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Discussion Paper

***International Mobile Roaming Services:
A Review of Best Practice Policies***



Work in progress, for discussion purposes

Comments are welcome!

Please send your comments on this paper at: grr@itu.int by 19 October.

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1 INTERNATIONAL MOBILE ROAMING SERVICES: A REVIEW OF BEST PRACTICE POLICIES

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1. Introduction

This paper provides a review of policy and regulatory initiatives taken to reduce the costs to users of international mobile roaming services (IMRS). It builds on the ITU's earlier work, in particular the 2008 Global Symposium for Regulators discussion paper¹, recommendations from ITU-T and analysis by the Organisation for Co-operation and Development (OECD) on this issue in addition to regional initiatives, such as by the European Union, the African Union and the Arab Regulators Network. The aim of the paper is to suggest best practice solutions to ensure that in the long term sustainable competition will reduce IMRS prices.

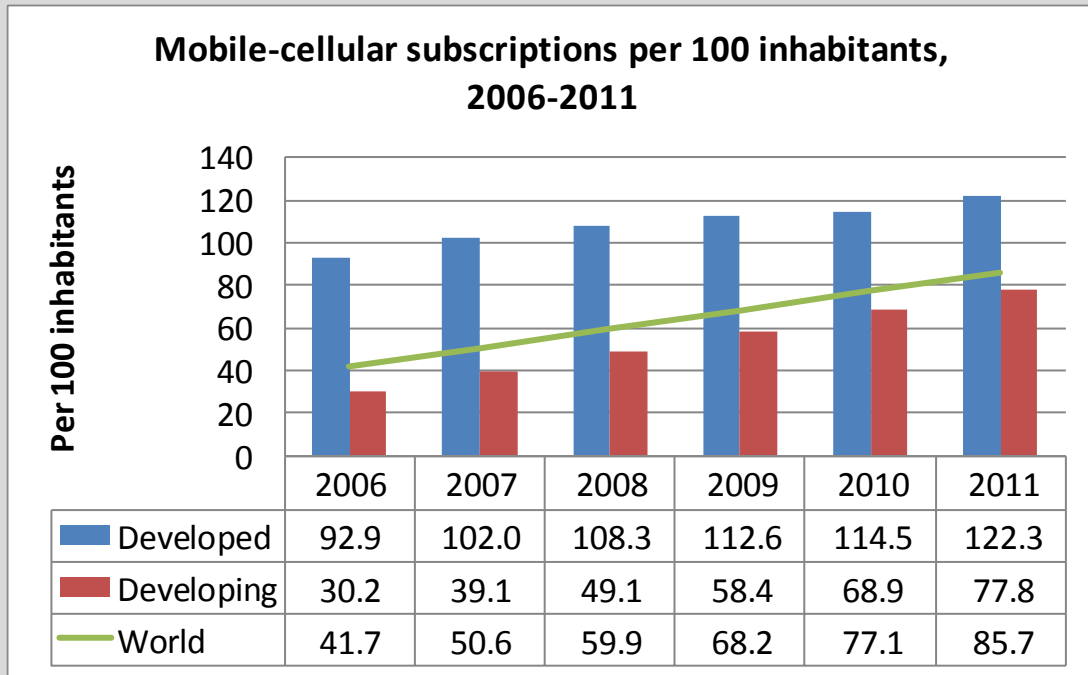
1.1 Mobile devices are becoming the main tool for communications

The high prices charged for international mobile roaming services have emerged in recent years as an important telecommunication policy and regulatory issue. Across the OECD countries it has been estimated that roaming prices on bilateral routes vary up to eight times (i.e. the cost of the same service for subscribers visiting each other's country and calling home) and up to 20 times more expensive for an international roamer to make a call home than for a local mobile user, in that country, to make an international call to the roamer's home country.² The European Union has estimated that retail roaming prices are, on average 118% higher than the estimated underlying costs.³

Finding solutions to high mobile roaming prices has also been difficult to resolve for a number of reasons. First, users in a country usually choose their service provider on the basis of the best prepaid offer or post-paid monthly mobile subscription package available for their particular consumption requirements - international mobile roaming charges are not normally advertised as part of this package although they are included in this package. Second, even if users are aware of the prices charged by mobile service providers for international roaming (and they are usually not), roaming is not a major consideration for them since in volume terms domestic calling, messaging and domestic mobile broadband access constitute the bulk of their mobile activity. Most users only become aware of international mobile roaming prices when travelling internationally. Third, when travelling, a mobile user cannot usually choose his/her international roaming service provider - they have to rely on their national provider. Finally, authorities from the country of origin of international travellers have no authority to control and regulate the wholesale prices set for international mobile roaming in a visited country.

While the issue of high IMR prices is not new, it has taken on increased importance in the last few years. A major reason for this has been the increasingly important role played by mobile services in economic and social transactions resulting from the significant growth in mobile subscriptions in developed and developing countries over the last decade. Recent ITU data show significant growth in mobile subscriptions (Figure 1) in particular in developing economies. In addition, significant technological change is shifting subscribers from 2G to 3G mobile technologies in some markets and from 3G to 4G in other markets. A key part of these changes is the increasing use of smartphones by subscribers and the shift to data communications.⁴ Figure 2 shows the rapid development of mobile broadband subscriptions at the global level.

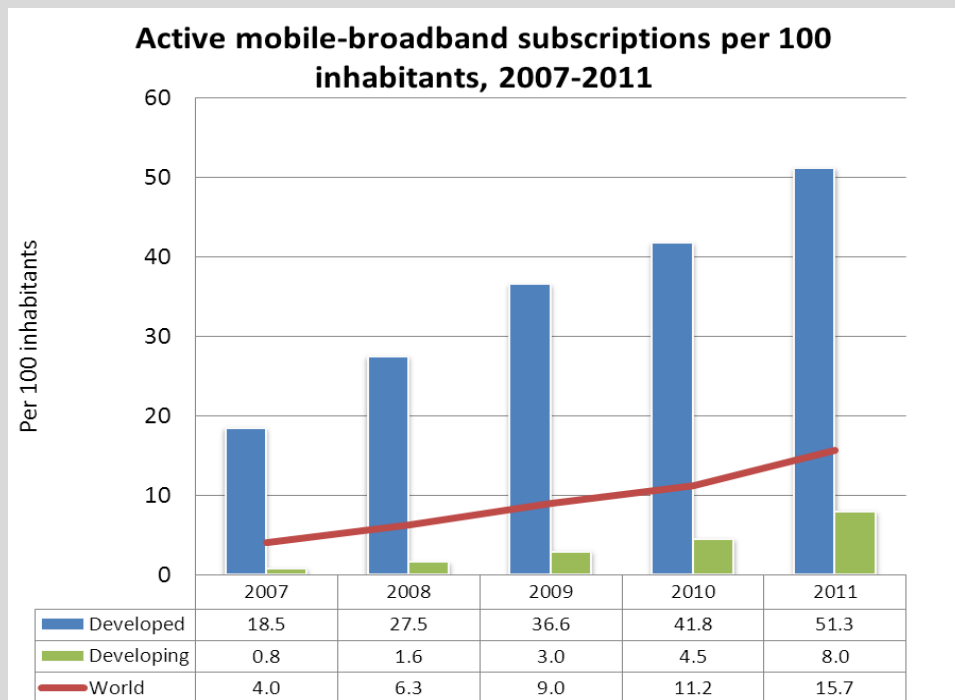
Figure 1: Mobile subscriptions per 100 inhabitants (2007-2011)



Note: The developed/developing country classifications are based on the UN M49, see: <http://www.itu.int/ITU-D/ict/definitions/regions/index.html>

Source: ITU World Telecommunication /ICT Indicators database

Figure 2 : Mobile broadband subscriptions per 100 inhabitants (2007-2011)



Note: The developed/developing country classifications are based on the UN M49, see: <http://www.itu.int/ITU-D/ict/definitions/regions/index.html>

Source: ITU World Telecommunication /ICT Indicators database

The development and rapid global diffusion of the Internet and related applications and services has transformed business practices in economies and changed the communications behaviour of users, both business and consumers. This transformation has increased innovation and improved productivity in many industry sectors, created new economic activities and expanded market reach of many firms, in particular small and medium enterprises. This transformation has led to the rapid growth of data communication which can be expected to expand significantly as broadband networks increase capacity through fibre to the home technologies, as new technologies such as cloud computing become more commonplace and as the range of applications widens.

Smartphones, and the related development of services and applications for these phones have significantly expanded the use of mobile data communications in national markets and mobile data services are increasingly being used by subscribers when roaming internationally. The demand for mobile Internet access is expected to continue to expand rapidly as smartphones continue to diffuse and other terminals, such as tablets, and portable computers become more commonplace.⁵ Mobile voice communications is being overtaken at national and international levels by the use of SMS, data access, access to emails using mobile phones and the use of a wide range of mobile applications. Many of these applications update automatically, require location data, etc., and in so doing generate more mobile data traffic. Subscribers also use their mobile terminals to access social applications and are storing personal content on cloud applications.

As these applications become commonplace, their use is expanding to international travellers increasing the demand for international roaming services. The expected shift to mobile payment services, use of mobile applications for airline tickets/boarding passes and other near field applications will also generate domestic as well as international traffic. At the same time a number of new data applications have developed for international users (maps, translation information, tourism information, location services, etc.). Mobile operators, faced with declining average revenue per user in mobile voice markets, as a result of competition in domestic markets and as users are migrating from using voice services to other messaging applications, are placing emphasis on developing new applications and services. Subscribers who use these new applications and services on a daily basis in their home country tend to continue to do so when travelling.

In many cases the use of these mobile services and applications by users travelling internationally has led to situations of "bill shock" because of insufficient knowledge by users on prices and billing practices.⁶ This has resulted in media and political pressure to tackle the problem of high international mobile roaming prices.

Almost all countries now have more mobile than fixed subscribers. In many economies there has been a trend in the reduction of fixed lines with users (including families) relying only on mobile phones. In developing economies, where in the past connectivity was based on expanding fixed lines, this has changed with the emphasis now on mobile communications. These trends are likely to continue given, as indicated by ITU data, that access to mobile networks is now available to 90% of the world population and 80% of the population living in rural areas.⁷ In short, the pressure to resolve the issue of high IMRS prices will increase.

An important mobile wireless growth area is machine-to-machine communication. This term includes devices that are connected to the Internet using a variety of fixed and wireless networks and communicate with each other.⁸ *IMS Research* estimates that shipments of cellular modules for M2M will reach over 100 million by 2015.⁹ A large number of these modules can be expected to be mobile across borders and hence could be subject to international roaming charges. Examples could include M2M devices used in the tracking of international cargo, in automobiles or trucks which cross borders, in consumer devices such as e-books or medical devices. Although the data traffic per device may be small, the eventual volume of devices which may cross-borders can result in high costs for business and act as a barrier to the development of new applications, services and productivity growth.

1.2 Growth in international travel

Separate, but concurrent with the explosive development of the Internet, mobile markets and ICT technologies in general, there has been a considerable expansion in worldwide trade and foreign direct investment as the global

economy has become more open.¹⁰ Open markets have also led to a greater integration of national economies with the development of global supply chains.¹¹ In most continents regional integration is developing and there are numerous free trade arrangements that have merged either bilaterally or among several countries in a region. These developments have strengthened economic and social ties, have led to a higher intensity of business travel among these countries and growing tourist travel. According to some estimates business travel is responsible for one-third of the growth in world exports over the last decade.¹² Business travel has been one of the major factors behind the growth of international mobile roaming services.

The opening up of economies to foreign direct investment has also stimulated the development of tourist industries in those countries. Developing economies quickly recognised the beneficial impact of tourism for economic growth.¹³ International tourism, according to the World Tourism Organisation generates USD 1.2 trillion equivalent to 30 percent of the world's exports of services.¹⁴ Travellers want to have reliable and cheap communications with their home country and increasingly rely on mobile applications to assist them in their international business and in facilitating their tourism plans. As noted above new mobile applications, in many cases developed by the visited country, target tourists resulting in the increased use of mobile data services.

The development of a range of mobile applications for business, tourism, and eventually payments will be constrained if international mobile roaming prices remain high and the opportunities for visited countries to develop tourism services and for users (business and consumers) to take effective advantage of smart mobile phones will be limited. The problem of high international mobile roaming service prices is a global issue but the probable impacts will weigh more heavily on developing economies in that users from those countries are facing, relative to their incomes, higher international mobile rates.

2. *The Regulatory Challenge in IMRS*

Questions regarding high prices and lack of effective competition in IMRS markets are not new. The International Telecommunications Users Group raised this as an issue in 2000 and it was subsequently discussed at the ITU's Study Group 3.15 In 2002 the European Union recognised that the wholesale IMRS market could be susceptible to ex-ante regulations and should be reviewed by national regulatory authorities.^{16 17} These early efforts did little to resolve the issue. However, efforts to resolve the issue of high IMRS prices have accelerated in the last few years. These efforts have ranged from private sector initiatives taken by mobile service providers or other service providers using alternative calling technologies and by government/regulatory initiatives either through bilateral discussions, regional initiatives, efforts by international organisations (ITU, OECD, WTO), and unilateral efforts. Progress has been made. However, it has been slow and has focused to a large extent on pushing prices down through regulatory measures rather than finding ways to introduce longer term solutions which could result in effective competition in IMRS markets and reduce prices.

2.1 *The regulatory challenge*¹⁸

Wholesale charges

All mobile wireless operators charge a wholesale interconnection rate (mobile termination rate) at the domestic level. These charges are what other operators pay (fixed or mobile) for delivering a call to mobile wireless providers. In effect, the terminating operator has a monopoly on call termination for their subscribers since it controls access to the specific subscriber being called. Termination rates provide a significant source of revenue for mobile operators so that there is little incentive to reduce these rates which also implies that larger mobile operators benefit more from above-cost rates. This also implies that above-cost termination rates result in a subsidy by subscribers of one network at the expense of another network. The termination rates faced by call originating service providers impacts directly on the retail prices originating operators can charge and the flexibility they may have in structuring retail offers. There is also a strong correlation between the volume of outgoing minutes on mobile networks and the termination rate.¹⁹

The perception by telecommunication regulators that high domestic mobile termination rates negatively impact on competition, innovation and consumer welfare in mobile markets has led to increasing intervention in this market in order to set wholesale termination rates. Although a number of mobile service providers have argued that reducing revenues from interconnection charges would lead to higher prices in other parts of the mobile market (the so-called "water-bed effect"), there is no evidence that in a competitive market this has occurred.²⁰ On the contrary, in many countries where the mobile termination rate has declined to low levels operators have started to provide innovative pricing packages such as unlimited national, international calls, unlimited SMS and unlimited mobile Internet access.²¹

The mobile termination framework at the international level is similar to domestic frameworks with the exception that it is much harder to regulate. Mobile network operators (MNOs) in country *A* have to pay a wholesale mobile termination rate to an operator in country *B* in order to deliver a call to one of their customers visiting country *B*.

The MNOs in country *A* also have to pay an operator in country *B* if one of their customers in country *B* wishes to originate a call back to their home country or to a subscriber in country *B*. Table 1, taken from the ITU's 2008 GSR discussion paper on international mobile roaming²² illustrates the main elements of IMRS cost structures. These cost elements are mobile origination, mobile/fixed termination, international transit and roaming specific costs. Other costs elements incurred by a customer who is roaming in another country are signalling and billing and transit. Of these cost elements the most important by far are mobile origination and termination charges. The OECD noted that the

*"...major contributor to high retail charges is the wholesale rates charged by foreign operators. Where information is available the wholesale rate makes up around three quarters of the retail rate. Wholesale roaming charges are frequently in excess of USD 2 to USD 3 per minute and sometimes are more than USD 4 per minute."*²³

The Body of European Regulators of Electronic Communications (BEREC) in reviewing the performance of prices caps in the European Economic Area highlighted that "... a sizeable margin remains between the average wholesale and retail prices. While the difference between average non-group wholesale and off-net retail rates has narrowed in relative and absolute terms in the past year, it remains significant (with retail representing a 429% or €2.097 margin over the per minute wholesale rate in Q2 2010, and 428% or €1.539 in Q2 2011)."²⁴

The wholesale roaming rates, for GSM network, are determined by Inter-Operator Tariffs (IOTs) which provide a non-discriminatory tariff - known to all GSM Association (GSMA) members - and which provide the benchmark for negotiating wholesale rates. The final outcome may as a result of negotiations differ from the IOT level for a particular operator since it may take into account volume of traffic, and traffic balance. The wholesale rate determines to a large extent the retail rates the MNOs in country *A* charge their customers for international roaming. Roaming agreements follow a framework defined by the GSM Association, which provide standard terms for international roaming agreements (STIRA). These guidelines apply only to operators that have an operating licence (i.e. mobile network operators) and as a result can be members of the GSM Association (effectively this excludes mobile virtual network operators and Network Service Providers).²⁵ Indications are that this may change in the near future.

The regulator in country *A* may be in a position to regulate the margin imposed on international mobile wholesale rates but, in itself, this would be insufficient to bring about a significant reduction in IMRS prices. The wholesale prices in country *B* are clearly outside the scope of jurisdiction of the regulator in country *A*. In effect, just as in national mobile markets where the terminating operator has a monopoly on call termination for their subscribers since they control access to the specific subscriber being called, in international markets the service operator in country *B* controls access by country *A*'s subscriber when that subscriber roams in country *B*. Similar to national markets, the access market for the purposes of international mobile roaming is not contestable.²⁶

National telecommunication regulators could regulate mobile origination charges that their national MNOs charge foreign MNOs and the termination charges faced by foreign MNOs, but to do so usually falls outside of their mandate to ensure that their citizens benefit from a competitive national telecommunication market. The only incentive that a national regulator in country *A* has to reduce the origination and termination charges its MNOs charge foreign MNOs is if this provides a benefit to its national citizens. This situation differs significantly from national roaming where regulators can set wholesale rates if necessary or, as India decided in 2012, to effectively abolish national roaming charges. Residents of country *A* only benefit from lower international roaming wholesale charges to service providers from country *B* if wholesale roaming charges to mobile service providers from country *A* are lowered in country *B*.²⁷

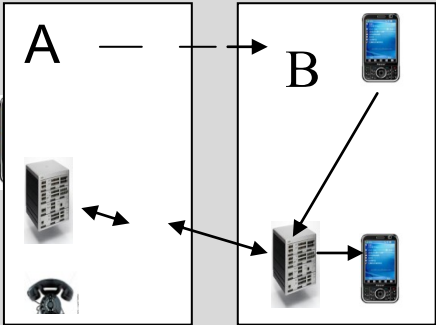
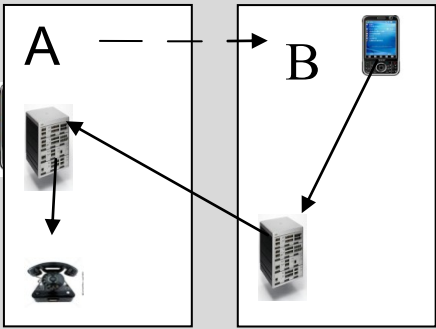
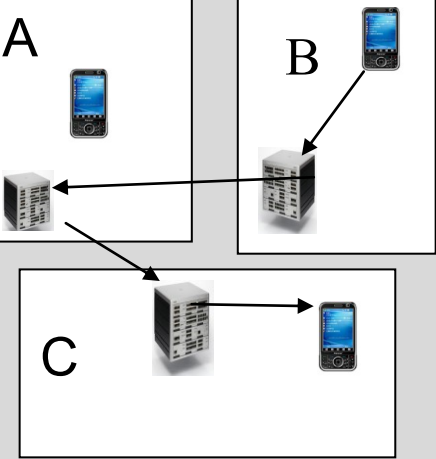
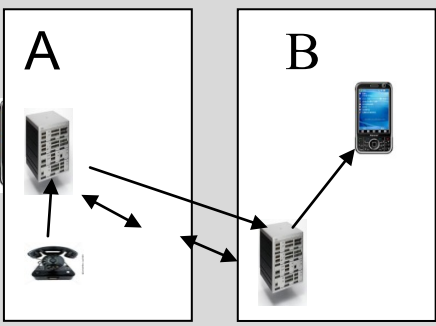
There is a question as to whether action should be taken only against wholesale rates and allow the lower rates to be reflected through the market on retail rates, or to take action on both wholesale and retail rates simultaneously. Taking action only against wholesale rates assumes that the market is working sufficiently well to pass on price reductions to end users. However, as noted above, there is very little competition at the retail level so that the incentive to pass on lower wholesale rates is probably quite low and even with some competition would probably take a much longer period to be reflected in retail charges. Taking action at both the wholesale and retail levels at least has the advantage of ensuring that consumers obtain benefits rapidly.

Retail charges

The telecommunication regulator of a country could determine that the retail rates for IMR paid by national subscribers are too high. A study undertaken for Australia found that the average roaming margins for Australian operators are approximately 3.2 times higher than domestic margins.²⁸ However, there is a limit on what actions can be taken. National operators could be required to reduce their retail rates, but the only part of these rates they have direct control over is the margin they are imposing on wholesale rates. Margins may be high and regulators may require that domestic service providers inform them of these margins. Reducing these margins may lead mobile service providers to try and obtain better wholesale rates from their counterparts in other countries although they have very little negotiation power.

Given that the main cost components which affects IMRS prices is the wholesale rate, the longer term solution is to find ways to reduce this rate while ensuring that reductions in wholesale rates are passed on to the retail market. Reviews of experiences in the European Union following the imposition of price caps is that prices declined to meet the requirements of price caps, but on average did not decline below the caps. If a regulatory initiative is taken which only imposes wholesale price regulation, it would seem necessary that retail prices should be monitored to determine whether they are reduced to reflect wholesale reductions. If retail prices remain sticky then it would be necessary to impose retail price regulation in addition to wholesale price regulation.

Table 1: Main international mobile roaming services and their cost structures

Call type	Cost elements	Illustration
<p>Call inside a visited Country</p> <p>A traveller from country A goes to country B and makes a call to a subscriber of country B.</p>	<p>Mobile origination in country B + [National transit in country B] + Mobile termination in country B + Roaming-specific costs + Retail-specific costs</p>	
<p>Call from a visited country to the home country</p> <p>A traveller from country A goes to country B and makes a call back home to a subscriber in country A.</p>	<p>Mobile origination in country B + International transit + Mobile or fixed termination in country A + Roaming-specific costs + Retail-specific costs</p>	
<p>Calls from a visited country to a third country</p> <p>A traveller from country A goes to country B and makes a call to a subscriber in country C. Note that country C may or may not be in a region where international roaming prices are regulated.</p>	<p>Mobile origination in country B + International transit + Mobile or fixed termination in country A + Roaming-specific costs + Retail-specific costs</p>	
<p>Receiving a call in a visited country</p> <p>A traveller from country A goes to country B and receives a call from either of the countries</p>	<p>Mobile termination in county B + International transit + Roaming specific costs + Retail specific costs</p>	

Source: Taken from "International Mobile Roaming Regulation - An Incentive for Cooperation", http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR08/discussion_papers/international_roaming_web.pdf

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2.2 Transparency

The level of wholesale charges is the key issue facing policy makers for IMRS charges, however the need to sensitise consumers and provide greater transparency is also important. While initiatives which increase transparency for consumers may only have a small and longer term impact on lowering IMRS rates they can help protect consumers from "bill shock" and may provide the information and incentive for users to try alternatives when roaming internationally. Consumers do not choose their service provider on the basis of international mobile roaming prices charged by these providers. They choose their service provider on the basis of a package of voice, messaging and data services and related prices i.e. the demand elasticity for subscriptions and call packages is considered much higher than for international mobile roaming. As argued by WIK " [a]t current levels of usage demand elasticity, it is rational for MNOs to take high markups over the wholesale IOT for mobile voice roaming. The marketplace for mobile voice roaming is unlikely to organically correct itself under current conditions."³¹

Indeed, in most cases consumers are not aware of roaming prices when they enter into a contractual arrangement with a mobile service provider and, in some cases, depending on the country and service provider they need to specifically request international roaming as an option before travelling. Seldom are roaming prices made transparent to the consumer when subscribing to mobile services.

Regulatory initiatives which increase transparency for users are important in allowing users to better manage their usage of mobile roaming, understand the implications of roaming on their bills and can help reduce bill shock. However, it should not be expected that increasing transparency will, on its own, play a large role in significantly reducing prices faced by consumers when travelling.

A regulator in country *A* may have limited scope in reducing the wholesale mobile origination and termination charges set by foreign MNOs, but there is scope in facilitating alternate calling procedures in country *A*.³² This could be through policies based on network neutrality, for example, ensuring that VoIP applications (sometimes referred

to as over the top providers), such as Skype, Fring, Viber, can be downloaded and used on mobile and other portable terminals. Policies on network neutrality can, in this context, complement policies on international mobile roaming.³³

Providing information to consumers on alternate calling procedures for IMR can also help empower consumers. Providing this information is difficult in that each of the alternatives has positive as well as negative characteristics. The number of alternatives also change fairly rapidly, many are specific to roaming between two countries only and their prices may be quoted for the visited country only. It is, therefore, a difficult challenge to maintain a data base on these alternatives.

Interconnection has been viewed as a fundamental requirement in telecommunication markets in order to create conditions of competition. However, it has been recognised that, while necessary, interconnection on its own is not sufficient to create effective competition. What is important in order to compete is equal access, in other words interconnection should be available on the same terms and conditions for competing carriers as the providing carrier provides for its own services. The ability to provide services by a carrier to its customers should not be constrained by another carrier's control of facilities or supplementary services. This notion of interconnection on an equal access basis has become a fundamental tool for telecommunication regulators. However, in the context of international mobile roaming a telecommunication service provider needs to attain access to networks of operators in other countries on equal access terms. There is a fairly wide agreement among telecommunication regulators at the global level that national interconnection rates need to be regulated, at least until sufficient competition emerges in relevant markets. The same arguments should normally apply to international mobile interconnection (roaming) rates.

Taxation

Governments need to recognise that they are also responsible for higher IMRS retail prices through their tax policies. Some countries tax inbound and outbound roaming, some only tax outbound roaming while some do not tax inbound or outbound roaming. Taxation can increase prices significantly as the GSMA has noted in the case of Latin America.³⁴ The taxation of international telecommunication services are also covered by the International Telecommunication Regulations, namely section 6.1.3 which states: "*Where, in accordance with the national law of a country, a fiscal tax is levied on collection charges for international telecommunication services, this tax shall normally be collected only in respect of international services billed to customers in that country.*"³⁵ The OECD in examining IMRS prices noted that "... it may be the case that in applying tax to the total bill many OECD countries are taxing the taxes applied in foreign countries through the wholesale rates charged to roamers."³⁶

2.3 Empowering and protecting consumers

Consumers have benefited significantly from competition in telecommunication markets through lower prices, more choice and better quality of services. Competition has also played an important role in the development and diffusion of new technologies and services which have also benefited consumers. Competition in the telecommunication sector has developed mainly through supply side measures, however, an important role can be played by consumers themselves in enhancing competition through demand side choices.

For this to occur it is necessary to ensure that consumers are empowered by providing them with better information and more flexibility in making choices in the market. In this context a number of measures are required: improving transparency of prices; minimising costs of switching services; facilitating timely, easy to use and effective settlement of consumer complaints. With such measures in place consumers themselves can help create more effective competition in the market.

As already noted, consumers, when subscribing to mobile services, do not pay much attention to international mobile roaming prices, nor are these prices generally brought to their attention or explained to them. Increasing

transparency is necessary at the domestic level since this provides them with sufficient information to make choices with regard to service providers. Transparency in the context of IMR provides consumers with a more limited scope to make choices since they are already tied to a mobile service provider. The choice then is to find alternative calling procedures or to limit their usage when travelling, roam silently (turn off their phones), disabling functionalities on their phones (e.g. data roaming), purchase local SIM cards (effectively losing their local phone number), using WiFi where available for calls or other messaging applications.

The challenge for policy and regulation is to ensure that consumers have full information on IMR prices when they first enter into a mobile contract, that they understand the potential expenses they may face when roaming, that they can keep up to date with IMR prices, have an understanding on how to technically manage their phones to avoid unwanted charges when roaming.

2.4 Facilitating competition

It is important that solutions to high international mobile roaming charges create conditions of effective competition in the longer term. Measures which help reduce wholesale or retail prices are of course important and provide an immediate benefit to consumers, but such measures do not necessarily lead to a long-term solution. Price caps were usually used by telecommunication regulators as a transition mechanism in the process of creating market competition and would normally be reduced in scope and impact as competition developed, and eventually abolished. In national telecommunication markets price caps were accompanied by other regulatory measures aimed at fostering market entry and developing competition. In the case of international mobile roaming unilateral measures cannot be used to create competition. It is therefore necessary to explore bilateral or multilateral approaches to obtain a solution, which is lasting, to deal with high international mobile roaming prices.

When countries began to move from national telecommunication monopolies toward competition, the regulatory bodies essentially restructured markets so competition could develop. Similarly, when the International Satellite Organisations lost their monopolies, there was agreement among the signatories that those markets needed to be restructured. Similarly, the solution to high IMR charges also requires structural changes.

The introduction of new technologies in the IMRS market could result in structural changes in the IMRS market which create conditions to help create competition. For this reason it is important that policies and regulations do not place impediments to new technologies. Mention has already been made of VoIP and other applications that can be downloaded on smartphones which require enabling policies to allow their use by subscribers. However, there is no guarantee that such technologies will develop, will enter the market, or whether these will be close substitutes to IMRS and have an impact on competition. In a number of cases technologies that are marketed for subscribers to use when roaming are similar to the range of call-back procedures that were developed in reaction to the high accounting rates for international calls in the fixed market. That is, the high IMRS prices offer an arbitrage opportunity (such as VoIP services used at wireless hotspots) which put some downward pressure on prices, but not sufficient pressure to result in prices that would reflect those in a competitive market. There are other technologies which will remain once efficient prices are attained, but may remain only in niche or specialised markets. Nevertheless, it is important to ensure that new technologies that can be used by subscribers when roaming are developed and are encouraged to diffuse.

Proactive policy and regulatory changes are the only sure course of action to ensure that structural changes take place in the IMRS market but these need to be co-ordinated at minimum at the bilateral level, or the regional level, but preferably at the international level. Such policies need to be multifaceted. Consumer empowerment is important, but on its own will not lead to longer term solutions. Ensuring the use of competing technologies is also important but require policies, such as those ensuring network neutrality, that allow the use of applications which have a potential to act as substitutes for IMRS (e.g. VoIP applications using mobile terminals). However, the most important policy initiatives are those that change the structure of the wholesale IMR market. This market has been identified as being primarily responsible for high international retail roaming prices.

There are two main structural measures that can be used and they are mutually compatible and complementary. The first is that countries agree (at the bilateral, regional or international level) to provide access to the MNOs in their country by mobile virtual network operators from other countries at the same terms of conditions as national MVNOs. This implies that the MVNOs can obtain access to the networks of MNOs at national interconnect charges, and offer IMR services. This has two implications. Many countries do not yet allow MVNOs - they would need to do so and, secondly, this implies that the IOT system used by GSMA needs to be changed.³⁷ Although not a preferred option, MVNOs could be limited to providing only roaming services. The second structural measure is to decouple (unbundle) international mobile roaming services from the bundle of services offered by mobile operators (MNOs or MVNOs) so that users, if they so choose, can when roaming use a competitive supplier of IMR services (the choice can be made either when they initially subscribe to a mobile phone service or before leaving their home country). It is likely that such structural changes will lead to the emergence of regional and perhaps global MVNOs and, in many cases, especially at regional levels, the MVNOs would have close ties with MNOs. These two solutions provide a means of developing sustainable competition in the IMR service market without the need to maintain prolonged price regulation. There are, of course, technical issues involved in implementing structural changes some of which can be complex.

The section below summarises a number of bilateral initiatives that are being discussed to reduce IMRS prices (both wholesale and retail in most cases). It is encouraging that a large number of regional bodies have recognised that high IMRS charges have negative economic and social implications for their region and are examining ways to reduce these high charges. In a number of regional bodies the concern has been at the political level which has helped provide an impetus to find adequate solutions. Finally, as discussed below, there is a possibility that the World Trade Organization's General Agreement on Trade in Services (as it applies to telecommunications) could be used as a tool to help introduce structural changes in the IMRS market and through this process reduce IMRS charges.

However, in most bilateral and regional discussions are aimed at reducing prices *per se* rather than finding a more permanent solution to high IMRS prices. The exception is the EU's Regulation III (see below in section 3.3) which from 2013 will begin to introduce measures which will lead to structural changes in the market.

3. A Review of Business and Regulatory Initiatives

Although IMRS prices still remain well above costs, they have declined since the early 2000s as a result of market initiatives taken by operators in response to several factors. Increased political, consumer (and media) awareness in recent years, often linked with cases of "bill shock" has imposed pressure on the market to lower retail IMRS prices. Partly, price declines can also be attributed to pressure from governments and regulatory initiatives. Some competition, although imperfect, has emerged as a result of technological change and has helped impose some pressure on the industry to reduce prices.

Examples of developments on the business side include the development of technologies which direct roamers to specific networks in foreign countries. This has allowed mobile network operators which have some affiliation with foreign operators to reduce retail rates. However, such traffic directing technologies have also created difficulties for smaller MNOs in trying to instil some competition in IMRS markets. The other market development which has played a larger role in putting downward pressure on retail IMRS rates has been through on-net pricing. This has led some MNOs with large international footprints to provide improved roaming prices (e.g. Vodafone, Orange, Telefonica, Zain).

A growing trend in response to consumer and regulatory pressure is for IMR service providers to offer fixed price or flat rate packages for roaming which are valid for short periods. Flat rate pricing is emerging in particular for data roaming. While such commercial offers are important in reducing retail prices for consumers, they are often not sufficient to introduce effective competition in the retail IMRS market.

3.1 *Technological solutions*

A number of technological solutions have developed aimed at providing users a by-pass solution to high IMR charges. Table 2 provides an overview of the advantages and disadvantages of a number of substitutes.

None of these provide a complete substitute to international roaming but can, in some cases, help reduce charges either for outgoing calls back to the country of origin, make calls in the visited or to a third country, receive calls or for messaging. In some cases substitutes mean that the subscriber does not have access to their domestic mobile number, or they may be required to find a free WiFi hotspot which can be difficult where knowledge of a foreign language is required. WiFi hotspots, for example, may be suitable for outgoing calls but not incoming and by definition are not mobile. For data roaming WiFi offers a close substitute but limits the use of applications which need, for example, location information. Other options can be complex for users or impose search costs on users. Technical issues, including the requirement to have a Smartphone, a tri-band phone, or an unlocked SIM card may also restrict the use of substitutes.

As already noted, changes in technology have also introduced some competition at the margin in the retail IMRS market. For example, the ability to use services such as Skype or Wi-Fi with Smart phones allow consumers to bypass high IMR charges but require access to hotspots. The availability of dual-SIM cards provides users with an alternative calling procedure to by-pass high IMR charges but also requires users to subscribe to a second service provider and to purchase a terminal which supports dual-SIM cards. Software solutions which integrate the home SIM card with a SIM card purchased in the visiting country avoid the need to have a dual-SIM card phone. Many of these technical solutions are for users who are technically knowledgeable and well prepared before embarking on international travel. The use of SIM cards with multi-IMSI numbers have also been suggested as a potential technical solution.³⁸ This would allow a user to choose a different operator for local mobile services and international mobile services. Such technical choices also raise a number of questions. For example, would the second operator be the cheapest for all visited destinations. If the user is a frequent visitor to a second country then a dual-SIM card solution or dual-IMSI may provide a solution. To most users these solutions provide added complexities.

Some examples of close substitutes include Interfone, a Danish company, which is marketing an overlay chip for GSM phones, which when a subscriber dials an international number or roams internationally takes over the call providing savings to users.³⁹ Gentay, a company specialising in the communication needs of the maritime industry launched in 2012 a global roaming SIM card using multi-IMSI⁴⁰ technology and offering worldwide connectivity for voice and data at local rates.⁴¹ Multiple numbers can also be incorporated on the SIM cards to reduce the cost of incoming calls. HolidayPhone⁴² provides a temporary SIM card with a call package that includes receiving 3 hours of calls on the users home number, making 2 hours of calls to the users country and 1000MB of mobile Internet access. The package purchased by the user is specific to the country visited and the SIM is a prepaid card from the visited country (the company provides prepaid SIM cards for 17 major tourist destinations. Flexiroam (Malaysia) supports roaming in 200 countries but the subscriber needs to purchase a local SIM card in the visited country and requires a mobile phone with call forwarding functionality.⁴³

Table 2 : Advantages/disadvantages of International Mobile Roaming substitutes

SUBSTITUTE	ADVANTAGES	DRAWBACKS
GLOBAL MVNOs – GLOBAL SIM CARDS – REGIONAL SIM-CARDS	Local calls at local rates Price reductions (use of call-back)	No incoming calls to the customer's usual number ⁶⁴ Lack of brand recognition
PURCHASING A LOCAL SIM-CARD	Local calls at local rates	No incoming calls to the customer's usual number Language barriers
DUAL SIM CARD HANDSET AND SERVICES	Retention of domestic provider	No incoming calls to the customer's usual number Availability of handsets SIM-lock
VoIP SUBSTITUTES (mobile or WiFi network)	Inexpensive over low-cost Wi-Fi access	No incoming calls to the customer's usual number ⁶⁵ Data roaming charges VoIP application lock or surcharge (mobile handsets) Specific handset or laptop necessary ⁶⁶
HOTEL TELEPHONES – PAYPHONES – CALL SHOPS		No incoming calls to the customer's usual number No mobility Cost
INTERNATIONAL CALLING CARDS	Inexpensiveness	No incoming calls No mobility/some nomadicity Language barriers
USE OF SMS	Perfect substitute of domestic SMS	Weak substitute (no voice calls) High price compared to domestic SMS
SATELLITE ROAMING	Global coverage	No incoming calls ⁶⁷ High prices/limited handset availability
VoIP SUBSTITUTES (fixed network)	Inexpensiveness	No incoming calls to the customer's usual number
EMAIL	Inexpensiveness More flexibility (longer text, file exchange)	No incoming calls Very weak substitute Lack of real-time communication

Source: OECD, DST/ICCP/CISP(2009)12/FINAL, *International Mobile Roaming Services: Analysis and Policy Recommendations*, Paris 2010.

Roamline, an affiliate of KPN, the Dutch incumbent fixed and mobile carrier, offers a global mobile roaming data roaming service which requires the subscriber to pre-purchase a SIM card which can be used in 130 countries and is charged on a per use basis.⁴⁴ Roam Mobility, based in Canada offers roaming for Canadians visiting the United States. It has teamed up with T-Mobile in the US and provides a US number to customers and unlimited calls and text to Canada and the US for a fixed per day charge.⁴⁵ Transatel, a French based company, offers to European roamers a multi-IMSI SIM card with embedded local numbers in 5 countries so that local calls in the visited country are made

at local rates and outgoing international calls are also at local rates.⁴⁶ Singtel's GlobalDial 121 provides customers with a call-back service.

The range of service providers offering roaming is quite large. Some have links with established operators and some mobile operators, recognising customer dissatisfaction with high prices, are trying to satisfy customer demand for cheaper roaming but making available alternative services.

Regulators can also help in stimulate these solutions by, for example, providing information to users on alternative solutions. More important, however, regulators should ensure that there are no obstacles to the take-up of alternative technologies. For example, many mobile operators have prevented users from downloading *Skype*, *Whatsapp*, or similar VoIP services which would help bypass high charges. For GSM phones regulatory initiatives, such as allowing subscribers to unlock their phones and use the SIM cards of alternate providers and from operators in visited countries, are important to take advantage of substitutes.

The different alternatives are useful for the experienced traveller or traveller that has some knowledge of roaming and the charges involved. Many of these near substitutes require prior awareness and prior knowledge by users before they leave their home country. Most consumers only become aware of roaming charges once they have left their home country. Despite a range of near substitute technologies it does not seem that they have had a significant impact either in terms of attracting customers or on prices in IMRS markets. An analogy can be made with call-back providers who provided international telephone service in the early stages of market opening in the international long distance voice market when accounting rates between countries, and as a result international calling retail rates, were extremely high. Call-back technology provided a close alternative to international voice calls, but the technology was insufficient to create competition in that market and change the accounting rate system which was in place. The creation of competition in that market required the opening of national markets to competition allowing direct access by national service providers to foreign markets so they could terminate cross-border calls locally.

3.2 *Business initiatives*

African mobile operators have been leaders in reducing and eliminating international mobile roaming charges in particular Zain (formerly Celtel) which in 2006 inaugurated *One Network* eliminating IMRS charges for its customers in Kenya, Tanzania and Uganda (i.e. customers paid domestic rates for outbound calls when roaming and were not charged for incoming calls).⁴⁷ The *One Network* expanded during 2007 to cover 6 more countries in Africa.⁴⁸ By the end of 2007 Zain claimed that *One Network* served "400 million people across 12 countries now connected across Africa in one borderless mobile network covering an area more than twice the size of Europe".^{49 50} Subsequent expansion of ZAIN also covered the MENA region.

The fact that ZAIN had licences in contiguous countries was an important factor supporting the development of *One Network* as was the liberalisation of international gateways in the countries where ZAIN operated. *One Network* subscribers can make calls to their home country and send SMS at prices applicable in visited countries and receive incoming calls from their home country for free. However, the elimination of roaming charges applied only to traffic which was retained on the Zain network i.e. on-net calls. Nevertheless, given the rapid expansion of the company across the African continent the benefit to customers was significant.

By creating disruptive competition Zain created pressure resulting in a number of other African operators offering cheaper IMRS to neighbouring countries or to countries where they had a footprint usually following the Zain model by providing subscribers with free incoming calls and SMS in visited countries and paying prices in the visited countries for outgoing calls. For example, Glo announced in May 2012⁵¹ a roaming service (UniWorld) offering a uniform local tariff for prepaid and postpaid subscribers in Nigeria, Benin and Ghana. Orange created a zone of West African countries in 2007, comprising Guinea, Guinea Bissau, Ivory Coast, Mali and Senegal and Vodacom provides roaming in six African countries with free incoming calls for IMRS and outgoing calls charged at the price of

visited countries. In contrast, in Europe where several companies have a fairly extensive cross-border footprint prices were reduced but never eliminated.

Digicel which is active in a number of Caribbean countries launched a service in 2011 which, for USD27 provided for 7 days unlimited roaming on a Digicel network which included incoming calls, unlimited calls to the home country, unlimited text messages to Digicel numbers and unlimited data access. As for offers in other areas this was facilitated by Digicel's presence in those countries where it had licences. PCCW (Hong Kong) mobile provides a "All-in-one Roaming Passport (Day Pass)" covering 53 countries. In contrast to other packages KDDI of Japan has offered a limited package to its users by providing Wi-Fi access for smartphones across 100 countries.

Operators in the European Economic Area have reduced IMRS prices as a result of the price caps imposed by the EU and some have introduced new packages aimed specifically at roaming. T-Mobile in the UK has also introduced a roaming option limited to data. This provides users with a fixed data allowance when roaming which stops the data connection once a certain limit is reached. At the regional level companies such as Telefonica has launched a standard pan-European data roaming tariff. Smartphone customers can now use 25 MB for internet access anywhere across the 27 European Union member states for EUR 2 per day. The tariff targets mobile customers on Movistar or O2 networks. The Pan-European tariff, launched in Germany in May 2012, will be available mid-2012 to O2 and Movistar customers in Spain, the UK, Ireland, Czech Republic and Slovakia. Vodafone (UK) launched a service in 2012 allowing customers to use their standard UK tariff plan for an additional £3 a day. Any excess charges are also billed as if the user was in the UK. In contrast Meteor Ireland announced in 2012 that it would abolish roaming charges in Europe enabling consumers to pay the same charges for calls and texts, but not mobile data charges, as when they are at home. T-Mobile US, taking advantage of its European footprint as well as the lower data roaming prices in the EU has introduced a plan providing its American business customers with unlimited data roaming for USD50 a month.

Elsewhere, many other mobile operators have reduced prices in many cases as a result of regulatory pressure rather than legal requirements. For example, Etisalat reduced calling charges for its UAE customers travelling within the Gulf Council Countries (GCC) by up to 26 per cent in early 2012 following a request by GCC officials to the regions MNOs. In April 2011 Singapore and Malaysia announced a progressive reduction of roaming rates (up to 30 percent for voice and 50 percent for SMS) following Ministerial pressure and in June 2012 Singapore and Brunei announced that they would begin in 2013 to jointly reduce roaming rates.

In May 2012 China Telecom began a novel prepaid service by launching a UK MVNO (CTExcelbiz) which markets prepaid packages for China Telecom customers in the UK. The service also provides a local Chinese number which friends and family in China can use to call a China Telecom roamer in the UK. China Mobile is also offering discounted data roaming rates to their customers for voice calls and data access when they are roaming internationally in key business destinations. For example, China Mobile's data roaming price for its customers when they are in the US is the equivalent of \$1.50 MB significantly lower than what US operators are offering their customers when roaming in China. The company has also indicated that it would become an MVNO in the USA, with plans for entry into France and Germany. MTN (South Africa), in March 2011, began providing free incoming calls and SMS for both postpaid and prepaid customers travelling in the South and East Africa (SEA) region (countries where MTN has market presence). Tele2 (Sweden) is marketing a VoIP application allowing its customers to make and receive calls outside of Sweden at the price of a normal mobile voice call.

The increased media attention as well as political attention to high IMRS prices has played an important role in many regions in reducing retail prices. A lesson from ZAIN and others is that lower prices can result when a network operator has access to foreign markets. In these cases access was available because these companies had a MNO licence. Clearly this is not generally an option given that a limited number of MNO licences are made available in most countries because of spectrum limitations as well as the cost of building a network. As a result the MVNO option suggested previously is necessary, an option that China Telecom seems to be following.

GSMA

The GSMA, in June 2012, obtained agreement among 24 (of 800) members to enhance transparency for customers when roaming. This initiative is limited to data roaming and includes sending SMS to customers to remind them of data roaming charges when they arrive in a foreign country, implementing a data spending limit and sending alerts when that limit was reached and temporarily suspending data services when the limit was reached.⁵²

3.3 Initiatives by International Organisations

ITU

Early work by the ITU on IMR charges was noted above. More recently, ITU-T Study Group 3 approved in September 2012 a new Recommendation ITU D.98 on Charging in International Mobile Roaming Service⁵³. Section 4 of this Recommendation contains principles for lowering IMR rates including empowering consumers (section 4.1), market-based solutions (section 4.2) and regulatory intervention (section 4.3).

The main recommendations, which are non-binding, are highlighted in Box 1.⁵⁴ In addition, a new supplement to ITU-T Recommendation D.98 was proposed and will be studied by Study Group 3.

Box 1: ITU Recommendation D.98 Charging in International Mobile Roaming Service

Empowering consumers

1. transparent information on IMR retail rates and structure before users roam internationally
2. usage alerts when users start to roam
3. warning alert when a certain cost has incurred
4. roaming cost caps
5. special user protection measures for inadvertent roaming in border regions
6. user choice of visiting network

Market-based solutions

1. provision of roaming pricing plans which fit different users
2. support substitutes like local SIM cards, and provision of IMR by other means
3. regional and interregional cooperation
4. cooperation of mobile operators to lower wholesale tariffs.

Regulator intervention

This section of the Recommendation states:

" regulators and policy makers, taking into account specific national or regional conditions, may introduce regulatory interventions on international mobile roaming service tariffs for the benefit of users by encouraging competition. Possible interventions may include a range of regulatory measures such as usage alerts, bill caps, tariff caps and pre-selection."

Source: ITU, Telecom Standardization Bureau, new Recommendation ITU-T D.98, Charging in International Mobile Roaming Service, www.itu.int/ITU-T/recommendations/index_sg.aspx?sg=3?.

The ITU's World Conference on International Telecommunications 2012 (WCIT-12), which meets in December 2012, will review the International Telecommunication Regulations (ITRs) where the international treaty that is the basis of today's connected world will be reviewed. The ITRs were agreed in 1988 at the World Administrative Telegraph and Telephone Conference in Melbourne, Australia, and came into force in 1990. The ITRs set out principles for ensuring that networks can connect with each other smoothly, and that international services will be offered in a fair and efficient manner. Within this context, proposals have been made to add provisions to the International Telecommunication Regulations (ITRs) to ensure transparency of end-user prices for international mobile services, and that rates are cost-based. Improved cooperation is needed to achieve effective solutions and make bill shock a thing of the past.⁵⁵

OECD

The Organisation for Economic Co-operation and Development (OECD) began work on roaming in 2008 by examining roaming retail prices for voice and SMS and providing a preliminary assessment of policy issues. This report found that roaming prices were excessive in the OECD area compared to underlying costs or compared to the retail price of a domestic mobile call plus an international call from the fixed network.⁵⁶ This was followed up by a report on providing an analysis of potential policy recommendations.⁵⁷ A report on data roaming prices was carried out over 2010-11 which analysed pricing data for data roaming (including for laptop use) and used the data to estimate total expenditures for several mobile roaming usage patterns. Most OECD operators have optional data plans available (usually daily, weekly and monthly plans). Information to users is facilitated somewhat in that operators categorise countries by zones and provide a single price for each zone.

Following this work a non-binding set of measures was adopted by the OECD in February 2012 (OECD Council Recommendation)⁵⁸ which put forward a series of measures that policy makers could use to raise consumer awareness and protection, ensure lower prices and encourage effective competition. The main points of the Recommendation are highlighted in Box 2.

Regional Initiatives

Perhaps one of the earliest regional initiatives on international mobile roaming was a *Report from the Nordic competition authorities* in 2004.⁵⁹ The report recommended that "... analyses [of international roaming markets] take into account that price regulation can unduly distort market development and that technological development in itself might lead to effective competition on the markets shortly."⁶⁰ Although there has been progress in technologies since 2004, this has been insufficient to lead to effective competition in the IMR market.

European Union

The European Union had been concerned with high intra-EU IMR prices for a number of years. In 2003, the Commission decided that the international roaming market should be considered as a relevant market. This eventually led in June 2007 to the adoption of a regulation on international mobile roaming. The EU Roaming regulation was adopted in 2007 and introduced caps on roaming prices within the EU ("Eurotariff") and imposed certain information obligations on operators. The Eurotariff set maximum prices for phone calls made and received while travelling within the EU. Revised rules were adopted two years later reducing roaming prices for voice calls even further as well as imposing caps on SMS prices. An additional requirement as of July 2010 was aimed at reducing "bill shock" by introducing a cut-off mechanism once data roaming bill had reached 50 euros and operators were required to send an SMS message once subscribers had reached 80% of the agreed limit.⁶¹

Box 2: OECD Council Recommendation

The OECD Recommendation encourages governments to:

- promote awareness about the cost of roaming services and the availability of substitutes;
- promote transparency of information provided to customers by international roaming providers regarding the use and billing of roaming services;
- promote transparency of information provided to customers by international roaming providers regarding the use and billing of roaming services;
- provide information to data roaming customers on the risk of automatic and uncontrolled data roaming connections and downloads and explanations about how to switch off these connections; agreed financial limits, beyond which data roaming transmission would be stopped, unless the customer follows an indicated procedure: personalised notifications when data roaming services have reached a certain proportion of an agreed financial limit;
- remove barriers that may prevent smaller players from competing with larger players to offer roaming services, in particular by forming trans-national alliances;
- In removing such barriers, Members should pay due attention that they do not protect inefficient operators, and that these alliances do not in fact reduce competition.
- encourage discussions with industry about the transparency of (headline or non-discounted) Inter-Operator Tariffs (IOTs) for IMR services to inform future or current regulatory proceedings and consider collecting data on wholesale roaming rates and publishing benchmarks of aggregate rates that preserve commercial confidentiality;
- remove barriers that prevent mobile virtual network operators to have access to local wholesale mobile services for the purpose of offering roaming services and ensure that mobile virtual network operators benefit from possible regulated wholesale roaming rates between operators in different countries when purchasing wholesale resale roaming in the home country;
- if it is determined that market dynamics are insufficient to produce reasonably competitive wholesale prices, authorities are encouraged to regulate wholesale roaming prices, including by reaching bi- or multi-lateral agreements between countries, as appropriate, and/or through the introduction of price caps based on commonly established principles;
- if market dynamics are insufficient to generate competition, consideration should be given to implement retail price regulation to protect customers from paying excessive prices for using roaming services;

Source: OECD, 16 February 2010², Recommendation of the Council on International Mobile Roaming Services, Paris.

On 30 May 2012 the Council of the European Union approved international roaming Regulation III, which became effective on 1 July 2012, when Regulation II expires.⁶² The new regulation will remain in force for 10 years. Its provisions (see Box 3) builds partly on earlier provisions. Some of the existing provisions, which only applied to intra-EU roaming, will be extended to apply to roaming outside of the EU. Several significant changes, which are

structural in nature, have been introduced, namely that customers will be able to choose a separate provider of roaming services after 2014 and that operators will be required to provide access to other operators for the purposes of providing roaming services at prices which are published as a reference offer following predetermined guidelines. The latter provisions are the most crucial.

Whereas the prices caps that were imposed by the European Union have helped place downward pressure on prices they have not created the conditions for competition. The new provisions by providing cross-border access are essentially treating regional roaming as an interconnect service and by facilitating the creation of cross-border MVNOs in the European Union area the provisions are laying down conditions which will eventually facilitate the development of competition.⁶³ It is worth noting that the EU used as a benchmark to set regulated roaming prices the mobile termination rate benchmark. It is also worth highlighting the important reductions that are being imposed on retail prices and wholesale prices that indicate the extent to which these prices diverge from cost-oriented prices which would be offered if IMRS markets were more competitive.

Box 3: Main provisions of the EU Roaming Regulation III⁶⁴

- The price-cap system for retail prices is extended to cover data transmission roaming services, (data euro-tariff) applicable to data communications within the European Economic Area (EEA) with a value that does not exceed the maximum price set in the new regulation. Limit is EUR 0.70 per megabyte as of 1 July 2012, changing to EUR 0.45 per megabyte on 1 July 2013, and to EUR 0.20 per megabyte on 1 July 2014;
- New reductions on the maximum limits that were set for the voice euro-tariff and the SMS euro-tariff. The voice euro-tariff, which was limited to EUR 0.35 per minute, will change to a maximum limit of EUR 0.29 per minute on 1 July 2012, and this limit will fall to EUR 0.24 per minute on 1 July 2013, and to EUR 0.19 on 1 July 2014. The maximum limit of the SMS euro-tariff will fall from the current EUR 0.11 per SMS to EUR 0.09 per SMS on 1 July 2012, to EUR 0.08 per SMS on 1 July 2013, and to EUR 0.06 on 1 July 2014;
- After 1 July 2014 mobile service customers will have the possibility to sign up for alternative mobile services within the EEA, separate from their national mobile operator. After 1 July 2014 customers will have the right to change their roaming provider at no cost, within 3 working days of concluding a deal with a new roaming provider;
- After 1 January 2013 mobile network operators will be obliged to satisfy all reasonable requests by other operators to access their networks in roaming and to publish a reference offer considering the specific guidelines to be published by the Body of European Regulators for Electronic Communications (BEREC);
- The obligation, previously in force, for operators to automatically provide their customers - via a messaging service - with basic personalized information about the roaming tariffs for voice, data or SMS communications when they enter another EEA country, now also applies when customers enter countries outside the EEA;
- The obligation, previously in force, for roaming operators to offer their customers, free of charge, a service providing information on the accumulated consumption of roaming data and which guarantees that the accumulated expenditure on that service does not exceed a specific monetary limit (EUR 50 by default) after which the service is no longer provided, now also applies when the customer travels outside the European Union (with some exceptions, established in the Regulation).

Source: http://ec.europa.eu/information_society/activities/roaming/regulation/archives/current_rules/index_en.htm

By 2013 the structural measures will begin to be implemented and while there will certainly be some technical challenges they should be no more burdensome than, for example, local loop unbundling were for fixed PSTN operators. Again, as in the case of LLU there is bound to be a learning period for operators as well as regulators.

In examining developments in Africa where ZAIN, MTN and others have made significant steps to reduce roaming charges, the question arises why this has not happened in Europe where a number of operators (e.g. Orange, Vodafone, T-Mobile, Telefonica) have licences (or are part share-holders) in a number of EU countries. Smaller operators in Europe are not in a position to emulate Zain since in most European countries no further MNO licences are available and in any case the costs would be excessive for them. Clearly the solution would be to provide these companies with licences through MVNO agreements so that there is an opportunity to create competition in the IMRS market. This is what the new EU Regulation III is aimed at.

AREGNET and GCC

The Arab Regulators Network, AREGNET, was given the responsibility by Ministers to follow-up on a 2005 report which examined international mobile roaming prices in the region and found them to be excessive relative to domestic mobile prices. The work of AREGNET⁶⁵ focused on developing a 'glide-path' for wholesale rates (IOTs). The wholesale rates were based on retail prices for similar calls in each country and a 30% mark-up was added to derive suggested retail prices. Despite the concern for high IMR prices agreement could not be reached on the AREGNET proposal. Ministers of the Gulf Co-operation Council, however, agreed in 2008 to follow-up on the AREGNET proposals and reached agreement on a formula to determine retail and wholesale rates using price caps with reductions in prices staggered over 2010 and 2011. The GCC roaming working group is examining how to impose price caps on SMS, MMS and data roaming charges.⁶⁶

Following a decision of the Ministerial Committee of the Gulf Cooperation Council (GCC), taken in February 2012, to introduce maximum prices cap for all mobile operators within the region, the GCC agreed to reduce prices for roaming amongst its six countries. In this context, Bahrain's Telecommunications Regulatory Authority (TRA) has issued an instruction to all mobile operators to implement reduced tariffs for international calls made to GCC countries while roaming in GCC countries. Bahrain's TRA reduces 75 per cent roaming tariffs across GCC.⁶⁷

The closer economic ties between GCC countries including a commitment to economic integration, much like the EU, facilitated the success of the GCC relative to AREGNET. The GCC agreement, which is in the form of a Memorandum of Understanding, foresees that other countries may join but need to have adequate provisions to enforce the agreement.

CRASA⁶⁸

The Communication Regulators' Association of Southern Africa set up a Regional Alliance Task Team (RATT) in 2008 to examine the problem of high IMR charges and subsequently commissioned a study published in 2010 and which put forward a number of short term goals for SADC's consideration.⁶⁹ These included regular roaming data collection, multilateral cost reduction measures and roaming hubbing, increased transparency and consumer protection and price control by agreement. Some of these have been implemented by the RATT in particular greater IMR price transparency through SMS notification when travelling, collection of comparable roaming price data by regulators, setting and notifying users of bill limits. Ongoing work is underway to examine the underlying costs of roaming in the Southern African Development Community.⁷⁰

The Economic Community for the West African States (ECOWAS) has undertaken important initiatives in developing regional roaming arrangements.⁷¹ These have been undertaken through intra-operator agreements which allow roaming subscribers to receive free calls when roaming and pay local rates for outgoing calls. The arrangements however are not generalised in that they only cover specific networks and do not apply completely to all ECOWAS countries. Regional roaming has been facilitated by the fact that several operators have a regional

footprint (Orange Zone, Zain One, and One World) but also because of close co-operation between the regional telecommunication authorities.⁷²

In Africa, the African Union has also examined the possibility of affordable roaming tariffs through regulation.⁷³ In this context the Commission put forward a number of proposals including:

- require transparency for roaming tariffs
- develop a single web site showing roaming tariffs
- co-ordinate and adopt common regulations which are obligatory
- try and obtain common acceptable rules among the African mobile operators

The breakdown of IMR charges in many parts of Africa developed largely by the fact that operators had licences in contiguous countries and also through effective co-operation between regional regulatory associations. This provides an important lesson which is that competition can work if a mobile operator is willing to break the mould (such as Celtel/Zain) but only if the conditions allow this to occur. The crucial factor has been that operators had licences in several countries in the region.

APEC TEL and Asia Pacific Telecommunity

APEC Ministers first discussed the issue of IMR in 2008 followed up by further analysis in APEC TEL. Emphasis was placed on developing guidelines to protect consumers and in 2010 APEC TEL produced “Guidelines for the Provision of Consumer Information on International Mobile Roaming” which put forward best practice suggestions on providing IMR information to consumers.⁷⁴

The guidelines suggested the types of information that should be provided to consumers, how to provide this information as well as the need to provide information on alternative technologies to consumers. The Asia Pacific Telecommunity International Mobile Roaming Working Group developed guidelines for regulators and the for operators aimed at enhancing transparency of information. ⁷⁵ The Guidelines for Regulators to Provide Information on International Mobile Roaming (IMR) Services is aimed at suggesting what type of information regulators should make available to the public including informing consumers of the high cost of IMRS, providing information on alternatives to IMRS services and that regulators should have a dedicated page on their website on IMRS issues with the following information.

A similar set of Guidelines for Operators to Provide Information on International Mobile Roaming (IMR) Services emphasised similar requirements to improve transparency by providing subscribers with information. The guidelines also put forward suggestions for reducing “bill shock”. They also suggested that operators provide subscribers with information highlighting differences in charging structures between IMRS services and domestic mobile services, and how subscribers can deactivate part or all of the IMRS services. The Guidelines also suggested that home operators may choose to adopt zonal charging for IMRS service, under which the same rate would be applied to a set of countries that fall under the same zone and inform subscribers as to which countries are covered by zonal pricing.

The APT also suggested that regulators should examine whether regulatory barriers exist in their countries which could create obstacles to potential substitutes for IMR services and should also take steps to educate subscribers as to the available substitutes they could use to reduce the cost of roaming.

Box 4 summarises the main features of these guidelines.

ASEAN

The ASEAN Telecommunications and IT Ministers have, as their goal, a roaming policy where users that roam across the 10 member countries pay the same charges as in their home country. The ASEAN Telecommunication Regulators’ Council (ATRC) adopted a *Record of Intent* aimed at strengthening co-operation in telecommunications regulations, focusing in particular, in the short term, on lowering intra-ASEAN roaming charges. In 2011 ASEAN

Ministers issued a Joint Ministerial Statement at the 11th ASEAN Telecommunications and IT Ministers Meeting welcoming this initiative.⁷⁶ Reducing roaming charges in the region has also been highlighted in the ASEAN ICT

Masterplan 2015 (AIM2015).⁷⁷ Progress has mainly been through bilateral agreements (see below). More recently, Indonesia's Minister indicated support for a "roaming-free" Asian region.⁷⁸

Box 4: APT Guidelines for Regulators and for Operators

Guidelines for Regulators :

1. A plain description of IMR services;
2. A prominent notification that using IMR services may be significantly more expensive than using domestic mobile services;
3. That IMR charges may apply to the following activities undertaken on a mobile phone while travelling overseas:
 - making and receiving calls
 - receiving and retrieving voicemail messages
 - sending and receiving SMS messages and multi-media messages
 - using mobile data services, including but not limited to browsing the internet, sending and receiving emails;
4. Before their departure, consumers are highly encouraged to obtain from their mobile service providers the detailed information of IMR charges applicable to their visited countries, and should take note of the following:
 - (e) whether there would be any difference in charges among different mobile networks in the visited country, and remind consumers that they may manually select the designated network under the "manual" mode of the network selection when travelling in the visited country
5. Hyperlinks to the web pages of individual operators dedicated for IMR-related information; (Regulators should work with their operators to ensure that their operators have followed the "Guidelines for Operators to Provide Information on IMR Services" when providing information on their websites;)
6. Information of various types of alternatives to IMR services, including but not limited to a description of how these alternatives are used, their advantages and limitations, etc.;

Guidelines for Operators:

1. Operators are recommended to provide clear, accurate and easy to understand information on IMR services to customers;
2. Customers should be informed that in general IMRS is significantly more expensive than using their national mobile services;
3. Subscribers should be informed that, when roaming, they may be paying for making and receiving calls and SMS messages as well as using mobile data services including email;
4. Operators are recommended to inform subscribers of different charging structures for IMRS compared to national services;
5. Customers should be provided with inform on how to deactivate all or some IMR services;
6. Customers should be notified by SMS messages when they roam outside their home country through SMS that IMR charges will apply;

Source: Asia Pacific Telecommunity, International Mobile Roaming Working Group Working Group Report , 15 May 2012, at http://www.apc.int/sites/default/files/2012/05/APT_IMR_Working_Group_Report_Final.pdf

South Asian Association for Regional Cooperation (SAARC)

The 2008 SAARC meeting of the Heads of State of the SAARC, in 2008, urged that mobile roaming tariffs in the region be reduced viewing this as an important step to stimulate regional trade. The Colombo Declaration they adopted stated that:⁷⁹

"The Heads of State or Government observed that an effective and economical regional telecommunication regime is an essential factor of connectivity, encouraging the growth of people-centric partnerships. They stressed the need for the Member States to endeavour to move towards a uniformly applicable low tariff, for international direct dial calls within the region,"

Latin America

A number of bodies in South America have been dealing with roaming including those focused mainly on telecommunications (Regulatel and CITEL), and those dealing with regional economic integration (MERCOSUR, CAN and IIRSA).⁸⁰ A number of projects have been undertaken in the different bodies dealing with cross-border roaming in the region. IIRSA began examining roaming prices in 2008 and followed up with a workshop later in that year.⁸¹ Its work is aimed at prompting a competitive roaming market in the region and improving costs, quality and coverage in the context of a South American Roaming Cross-border Agreement⁸². The project was also aimed at improving regional co-ordination by the regulators from participating countries to facilitate the development of regional roaming. CITEL has also put forward proposals to increase transparency on IMRS charges in the region.

The Caribbean

The Caribbean Community (Caricom) in a *Draft Regional Information and Communication Technology (ICT) for Development Strategy, Telecommunications Services Sector* of 2010 suggests several challenges relevant to roaming that the region should take-up including establishing a single mobile numbering plan for the region and removing mobile roaming charges and remove mobile termination for data and voice.⁸³ CARICOM will begin in 2013 to undertake a study on the *"Development of a Regional ICT Space for CARICOM countries"* which includes as a module an examination of new regulations for mobile roaming charges.

3.4 Bilateral Initiatives

There have been a number of bilateral initiatives to reduce cross-border roaming charges usually taken between neighbouring countries that have close trade, tourism ties or population links. In many cases the agreement to move forward on reducing IMRS charges has taken place at the political level but there may be a need to provide statutory power to regulators/ministries to enable agreements to be implemented and enforced. In certain cases political pressure on the incumbents in the two countries involved may be sufficient to reduce charges. For bilateral agreements to be effective there are a number of elements which may be required. These would include the methodology used to reduce prices and a decision on whether only wholesale prices or wholesale and retail prices would be targeted. A decision on whether reductions in prices will be "one-off", or take place in steps over time and whether this will be based on a cost model or agreement on a "glide path". Good co-ordination is also required between regulators of the two countries involved. Consideration also needs to be given to whether structural measures will also be implemented to ensure that bilateral arrangements lead to longer term competition allowing the eventual phasing-out of regulatory measures.

To be effective a bilateral agreement would require that country A agrees to require its MNOs to reduce origination and termination charges faced by MNOs in country B if these charges are also reduced for the MNOs from country A. Retail charges for IMRS would not necessarily have to be similar in bilateral agreements although it would be expected that, following the reduction in wholesale charges, that retail prices would decline. Wholesale charges would be similar unless there are well defined cost differences between the two countries.

Examples of bilateral agreements some of which are underway and others under discussion include:

- **Singapore and Malaysia** were the first ASEAN countries to take action on IMR prices through an agreement entered into by the regulators in the two countries.⁸⁴ The regulators agreed to implement a number of measures which increased transparency for consumers. In addition they agreed that consumers would have the option of capping their data roaming usage. Price reductions of up to 30% for voice calls and 50% for SMS were agreed to beginning in May 2011 for roaming services in Singapore and Malaysia and phased in over time. The agreement covered both wholesale and retail prices. The two regulators have also agreed to continue examining what actions to take to reduce mobile data prices and MMS and video calls.
- **Brunei Darussalam and Singapore** have agreed to reduce roaming rates for mobile voice calls, SMS and data roaming charges by the first quarter of 2013. As part of the agreement both the wholesale inter-operator wholesale charges and retail charges will be reviewed.⁸⁵
- **Brunei Darussalam and Malaysia** have agreed to discuss the reduction of roaming rates but no announcements have been made to indicate whether there is progress although it would be expected that such an agreement would reflect decisions taken between Brunei and Singapore and Singapore and Malaysia..
- **Australia and New Zealand** issued a joint report⁸⁶ in 2010 which reviewed mobile roaming between the two countries and recognised that prices, both wholesale and retail, were high and transparency for users was inadequate. The report concluded with a potential list of possible actions that could be taken to reduce IMR prices. The report examined the pros and cons of a number of measures. Those measures viewed as having some potential included rerouting technologies for outgoing calls viewed as reducing wholesale charges, improving transparency through a centralised website showing the roaming rates of all national operators, SMS on arrival in the visited country and SMS after a roaming charge has been incurred in the visited country showing the price of the communication. Billing caps were also put forward as a suggestion for controlling charges for users. The potential for price controls, on either wholesale or retail or both, was also raised in the discussion paper. Further solutions raised was to mandate wholesale IMR services to any home network (Australian or New Zealand) upon request and using MVNOs to offer inbound services to foreign MNOs. Other potential structural solutions discussed were unbundling mobile roaming services. The report recognised that there could be a need for harmonisation in legislative provisions between the two countries in order to implement certain recommendations. Following this report (which had the status of a discussion paper) the Ministers of the two countries agreed in 2011 to undertake a full market investigation into trans-Tasman mobile roaming. Australia and New Zealand have a Free Trade Agreement which covers the telecommunication sector and which was being reviewed over 2012 as an option to be used to put in place a bilateral agreement on IMR.
- **Finland-Russia and Poland-Russia** have international mobile roaming agreements. Russia had initially sought to have an EU-Russia agreement but this effort was not successful. Israel had similarly tried unsuccessfully to join the EU agreement and had suggested to the EU that it widen its proposed roaming area to include any county that would harmonise its regulations on a reciprocal basis. According to Israel his was rejected on the grounds that the EU could not enforce its regulations outside Europe.⁸⁷ Russia has opted to try and follow a bilateral approach with border EU countries. The intent of the Polish-Russia discussions in 2011-2012 was to enter into a Memorandum of Understanding between the operators of the two countries and the Ministries. Although the MoU was agreed to by the Polish operators and the two Ministries the Russian operators did not sign. The MoU was only valid until the end of 2011 and has not been renewed. Furthermore, the Russian authorities do not have the authority to require their operators to adhere to an MoU. The situation with respect to discussions between Finland and Russia, also during 2011-2012, has been similar to that between Poland and Russia. The fact that the Russian authorities do not have the legal power to implement an agreement which would lower the wholesale roaming charges of their operators has meant that, despite the desire of the Russian authorities, that discussions are at an impasse.

The role of cross-border and trade agreements

Domestic ICT regulators do not have any jurisdiction over wholesale rates for international mobile roaming charged by operators in foreign countries. As such, some form of cross-border co-operation is required which could be at the bilateral, regional or international level. Clearly, a global agreement would be the preferred way forward, but may be the most difficult, and will unlikely be the most rapid given the number of countries involved. While a number of regulators wish to move ahead with bilateral or regional agreements, there is a concern, as discussed above, by some that trade negotiators will be reluctant to allow such initiatives arguing that a bilateral or regional agreements may have to be opened up to third parties as part of *most favoured nation* obligations.^{88 89}

Bilateral IMR service agreements, which have only begun to be implemented, have not to date been challenged by other countries in the context of the GATS MFN commitments. In the case of a bilateral agreement it may be possible for third countries to request their operators obtain the same treatment in the two countries that have a bilateral agreement. This could lead to a WTO dispute procedure. However, it should be noted that the IMRS bilaterals are unlikely to have an impact on third countries.

Where a Free Trade Agreement exists between several countries a bilateral agreement between two countries covered by that agreement may provide a "free-ride" to operators from a third country. The benefits from the bilateral need to be examined relative to the costs of providing that " free-ride". If the economic and social links between the bilateral partners is high then the benefits are likely to outweigh any costs.

By allowing third countries to join bilateral agreements on IMRS and adhere to the same principles as the initial partners would also help to reduce the risk of disputes. The OECD in its policy paper argued that bilateral agreements should be open to all countries that were willing to reciprocate and take action against their operators wholesale rates, citing the framework developed (but not agreed to) by AREGNET, which was in the form of a MoU, as one example which could be used.⁹⁰

The World Trade Organization's (WTO) Basic Telecommunications and Reference Paper makes no explicit mention of international mobile roaming services (or for that matter mobile services). However, commitments in the context of market access and national treatment include cross-border supply, consumption abroad and commercial presence. At an informal Symposium on International Mobile Roaming held at the WTO in March 2012 there was discussion (but no conclusion) as to whether the Basic Telecommunications Agreement applies to wholesale international roaming services and whether this would imply that there was a requirement to offer non-discriminatory terms and conditions for interconnection.⁹¹ A 2004 WTO report⁹² "*Mexico – measures affecting Telecommunications services*" which was released by a Panel examining the dispute between the United States and Mexico regarding provisions in Mexico's domestic laws and regulations on telecommunications stated that:

*There is no reason to suppose that provisions that ensure interconnection on reasonable terms and conditions for telecommunications services supplied through the commercial presence should not benefit the cross-border supply of the same service, in the absence of clear and specific language to that effect. Since the GATS deals specifically with international trade in services by four modes of supply that are considered comprehensive, it would indeed be unusual for interconnection disciplines not to extend to an obvious and important mode of international supply of telecommunications services – cross border.*⁹³

The Panel argued that cost-orientation also should apply to domestic and international interconnection and that the domestic rates provided a benchmark for international interconnection

4. *Proposed Best Practice Recommendations*

International mobile roaming prices have declined over the last few years and there have been improvements in many markets through increased transparency and access to alternate technologies which, while not perfect substitutes, provide a means for mobile subscribers to reduce their bills when roaming. Nevertheless, from the many studies carried out across the different economic regions, the evidence indicates that the IMR market is one characterised by market failure leading to a general conclusion that it is highly unlikely that high international mobile roaming prices will be corrected through market forces. If this is the case regulatory initiatives will be required.

There are costs to regulations as well as benefits. In the case of IMR services the costs are imposed on regulatory bodies as well as mobile network operators. On the other hand there are benefits in correcting market inefficiencies, in particular by reducing the net economic loss to society resulting from inefficient prices. Certain countries are concerned, especially those that have a large number of foreign tourists, that they will experience a loss in foreign exchange revenues. It is more likely that as prices fall for voice, messaging and data, that foreign tourists will begin using these services more intensively resulting in the longer term to higher foreign exchange revenues. For those countries that have moved toward greater economic integration it is evident that high IMRS prices are an obstacle to such integration imposing a cost to business as well as consumers.

The issue of high IMRS prices (wholesale and retail) needs to move forward from debates, workshops, analysis, etc., toward more concrete implementation. There has been progress and the background work has been extremely useful in providing all the main elements to move toward more concrete actions. The European Union has moved forward in implementing change and there has been progress in obtaining lower prices, but it has also been recognised that the solutions that have so far been used are not in themselves conducive to create in the long term competitive markets. The recent regulations adopted by the EU are likely to achieve this goal but there is a need to sort out the complexities of implementing these solutions.

Bilateral and regional initiatives are extremely important and help in the process of reaching a global solution to the problem of high prices. They should be encouraged to move forward. However, consistency in measures across regions is important. At present such consistency seems to be emerging. In the longer term it is clear that a global solution is required which can ensure that the IMRS market can develop effectively within a competitive framework. This may occur through the widening of some regional frameworks once they are established to encompass other regions. The OECD has put forward recommendations for its member countries⁹⁴ and the ITU developed a recommendation and is revising the current International Telecommunications Regulations Discussion, although informal, has begun at the WTO.

This section will build on section 3 by putting forward recommendations on best practice which could be followed at the international level, regional and national levels in order to develop a long lasting solution to reduce high international mobile roaming prices. The range of solutions is twofold. Solutions which provide more empowerment for users as well as improve transparency in the market and solutions aimed at developing effective wholesale and retail price competition in the international market for mobile roaming.

4.1. *Transparency*

Transparency in markets plays a fundamental role both in empowering users and in providing the relevant authorities with information in order to take appropriate decisions. Transparency can also be important for the market players to foster competition.

Empowerment for users

The choices that users (consumers and business users) make in international mobile roaming markets can be important in helping create some competition in this market and consequently helping in changing the behaviour of service providers in the market. Business users, in particular those from large companies that have a high volume of international mobile roaming business, are in a better position to negotiate with their mobile service providers more favourable IMRS prices, so that specific attention needs to be paid to consumers and to small and medium enterprise users. Empowerment is closely linked with increased transparency. Work by BEREC, AREGNET and the Arab Telecommunications and Information Council of Ministers, CRASA and the African Union, APEC and the APT, the Inter-American Commission for Telecommunications (CITEL), the ITU, the OECD, the EU, and a number of other regional organisations have all highlighted the need for increased transparency for subscribers and, to a large extent, these bodies have reached similar conclusions as to what is required to attain that goal. As competition develops in the IMRS market regulatory authorities may find that the market itself through the competitive process provides sufficient transparency. There is a consensus across continents that this is far from being the case at present.

Empowerment for users can be facilitated unilaterally by the competent authorities within a country and should, in practice, be easy to implement at the regional level.

Some best practices in this regard are outlined below:

- ✓ Users need to be informed when roaming that charges are higher than domestic charges and that there is a risk involved in adhering to the same consumption pattern that they use at home when roaming.
- ✓ Users should have easy access to the prices they will pay in visited countries.
- ✓ Users should be informed of international mobile roaming prices, including the structure of these prices, when subscribing to mobile voice and/or data services and the information should be easily found on the mobile operator's web site.⁹⁵
- ✓ Simplicity and clarity of information is important since prices differ for incoming calls, outgoing calls to the home country, outgoing calls to the visited country, and data usage charges. In addition, charging practices may differ for IMR services as opposed to domestic services e.g. in the use of per minute or per second pricing or the use of peak/off-peak charging.
- ✓ Subscribers should be informed of how to disable handsets to prevent international roaming, for example, for data roaming. Many data applications on smartphones can lead to inadvertent roaming so information on how to disable such applications is important.
- ✓ When arriving at a roaming destination, users should be informed by SMS that roaming charges will be incurred and provided with information on those charges.
- ✓ Users should be able to choose a preferred visiting network and the prices on that network.
- ✓ Pre-determined limits (caps) could be applied on international mobile data roaming and users should be informed when they are close to attaining this limit. The default should be to disconnect data roaming when the limit is reached, although the option to exceed this limit should be available.
- ✓ Regulatory authorities need to ensure that users are protected from inadvertent international roaming in border regions.
- ✓ Regulators are encouraged to review (with their national taxation authorities) the tax treatment of IMR services imposed on their national users as well as foreign roamers to avoid double taxation and to ensure that tax treatment is consistent with international provisions, in particular the ITRs.

Price Regulation

The analyses and reviews of international mobile roaming that have been undertaken by all the international organisations, regional bodies and individual countries have reached a similar conclusion. That is, that retail prices for international mobile roaming are significantly high, have no linkage to domestic mobile prices and do not reflect costs. In addition, there is widespread agreement that a major reason for high retail prices are the underlying wholesale prices which come under the responsibility of ICT regulatory authorities in visited countries. There is also, to a large extent, agreement that a lowering of wholesale rates may not in itself be sufficient to lower retail

rates since market forces are weak in the international roaming market. These findings lead to the following conclusions for best practice regulation:

- ✓ wholesale price regulation of inter-operator tariffs is necessary to move to reasonable cost-based IMRS retail prices. Such regulation requires bilateral, or regional or international agreements.
- ✓ government authorities need to have legal power to enforce such regulation in particular to impose price controls.
- ✓ a number of models can be used to move to lower wholesale IMRS charges including price caps, cost models or using national mobile termination rates as a benchmark and reductions in charges would normally take place through pre-determined glide-paths.
- ✓ retail price regulation would be unnecessary if the decline in wholesale prices is passed on to the retail market. There is no clear evidence to indicate whether this would take place so monitoring would be necessary if regulators decide not to impose any retail price controls. The experience of the EU indicates that without retail caps declines in wholesale prices are not usually passed on to users.
- ✓ IMRS retail rate reductions should be avoided if they are not complemented by wholesale IMRS price reductions. Without wholesale rate regulation and wholesale price reductions, the flexibility to reduce retail IMR prices would be limited to a level which is likely to be unsatisfactory and could result in margin-squeeze especially for those operators, usually the smaller operators, that are not in a position to obtain lower wholesale prices in other countries.
- ✓ per second charging is the preferred means for retail pricing. This implies a similar pricing structure for wholesale prices but does not preclude the use of an initial flagfall charge.⁹⁶

Price regulation should lead to lower IMRS prices but will not resolve the problem of market failure. However, in the absence of structural measures price regulation remains the best option to obtain reductions in prices of international mobile roaming. However, in the longer term it is not desirable to maintain price regulation so that consideration may have to be given to adopting structural measures so that long term competition in the IMRS market can develop.

Transparency of wholesale rates

Transparency is important at the wholesale level in addition to retail prices. In general, wholesale rates paid by a retail company in an industry are not known to competitors and there is a danger that if they are made public that the competitive process can be negatively affected. However, where there is no competition making wholesale rates known can help in creating competition. In the case of IMRS high wholesale rates have been determined as being at the core in explaining high retail charges so that the evolution of these charges is important to ensure that any policies regulators take are effective. In the case of the telecommunication sector it has been common practice by telecommunication regulators to make public wholesale rates (interconnection/termination rates) and this has helped drive the process of creating more effective competition. In the case of roaming the IOTs are transparent to the mobile operators but not to the regulators. Transparency of wholesale rates is therefore crucial if action to reduce them is taken and to enable regulators to monitor developments in the market so as to ensure that effective competition is emerging in the market.

Regulators may:

- ✓ have the authority to obtain wholesale IMRS rates charged by their national operators and share these rates when entering into bilateral or regional agreements.
- ✓ encourage the GSMA to publish headline (non-discounted) wholesale charges for international mobile roaming services (voice, SMS, mobile data).⁹⁷

Substitutes

There are a number of potential substitutes which can be used by subscribers when roaming. As indicated above most are not perfect substitutes compared to a subscriber using their own terminal and domestic mobile

phone number. Nevertheless these substitutes can be useful in helping reduce the total charges a subscriber may face when visiting another country. Providing information on these substitutes, where to obtain them and their limitations can help empower users and instil some competition in the market. It needs to be recognised that it would be a difficult to maintain such a data base up-to-date.

- ✓ Regulators need to encourage the development and diffusion of substitutes to IMRS. They should ensure that operators do not prevent applications which can be used in roaming from being used on smartphones, laptops or other wireless devices.
- ✓ Regulatory/consumer authorities should provide a dedicated web site providing information on international mobile roaming substitutes including any drawbacks these substitutes may have.
- ✓ Regulators need to consider allowing the development of VoIP services and applications in their countries that can help in facilitating international mobile roaming services.

Regulators

One function of regulators is to require mobile service providers to be more transparent and to monitor that this is taking place. However, regulators themselves have an important role to play in the process of creating transparency and market competition.

In this context, regulators need to:

- ✓ encourage service providers to provide 'fixed' or 'flat' fee roaming services for mobile data roaming services which would allow them to better control their expenditure, understand the pricing structure and reduce the potential for "bill shock".
- ✓ encourage mobile service providers to structure their roaming charges on a zone basis so that it is easier for users to understand pricing structures.
- ✓ encourage operators to provide a data plan, with a spending limit, for roamers e.g. a per day/per week plan with a choice for the amount of data usage.
- ✓ require mobile operators to place a cap on data roaming and provide information when the user's usage is approaching the cap, allowing users to opt-out of the cap.
- ✓ require service providers to ensure that subscribers can obtain up-to-date information on their expenditures when roaming.
- ✓ set up a dedicated page on their web sites on international mobile roaming which provides up-to-date information on pricing and consumer related issues relevant to roaming.
- ✓ examine the potential to develop an independent "watchdog" type website at the international level on mobile roaming providing relevant information for users to consult.⁹⁸
- ✓ pay to which either they or the relevant Ministry enters into.

4.2. Structural measures

There is a considerable consensus among government authorities that the dynamics of the international mobile roaming market are not conducive to the development of competition in this market and, as a result, there is a need to resort to structural measures in this market. In this context best practice would require the following measures:

- ✓ Where this has not occurred international gateways need to be liberalised.
- ✓ Subscribers should not be restricted from downloading applications on their terminal equipment that allow them to use alternative voice or messaging services when roaming.

- ✓ Separating (unbundling) the home and visited market. This implies that a subscriber can choose an international mobile roaming service provider before leaving the home country while maintaining an existing mobile number. This would be similar to the pre-selection process that was successful in creating competition in the fixed market for domestic and, in particular, international long distance.
- ✓ A complement to domestic unbundling of roaming service would be the concept of "local break out" for mobile data services allowing a visitor to choose a data service provider in the visited country to provide IMR services.⁹⁹
- ✓ Creating international mobile roaming as a separate market implies that authorities allow domestic MVNOs to have access to network resources in the home market and agree with the authorities of visiting countries that these MVNOs have access to visiting country telecommunication markets on a non-discriminatory basis. This would allow MVNOs to have access to wholesale IMR offers.
- ✓ The international roaming service provider would need to have the capability to provide full international mobile roaming at a global level or at a regional level with significant country coverage.
- ✓ Bilateral agreements would need to be made open to third countries that agree to meet the same terms and conditions as the initial bilateral partners.

4.3. *Bilateral, Regional and International agreements*

Progress in resolving the high prices paid for the range of international mobile roaming services will only occur through appropriate bilateral, regional and/or international agreements. While the initial steps that are being taken in some of the bilateral and regional agreements are useful in lowering IMRS prices for users they will be insufficient to result in longer term competition in the market, that is competition which can be sustained without intrusive regulation. The EU Regulation III with its structural measures is moving toward a framework which will help such competition emerge. The earlier EU Regulation I and II were successful in lowering prices but clearly showed that, unless there was a desire to maintain continuous price regulation, steps were required to create conditions of competition in a market which was not contestable.

The WTO has taken an initial step in informally discussing international mobile roaming. Bilateral agreements and regional agreements should be encouraged but should be opened to other countries if they are willing, and able, to make the same commitments as the initial countries.

- ✓ Governments and/or government authorities which enter into bilateral or regional agreements to lower IMRS prices or eventually take structural measures to develop competition in IMRS markets need to ensure that they have the legal authority to enforce measures taken, monitor developments in IMRS markets and can enter into agreements with counterparts in other countries or at the regional level.
- ✓ Agreements need to be clear as to the responsibility of regulators, the methodologies to be followed and the data requirements for monitoring developments in IMRS markets.

The ITU can play an important role in developing and diffusing best practice regulation for IMRS among its members, and in particular acting as a forum to exchange experiences based on the lessons learned by those countries that have already moved forward and taken action to lower prices and develop competition in IMR markets.

ENDNOTES

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- ¹ International Mobile Roaming Regulation - An Incentive for Cooperation, http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR08/discussion_papers/international_roaming_web.pdf
- ² OECD (2009), International mobile roaming charging in the OECD area, SAI/ICCP/CISP(2009)8/FINAL, Paris, 2009, <http://www.oecd.org/dataoecd/41/40/44381810.pdf>.
- ³ See presentation by Peter Stuckmann, European Commission Information Society and Media directorate, EU Roaming Regulation - towards structural solutions, March 2012, Geneva, http://www.wto.org/english/tratop_e/serv_e/sym_march12_e/sym_march12_e.htm
- ⁴ Smartphones are built around a mobile computing platform and support applications and provide Internet access.
- ⁵ Cisco, for example has projected that global mobile Internet traffic will grow ten-fold from 2011 to 2016. See Cisco Visual Networking Index at http://www.cisco.com/en/US/netsol/ns827/networking_solutions_sub_solution.html#forecast.
- ⁶ "Bill shock" refers to the negative reaction a subscriber has to receiving a high and unexpected request for payment from his/her company. As an example, see <http://www.tgdaily.com/mobility-brief/59141-womans-200000-phone-charge-defines-bill-shock>.
- ⁷ <http://www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2010.pdf>
- ⁸ See, OECD, Machine-to-Machine Communications: Connecting Billions of Devices, DSTI/ICCP/CISP(2011)4/FINAL, Paris 2012, [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP\(2011\)4/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP(2011)4/FINAL&docLanguage=En)
- ⁹ http://imsresearch.com/news-events/press-template.php?pr_id=1875
- ¹⁰ WTO data show nearly a threefold increase in world merchandise trade (in current prices) between 2000 and 2011
- ¹¹ The stock valuation of foreign direct investment during the 2000 and 2011 increased 3.4 times according to OECD data.
- ¹² See World Travel and Tourism Council *Business Travel: A Catalyst for Economic Performance* http://www.wttc.org/site_media/uploads/downloads/WTTC_Business_Travel_2011.pdf
- ¹³ Tourism commitments have been made by over 125 WTO members, more than in any other services sector.
- ¹⁴ *UNWTO World Tourism Barometer*.
- ¹⁵ See ITU-T, COM 3-19-E, April 2002, Study Group 3, Contribution 19. INTUG argued that "... wholesale international mobile roaming charges are not cost-oriented and that home operators then add excessive charges before billing their retail customers. The wholesale prices are far from being cost-oriented. They are determined by administrative means, unrelated to costs and far from any competitive market." See also COM-R11-E, January 2003, REPORT OF THE FIFTH MEETING OF STUDY GROUP 3 HELD IN GENEVA FROM 9 TO 13 DECEMBER 2002, "The TAL Group fully supports the cost causation concept as the basis for determining rates for international traffic termination on mobile networks in all markets, and believes that in general, the costing elements are substantially the same for fixed line network termination and mobile network termination."
- ¹⁶ 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, http://ec.europa.eu/information_society/topics/telecoms/regulatory/maindocs/documents/explanmemoen.pdf
- ¹⁷ In 1999 the European Commission decided to carry out an inquiry on international mobile roaming services recognising the problem of high charges -see <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52006PC0382:EN:NOT>
- ¹⁸ An excellent technical description of international mobile roaming is provided in the 2008 GSR ITU paper, *op.cit.*
- ¹⁹ For example, in the United States where Receiving Party Pays is used termination rates are very low resulting in very high volume of calls per subscriber. See Figure 6, OECD, Developments in Mobile Termination, DSTI/ICCP/CISP(2013)/FINAL, <http://dx.doi.org/10.1787/5k9f97dxnd9r-en>.
- ²⁰ BEREC (the Body of European Regulators of Electronic communication notes that in reviewing the impact of price caps in the European economic Area on IMR charges that "[t]here are no clear indications that operators have tended to raise the prices of unregulated „Rest of World“ roaming calls to make up for lost revenue due to the regulated price caps." Paragraph 1.12, International Roaming BEREC Benchmark Data Report January 2011-June 2011, BoR(11)51.
- ²¹ For example, see www.free.fr
- ²² *op.cit.*

²³ OECD (2009), *op.cit.*

²⁴ BEREC, *op.cit.*, paragraph 1.23.

²⁵ The GSMA has indicated that they are in the process of allowing MVNOs to use standard documents such as STIRA and presumably participate fully in the GSMA system.

²⁶ A contestable market is one where there is freedom of entry and exit in the market and the threat of competition is sufficient to keep prices low and prevent the abuse of monopoly power.

²⁷ If country A residents are not regular visitors to country B there is little benefit from declining IMRS prices in country B.

²⁸ Department of Broadband, Communications and the Digital Economy, Report of findings on: International Mobile roaming charges, June 2008,
http://www.dbcde.gov.au/_data/assets/pdf_file/0005/86369/KPMG_Report_of_findings_on_International_Mobile_roaming_charges.pdf

²⁹ A contestable market is one where there is freedom of entry and exit in the market and the threat of competition is sufficient to keep prices low and prevent the abuse of monopoly power.

³⁰ If country A residents are not regular visitors to country B there is little benefit from declining IMRS prices in country B.

³¹ WIK-Consult, Final Study Report, Study for the European Commission, Study on the Options for addressing Competition Problems in the EU Roaming Market, SMART 2010/0018, page 6,
http://ec.europa.eu/information_society/activities/roaming/docs/cons11/wik_report_final.pdf

³² See the background report to the ITU workshop on Origin Identification and Alternative Calling Procedures, March 2012 and summary report at: <http://www.itu.int/ITU-T/worksem/oi-acp/index.html>.

³³ The ITU reported (see background report in endnote 32) that at the end of that period 2004-2009 92 countries allowed VoIP while only 49 banned it outright; the remainder either had no regulatory framework for VoIP or allowed it only in a wholesale or restricted form while the number of countries “legalizing” VoIP doubled over the period, from 46 in 2004 to 92 five years later.

³⁴ GSMA, “Roaming Services in Latin America”, Market and technical Approach, IIRSA Workshop, Bogota, Colombia, 7 November 2008, www.iirsa.org/BancoMedios/Documentos%20PDF/tir_bogota08_medidas_tecnicas.pdf.

³⁵ International Telecommunication Regulations, http://www.itu.int/osg/csd/wtpf/wtpf2009/documents/ITU_ITRs_88.pdf.

³⁶ OECD (2009). DSTI/ICCP/CISP(2009)8/FINAL, International Mobile Roaming Charging In The OECD Area, Paris, 2009.

³⁷ Moving away from IOTs would not in itself have an impact on the GSMA which plays an extremely useful role in other areas in terms of standardisation, helping developing economies improve their roaming capabilities and in facilitating billing, etc.

³⁸ IMSI or international mobile subscriber identity numbers are embedded on SIM cards and used to identify the subscriber.

³⁹ <http://www.interfone.com/frontpage.php>

⁴⁰ The International Mobile Subscriber Identity is a unique identification associated with a mobile user and used to send details of the mobile to the network including details of the mobile to the Home Location register or to the Visitor Location Register (when roaming). The IMSI determines whether a subscriber can use a particular network and used to obtain the subscriber’s data.

⁴¹ <http://www.gentay.co.uk/newsandpr.php?category=News>

⁴² See www.holidayphone.com

⁴³ <http://www.flexiroam.com/>

⁴⁴ <https://www.roamline.com/>

⁴⁵ <http://www.roammobility.com/>

⁴⁶ <http://www.transatel-mobile.com/>

⁴⁷ See Sutherland, Ewan, International mobile roaming in Africa, Link Public Policy Research Paper No. 10, March 2010,
<http://link.wits.ac.za/papers/Sutherland-2010-mobile-roaming-africa.pdf>

⁴⁸ In early 2010, Zain accepted an offer for the sale of all its Africa operations to Bharti Airtel which still operates the *One Network* in Africa.

- ⁴⁹ Zain Press Release at:
<http://www.zain.com/muse/obj/lang.default/portal.view/content/Media%20centre/Press%20releases/One%20Network%2012%20countries>
- ⁵⁰ It should be noted that the percentage of population roaming in the *One Network* region compared to Europe is much lower as is the revenue generated by roaming relative to total mobile service revenues.
- ⁵¹ <http://www.thenationonline.net/2011/index.php/business/infotech/48384-will-subscribers-get-cheaper-roaming-charges.html>
- ⁵² <http://www.gsma.com/newsroom/gsma-launches-data-roaming-transparency-initiative/>
- ⁵³ <http://www.itu.int/en/ITU-T/studygroups/com03/Pages/results.aspx>
- ⁵⁴ ITU-T, Draft new Recommendation ITU-T D.98, Charging in International Mobile Roaming Service, 16-20 January 2012, TD 227 Rev.2 (PLEN/3)-E.
- ⁵⁵ For more information on WICT12 and ITRs see: www.itu.int/en/wcit-12/Pages/default.aspx, See the background paper on international mobile roaming at: www.itu.int/en/wcit-12/Documents/WCIT-background-brief10.pdf .
- ⁵⁶ OECD (2009), *op.cit.*
- ⁵⁷ OECD (2009a), International Mobile Roaming Services: Analysis And Policy Recommendations, DSTI/ICCP/CISP(2009)12/Final, Paris 2010.
- ⁵⁸ OECD, 16 February 2010, Recommendation of the Council on International Mobile Roaming Services, Paris 2012, <http://webnet.oecd.org/OECDACTS/Instruments/ShowInstrumentView.aspx?InstrumentID=271&InstrumentPID=276&Lang=en&Book=False>.
- ⁵⁹ Telecompetition, Towards a single Nordic market for telecommunication services, Report from the Nordic competition authorities, No. 1/2004, <http://www.kilpailuvirasto.fi/tiedostot/telecompetition.pdf>
- ⁶⁰ *op.cit.*, page 10.
- ⁶¹ Consumers can select a different cut-off limit or opt out of this bill shock safeguard entirely. Operators will be obliged to send a message (SMS, e-mail or pop-up message) to customers informing them of how much it will cost to surf the net via their mobile devices when they use roaming services in addition to the alert message warning customers when they have used 80% of their agreed limit.
- ⁶² Regulation (EC) no. 717/2007 of the European Parliament and of the Council of 27 June 2007, amended by (Regulation (EC) no. 544/2009 of 18 June 2009).
- ⁶³ Allowing subscribers to choose an IMR carrier different to their domestic carrier is similar to carrier pre-selection which was introduced in the early days of competition in fixed networks. Pre-selection allowed subscribers to choose in advance an alternative carrier to carry their calls (usually long distance and international) without having to dial a special number of install specific equipment.
- ⁶⁴ See http://ec.europa.eu/information_society/activities/roaming/regulation/archives/current_rules/index_en.htm
- ⁶⁵ See, Ms Maitha Ali Jaffar, Telecommunications Regulatory Authority Sultanate of Oman, presentation at the IMR Symposium, Geneva, 22 March 2012, GCC International Roaming Regulatory Initiative, www.wto.org/english/tratop_e/serv_e/sym_march12_e/presentation_%20maitha_jaffar.pdf
- ⁶⁶ *ibid.*
- ⁶⁷ <http://arabnews.com/economy/article574768.ece>
- ⁶⁸ See, <http://www.crasa.org/>
- ⁶⁹ Regulatory Impact Assessment Study SADC Home and Away, 23 April 2010, Ref. 15493-154, available at <http://www.crasa.org>
- ⁷⁰ See, Christian Mhlanga, presentation at the IMR Symposium, Geneva, 22 March 2012, A South African Perspective On International Mobile Roaming, www.wto.org/english/tratop_e/serv_e/sym_march12_e/presentation_mhlanga.pdf - 2012-03-29 -
- ⁷¹ International Telecommunication Union, West African Common Market Project: Harmonization of Policies Governing the ICT Market in the UEMOA-ECOWAS Space Interconnection, 2004, <http://www.itu.int/ITU-D/treg/projects/itu-ec/Ghana/modules/FinalDocuments/Interconnexion.pdf>
- ⁷² See Rupa Ranganathan and Vivien Foster, *ECOWA's infrastructure: a regional perspective*, The World Bank Africa Region, Sustainable Development Unit, Policy Research Working Paper 5899, December 2011, " *The national members of the West Africa Telecommunications Regulators Association (WATRA) communicate regularly to keep abreast of telecom issues in the region and share information. The existence of this relatively developed institutional structure has helped to facilitate the roaming arrangements that are*

observed in the region.", page 59, http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2011/12/05/000158349_20111205145616/Rendered/PDF/WPS5899.pdf

- ⁷³ Commission de l'Union Africaine, Pré-étude de faisabilité pour le développement d'un programme pour la mise en place de tarifs de roaming abordables en Afrique, Synthèse, Juin 2011, http://www.itu.int/ITU-D/finance/work-cost-tariffs/events/tariff-seminars/Cotonou-12/pdf/Session6_1_Guellouz.pdf
- ⁷⁴ <http://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Cooperation/Working-Groups/Telecommunications-and-Information.aspx>
- ⁷⁵ APT Working Group Report, 15 May 2012, http://www.apr.int/sites/default/files/2012/05/APT_IMR_Working_Group_Report_Final.pdf
- ⁷⁶ See, Joint Ministerial Statement of the 11th ASEAN Telecommunications and IT Ministers Meeting and its Related Meeting with External Parties Myanmar, 9 December 2011, <http://www.aseansec.org/25751.htm>
- ⁷⁷ See *Evolving Towards Asean 2015*, Asean Annual Report, 2011-12,, <http://www.aseansec.org/documents/annual%20report%202011-2012.pdf>
- ⁷⁸ <http://www.thejakartaglobe.com/tech/indonesia-wants-roaming-free-mobile-phone-coverage-in-asean-by-2014/537512>
- ⁷⁹ See, <http://www.smission.com/statements/88-ministry-statements/109-colombo-declaration-of-the-15th-saarc-summit.html>
- ⁸⁰ Regulatel is the Latin American Forum of Telecommunication Regulatory Entities (Foro Latinoamericano de Entes Reguladores de Telecomunicaciones) which created a Working group on Roaming in 2012. CITEI the Inter-American Telecommunication Commission, is an entity of the Organization of American States and the region's intergovernmental telecommunication advisory body. Mercosur, or Southern Common Market, is an economic and political agreement among Argentina, Brazil, Paraguay and Uruguay. CAN is the Andean Community (Comunidad Andina) which is a customs Union between Bolivia, Columbia, Ecuador and Peru. IIRSA is the Initiative for the Integration of the South American Regional Infrastructure created in September 2000 during a meeting of Presidents from the 12 official South American countries (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela) aimed at the integration of the physical infrastructure in South America to promote economic growth throughout the region.
- ⁸¹ http://www.iirsa.org/BancoConocimiento/R/roaming_suramericano/roaming_suramericano_ENG.asp?CodIdioma=ENG
- ⁸² http://www.iirsa.org/BancoConocimiento/R/roaming_suramericano/roaming_suramericano.asp?CodIdioma=ESP
- ⁸³ <http://www.gov.ms/wp-content/uploads/2011/02/Draft-RDdS-Nov-2010.pdf>
- ⁸⁴ The Infocomm Development Authority of Singapore (IDA) and the Malaysian Communications and Multimedia Commission (MCMC).
- ⁸⁵ The Info-communications Development Authority of Singapore and the Authority for Info-communications Technology Industry of Brunei Darussalam were charged with examining roaming charges between the two countries and reaching an agreement with the operators on lower charges.
- ⁸⁶ See Trans-Tasman mobile roaming Discussion document May 2010, http://www.dbcde.gov.au/_data/assets/pdf_file/0008/127709/Trans-Tasman_mobile_roaming_discussion_document.pdf
- ⁸⁷ See Dr. Assaf Cohen, Widening the EU Roaming Zone, Vienna, April 23, 2008, http://www.moc.gov.il/sip_storage/FILES/5/1375.pdf
- ⁸⁸ *Most Favoured Nation (MFN) treatment is an obligation under the General Agreement on Trade in Services (Article II) which requires that a signatory accords "... immediately and unconditionally to services and service suppliers of any other Member treatment no less favourable than that it accords to like services and service suppliers of any other country" (Article II, 1.). Common markets, customs unions, and free trade areas, however, are exempt from MFN provisions.* http://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm.
- ⁸⁹ See for example, Sydney Morning Herald | July 18, 2011, **Hitch in bid to curb phone roaming costs** by Lucy Battersby, "FEDERAL [Australian Government] attempts to reduce global-roaming fees between Australia and New Zealand could be stymied by a free-trade agreement with the United States. The Department of Foreign Affairs and Trade is investigating if the introduction of price caps on mobile roaming fees will have an impact on the free-trade agreement with the US and agreements with Pacific countries. DFAT is concerned that under the US treaty Australian carriers may have to offer US visitors lower rates but Australians would not receive the same treatment there. Advertisement: Story continues below "DFAT is working with the Department of Broadband, Communications and the Digital Economy on a range of issues in relation to international mobile roaming and Australia's international trade obligations," a departmental spokeswoman said.
- ⁹⁰ OECD (2010) op.cit., page 29.

⁹⁴ See OECD, Recommendation of the Council on International Mobile Roaming Services (C2012)7, Paris 2012, at <http://webnet.oecd.org/OECDACTS/Instruments/ShowInstrumentView.aspx?InstrumentID=271&InstrumentPID=276&Lang=en&Book=False>

⁹⁵ It needs stressing that many users (prepaid and postpaid) purchase a package of calls (e.g. number of hours) and would not necessarily be familiar with how much they pay per minute for their domestic mobile calls so that comparisons with domestic and international prices may be difficult for them. The use of per minute pricing for international mobile roaming charges in certain cases, instead of per second pricing, also increases the cost to users.

⁹⁶ Regulation I of the EU imposed for outgoing calls a per second billing interval after the 31st second and per second for incoming calls.

⁹⁷ Transparency of international accounting rates played an important role in fostering competition and reducing prices for international long distance calls in the fixed voice market.

⁹⁸ See APEC Guidelines, op.cit. APEC recognised the difficulty in maintaining such as site for the APEC members. At the International level this would be difficult.

⁹⁹ The EU Regulation III requires that, from July 2014, mobile operators in visited countries have the possibility to directly offer data roaming services to foreign roamers on their own networks.