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International roaming: is there a need for EU-regulation beyond 2010?

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Abstract

Purpose – *The purpose of the paper is to analyze the need for regulation of international roaming within EU beyond 2010.*

Design/methodology/approach – *The paper analyzes roaming costs, market conditions and present regulation. On this basis, future prospects for competition in international roaming are discussed.*

Findings – *Market developments indicate that regulation of international roaming charges will be needed for some time, before competition can ensure that roaming charges are at a level that reflects the underlying costs.*

Research limitations/implications – *The paper limits its analysis to roaming of voice services, and excludes analysis of roaming of data service services.*

Originality/value – *The paper contributes to the ongoing discussion on the need to regulate international roaming charges.*

Keywords *European Union, Legislation, Mobile communications systems, Pricing policy, Regulation, Telecommunications*

Paper type *Research paper*

1. Background

Following a lengthy debate on how to avoid excessive international roaming prices within the EU, the Council of Ministers adopted in June 2007 legislation in this market. The legislation includes common Europe wide ceilings on international roaming charges at both wholesale and retail levels. The price caps are lowered every year and will be effective until 2010 in order to secure cheaper roaming services within the EU area. The Commission shall review the functioning of the regulation, and it will be decided whether there will be need for regulation beyond 2010.

High international roaming charges have been a matter of concern in several countries. The Australian Competition and Consumer Commission concluded in 2005 that both wholesale and retail roaming charges are too high, but have not turned into direct price regulation. The Arab Regulators' Network is working on different models for introducing price regulation in the Arab region.

Regulation of international roaming is more complicated than regulation of other telecom services for two reasons. First, the market structures on mobile markets are different than on markets for fixed services. Second, regulation of international roaming is difficult to implement at the national level as operators from more than one country are involved.

The legislation on regulation of international roaming made by the EU introduces price caps in both retail and wholesale markets for international roaming (Sutherland, 2008). The major argument for such a heavy handed regulation is that international roaming prices hitherto have been way above cost based prices, and that roaming charges represent a major

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barrier towards growth in international mobile communication within the EU. The proposal has already resulted in a reduction in international roaming prices with more than 50 percent. The question is how this intervention will affect the market in the long term. Will a temporary price cap be enough to keep prices down or will it be necessary to introduce a more permanent type of regulation? Another question is if such regulation can be made without having a negative impact on competition and innovation.

This paper will first look at the technology and analyze the costs of providing roaming services. Thereafter the demand and supply conditions on the roaming market are analyzed. Finally the present EU regulation and its future are discussed. Following its regulatory intervention in 2007, the EU Commission has later initiated regulation of international roaming of data services. However, this paper limits its analysis to voice services, and excludes data service services from the analysis.

2. Roaming technology

The most important components used when international roaming is required are the Home Location Register (HLR), the Visiting Location Register (VLR), and the Mobile Switching Center (MSC). They provide the call-routing and roaming capabilities of the GSM network, which is the topic of this paper. The signaling system which is used for communication between these intelligent network components in the GSM network is the Signaling System 7 (SS7), which is widely used also in PSTN and ISDN networks. Other components in the mobile network system are the Equipment Identity Register (EIR), the Authentication Center (AUC), and the Gateway Mobile Switching Center (GMSC).

When a mobile terminal is turned on or moved to a new location area, it will register its location information to the VLR[1]. The VLR sends the location information of the mobile station to the HLR. In this way the HLR is always updated with regard to location information of subscribers registered in the network. The information sent to the HLR is normally the SS7 address of the new VLR, although it may be a routing number. A routing number is not normally assigned, even though it would reduce signaling, because there are only a limited number of routing numbers available in the new MSC/VLR and they are allocated on demand for incoming calls. If the subscriber is entitled to service, the HLR sends a subset of the subscriber information, needed for call control, to the new MSC/VLR, and sends a message to the old MSC/VLR to cancel the old registration. Call routing is based on the dialed mobile number, which is an E.164 number starting with country code, etc. If the dialed number is a local number, the connection is set up locally; otherwise the call is transmitted to the country to which the number belongs.

Depending on the usage scenario, different routing modes can be used for international roaming calls. At least four different scenarios can be distinguished:

1. Calls inside a visited country.
2. Calls from a visited country to the user's home country.
3. Calls from a visited country to a third country.
4. Calls received in a visited country.

It follows that three different countries may be involved in the handling of an international roaming call:

1. ''Home country''. The country, where the user has his/her subscription. We have chosen Denmark as the home country.
2. ''Visited country''. The country visited by the user. We have chosen France to be the country visited.
3. ''Third country''. The country to which the call is directed, if different from the home country and the visited country. We have chosen Germany as the third country.

Scenario 1: Calls inside a visited country

Different variations of scenario 1 are depicted in Figure 1.

1a) A Danish user traveling in France calls a French user staying in France. As seen, the call is routed locally in the visited country (France). The call set-up and switching are performed and maintained in France. However, even though the call is routed locally, there are signaling communications between Denmark and France. For the voice connection, one origination and one termination are deployed.

1b) A Danish user traveling in France calls another Danish user traveling in France. The call is routed to Denmark and the switching and call set-up are performed in Denmark. So apart from the origination and termination there are two international transits between France and Denmark included in order to maintain the connection. This routing method is called ''tromboning''[2] in the literature, which indicates that the voice channel is sent to the home network and back. This method is the common practice, but there are technologies which can eliminate the ''tromboning'' part and maintain a local termination in this scenario (Audestad, 2004). This requires standardization and agreement between the operators, and the cost reduction incentives are not very high, which has resulted in relatively limited use of these technologies.

1c) A Danish user traveling in France calls a German user traveling in France. This is like the 1b scenario, but here the call is sent to Germany. Also additional signaling is needed.

Scenario 2: Calls from a visited country to the home country

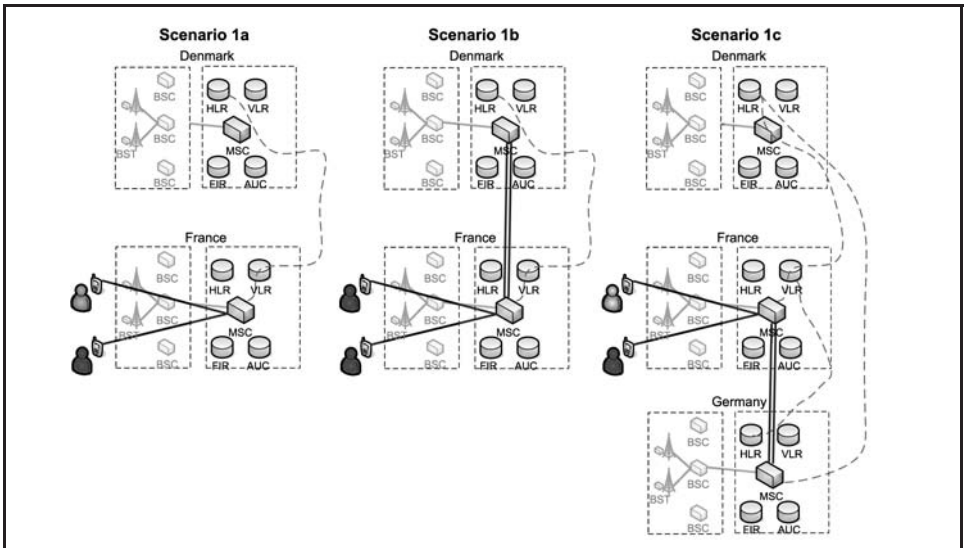
Different variations of scenario 2 are depicted in Figure 2.

2a) A Danish user traveling in France calls a Danish user staying in Denmark. The call is sent to Denmark. The call set up is performed in Denmark. There is one origination, one termination and one transit.

2b) A Danish user traveling in France calls a French user travelling in Denmark. The call set up is maintained in France. There is one origination, one termination and one transit. There is additional signaling between VLR in Denmark and HLR in France.

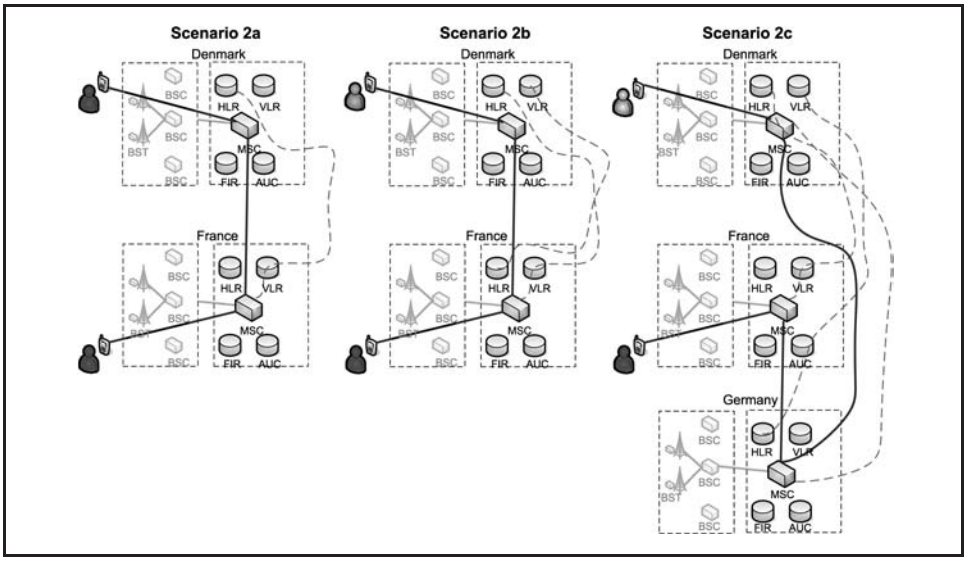
2c) A Danish user traveling in France calls a German user traveling in Denmark. The call is sent to Germany. The call set-up is performed in Germany. There is one origination, one

Figure 1 Scenario 1: Calls inside a visited country



Note: Dashed lines indicate signaling channels, and bold lines indicate voice channels

Figure 2 Scenario 2: Calls from a visited country to the home country



termination, one transit between France and Germany and one transit between Germany and Denmark. There is additional signaling between Denmark and Germany.

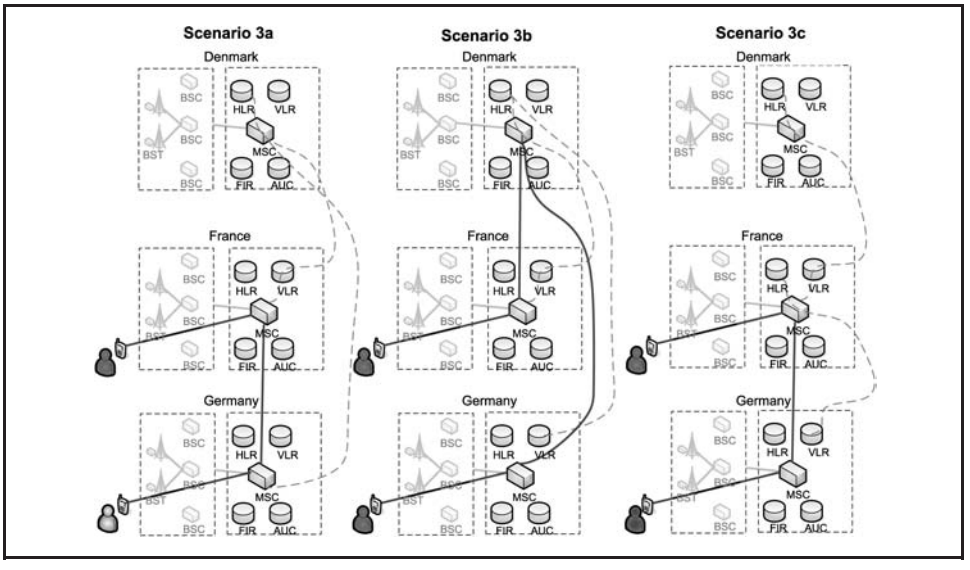
Scenario 3: Calls from a visited country to a third country

Different variations of scenario 3 are depicted in Figure 3.

3a) A Danish user traveling in France calls a German user staying in Germany. The call is sent to Germany. The call set-up is performed in Germany. There is one origination, one termination and one transit.

3b) A Danish user traveling in France calls a Danish user traveling in Germany. The call is sent to Denmark. The call set up is performed and maintained in Denmark. There is one origination, one termination, one transit between France and Denmark and one transit between Denmark and Germany.

Figure 3 Scenario 3: Calls from a visited country to a third country



3c) A Danish user traveling in France calls a French user traveling in Germany. The call set up is performed in France. There is one origination, one termination and one transit between France and Germany.

Scenario 4: Receiving calls in a visited country

This applies to all the above-mentioned scenarios, however with the difference that here, the Danish user traveling in France receives a call. This will in all cases involve one termination.

All scenarios assume that calls are terminated in a mobile network. Scenarios similar to scenarios 1-3 could be made for calls with fixed termination. In scenario 4, calls can be originated either in the fixed or the mobile network. This is however not relevant in this context, as the roaming charge paid in this scenario does not include call origination (this is paid by the caller).

3. Techno-economic analysis of roaming costs

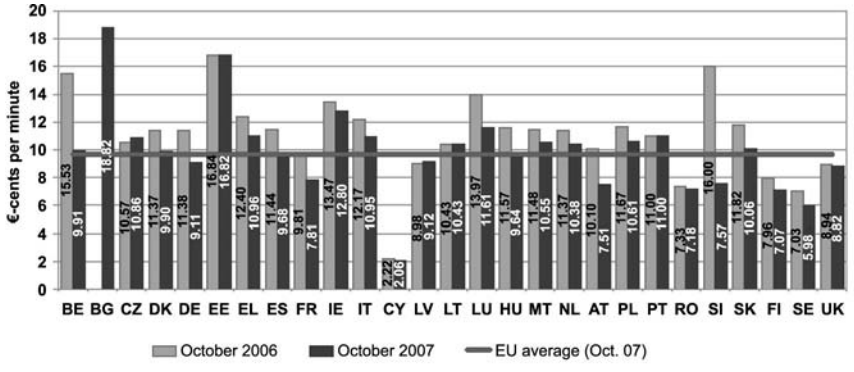
Basically, international roaming involves the following functions:

- Mobile origination (MO).
- Mobile/Fixed termination (MT/FT).
- International transit (IT).
- Roaming specific costs (RSC).

The costs of mobile origination are comparable to those of mobile termination. Mobile termination rates are subject to regulation within the EU and are in principle cost-based. Mobile termination rates per minute varied in October 2007 between €0.0206 in Cyprus and €0.1882 in Bulgaria (Figure 4). However in most countries the rates are close to the EU average of €0.0967. The European average for local fixed termination is € 0.0083. It may be argued that it is more appropriate to use the double transit charge of € 0.012 (European average), as the calls to be terminated are international.

International transit costs depend on the inter-operator tariffs agreed between operators. These tariffs are confidential, but some information on these has been provided to the Commission. According to Copenhagen Economics, international transit costs vary between €0.01 and €0.025 per minute (Jervelund *et al.*, 2007). They use in their calculations €0.02 per minute as a high estimate for international transit costs. INTUG, for instance, estimates that the wholesale cost for international calls between EU countries is of the order of €0.01 per minute (INTUG, 2006). In the report from Copenhagen Economics, roaming specific costs

Figure 4 Interconnection charges for call termination on mobile networks (national average on the basis of subscribers) EU average October 2007: 9,67 €-cents



Source: CEC: Progress report on the single European electronic communications market 2007 (13th report) Brussels, 19/03/2008 SEC (2008) 356, Volume 2

are estimated to account for €0.01-0.02 per minute. The costs used in the calculations are summarized in Table I.

Using the cost estimates from Figure 1, roaming costs for each scenario can be calculated as depicted in Table II. The results are in line with the wholesale cost estimated in the impact assessment report prepared by the Commission (CEC, 2006a). In this report the average international roaming costs are estimated to be slightly below €0.02 per minute. A report on the same issue published by The European Parliament estimate the same costs to be €0.02-0.03 per call (European Parliament, 2006). It follows from the table that the major cost components are origination and termination of a call. These two components add up to €0.1265 or €0.228 depending on the kind of termination. In spite of this, retail charges for international roaming call are almost four times higher than for national mobile calls (Figure 5). This indicates that the charges currently paid by international roaming customers are way above the underlying costs, and that the Commission therefore had a strong case for suggesting regulatory intervention.

4. Structure of the market for roaming services

The market for international roaming services differs in many ways from the markets for other mobile services. The special characteristics of this market have been studied in a number of reports and research papers, e.g. (Stumpf, 2001). A formal mathematical model of the market is presented in (Salsas and Koboldt, 2004) and further extended in (Lupi and Manenti, 2006). The Commission has also created a model in their impact assessment report (CEC, 2006a).

Demand conditions – retail

According to the impact assessment report international roaming is used by at least 147 million EU citizens, of whom 110 million are business customers, while 37 million are traveling for leisure purposes (CEC, 2006a).

Although international roaming is an important service used by a large group of customers, most subscribers use this service only occasionally, and the level of roaming charges is

Table I Cost estimates of key network functions in international roaming

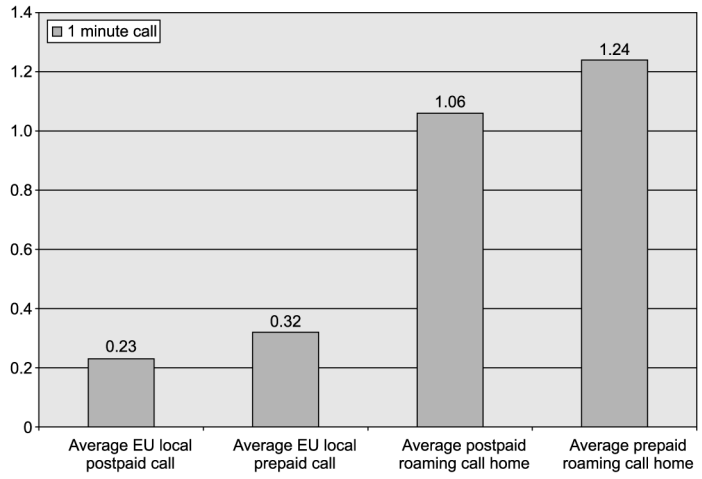
	€ per minute
Mobile origination/termination (MT)	0.10
Fixed termination (FT)	0.012
International transit (IT)	0.02
Roaming specific costs (RSC)	0.02

Table II Roaming costs per scenario (€ per minute)

Scenario	*Mobile termination*		*Fixed termination*	
0	2*MT	0.20	FT + MT	0.112
1a	2*MT + RSC	0.22	FT + MT + RSC	0.132
1b	2*MT + RSC + 2*IT	0.26	FT + MT + RSC + 2*IT	0.172
1c	2*MT + 2*RSC + 2*IT	0.28	FT + MT + 2*RSC + 2*IT	0.192
2a	2*MT + RSC	0.22	FT + MT + RSC	0.132
2b	2*MT + RSC + IT	0.24	FT + MT + RSC + IT	0.152
2c	2*MT + 2*RSC + 2*IT	0.28	FT + MT + 2*RSC + 2*IT	0.192
3a	2*MT + RSC + IT	0.24	FT + MT + RSC + IT	0.152
3b	2*MT + RSC + 2*IT	0.26	FT + MT + RSC + 2*IT	0.172
3c	2*MT + RSC + IT	0.24	FT + MT + RSC + IT	0.152
4	IT + RSC	0.04	–	–

Notes: Scenario 0 includes the costs for a national call without roaming. RSC are included for 2c as this type of call involves more complicated call handling than the other scenarios. Scenario 4 includes costs incurred in addition to those paid by the calling party only

Figure 5 Prices of local and roaming calls



Source: CEC (2006a)

relatively unimportant for the total cost paid by a mobile subscriber. Therefore only few subscribers will let their choice of operator depend on the roaming charges offered.

Another characteristic of roaming services is that it involves use of many different visiting networks, so even high volume users may only gain a minor benefit by reductions in wholesale roaming charges by a particular operator.

An alternative to international roaming is to acquire a local SIM-card and in this way to avoid paying roaming charges. This solution is in particular attractive for placing local calls abroad, and is used by many potential high volume users of international roaming.

Even though the level of roaming charges is not used as a parameter in competition, it might still be a price elastic service. According to a European fieldwork on roaming prepared in 2006, the main reason for using the mobile phone less while traveling abroad is excessive costs, and six out of ten Europeans would use their phone abroad if prices were more attractive (European Parliament, 2007c).

The impact assessment report assumes in its analysis price elasticities between − 0.55 and − 1.20 (CEC, 2006a). If this is correct, there will be substantial welfare gains associated with price reductions towards costs based prices (if elasticity are − 1.20, even operators revenue will increase).

It should however be noted that the majority of the subscribers using international roaming are business customers, who are likely to be less price sensitive than private customers. Another factor, which may lead to low price sensitivity is lack of transparency. If users are unaware of the actual prices, price reductions will not lead to a higher demand. Use of SMS informing about roaming charges sent to subscriber arriving in country makes the prices more transparent and may therefore increase price elasticity.

International roaming is an international service. International roaming is demanded by customers, when they are abroad. The demand for roaming in a certain area depends therefore not on the number of local customers, but on the number of visitors. Roaming may therefore constitute a major share of the traffic and revenue in tourist areas.

Supply conditions – Retail

Suppliers at the retail market include all mobile operators at the national market. As with most other telecom services, the retail market is more competitive than the wholesale market as it includes network operators as well as virtual operators and service providers. Although the

suppliers are identical to those offering other mobile services, the roaming market seems to be less competitive. At least the mark-ups demanded by the operators are much higher than mark-ups on other mobile services. The reasons for this is that international roaming is bundled with the subscription for domestic mobile services (unless the customer buys a new SIM-card), and that customers consider roaming rates to be of minor importance compared to rates for other services.

Demand conditions – wholesale

International roaming services is demanded by all mobile operators offering international roaming to their retail customers. Only few operators with an international footprint are able to handle part of their roaming within their own network, while others other – including virtual network operators – will need to buy roaming services from local mobile operators.

Operators will charge their retail customers a price covering the wholesale roaming costs plus a mark-up covering various retail costs such as billing and customer handling. The incentive to reduce wholesale costs depends on how price sensitive the retail customers are. In addition, for technical reasons, it is not always possible for the HMNO to choose the VMNO offering the lowest price.

Supply conditions – wholesale

Non-roaming international mobile calls can be handled within the same framework as fixed international calls. Before the liberalization international fixed calls were priced according to the international accounting rates. The system with international accounting rates dates back to 1865, when the predecessor of ITU were created. The rate determines how much an operator in one country needs to pay for termination of a call in another country. These rates are negotiated on a bilateral basis and are loosely connected to the costs of maintaining end-to end facilities between the two countries (ITU, 1996).

Payments of international roaming calls are organized in a similar way as other international calls: The call is handled by the operator, where the call is originated. If this involves use of services from other operators, these operators are paid wholesale charges by the originating operator.

In international roaming the call is originated in a visited network and the visited network operator (VMNO) will therefore charge the home network operator (HMNO), holding the subscription of the caller, in order to cover its costs. This payment is settled through the Transferred Accounting Procedure (TAP) by use of Inter Operator Tariffs (IOT) (Gullstrand, 2007).

For receiving international roaming calls, the situation is slightly different. Here, the caller will pay for the price for termination of the call in the home network of the roaming subscriber. The HMNO will then transfer the call to the VMNO, who will receive the usual mobile termination rate for terminating the call. In addition to this, the HMNO must pay the international transit charge for a call. Thus the IOTs used for originating roaming calls are not used in this case.

The number of suppliers of roaming services is same as the suppliers of wholesale mobile services in the respective countries. In most countries all mobile network operators are required to provide roaming services to foreign operators. Thus the number of suppliers is three to four in most of the EU countries, and it could be expected that the level of competition on roaming services should be at a level similar to that for wholesale provision of other mobile services.

However IOTs have not followed the same decreasing price trends as wholesale charges for other mobile services. Up to 1998 IOTs were based on normal network tariffs for local call with a mark-up at 15 percent (Salsas and Koboldt, 2004). But since then local tariffs have declined due to price competition. IOTs have not been subject to the same kind of competition, operators within the same country use similar IOTs, and if they relate to normal network tariffs they are set according to the highest rates offered.

There are a number of reasons for this:

1. Technical: limitations in the choice of VMNO.
2. Tariffs are agreed on reciprocal basis.
3. Demand conditions and lack of transparency.

As noted above, it is not always possible for the HMNO to choose the VMNO with the lowest IOT. This implies that suppliers of roaming services cannot gain market shares by reducing their roaming charges. Market shares of VMNOs are independent of their charges, and therefore, there is no incentive to lower charges as it just will decrease revenues.

IOTs remind in many ways of international accounting rates. Usually agreements are reciprocal in the sense that IOTs are independent of the direction of the call. In a market where competition is limited, the HMNO and the VMNO have a common interest in keeping IOTs at a high level. The VMNO will get higher revenue for providing the roaming, the HMNO will able to transfer the roaming costs to its retail customers, and will therefore not suffer from this. When a roaming call is made in the opposite direction it is the other operator who benefits.

The international accounting rates contributed to keeping international telephone charges at an artificially high level for many years, and prices came down only when it became possible for retail customers to choose an alternative international operator offering lower charges.

The final point to mention is the impact of demand conditions and lack of transparency. An inelastic demand caused by lack of market transparency as well as other factors imply that suppliers are less eager to reduce costs. For instance there is no incentive to solve the technical complications related to choosing the cheapest VMNO, if cost reductions don't lead to increased traffic demand.

5. EU regulation of international roaming charges

The EU regulation includes regulation of wholesale as well as retail charges. The first proposal from the Commission linked the prices paid for international roaming to prices paid by customers for ordinary mobile calls in their home country (CEC, 2006b). This home pricing principle was replaced by a ''European Home Market Approach'' in the revised proposal, in which the same maximum price limits are applied in all the EU member states. In the final proposal adopted by the Parliament, the concept of a Eurotariff is used for the maximum price that operators are allowed to charges their customers for international roaming calls within the EU area. The Europe-wide maximum tariffs are defined both for wholesale and retail charges.

Wholesale charges

The final text adopted use mobile termination rates (MTR) as a benchmark for international roaming charges. The original proposal distinguished between calls involving one or two countries in addition to the home country. For calls involving the home country and the visited country only (scenarios 1 and 2), the suggested wholesale price cap was set to 2 × MTR (€0.23), while the price cap for calls in the less common scenario 3, involving a third country as well, was set to 3 × MTR (€0.35).

The advantage of using the mobile termination rates as a proxy for an origination rate, termination rates (market 16) is, from a regulatory point of view, that they are (or will be) regulated and that rates, therefore, are known to the regulators. Origination is only regulated in a limited number of countries, as the wholesale origination markets (market 15) mostly are considered as competitive and, therefore, not subject to ex ante regulation. Furthermore, although termination rates vary between countries (from €2.06 per minute in Cyprus to € 18.82 per minute in Bulgaria (Figure 4). Most termination rates are in the vicinity of the average EU termination rate.

This proposal from the Commission (see Table III) was subject to intensive negotiations and discussions within the Parliament, with the Ministry Council, and with the industry. And

Table III Wholesale charges allowed in the three proposals (€ per min.)

Commission proposal	*0.2320 (2xMTR)*	*0.3480 (3xMTR)*	
European Parliament draft opinion (9 February, 2007)		0.2468	
European Parliament draft report (20 April, 2007)		0.2180	
European Parliament (23 May, 2007)	30 (1st year)	28 (2nd year)	26 (3rd year)

Sources: Jervelund *et al.* (2007), European Parliament (2007b)

substantial revisions were made before the final adoption by the Ministry Council. The wholesale charges was set at €0.30 the first year, and then reduced to €0.28 after one year and €0.26 after two years. After three years, the regulation may be extended or amended following a review by the Commission. This approach is clearly more beneficial for the operators, as the minute charge is increased from €0.2468 to €0.30. Reductions are built into the system, but it is not unlikely that MTRs, which constitute a major part of the costs, are reduced as well. The major reason for this change was the need to reach agreement with the Telecom Ministry Council, who suggested even higher charges (first €0.50 and later €0.60).

Retail charges

The introduction of price regulation at retail level is certainly more controversial than price regulation at wholesale level. It is generally acknowledged within the EU that the best way to ensure competition and bring down retail prices is to ensure open access to network facilities provided at cost-based prices. Therefore, the EU Commission recommends applying price regulation mainly at wholesale level. During the first-phase consultation preceding the proposal from the Commission, the great majority of the respondents in favor of regulation preferred regulation at wholesale level only. For instance, ERG favored introduction of regulation at wholesale market first, and adoption of a ''wait-and-see'' approach to regulation of the retail market.

The argument concerning retail regulation from the Commission is that there is no ''guarantee that lower wholesale prices will be passed through to retail roaming customers, given the lack of competitive pressures on operators to do so.'' (CEC, 2006a). This argument could be used for regulation of retail prices for any service provided in markets with limited competition. A relevant question is, therefore, whether there are any special reasons for allowing more tight regulation of international roaming services than other retail telecom services.

In the impact assessment report, it is argued that there is no clear relationship between costs and end user prices for roaming services. Some European operators have entered into mutual agreements with foreign operators and have in this way been able to buy roaming services at reduced prices. However, these operators do not yet offer cheaper retail roaming services than others.

But this lack of relationship can also be observed for fixed services. In many countries reductions in charges for switched interconnection prices have not been followed by similar reductions in retail prices, but have instead led to increased margins between wholesale and retail prices.

In addition, the market for international roaming services is not without competition. Mobile operators may use low charges on international roaming services as a competitive parameter in order to attract more customers. Also, mobile service providers can offer cheap international calls, if the operators choose to maintain an excessive profit margin in this market.

The main argument for retail price regulation in this field is to ensure a fast and Community-wide lowering of end-user prices in a field that has been plagued with prices that are far too high. Experience shows that wholesale price deductions are not transferred to retail price reductions.

In the current EU regulation, retail price regulation is used in combination with regulation of wholesale prices. It could be argued that a price cap on retail prices is sufficient to ensure low charges for users. However, this might lead to a profit squeeze, where service providers would be unable to cover their costs and it would, therefore, harm competition. This argument is used both in the proposal and in the impact assessment report. A combination of retail and wholesale regulation is the most appropriate solution – or at least, if there is retail regulation, there should also be wholesale regulation.

In the final text adopted by the Ministry Council, the benchmark for determination of maximum of maximum retail charges is the wholesale charges plus an acceptable mark-up in order to cover retail costs such as billing customer handling etc. The final text does not reveal how the exact prices was been decided, but the charges can be seen as a compromise with the Telecom Ministry Council, who first proposed retail charges of €0.50 and €0.25 and later €0.60 and €0.30 (European Parliament, 2007a). These charges allow for a mark-up, which is considerable higher than the 30 percent proposed originally (Table IV).

Considering the underlying costs, it can be questioned whether it should be allowed to charge for receiving international roaming calls, as the caller pays for both origination and termination of the call. The charge for receiving an international roaming call should therefore cover the costs of international transit and of roaming specific costs. These costs add up to no more than €0.04 per minute plus the costs of retail operations (customer-handling, billing etc). Furthermore, it should be noted that some of these costs have been covered already, if the calling party makes use of international roaming as well.

Discussion

Regulation of international roaming is more complicated than regulation of other telecom services for two reasons. First the market structures on mobile markets are different than on markets for fixed services. Markets for fixed services are dominated by one incumbent operator on each market who has its own fixed infrastructure. Regulatory intervention demanding open access to this network will benefit new entrants and promote competition at least in the short term. In mobile markets, the situation is slightly different as more competing mobile infrastructures are available. It is therefore less obvious what the market implications will be, if a similar kind of obligation is imposed on mobile networks. Second, regulation of international roaming is difficult to implement at national level as operators from more than one country are involved.

For these reasons, a common framework for regulation was not adopted at EU level before 2007. International roaming was defined as a separate market in the market definitions applied in the EU regulatory framework, but the implementation of the new telecom regulation package has not led to any intervention on this market at national level. Market studies for this particular market were among the last to be implemented. In August 2006 market analyses for other telecom services had more or less been completed in most countries, but only Finland had made a decision on international roaming; here the conclusion was that the market was competitive. Since then, no other member states decided to intervene at the market for international roaming. Regulation of the market for

Table IV Retail charges allowed in the four proposals (€ per min.)

	Making a local call	*Making a call home/ to third country*	*Receiving a call*
Commission proposal	0.3016	0.4524	0.1508
European Parliament draft (9 February 2007)	0.3868		0.2634
European Parliament Report (20 April 2007)	40		15
European Parliament (23 May 2007)	49 1st year 46 2nd year 43 3rd year		24 1st year 22 2nd year 19 3rd year

Sources: Jervelund *et al.* (2007), European Parliament (2007b)

international roaming seems to be more difficult for national regulators to handle than regulation of markets for other telecom services.

The proposal for regulation of international roaming put forward by the EU Commission suggested the introduction of price caps in both retail and wholesale markets for international roaming. The major argument for such heavy-handed regulation was that international roaming prices were much higher than cost-based prices, and that roaming charges represented a major barrier towards growth in international mobile communication within the EU[3].

An interesting aspect of the proposal from the Commission is the use of a European home-market approach, which implies use of common price caps for all EU member states. This implies that the determination of price caps is moved from national to European level. This may therefore be seen as a step towards decreasing the power of national telecom authorities and strengthening regulation at EU level. A common price cap improves transparency for consumers, but it may create a situation where operators in high cost countries may have difficulties in covering their costs in full. It may also create strange pricing schemes, where international roaming becomes cheaper than national roaming.

Both wholesale charges and retail charges have been subject to intensive debate. From the beginning operators were very much against any form of regulation, in particular at the retail level. In spite of amble documentation proving excessive rates without any relationship to costs, it is claimed that there is effective competition on the international roaming market. The proposal ''smacks of planned economy-style approach to the market'' according to a spokesman for the GSM Association.

Also some Governments have been very reluctant towards regulation. In particular in tourist destinations in Southern Europe, international roaming has proved to be an important source of income.

The EU intervention is a compromise between those asking for cost based roaming charges and the interests of operators – particularly those operating in major tourist destinations. Nevertheless seen from the consumers' point of view, it is a considerable improvement compared to the former situation, and it was implemented with an impressive speed (less than one year after the proposal from the Commission was published). It is also a move away from regulation based on more or less objective economic evidence towards regulation based on political negotiations between parties with conflicting interests.

The present regulation will last for three years. In year 2010 the outcome of the regulation will be reviewed, and it will be decided whether price regulation on both retail and wholesale markets is to be maintained, or if competition has developed in a way, which makes further regulation superfluous. Telecom markets have indeed become gradually more competitive since the liberalization process began in the mid 1990's. In particular in markets for mobile services real competition has developed. As a consequence of this, regulation in particular on retail markets has been relaxed and more light-handed remedies is preferred. The question is whether the market for international roaming services inhibits certain characteristics that make it different from any other market, or if the competitive problems are of transitory nature.

According to Salsas and Koboldt (2004), the major problem is that it has not been possible for operators always to choose the cheapest VMNO. This is a purely technical problem, and a solution has been developed already. The transparency problems have been drastically reduced by delivery of information on roaming charges via SMS.

One way to assess the level of competition is to analyze the pricing strategies applied on the European roaming market, in order to see whether competition will be able to drive prices downwards to a level approaching the costs. The new legislation has brought international roaming charges closer to costs, but it is less clear whether it will lead to more cost orientation. So far operators are demanding charges, which are at the allowed maximum level or slightly below. According to the EU website on international roaming, 46 out of 99 operators offered in October 2007 international roaming at calling charges lower than the Eurotariff. A total of 37 operators offered receive call charges below the eurotariff. However most of these operators demand rates just below the maximum charge.

It follows from Table V that the second cheapest operator demanded charges higher than 95 percent of the maximum charge in all countries, and only in five countries is the calling charge below 80 percent of the maximum. For receiving calls the situation is even worse, as it is possible to receive calls at rates below 80 percent of the maximum only in two countries.

Only three in Ireland offers their customers cheaper rates on both calling and receiving[4]. Considering the substantial gap between the charges allowed by the roaming regulation and the underlying costs, this does not indicate that competition play any role in the price setting.

It should be noted that the figures are from October 2007 (see Table VI), so competition might drive prices further down before 2010. But more recent figures published by ERG in their latest benchmarking report (ERG, 2008) indicate that this not yet has happened.

Table V Number of countries with roaming charges below 80, 90, 95 and 100% of maximum

	Call tariff			*Receive tariff*		
	Cheapest offer in the country	*2. Cheapest offer in the country*	*3. Cheapest offer in the country*	*Cheapest offer in the country*	*2. Cheapest offer in the country*	*3. Cheapest offer in the country*
Below 80%	5	0	0	2	0	0
Below 90%	7	0	0	5	0	0
Below 95%	12	5	0	10	0	0
Below 100%	20	15	8	19	14	3

Notes: The figures indicate the number of EU countries (26 in total), in which the cheapest, the 2nd cheapest and the 3rd cheapest offer are cheaper than 80, 90, 95 and 100 percent of the maximum roaming charge set by the Commission

Table VI International roaming charges within Europe, 10 October 2007 (Eurocent per minute)

	Call tariff			*Receive tariff*		
	Cheapest offer	*2. Cheapest*	*3. Cheapest*	*Cheapest offer*	*2. Cheapest*	*3. Cheapest*
Austria	37.5	49	49	20.83	24	24
Belgium	37.19	46	49	22	23.14	24
Bulgaria	46	46	49	22	24	24
Cyprus	47.84	49	49	22	24	
Czech	48.4	48.5	48.9	23.68	23.8	24
Denmark[a,b]	42.46	48.91	49	23.65	23.65	24
Estonia	47	47	49	23	24	24
Finland[b]	45.15	49	49	24	24	24
France	46	48.5	49	22	23.4	24
Germany	48.73	48.73	48.74	23.52	23.52	23.53
Greece	49	49	49	24	24	24
Hungary	48.7	48.7	48.8	23.9	23.97	24
Ireland	32.23	49	49	15.7	24	24
Italy	49	49	49	24	24	24
Latvia	45.5	48.2	49	22.9	22.9	24
Lithuania[b]	48.6	48.8	49	23.6	23.8	
Luxembourg	46	46	48	22	23	23
Malta	49	49		24	24	
The Netherlands	20	46	48.73	20	22	24
Poland	43	47.9	48	22	23.9	24
Portugal	49	49	49	24	24	24
Romania	48.1	49	49	23.7	24	24
Slovakia	48.8	48.9	49	23.8	23.9	24
Slovenia[b]	49	49	49	24	24	24
Sweden[a]	42.8	43	47.52	21.6	23.78	24
United Kingdom	31.57	44.19	47.5	12.63	22.73	23.7

Notes: [a] The cheapest operator demands a set up fee in addition to the minute charge; [b] No figures available for one of the operators
Source: Eurotariff rates: overview http://ec.europa.eu/information_society/activities/roaming/implementation/benchmark/index_en.htm (accessed 3 November 2008)

According to this report, the regulated international retail roaming charges have declined by just 1.5 percent from 4th quarter 2007 to 1st quarter 2008. This is compared to a decrease in other international roaming charges (concerning calls outside the EU area) by 8-10 percent within the same period. These figures clearly demonstrate that mobile operators will not give up their cash cow until they are forced either by competition or regulation. If roaming charges are not lowered substantially in the next few years, it clearly demonstrates a need for regulation beyond 2010.

Notes

1. In the event that the user is in an area where there is no coverage from his/her home network, e.g. in another country, the precondition for registration to the VLR is that there is a roaming contract between the visiting network and the user's home network.
2. See for example ''The mobile application part (MAP) of GSM'', Jan A. Audestad, Telektronikk 3, 2004.
3. Documented by Special Eurobarometer on Roaming published March 2007 http://ec.europa.eu/information_society/newsroom/cf/document.cfm?action = display&doc_id = 250
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