex is a constant 20% mark-up to capex.

Each of these inputs was, in turn, set to zero value, and the Ofcom FTR model was then run holding all other variables constant. The difference between the FTR with and without the input is the amount of the costs in the FTR that are attributable to this input. Table 1 below summarises the cost stack.

Components	Costs (ppm)	Costs (€cpm) ⁵	Proportion of FTR
Installation (Labour)	0.00003	0.00003	0.1%
Power	0.00007	0.00008	0.2%
Cooling	0.00001	0.00002	0.0%
Opex	0.01917	0.02204	47.9%
Equipment	0.02072	0.02382	51.8%
Pure-LRIC FTR	0.03999	0.04599	100%
Mark-up for LRIC+ common costs	0.13998	0.17186	-
LRIC+ FTR	0.17998	0.21785	-

Source: Ofcom. Deloitte analysis.

⁵ Assuming an exchange rate of $1.15 \in$ to the £, which is consistent with the rate used by Ofcom.

Equipment is the largest item in the cost stack, with opex being the second largest item. In practice, opex contains a number of different cost types, including network planning, maintenance and accommodation costs. However, since Ofcom's model calculates the opex by applying a general assumption of 20% mark-up to capex, it does not provide the breakdown of opex into subcategories. In order to allow a further disaggregation, data from BT's regulatory accounts relating to NCC services was used to provide a further breakdown of opex. Table 2 below illustrates the elements and their proportion used in the analysis.

Breakdown of opex	Proportion of opex	FTR breakdown (ppm)	Proportion to total FTR
Pay and pay related	29%	0.00560	14.0%
Accommodation	51%	0.00974	24.3%
Other	20%	0.00383	9.6%
Total	100%	0.01917	47.9%

Table 2: Breakdown of the opex b	ased on BT's cost proportion
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Source: BT. Ofcom. Deloitte analysis

2.2 Benchmarking partners

In the consultation document⁶, Ofcom compared the LRIC FTRs proposed by the NRAs in France, Ireland, Demark and Malta with its proposals for the UK. In addition, Italy has recently introduced pure-LRIC FTR⁷, and this has been added as a further benchmarking partner in this analysis. Other European NRAs are currently implementing NGN LRIC cost models and have yet to determine NGN based pure-LRIC FTR rates.

Additionally, Belgium and the Netherlands currently set FTRs on a NGN LRIC+ basis. Although Ofcom has not set the FTRs on a LRIC+ basis, for completeness the same analysis was conducted on the LRIC+ results from the Ofcom model, comparing to those from other NGN BU models to see if the results are consistent. The analysis results are found in Appendix B.

2.3 Adjustments

The next step in the analysis was to identify the FTR cost elements that varied through country specific cost conditions:

• Equipment is generally purchased on the international market and therefore the unit asset costs are expected to be relatively constant between countries⁸. As such, a country specific cost adjustment is not applied to equipment costs⁹.

⁹ Whilst it may have been helpful to adjust for the different equipment quantities between countries and operators, this approach was not followed due to the wide variation in network topology meaning that a meaningful comparison of the number of nodes/equipment could not be achieved.

⁶ Ofcom, "Review of the Fixed Narrowband Services Markets", Feb 2013 p407.

⁷ <u>http://www.telegeography.com/products/commsupdate/articles/2013/02/11/ec-questions-agcoms-proposed-fixed-termination-rates/</u>

⁸ Equipment prices are also subject to the negotiations between operators and vendors, which vary across operators and countries. However, for simplicity and for the purpose of this analysis, it was assumed that all operators pay the same price.

• For all other elements, costs are likely to be incurred domestically and so can be expected to vary between countries.

The following adjustment factors to each of the non-equipment cost elements were adopted:

- Installation costs: These are mainly driven the man-days required to install the equipment, so these costs are adjusted by reference to annual labour costs;
- Power and cooling costs: These costs are subject to the price of electricity, as the telecoms network is largely powered by the grid, and therefore adjusted by reference to electricity prices.
- Opex has been decomposed to three sub-categories:
 - Pay and pay-related costs, covering all labour costs such as network planning, maintenance and development, adjusted for by reference to annual labour costs;
 - Accommodation costs, of premises such as exchanges and cabinets, are adjusted by reference to the average real-estate rental market value; and
 - Other costs, including smaller categories that are related to support activities, are mainly driven by man-hours and therefore adjusted by reference to annual labour costs.

The proposed adjustment factors for the FTR elements are summarised in Table 3.

Cost elements	Adjustment factor	Source
Installation	Annual labour costs	OECD, Eurostat, International Labour Organisation, www.annualsalarysurvey.com
Power and cooling	Electricity prices	Eurostat, industrial electricity prices 2012
Opex		
Pay and pay related	Annual labour costs	OECD, Eurostat, International Labour Organisation, www.annualsalarysurvey.com
Accommodation	Real estate market values	Cushman & Wakefield Research, Global Property Guide, Prices per Sqm- Europe
Other	Annual labour costs	OECD, Eurostat, International Labour Organisation, www.annualsalarysurvey.com
Equipment	CNA	Telecoms equipment is internationally traded, and therefore prices are unlikely to vary significantly across EU countries.
LRIC+ common costs		Weighted average index based on the proportions of each element above as set out in Table 1.

Table 3: Summary of cost drivers and source of adjustment factors

For each adjustment factor, the data for each country is presented in the appendix to this report. Table 4 summarises the adjustment indices applied to the cost elements.

Table 4: Summary of adjustment indices¹⁰

Adjustment factors	UK	Average*	Malta	Denmark	France	Ireland	Italy	Belgium	Netherlands
Annual labour input costs	100	99	52	139	99	102	92	104	107
Electricity prices	100	102	164	76	74	118	120	87	73
Real estate costs	100	49	23	43	85	40	62	36	57
LRIC+ common costs	100	74	38	90	92	-	-	70	82

*Note: the average index excludes the UK. Ireland and Italy did not publish their LRIC+ results, therefore no LRIC+ mark-up adjustments were applied to these two.

Source : Deloitte analysis OECD, Eurostat, Global Property Guide, Deloitte analysis.

The indices show that costs vary significantly across different countries in the EU. The annual labour costs in the UK are above the average of those in the benchmarking countries; whilst electricity prices in the UK are at the average EU level. The most significant variance in the elements is for the real estate costs, with the UK being the most expensive in the sample and more than twice as high as the average.

The adjustment indices were applied to the FTR cost elements shown in Table 1 and Table 2. The resulting adjusted FTR provides the level of FTR would have been if Ofcom had adopted a regulatory approach that is consistent with that of other NRAs in the sample.

The next section calculates an adjusted FTR taking into account the country specific costs difference between the UK and the countries in the sample, and then compares this adjusted FTR to the FTR proposed by Ofcom. These results are then used to provide an indication of whether the rate proposed by Ofcom is at a reasonable level.

¹⁰ A sensitivity analysis on the impacts of changes to the selected indices is presented as Appendix A to this report.

3 Result summary

The proposed (or applied) FTRs from the benchmarked countries are significantly higher than those proposed by Ofcom. This is shown in Figure 1 below, which shows the proposed pure LRIC FTR targets in the benchmarking partners. For most of these countries an explicit glide path is proposed and this is shown for the period 2013-15¹¹.





Source: Ofcom, NRAs of countries identified and Deloitte analysis. Country specific cost adjustments. Note: ^ The FTR of Denmark reported here is the average cost per minute of a 3-minute call, including the set up fee of 0.063 EUR cents per call¹².

When the cost differences outlined in Section 2 between the UK and other European countries are taken into account, the difference between the level of FTR proposed by Ofcom and the average FTR in the benchmarked European countries is even more significant. This is because, given the higher input costs in the UK compared to other European countries, the UK would not be expected to have the lowest level of FTR.

¹¹ NRA in Malta did not provide additional information on FTR glide path. NRA in Denmark runs the NGN model on yearly basis and sets charge controls based on the model result every year. Therefore, no glide path rates are available for these two countries.

¹² The Danish regulated FTRs in peak and off-peak are 0.06 EUR cents and 0.032 EUR cents respectively. There is also a set up charge of 0.063 EUR cents per call. Based on an average 3-minute call assumption, the average cost per minute will be 0.067 EUR cents.

Rather, the difference in input costs across countries imply that, if Ofcom were to adopt the same regulatory approach as other NRAs in the benchmarked countries, the FTR in the UK would be at a higher level.

To investigate the impact of the differences in input costs, as well as the differences in modelling approaches, a scenario was calculated where an adjusted FTR for the UK had been calculated taking into account:

- UK specific costs; and
- The UK adopting an approach to setting FTRs that was consistent with the average of that used by the other NRAs¹³.

This was calculated by applying the costs adjustments discussed in Section 2 to the average FTR across the countries in the benchmarking sample. Each cost adjustment is applied to the various elements of the cost stack. More specifically, the adjusted FTR was calculated by breaking down the average FTR proposed by the other NRA using the same proportion in the Ofcom FTR cost stack (as shown in Table 1). This approach assumes that, proportionally, the pure LRIC FTR cost stack is similar across jurisdictions.



Figure 2: Ofcom proposed FTR and scenarios allowing for national cost differences and different regulatory applications across Europe (EUR cents)

Source: Deloitte analysis.

¹³ Calculated by applying the ratio between the average of regulator proposed FTR (values in "Average excluding UK" in Figure 4) and the adjusted pure-LRIC FTR to the UK FTRs. The ratio was calculated for year 2013 to 2015 separately.

In the figure above, the green bar indicates the FTR that would be expected in the UK, in the absence of input cost differences, if Ofcom had applied a similar approach to that used by other European NRAs. The light blue bar reflects the cost difference between the UK and the average of the European countries benchmarked.

In conclusion, if Ofcom were to benchmark EU FTRs and take into account differences in national input costs, a fair comparison would indicate that the appropriate benchmark price is around 0.1ppm for the UK.. Whilst Ofcom is not obliged to follow exactly the same approach in setting FTRs as other European NRAs, it appears important that a consistent approach is adopted across European countries as each NRA is implementing the same EU Recommendation.

Appendix A Index Sensitivity Analysis

The results of the adjustment analysis depend on the value of the selected indices. This appendix discusses the underlying drivers chosen to compose the indices and provides a summary of the sensitivity analysis conducted on the labour costs index and the real estate cost index.¹⁴

Labour costs index

The labour costs index is used to capture the differences in the costs of labour and installation across the countries in the sample. There are a number of variables that can be used as the proxy of labour costs, extracted from various source:

- Average gross annual earnings in EU countries¹⁵ this is published by Eurostat on an annual basis, which summarise the average gross earnings of full-time employees in enterprise with 10 or more employees. As described by Eurostat "…the gross earnings are wages and salaries in cash paid directly to the employee, before any deductions for income tax and social security contributions paid by the employee";
- Monthly minimum wage¹⁶ published by Eurostat. The national minimum wage usually
 applies to all employees. Minimum wages published here are gross amounts, that is, before
 deduction of income tax and social security contributions;
- Average salary survey¹⁷– average gross salaries across EU countries published on an internet survey site. The data are from various sources, including official statistics and the self-entered records by visitors of the site;
- Labour input costs in national economy¹⁸ published by OECD. This measures the average cost of labour per unit of output. As described by the OECD "... They are calculated as the ratio of total labour costs to real output, or equivalently, as the ratio of average labour costs per hour to labour productivity (output per hour). As such, a unit labour cost represents a link between productivity and the cost of labour in producing output..."

The labour costs adjustment index used in the analysis (as in Table 4) is the arithmetic average of the values of the variables listed above.

¹⁴ The electricity price index has only one scenario, therefore it is not included in the sensitivity tests.

¹⁵ <u>http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tps00175</u>

¹⁶ <u>http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tps00155</u>

¹⁷ <u>http://www.averagesalarysurvey.com/article/average-salary-in-eu/26025059.aspx#salaryreport</u>

¹⁸ <u>http://stats.oecd.org/</u>

No	Variables	UK	Italy	Malta	Denmark	France	Ireland	Netherlands	Belgium
1	Average gross annual earnings	100	85	47	135	88	108	106	N/A
2	Minimum wage	100	N/A	57	N/A	116	122	120	120
3	Average salary survey	100	95	51	165	96	97	101	96
4	Self-entered average gross salary	100	95	56	117	98	82	102	96
5	Labour input costs	100	174	N/A	167	170	33	66	37
	Average	100	92	52	139	99	102	107	104

Table 5: Summary of labour costs index values

Source: Eurostat, OECD, <u>www.averagesalarysurvey.com</u>. Deloitte analysis

A sensitivity analysis is conducted for each of the selected variable above. The pure-LRIC FTR results for each scenario are summarised in the table below.

Table 6: Summary of adjusted pure-LRIC FTR results across different labour cost index scenarios (EUR cents)

	UK	Average	Italy	Malta	Denmark	France	Ireland
Scenario 1	0.04599	0.03448	0.03490	0.02754	0.03776	0.03733	0.03485
Scenario 2	0.04599	0.03508	N/A	0.02849	N/A	0.04003	0.03618
Scenario 3	0.04599	0.03526	0.03582	0.02796	0.04053	0.03810	0.03388
Scenario 4	0.04599	0.03418	0.03579	0.02839	0.03606	0.03827	0.03241
Scenario 5	0.04599	0.03791	0.04328	N/A	0.04079	0.04511	0.02778
Average	0.04599	0.03561	0.03745	0.02809	0.03879	0.03977	0.03302
Maximum	0.04599	0.03924	0.04328	0.02849	0.04079	0.04511	0.03618
Minimum	0.04599	0.03418	0.03490	0.02754	0.03606	0.03733	0.02778
Base case	0.04599	0.03490	0.03550	0.02809	0.03812	0.03843	0.03433

Source: Deloitte analysis

The results show that in most cases, if the difference in labour costs were taken account of, the adjusted pure-LRIC FTR in the UK would be the highest in the sample.

Real estate market value index

Accommodation costs index is used to capture the variation in the costs of renting or purchasing premises for exchanges, cabinets etc across the countries in the sample. There are a number of variables that can be used as the proxy of accommodation costs, and they are extracted from various source:

• Residential real estate prices 2012¹⁹ - published by the Global Property Guide. This variable represents the average per square metre (sq. m.) prices in Euro of 120-sq. m. apartments located in the centre of the most important city of each country, e.g. administrative capital, financial capital and the centre of the rental market;

¹⁹ <u>http://www.globalpropertyguide.com/Europe/square-meter-prices</u>

- Office space rental²⁰ published by Cushman & Wakefield Research. The variable used is the average occupancy costs of office space measured in Euro per square meter per year. The data is based on sampling the prime office location in the major cities in each country.
- Logistic rental²¹ published by Cushman & Wakefield Research. The variable used is the average costs of logistic parks measured in Euro per square meter per year. The data is based on sampling the major logistics parks in the major cities in each country.

The accommodation costs adjustment index used in the analysis (as in Table 4) is the arithmetic average of the values of the variables listed above.

No	Variables	UK	Italy	Malta	Denmark	France	Ireland	Netherlands	Belgium
1	Residential real	100	33	10	20	77	16	24	16
	estate prices 2012								
2	Office rental	100	95	37	42	87	43	59	46
3	Logistics rental	100	57	N/A	67	91	60	89	46
	Average	100	62	23	43	85	40	57	36

Table 7: Summary of accommodation costs index val

Source: Global Property Guide. Cushman & Wakefield Research. Deloitte analysis.

A sensitivity analysis is conducted for each of the selected variable above. The pure-LRIC FTR results for each scenario are summarised in the table below.

Table 8: Summary of adjusted pure-LRIC FTR results across different real estate cost index scenarios (EUR cents)

	UK	Average	Italy	Malta	Denmark	France	Ireland
Scenario 1	0.04599	0.03351	0.03379	0.03102	0.03343	0.03669	0.03263
Scenario 2	0.04599	0.03640	0.03983	0.03371	0.03557	0.03764	0.03523
Scenario 3	0.04599	0.03779	0.03610	N/A	0.03806	0.03801	0.03694
Average	0.04599	0.03590	0.03658	0.03237	0.03569	0.03745	0.03493
Maximum	0.04599	0.03779	0.03983	0.03371	0.03806	0.03801	0.03694
Minimum	0.04599	0.03351	0.03379	0.03102	0.03343	0.03669	0.03263
Base case	0.04599	0.03490	0.03550	0.02809	0.03812	0.03843	0.03433

Source: Deloitte analysis

The results confirm that the adjusted pure-LRIC FTR in the UK remains the highest in the sample under each of the scenarios considered.

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http://www.cushwake.com/cwglobal/jsp/kcReportDetail.jsp?Country=EMEA&Language=EN&catId=100004&pl d=c46800009p

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https://www.cushwake.com/cwglobal/docviewer/Focus%20on%20Market%20Values%202012%20Q4.pdf?id= c67100024p&repositoryKey=CoreRepository&itemDesc=document&cid=c46800009p&crep=Core&cdesc=bin aryPubContent&Country=EMEA&Language=EN&just_logged_in=1

Appendix B Benchmarking LRIC +

Whilst Ofcom's network charge control is set on a pure LRIC basis, the same analysis on LRIC+ values was conducted for completeness, comparing the adjusted LRIC+ FTR to the ones proposed by the NRAs that have adopted LRIC+ rates to see if the Ofcom model would produce consistent results compared to those from NGN BU models by other NRAs.

Figure 3 below shows the comparison between Ofcom's LRIC+ FTR results and those in the Netherlands and Belgium, which have been adjusted to reflect the cost differences between these countries and the UK. Specifically, the green bars show the actual LRIC+ calculated in the NRAs' models and the blue bars show the LRIC+ rates based on Ofcom's model, adjusted for the Netherlands and Belgium to reflect the lower input costs in these countries compared to the UK.

Figure 3: Adjusted LRIC+ FTR in other countries and NGN based LRIC+ FTR proposed by the NRAs



Source: Deloitte analysis.

The comparison shown in the figure above indicates that the LRIC+ output of the Ofcom model is significantly lower than those calculated by other NRAs, in particular once input costs differences between countries are taken into account. This result is consistent with that estimated for the pure LRIC rates.

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