

## CHAPTER VIII

<b>CONCLUSIONS ON RELEVANT MARKETS</b>
--

## TABLE OF CONTENTS

I.	CONCLUSIONS AND RELEVANT MARKETS .....	379
I.1	Fixed Services.....	379
I.1.A.	Wholesale Fixed Network Access to End users .....	379
I.1.B.	Access to Dedicated Capacity .....	379
I.1.C.	Fixed Interconnection Services.....	380
I.1.D.	Retail Narrowband and Broadband Services.....	381
I.1.E.	Wholesale Internet Connectivity .....	382
I.1.F.	Wholesale Access to Fixed Networks for the Provision of Voice and Low Speed Switched Services .....	382
I.2	Mobile Services .....	384
I.2.A.	Individual or Cluster Retail Mobile Markets.....	384
I.2.B.	Retail Mobile Access Charge .....	385
I.2.C.	Retail Mobile Sub-Markets.....	385
I.2.D.	Wholesale Mobile Access.....	386
I.2.E.	Wholesale Voice Termination .....	386
I.2.F.	Wholesale Data Termination .....	388
I.2.G.	Wholesale Voice Origination Services .....	389
I.2.H.	Wholesale International Roaming .....	389
I.2.I.	Wholesale National Roaming.....	390
I.3	Broadcasting Services.....	390
I.3.A.	Wholesale Broadcasting Transmission Services .....	390
I.3.B.	Wholesale Broadcasting Ancillary Services.....	391
II.	ENTRY BARRIER EVALUATION.....	392

## **I. CONCLUSIONS AND RELEVANT MARKETS**

On the basis of the legal and economic standards outlined in Chapter II and the guiding principles for market definition for *ex ante* regulation outlined in Chapter IV, the Study Team conducted market analyses across the fixed, mobile and broadcasting sectors, albeit without the benefit of all of the empirical data necessary to be able to take a definitive view of the precise parameters of the potential relevant markets. The Study Team has identified a series of relevant product and geographic markets in the communications sector that may warrant investigation and analysis by NRAs, as discussed in the following summary. Some of those markets display certain characteristics which suggest that they are not only susceptible to market failure, but also that such market failure might not be capable of being addressed adequately by the enforcement of *ex post* competition rules or the effect of market forces in the short to medium term because of the enduring or persistent existence of entry barriers.

### **I.1 FIXED SERVICES**

#### **I.1.A. Wholesale Fixed Network Access to End users**

This product market appears to include all forms of access to a fixed network that provide operators with access to end users over facilities under the operators' control. There are clearly a number of ways that operators can gain access to end users: make the "make/buy" decision in favour of "make", and build competing infrastructure; buying access over existing alternative delivery platforms; or accessing end users over facilities controlled by another party. For technical, economic and functionality reasons, the Study Team has concluded that none of these alternatives currently provide a substitute for access over PSTN facilities under the control of a competitive carrier (*i.e.*, a non-incumbent fixed line operator).

With local access facilities continuing to be, for the foreseeable future, a bottleneck dominated by PSTN operators, access to local loops is regarded as critical to the expansion of competition in local markets. Despite existing *ex ante* measures relating to unbundled local loops, PSTN operators still continue to dominate the provision of local access, over facilities controlled by the service provider. It is clear that the construction of new access networks and the resolution of technical issues surrounding certain existing networks have the potential, over time, to increase the number of networks over which end users can be accessed through facilities controlled by the access provider. It remains to be seen how far new or existing networks will provide the appropriate level of functional substitutability.

In the view of the Study Team, there is (and will remain, in the short term) a need for *ex ante* regulation of the supply of services in this market.

#### **I.1.B. Access to Dedicated Capacity**

Access to dedicated capacity is a key input for alternative carriers and for large corporate customers. As such, it is clear that there is demand at both the wholesale and retail levels for such services. However, there are currently only distinct wholesale offers in very few Member States. In the view of the Study Team, the absence of a functioning wholesale market in a

number of Member States does not provide persuasive evidence that there is no demand which needs to be satisfied. Our reasons for such a conclusion are based on the following empirical observations:

- The basic services which provide the ability to use a defined amount of unswitched capacity to carry traffic between two defined points range from IRUs, to leased lines (which have some degree of management) to, possibly, VPNs. Requirements for dedicated capacity are essentially characterised by bandwidth and distance elements (coupled with location). It appears to the Study Team that there is limited substitutability between different bandwidths. In particular, there appears to be an important break point at 2 Mbps. In addition, it also appears that higher bandwidth demand will polarise around 34 Mbps (E3).
- National and international markets appear to be substantially more mature than the provision of local tails. However, the nature and form of demand for national and international dedicated capacity continues to grow and evolve. A number of competitive providers of national and international dedicated capacity (both alternative infrastructure providers and bandwidth exchanges) have entered the market over the past five years. Prices for international services have, as a result, been falling significantly for many bandwidths and distances. At a national level, the provision of capacity between major cities has witnessed the strongest degree of competition. Some of the key factors driving the market are the rise of alternative providers, rebalancing between local and international charges and the availability of intelligent least cost routing options.
- Local tails are increasingly used as permanent access connections for non-residential users. In some circumstances, xDSL lines may be substitutable for tails of less than 2 Mbps. However, such lines are still provided predominantly by PSTN operators, as are local tails. In contrast to national and international dedicated capacity, there appears to have been little new entry and prices appear to have been rebalanced upwards in recent years. Continued development of xDSL services may, increasingly, increase the pressure of PSTN operators' local tails strategies – new entrants might offer new services that are functional and commercial substitutes for local tails; PSTN operators might in turn need to reassess their service placement to reduce “cannibalisation” between revenue streams.

In the view of the Study Team, the sub-market for local tails should continue to be the subject of *ex ante* regulation. By contrast, the sub-markets for national and international dedicated capacity are becoming increasingly competitive. However, NRAs should keep the provision of such services under review, to ensure that competitive conditions do not deteriorate.

### **I.1.C. Fixed Interconnection Services**

There are a number of fixed interconnection services falling within the broader basket encompassed by the term “interconnection”, including call termination, origination and transit services. It is important to recall that in all Member States there has been limited duplication of the local access element of the PSTN by new entrants. As such, most new entrants must acquire both origination and termination services from other operators. Currently, local, single transit and double transit fixed interconnection services are acquired and provided. Demand

for fixed interconnection at different levels has altered over time as investment in alternative infrastructures has occurred. More particularly, demand for double transit interconnection has dropped sharply as increasing numbers of new entrants develop their networks down to single transit switches (and, less commonly, local switches). Substantial differences in the conditions of supply (*e.g.*, costs, preconditions for supply) at local, single transit and double transit levels continue to exist across all Member States. To some extent, a decreased reliance on local interconnection services is itself dependent on other elements of *ex ante* regulation being maintained. For example, pre-selection and number portability have begun to reduce the local access providers' control over originating service provision to end users. The issue is the extent to which these measures might generate the sorts of revenues necessary to fund investment in alternative local network infrastructure.

The other factor driving the changes in fixed interconnection services is the changing nature of the retail services provided by interconnecting operators. For example, flat-rate Internet origination interconnection services (*e.g.*, FRIACO) have been imposed in a number of Member States in response to the introduction and rapid take-off of flat rate retail Internet access services.

As with a number of other fixed services, recent rebalancing has seen substantial decreases in double transit prices, but little change in single transit and local (both origination and termination) charges. However, it should be noted that current fixed interconnection pricing is largely the creation of the existing *ex ante* regulatory framework, rather than the result of the operation of competitive forces. As such, it is extremely difficult to anticipate what an interconnection "market" might look like if existing regulatory requirements were to be lifted.

In the view of the Study Team, *ex ante* regulation of local (both origination and termination) and single transit interconnection services should be retained, and regulators should monitor the interaction between these services and double transit services to ensure that the competitive conditions for double transit interconnection do not deteriorate.

#### **I.1.D. Retail Narrowband and Broadband Services**

Retail low bandwidth access services are usually provided by a dial-up connection over a PSTN circuit. High bandwidth access services may be provided over dedicated capacity, xDSL-upgraded copper lines, upgraded cable networks or other platforms capable of supporting two-way data transmission at high speeds. Distinct retail high and low bandwidth access service markets have been slow to develop because of a combination of factors, including the significant delays in xDSL deployment, the slow emergence of alternative platforms capable of providing high bandwidth access and the relative absence of "broadband" content requiring high bandwidth access (with speed of access to content being the major content-based distinguishing characteristic between high and low bandwidth services, currently).

It appears that most end users currently make a price-quality trade-off when deciding which form of access to acquire. End user perception of "value for money" is central to their choice. The wide variation in xDSL take-up rates across Member States, examined in light of the pricing differentials for the various competing services and the apparently "strategic" nature of some pricing decisions, is instructive in this respect. It appears to the Study Team that, in a number of Member States, low and high bandwidth access over competing platforms may provide an example of chain substitution.

In assessing the appropriateness of *ex ante* regulation, the Study Team considered the relative immaturity of a number of services available to end users, the rapid growth of the overall market, market share fluctuations, and the high percentage of new high bandwidth subscribers churning from low to high bandwidth services (where they are not entering the market as new subscribers). In addition, while it is clear that changes in pricing structure have a significant impact on demand, the availability of new content (particularly content with a “minimum access speed”) will become increasingly important and new platforms (including mobile) and technologies might have a significant impact on the development of the market.

On balance, the Study Team does not consider that *ex ante* regulation of this retail market is currently warranted because “broadband” services are embryonic in their development and may currently be part of a chain of substitutes in some Member States.

### **I.1.E. Wholesale Internet Connectivity**

Internet connectivity is a form of interconnection which allows ISPs providing retail access services to interconnect with other ISPs, thereby satisfying end users’ expectations that they will have access to all open addresses on, and content available over, the public Internet. Given the recent focus on “top-level” Internet connectivity services (*i.e.*, U.S. Tier 1 ISP services), the Study Team considered whether there is a relevant market which warrants *ex ante* regulation. Having considered whether there is a separate and distinct market for U.S. Tier 1 ISP services,<sup>1</sup> the Study Team believes that there exists a range of substitutes that renders the relevant product market significantly broader than connectivity provided by U.S. Tier 1 ISPs, having taken into account the forms of available connectivity (*e.g.*, transit and other forms of peering, secondary peering, alternative content delivery networks and so forth), service quality and price.

Moreover, empirical evidence and industry trends suggest to the Study Team that such a relevant market for transport services is highly competitive, and that any potentially anti-competitive bottleneck issues in terms of local access are adequately addressed by *ex ante* regulation, while effective competition at the retail level (*i.e.*, the interface with the end users in terms of control of ‘eyeballs’) is best addressed *ex post* by competition rules.

The Study Team concludes that, both in terms of the inherent competitiveness of the transport function and the availability of actual and potential substitutes, Internet connectivity does not require *ex ante* regulation.

### **I.1.F. Wholesale Access to Fixed Networks for the Provision of Voice and Low Speed Switched Services**

There are a number of wholesale services currently used to provide a range of retail services linked to access for voice services and various types of voice call services. In the view of the Study Team, fixed access for voice service provision over the PSTN or new entrants’ networks is substitutable with access provided over up-graded cable networks, wireless local loops and unbundled local loops. The Study Team does not consider that mobile and fixed access are as yet substitutable for operators seeking to provide retail services. They are still

---

<sup>1</sup> Namely, whether there is sufficient substitutability between such services and others, including the services provided by U.S. Tier 2 and other ISPs and services which enable traffic to be contained within regions and delivered using other means.

considered to be complements, rather than substitutes, by all but an insufficiently large margin of consumers. At this stage, it does not appear to the Study Team that the wholesale provision of voice-grade access is competitive.

In the view of the Study Team, Member States in which carrier (pre)selection has been implemented for a number of years, have separate voice-grade access and voice (and related services) service markets. In addition, most such voice service markets are competitive. As such, it appears that the provision of national and international voice (and related) services in a number of Member States are competitive. However, there are very few Member States where the provision of local voice (and related) services is competitive. The competitive conditions for the provision of such services are particularly poor where local pre(selection) is not implemented.

The Study Team believes that voice-grade access and local voice (and related) services continue to warrant *ex ante* regulation in all Member States and that there is a need to regulate *ex ante* national and international voice (and related) services in a significant number of Member States (with the need for regulatory vigilance in the others).

For the sake of clarity, the inter-relationship between some wholesale and retail fixed relevant networks and services markets, many of which the Study Team assessed in this Study, are reflected below in **Table VIII.1**. In the view of the Study Team, not all of these markets warrant *ex ante* regulation. However, the relationships between these (and other) retail and wholesale markets are important to bear in mind when identifying Candidate Markets in which it appears that there is the possibility of enduring market failure.

Relevant Wholesale Markets	Corresponding and/or Affected Relevant Retail Markets
Wholesale Fixed Network Access to End users	Broadband and Narrowband Access
Wholesale Local Switched Capacity and Access	Voice Access and Local Service
Wholesale Long Distance and International Switched Capacity	Long Distance Calls International Calls
Local Dedicated Capacity	Local Dedicated Capacity
Transit Dedicated Capacity Long Distance International Capacity	Long Distance Dedicated Capacity International Dedicated Capacity
Internet Connectivity	No equivalent
Local (and Regional) Fixed Call Termination	No equivalent
Call Origination	No equivalent
Cable Landing Rights (including backhaul)	International Calls
No equivalent	Value –Added Services
No equivalent	Internet Access Services ( <i>i.e.</i> , not network access, but a form of access to content to end users) fall outside regulatory regime

**Table VIII.1: Fixed Relevant Networks and Services Markets**

## I.2 MOBILE SERVICES

### I.2.A. Individual or Cluster Retail Mobile Markets

The patterns of supply and demand for mobile retail services have developed in a manner which is not identical to their counterparts in the fixed line sector, largely reflecting the fact that they have: (i) from the outset, been provided under competitive conditions (*i.e.*, no legacy incumbency); (ii) been subject to less regulation (*i.e.*, they do not reflect markets which exist solely by virtue of regulatory intervention); and (iii) reflect different patterns of network/technical configuration (*i.e.*, a mobile service ensures connectivity regardless of location) and technological development (*i.e.*, qualitative changes brought about by 2G, 2.5G and 3G applications).

As a result, the market definition process conducted by the Study Team in the mobile sector at the retail level has had to appraise: (1) whether fixed and mobile services are interchangeable; (2) whether technological migration affects conclusions regarding relevant markets; and (3) the extent to which individual mobile retail services are part of a broader “cluster” market, on the basis of their mode of supply and the nature of demand.

- (1) The Study Team examined whether a broad *voice communications market* exists at the retail level, *i.e.*, whether voice services, including short messaging services (SMS), provided over mobile and fixed networks are substitutable. An analysis going beyond the simplistic differentiation between fixed and mobile services on the grounds of convenience of mobility is required, because of the growing body of evidence of the convergence of fixed and mobile services or, at least, the migration of voice traffic from fixed to mobile networks.

Empirical research suggests that, at this point in time, it is most likely that fixed and mobile voice services are complementary, rather than interchangeable. A preliminary examination reveals that fixed and mobile data communications services remain separate relevant product markets, at least for high bandwidth data applications, due to the current technical limitations on the provision of a full range of mobile data services.

- (2) Research suggests that *analogue and digital mobile services* fall within the same relevant product market, as do mobile communications services provided over GSM 900 and GSM 1800 systems. Both conclusions are based on an assessment of the conditions of competition, demand and supply substitutability, and anecdotal evidence received from operators. The Study Team considers that the rollout of GPRS and wCDMA systems is too immature to determine, definitively, whether mobile services provided by 2G, 2.5G or 3G systems form part of the same relevant product market. Nevertheless, several factors other than price should be taken into account in this context in a market definition exercise, including network integration issues, quality of service performance, speed of service delivery, licensing requirements, the inter/intra-operability of voice and data services, and the range of available applications.
- (3) The existence of a broader mobile communications market at the retail level is based on the concept of a *product “cluster”*, as that expression is used in recent economic theory and in the recent administrative practice of the Commission. Consumers in a cluster market are said to be very sensitive to the substantial (and inconvenient) transaction costs that would be associated with the unbundling of a range of available

services. This sensitivity leads them to evaluate the price and quality of the totality of the package of services rather than its component parts. Thus, the services in question are purchased on an aggregate basis, in order to realise available savings. If customers would find it inconvenient to have individual services supplied by different firms rather than as a bundle and the majority purchase such services as a bundle, the services in question would form a “cluster” market. The Commission acknowledges that a narrow analysis based on demand and supply-side substitutability may not allow a proper analysis of the conditions of competition for such a product “cluster”.

A mobile communications cluster market appears to exist for the retail provision of mobile access, basic voice services, supplementary voice services, emergency services, and basic and value-added SMS. Other services such as premium SMS or international roaming services, may be provided individually by service providers, which means that it is arguable that such services would fall outside the scope of the cluster market. On balance, however, the provision of some mobile services individually should not affect the integrity of a cluster market approach where it can be demonstrated that the provision of such a service on an individualised basis represents only a “*de minimis*” proportion of the overall provision of that service and has an insignificant impact on the degree of competition between the provider of the individual service and the provider of the range of mobile services. Similarly, as is the case for international roaming services, the availability of partial substitutes (*e.g.*, calls from a fixed line, call-back services, national prepay cards) may well be relevant in assessing SMP, but does not reduce the value of a cluster market analysis.

The Study Team does not consider that the *ex ante* regulation of retail mobile communications services, including international roaming services, is currently warranted. It is of the view that regulatory concerns regarding the mobile sector are best addressed at the wholesale level. Any regulation at the wholesale level should take into account the fact that mobile services are characterised by common costs and single services are not priced by operators in isolation from other services (which may mean that a small number of items of wholesale regulation might have a direct impact at the retail level across a broader range of services).

### **I.2.B. Retail Mobile Access Charge**

The Study Team considers that the imposition of a mobile access charge does not appear, at present, to be capable of being unbundled from the charges for other elements of service, so as to be capable of constituting a separate relevant product market. This conclusion might be subject to change where mobile carrier selection obligations are introduced to the marketplace and they prompt actual – not theoretical - market entry.

Unlike the fixed line sector, which is characterised by a local access element, mobile retail services have developed in such a way that an access charge cannot be clearly differentiated and treated as a relevant product market separate from the other retail services to which it is directly linked. In the event, however, that a distinct market develops in the future for origination services at the retail level, this conclusion may need to be reviewed.

### **I.2.C. Retail Mobile Sub-Markets**

Pricing in the mobile sector is very complex, with tariffs differentiated on the basis of a number of factors such as usage, time of day, types of call and types of customer. Although tariffs differ for customers with different levels of usage, this characteristic need not of itself

imply the existence of a separate product market. The ability of mobile users to switch between tariff offerings suggests that distinct mobile customer groupings for 2G services do not affect the market definition exercise. This conclusion should, however, be reassessed if a GPRS or a wCDMA environment facilitates greater differentiation between mobile services.

By way of exception, it might be currently possible to segment multinational mobile users in light of their specific mobile requirements. Such an approach is comparable to the identification of a relevant product market for the provision of customised packages of corporate services in the fixed sector.

There appear to be insufficient competitive concerns to justify the regulation of mobile communications services for corporate customers, irrespective of whether this distinct customer grouping might be considered to represent a separate relevant market for *ex post* purposes.

#### **I.2.D. Wholesale Mobile Access**

The fixed line sector is characterised by a series of clearly differentiated means of access. By contrast, at this stage in the development of the mobile sector, it is exceedingly difficult to identify the full range of access requests that might arise in the near future, given the complexity of the existing and emerging mobile value chain and the technology of mobile networks themselves. Each access request is therefore best appraised *ex post* on a case-by-case basis under competition rules. However, historical evidence makes it possible to identify categories of generic access requests for *ex ante* regulatory purposes.

The relative immaturity of access requests in the mobile industry, coupled with the broad range of access-related requests which might, in theory, be made in the mobile sector in a 3G environment, means that access (beyond interconnection) to mobile networks does not lend itself readily to a generic analysis of all relevant markets for mobile access. An analysis of previous requests allows several categories of access to be identified, including voice termination and international roaming.

#### **I.2.E. Wholesale Voice Termination**

The Study Team examined the ability of characterising mobile voice termination services under a number of alternative relevant product market scenarios, including hypothetical product markets for voice termination on: (i) fixed and mobile communications networks; (ii) mobile communications networks; (iii) individual mobile communications networks; and (iv) individual mobile numbers. The analysis was confined to the short to medium term and, consequently, was restricted to a 2G environment. An analysis of the demand and supply characteristics of wholesale mobile voice termination services suggested that the current regulatory standard of the “national market for interconnection” (*i.e.*, embracing termination on all networks) is too broad for a market definition exercise conducted under EC competition rules. At the other extreme, a market definition made on the basis of individual subscriber numbers would ignore the broader dynamics of competition in the provision of mobile termination services and the fact that a mobile operator cannot discriminate on price between individual numbers for the purposes of wholesale termination rates.

A short term analysis of demand and supply suggests that voice termination on individual mobile networks does not have a direct substitute, principally because it is not possible from a technological perspective to obtain alternative mobile access to a given subscriber other than

where they use multiple SIM cards. However, it is arguable that this type of analysis might not reflect fully the competitive dynamics of the mobile sector in more general terms, and whether the specific termination service being sought is subject to competitive pressure from other sources which have an impact on the overall competitiveness of individual networks or alliances (as has occurred, for example, in the Commission's administrative practice in the airline sector). In the alternative, such an additional analysis may occur at the later stage of determining SMP, where an assessment of the bargaining power of interconnecting parties will be relevant.

The Study Team pursued two lines of enquiry regarding the scope of competitive constraints, with a view to determining whether the relevant product market is broader than termination on individual networks and whether the relevant product market at the wholesale level should be "associated" in some way with the level of competitiveness in retail markets. These lines of enquiry were:

- whether subscribers of the called mobile network can themselves constrain mobile termination charges at the wholesale level; and
- whether alternative means of communicating between a caller and a mobile subscriber are sufficient to constrain mobile call termination charges at the wholesale level.

It has become increasingly accepted that the "calling party pays" principle contributes to end users being relatively insensitive to the pricing of termination on mobile networks. An essential element of a market definition analysis of mobile voice termination is a consideration of the relative price-sensitivity of mobile users to incoming call charges. In particular, attention can be focused on the price-sensitivity of mobile users at two distinct points in time, namely, at the time of the selection of mobile network for the first time and during the period following this selection. The essential empirical elements of this analysis would need to consider several factors, including: (i) the existence of differentiated retail tariffs for fixed to mobile calls; (ii) the price sensitivity of mobile users to inbound call charges, including the impact of emerging mobile communities of interest; (iii) switching costs; and (iv) the likelihood of mobile users churning due to high inbound call charges.

The calling party pays principle, to the extent that it has an impact on the price sensitivity of mobile users, could also be seen as hindering the calling party's ability to restrain mobile termination charges. Accordingly, the Study Team has examined whether callers can realistically take their business elsewhere, if dissatisfied with fixed to mobile tariffs and, to the extent that this happens, the impact that this behaviour might have on mobile termination charges at the wholesale level. As part of this analysis, the Study Team considered whether callers are aware that they are calling a mobile network and whether they are also sufficiently price sensitive to fixed-to-mobile call charges to consider their by-pass options.

It emerged from the Study Team's analysis that the arguments for defining mobile voice termination markets, whether on an individual network basis or on the basis of mobile networks taken in the aggregate, are finely balanced. As a starting point, the Study Team takes the view that the relevant product market for mobile call termination can be assessed in relation to individual mobile operators, but that this short-term substitutability exercise can also be assessed in the light of a broader range of competitive dynamics, consistent with Community precedent and the Commission's administrative practice.

The Study Team is of the view that mobile call termination has more of the characteristics of a 'bottleneck' than a classical 'market', which means that the separation of market definition and the identification of dominance is particularly difficult. 'Termination' on mobile networks is arguably no different from 'termination' on any other network, as all networks share this element of customer price insensitivity. This would not be the case, of course, where customers are able, through technical means, to obtain multiple means of access to a customer (*e.g.*, multihoming in the Internet context, multi-SIM cards in the mobile context).

Ultimately, regulators may feel that the appropriate balance between market definition principles and calculations of relative market power might be most efficiently struck through the application of proportionate *ex ante* remedies (*e.g.*, bearing in mind that the competition law standard of "excessive pricing" is set at a significantly higher threshold than "cost-based pricing" under traditional ONP principles). Taking into account the bottleneck aspect of the termination function, a flexible approach to the adoption of proportionate remedies might also be the best means of redressing imbalances in relative bargaining power between interconnecting parties, which lie at the heart of perceived market failures in interconnection.

### **I.2.F. Wholesale Data Termination**

The provision of mobile data services is currently in its infancy. There is therefore little empirical research and additional information available concerning the wholesale provision of data termination services by mobile operators. Nevertheless, the recent revisions across the mobile industry of pricing policies for SMS traffic and the introduction of SMS interconnection agreements might suggest that a wholesale SMS termination segment is emerging. It is understood that SMS agreements are generally being concluded on a commercial basis, with complaints having arisen in isolated instances thus far.

There is an absence of direct interconnection arrangements between mobile operators for GPRS-based services at this point in time, while interconnection arrangements are developing between individual mobile operators and providers of GPRS Roaming Exchange (GRX) services. The charging and other arrangements for the exchange of traffic between operators have yet to be developed for the 3G environment, an environment which will not necessarily exhibit the same characteristics as a 2G environment, (*e.g.*, the lack of reliance calling party pays principle, the ability to easily differentiate applications, the "pulling" of content-based services, and the charging of interconnection on a per minute basis).

The *ex ante* regulation of mobile data termination services currently appears not to be warranted. Regulators should nevertheless monitor SMS interconnection arrangements to ensure that competitive conditions are maintained.

### **I.2.G. Wholesale Voice Origination Services**

As a matter of general principle, the wholesale provision of voice origination services on the basis of carrier preselection should constitute a separate relevant product market, although such a relevant market might not be identifiable in each Member State if providers have failed to emerge in the marketplace. In addition, mobile operators might provide wholesale offerings of bundled origination minutes, which could form the basis of the commercial offerings of so-called MVNOs. Many operators view such wholesale origination arrangements as an additional means of generating revenues. The Study Team has left open whether such wholesale offerings of bundled origination minutes constitute a separate relevant market, particularly in light of the limited publicly available details of such arrangements.

The existence of competition for origination at the retail level among a number of mobile network operators arguably means that wholesale origination services need not be subject to *ex ante* regulatory intervention at this point in time. Moreover, existing examples of regulatory intervention in Member States such as *The Netherlands* and the *United Kingdom* have demonstrated a lack of commercial interest in carrier selection services. In addition, it would appear that the conclusion of a number of wholesale origination arrangements between mobile market players suggests that the segment might be effectively competitive.

### **I.2.H. Wholesale International Roaming**

An analysis of service interchangeability and broader competitive conditions suggests that the wholesale provision of international roaming services constitutes a separate relevant product market for *ex ante* regulatory purposes. While the Study Team is well aware of current concerns regarding the pricing of international roaming tariffs, there is a general understanding that current commercial initiatives by mobile operators and enforcement actions by competition regulators may mean that the concerns about excessive or parallel pricing are transient issues which may not indicate a durable market failure.

The enforcement initiatives under competition rules include the Sectoral Inquiry into mobile roaming charges, the notification of Vodafone's Eurocall flat-rate service, the notification of several standard roaming agreements by the GSM Association, the Commission's competition investigation of the behaviour of mobile operators in the *United Kingdom* and *Germany* in the context of international roaming charges, and several regulatory initiatives at the national level to increase consumer awareness. Examples of recent market developments which are, in principle, capable of acting as a stimulus to greater competition in the provision of international roaming services include the increasing ability of and incentives for GSM 1800 operators to attract inbound roaming traffic, the increase in bargaining power of home network operators, particularly due to assisted roaming technologies, the introduction of flat-rate tariffs by several pan-European mobile operators, and the Code of Conduct for information on international roaming retail tariffs adopted by the GSM Association.

In the absence of the on-going competition investigations being resolved, there is reluctance on the part of the Study Team to propose that wholesale international roaming be designated as a Candidate Market for *ex ante* regulation. Given that pricing practices are both the subject of *ex post* competition law assessment and commercial pressures, they might be capable of resolving themselves in a manner similar to that experienced in the fixed line sector with the disappearance of the old Accounts Settlement regime.

### I.2.I. Wholesale National Roaming

The Study Team considers that national roaming is a distinct relevant product market which has been primarily created through regulatory intervention. Given its existence as licence condition of many 3G operators, and in light of the fact that there is evidence of its being successfully negotiated on a commercial basis (at least for 2G-on-3G roaming), there appears to be little likelihood of additional action being required at this time.

Although identifiable as a relevant product market, the commercial and regulatory conditions which prevail with respect to national roaming are such that *ex ante* regulation is unnecessary.

For the sake of clarity, the inter-relationship between some wholesale and retail fixed relevant networks and services markets, many of which the Study Team assessed in this Study, are reflected below in **Table VIII.2**. In the view of the Study Team, not all of these markets warrant *ex ante* regulation. However, the relationships between these (and other) retail and wholesale markets are important to bear in mind when identifying Candidate Markets in which it appears that there is the possibility of enduring market failure.

Relevant Wholesale Product Markets	Corresponding and/or Affected Relevant Retail Product Markets
Mobile Call Termination Mobile Call Origination (including enhanced mobile service providers and indirect access providers) National Roaming International Roaming Mobile Data Interconnection	Individual and/or Clusters of Mobile Telecoms Services

**Table VIII.2: Mobile Networks and Services**

## I.3 BROADCASTING SERVICES

### I.3.A. Wholesale Broadcasting Transmission Services

Broadcasting transmission services, both analogue and digital, are a key element in the broadcasting value chain, and can be provided over an increasing number of platforms (albeit platforms with different geographic coverage). Content providers require access to platforms that enable them to generate subscription and/or advertising revenues to support their business plans. However, the Study Team considers that great care should be taken to avoid defining the relevant market by reference to individual business plans and structures. There are wide variations between Member States in relation to the number, coverage and technical characteristics of the platforms available. The key demand drivers are viewer coverage, price and other non-price terms imposed by platform operators. Other factors, including differences in the costs borne by consumers for content on different platforms (given that historic behaviour in a market affects viewer perception of new services) also impact on demand for different platforms.

The Study Team is conscious of the effects of “must carry” and other public policy-related regulation. However, it is of the view that, given the existence of at least two competing close-

to-ubiquitous “any-to-many” platforms in every Member State, there is no justification for treating individual platforms as the sole means of access to individual viewers or for effectively defining the relevant market so as to provide content providers with mandated “any-to-all” access. In addition, retail pricing sensitivity and price elasticity (in contrast to termination services in the context of real time communication) supports an approach whereby the relevant market is considered to be the aggregate all broadcast transmission networks.

In the view of the Study Team, the relevant market for wholesale broadcasting transmission services is that of the aggregate of such services provided on all broadcast transmission networks.

### **I.3.B. Wholesale Broadcasting Ancillary Services**

The broadcasting ancillary services concept (including technical services) is broad, potentially including all of the elements in “set-top boxes”, namely: hardware and software for conditional access services; subscriber management services, EPGs and APIs (including derivative authoring tools). Set-top box manufacturers develop boxes in close co-operation with the providers of software for key elements (bearing in mind that APIs currently incorporate an operating system), the transmission platform providers and, where they are separate, transmission network operators. It is usually the transmission platform providers that supply set-top boxes to end users in most Member States.

Given the current regulatory requirement that all entities producing and marketing CAS provide all broadcasters with fair, reasonable and non-discriminatory access, that all descrambling consumer equipment allow descrambling in accordance with the common European scrambling algorithm, and that CAS must permit cost-effective transcontrol, it is difficult to anticipate how the relevant market(s) might have developed with less or no *ex ante* regulation.

Interoperability of set-top boxes is a key issue for content providers. The regulatory regime requires either entry into simulcrypt agreements or the adoption of “open” multicrypt systems that use a common interface, allowing for multiple CAS in each set-top box. Such boxes tend to be more expensive to produce, and their “open” nature reduces the incentives of the platform provider (usually also the box provider) to subsidise retail acquisition.

APIs are not within the current mandated access regime. With the exception of the MHP standard, all of the APIs currently in use in Europe are proprietary. Incompatible proprietary APIs effectively prevent the unbundling of other ancillary services, thereby preventing the development of an application for use in the same form on competing platforms. There is mixed evidence in Europe concerning the possibility of market failure in relation to the provision of access to APIs. However, the Study Team takes the view that the strong commercial incentives for platform operators to provide access to their APIs (*e.g.*, the availability of content that will be attractive to end users on their platforms) should not be underestimated, and are likely to further increase as capacity increases. However, the development of the provision of access to APIs, particularly given their control role as the operating system of the set-top box, should be carefully monitored by regulators.

It is technically possible to provide EPGs separately from both CAS and the API. However, the lack of API interoperability (inhibiting the development of generic EPGs) and heavy

marketing use of EPGs means that most platforms currently carry the platform operator's EPG. As the number and range of programmers and other forms of content increase, generic EPGs may become more viable. In the view of the Study Team, regulators should monitor this, together with access to APIs, to ensure that control by platform operators does not stifle the development of a competitive market.

In the view of the Study Team, broadcasting ancillary services are part of a single relevant market. While they warrant close monitoring, the Study Team does not believe that APIs and EPGs currently warrant *ex ante* regulation.

For the sake of clarity, the inter-relationship between some wholesale and retail fixed relevant networks and services markets, many of which the Study Team assessed in this Study, are reflected below in **Table VIII.3**. In the view of the Study Team, not all of these markets warrant *ex ante* regulation. However, the relationships between these (and other) retail and wholesale markets are important to bear in mind when identifying Candidate Markets in which it appears that there is the possibility of enduring market failure.

Relevant Wholesale Product Markets	Corresponding and/or Affected Retail Product Markets
Broadcasting Transmission Services Ancillary Technical Broadcasting Services	Broadcasting Transmission Services

**Table VIII.3: Broadcasting Networks and Services**

## **II. ENTRY BARRIER EVALUATION**

On the basis the contestability analysis discussed in Chapter IV, the Study Team has sought to identify the entry barriers which might exist with respect to a broad range of product markets with respect to which it has conducted a market analysis. In the view of the Study Team, it is essential that the nomination of Candidate Markets for *ex ante* regulation is based on a comprehensive understanding of whether entry barriers are of such significance as to confirm that a particular product market is likely to continue to be not effectively competitive, in the absence of *ex ante* regulation.

The Study Team believes that the existence of non-transient barriers to entry represents the main obstacle to the development of effective competition. In the absence of barriers to entry, even the behaviour of a firm with 100% market share can, in theory, be effectively governed by the threat of competition (*i.e.*, under certain conditions, the threat of entry will force even a firm with 100% market share to price at levels which ensure both efficiency in production and competitive pricing which does not lead to the making of excessive profits at the expense of customers and consumers). A high entry barrier should usually be required to justify the imposition of *ex ante* regulation, after an effective competition analysis has been conducted.

**Table VIII.4** tends to confirm that, by and large, those relevant markets identified by the Study Team as exhibiting *prima facie* characteristics of market failure are also characterised by the existence of various types of entry barriers that justify inclusion as Candidate Markets.

	Relevant Product Market	Entry Barriers			
		Legal & Technological	Regulatory	Economies Of Scale	Others
W H O L E S A L E	1. Fixed call termination (including provision bundled with transit)	√	X	√	X
	2. Fixed Call origination	X	X	√	X
	3. Cable landing rights	X	X	X	X
	4. Internet connectivity (connectivity between ISPs)	X	X	X	X
	5. Wholesale local switched capacity	X	X	√	X
	6. Wholesale long distance and international switched capacity	X	X	X	X
	7. Wholesale fixed network access to end users	X	X	√	X
	8. Local fixed dedicated capacity	X	X	√	X
	9. Long-distance and international fixed dedicated capacity	X	X	X	X
	10. Mobile termination	√	X	X	X
	11. Mobile origination	√	X	X	X
	12. National roaming	√ <sup>2</sup>	X	X	X
	13. International roaming	√	X	X	X
	14. Broadcasting transmission services	X	X	X	X
	15. Ancillary technical broadcasting services (CAS, EPG, API)	X	X	√	X
R E T A I L	16. Voice access and local fixed service	X	√	√	X
	17. Broadband and narrowband access (non-voice services)	X	X	√	X
	18. Long distance fixed calls	X	X	X	X
	19. International fixed calls	X	X	X	X
	20. Local fixed dedicated capacity	X	X	√	X
	21. Long distance and international fixed dedicated capacity	X	X	X	X
	22. Mobile telecoms services (including international roaming)	X	X	X	X

**Table VIII.4: Entry Barrier Analysis for Candidate Markets<sup>3</sup>**

The Study Team believes that the relevant market analyses that it has conducted, together with its assessment of likely market failures (potentially leading to a lack of effective competition) and its identification of barriers to entry which may warrant *ex ante* regulation of a relevant market provides a broadly based analysis of the key issues that will inform the debate surrounding the implementation of the *Recommendation* and the *SMP Guidelines*.

<sup>2</sup> Possible on-supply by MVNOs and resellers, unless there are contractual limitations on on-supply.

<sup>3</sup> √ indicates existence of an entry barrier