Before the

Federal Communications Commission

Washington, DC 20554

In the Matter of	)	
	)	
International Settlements Policy Reform	)	IB Docket No. 02-324
	)	
International Settlement Rates	)	IB Docket No. 96-261

To: The Commission

COMMENTS OF VODAFONE

ON NOTICE OF PROPOSED RULEMAKING

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January 14, 2003

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Summary

Vodafone welcomes this opportunity to comment on the Commission's *Notice of Proposed Rulemaking*. Vodafone has interests in mobile operators in 28 countries, serving over 270 million customers in markets which utilize Receiving Party Pays (RPP) charging structures (such as Verizon Wireless in the US), and markets which use a Calling Party Pays (CPP) charging structure.

Vodafone recognizes that there are a number of reasons for the growing interest in charges paid by US carriers and their customers to terminate US-originated traffic to mobile handsets outside of the United States. Although very modest at present, volumes of such traffic are growing. In CPP markets, termination charges are not levied in the same manner as are interconnect charges assessed by US mobile operators for either international or domestic traffic, with the result that the differences between fixed and mobile termination charges in CPP markets are also not well understood. This makes comparisons difficult. Differences in the two models mean that international fixed-to-mobile calling lacks the element of reciprocity which characterizes most other international traffic arrangements between the US and other countries

In such circumstances, we understand that the Commission will want to better understand developments overseas, and Vodafone welcomes the Commission's inquiry as it is critically important that the Commission is well informed on these matters. Vodafone's comments are intended to contribute to that process and, as such, Vodafone confines its comments to those markets in which it has operational experience. In summary, relevant issues for the Commission to note are:

- Vodafone estimates that all calls originating from overseas typically account for less than 5% (by volume) of all traffic terminated within Europe, and substantially less in Japan. Calls originating from the United States account for significantly less than 0.5% of traffic in most Vodafone markets and are <u>de minimis</u> in many.

- 95% or more of all traffic terminating on European mobile networks is sent by domestic carriers. These domestic carriers have their own incentives to ensure that wholesale prices for mobile termination receive attention. The interests of the domestic European and the US international carriers are aligned in this regard and are already represented in foreign regulatory proceedings. There is no separate US interest not already represented. The Commission should not seek to exercise jurisdiction, indirectly or otherwise, over the matters at issue in those proceedings.

- Regulatory authorities in many overseas markets have examined mobile termination rates for several years now; this interest pre-dates any significant US calling volumes to overseas mobile handsets. Substantially the greatest volumes of US international traffic that terminate in Europe terminate in the United Kingdom – one of the most heavily regulated mobile markets in the world.

- There is presently no issue with respect to discrimination between domestic- and internationally-originated calls to mobile networks in the territories in which Vodafone has an interest. In the past, termination rates for traffic originating overseas, including from the US, were in fact often substantially *below* termination rates levied upon traffic originating

domestically. This remains the case today in some markets, such as is the case for Japanese rates for domestic fixed to mobile calls. There is of course no objective basis for such differentiation; it often arose because low international mobile call volumes were insufficient to prompt international carriers to implement the billing systems needed to differentiate between different types of traffic. Growing arbitrage activity in the late 1990s prompted foreign international carriers to begin to identify mobile terminated traffic, and differences between international and domestic mobile rates have now largely been eliminated. While arrangements in the past favored overseas carriers, the introduction of parity in charges simply eliminated such unwarranted discrimination against national traffic.

- Determining the efficient level for mobile termination rates in overseas markets is complex. Comparing interconnect rates for receiving party pays ('RPP') pricing structures with those used in CPP markets, or using other forms of benchmarking, is simplistic and misplaced. RPP and CPP markets create different demand conditions which imply different efficient pricing structures.

- Efficient wholesale prices levied by foreign mobile operators do not necessarily imply either (1) efficient settlement rates on the part of overseas fixed carriers, or (2) efficient retail prices or 'collection rates' on the part of US carriers. It is difficult to isolate the mark-ups levied by intermediaries in what can be complex multi-firm set of transactions, but an analysis by independent U.K. consultant Ovum suggests that the introduction of 'mobile surcharges' by US-based international carriers for calls to overseas mobile numbers do not appear to reflect simply a recovery of costs, nor downward movements in the price of mobile termination. This appears to be an issue which properly falls within the Commission's jurisdiction, and which may merit further attention.

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To: The Commission

COMMENTS OF VODAFONE AMERICAS, INC.
ON NOTICE OF PROPOSED RULEMAKING

Vodafone Americas, Inc., on behalf of itself and its parent, Vodafone Group, Plc., ('Vodafone'), hereby responds to the *Notice of Proposed Rulemaking* ("*Notice*") in the above-captioned proceeding seeking comment on proposed reforms to the Commission's international settlements policy. Vodafone addresses, in particular, the question of mobile termination rates in overseas markets with a 'Calling Party Pays' ('CPP') pricing structure, discussed in Section III.D. of the above-referenced *Notice*.[1]

Vodafone is the world's mobile telecommunications leader, with interests in mobile operators in 28 countries worldwide, serving over 270 million customers.[2] In the United States, Vodafone has a 44.2% interest in Verizon Wireless. Vodafone and its affiliates have marketplace and regulatory experience in both CPP and RPP environments. Vodafone recognizes that foreign mobile termination rates raise questions for the Commission and US policymakers.[3] Although very

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[1] *In the Matter of International Settlements Policy Reform, Notice of Proposed Rulemaking*, IB Dockets No. 02-324, and No. 96-261, FCC 02-285, ¶¶ 45-51 (rel. October 11, 2002).

[2] A complete list of the markets in which Vodafone has interests in mobile operators is attached to these comments as Annex A. In most countries Vodafone is not affiliated with the fixed incumbent.

[3] *See* United States Trade Representative, 2002 National Trade Estimate Report on Foreign Trade Barriers, at 131 (2002); United States Trade Representative, Annual Reform Recommendations from the Government of the United

modest at present, volumes of such traffic are growing. Termination charges are not levied in a similar manner by US mobile operators for either international or domestic traffic, however, which makes comparative analysis difficult. Also absent is the element of reciprocity which characterizes most other U.S.- international traffic arrangements. In such circumstances, we understand that the Commission will want to better understand developments overseas, and Vodafone welcomes the Commission's inquiry as it is critically important that the Commission is well informed on these matters.

DISCUSSION

I. <u>Domestic Carriers and Regulators in Overseas Markets Have Strong Incentives to Tackle Issues Related to Mobile Termination Rates</u>

It is important to be clear at the outset as to the terms employed and the market conditions under which services are supplied. In particular, it is important to distinguish between the rates set by foreign mobile carriers to terminate traffic – the 'mobile termination rate' – and international settlements for calls to mobiles which are generally not set by mobile operators, but by foreign international carriers ('mobile settlements'). Arrangements other than mobile settlements may also be used to carry international traffic to mobiles (*e.g.* international private lines or other facilities). In the US, retail charges for calls to foreign mobiles are set by either the US international fixed carrier, or by another US company which offers international services, such as resellers (which charges are often called 'collection charges'). As explained below, it is not safe to assume that a high collection charge or a high mobile settlement corresponds to a high foreign mobile termination rate.

A. Background – Mobile Termination Rates Have Become an Issue Due to Cost-Based Settlement Rates and Increasing Numbers of U.S. Calls Terminating on Mobile Networks

There are several reasons why the perceived impact of foreign mobile termination rates on international arrangements is receiving attention at present. The first is that costs are simply becoming more transparent and visible as international settlement rates have tended towards more competitive, cost reflective levels, and as many countries have separated out settlement rates for calls to fixed on the one hand, and settlement rates for calls to mobile on the other. The fact that

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States to the Government of Japan under the U.S.-Japan Regulatory Reform and Competition Policy Initiative, Annex at 5 (Oct. 23, 2002).

previously 'blended' rates have been separated into two distinct rates, each reflecting the differing costs of termination on fixed and mobile networks, is a welcome development towards transparency and appropriate pricing signals in a market not previously characterized by either.

However, it is a mistake to attempt to derive or judge mobile termination rates by reference to fixed interconnection rates. So far as we are aware, all regulators who have examined the cost structures of mobile networks in detail recognise that mobile networks have substantially different cost drivers to fixed networks, that mobile operators incur costs which are not incurred in fixed networks (such as spectrum fees and the costs of providing mobility and handover), and that traffic levels on mobile networks (at least in developed markets) generally remain lower than fixed. These differences should be expected to produce cost oriented mobile termination rates which are substantially higher than cost oriented fixed interconnection rates. OFTEL recognises that mobile termination costs exceed fixed by at least a factor of 10 to 1[4], although Vodafone believes this substantially understates the true magnitude in the UK (which is why an appeal is currently before the UK Competition Commission). Since there are substantial cost differences between operators and markets, it is not possible to extract from this work any more detailed lesson other than to undermine the expectation, promoted by many fixed carriers, that mobile rates are not cost oriented unless they are closer to fixed rates.

One consequence of averaging rates for traffic originating overseas was that international mobile rates, as part of a 'blended rate,' were often substantially below termination rates levied upon traffic originating domestically. There is of course no objective basis for such differentiation. The differentiation, in fact, often arose because low international mobile call volumes were insufficient to justify the investment in billing systems necessary to differentiate between different types of traffic.[5] Growing arbitrage activity in the late 1990s prompted foreign international carriers to begin to identify mobile terminated traffic explicitly. Consequently, differences between international and domestic mobile termination rates in Vodafone's markets have now largely been

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[4] OFTEL, *Review of the Charge Control on Calls to Mobiles,* 26 September 2001, http://www.oftel.gov.uk/publications/mobile/ctm0901.htm

[5] Vodafone is aware of no claims that the costs of terminating traffic originating overseas are in any sense lower than those of terminating traffic which originates domestically.

eliminated [6] – with the exception of Japan, where international rates for fixed to mobile calls continue to be *lower* than domestic equivalents.[7] As a result, mobile settlements have developed which properly reflect the input costs of mobile termination charges levied on all calls, irrespective of their origin.[8] These costs are now transparent to originating carriers in a way in which they were not previously. Vodafone submits that this is a welcome development and that carriers and customers should be exposed to the costs of the resources they consume, with these costs differing substantially as between fixed and mobile networks.

The second reason for interest in foreign mobile termination rates is that, although very modest, call volumes from the US to foreign mobile networks are growing. Research undertaken by Vodafone and Telegeography shows that, at present, calls originating internationally typically account for less than 5% by volume of all calls terminated on mobile networks, and that calls originating from the US account for less than 0.5% in most European markets, and even less in Japan. It is also important to note, however, that US interexchange carriers such as WorldCom have many subsidiaries in European and Japanese markets which originate domestic calls to mobiles.[9] As discussed below, to the extent that US interexchange carriers' concerns for mobile termination relate primarily to their subsidiaries' operations, US customers' welfare is not at issue and overseas regulators, not the Commission, are the proper audience to whom those concerns should be addressed.

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[6] Not only are there regulatory limits on discrimination between national and international calls, but there are also commercial and technical limitations. There are commercial limits on operators' ability to discriminate due to the arbitrage opportunities varying rates would create. There are often also technical limits since mobile operators are in many cases unable to distinguish between nationally originated and internationally originated traffic since many international networks do not pass CLI with the calls.

[7] This is now under review by the regulator in Japan and a study group is being set up which Vodafone expects to produce a closer alignment between domestic and international rates.

[8] We understand, however, from documents filed with the USTR that , in a market in which we have no direct experience (Argentina), mobile operators appear to be attempting to charge a higher mobile termination rate for international traffic than for fixed. We are unable to comment on the facts, but note that Vodafone does not consider cost differences could justify such significant discrimination. AT&T Comments on 2003 Review of Compliance with Telecom Trade Agreements, http://www.ustr.gov/sectors/industry/Telecom1377/index.htm

[9] WorldCom subsidiaries provide voice telephony services throughout Europe, including Belgium, France, Germany, the U.K., Italy, Spain, and the Netherlands. In addition, Global Crossing has operations in UK, Ireland, Netherlands, Belgium, France, Spain, Switzerland, Germany, Denmark, and Sweden.

B. Domestic Overseas Customers' and U.S. International Long Distance Customers' Interests Are Commonly Served by Non-U.S. Regulators

The interests of domestic callers in foreign jurisdictions and the interests of US callers to foreign mobiles are wholly aligned in this case. Indeed, domestic fixed carriers within overseas jurisdictions (including those with US parents) have strongly advocated regulatory interventions in mobile termination rates for some time. Regulators began investigating this matter long before U.S.-international traffic terminating on foreign mobile networks became an issue of any significance. The circumstances underlying mobile termination are therefore quite different from that upon which the Commission's ISP and related policies are premised. In this case the interests of US consumers and regulators are wholly aligned with those of overseas consumers, carriers and regulators. In the absence of discrimination (see above), there is no question of foreign Governments or other interests seeking to promote domestic interests over those of US consumers or carriers since in this case each is in accord with the other.[10]

As the Commission observes, the advocacy of domestic fixed carriers overseas has received close attention from regulators within these overseas jurisdictions, with call termination rates being regulated on a *de facto* basis by the regulator in most European markets.[11] Nor is this likely to change in the future, even as Europe seeks a more pro-competitive and deregulatory

[10] The Commission's *Benchmarks Order* underscored U.S. and foreign carriers' and foreign governments' disparate interests in the context of traditional accounting rates:

> Above-cost settlement rates pose particular problems for the United States as the largest and most competitive market in the world for facilities-based and resale domestic and international long distance services. Because rates in the United States are lower than in many countries, a substantial amount of world traffic is routed through the United States. The traditional settlement rate system assumes that a customer's physical location determines the place of origin of an international call, with the carrier in the originating country paying a settlement rate to the carrier in the terminating country. However, service innovations such as callback allow customers to change the originating country for settlement purposes. The result is that many more calls are originated for settlement purposes from countries like the United States with vigorous retail and wholesale markets than in monopoly markets that lack similar competition. Partly as a result of these traffic routing patterns, the U.S. settlement deficit continues to grow steeply. In 1996, the U.S. settlement deficit totalled $5.4 billion, double what it was in 1990. Conservative estimates put at least seventy percent of that total as an above-cost subsidy from U.S. consumers to foreign carriers. It is this subsidy paid by U.S. consumers which is the focus of our concern, not the total settlements deficit.

International Settlement Rates, Report and Order, 12 FCC Rcd 19806, ¶ 12 (1997). As discussed herein, the marketplace dynamics regarding mobile termination are substantially different.

[11] *See Notice*,¶ 50, n.111 and Annex B to this submission.

framework for its communications markets. The regulation of mobile call termination has been a central feature of debates concerning the new regulatory framework which is to come into force in all European Member States in July 2003; indeed, mobile call termination is a candidate market for ex ante intervention identified under the draft Recommendation issued by the Commission.[12] The EU non-discrimination provisions referred to above ensure that the consequences of regulatory intervention apply to rates levied on domestic and international carriers alike.[13]

Annex B provides an overview of past and current regulatory activity in those markets in which Vodafone has an interest. Overwhelmingly, regulators have intervened in setting mobile termination rates. This is particularly the case in markets to which, on Vodafone's analysis, much of the US originated traffic terminates – notably the United Kingdom.[14] In many cases mobile termination rates in these markets have been subject to regulation for the past 5 years. .

Mobile termination rates in overseas markets have consistently fallen over recent years. In Europe generally, mobile termination rates have declined by around 10% over the last year.[15] Vodafone provides specific relevant data on declines in mobile termination prices (and a comparison of such declines to US carriers' mobile surcharges) in Annex C, which is a report from independent consultancy Ovum comparing termination, settlement and collection charges for calls to mobiles. While the derivation of efficient mobile termination prices is a complex task to which many regulators are committing considerable resources at the time of writing, intervention on mobile termination rates in overseas markets is already pervasive.

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[12]*Draft Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services; Brussels, 17 June, 2002, p. 27 - 28*

[13] Although this matter did attract comment from the EC, who issued a note confirming that such discrimination would be unwarranted in Europe. *European Commission, 'Cross-border interconnection: analysis of 'two-level' tariff structures for call termination', ONPCOM 99-20, 12 May 1999.*

[14] This is still substantially less than 1% of total volumes terminated to mobile networks in the UK.

[15]*Seventh Report on the Implementation of the Telecommunications Regulatory Package*, Section 4.2.2 'Interconnection – call termination in mobile networks', p.16.

The Commission is also aware that Study Group 3 of the ITU Telecommunications Standardization Sector has been studying international mobile termination for the last year. Recommendations from the relevant Rapporteur Group (of which Vodafone, Verizon, Worldcom, Sprint and AT&T were members) were presented to SG3 on December 9, 2002. The aim of the recommendation is to ensure that settlement rates are cost oriented, that termination rates charged by national mobile operators continue to be non-discriminatory and that those termination rates, and reductions in termination rates, are passed on by the international carriers. In addition, the Competition Directorate of the European Commission has also taken a close interest in these matters.[16] Japanese termination rates for international traffic, which were already amongst the lowest of all CPP markets, have been scrutinized by the MPHPT, which is now also investigating national mobile termination rates. Given the scale and scope of this international regulatory activity, and the strong incentives upon local carriers, customers, and regulators which align with US interests, there is no reason for the Commission to seek to indirectly regulate matters otherwise outside its jurisdiction.[17]

II. <u>Many Concerns About Mobile Termination Rates are Premised on Misunderstandings About 'Calling Party Pays' Markets</u>

There are critical differences between overseas termination rates, set under CPP demand conditions, and the reciprocal compensation interconnect rates that are common practice in the US (where there is both a 'receiving party pays' model for mobile service pricing, and an entirely different regime for interconnect pricing).[18] A cursory glance at 'reciprocal compensation' based interconnect rates used in the U.S., where wireless carriers may terminate domestic landline-originated calls for between $0.02 and $0.04 per minute, does not offer a useful starting point for the Commission's analysis.[19] Indeed, mobile termination rates in overseas markets cannot be

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[16] Case No. COMP/C-1/37.704 - KPN mobile termination rates; and, 'Seventh Report on the Implementation of the Telecommunications Regulatory Package', p. 5.

[17] *See EEOC v. Arabian American Oil Co.*, 499 U.S. 244, 248 (1991); *Foley Brothers v. Filardo*, 336 U.S. 281, 285 (1949) (discussing presumption against extraterritorial application of statutes).

[18] We note that the US regime will usually produce rates which are not cost oriented, since carriers utilize "reciprocal" interconnect rates between two networks (fixed and mobile) which have different costs (*e.g*. mobility and spectrum), different cost drivers and different demand conditions.

[19]*See* 47 C.F.R. §§ 20.11, 51.701 et seq.

meaningfully compared to either wireless or fixed interconnect rate levels commonly found in the United States.[20] The market structures, and thus demand conditions, are markedly different in overseas CPP-based markets, and meaningful conclusions are not possible if mobile termination prices are viewed in isolation from the context of overall pricing structures to which they apply – or by comparing mobile termination prices with prices applied in a quite different context.

A. Preliminary Cost Modeling Indicates that Termination Prices in CPP Markets Are Justifiably Higher than in RPP Markets.

Determining the efficient level for mobile termination rates in overseas markets is at least as complex as the debates concerning fixed carrier costs which have been the subject of extensive proceedings in the United States over many years.[21] Nevertheless, it is self-evident that, even with common demand conditions for outbound calling and subscription, efficient pricing structures under CPP and RPP arrangements will be very different. Vodafone's own modeling, using UK elasticity and volume data, suggests that appropriate charges for termination under RPP price structures should be between 1/3 and 1/5 of those under CPP arrangements.[22] But subscription charges under RPP would be much higher. To extract one component of the overall RPP price structure - the 'termination' element - and apply it to a quite different context is wholly misleading. Meaningfully assessing pricing arrangements under CPP arrangements requires that the Commission ignore simplistic and misconceived attempts to benchmark and, instead, engage in the complexity of determining efficient cost recovery in a multi-product market with substantial fixed, joint and common costs.

Vodafone has determined that current termination rates in many European mobile markets are likely to be too low to allow an efficient recovery of costs and that regulation is now distorting

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[20]Nor, for that matter, is there a meaningful comparison between overseas markets mobile termination rates and fixed-carrier termination rates for international traffic, as some have attempted to claim. *See, e.g.*, 'Termination of International Calls to Mobile Networks,' submission of INTUG to ITU SG #3, August 2002. Both the cost structures, and the demand conditions and competitive environment of mobile services, are very different from fixed.

[21] *See Iowa Utilities Board v. FCC*, 219 F.3d 744 (8th Cir. 2000), *rev'd, Verizon Communications, Inc. v. FCC*, 122 S. Ct. 1646, 1660-61, 1669-70 (2002).

[22]In Vodafone's modelling, we apply the same elasticity inputs in both CPP and RPP models, with additional RPP assumptions where necessary.

pricing. This is a matter of grave concern to Vodafone and something which is being debated with the regulators concerned. Vodafone contends that inefficiently low termination prices work to the disadvantage of both domestic and US consumers because they constrain penetration and usage.

B. Mobile Termination is Generally Cost-Oriented and Does Not Improperly Subsidize Call Origination and Subscription Services

We understand that there are at least two primary complaints about mobile termination rates that have arisen among relevant US government authorities. First, concerns have arisen that, in CPP markets, mobile termination improperly 'subsidizes' call origination and subscription. Second, mobile termination prices in CPP markets that exhibit this characteristic are described as not being 'cost-oriented.'[23] When scrutinized, however, both arguments are misplaced and inaccurate.

The claim that call termination is somehow 'subsidizing' call origination or subscription prices in overseas markets would be sustainable only if call termination services both recovered marginal costs or their appropriate proxy (Long Run Average Incremental Cost) and made a disproportionate contribution to the common costs of the mobile business, or if such charges made a contribution to costs which were inefficiently incurred. Vodafone believes that there is no evidence of such practices, properly understood.[24] These are not simple concepts, but 'subsidy' is a term which should be used with care and accuracy in regulatory proceedings. A 'subsidy' does not arise simply because charges appear to be relatively high or because services appear to be making a substantial contribution to common costs.

[23]The question of whether prices are 'cost-oriented' is relevant because of, *inter alia*, provisions in the Reference Paper to the General Agreement on Trade in Services (GATS) that would apply assuming *arguendo*, that mobile carriers are considered 'major suppliers' of interconnect services. For example, Section 2.2 of the Reference Paper provides that interconnection provided by 'major suppliers' - those deemed to have essential facilities - is to be ensured on 'cost-oriented rates that are transparent, reasonable, having regard to economic feasibility, and sufficiently unbundled.'

[24] Even if such a 'subsidy' did arise, Vodafone contends that there are persuasive arguments to suggest that recognition of network externalities means that such subsidies enhance social welfare -- a view which both OFTEL and the MMC in the UK have accepted in their proposals.

Vodafone further contends that, for the same reason, mobile termination prices in CPP markets are generally 'cost-oriented.' As described above, the structure through which costs are recovered efficiently in CPP markets does differ from that used in RPP markets, but that difference cannot by itself sustain a claim that termination prices are not 'cost-oriented.' Vodafone concedes that, in many jurisdictions, information about which prices recover costs efficiently is still forthcoming and, as noted above, this work is ongoing.

Finally, the Commission asks whether mobile carriers are 'artificially inflating' international calling rates through an abuse of market power.[25] The answer here is, in contrast, simple: they are not. The demand conditions that exist in CPP markets apply to all the carriers in the market; the reasons for why price structures are as they are in CPP markets are wholly unrelated to whether a particular carrier is 'dominant' in the local market for mobile services. It is both inaccurate and misconceived to characterize general trends in mobile termination pricing as an 'abuse of market power.'

III. Commission Regulatory Action Is Necessarily Restricted by Limits on its Jurisdiction

One simply cannot draw a meaningful parallel with the approach adopted in benchmark settlement rates – in which US carriers could exert reciprocal bargaining power in bi-lateral relationships - in contemplating a US response to the issue of overseas mobile termination rates. Mobile termination rates do not exhibit the reciprocal characteristics - US international carriers and overseas mobile carriers do not exchange settlements on this basis. Mobile termination rates for overseas carriers are set by domestic regulators for those jurisdictions - beyond the reach of any recognized zone of permissible extraterritorial activity by the Commission. The Commission does not have available to it the same measures as were utilized in the *Benchmarking Order*.[26]

The Commission does have jurisdiction, however, over the rates charged by providers of international calling services to US customers. The *Notice* raises questions about not only the

[25] *See Notice*, ¶ 51.

[26] *See supra*, n.10.

mobile termination rates of foreign mobile operators, but also about the surcharges US customers generally incur when using these carriers' services.[27] Although non-discriminatory practices ensure that the consequences of regulatory intervention by overseas regulators apply to mobile termination rates levied upon domestic and US carriers alike, Vodafone notes that, in practice, US carriers do not appear to have passed movements in foreign termination rates – which have been both frequent and substantial – to the benefit of US consumers. This is a matter to which the FCC may wish to give further attention in the course of this proceeding.

Vodafone has asked an international consultancy, Ovum, to consider the question of whether fixed carriers who originate calls to foreign mobiles are appropriately reflecting their input costs including mobile termination rates, and whether they are passing through reductions in those mobile termination rates. The data collected in this investigation suggests that, for international calls originating from the US, carriers are not doing either.[28] This data indicates that: on average the surcharge is 80% greater than the additional costs incurred as a result of delivering to a mobile rather than a fixed terminal; this difference ranges from 41% for calls to Italy to 127% for calls to Sweden; and such charges have not been reduced over time notwithstanding reductions in foreign mobile termination rates. Note that since completion of the report, AT&T recently *increased* its rates for calls to mobile networks in some of the countries Ovum evaluated, and both AT&T and WorldCom increased such rates for other countries.[29] Comparison of 2002 and 2003 surcharges is somewhat difficult, however, since only some changes are explicitly identified by AT&T.[30] Ovum's report is attached at Annex C.

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[27] *See Notice*, ¶ 46.

[28] It also reveals a similar pattern for intra-European calls based on calls to foreign mobiles originating in Germany as a country representative of the EU.

[29] *E.g.,* AT&T's surcharges changed between 22 April 2002 and 1 January 2003 for calls to Austria (up from 16c to 19c/minute), and Spain (up from 13c to 18c/minute). Other surcharges have reduced (Italy and Sweden). *Cf* AT&T International Mobile Termination Charge Guide Effective 22 April 2002, and AT&T International Mobile Termination Charge Guide Effective January 1, 2003, available at <http://www.serviceguide.att.com/ACS/ext/pi.cfm?JID=2>; rates for WorldCom (MCI) effective January 3, 2003 are available at the following URL http://www.mci.com/mci_service_agreement/res_pdf/IMT_01_01_2003.pdf.

[30] *See* AT&T International Mobile Termination Charge 1 January 2003, issued 17 December 2002 which identifies changes for Bulgaria, Colombia, Georgia, Gibraltar, Guatemala, Jamaica, Lithuania, Macedonia, Mayotte Island, St. Pierre & Miquelon, Tanzania, Turkey, and Republic of Yemen.

CONCLUSION

For the foregoing reasons, the Commission should defer to its foreign counterparts to take any necessary actions to ensure that foreign mobile termination rates are reasonable and, in any event, should consider the issues involved in the context of overseas calling party pays markets. The Commission should, however, consider whether US international carriers are fully recognizing reductions in mobile termination rates in the mobile termination 'surcharges' assessed on US consumers.

Respectfully submitted,

VODAFONE AMERICAS, INC.
VODAFONE GROUP, PLC.

By: /s/__________________

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January 14, 2003

ANNEX A – LIST OF VODAFONE GROUP PLC'S INTERNATIONAL MOBILE INTERESTS

Vodafone Group plc has interests in mobile communications networks in 28 countries on five continents, namely:

Europe:
Albania
Belgium
France
Germany
Greece
Hungary
Ireland
Italy
Malta
Netherlands
Poland
Portugal
Romania
Spain
Sweden
Switzerland
United Kingdom

Americas:
Mexico
United States

Africa & Middle East:
Egypt
Kenya
South Africa

Asia Pacific:
Australia
China
Fiji
India
Japan
New Zealand

ANNEX B – OVERVIEW OF REGULATORY INTERVENTIONS IN MOBILE TERMINATION RATES (TO NOVEMBER 2002).

(* Indicates Vodafone has an interest in market.)

Country	Commentary	Rate movements	Discrimination against international traffic?
Australia*	In July 2001, the regulator imposed a regulatory constraint which tied mobile termination rates (MTRs) to movements in the retail market (which was acknowledged to be sufficiently competitive). See 'Pricing Methodology for the GSM Termination Service', Final Report, July 2001, www.accc.gov.au	--	None.
Austria	July 00 - Max.mobil and ONE regulated (orders Z4, Z7, Z8-2000). Nov 01 - Max.mobil and Mobilkom regulated further (order Z14/01-103 and order Z5/01-112) (See Www.tkc.at).	Not known.	Not known, but presumed none.
Belgium*	NRA imposed various regulatory constraints on MTRs in January 01, July 01 and August 02. All operators were requested in a decision of July 01 to bring their MTRs in line with Proximus (allowing a maximum difference of 15%). **Reference of decisions** www.bipt.be/bipt_E.htm	10% per annum on average since 2001.	Minimal. Different tariff gradients.

Country	Commentary	Rate movements	Discrimination against international traffic?
	Telecom/Interconnection/communications		
Finland	Sonera's MTRs became regulated by a decision of April 01. Radiolinja's MTR are currently under investigation. **Reference of decisions** www.ficora.fi/suomi/document/Sonera240401.pdf	Not known.	None. Discrimination is prohibited in Finland, following an interpretation of Regulation 1393/1997 of the Ministry of Transport and Communications.
France*	SFR and Orange reduced MTRs since 1999. **Reference of decisions** www.art-telecom.fr/textes/index.htm Textes de références/avis et décisions/textes adoptés années par années	Between 12 and 30% per annum for all operators since 1999.	None. International calls receive slightly *lower* MTR than national calls.
Germany*	Germany has seen no direct regulatory intervention to date, but MTRs have reduced. **Reference of decisions** www.regtp.de/en/index	Substantial reductions in May 2000.	None. International calls receive slightly *lower* MTR than national calls.

Country	Commentary	Rate movements	Discrimination against international traffic?
Greece*	Regulatory intervention in July 2002. No direct regulation previously, but MTRs reduced in March 2001. **Reference of decisions** www.eett.gr/eng	Overall movements not known but reductions since 1999.	Minimal and regulator has ordered rates to be aligned by end of 2002.
Ireland*	No direct regulatory interventions, but MTRs have reduced. **Reference of decisions** odtr.ie	Greater than 10% in 2002.	None.
Italy*	Italy has seen rate reductions since February 2001. The regulator issued a draft decision imposing a price cap for three years, using a 'competitive mechanism' similar to that employed by the ACCC in Australia, tying movements in mobile termination rates to movements in the retail market. **See: www.agcom.it/novit_.htm**	Reductions of 40% since 1999.	None. Different tariff gradients.
Japan*	Rates for termination of international calls for all operators have fallen by 10-50% per year since 1998 based on a historical cost accounting model.	10-50% per year.	None. International traffic incurs a substantially *lower* effective rate than national traffic, although rates for termination of

Country	Commentary	Rate movements	Discrimination against international traffic?
			national traffic operate under a different model, which is currently being reviewed by MPHPT.
The Netherlands*	No intervention on MTR yet, but operators have reduced their rates. Ongoing regulatory procedures since 2002 are considering whether further reductions are required. **Reference of decisions:** www.opta.ne	20% since 1999.	None.
New Zealand*	Although operators may request the regulator to investigate mobile termination rates under the new sector-specific Telecommunications Act, no complaints have been submitted to date.	--	None.
Norway	In a decision of May 01, the regulator imposed a price cap on Telenor's MTRs. In June 02, the regulator requested further reductions. **Reference of decisions** www.npt.no www.npt.no/no/bransjeinfo/nett_og_tjenester/off_telenett/aktu	Not known.	None.

Country	Commentary	Rate movements	Discrimination against international traffic?
	elt/data/2001/telenor-samtrafikk.html		
Portugal*	Regulatory intervention in 2000 and 2002.	15% in 2002.	None. International calls currently receive *lower* MTR than national calls. Regulator has ordered alignment of prices.
Spain*	Regulated in August 2002. No direct regulation previously, but MTRs have reduced. **Reference of decisions** www.cmt.es/cmt/decisiones/ultima.html	Vodafone has decreased its MTR by 30% since 1999.	None.
Sweden*	Telia Mobile has been forced to reduce its MTR following a range of decisions by the regulator: in May 99, March 00, May 01, January 02. In February 02, the regulator intervene also ordered Tele2 and Vodafone to decrease their MTRs. **Reference of decisions** www.pts.se www.pts.se/tele_svar.asp?avdelning=for_branschfolk&uavdelning=tele_svar&u2avdelning=aktuellatelearenden&lang=&header=Aktuella%20teleärenden	20-60% since 1999.	None.

Country	Commentary	Rate movements	Discrimination against international traffic?
The UK*	1990: Oftel intervention in dispute between Mercury and BT Cellnet / Vodafone. 1998: UK Competition Commission set BT Cellnet's and Vodafone's MTRs until 2002. September 01: Oftel proposal to impose charge cap on all four operators. Matter under appeal to the Competition Commission. Decision due January 2003. **Reference of decisions** www.oftel.gov.uk/publications/mobile/ctm0901.htm www.competition-commission.org.uk/inquiries/mobile.ht	02 and Vodafone decreased their MTRs yearly by RPI-9 % 1998-2002. Oftel propose RPI-12% until 2006 (currently under appeal).	None.

ANNEX C – OVUM REPORT *THE FIXED RETENTION ON CALLS TO MOBILES,* DECEMBER 2002

The fixed retention on international calls to mobiles

A report to Vodafone

Ovum:
David Lewin
Jane Parry

25 November 2002
Job CLI89
Final version

Executive summary

Until recently most operators charged at a single blended rate for international calls to mobile terminals and to fixed network terminals. But, since the late 1990s, most operators who terminate international traffic[1] have quoted two settlement rates – one for calls to fixed network terminals and another for calls to mobile terminals. This, in turn, has lead originating operators to set separate retail rates for international calls to fixed and mobile terminals. The new method of retail pricing for international fixed to mobile calls raises two important questions:

- do the higher prices for calls to mobiles reflect the additional costs or do they generate additional profits as well?
- are these higher prices falling to reflect the cuts in mobile call termination rates which are being made in Europe in response to regulatory scrutiny?

In this short report we look at this retail surcharge on calls made ***from*** Germany[2] and the USA ***to*** five EU countries - Austria, Italy, Spain, Sweden and the UK.

Our main findings are as follows.

[1] In countries where the calling party pays for calls to mobiles
[2] As a country representative of the EU

- the retail surcharge on international calls to mobiles generates substantial additional profits as well as recovering the additional costs of delivering these calls
- in many cases it is clear that the originating operator retains these additional profits itself. In other cases the additional profits may be distributed over a number of operators involved in delivering the call to the terminating mobile operator. In any case it is difficult to say whether the additional profits are used to cross subsidise prices for other services or flow through in profits to shareholders
- in the case of calls made from the USA to Europe via AT&T and Worldcom the average surcharge is 80% greater than the additional costs of delivering a call to a mobile terminal
- only a small proportion of this difference can be attributed to higher retail collection costs and bad debt or to the costs of differentiating between international calls to fixed and mobile terminals.
- the additional profits associated with these surcharges are growing. Mobile call termination charges fell by over 10% since AT&T introduced its surcharge but the surcharge has remained unchanged.
- incumbent operators in Europe also apply retail surcharges for making international calls to mobiles. Again there are similar, substantial levels of additional profits associated with these surcharges – at least in Germany, the country chosen for our analysis.

1 International calls to mobiles

Until recently most operators charged at a single blended rate for international calls to mobile terminals and to fixed network terminals - despite the fact that the national termination rate for mobile call termination was substantially greater than that for fixed call termination.

Such a blended rate was a practical simplification while:

- international settlement rates remained high
- the proportion of international calls made to mobiles remained low.

The operator terminating international calls was prepared to accept a low margin on calls to mobiles which was compensated for by higher margins on other calls.

Over the past few years however the proportion of international calls to mobiles has grown substantially and settlement rates have fallen sharply. Together these changes have made a blended rate untenable. In particular they have lead to arbitrage opportunities for operators with national traffic to deliver to mobile networks. Once the blended international settlement rate drops significantly below the mobile call termination rate, it makes commercial sense for an operator to:

- export minutes destined for a mobile network in the same country
- pay the settlement rate for delivering the calls back into the country rather than the national mobile call termination rate.

This practice grew to substantial proportions in the late 1990s and lead many operators who terminate international traffic to quote two settlement rates – one for calls to fixed network terminals and another for calls to mobile terminals. This in turn lead originating operators to set separate retail rates for international calls to fixed and mobile terminals.

This new method for retail pricing of international fixed to mobile calls is in principle a good thing. It leads to greater economic efficiency in retail prices which better reflect the underlying cost of provision. But it also raises two important questions:

- do the higher prices for calls to mobiles reflect the additional costs or do they generate additional profits as well?
- are these higher prices falling to reflect the cuts in mobile call termination rates which are being made in Europe in response to regulatory scrutiny?

This short report tries to answer these questions. In it we consider the retail surcharge on calls made ***from*** Germany[3] and the USA ***to*** five EU countries - Austria, Italy, Spain, Sweden and the UK. We select this set of EU countries because they publish mobile call termination rates. In many countries mobile call termination rates are not yet published.

2 Surcharges on calls from the USA

2.1 Introduction

In the USA the main international carriers - AT&T and WorldCom – have both introduced differentiated rates for international calls to mobiles during the last two years. AT&T introduced two tier retail rates in February and March 2001[4] and Worldcom in September 2001. Both operators set their prices for international calls to mobile terminals as a surcharge on the rates for the equivalent call to a fixed terminal. The surcharges set at these dates to the five terminating countries under study are shown in Figure 2.1. These surcharges have not changed since they were introduced. They apply to all the many price packages offered by the two carriers at all times throughout the week. For some destinations the two operators apply the same surcharge; for others the surcharges differ as shown in Figure 2.1.

Figure 2.1 The mobile surcharge of the two leading US international carriers

Call to	Mobile surcharge in US cents per minute	
	AT&T	Worldcom
Austria	16	17
Italy	18	18
Spain	13	18
Sweden	21	21
UK	22	22

3 As a country representative of the EU
4 The date depended on the calling plan the customer was using at the time

2.2 Comparing surcharges with additional costs

Are the US international carriers simply recovering the additional costs of making international calls to mobiles or are they generating additional profits as well? We can answer this question by comparing the surcharge with the additional costs which are incurred as a result of terminating a call on a mobile rather than a fixed terminal.

The main additional costs which AT&T and Worldcom incur are given by:

- the average mobile call termination charge in the terminating country ***less***
- the average fixed call termination charge avoided in the terminating country.

To estimate the mobile call termination charge in the terminating country we have used the following approach:

a) we tabulate the call termination prices charged by each mobile operator in March 2001 and July 2002. We use rates as recorded in Ovum's Interconnect@Ovum service

b) where prices differ by time of week we produce a weighted average rate using a standard country specific traffic profile which is based on traffic received over a week by a number of EU mobile operators

c) where prices differ by mobile operator called we produce a weighted average rate using market shares measured in number of subscribers at the date in question.

d) we convert all prices to Euros per minute using the exchange rates which prevailed at the time

Annex A presents the data used.

To estimate the average fixed call termination charge we use the same approach. We assume that a double tandem fixed call termination charge is normally paid when terminating a call on a fixed network terminal.

2.3 Findings

Figure 2.2 compares the retail surcharge with the main additional costs which the US carriers incur. Note that we have adjusted the surcharge to ensure we are comparing like with like. US operators pay for mobile call termination charges by the second but charge their retail customers by the minute or part minute. So an AT&T customer who makes a 10 second call to a mobile in the UK pays an additional 22 cents while AT&T pays only for 10 seconds of mobile call termination. To take account of the minute billing unit for retail calls we need to increase the surcharge by 20% before making the comparison. See Annex B for details.

We can see that:

- on average the surcharge is 80% greater than the additional costs incurred as a result of delivering to a mobile rather than a fixed terminal
- this difference ranges from 41% for calls to Italy to 127% for calls to Sweden.

These differences appear to reflect additional profits. We might account for a small proportion of the difference between the surcharge and the additional costs through:

- increase in bad debt. Given what we know about bad debt rates in companies similar to AT&T and WorldCom we would expect this allowance for bad debt might narrow the gap from the observed 80% to around 65%. We understand that bad debt in companies like AT&T and Worldcom is running at 5 to 10% pa. Let use assume a rate of 9%. In the case of a route where additional costs are 10 cents per minute and the surcharge is 18 cents per minute we would need to increase the additional costs from 10 to 10.99 cents per minute (10/(1-0.91)) to allow for bad debt. At this point the ratio of surcharge to additional costs falls from 80% to 64% (18/10.99)
- the cost of distinguishing between calls to mobiles and calls to fixed terminals in each country. The main cost here is maintaining tables needed to distinguish the two call types. Let us assume that:
  - 20% of international calls from the USA are now made to mobiles
  - there are 50 billion such calls
  - AT&T and WorldCom each employ two full time staff at $100,000 per annum to maintain these tables.

  These assumptions lead to an additional cost per mobile minute of less than 0.01 US cents per minute.

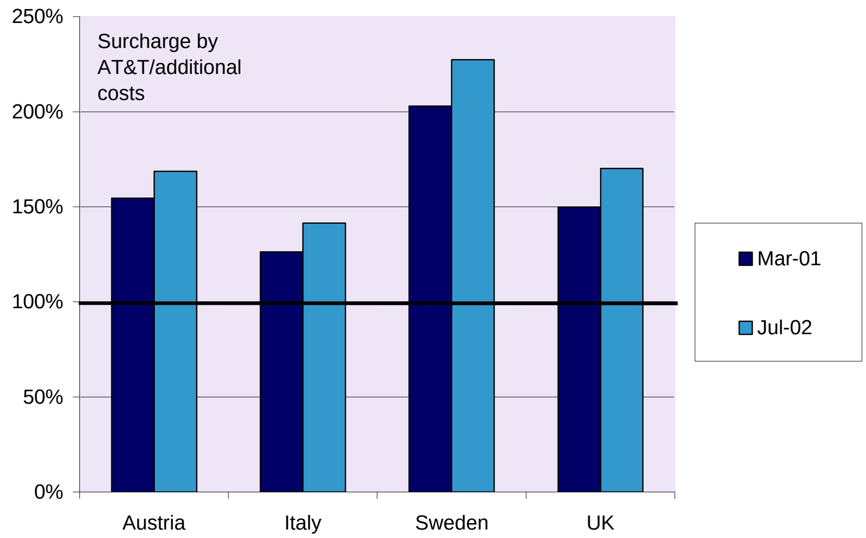
Figure 2.2   The surcharge and additional costs compared – July 2002

Calls to	*Surcharge (1)*		*Ave. mobile termination charge (2)*	*Ave. fixed termination charge (3)*	*Additional costs for mobile termination*	*Surcharge/additional cost*	
	AT&T	*Worldcom*				*AT&T*	*Worldcom*
Austria	19.2	20.4	12.9	1.5	11.4	169%	179%
Italy	21.6	21.6	16.7	1.4	15.3	141%	141%
Spain	15.6	21.6	11.8	1.6	10.2	153%	212%
Sweden	25.2	25.2	12.0	1.0	11.1	227%	227%
UK	26.4	26.4	16.5	1.0	15.5	170%	170%
Average						**172%**	**186%**

(1) In Eurocents per minute at 1.0 euro per $ with 20% uplift for per minute charging
(2) In Eurocents per minute
(3) Double tandem termination charge in Eurocents per minute

Figure 2.3 then shows how the additional profits generated by these surcharges have grown since AT&T introduced the surcharges in February and March of 2001. Over this period mobile call termination rates have dropped substantially but the surcharges have remained unchanged.

Figure 2.3 The growth of additional profits



2.4 Who keeps the additional profits?

Worldcom operates extensive networks in Europe and uses them to interconnect directly with the mobile operators in the terminating countries. So it pays the mobile call termination rates of Figure 2.2 and retains the whole of the profit on the surcharge. The position for AT&T is less certain. Until recently AT&T ran the Concert joint venture with BT and, almost certainly, used agreements reached under this joint venture for the delivery of calls to mobile terminals in Europe. Now that Concert has disappeared it is possible that AT&T:

- continues to use BT's European network facilities for delivery of this traffic
- has built its own points of presence in the terminating countries and interconnects at national interconnect rates based on the mobile call termination rate plus a small transit rate[5]
- uses international wholesalers in the USA to terminate its traffic. Arbinet for example offers wholesale rates which are typically 20% below the retail surcharges for carrying calls from New York to mobile terminals in EU countries.

In either case it is impossible to tell whether the additional profits are used to cross subsidise prices for other services or flow through in profits to shareholders

[5] Typically 0.5 cents per minute or less

3 Surcharges in Germany

3.1 The surcharges of Deutsche Telekom

Deutsche Telekom (DTAG) charges for international calls to mobiles by putting a surcharge on its fixed international rates to countries which use the calling party pays system for calls to mobiles. There are three rates of surcharge:

- 12.78 Eurocents per minute for countries with relatively low mobile call termination rates
- 18.95 Eurocents per minute for countries with mid level mobile call termination rates
- 21.55 Eurocents per minute for countries with high mobile call termination rates

These rates apply at all times of the week and are charged for each minute or part minute. The surcharges for calls to the study countries are shown in Figure 3.1.

Figure 3.1 The surcharges of Deutsche Telekom

Calls to	*Surcharge by DTAG(1)*
Austria	18.9
Italy	18.9
Spain	18.9
Sweden	21.5
UK	21.5

(1) In Euro cents per minute from DTAG price list for September 2002

3.2 The surcharges and additional costs compared

Figure 3.2 provides a comparison of DTAG's surcharges with its additional costs. Again we have adjusted the surcharge to take account of the fact that DTAG charges users by the minute but pays by the second.

Figure 3.2 The surcharge and additional costs compared

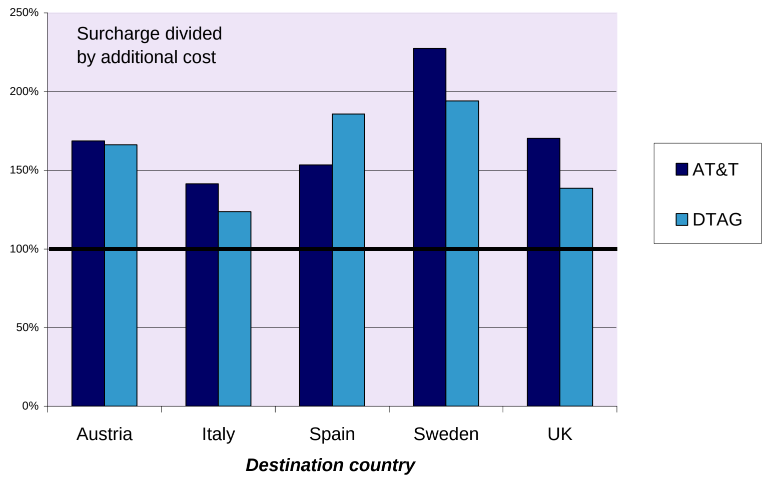
Calls to	*Surcharge by DTAG(1)*	*Surcharge by DTAG adjusted for per minute charging unit*	*Ave. mobile termination charge (2)*	*Ave. fixed termination charge (3)*	*Additional costs for mobile termination (4)*	*Surcharge / additional cost*
Austria	18.9	22.68	12.9	1.5	11.4	166%
Italy	18.9	22.68	16.7	1.4	15.3	124%
Spain	18.9	22.68	11.8	1.6	10.2	186%
Sweden	21.5	25.8	12.0	1.0	11.1	194%
UK	21.5	25.8	16.5	1.0	15.5	139%

(1) In Euro cents per minute from DTAG price list for September 2002
(2) In Eurocents per minute
(3) Double tandem termination charge in Eurocents per minute

3.2 Germany and the USA compared

Figure 3.3 shows the extent to which DTAG's and AT&T's surcharges each exceed the additional costs. There is little to choose between them. The additional profits on calls to Austria is about the same; AT&T makes more on calls to mobiles in Italy, Sweden and the UK; and DTAG makes more on calls to Spain.

Figure 3.3 Surcharges as a % of additional costs – DTAG v AT&T



4 Conclusions

The retail surcharge on international calls to mobiles generates substantial additional profits as well as recovering the additional costs of delivering these calls

In many cases it is clear that the originating operator retains these additional profits itself. In other cases the additional profits may be distributed over a number of operators involved in delivering the call to the terminating mobile operator. In any case it is difficult to say whether the additional profits are used to cross subsidise prices for other services or flow through in profits to shareholders

in the case of calls made from the USA to Europe via AT&T and Worldcom the average surcharge is 80% greater than the additional costs of delivering a call to a mobile terminal

Only a small proportion of this difference can be attributed to higher retail collection costs and bad debt or to the costs of differentiating between international calls to fixed and mobile terminals.

The additional profits associated with these surcharges are growing. Mobile call termination charges fell by over 10% since AT&T introduced its surcharge but the surcharge has remained unchanged.

Incumbent operators in Europe also apply retail surcharges for making international calls to mobiles. Again there are similar, substantial levels of additional profits associated with these surcharges – at least in Germany, the country chosen for our analysis.

Annex A   Data used to estimate basic fixed retention

Interconnect F-M tariffs (excluding VAT) - March 2001

	Setup	Peak	Off-peak	Weekend	Mkt share	Currency	*Source*
	Mar-01						
BT		8-18h M-F	18-8h M-F	S,S			
Vodafone		0.132	0.132	0.047	27%	GBP	OIK Q1 01
BT / O2		0.132	0.132	0.011	25%	GBP	OIK Q1 01
Orange		0.152	0.111	0.045	26%	GBP	OIK Q1 01
0ne2One / T-Mobile		0.168	0.108	0.025	22%	GBP	OIK Q1 01
Average					100%		
Telecom Italia		8-1830 M	1830-8 M	S,S except Sat 8-1330			
TIM		430	290	290	50%		
Omnitel		425	295	295	34%		
Wind							
Blu							
Average					84%		
Telekom Austria		8-18 M-F	18-8 M-F	S,S			
Mobilkom / A1		1.90	1.90	1.90	44%	ASch	OIK Q1 01
ONE (Connect)		1.90	1.90	1.90	33%		
Max.mobil / T-Mobile		1.90	1.90	1.90	21%		
Tele.ring		2.9	2.9	2.9	2%		
Average					100%		
Telefonica		8-16 M-F,	16.00-8.0 SS except 8.00-14.00 Sat				
Telefonica Moviles					57%		
Airtel / Vodafone		Estimates only available			26%		
Average					83%		
Telia		8-18h M-F	18-8h M-F	S,S			
Telia Mobitel		1.180	1.180	1.180	49%	SKR	OIK Q1 01
Comviq		1.240	1.240	1.240	35%	SKR	OIK Q1 01
Europolitan		1.240	1.240	1.240	16%	SKR	OIK Q1 01
Average					100%		OIK Q1 01

Interconnect F-M tariffs (excluding VAT) - July 2002

	Setup	Peak	Off-peak	Weekend	Mkt share	Currency	*Source*
	Jul-02						
BT		8-18h M-F	18-8h M-F	S,S			
Vodafone		0.133	0.074	0.048	25%	GBP	OIK Jul 02
BT / O2		0.126	0.103	0.012	24%	GBP	OIK Jul 02
Orange		0.140	0.101	0.042	27%	GBP	OIK Jul 02
0ne2One / T-Mobile		0.158	0.109	0.026	24%	GBP	OIK Jul 02
Average					100%		
Telecom Italia		8-1830 M	1830-8 M	S,S except Sat 8-1330			
TIM		0.199	0.129	0.129	48%	Euros	OIK Jul02
Omnitel		0.194	0.152	0.152	33%	Euros	OIK Jul02
Wind							
Blu							
Average					81%		
Telekom Austria		8-18 M-F	18-8 M-F	S,S			
Mobilkom / A1		0.113	0.113	0.113	42%	Euro cent	Q3 02 OIK
ONE (Connect)		0.138	0.138	0.138	25%	Euro cent	Q3 02 OIK
Max.mobil / T-Mobile		0.138	0.138	0.138	30%	Euro cent	Q3 02 OIK
Tele.ring		0.196	0.196	0.196	3%	Euro cent	Q3 02 OIK
Average					100%		
Telefonica		8-16 M-F,	16.00-8.0 SS except 8.00-14.00 Sat				
Telefonica Moviles		0.172	0.095	0.095	56%	Euros	OIK Jul 02
Airtel / Vodafone		0.172	0.095	0.095	24%	Euros	OIK Jul 02
Average					80%		
Telia		8-18h M-F	18-8h M-F	S,S			
Telia Mobitel		0.920	0.920	0.920	46%	SEK	OIK Jul 02
Comviq		1.240	1.240	1.240	38%	SEK	OIK Jul 02
Europolitan		1.240	1.240	1.240	16%	SEK	OIK Jul 02
Average					100%		

Exchange rates used - euros per local currency

	01-Jan-99	*01-Oct-00*	*01/03/2001*	*01-Jul-02*
UK	1.4221	1.66528	1.567	1.54631
Italy	0.0005	0.0005	0.0005	1.0000
Austria	0.0727	0.0727	0.0727	1.0000
Spain	0.0060	0.0060	0.0060	1.0000
Sweden	0.11717	0.11717	0.1105	0.11019

Market shares

		Jan-99	Oct-00	Mar-02	Jul-02
UK	Vodafone	38%	30%	27%	25%
	BT / O2	31%	26%	25%	24%
	Orange	15%	24%	26%	27%
	0ne2One / T-Mobile	16%	20%	22%	24%
Italy	TIM	70%	54%	50%	48%
	Omnitel	30%	35%	34%	33%
	Wind				
	Blu				
Austria	Mobilkom / A1	63%	46%	44%	42%
	ONE (Connect)		17%	33%	25%
	Max.mobil / T-Mobile		36%	21%	30%
	Tele.ring		1%	2%	3%
Spain	Telefonica Moviles	70%	57%	57%	56%
	Airtel / Vodafone	30%	29%	26%	24%
Sweden	Telia Mobitel	54%	52%	49%	46%
	Comviq	31%	33%	35%	38%
	Europolitan	15%	15%	16%	16%

Time of week traffic distribution for the study period

	Peak	*Off-peak*	*Weekend*
UK	48%	37%	16%
Italy	49%	37%	14%
Austria	47%	37%	16%
Spain	30%	56%	14%
Sweden	47%	37%	16%

Annex B The uplift for one minute charging

Consider two users. One pays for calls by the second at one unit per second and the other by the minute or part minute at 60 units per minute. What do these callers pay on average for calls? On the face of it the rate per minute is the same – 60 units per minute. But in practice the first caller pays less.

Figure 1 provides a simple estimate of the difference. We assume that:

- the distribution of calls made by the two callers is the same
- the length of calls is distributed over an eight minute period as shown in Column 5 of the table
- the average call duration is 152 seconds (just over 2.5 minutes)
- We then calculate the average charge paid under the two tariffs. We find that the caller charged by the minute pays 20% more than the caller charged by the second when we average over the whole distribution of call holding times.

Figure 1 The uplift for per minute charging

Minute	% calls	10 second category	Average call duration in seconds	% calls	Average duration	Pay with per minute charging	Weighted average charge	Pay with per second charging	Weighted average charge
1	13.0%	1	5	0.5%	0.03	60	0.3	5	0.025
		2	15	1.0%	0.15	60	0.6	15	0.15
		3	25	1.5%	0.38	60	0.9	25	0.375
		4	35	2.0%	0.70	60	1.2	35	0.7
		5	45	3.5%	1.58	60	2.1	45	1.575
		6	55	4.5%	2.48	60	2.7	55	2.475
2	31.0%	1	65	5.0%	3.25	120	6	65	3.25
		2	75	5.5%	4.13	120	6.6	75	4.125
		3	85	5.5%	4.68	120	6.6	85	4.675
		4	95	5.5%	5.23	120	6.6	95	5.225
		5	105	5.0%	5.25	120	6	105	5.25
		6	115	4.5%	5.18	120	5.4	115	5.175
3	24.0%	1	125	4.5%	5.63	180	8.1	125	5.625
		2	135	4.5%	6.08	180	8.1	135	6.075
		3	145	4.0%	5.80	180	7.2	145	5.8
		4	155	4.0%	6.20	180	7.2	155	6.2
		5	165	3.5%	5.78	180	6.3	165	5.775
		6	175	3.5%	6.13	180	6.3	175	6.125
4	15.0%	1	185	3.0%	5.55	240	7.2	185	5.55
		2	195	3.0%	5.85	240	7.2	195	5.85
		3	205	2.5%	5.13	240	6	205	5.125
		4	215	2.5%	5.38	240	6	215	5.375
		5	225	2.0%	4.50	240	4.8	225	4.5
		6	235	2.0%	4.70	240	4.8	235	4.7
5	9.0%	1	245	1.9%	4.66	300	5.7	245	4.655
		2	255	1.7%	4.34	300	5.1	255	4.335
		3	265	1.5%	3.98	300	4.5	265	3.975
		4	275	1.4%	3.85	300	4.2	275	3.85
		5	285	1.3%	3.71	300	3.9	285	3.705
		6	295	1.2%	3.54	300	3.6	295	3.54
6	5.0%	1	305	1.1%	3.36	360	3.96	305	3.355
		2	315	1.0%	3.15	360	3.6	315	3.15
		3	325	0.9%	2.93	360	3.24	325	2.925
		4	335	0.8%	2.68	360	2.88	335	2.68
		5	345	0.7%	2.42	360	2.52	345	2.415
		6	355	0.5%	1.78	360	1.8	355	1.775
7	2.1%	1	365	0.5%	1.83	420	2.1	365	1.825
		2	375	0.4%	1.50	420	1.68	375	1.5
		3	385	0.4%	1.54	420	1.68	385	1.54
		4	395	0.3%	1.19	420	1.26	395	1.185
		5	405	0.3%	1.22	420	1.26	405	1.215
		6	415	0.2%	0.83	420	0.84	415	0.83
8	0.9%	1	425	0.2%	0.85	480	0.96	425	0.85
		2	435	0.2%	0.65	480	0.72	435	0.6525
		3	445	0.2%	0.89	480	0.96	445	0.89
		4	455	0.2%	0.91	480	0.96	455	0.91
		5	465	0.1%	0.47	480	0.48	465	0.465
		6	475	0.1%	0.24	480	0.24	475	0.2375
	100.0%			100.0%	152		182.34		152.16