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Master Thesis, Fall 2006:

International Roaming

- **How *smart* regulation could achieve sustainable improvements in the competitive climate of the European telecom sector.**

Author: Henrik Evrell (I-02)

For: Kreab AB

Tutors: Carl-Johan Asplund (LTH)
Peder Jonsson (Kreab)

Discussants: Martin Martinsson (I-02)
Gustaf Tegell (I-02)

Examinator: Bengt Horndahl

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Abstract

International roaming has been a frequently debated subject in the European telecom sector lately. While prices on most other mobile services have been reduced by half during the past few years, roaming charges have remained fairly static since the service was first introduced with the birth of GSM. While generating large profits for Europe's dominating operators, the situation constitutes a restriction to the freedom of movement concept within the EU Internal Market. In June 2006 the EU Commission proposed a regulation by capping prices for roamed voice traffic on both the wholesale and the retail level.

Through studies of literature, articles and statistics, and through interviews with the regulators, operators and other experts it has been my ambition to give answers to the following questions:

1. In what direction is the European mobile telecom sector developing? Who are its dominant players today and tomorrow?
2. What role does international roaming play in this development?
3. What are the purposes of the proposed regulation, and how would it change the conditions for effective competition?
4. Could the regulation's design be modified to better fulfil its purposes?

The study shows that the sector through a massive trend of consolidation is developing towards a pan-European service oligopoly, consisting of Vodafone and two strategic alliances formed by some of Europe's dominating operators.

It further shows that international roaming has played an important role in this development by adding to the industry's already strong network externalities, thus posing a significant problem for Europe's few remaining independent operators. Low roaming charges has sailed up as the top priority in the lucrative MNC (Multinational Corporations) market segment, making cost efficient supply of roaming services into a key success factor in industry. By reciprocal discount agreements, oligopoly players have the possibility to margin squeeze independents out of this market.

Regulation as proposed by the Commission would, by applying a wholesale price cap, reduce the scope for such margin squeezes significantly and thereby evening out the competitive conditions among operators. However, the study draws me to conclude that the competitive climate has not been a major concern of the Commission's. The EU is in serious need of public support, and the regulation's design rather points towards that speed and clarity of results have been the top priorities. Such results are ensured by capping prices even on the retail level. In the meanwhile other issues, such as price caps for roamed data traffic and standardized contract procedures, have more or less been left out of the discussion.

The general conclusion is that the Commission, by adding a few modifications to its proposed model, could trade short-term populism to achieve sustainable improvements in the competitive climate of the sector. The study includes three recommendations addressed to the Commission:

- Ad to the model a uniform wholesale price cap on roamed data traffic
- Ad to the model a uniform duty to provide roaming contracts to all interested parties
- Give national regulatory authorities the responsibility to independently handle retail issues

The study finally argues that regulation of international roaming, if designed to encourage competition in the network sector, has the potential to achieve positive dynamic effects even in upstream (equipment) and downstream (content) markets.

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Preface

It has been a long and challenging process to put together the master thesis that you are now about to read. The finished result however convinces me that my time has been well spent. Opening my inbox a few days ago I found an offer to buy a 2nd edition “Global Mobile Roaming Report” by *Informa Telecoms & Media*, a report covering the same basic areas as this one. The fact that it was offered for €5614 indicates, if nothing else, that the subject of international roaming is still most relevant.

Since I decided to embark on the mission to put together this master thesis alone, I have been depending much on others, not just for data and opinions, but also for creative stimulation. The idea of analysing the European market for international roaming and the proposal for regulation was born at a casual dinner among friends (who usually discuss more casual subjects) in August 2006, and was developed in September together with Peder Jonsson at Kreab. Peder has functioned as my mentor during the process, contributing with his long experience from working in the interface between the industry and decision makers.

My gratitude also goes out to the rest of the Kreab workforce, for integrating me in their team and providing me with great resources.

I furthermore want to thank my reference group and everyone who has contributed with input. During the thesis work I have met with some of the industry’s most prominent people, and I want to thank them all for lending their time.

Big thanks also to Carl-Johan Asplund at LTH for his inspiring ideas and creative thinking. I hope that this thesis might also inspire him to finally purchase his first mobile phone.

Last but not least I want to thank my family and friends for giving me reasons to leave my computer once in a while.

Stockholm, January 2007

Henrik Evrell

1. Introduction

Welcome dear reader: Here follows a brief introduction to the thesis, including its background, purpose, area of research and its disposition. Finally this chapter will guide you through some basic terminology that will be helpful in making the fairly complex subject more comprehensible.

1.1 Background of the Study

Ever wondered why your mobile operator seems to rip you off every time you get home from a vacation or a business trip? The truth is actually that the bulk of your bill goes not to your own operator but to the foreign operator who connected your calls, a service which is normally referred to as *international roaming*.

One of the fundamentals when introducing GSM as an open international standard back in 1993 was the possibility to operate seamlessly across borders, and it was promoted by the EU to play an important part in the inception of its Internal Market. The technology to provide roaming services has thus been around for over ten years, but unlike regular voice calling, prices as well as usage have remained on skimming levels. Seeking the cause, static price and usage levels at first appear to be surrounded by a chicken-or-egg dilemma. User groups claim that people avoid calling abroad as a result of high prices, whereas most operators argue that the services are still early in their life cycles and priced accordingly. However, digging a little deeper one realises that the problematic situation in European telecoms derives from lack of consumer power combined with seriously dysfunctional, though natural according to theory, market characteristics.

The issue of the dysfunctional roaming market has during the last few years caught the attention of the EU Commission, fronted by IT commissioner Viviane Reding, because of the obstacle it constitutes for the concept of “free movement” within the Internal Market (see appendix 1 for more detailed description). Reding is now on a crusade to regulate. After having to back on her initial proposal, consisting of a so-called “home pricing” principle (HPP), after vast critique from the industry as well as national regulators, a revised final version is now up for discussion in the Council and Parliament (see appendix 2 for an account of legislative processes within the EU). A final decision is expected during the summer of 2007¹.

The reception of the commission’s proposal has however, to say the least, been mixed. Depending on their own stakes in the matter operators have assumed very specific agendas, which they fiercely strive to impose on decision makers in Brussels through massive lobby pressure. It therefore appears reasonable to assume that the proposed regulation, even though symmetrical in its design, will affect operators differently depending their characteristics. If so, a regulation of international roaming could, apart from making frequent-flyers happy in the short term, well have other more fundamental effects on the industry structure.

Since being opened up to competition in the mid-nineties, most national markets have seen new players entering, often contributing with new technology and/or downward pressure on prices, only to disappear a short time afterwards. What we see now is instead a steady trend of consolidation, with Europe’s dominating operators merging or forming strategic alliances across the national borders that used to separate the markets from each other. As a result, usage as well as capex levels have stabilized, while the operator’s profit levels continue to grow. Does the situation surrounding international roaming have anything to do with this trend, and would a regulation in that case affect the development?

¹ Interview with Mattias Revelius, Swedish permanent representation in the European Council (2006-10-20)

1.2 Purpose and Problem Formulation

The purpose of the thesis is to give the reader a thorough understanding of the dysfunctions of the European market for international roaming services, their effects on competition within the sector, and the conflicts of interest surrounding the forthcoming regulation.

The thesis pays specific attention to analyse what role international roaming plays in the current trend of cross-border consolidation, and particularly in the formation of the strategic alliances between European operators. The huge political and economical interests surrounding subject matter appear to reflect well the different approaches to regulation among operators, regulators and user groups. It is therefore necessary to also recognize those interests in order to further analyse the motifs and consequences of regulation.

To give a comprehensible structure to this fairly complex subject, the analysis is built around four interconnected questions that are chosen to match the essay's purpose:

5. *In what direction is the European mobile telecom sector developing? Who are its dominant players today and tomorrow?*
6. *What role does international roaming play in this development?*
7. *What are the purposes of the proposed regulation, and how would it change the conditions for effective competition?*
8. *Can the regulation's design be modified to better fulfil its purposes?*

Furthermore, it is my intention to demonstrate to fellow engineers the impact and perhaps necessity of political interference in the capitalistic marketplace, an area that has been largely overseen throughout our education.

1.3 Delimitation

The thesis focuses exclusively on the European market for mobile telecommunications. Serving as benchmarks, the analysis will however make some references to the American and Asian markets, which have seen a much faster pace of development, both technologically and price wise, during the last couple of years. Furthermore, I have to a large extent excluded the possibility of quantitative analysis. The reason being limited access to accurate and reliable data on which base calculations. I have judged much of the data presented publicly by operators as well as regulators as not being reliable enough, given the economical and political interest in which they are displayed. This conclusion can for example be supported by the large divergence in estimates of profit margins, prize development, the market's size etc. More about the thesis's qualitative approach in chapter 4.1.

1.4 Target Groups

The thesis targets two groups of readers:

1. Decision makers involved in the evaluation process of the European Council and Parliament.
2. Fellow Industrial Management & Engineering students.

For the first group, the thesis aims to provide an alternative perspective to inspire discussions on the subject matter. For the second group, the thesis foremost gives a thorough illustration of the impact, and perhaps necessity, of political intervention in a market economy.

1.4 Disposition

The thesis consists of ten chapters:

1. Introduces the area of research, the problem formulation, the purpose etc.
2. Presents and discusses theories, on which the forthcoming analysis is based.
3. Introduces the reader to some recent research on related subjects, including Hannes Leo's study on first-mover advantages in mobile telecoms and Bhaskar Chakravorti's study on how network markets resist innovation.
4. Presents methods used to gather and analyse information.
5. Describes and analyses today's situation concerning international roaming: What is the problem, how did it arise and what are authorities and the market looking to do about it?
6. Widens the perspective to look at the European mobile telecom sector as a whole. Its current trend towards consolidation is analysed through determining the major drivers, and evaluated from a competition perspective.
7. Jumps back and analyses how operators should be affected differently by the proposed regulation, depending on their size, maturity and geographical origin.
8. Discusses how the design of the proposed regulation could be modified to better suite EU's objective.
9. Widens the perspective once again, this time to discuss what influence the proposed and modified regulation could have on the industry as a whole, including up- and downstream providers.
10. Wraps the thesis up by summarizing the conclusions from previous chapters.

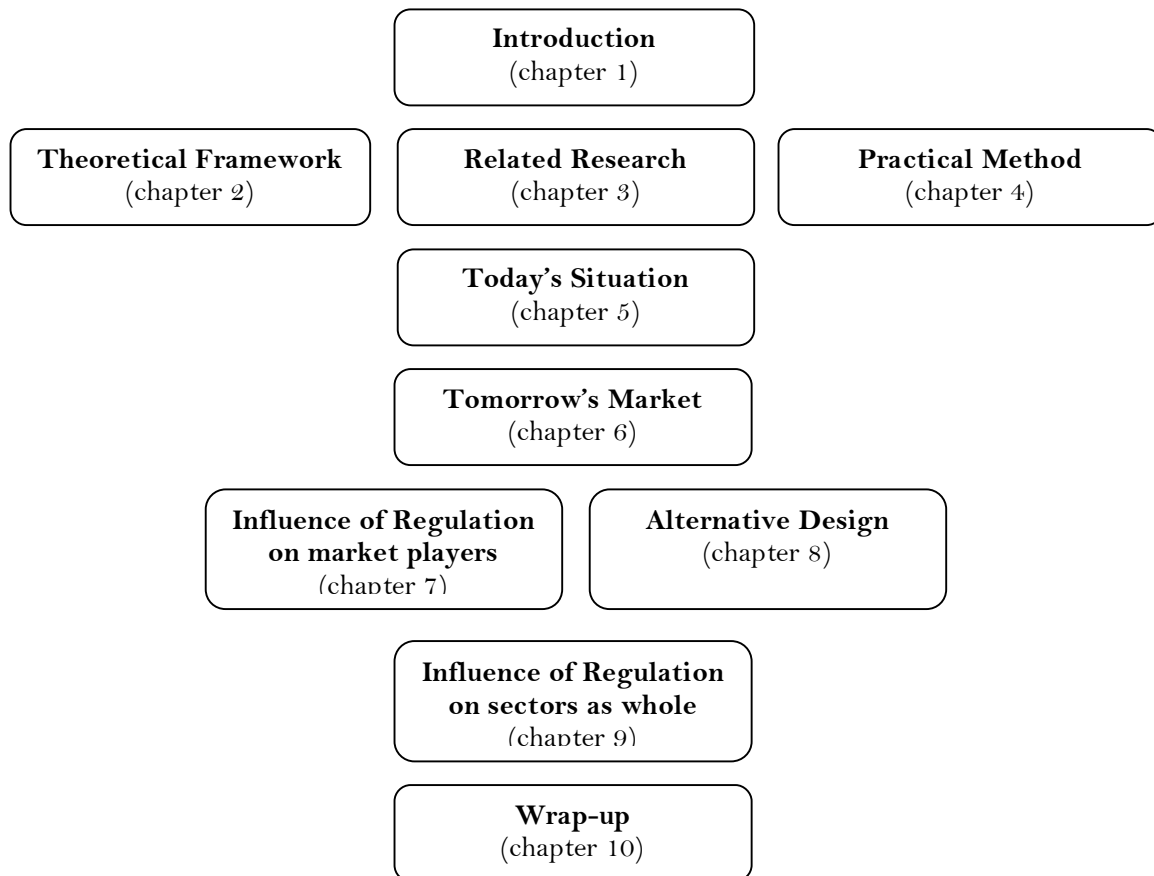


Figure 1.1 *Illustration of the thesis's disposition*

1.5 Definitions

It is crucial for the reader to be familiar with certain concepts and words with in order to follow the discussions of the thesis. The concept of international roaming is more thoroughly explained in chapter 5.

Roaming	Roaming means connecting a mobile handset to a network other than the one it is subscribing to. Roaming can be either <i>national</i> , when being outside the range of the own operator within the country, or <i>international</i> when connecting to a host network abroad. Using the term roaming, the thesis always refers to international roaming.
ICC	<i>Intercarrier Compensation</i> . A joint conception of charges between interconnected parties to compensate for use of each other's network capacity. Commonly used while referring to the US market.
MNO	<i>Mobile Network Operator</i> . An operator providing services through self-owned network infrastructure. Using the term "operator", the thesis always refers to MNO:s if nothing else is stated.
MVNO	<i>Mobile Virtual Network Operator</i> . An operator providing services through use of someone else's network infrastructure. The MVNO thus acts purely as a retailer and is depending on (reasonably priced) access to network infrastructure. Such access is often meant to be secured by national regulation, but as presumed from the declining number of MVNO:s on the European markets regulators have seldom succeeded in this task.
Incumbent	The thesis most often refers to <i>incumbent operator</i> as the former monopolist, who is thus the market's first mover in the GSM market. As shown by Hannes Leo (see chapter 3.1) incumbents share large advantages towards latecomers into the markets deriving from switching costs, economies of scale etc. However, from a newcomer's point of view an incumbent (word meaning <i>present</i>) could be any existing operator on the approached market.
MNC	<i>Multi-National Corporation</i> . A company with operation spread across many countries, or with a globally diffused value chain. The number MNC:s have and are still continuously increasing with globalisation trends, which are to a great extent driven by ICT innovation.
Termination	<i>Call Termination</i> (termination derives from the word <i>terminal</i> rather than <i>terminate</i> =end). The service provided by an MNO by connecting a call through its network infrastructure.
Origination	<i>Call Origination</i> . The originator of a call (or data transfer) is the person or network from which the call is originated. Opposite of termination.
Wholesale	<i>Wholesale markets</i> in mobile telecoms work slightly different than most other wholesale markets. MNO:s are often obliged by regulation to act as wholesalers towards MVNO:s, even though they both play the same retail markets. As discussed in chapter 6.3.1, this situation can encourage abusive behaviour among MNO:s with SMP (significant market power).

- Retail** *Retail markets* in mobile telecoms consist, just as any other retail markets, in the offers marketed towards end users.
- Footprint** Footprint is a word often in mobile telecom contexts to address the geographical coverage or presence of MNO. The current consolidation described in chapter 6 logically reduces the number of suppliers, but increases the footprints of those remaining.
- NRA** *National Regulatory Authority*. All EU countries have own authorities responsible for regulation of telecommunication on their domestic markets respectively. These vary in terms of specialization and levels of power (see chapter 2.1.2). The Swedish NRA is PTS (Swedish National Post and Telecom Agency).
- Mobile data** Information sent over mobile networks as data “packages” rather than voice protocols. Some of the emerging standards, such as VoIP, transforms voice into data packages and can thereby send the same information with less strain on the network.

2. Theoretical framework

The theories presented in this chapter function as basis for the forthcoming analysis, and can be divided into two parts. The theories in the first part deal with regulation, including Ahrne & Brunsson's theories on different motifs and attitudes towards regulation in general. It also accounts for different regulatory "traditions" with adherent regulatory bodies. The next section considers network industries, including Bergman's theories on how their specific economical structure drives consolidation, and Henry & Matheu's thoughts on how network industries are regulated to achieve desired purposes. Finally is Göran Liljegren's growth model presented, which is used as a reference to describe the consolidation in today's operators sector.

2.1 Why and How do we Regulate?

Regulating means setting up rules according to which individuals and organisations are expected to act in a given society. What distinguishes most rules from common norms is that they are formulated in writing and that they are put into action through a decision process. In a democracy rules are considered legitimate only if they are formulated and decided by a democratically chosen institution or its representatives. In spite of this rules has often been looked upon as negative in different aspects by those who are regulated. Author Ayn Rand brings up regulation as one of the main themes in her classic novel *Atlas Shrugged* from 1957, arguing that it inhibits human creativity and thus slows down the engine of the world. Nowadays opinions like these are perhaps particularly usual regarding regulations of economic markets. Increased questioning of such regulations has led to steady stream of market deregulations, most significantly during the last twenty years. Yet new rules and new rule makers constantly appear. Even deregulation tends to create a need for further rules in order to regulate the deregulation... This section aims to clarify why we regulate, according to different views, the conflicts of interest and by which processes regulations are formed in practice. The theories will be used to analyse the motives of the EU commission in regulating international roaming fees.

2.1.1 Different Perspectives on Regulation

There exist a number of different theoretical perspectives on how regulation is perceived and understood. These perspectives have different answers to why, when and by which processes regulation should exist. Literature on the subject can be divided into three major perspectives, popularly labelled *normative*, *interest based* and *cultural*, as compiled by Ahrne & Brunsson².

The normative perspective

According to the normative perspective regulations exist principally to enhance collective welfare. People are viewed as striving for a common purpose, but with the need of certain rules to help them set a path. However maximizing collective welfare, in its economical sense, is not the only standard to evaluate upon. Yale professors of political science Dahl and Lindblom discussed the relationship between economics and politics and how a successful blend of different rules contributes to obtain freedom for as many as possible³. They argue that people feel free when they are not expected to cope with too many unpredictable and frightening variables in life. This means that freedom paradoxically requires a certain amount of control. Author Giandomenico Majone argues that regulations need also be based on some sort of established ethical stance in order to get public acceptance⁴. Thus rule makers need to strive after broad public support to ensure legitimacy.

² *Regelexplosionen*. Ahrne & Brunsson (2004)

³ *Politics, Economics & Welfare*. Dahl & Lindblom (1963)

⁴ *Regulating Europe*. Majone (1996)

The question of *how* rules are formed is often very simplified or even left out in normative literature. Some sort of central institution, most often a state, lead by public interests, regulates to lead its society in the wanted direction. In order to get the whole perspective on public interest this institution needs to be represented by experts with different backgrounds in decision processes. These backgrounds include economists, who seek efficiency, politicians, who seek democracy and lawyers, who seek openness and compatibility with existing juridical frameworks.

The interest-based perspective

The interest-based perspective often share views on the purpose of regulation with the normative perspective, but differs when it comes to the creative processes. Here is suggested that understanding regulation is to understand the underlying struggle for power. The principal idea is that organized economical and political interests, rather than public opinion, exert great influence on central rule making authorities. Political scientist John T Scholz draws parallels to game theory and claims that the model often ensures a win-win equilibrium for regulators and business organisations as long as they choose to cooperate⁵. If one part on the other hand breaks the cooperation this will mean severe consequences for the counterpart. Thus regulations are mainly based on the interest of those organizations that have enough power, economical or political, to make claims. Regulators might therefore be perceived as corrupt and their rules lack legitimacy amongst the public.

Evolution of a regulatory framework is according to the interest-based perspective driven by shifts in the balance of power. This theory is becoming increasingly interesting as markets (even network markets as will be showed later) are constantly moving towards globalization. Globalization creates demands and incentives for international regulation, which further complicates the situation.

The cultural perspective

The cultural perspective also emphasizes the struggle between different groups of interest in its explanation to why we regulate. However it differs in how these interests are formed. People are not viewed as completely rational, and their interests are rather based on cultural aspects than on calculations of costs and gains. Regulation is decided upon socially created expectations on how people are supposed to act in a given situation. Since these expectations are created through social norms and not through interests of power, people will accept them and act accordingly. Unlike the other two perspectives, the cultural does not divide players into public and private ones with conflicting interest. Society is rather viewed as a web of organisations and cultural groups struggling to make their values count⁶.

In order to understand regulation according to the cultural perspective, one must understand what gives the authority to make rules. Knowledge and social influence are considered more powerful than financial strength. Power is also to understand how to play the game. Change in regulatory frameworks is driven by changes in the cultural perceptions of the society it regulates. Perceptions in their part are most heavily affected by historical and environmental factors.

2.1.2 Shaping of Regulatory Bodies

Depending on the circumstances regulation can be organized very differently. Most notably this depends on who is the regulator and the level of authority he has to initiate and carry out

⁵ *Adaptive Governance and Water Conflicts*, Sholz (2003)

⁶ *Capitalism, Culture and Economic Regulation*. Hancher & Moran (1989)

regulatory measures. Experimentation has been made with the shaping of regulatory bodies since the beginning of the 19th century, and the development is still very much ongoing.

Level of specialization

A significant difference between regulation models is the nature of the legislating authorities. Still today there is an argument about what different roles the entities involved in the regulation should have. Most states agree that it is the legislator's responsibility to define obligations for public service in each sector. It is however less clear what entity or entities should have the rule-making power. For example, Britain has specialized regulative bodies, separated from the legislative bodies, while France does not. There is also the need to define limits that separate regulation from competition law, and to reconcile competition with the goals of public interest. Of course there are many possible organisations of regulatory frameworks. Authors Claude Henry and Michel Matheu emphasize five different options, three of which does not call for specialized authorities⁷:

- The first one does in fact imply specialized regulation, but undertaken by the executive body. This option may seem logical if national interests are brought into play and the matter therefore is of a political nature rather than economical. This approach applies particularly to sector where only partial competition has been introduced.
- Secondly, regulation can be put under the responsibility of the competition body. This solution is logical if the given sector is considered to have a character broadly similar to other industries, and is therefore not in need of a specialized regulatory body.
- Some analysts also believe that regulation is best made retrospectively when for example fair prices are difficult to set in advance. Under this conclusion it seems natural to refer regulation to settlement courts. This method has only been tried a few times in reality, often giving rise to many practical difficulties.

On the other hand, regulation can in many cases be considered a very special task, requiring an ad-hoc structure. There are two general organizations of specialized regulative bodies, which between them disagree on whether or not these bodies should be temporary:

- Some analysts consider that it is possible to achieve a competitive market within a certain reasonable deadline. At the end of this period the specialized regulatory body should be abolished and its responsibilities handed over to the competition body.
- On other markets, for instance network markets that imply *natural monopolies* (described in chapter 2.2), the regulatory body may be needed infinitely to ensure fair competition. Such situations call for rigid and permanent institutions.

Level of independence

In fact, the debates in most countries have not focused primarily on whether or not to have specialized regulators, but rather whether these should be independent. In most cases specialized regulatory bodies are not entirely under control of the state and are therefore considered independent. This term can however be misleading. Even if a regulator is independent from the executive power it is still influenced by legislation and courts that can challenge its decisions. Furthermore the "independent" regulators are often heavily influenced by the government, which is also responsible for the appointing of the general director.

There are a number of important arguments to why specialized regulators should be granted independence, even if limited. First of all can conflicts of interest be managed openly, which enhances legitimacy. It is also considered, though impossible to prove, harder for a dominant actor on a market to "capture" an independent regulator than one under government control.

⁷ *Regulation of Network Utilities*. Henry & Matheu (2001)

When introducing competition in formerly monopolized markets, for example, the state often has close ties with the incumbent for which reason an independent regulator is preferred. Finally independent bodies are allowed to act quicker and more dynamic than for example competition bodies. This is particularly important in markets with fast technical development, such as the telecom market. Through blurring the distinction between previously separate sectors, technical development also gives rise to the question of how many regulators are necessary. For example, today telecommunications compete with Internet services as well as with postal services. Some analytics recommend that regulatory bodies in related sectors be merged while others prefer coordination⁸.

Level of powers

In addition to decide the levels of specialization and independence of a regulatory body, its powers need also be defined. There are three traditional powers that regulators may possess to different extent:

- Power to lay down regulations
- Legislative powers
- Power to investigate, settle disputes and impose penalties

A regulator holding the three powers functions as a new administrative body, that can (virtually) make laws, regulate and then act as judge enforcing its own rules. Others only have one or two of these powers. Depending on the extent of its powers an independent regulator can have a varying influence on its sector. Nevertheless, the actual influence is not entirely determined by the regulators formal powers. In some cases regulatory bodies have gradually sets up doctrines by merely giving recommendations to the executive administration. Acting as experts their views become more difficult to challenge. This effect is known as *sunshine regulation*, and is much depending on the regulators ability to acquire the market information needed to make qualified proposals⁹.

2.2 Network Markets

To fully understand the complexity of the situation facing the European regulators and telecom operators, it is crucial to know a few things about network markets. This chapter will present the general characteristics of network markets, and theories on why and how they need to be regulated. Extra attention will finally be given to EU Regulation 2560/2001 (of cross-boarder financial transactions, see appendix 3), which is said to function as an example for the approaching regulation of international roaming.

2.2.1 Structural Characteristics of Network Markets

Network industries generally share a number of features. In particular they involve connecting customers and service providers via a certain infrastructure. The processes are often described as a stream, where upstream production or supply units are linked with customers lying downstream. Network industries are therefore considered to have a vertical structure, with three key elements: core products, infrastructure and service provision. For example, in the railway industry upstream production involves manufacturing of trains, the rails and power cables make up the infrastructure and service provision include ticket sales etc. Depending on the level of competition in the different parts, the vertical structures of network industries can differ. Figures 1 a-d present a few of the possible configurations¹⁰.

⁸ *Regulation of Network Utilities*. Henry & Matheu (2001)

⁹ *Regulation of Network Utilities*. Henry & Matheu (2001)

¹⁰ *Europe's Network Industries: Conflicting Priorities*. Bergman et Al. (1998)

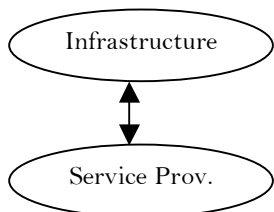


Figure 2.1a

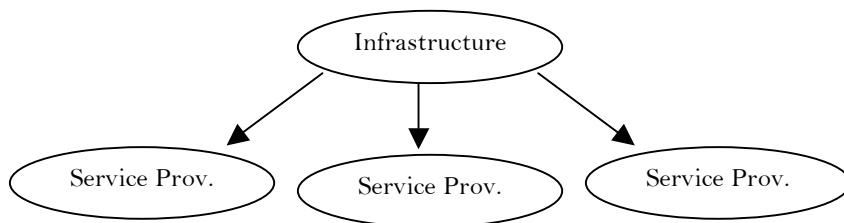


Figure 2.1b

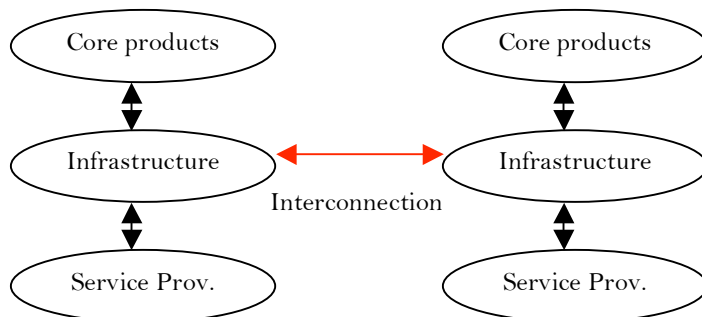


Figure 2.1c

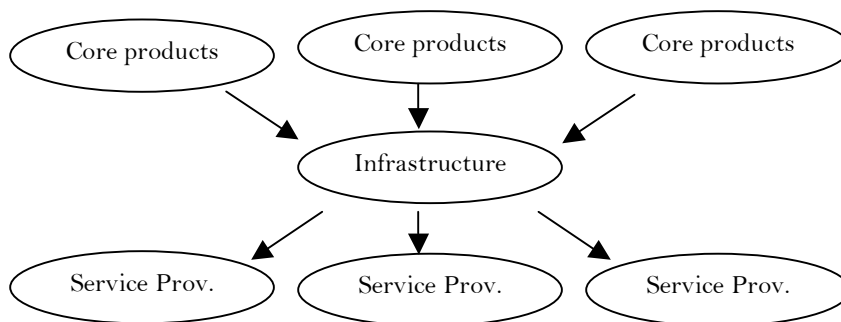


Figure 2.1d

Figure 2.1a illustrates the case of vertical integration where a single firm operates all upstream and downstream components and thus has a monopoly on the whole network. In case 2.1b there is still an infrastructure monopoly, but the downstream activities are open to competition. Figure 2.1c illustrates a case where two network markets, separated for example by a national boarder, are interconnected to allow service between them. Case 2.1d has competition in both upstream and downstream activities, which are linked together by a single infrastructure. The infrastructure is therefore a strategic bottleneck, which may in some cases be co-owned by the firms who use it. The European telecom market, if there really is one, is clearly an example of case 2.1c, which will be showed in chapter 5.

2.2.2 Economical Characteristics of Network Markets

Network industries generate a significant portion of Europe's total GDP. When including road, air and water transportations, they produce some 9% of the total EU GDP, and a similar percentage of its workforce¹¹. However, the network markets' relative significance is difficult to quantify since many of their outputs are crucial inputs to other markets. Some studies have shown that network industries have significant impact on general economic performance. A good example is a study of telecom investments in a sample of OECD countries by Röller and Waverman¹². The study shows evidence of a positive connection, with telecom infrastructure accounting for over 15% of the regions' total economical growth. Others find no such connection, but the general conception is that a firm development in network industries is crucial for a region's competitiveness¹³.

Sunk and lumpy investments

Network markets share a number of economic features. Most significantly investments in infrastructure have two key characteristics:

- a. They are sunk
- b. They are lumpy

Installing network infrastructures from scratch often involves very large fixed initial costs. Even service actions are generally carried out on a large scale, making the cost structure distinctly lumpy. Well up and running the operational costs are often relatively low. Since much of the equipment has no or few alternative uses once it is installed the investment may also be considered irreversible or sunk. These investment characteristics create high entry barriers to the industries on one hand, and on the other it makes ventures very risky since they are sensitive to political and technological movement¹⁴.

High entry barriers

Large sunk investments in combination with low marginal costs encourage economies of scale as average costs decline when output increases. This makes entry barriers into network markets considerable. A company about to enter into such a market is exposed to a clear risk that revenues, over a long period of time, will not be sufficient to cover the sunk initial investment. It is anticipated that rivalry on the market logically will drive prices downward, which further deters new entrants. The greater proportion of sunk costs, the smaller the incentives to enter and thus the fewer the number of competitors is the typical scenario (Bergman et al 1998).

Homogenous services

As service output in network markets usually depends on being supplied through a uniform infrastructure, little differentiation between providers is possible. For example: a normal mobile voice caller would not notice any difference in service quality if trying different operators. Neither would an Internet user given that the connections had similar speed, or a consumer of electricity. Even personal transportations share this characteristic to a large extent, even through some differentiation of service classes onboard is possible. The result of a homogenous service output is in many cases that competition is almost exclusively based on pricing. A low price is enabled through optimization of cost structures¹⁵.

¹¹ *Lisbon Strategy: A motor for market reforms of the network industries*. European Economic & Social Committee (2003)

¹² *Telecommunications Infrastructure & Economic Development*. Röller & Waverman (1998)

¹³ *Europe's Network Industries: Conflicting Priorities*. Bergman et Al. (1998)

¹⁴ *Europe's Network Industries: Conflicting Priorities*. Bergman et Al. (1998)

¹⁵ *Competition and Industrial Policy in the EU*. Sauter (1998)

Network externality

Another usual characteristic of network markets is what is commonly referred to as *Network externality*. This meaning that the value an individual member represents for network increases or decreases with the number of members. In most networks the externality is positive. A telephone network for example is more valuable for everyone the more people are connected to it. In transport networks, on the other hand, the effect of more users might be negative because of congestion. Whether the network externality is positive or negative is in other words a consequence of the capacity of the infrastructure, which at some point will be saturated. This is a factor that further increases entry barriers, since starting out on a small scale is generally not an option. A network with few members is unlikely to attract new ones¹⁶.

The result: Network markets are natural oligopolies

The characteristics above together make network markets natural oligopolies, meaning that they will eventually end up with a small number (usually 2-4) of very dominant players¹⁷.

- Positive Network externalities and sunk and lumpy cost structure drives economies of scale, favouring large players.
- Entry barriers, partly caused by the cost structure, deter new players from challenging established ones.
- Small possibilities in differentiating the service output decrease the scope for new players, thus further raising entry barriers.

Oligopolistic markets are generally considered favourable to collective dominance and conducive to collusive behaviour.

2.2.3 Interconnection Between Networks

Large impact on general economic performance in combination with public service features gives network industries a special political importance. Traditionally states have therefore initiated and financed the building of much infrastructure, knowing that few private operators could handle the large risks involved in such ventures. Also, for a state, red figures from operating a network can be compensated by its expected positive impact on other markets. Consequentially, most networks that are in use today started out as national monopolies. They were generally designed to serve businesses and citizens of individual countries, in times when economies were far less dependent on each other than they are today. However, along with globalisation has followed an increased need of cross-boarder service in networks, which has been difficult to satisfy because of bad compatibility, missing links etc.

Now over ten years since the inception of the Single Market, many European networks function much like described in figure 2.1c but with multiple countries connecting each other's infrastructure. The result is a network of networks, schematically illustrated in figure 2.2.

¹⁶ *Structural Changes In the Telecom Industry...* Mossakowski (2006)

¹⁷ *Oligopoly Dynamics*. Puu & Sushko (2002)

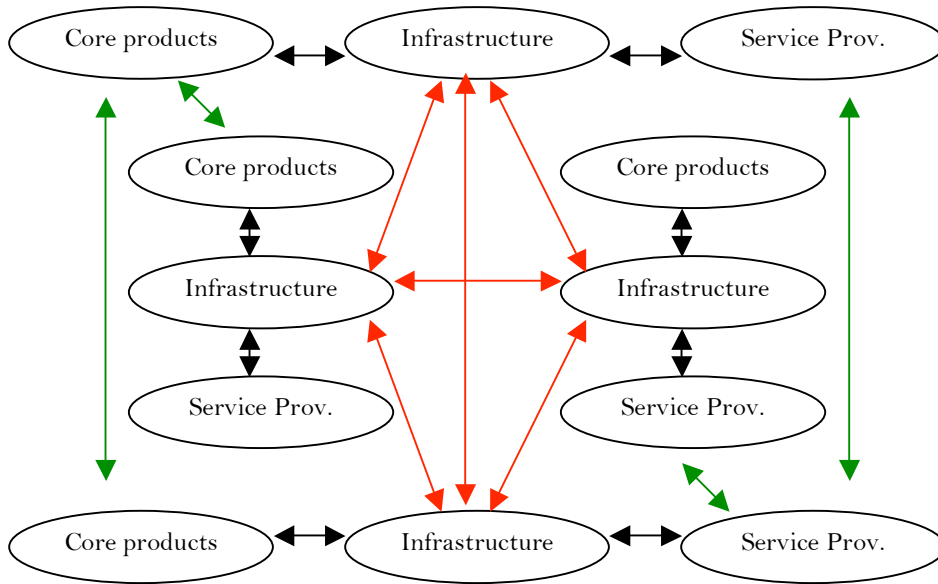


Figure 2.2 Schematic sketch of interconnection between network value chains

The red arrows represent interconnections between networks, the black lines the network supply chains and the green lines represent competition between upstream and downstream players. These connections are held together and controlled through regulations and agreements between companies. The Single Market may not yet have managed to unionize infrastructure, but since borders opened for trade international competition has been established for goods supporting the infrastructure and the services that are provided through it.

In mobile telecom markets interconnection consists of roaming, which is schematically described in chapter 1.1, and simple cross-boarder service through international calls.

2.2.4 Regulation of Network Industries

Maintaining stability and fair competition after deregulations has in most network markets required regulation. There are however different methods of regulation, which first need to be evaluated from the issues they aim to manage. This chapter will present some of the common issues associated with liberalization of network markets, and different methods of regulation.

Interconnection Issues

When liberalizing a network market, infrastructure will initially be owned and operated by an incumbent company. A major regulatory issue is thus how to allow entrants to access this infrastructure on fair premises. Studies show that those incumbents, if permitted to do so, tend to want to use their dominant position to refuse interconnection or to provide it at unreasonably high costs. This would of course deter new entrants, with continued poor competition as result. To overcome such resistance entrants may have to oversize investments in own infrastructure, leading to excess capacity. Excess capacity often equals inefficiency for the market as a whole, which is of course not desirable for the state. On the other hand, if given too favourable interconnection terms through regulation, entrants may under-invest and drive prices down below costs levels for the incumbent. A study of national telecom markets from 1997 argues that the equilibrium should be reached when interconnection fees are set equal to the incumbent's costs. If set higher, competing could make arbitrage profits from interconnection, and setting it lower would force the incumbent to reduce its prices below its margin costs¹⁸.

¹⁸ *Efficient Competition in Local Telecommunications*. Haring & Rohlfs (1997)

Pricing issues

Prizing is a central issue in the regulation of network markets. Bergman presents five common concerns on how prizes can evolve after liberalization. These concerns are of course interrelated and managing one of them may very well cause another¹⁹.

- a. Fear of *too high margins* in those service markets where competition is entering slowly.
- b. Fear of *too low margins* for entrants, caused by low retail prices and high interconnection fees.
- c. Fear of *too high margins* from formation of cartels between incumbent operators.
- d. Fear that *too low margins* will close down parts of the network with expensive service provision.
- e. Fear that *too low margins* will impair the profitability of investment in new technology, thus slowing the pace of development.

Prizing methods

To influence prizing regulators generally use two different methods. Simplified, they can either put a cap on retail prizes or control the margin rates for companies on a market²⁰.

Controlling margin rates is called *ROR* (Rate Of Return) regulation and is an indirect method of preventing abuse of dominant market positions. In practice ROR regulation is applied by first calculating the total value of the firm's assets (that are employed in the regulated market) and then decide a maximum rate at which the firm would be enabled to earn a fair return on these assets. There is however a number of biases involved in applying ROR regulation. Firstly, the fixed rate is often calculated from historical data, which is not necessarily representative for today's situation. Secondly, studies have showed that ROR regulation does not give sufficient incentives for companies to develop effectively. With fixed margin rates, the only way to increase absolute profits by become bigger. Thus it is profitable to inflate the capital base in order to earn more money from the same rate of return. Furthermore, the regulated firm may be comfortable in knowing it will always be possible to earn the allowed return by just passing costs through to customers.

The method of *Prize-cap regulation* was introduced in 1980s as a superior alternative to ROR, which until then had been the dominant method of prize regulation. As the name suggests it works by setting explicit caps on prices, in this case on prizes charged for services on network markets with ineffective competition. To calculate the cap a formula *RPI-X* is often used, where RPI is the inflation rate and X is an adjusting factor which is meant to reflect expected technological development. The weighted average of prize increases for regulated services are then constrained to be no greater than RPI-X. However, the factor X is generally difficult to calculate, making it hard for regulators to put accurate price caps. The problem is specifically notable in mobile communications industries where the pace of development is high and generally unpredictable.

Prize-caps aim to give companies incentives to minimize costs and thus compete on the base of productive efficiency. In contrast to ROR, price-cap regulation is forward-looking and thus more accurate. Also, price-caps allow companies greater freedom in setting individual prizes since the regulator is only interested in the average price. Regulators have flexibility in the setting of weights, giving them the possibility to target customer groups differently. This has proved helpful when aiming to achieve public service objectives.

¹⁹ *Europe's Network Industries: Conflicting Priorities*. Bergman et Al. (1998)

²⁰ *Europe's Network Industries: Conflicting Priorities*. Bergman et Al. (1998)

2.3 The Logics of Growth

In order to analyse the development of the telecom industry (or any other industry) it is important to understand the drivers and dynamics of growth. As will be discussed in chapter 6, the European operators sector has during the past 2 years experienced a steady trend of consolidation. To understand the logics of this trend is essential to discuss future paths.

Professor Göran Liljegren of Linköping Institute of Technology has through empirical studies of international industrial companies worked out *The Logics of Growth* model. Growth can, according to Liljegren's model (see figure 6.1), be rewarded, created or acquired.

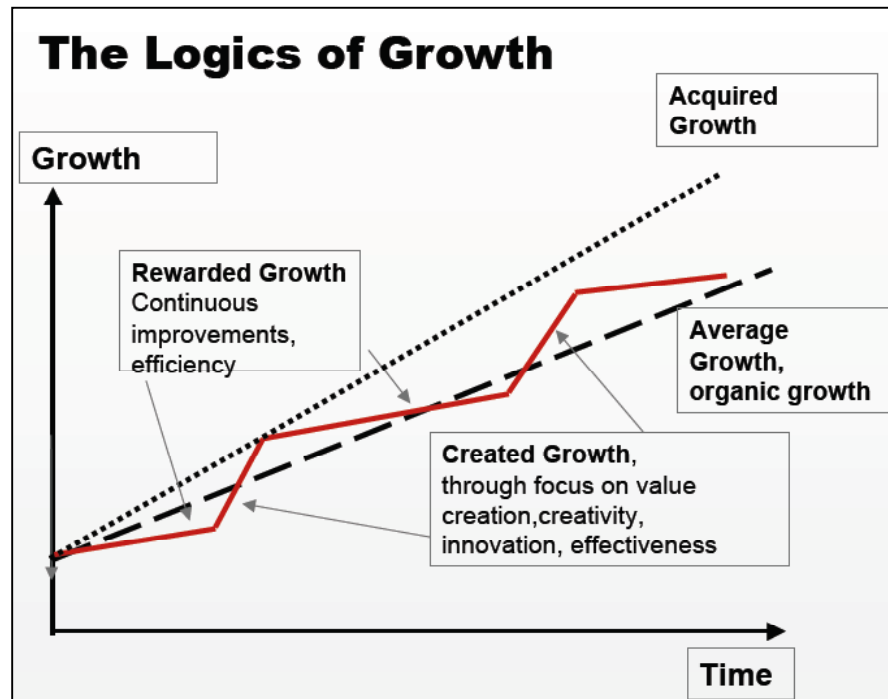


Figure 2.3 Liljegren's growth model²¹

Rewarded Growth

Rewarded growth is organic and the result of continuous improvements within the current niche. Such improvements can be increased revenues and effectiveness, and derive from restructuring and reallocations of business units. The main challenge is to avoid over capacity while maintaining a high accuracy of delivery.

Created Growth

Created growth is also considered organic, and derives from expansion into new markets or product segments, in other words differentiation. Growth can be created through ventures in product- and concept innovation and in new business models. The main objective is to extend the scope of value by modifying the company's role in the marketplace.

Acquired Growth

Acquiring growth is the third, and most drastic level of growth. The objective is either to strengthen the core of the company's operation (incremental), or to expand its scope by building

²¹ The Logics of Growth. Göran Liljegren, Linköping Institute of Technology (2006)

a new leg to stand on (radical). The main challenges are to identify potential synergies and to provide seamless integration of the acquired business unit.

Liljegren concludes from his study that more and more of companies' growth-driving activities are allocated to generate created and acquired growth rather than rewarded growth.

3. Related research

As the theme of my research is prospective and therefore largely based on speculation, related retrospective research must be an important tool to give scientific support to my discussion. This chapter introduces the reader to three research studies, two of which consider events shaping mobile telecom industries in the late 20th century and early 21st century. First up is Hannes Leo's research on market dynamics in the mobile industry, as a result of first-mover advantages and market entry timing. Next is Bhaskar Chakravorti's research on how network markets naturally strive towards a point of equilibrium, at which they strongly resist technical innovation or any other changes to the scenery. Finally, to bring international roaming into context, the EU Commission's impact assessment on its own proposal will give an alternative prospective view on the subject matter.

3.1 First-Mover Advantages in Mobile Communications (Hannes Leo 2004)²²

Leo investigates how market share development for first-movers and followers is affected by the high market penetration. The study takes its starting point in determining the driving factors behind events in the European operators market. By first presenting these factors briefly two birds are killed with one stone, since they also apply the general network theories presented in chapter 4 in a mobile telecom context:

3.1.1 Driving Factors in the European Mobile Telecoms Industry

Regulation

The number of market participants are restricted by the available frequency spectrum, which generally means that 3-4 networks can be operated in the same geographic area. In such concentrated markets the danger of collusive behaviour (cartels etc.) is considered very high, which calls for regulatory intervention to diminish these risks. The mobile telecom industry is one of very few that is influenced by sector-specific regulation. Interventions have only been made on a national level until the EU common regulatory framework was introduced in 2002²³.

Switching costs

Switching cost are the costs associated with leaving one network for another, and generally consist of:

- Direct costs (activation and termination of subscriptions)
- Learning costs (new interface)
- Uncertainties (quality and compatibility)
- Brand loyalty (towards old network)

To overcome the issue of switching costs, a new entry on a mobile telecom market is often made in two steps. The first step is building up market shares, which is an essential prerequisite to ensure profitability in the second step. To attract customers from established networks, the price must be set lower to compensate for the switching costs. As a consequence, market entries lead to price wars, the scale of which depend on the size of the switching costs. In the second step prices are possible to rise, again because of switching costs. According to Leo, switching costs also restrict product diversity as it leaves companies with no or little incentive to attract customers by product differentiation or changeover.

²² Study ordered by Hutchison 3G Austria, Vienna 2004

²³ Directive 2002/21/EC (2002-03-07)

Network externalities & economies of scale

As explained in chapter 2, network externality denotes a situation where the average return of a subscriber increases with the size of the network. The reason being a higher value to the users and the high proportion of fixed costs that causes average cost to fall as the network grows. These characteristics turn market share into a strategic target figure for operators. The homogenous product structure, partly caused by switching costs, makes price the dominating competition factor. Results can be vicious circles of price-cuts, and ultimately “competitive shakeout” of smaller operators disadvantaged by network externality.

First-mover advantages

First-mover advantages are according to Leo a result of the driving factors listed above, except for regulation that is generally supposed to work counteractively. The existence of first-mover advantages in the operators industry is undisputed, but their consistency is less legible. If the advantages of early entry in the market were only temporary, market shares should converge over time. Leo’s studies however show that this has not been the case in the European operators market.

3.1.2 Mobile Phone Penetration and Market Share Development

When analysing the influence product penetration on market share development, Leo splits the timeline around the year 2000:

1993 – 2000

Up until the year 2000, all European mobile phone markets experienced large growth rates. Subscriber growth averaged more than 50% over a period of about eight years. During this period, due to new market entrants, first-movers lost market shares amounting to 3-9 percentage points a year across Europe, even though third entries for the most part occurred as late as 1997-1998 in most markets.

2000 – Today

Owing to the fast growth, the markets reached their saturation level in less than a decade from the introduction of GSM. This level should according to Leo be at a penetration rate of about 90%, even though some examples show that this rate can be exceeded. In around 2000 growth rate drop to values around 10%. Simultaneously, the development of market shares between first, second, third and in some cases fourth-movers stabilizes significantly. Market shares continue to shift, but in on a small scale by 1-2 percentage points per year, and can therefore be considered non-converging.

3.1.3 Conclusions

Leo concludes from these results that first-mover advantages are static in the medium term. In 2003, first-movers across Europe still had a market share of 47%. Because of the markets’ saturation, growth rates must in the future be achieved, not through acquiring new customers, but through introduction of new services.

3.2 New Rules for Bringing Innovation to Market (Bhaskar Chakravorti 2004)

3.2.1 Market Equilibrium

In the Harvard Business Review article *New rules for bringing innovation to market*²⁴, Bhaskar Chakravorti argues, refereeing to the game theories of Nobel Prize winner John Nash, that network externalities make network markets strive towards an equilibrium, at which point they stagnate. When such equilibrium is reached there is none or little possibility to continue to

²⁴ *New rules for bringing innovation to market*. Bhaskar Chakravorti, Harvard Business Review (March 2004)

grow organically, leaving consolidation or investments in new infrastructure as the only options. In the case that the market is saturated the options will be simply to overtake or to be overtaken. According to Chakravorti, another parallel effect of the market equilibrium is stagnation of technologic innovation. The more networked a market is, the harder it is for an innovation to take hold because of decreasing first-mover incentives.

Chakravorti proposes a test consisting of three questions to determine whether a market has reached its point of equilibrium:

1. **Is innovation the “best choice” for consumers?** The question is really about considering whether customers in the market tend to make their choices in response to what they know about alternative product, or in response to what other customers are choosing. If the answer is the latter, the market should remain relatively static.
2. **Is innovation the “best choice” for suppliers?** The case that none of the network players have incentives to change can derive from a situation where a change by any player will be neutralized by the other ones, or if possible changes are too small to have effect. If either, innovation will not be driven from the supplier side.
3. **Can the innovator trust the consumers’ behaviour?** In other words, will data concerning consumer behaviour (assessed through focus group studies etc) have a high correlation with reality? If not, the uncertainty factor will deter innovators from the market.

As you understand, the test encourages employment of game theory when approaching a networked market with an innovative product or service.

3.2.2 A Network’s Value

Chakravorti argues, referring to Robert Metcalf’s *Metcalf’s Law* that a value of a network is proportional to the square of its number of members. The 1998 antitrust lawsuit against Microsoft, where supporters claimed that the company locked users into using Windows by the heavy network externalities generated by it, is brought up as an illustrative example. The effect is that network players tend to focus their attention on the network surrounding its product, rather than at the product itself, thus creating high barriers of entry.

3.3.3 How to Break into Networked Markets

Chakravorti finally presents a conceptual framework for players wishing to enter a networked market, and refers to Adobe Acrobat as a product that has succeeded in this task:

- **Start with the endgame:** In order to launch Acrobat properly, Adobe started by envisioning its position in the future industry, with online distribution official documents etc. From there it decided what players to ally with on its way there.
- **Complement the power players:** Adobe signed agreements with Microsoft (to incorporate Acrobat into standard Windows offers. A similar deal was made with Google ad specific searches for Acrobat documents into their functionality).
- **Orchestrate incentives:** In order for Acrobat to break, Adobe focused equal attention on three key groups: the content adders (authorities, publishers etc), the distributors (Microsoft, Apple etc) and the adopters (the consumers).

- **Maintain flexibility:** In order to diversify its offer, Adobe separated in 1994 the functions of reading (Acrobat Reader) and creating (Acrobat Wizard). By distributing the reader function for free to the adopter group, the two other groups gained incentives of purchasing Wizard.

3.3 COM(2006) 382 final: Impact Assessment of... (EU Commission 2006)

The EU Commission released on July 12 2006 an 80-page impact assessment of its own proposal for regulation, speaking clearly in its favour²⁵. The document first comments on different regulatory options such as self-regulation, regulation of retail and wholesale markets respectively and combined, and the option of leaving the market with no policy change. These comments concern the impact on consumers, private and businesses, as well as on the industry itself.

3.3.1 Impact on Consumers

Not surprisingly, the effects of the proposed model correspond very well with its two main objectives. The consumer impact also discriminates between different consumer segments, of which high-frequency business roamers are expected to benefit the most. In particular the ones who are currently not in the position to negotiate better contracts through large volumes, as would be the case for most SME:s. Also people living and working in border regions, such as Öresund to make a Nordic example, are expected to gain from regulation.

3.3.2 Impact on the Industry

Concerning operators, the impact assessment comments on the impacts in terms of different risks. It states that *some* reduction of investments in the industry is reasonable to assume, but that such reductions are more likely to consist of targeted cuts rather than “across-the-board” ones. Spill-over effects, by rebalancing of tariffs etc, are deemed “highly unlikely given the intense competition in major markets”. The report, which is said to be “one of the Commission’s most comprehensive impact assessment reports to date²⁶”, draws the conclusion that the option of combining retail and wholesale elements by the home-market approach will optimize customer benefits in respect to the impact on the industry. It is argued that operators, with wholesale margins often above 200% and retail margins between 300-400%, should be perfectly able to adapt to the cuts thanks to a 6-month transition period.

3.3.3 Conclusions

However, the impact assessment leaves out a very important aspect: The impact on market dynamics in the operators industry. In almost every case brought up in the report, operators are treated as a homogenous group with a common agenda. The only distinguishing comments concern their geographies, which are said to have some correlation with the loss of revenues caused by regulation through the home market approach. This is of course an important finding, but as will be shown in chapter 6.2.4 discriminating between sizes and maturity levels is well as interesting when analysing impact on operators. Differences in operator “demographics” will determine if, and in that case how, a regulation will affect the market structure.

²⁵ COM(2006) 382 final – Impact assessment (2006-07-12)

²⁶ EC MEMO/06/276: *International mobile roaming charges FAQ* (2006-07-12)

4. Practical Method

This chapter aims to clarify the method used to penetrate and analyse the thesis's fairly complex subject, and motivate its adequateness in respect to the research purpose. It begins by describing the qualitative approach and the different methods used for forecasting analysis. After then walking through the data collection process the chapter wraps up by discussing the thesis's reliability.

4.1 Qualitative approach

4.1.1 Qualitative and Quantitative research

The task of analysing the impact of regulation on the European mobile telecom market could have been approached either quantitative or qualitative, or with a combination of both. Two factors have although made me choose a principally qualitative approach in my thesis work:

- *The study's broad focus.* The thesis primarily considers the macro perspective of industry development. The industry dynamics would to calculate accurate and useful results. Furthermore, the fact that I analyse future development rather calls for a qualitative approach.
- *The lack of reliable quantitative data.* In order to quantitatively determine direct effects of regulation, one would need access to classified corporate data such as operating margins for certain market segments and services. Available estimates (from analysts and other operators etc.) have throughout my research proved to differ substantially, and should therefore be regarded as illustrative rather than decisive.

	Quantitative	Qualitative
1. Role of research	Preparatory approach	Exploratory approach
2. Researcher's stance in relation to subject	Outsider	Insider
3. Relationship between theory and empery	Verification of theory	Discovery of theory
4. Research strategy	Structured	Unstructured
5. Scope of findings	Universal	Time & place specific
6. Nature of data	Hard & reliable	Deep and rich

Table 4.1 *The character of quantitative and qualitative research*

Table 4.1 presents the difference in character between qualitative and quantitative research as described by Bryman & Burgess²⁷. Noteworthy is that the scope of findings for quantitative analysis is described as "Universal" while results obtained through qualitative analysis are specific for a time and place. This is certainly true when considering the research subject of this thesis. Furthermore the relationship between theory and empery differs substantially between the two approaches, as will be discussed in chapter 4.1.2.

4.1.2 Theory and Empery

There are to two general ways of relating theory and empery in scientific research: *Induction* and *Deduction*. Induction mean explaining general conditions from studying a specific case or object, or in other words, deriving theory from empery. Deduction works the opposite way, that is assuming a specific result from study of theory or by simply applying logic reasoning.

²⁷ *Barriers to Integrating Quantitative and Qualitative Research.* Bryman & Burgess (Sage, 1999)

This thesis includes both inductive and deductive elements. While for the most part being emery driven, hence inductive, conclusions are compared and tested against theory. This combined method, normally referred to as *abduction*²⁸, helps increasing the distance between the researcher and the researched object, which is otherwise an apparent risk in inductive research processes. Applying a qualitative approach, it is of course impossible to remain completely objective, and previous experiences and presumptions may therefore to some extent have affected the choice of data and the outcome of the analysis. Event though complete objectivity has not been an ambition, I have tried to maintain a distance to the subject by collecting as much data and impressions as possible before beginning to analyse and draw conclusions. This has proven specifically important considering the fairly large portion of interview material.

Although a plan of action was set up early in the process, the methodology was flexible and to a large extent altered along the way. A flexible approach has however been necessary as the most data, whether from primary or secondary sources, was in fact created (or published) during the course of work.

4.2 Forecasting analysis

Analysing the impact, direct or dynamic, of a forthcoming environmental change such as regulation is of course not an exact science. No matter how well the study is founded on reliable data (the thesis's reliability is discussed in chapter 4.4), in the end it all comes down to guessing. In order to maintain an academic approach, guesses must however derive from well thought-out and structured assessment processes. The literature on forecasting analysis can roughly be divided into three methods: Prognostication, Expert Opinions and Scenario Analysis²⁹.

4.2.1 Prognostication

Prognostication is perhaps the most common forecasting method, and implies analysis of historical observations and trends in order to predict the future. The philosophy is that all future predictions must derive from analysing the past, if not being pure fantasies³⁰. Development patterns and trends all have driving forces on which they depend, and a change in one or more of those will logically affect the future outcome (which is the research purpose). Determining driving forces and their relative impact on the trend is therefore a central task in prognostication. The same method could be applied quantitatively, and would then be called extrapolation, i.e. predicting a future point on a curve by looking at its factors and weights.

4.2.2 Expert Opinions

Another common forecasting method is the use of expert opinions, which can be done in a variety of ways, of which the *Delfi Method* might be the most popular. The Delfi Method consists of collecting and harmonizing knowledge from a group of experts in the subject matter or in other relevant fields. The assessment process is often based on interviews, preferably which similar type questions to allow qualitative comparison. A correct Delfi methodology involves very specific interview technique, which aims to reduce chance elements. If the experts opinions turn out to differ it is important to take into account their personal positions and relations to the subject matter and use in the analysis. Expert opinions do not need to be assessed through interviews. Much secondary information quotes experts in order to gain reliability among readers.

²⁸ *Vetenskapsfilosofi & Kvalitativ Metod.* (Alvesson & Sköldberg 1994)

²⁹ *Vad är framtidsstudier?* (Institutet för framtidsstudier 2002)

³⁰ *Vad är framtidsstudier?* (Institutet för framtidsstudier 2002)

4.2.3 Scenario Analysis

Scenario methods have been popularized fairly recently. A scenario is a vision of a possible future event or development, which is based on different assumptions and prognoses and to which the organisation must adapt. There are different ways of conducting scenario analysis, but what generally separates the methods from pure prognostication is that several alternative scenarios are constructed and analysed. The concept aims at reducing the risk of unforeseen industry turns by allowing preparation for different future scenarios. Furthermore, scenario analysis encourages identification of all important external drivers of the industry and market (i.e. PESTEL), some of which can be easy to neglect if working with a single prognosis.

4.2.4 Application of Prognostication Methods

Given the complexity of the subject I have chosen to not work with one such method exclusively, but rather let the method adapt to suit the different stages of the thesis:

- *Prognostication* methods have been used in chapters 6 and 9 to determine the future path of the industry and the dynamic impact of regulation. The latter is largely based on comparisons with the US market, where the regulatory climate has looked significantly different from Europe's
- *Expert opinions* have been applied in many contexts throughout the thesis. Perhaps most notably in chapter 7 to determine the effect of regulation on different players in the market. The experts have been carefully chosen to represent all major groups of interest in order to provide a comprehensive spectrum of opinions (see chapter 4.3.2). Expert opinions have also been used to identify the industry's important drivers. The Delfi method has been avoided in favour of a more ad-hoc structure, which was necessary in order to bring findings from past interviews into new ones and have those commented.
- *Scenario Analysis* has been used in chapter 6 to forecast the future path of the European telecom industry through analysing its past development and identifying its major drivers. Two alternative scenarios are identified (see chapter 6.2.3), which is normally considered to be narrow³¹, but since they are discriminated by the outcome of a single event I judge the method to be feasible in respect to its purpose.

4.3 Collection of Data

There are several possibilities when considering the choice and collection of data for a qualitative study such as this one. I could have chosen it to be on hundred percent interview-driven on one hand, or completely based on secondary data on the other. It is impossible to tell what effect either extreme would have on the outcome, but it appeared reasonable to apply a combined approach. Most significant in the choice of data is perhaps the relative small amount of published literature employed. This active choice has its explanation in my strive to keep up to date with industry happenings and has thus preferred to use interview material and fresh magazine articles as the base for my analysis.

4.3.1 Choice of Secondary Data

The up-to-dateness of the research topic makes the supply of relevant secondary information limited, to a large extent, to articles and Internet sources. The fact that roaming has been such a hot topic for the past six months has however spawned much interesting material on the subject. This has been both a privilege and a problem. A privilege to gain direct access to up-to-date expert opinion and comments on the latest events, but also a problem in the sense that the tables have turned during the course of work which has complicated the analysis. For example,

³¹ *Strategic Learning With Scenarios*. (Bood & Postma 1997)

operators have constantly announced new proposals of self-regulatory measures (such as Vodafone's promise to cut roaming tariffs by 40% by 2007³²). I would estimate that some 50% of the used secondary was published later than June 1 2006, i.e. during the past six months. The secondary data employed in this thesis can be divided into different categories:

- Articles from *general business press* (The Economist, Harvard Business Review etc).
- Articles from *industry press* (Mobile Europe, Telecommunications Magazine etc).
- *Press releases* from operators and regulators.
- Surveys and studies from research institutes and organisations (OVUM, EVUA etc).
- Statistics from *regulators* (EC, ERG, OffCom, PTS etc).
- Statistics from *research institutes* (Handelsbanken, Dresdner Kleinwort etc).
- *General information* on official websites (EC, Operators etc)

It has been my ambition throughout the research process to use as recent publications and statistics as possible to address today's situation, and older material to look back on events in the past.

4.3.2 Choice of Primary Data

As mentioned, it was my ambition from the start to make the thesis interview driven, and the choice of respondents has therefore been crucial for its outcome. Actually, the whole work process begun with putting together and contacting an initial reference group comprised of 6 key people with different perspectives on the industry in general and on the proposed regulation in particular. The purpose of putting together a reference group so early in the process was to get a thorough introduction to the subject matter and to get a feel for the different sides of the possible conflict surrounding it. I initially received much help from Peder Jonsson at Kreab in the identification of key people and with providing contacts.

The reference group was successively extended along with the process. The initial interviews gave indications or direct suggestions to other possible respondents to follow up with. The process has thereby much resembled that of an Agatha Christie murder mystery: The murderer being exchanged for the regulation, and the picturesque British small town being exchanged for the European mobile telecom sector. Most interviews generated new leads to follow. In a such situation it is according to Michael Denscombe³³ neither desirable nor possible to identify the whole reference group before research is commenced. Looking back it is obvious that this unstructured method has given me more primary source material than what I had first planned for.

4.3.3 Reference Group

When putting together a reference group for the study, my primary selection criteria has been personal or professional involvement in the regulation of international roaming or in the debate surrounding it. The purpose has been to come as close to the core interests as possible. Another priority has been to gain input from a wide range of interest groups and thereby get a broader perspective on the situation. The respondents can be divided into four groups:

- Decision makers (EU, PTS, OffCom, KKV, Industry Ministry)
- Industry representatives (TeliaSonera, Tele2, 3, Telenor)
- Other interest groups (Ericsson, Wayfinder, KTIB)
- Analysts (Handelsbanken, Kaupthing, Dresdner Kleinwort)

³² Vodafone press release: *Vodafone to reduce the cost of European roaming by at least 40% by April 2007* (2006-09-08)

³³ *Forskningshandboken – För småskaliga forskningsprojekt inom samhällsvetenskaperna* (Denscombe 2000)

Decision makers are represented by both Swedish and EU perspectives. Carl Jeding of the Swedish Industry Ministry is responsible for preparing the Swedish stance in Council discussions concerning the regulation and has thus been able to give a split perspective. Fredrik Blomström of PTS has contributed with a general regulatory perspective but also as a representative of ERG where PTS is incorporated. The British equivalent to PTS, OfCom (Office of Communications) is represented by Selina Bevis. Staffan Martinsson of the Swedish Competition authority has represented the competition law perspective. Finally the EU administration is represented by Mattias Revelius, Swedish permanent representative in the Council.

Operator inputs come from three of the four network-owning operators in Sweden: TeliaSonera (Gunnar Forsgren, Vice President), Tele2 (Jan Tjernell, Head of Regulatory) and 3 (David Mothander, Head of Regulatory and Pontus Berg, Roaming & Interconnect), Telenor excluded. During the research period, Telenor was restructuring its organisation following the acquisition of Vodafone's Swedish fraction, and did not have a specific person responsible for regulatory matters.

The category "other interest groups" contains representatives from upstream and downstream markets and consumers. Jan Uddenfeldt, Chief Technology Officer of Ericsson and professor of telecom at KTH (Royal Institute of Technology) represents the upstream (equipment) perspective but has also contributed with historical references. Content provider Wayfinder (mobile navigation) is represented by Peter Sellergren, and consumer interests by Mattias Grafström of the newly formed telecom consumer bureau KTIB.

The final group is analysts, which were all added late in the process to give an objective perspective on the drivers and future of the industry. Two of the analysts included in the reference group follow the operators industry (Staffan Martinsson, Kaupthing and Andreas Ekström, Handelsbanken Capital Markets) while the third follows the equipment industry (Per Lindberg, Dresdner Kleinwort). The analysts have apart from given qualified opinions contributed with statistical material and estimates, which has been very useful during the process.

4.3.4 Interview Technique

Prior to each interview, after taking an initial contact by telephone, an email was sent to the respondent to inform about the thesis's purpose and to suggest topics of discussion. The respondents did often return the email with personal additions to the agenda. Such additions have been much appreciated since they have given me an understanding of what the respondents find important. Thorough preparations have allowed the interviews to commence directly and thus the time (often limited to 60-90 minutes) to be used effectively.

Rather than to follow a scheme of direct questions I have chosen to interview using more open topics. The topics varied to fit the specific knowledge of each respondent. Lekvall & Wahlbin recommends this method for qualitative research in order to gain a deeper understanding for the respondent's position and to let him (in this case all respondents happened to be men) use his own words³⁴. In some cases I have however deemed it necessary to more actively steer the discussion. For example, I have a few times during the interview process got the sense that the respondent has either tried to flatter his own position or avoid certain topics to not offend other parties. Out of a total 15 interviews, 9 was conducted face to face at the respondent's workplace and the rest over speakerphone from the Kreab office.

³⁴ Information för Marknadsföringsbeslut (Lekvall & Wahlbin 1994)

During the course of work, the initial open interviews were followed up with either email correspondence additional telephone interviews to address more specific questions that had arisen. Most respondents have been contacted at least once after the initial interview, and a few have contributed through continuous correspondence throughout the whole process. To extend the contact has apart from increasing the amount of input also infused a bigger confidence and thus allowed more relaxed conversations.

During all interviews I have taken notes by hand. Considering the sensitive subject, I have avoided recording conversations in order to inspire more relaxed sharing of ideas and opinions. To avoid misquoting I have after each interview made complete transcriptions my notes and sent them back to the respondent, often the same day. In this way, the respondents have been able to comment and add to the material as they wish. This method has given me a reason to be ambitious in the documentation, which has enabled me to look back at interview material throughout the course of work.

4.5 Reliability and Validity

Reliability and validity are the central concepts when assessing the value of a study³⁵. Reliability refers to the study's trustworthiness. High reliability suggests that the study, if performed again with the same method, would obtain a similar result. Validity is the study's relevance in respect to its purpose, i.e. if the conclusions have been based on the right questions to the right people and use of proper data.

4.5.1 Validity

I believe the validity of the thesis to be high. It is based on a broad range of data in order to address a broad issue, and focus has been put on using fresh sources to the largest possible extent. In this way I have managed to keep the work up to date despite that much has happened in the industry since the start of the research process. The rapidly changing nature of the industry (which I actually debate against) could otherwise have posed a problem for the study's validity.

4.5.2 Reliability

The question of reliability is more uncertain for one simple reason: In a politically charged situation such as the one surrounding regulation of international roaming, all parties have specific positions deriving from economical interests and/or prestige. See chapter 7 for a discussion of the positions of different operators, and chapter 8 for a similar discussion of the Commission's motifs. This means that all data, quantitative as well as qualitative, must be carefully examined before deemed reliable, which goes for secondary sources as well. During my research I furthermore have learnt that even analysts have economical interests baked into their opinions. Analysts following the operators industry share incentives to stay friends with the companies that they are following and will therefore likely assume their position. The same goes for analysts following upstream and downstream markets. Being stationed at Kream for the thesis work has meant access to professional second opinions on the reliability and interests of different sources, which has been a security for me as an author.

On the other hand, relating opinions and standpoints to the sources' supposed agendas has led me to many interesting findings and may thus have had positive impact on the thesis's outcome rather than negative. Furthermore, the fact that I have let all respondents review the transcriptions and renderings from the interviews have minimised the risk of direct misconceptions.

³⁵ Information för Marknadsföringsbeslut (Lekvall & Wahlbin 1994)

5. Today's Situation

The chapters in this section aim to give a comprehensive account of the situation that the industry and regulators are facing today concerning international roaming. First, the concept of international roaming is described, followed by an analysis of how today's situation did arise. This brings us to discuss the motifs of regulation, as communicated by the Commission. Next follows an outline of the Commission's initial proposal, and the adherent responses from the industry, regulators, user groups etc. Finally the revised proposal, which is now the subject of discussion in the Council and Parliament, is presented.

5.1 International Roaming – Concept and Problems

Telecommunications networks are unique because they require a high degree of cooperation because of their interdependency. The issues of matching technical standards are today solved to a large extent after through extensive industry efforts. Pricing arrangements however aren't, and the current situation facing European regulators is perhaps its best illustration.

5.1.1 Costs of Using Your Mobile Phone Abroad

Asking regular people on vacation or business trips, the common perception is that the costs of using you mobile phone abroad are unreasonably high. While prices for domestic calls have descended consistently since the markets were opened to competition some ten years ago, price levels for calling outside of the home country have remained grossly unchanged. Today, making cross-border mobile call can in extreme cases cost twenty times the price of a domestic one, even with the same subscription. Table 1 shows a sample of prices from March 2006 for using a telephone with a Swedish subscription in France (Offcom³⁶ 2006).

Calling Swedish operator	Host operator France		
	Bouygues	Orange	SFR
3	4,36 €	4,36 €	-
Tele2	4,30 €	4,39 €	4,39 €
Telenor	3,46 €	3,46 €	3,01 €
TeliaSonera	5,12 €	4,07 €	5,12 €
Receiving call Swedish operator	Host operator France		
	Bouygues	Orange	SFR
3	2,10 €	2,10 €	-
Tele2	2,00 €	2,00 €	2,00 €
Telenor	1,76 €	1,76 €	1,76 €
TeliaSonera	2,31 €	2,31 €	2,31 €

Table 5.1 *Sample tariff: roaming with Swedish subscription in France, March 2006*

Figures in table 5.1 shows prices in euros for a four-minute post-paid peak hour (Monday 11.00 AM) voice call made in March 2006. These prices can be compared with an average price per minute of €0.104 in Sweden³⁷ and €0.112 in France³⁸ for domestic mobile calls. Also, domestically, customers are rarely charged for incoming calls.

³⁶ Office of Telecom, United Kindom (www.offcom.org.uk)

³⁷ *Svensk Telemarknad 2005 – Table 19. PTS (2006-06-08)*

³⁸ *Autorité de regulation des Communications Electroniques et des Postes, France (www.arcep.fr)*

Asking the same people if they know what they pay for, the answer will in many cases be no. The service that entails the greater part of the cost is called *international roaming* and occurs when a network (host operator) connects a cell phone with a foreign subscription, and by doing so allowing it to function within the network. While many people only use their phones abroad in case of emergency because of the high prices, roaming volumes have grown consistently during the last few years. An explaining factor is the increased business travelling caused by globalisation of companies and value chains. Within EU specifically, since opening borders for free movement of people and goods, international roaming is gaining greater importance for both mobile operators and their customers. However, at present, only a minority of EU citizens makes use of roaming services, even when on vacation, despite overall mobile penetration of above 90% (eTEN³⁹ 2006). Some analysts claim that high prices are the reason while others reverse the argument, saying that the service is young and unexplored, which allows operators to skim the market.

5.1.2 Roaming Principles

Mobile roaming simply means to connect a mobile phone to a network other than the one it subscribes to. The service is required when using a mobile phone outside the geographical boundaries of its home network. Since most networks are operated nationally, network boundaries often correspond with national borders. However, roaming can also occur within countries in cases when all networks do not cover a certain geographic area. Connecting to a host operator when travelling abroad is commonly referred to as *international roaming*.

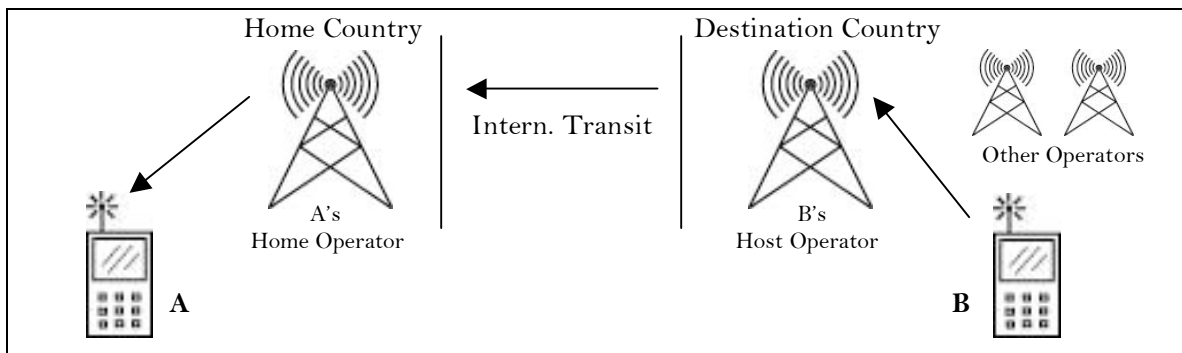


Figure 5.1 Schematic sketch of roaming principles – Calling home

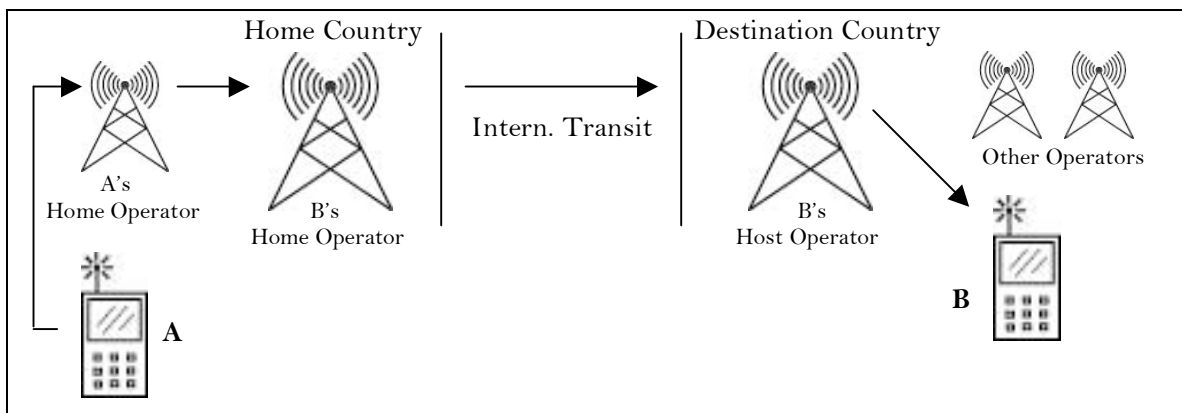


Figure 5.2 Schematic sketch of roaming principles – Receiving a call from home

³⁹ eTEN – Electronic Trans European Networks (<http://europa.eu.int/eten/>)

How a call is connected when using a phone abroad depends on whether the call is made from or received in the foreign country. Figures 5.1 and 5.2 illustrate the two cases and what the caller pays for in each step⁴⁰.

In the case of *calling home* from a foreign country, illustrated in Figure 5.1, the signal is first received by the caller's (B) host operator. Recognizing the number as international, the host operator redirects it via "international transit" to the receiver's (A) home operator, which connects the call to the receiver's mobile phone. Below is an account of who pays for what:

- The host operator will charge B's home operator with a wholesale rate for allowing B to roam in its network.
- The host operator will pay for the international transit and pass the charge on to B's home operator.
- B's home operator is also charged by A's operator for putting the call through.
- B will be charged with all these costs, plus a profit margin applied by its home operator.

When *receiving a call* abroad, as illustrated in Figure 5.2, the signal takes the opposite course except for difference that it must also be passed through the receiver's (B) home operator. Charges as follows:

- A will pay for the domestic part of the call at the standard rate.
- B's home operator will pay for the international transit.
- B's home operator will pay a wholesale roaming charge to the host operator for handling the call in the foreign country.
- B will be charged with all of its home operator's costs for the call plus a profit margin.

5.1.3 Roaming Agreements

As explained in the previous paragraph, all charges from using a mobile phone abroad are coordinated through the users home operator. This allows callers to pay for international roaming services via their ordinary phone bill, rather than receiving separate bills from each host operator when travelling. Coordination of billing is made possible through roaming agreements between operators, in which the wholesale rates are also determined. When entering a new country, mobile phones automatically connect to a host network. Which host operator is chosen depends on agreements made between the home operator and the operators in the foreign country. The home operator usually has a "preferred list" of operators from which it prioritizes. However, callers can actively choose from the available host operator by switching to the manual mode on their handsets. Information (if though not continuously updated) about roaming charges between different operators is available through the EU Commissions international roaming web site⁴¹ and through different national authorities.

5.1.4 Significance for Industries and Consumers

As markets continue to globalize and the volume of international travel constantly increases, international roaming becomes more and more important for businesses as well as private consumers. Without the service travellers would be required to have a separate subscription for each country and to switch SIM-card whenever crossing a border, which would be both expensive and inconvenient.

Making up a vital part of a country's infrastructure, telecommunications has since its birth been an industry of great political significance on the national level. However, as demands for cross-

⁴⁰ GSME official website, www.gsmeurope.com (2006-10-25).

⁴¹ EC International Roaming web site (http://ec.europa.eu/information_society/activities/roaming/index_en.htm)

border interaction increases, so does the importance of systems linking national infrastructures together. Thus, high prices for international roaming is an important issue in international politics, most significantly in the EU administration.

5.2 How Did Today's Situation Arise?

5.2.1 Historically – from NNT to IOT

Pricing of international roaming has since the birth of GSM been a subject of discussion. Prior to 1997, wholesale roaming charges were determined on the basis of the “Normal Network Tariff” (NNT) of a host operator. The NNT should then be the standard domestic tariff charged the host operator's own subscribers at the retail level. In 1995 host operators started marking up the NNT with 15% in their wholesale offerings. The cap of 15% was meant to reflect the costs of handling calls from external networks in comparison to handling calls from own subscribers⁴².

In 1997 the GSMA started promoting the use of a different standard agreement, prepared by the association itself. The NNT was replaced by the IOT (Inter Operator Tariff) as the new basis for wholesale roaming charges. The introduction of the IOT dissociated wholesale prices from the standard retail tariffs applied by the visited network, which allowed for unique bilateral agreements between operators. The purpose was to encourage competition by letting operators to trade favourable prices for larger volumes. The Commission gave the IOT system an exemption from Article 81(3) EC⁴³ by a comfort letter, but it needed to verify the system's effects before making a formal decision, which was the initial wish of GSMA⁴⁴. However, it appeared that prices were increasing instead of decreasing as was anticipated under the IOT system. Up until today, retail prices have remained virtually unchanged while prices on the wholesale level have somewhat decreased. Operators have tried to justify high roaming charges not only with the complexity of routing a call over different networks, but also with the complex billing process.

5.2.2 Poor Incentives to Compete

As will be discussed in chapter 6.1.4, the last five years' downward pressure on prices for domestic voice calls has increased the importance of roaming among operators, for which reason they appreciate the ability to maintain “old” price levels for such services. This despite of years of complaints from both customers and authorities. Market analysts tend to be of the opinion that a lowering of prices would even be beneficial even to operators themselves by the increase in demand that would follow because of a supposed high price elasticity (>1)⁴⁵.

One may thus ask why competition has not driven prices of roaming down as it has with domestic prices across Europe.

The answer appears to be a combination of different factors that together form poor incentives for operators to compete, most of which derive from a lack of consumer power:

- For most private customers, the greater portion of the average mobile phone bill consists of domestic calling and text messages. Conditions and prices for roaming services are therefore not of decisive importance in the choice of subscription according to Fredrik Blomström at PTS⁴⁶.

⁴² *International Roaming*. MEMO/04/198, EU Commission (2004-07-26)

⁴³ Prohibition of cartels, see chapter 6.1.2

⁴⁴ *The sector inquiries into leased lines and mobile roaming*. Wolf Sauter (2001-09-17)

⁴⁵ Anders Ekström, Handelsbanken. Interview (2006-10-30). Per Lindberg, Dresdner Kleinwort & Urban Ekström, Redeye. Article: *Special Telekom*, Affärvärlden nr 48 (2006-10-18)

⁴⁶ Interview with Fredrik Blomström, PTS (2006-10-03)

- On the other hand, end customers of roaming services are to a large extent represented by business callers. The GSMA indicates that out of 147 million EU roamers annually, 110 millions are business customers and 37 million are leisure travellers⁴⁷. What usually separates business callers from private caller is that they get their bills paid by their employers and consequentially are less concerned with prices, says Mattias Grafström at KTIB, a newly formed Swedish telecom counselling agency⁴⁸. It is thus corporations who have the power to put pressure on the operators through their large volumes. However, companies with considerable amounts of business travelling employees are logically the large international ones. Grafström deems it unlikely that these companies will spend more energy on price negotiations, since high roaming charges is a small issue put into their context. This point is strongly contradicted by estimates from MNC telecom Users group EVUA (see figure 6.3), suggesting that over half of the typical MNC mobile bill is comprised of roaming charges⁴⁹.
- Callers actually can choose which host network to connect to when abroad. This action usually involves switching to manual from the preset automatic mode on the handset, and choosing from a list of available networks. By doing so a caller can actively connect to the network with the most favourable prices. To determine which host network is the cheapest is however a more difficult task. Operators rarely display their pricing schemes either on websites or in contracts. The result is that customers, whether private or business callers, seldom make the effort to look up prices in advance when travelling states Blomström. In 2005 the Commission launched a website⁵⁰ where pricing matrixes for roaming between most European operators (such as shown in Table 5.1) are collected and displayed. Even there some operators are missing due to roaming rates not being “publicly available”.
- Even if a customer actively chooses a host operator, chances are that the handset (or the SIM-card actually) automatically changes back to the preset when entering a new cell⁵¹. As described in chapter 6.2.2, operators have so called “preferred lists” for each visited country programmed into their SIM-cards to determine which host network to use for roaming.
- The bullets so far have dealt with consumer power, or lack thereof. However, even if consumers did have power to demand lower prices, their own operator could not do much about this on a larger scale. The reason is obvious. If an operator decides to lower prices, this will benefit inbound travellers using the network for roaming but not its own subscribers. To these, it is the prices of the host operators abroad that matter. The situation is sort of status quo says Jan Tjernell of Tele2, who claims to have initiated discussions with roaming partners of reciprocally lowering prices with poor response⁵².

5.2.3 Customer Awareness

Static high price levels have spawned an increasing awareness among customers. An obvious effect, according to Mattias Grafström at KTIB, is an adjusted user pattern among customers in order to evade the service. A common method is to send text messages instead of calling. PTS has for example shown in a study that a two minute roamed call in Great Britain on the average

⁴⁷ Viviane Reding, SPEECH/06/427 (2006-06-29)

⁴⁸ Interview with Mattias Grafström, KTIB (2006-10-27)

⁴⁹ EVUA news release: *The recent cuts in mobile roaming charges by the operators are too little, too late* (2006-06-14)

⁵⁰ Commission roaming website: http://europa.eu.int/information_society/roaming (2006-11-15)

⁵¹ Cellular networks (such as GSM) are divided in to geographical cells, each served by a separate base station

⁵² Interview with Jan Tjernell, Tele2 (2006-10-18)

costs the same as 20 SMS⁵³. For longer stays it is common to use domestic pre-paid cards to access domestic price plans. A survey conducted by the telecom users group EVUA also shows that the high roaming prices result in an increased demand for alternative technologies⁵⁴. Over 40% of the respondents already used own IP networks and another 30% planned to use such networks within two years. Over 50% planned to use WiFi networks for voice calling within the same period.

5.2.4 Why is National Regulation not Effective?

The problem does hence seem to be that roaming is an international service marketed nationally. This is also the reason for which national regulators have not been successful in dealing with the issue. Just as an initiative to cut prices by a single operator will not benefit its own subscribers, a national regulatory intervention would not profit domestic citizens but only foreigners travelling into the own country.

5.2.5 Conclusions

Today's high roaming prices are a result of several factors that together form poor incentives for operators to compete. On one hand we have low consumer power and on the other hand a status quo situation where price cuts by operators do not benefit own customers. The latter is also the reason for which national regulation is not an applicable solution. Little points towards that the situation will change by market action on a broader scale, since the European wholesale roaming market appears to share the oligopolistic characteristics described in chapter XYZ:

- A homogenous product
- High entry barriers
- Absence of a competitive fringe
- High concentration
- High switching costs

Logically then, the situation would call for some regulatory action in order to benefit consumers by preventing collusion among the major players. Since national regulation has proven inefficient intervention on Commission level appears to be the only available alternative.

5.3 Regulation of International Roaming Within the EU

5.3.1 The Commission's Motifs for Regulation

With this given background the Commission, fronted by Viviane Reding, began promoting the idea of a regulation of international roaming in early 2006. During the time since, Reding has sought support on a broad basis from citizens, lobby organisations, MOP:s and fellow commissioners, and has very actively communicated the benefits of a regulation in the press, in speeches and through the Commission's website, where price information for most European operators can also be found.

The primary purpose of regulation is of course to obtain significantly lower price levels on international roaming services, and to increase transparency. The public argumentation focuses, almost exclusively, on **two effects** of lower and more transparent prices:

- The Commission's proposal makes it cheaper for corporate and private consumers to call while travelling within Europe, thereby enabling them to take full advantage of the Internal Market concept (see appendix 1).

⁵³ Interview with Mattias Grafström, KTIB (2006-10-27)

⁵⁴ EVUA press release: *The recent cuts in mobile roaming charges by the operators are too little, too late* (2006-06-14)

- By regulating as proposed, the Commission also helps cutting a large cost driver for European businesses, and thereby boosting the union's overall economic competitiveness.

Most concerning documents also stress the importance of the regulation being brought into action before the 2007 summer holidays, so that operators will not “enjoy another roaming holiday bonanza”⁵⁵.

However, many of the people I have talked to during my research have suggested that there might also be motifs of a more political nature, other than the ones communicated publicly. Such possible motifs will be presented and discussed in chapter 8.2.

5.3.2 The Initial Proposal

On February 8 2006 Viviane Reding, the EU commissioner responsible for telecoms and media, held a speech before the European Regulators Group⁵⁶ (ERG) about the future of ICTs⁵⁷ in the Internal Market. The speech regarded the future of ICTs and the role of ERG in general, but ended with highlighting a specific issue on which Reding saw “a clear need for determined European regulatory action”: international mobile roaming. At this time, high costs of international roaming was not a new issue. The Commission had already been addressing the problem for several years. Calls for self-regulation by operators had been made in 2004 and 2005⁵⁸, as well as competition law investigations⁵⁹. However, the market was not keen to respond to the initiatives, and consequently the wished-for results were not obtained.

The first concrete proposal for regulatory action was announced by the Commission on March 28 2006⁶⁰. The press release quoted Reding saying, “the regulation should be used to eliminate all unjustified roaming charges. A mobile phone customer should not be charged a higher tariff just because he is travelling abroad”. The proposal was outlined as follows:

- Inter-operator wholesale prices on roaming services should not be substantially higher than the actual cost.
- Retail prices should be regulated through a *home pricing principle* (HPP), meaning that a customer travelling in the EU should always be charged only the price that he is normally paying in his home country. He would either pay a local tariff when calling locally within the visited country, or a normal international tariff when making a call to another country.
- All roaming charges for receiving calls when travelling abroad should be eliminated.

In connection with the proposal, the Commission also launched a website carrying consumer information about international roaming, including updated roaming tariffs from larger European operators, to inform EU citizens on the current situation.

5.3.3 Groups of Interest and Responses to the Commission's Proposal

On the basis of its proposal, the Commission held a consultation phase where details were open for discussion until May 12. During this phase, Reding's plan received harsh criticism from most operators, and more diplomatic remarks from national regulators as well as from fellow commissioners. The Commission estimates, with support from the GSM Association, the

⁵⁵ EC SPEECH/06/69. Viviane Reding – *Towards a true internal market for electronic communications* (2006-02-08)

⁵⁶ SPEECH/06/69 *Towards a true internal market for electronic communications*. Viviane Reding (2006-02-08)

⁵⁷ ICT = Information and Communications Technologies

⁵⁸ EU press releases IP/04/1458 (2004-12-09), IP/05/901 (2005-07-11) and IP/05/161 (2005-07-11)

⁵⁹ EU press releases IP/04/994 (2004-07-26) and IP/05/161 (2005-02-10)

⁶⁰ EU press release IP/06/386 (2006-03-28)

European market for international roaming to be worth around €8.5 billion⁶¹ spread among approximately 147 million users. There are hence huge interests in the matter, both political and economical, which brings the different groups of interest to take different stands. However, the common standpoint was that the home pricing principle is a far too drastic measure to take at this point. Here follows an introduction to some important groups of interest and their response to the Commission's proposal:

ERG – European Regulators' Group

ERG was established by the EC in 2002⁶². Its objective is basically to help the EC to implement the EU regulatory framework, by gathering regulatory expertise from the member states' national regulators. ERG's division for Electronic Communications Networks and Services was created on September 14 2004⁶³.

In its formal response⁶⁴, ERG announced that it supported the Commission's initiative to regulate roaming charges on a wholesale level, but suggested a uniform price cap instead of a cost oriented one. Also, ERG did not support retail regulation through the Home Pricing Principle since it could result in "various highly undesirable market distortions". As an alternative ERG pushed for wholesale regulation with a *sunshine clause*, a retail benchmark index to monitor the passing on of cost reductions to consumers. Retail regulation would be used only if this index not indicated good enough results.

PTS – Swedish National Post and Telecom Agency

Established in 1992, PTS is the Swedish national authority in charge of monitoring and regulating post, radio, telecom and IT industries.

PTS officially supported ERG's view on regulation of international roaming, with an initial focus on wholesale charges and interfering with the retail market only if reductions in wholesale costs are not satisfactory passed on to end customers⁶⁵

CMT – Spanish Telecom Market Commission

CMT is the Spanish equivalent to PTS, responsible for monitoring and regulating of national telecom markets.

Like the Commission, CMT insisted on the need to lower consumer prices, but strongly disagreed with its choice of method: "CMT is of the view that the present regulatory framework⁶⁶, set up by the Commission, is an adequate manner of regulating international roaming services", the Spanish regulator stated in its official response⁶⁷. CMT was also the only European national regulator neither supporting ERG's counterproposal. It stated that, in case that a regulation is eventually adopted, it should be limited to retail prices. If so, pricing should follow the principle of the visited country instead of the home pricing principle of the Commission. Reference retail prices should be established by national regulatory authorities rather than by the EC.

BEUC – European Consumers' Organisation

BEUC is a federation of 40 national consumer organisations from 30 European countries, whose task is to influence the evolution of EU policy in the consumer interest. At the time of the

⁶¹ SPEECH/06/427 *The importance of reducing mobile roaming charges for the competitiveness...* Viviane Reding (2006-06-29)

⁶² Commission Decision 2002/627/EC (2002-07-29)

⁶³ Commission Decision 2004/3445/EC (2004-09-14)

⁶⁴ *ERG response to the European Commission's second phase public consultation...* (2006-05-11)

⁶⁵ Interview with Fredrik Blomström (2006-10-03)

⁶⁶ EU Directive 2002/21/EC (2002-03-07)

⁶⁷ *CMT Response to the European Commission's second phase consulting...* (2006-05-11)

Commission's proposal, BEUC had already commented on the issue on several occasions because of its harm to consumers.

BEUC announced in its formal response⁶⁸ that the organisation supported the Commission's initiative to take strong regulatory action on international roaming charges. BEUC had no comments on the details of the proposal but referred to the success of the Commission's previous regulation of cross-border payments in Euros as a good example to follow.

GSMA – The GSM Association

GSMA is a global trade association representing around 700 operators in 213 different countries. The association's official objective is to ensure that mobile services work globally and to enhance their value to customers and national economies⁶⁹, but is generally considered a lobby group for the telecom industry.

In its formal response⁷⁰, GSMA announced through CEO Rob Conway that it opposes any kind of regulation of international roaming. Conway stated that the EC's "draconian proposal" would lead to either higher domestic tariffs or profits falling by as much as 20%, causing investors to flee the sector.

Vodafone

British Vodafone Group is the world's largest provider of mobile telecom services. The group operates under the name Vodafone in Europe, Asia and Africa and as Verizon in the US. In mid 2006 Vodafone had 185 million customers, making up a total market cap of £80 billion.

The company's criticism of the Commission's proposal was hard. CEO Arun Sarin went as far as calling the home pricing principle "Soviet-style regulation" in Financial Times⁷¹. Vodafone's 129 page formal response⁷² focused on the indirect negative impacts a regulation may have on calling patterns, pricing and service configuration, arguing that the Commission "makes no case for regulation" in its consultation.

T-Mobile

T-Mobile is a fully owned subsidiary of Deutsche Telekom, operating mobile network in Europe and in the US. In mid-2006 the company had around 90 million customers allocated in nine different networks. T-Mobile is a partner of Freemove Alliance, formed in 2003, together with Orange, TIM (Telecom Italia Mobile) and TeliaSonera.

Like Vodafone, T-Mobile emphasized in its response the negative consequences that may follow a regulation of international roaming. T-Mobile also claimed that the Commission's proposal is incompatible with European Community law (article 95 of the EC Treaty) and also with EU regulatory framework for electronic communications⁷³.

TeliaSonera

TeliaSonera was formed in 2003 through the merge of Finnish mobile operator Sonera and the former Swedish telecom incumbent Telia. The Stockholm-based operator had 28.7 million customers in six different markets in the end of 2005, and a net turnover of 87.6 billion SEK.

⁶⁸ BEUC/128/2006: International Roaming Tariffs – Commission's consultation – BEUC comments (2006-04-22)

⁶⁹ GSMA official website: www.gsmworld.com

⁷⁰ *GSMA Association's response to the second phase public consultation...* (2006-05-12)

⁷¹ Iain Morris: *Roaming Dispute at EU* (Financial Times 2006-06-05)

⁷² *Second phase consultation on proposal for a regulation...* *Comments of Vodafone* (2006-05-12)

⁷³ Directive 2002/21/EC (2002-03-07)

Like most other responding operators, TeliaSonera claimed to share the Commission's view that prices must be brought down but strongly objected its home pricing principle. Instead TeliaSonera proposed a voluntary self-regulatory solution based on a "code of conduct" that should be agreed on by all participating operators. This code of conduct would focus on price transparency in order to stimulate price descents through competition. If however a regulation showed to be unavoidable, TeliaSonera stressed that it be concerning wholesale charges only and that it should be subject to review in order to determine when its goals are achieved.

3

3 is a mobile operator brand owned by Chinese conglomerate *Hutchison Whampoa*. It operates on 10 different markets and has 13.5 million registered customers (August 2006). 3 operates on 3G infrastructure and has invested over €20 billion in licences and networks since its start in 2003⁷⁴. Its Swedish fraction, Hi3G Access AB, is a 60/40 joint venture between Hutchison Whampoa and *Investor*.

3 has in comparison to most of its operator colleagues responded positively to the idea of regulating roaming, arguing that regulation of wholesale prices is essential to make the market competitive. 3's alternative suggestion is to cap wholesale rates at €0.25 per minute, which should be enough to cover the average costs and make a reasonable profit. 3 does however not support regulation of retail prices⁷⁵.

KPN

Dutch KPN was formed in 1998 through a split of former postal monopoly into one postal company and a separate telecom provider. The KPN Group consists today of KPN, Base (Belgium) and e-Plus (Germany) and has around 21 million subscribers in divided between the three networks.

Just like 3, KPN favours wholesale regulation but strongly oppose regulation on the retail level. Specifically, KPN flags about the danger with demanding incoming traffic to be free of charge, claiming that a such model would only be bearable for large operators who can internalize the its effects⁷⁶.

Voices in the Parliament

The Parliament is the instance that will ultimately decide on the matter of regulation. Negotiations are currently in progress and no formal response has therefore been published. However, some MEPs (Members of the European Parliament) have commented on the issue in various contexts. Malcolm Harbour (EPP-ED, UK) stated that operators should be given a chance to respond to the criticism before any action is taken. Harbour stated, "Surveys have revealed no significant failures of competition, but rather a lack of transparency", and stressed that the EU should not seek to manipulate the retail prices in any market⁷⁷. Charlotte Cederschiöld (EPP-ED, SE), deputy chair of the *Internal Market Committee*, emphasized that "implementation of the service directive⁷⁸ could in itself bring the transparency needed for functioning competition"⁷⁹. Catherine Trautmann (PES, FR) even warned operators against self-regulation, since it could seem like "collusion by the industry"⁸⁰.

Voices in the Commission

⁷⁴ 3 official website: <http://www.tre.se/templates/Page.aspx?id=379>: *Kort om 3* (2006-10-27)

⁷⁵ *The facts about the failure of Europe's roaming market*. Hutchison Europe (2006-10-03)

⁷⁶ *Response of KPN Mobile to the second phase consultation on a regulation...* KPN Mobile (2006-05-12)

⁷⁷ Ricardo Varanda: *Malcolm Harbour: More transparency better than regulation* (EU Reporter 2006-07-13)

⁷⁸ Initiative of the EC to establish a single market for services, as discussed at the Lisbon Summit (see chapter 2.2)

⁷⁹ European Parliament press release: *Roaming charges: MEPs reluctant to intervene yet* (2006-05-05)

⁸⁰ European Parliament press release: *Roaming charges: MEPs reluctant to intervene yet* (2006-05-05)

Although Viviane Reding has been the Commission’s official spokesperson and the one getting the most medial attention, other commissioners have also commented on the issue and on Reding’s proposal. Most notably, Peter Mandelson and Günter Verheugen have argued that such a drastic action will harm the competitiveness of the sector⁸¹. By such statements Mandelson and Verheugen sought support for a redrafting of Reding’s proposal.

5.3.4 The Commission’s Revised Proposal

After being put under massive pressure, from the market but even internally, the commission redrafted its proposal and presented an official final version to the Parliament and the Council on July 12 2006⁸². The new model was referred to as the “European home-market approach”.

The regulation in its revised format would work by capping, first of all, wholesale charges. The method used by the Commission for this cap takes its starting point in the tariffs for connecting mobile phone calls from other *domestic* network, commonly referred to as *MTR* (Mobile Termination Rate). MTRs are regulated nationally on most European markets, which means that their levels may vary between countries⁸³. To allow a uniform cap for the whole European market, the Commission proposed that the cap should be based on the Union’s *average* MTR, the *AMTR*. AMTR would thus represent the average wholesale price for terminating domestic calls in Europe. Exactly how the AMTR should be calculated was however not decided at the time. Now it is however fixed at **€0.127** per minute⁸⁴. Depending on the character of a phone call, AMTR would be weighted with factor 1,2 or 3 to make up the cap for wholesale charges:

- $1 \times AMTR =$ Maximum *wholesale* charge for inbound roaming calls (i.e. receiving call in the visited country)
- $2 \times AMTR =$ Maximum *wholesale* charge for outbound domestic roaming calls (i.e. making domestic call in the visited country)
- $3 \times AMTR =$ Maximum *wholesale* charge for outbound international roaming calls (i.e. making international call from the visited country)

To “guarantee that the benefit of the new regulation reach the level of consumers”⁸⁵, the home-market approach also contains a price cap at retail level. The method is simple: Operators are allowed to mark up their wholesale cost by **30%** to determine the maximum retail price for a call:

- $1.30 \times 1 \times AMTR =$ Maximum *retail* charge for inbound roaming calls
= **€0.165** per minute
- $1.30 \times 2 \times AMTR =$ Maximum *retail* charge for outbound domestic roaming calls
= **€0.33** per minute
- $1.30 \times 3 \times AMTR =$ Maximum *retail* charge for outbound international roaming calls
= **€0.49** per minute

The 30% mark-up is intended to cover costs that are directly referable to retail marketing, such as advertising, sales promotion, stores and call centres⁸⁶.

From its first proposal for regulation, the Commission hereby backed on the home pricing principle, as well as eliminating all charges for received roaming calls. The revised proposal also

⁸¹ Iain Morris: *Roaming Dispute at EU* (Financial Times 2006-07-05)

⁸² COM(2006) 382 final (2006-07-12)

⁸³ From approximately 5 €c to 18 €c per min minute. Interview with Jan Tjernell, Tele2 (2006-10-18)

⁸⁴ European Commission: MEMO/06/276 *International mobile roaming charges FAQ* (2006-07-12)

⁸⁵ COM(2006) 382 final (2006-07-12)

⁸⁶ European Commission press release IP/06/978 (2006-07-12)

obliges operators and MVNO:s to provide customers with free personalized prize information on request.

5.3.5 Initiatives to Self-Regulation

As understood by their responses to the commission's proposal, most operators perceive regulation of international roaming, whether on wholesale or on retail level, as a threat to their profitability. According to Stefan Pettersson, telecom analyst at Kaupthing Bank, today's EBITDA margins are at least 75% on inbound roaming and 20% on outbound roaming, but could very well be even higher⁸⁷. Since the Commission began raising its voice about the issue in 2005, initiatives of self-regulation have been communicated by most large European operators. The purpose being to avoid firm regulation through voluntary action, thereby demonstrating that they share the commission's concern and ultimately keeping up their margins. Below are two examples of such initiatives:

Vodafone Passport

On May 8 2006, 4 days before the end of the commission's consultation phase, Vodafone announced that average roaming costs for Vodafone customers would be cut by at least 40% by April 2007 (from €0.90 to less than €0.55 per minute). This would, according to the press release⁸⁸, benefit the over 30 million Vodafone customers who roam every year. Vodafone also announced that it would enter into bilateral roaming agreements with other operators at no more than €0.45 per minute from October 2006. The reduction would be offered through the *Passport* subscription, which was launched by Vodafone one year earlier. CEO Arun Sarin stated: "By addressing both retail and wholesale prices, we are providing a platform for sustainable, lower retail prices across Europe in the future".

"Code of Conduct"

In June 2006 a reciprocal lowering of prices was also announced between T-Mobile, Orange, Wind, TIM, TeliaSonera and Telenor⁸⁹ and all their respective affiliates. The background to the initiative was admittedly the Commission's "activities to gain the industry's attention on consumer opinions". However, TeliaSonera's head of marketing Terje Christoffersen stated that it was his firm belief that lowered retail prices will benefit operators in the long run through increased volumes⁹⁰. The participating operators, who together make up about half of the European market⁹¹, agreed on reciprocal cuts in wholesale charges to €0.45 per minute by October 2006 and to €0.36 per minute by the same time 2007. Furthermore an independent authority would be appointed to monitor and publicise an index tracking the effect on retail prices.

⁸⁷ Interview with Stefan Pettersson, Kaupthing (2006-10-24)

⁸⁸ Vodafone press release: *Vodafone to reduce the cost of European roaming by 40% by April 2007* (2006-05-08)

⁸⁹ TeliaSonera press release: *TeliaSonera och ledande europeiska operatörer åtar sig att sänka priser på int. samtal* (2006-06-01)

⁹⁰ TeliaSonera press release: *TeliaSonera tar initiativ för lägre priser på internationella mobilsamtal* (2006-05-12)

⁹¹ Interview with Gunnar Forsgren, TeliaSonera (2006-09-29)

6. Towards a pan-European oligopoly

Since its birth, the mobile telecommunications industry has resembled a patchwork of independent nationally operated networks. But as the sector has matured and as new consumer habits have created new market segments, development is now taking a different course. By identifying its major driving forces this chapter analyses the path of the European mobile operators industry, looking to determine its future configuration given these forces are allowed to work freely. Finally the potential effects of this new configuration are discussed.

6.1 The Major Drivers

6.1.1 Network Externalities

Perhaps the most fundamental force in the operators industry today is the externalities derived from its structural and economical characteristics. As concluded in chapter 2.2, the industry's cost structure is distinctly lumpy, with a high proportion of fixed costs and relatively low operational costs. Also, mobile telecoms are characterized by positive club externality, meaning that the value each subscriber represents to its network increases with the number of subscribers. According to Bhaskar Chakravorti the value of a network can generally be considered proportional to n^2 , where n is the number of members⁹². The more people connected to the network the more useful are its services. These and other market characteristics strongly favour economies of scale in operations of mobile phone networks. A large network operator can divide its fixed costs (from investments in infrastructure, marketing efforts, license bids etc) onto a larger number of customers.

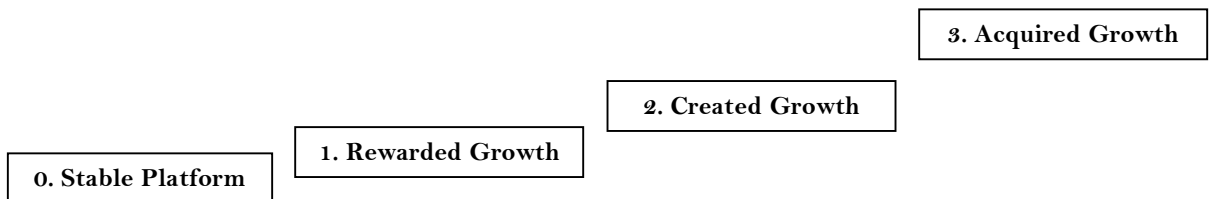


Figure 6.1 3-step Growth Model⁹³

Growth can, according to Liljegren's Growth Model (see chapter 2.3) shown in figure 6.1, be either rewarded, created or acquired. Rewarded growth is organic and the result of increased revenues and effectiveness within the current niche. Created growth derives from expansion into new markets or product segments. The third step is growth through acquisitions. In a saturated market such as GSM (see chapter 3.1.2), possibilities of organic growth are largely exhausted. GSM operators today thus work primarily with step 2 and 3. Perhaps the most talked-about strategy to create growth is the *Triple-Play* concept, i.e. mobile operators diversifying to provide integrated solutions consisting of mobile telephony, fixed telephony and broadband Internet (some providers also integrate TV services into the offer, which is then labelled *quadruple play*). The idea is to increase the revenue from each subscription and thereby increase turnover and bottom line without necessarily recruiting new customers. However, the most obvious trend is growth through mergers and acquisitions. For example, merging two equally sized networks would according to Chakravorti's theory not double the value of the resulting network, but increase it exponentially.

⁹² *New rules for bringing innovation to the market*, Bhaskar Chakravorti (Harvard Business Review, March 2004)

⁹³ *The Logics of Growth*. Göran Liljegren, Linköping Institute of Technology (2006)

The old saying that it is more effective to increase sales to existing customers than to recruit new ones may therefore not apply in the mobile telecom industry. The obvious consequence of market saturation is therefore consolidation, which is exactly what we are experiencing on a large scale in the industry today.

Conclusion: In a saturated market such as European telecoms, network externalities drive consolidation.

6.1.2 Competition Law

Another important factor is competition law. The Commission enforces competition law by applying article 81 and 81 of the EC Treaty⁹⁴. Article 81 prohibits any kind of agreements between companies that effect in prevention or restriction of competition within the internal market. Prohibited agreements include those that directly or indirectly fix trading conditions, limit or control investments, technical development etc, and those that share markets or sources of supply. Article 82 in its turn forbids any abuse of a dominant position within the internal market. Such abuse may consist of imposing unfair purchasing or selling prices or limiting output or development to manipulate demand conditions. Also, control of business concentrations is carried out nationally and internationally in connection with mergers and acquisitions, to prevent businesses from gaining such dominant positions on the market.

High concentrations are restricted on individual markets separately, which means that companies cannot acquire dominating shares by overtakings in any market or in any niche, no matter its size or scope⁹⁵. In the mobile telecom industry, with its current tendency towards consolidation, large operators are therefore left with the sole option to expand into new markets in order to allow further growth. For example, one single operator could theoretically be allowed 30% market shares on all national markets across Europe (or worldwide), but not an 80% share on one separate market.

Conclusion: Competition law drives cross-border diffusion of enterprises in order to allow acquired growth.

6.1.3 The Market for MNC Contracts

Telecom is not the only sector experiencing a strong cross-border trend. Many other industries have already seen vast diffusion of organisations and value chains across the globe. The major enabling factor in the context is often said to be the development of information technologies, or “the growling engines of change” as author Peter Dicken describes them⁹⁶. This means that the customers, just as the operators themselves spread across borders with increased travelling as a result. “MNC:s (Multi-National Corporations) have during the last years become the largest market segment for mobile services, which will force operators to reconfigure and adapt”, wrote Telecommunications International in mid-2004⁹⁷. According to a survey conducted by telecom advisor OVUM about telecom usage among MNC:s in Europe⁹⁸, the top concern for MNC:s when considering telecom supplier is the cost of roaming services. Figure 6.2 summarizes the results of the survey. Further support is given by the fact that roaming services actually represent a majority of many MNC telecom bills. EVUA, a telecom users group representing some 70 MNC:s (with an annual ICT spend over €3 billion) estimates that around 55% of their member’s mobile bills consists of various roaming charges, as shown in figure 6.3.

⁹⁴ *Treaty establishing the European Community, aka the Treaty of Rome (1957-03-25)*

⁹⁵ Interview with Staffan Martinsson, KKV (2006-11-03)

⁹⁶ *Global Shift*. Peter Dicken (Sage 2003) Chapter 4, p 85.

⁹⁷ *Starmap & Freemove – Partners in time?* Ken Weiland (Telecommunications International July 2004)

⁹⁸ OVUM Survey: *Corporate Telecom Usage 2005* (2005-11-24)

Consequentially, roaming is getting increasingly important for operators striving to target MNC consumers. The supplier who can provide international roaming solutions to the lowest prices will get the most business in this segment. “Our members complain that most mobile operators are unable to provide good contracts for international use”, said EVUA CEO Ed Vonk in connection to the survey’s release⁹⁹. The market for roaming services is hence becoming increasingly synonymous with the market for MNC contracts, which is also illustrated by the Commission’s estimate showing that 110 out of 147 million European roamers annually use the services for business purposes.

Conclusion: The size and characteristics of the MNC market has made cost-efficient supply of roaming services a top-priority success factor for European telecom service providers.

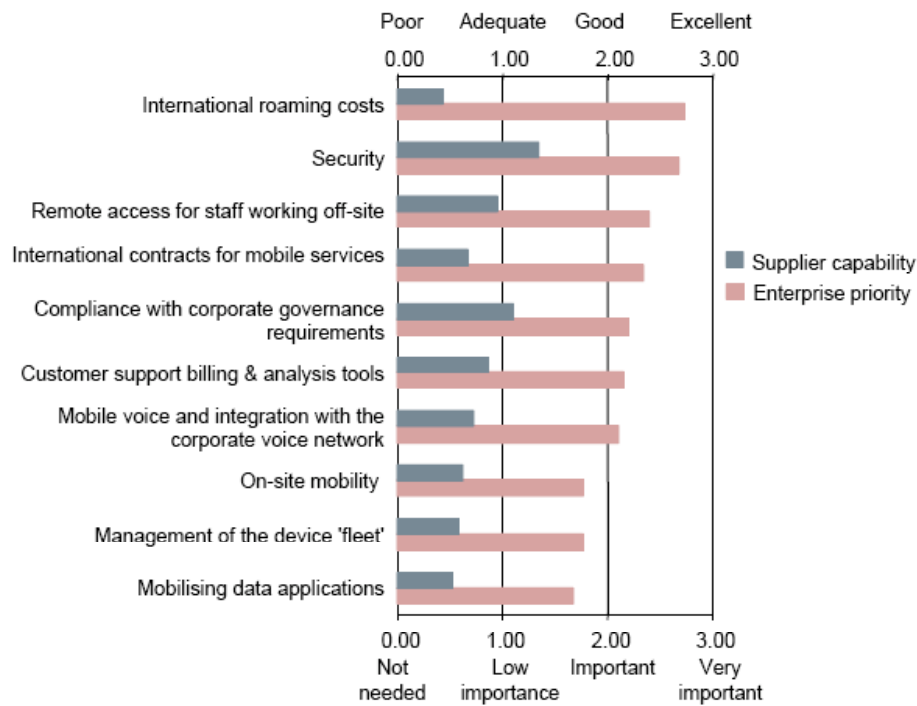


Figure 6.2 Telecom concerns among European MNC:s (source: OVUM)¹⁰⁰

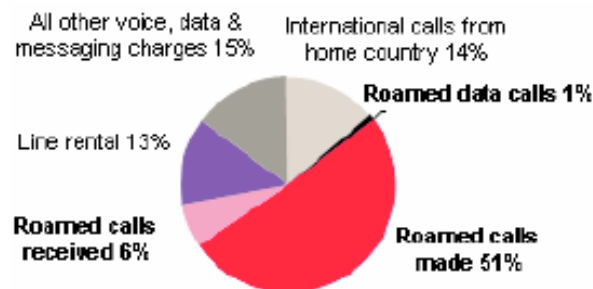


Figure 6.3 Telecom spends of a typical European MNC (source: EVUA)¹⁰¹

⁹⁹ OVUM press release: *Mobile Operators must build trust with MNC:s to secure future revenues* (2005-11-24)

¹⁰⁰ *MNC:s & mobility: ten important messages for service providers*. Pauline Trotter, OVUM (2006-07-12)

¹⁰¹ EVUA press release: *The recent cuts in mobile roaming charges are too little too late* (2006-06-05)

6.1.4 International Roaming

“International roaming was one of the primary purposes behind the development of the GSM standard, because of its role in the Internal Market’s free movement of people” says Jan Uddenfeldt, CTO of Ericsson¹⁰². As the effects of the Internal Market are now kicking in the importance this role is increasing, both politically and economically. Its political importance is clearly illustrated by the Commission’s profound commitment, and its economical importance by the fact that international roaming makes up a constantly increasing share of operator revenues. Andreas Ekström, telecom analyst at Handelsbanken Capital Markets¹⁰³, estimates that roaming on the average represents 5% of the turnover and 11% of profits for TeliaSonera¹⁰⁴, the Swedish incumbent. For Vodafone, with most of its networks operated in countries with a larger share of tourists and business travellers, roaming stands for 9-10% of the turnover and up to 20% of profits. Only a few years ago these figures were significantly lower says Ekström. Two important reasons for this trend are:

1. More callers use the service, which is primarily a consequence of the mentioned globalisation of enterprises. Roaming in Sweden has for example increased from 124 million traffic minutes in 2000 to 179 million minutes in 2005¹⁰⁵.
2. Less revenues from national calling caused by “price wars” 2000–2006 (see chapter 5.1).

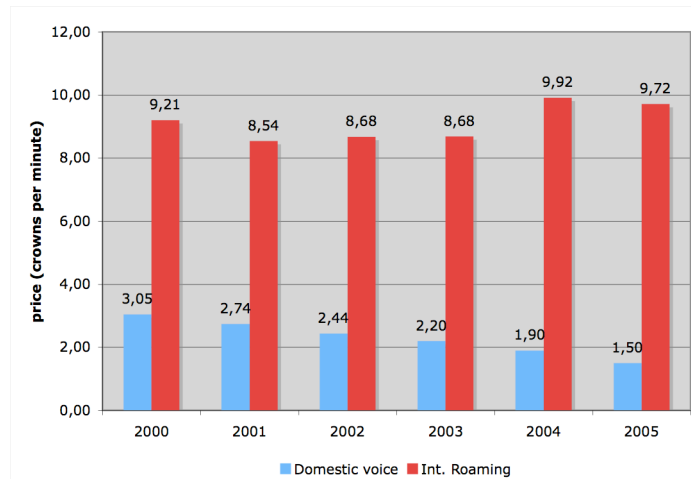


Figure 6.3 Price development on the Swedish market 2000 – 2005 (source: PTS 2006)¹⁰⁶

As prices for roaming calls have remained virtually unchanged during the same period (see figure 6.3), they represent a constantly growing bulk of operators’ profits. For operators who are net receivers of roaming traffic (see chapter 7.3.1) the largest share of these profits come from inbound roaming because of its higher margins. According to GSMA, EBITDA for inbound roaming averages 75% across Europe, which draws Stefan Pettersson, telecom analyst at Kaupthing Bank, to conclude that it could well be even higher¹⁰⁷. With an average EBITDA of around 20% for outbound roaming, this means that the wholesale charges represent the larger portion of roaming income (and spending).

¹⁰² Interview with Jan Uddenfeldt, Ericsson (2006-10-10)

¹⁰³ Interview with Andreas Ekström, Handelsbanken Capital Markets (2006-10-30)

¹⁰⁴ Figures concern TeliaSonera’s revenues from mobile telephony only.

¹⁰⁵ *Svensk Telemarknad 2005* – chart 22. (PTS 2006)

¹⁰⁶ Average income from inbound roaming in Sweden down from 5,97 SEK/min in 2000 to 5,85 SEK/min in 2006. *Svensk Telemarknad 2005* – chart 22. (PTS 2006)

¹⁰⁷ Interview with Stefan Pettersson, Kaupthing Bank (2006-10-24)

Consequentially, MNO:s share large incentives to cooperate or size up in order to lower wholesale spending, while maintaining high retail prices and thus increasing margins. In other words: the dysfunctional competition within the European roaming wholesale market strengthens the sector's already strong network externalities, since large volumes of outgoing roaming traffic guarantee cheaper wholesale deals through reciprocal exchanges.. The result, which is described and analysed in chapter 6.2, is crystallization of a few dominant players through either M&A:s or alliance formations.

Conclusion: The increasing significance of the roaming market, in combination with the fact that it contributes to strengthened network externalities, makes international roaming one of the primary drivers towards a pan-European oligopoly.

6.2 M&A:s – Mergers & Alliance Formations

6.2.1 A Clear Trend of Consolidation

After the burst of the “IT-bubble” in 2001 the European telecom industry became somewhat paralysed in the sense that very few players had means to invest. Most large MNO:s had exhausted their resources in bids for 3G licences and infrastructure in 2000 (see chapter 6.1.1), which caused the following year's downturn to nearly bankrupt the whole sector, says Uddenfeldt¹⁰⁸. Instead, attention was focused on rebuilding stability through cost efficiency measures. The paralysis continued until 2005 when companies finally started to get their financial situations in order, with average debt levels down to around 1.4 times EBITDA¹⁰⁹. With improved credit ratings Europe's MNO:s are once again spending, and the sector has seen a wave of large-scale mergers in the past two years.

The Vodafone-Mannesmann deal

However, the first real step towards cross-border consolidation was taken already in early 2000 with Vodafone's hostile takeover of German operator *Mannesmann*. The two companies had intensely been building up their respective operations across Europe when Vodafone placed its \$107 billion bid, which at the time was considered the largest hostile bid ever. “More and more, it looks as if Europe isn't big enough for these two aggressive mobile powerhouses to co-exist independently”, wrote Business Week during the negotiations in November 1999¹¹⁰, which illustrates the two rivals' struggle to become Europe's number one MNO. For example, in October 1999 Mannesmann had acquired the British fraction of Orange for \$32 billion from France Telecom in order to strengthen its position and hence avoid an expected bid from Vodafone. Finally, the bid was accepted at \$180 billion worth of stock. At this price Mannesmann's then 21 million subscribers were valued at around \$8500 each, which can be compared with corresponding numbers for more recent mergers shown in table 6.1. However, normalizing against the NASDAQ Telecom Index (see figure 6.5) the value per customer drops to \$1763. Even though the Vodafone-Mannesmann deal was made in the midst of the IT frenzy in 2000 (note how the index differs between 2000 and 2005 in table 6.1) and under rather unusual circumstances (hostile all-stock bid rather than friendly cash bid), it once more illustrates the positive club externality of the industry as described in chapter 6.1. After the Vodafone-Mannesmann deal was settled, analysts expected the rest of the still fragmented European market to continue the trend of cross-border consolidation¹¹¹. The market's collapse in 2001 would however delay this development by almost five years.

¹⁰⁸ Interview with Jan Uddenfeldt, Ericsson (2006-10-10)

¹⁰⁹ *Europe's dealmakers are dialling again*, Andy Reinhardt (Business Week 2005-04-25)

¹¹⁰ *Vodafone's Power Play*, Kerry Cappel (Business Week International Edition 1999-11-29)

¹¹¹ *Vodafone's Power Play*, Kerry Cappel (Business Week International Edition 1999-11-29)

Buyer	Acquired	Date of Acq.	Index	Price (m€)	Norm Price	Customers	Val/C	Val/C Norm
Vodafone	Mannesmann	00-03-27	875	180 000	37 029	21 000 000	8 571	1 763
Telefonica	O2	06-01-10	199	31 400	28 402	21 500 000	1 460	1 321
Orascom	Wind	05-08-06	192	15 600	14 625	13 300 000	1 173	1 100
Orange	Amena	05-11-08	186	7 700	7 452	7 600 000	1 013	980
Telenor	Vodafone SWE	05-11-01	180	1 300	1 300	1 500 000	867	867

Table 6.1 Sample of mergers and acquisitions on the European mobile operators market¹¹²

M&A:s in 2005

Table 6.1 displays some of the more interesting recent mergers of European MNO:s, which all took place in 2005 and started what could become a massive reshaping of the industry. In June the Egyptian telecom giant Orascom bought Italian MNO Wind (13.3 million customers, most of which on pre-paid formulas) from the Enel conglomerate for \$15.6 billion. Later in the summer France Telecom acquired Spain's third tier MNO Amena, with roughly 8 million customers, for \$7.7 billion. On October 31 the same year Norwegian incumbent Telenor acquired the Swedish subsidiary of Vodafone with 1.5 million subscribers for \$1.3 billion, and on the same day Spanish giant Telefonica placed a \$31.4 billion bid on British O2 that was accepted two weeks later. The price of O2 was driven up a bidding war between Telefonica and T-Mobile, resulting in a 22% premium over its share price at the time¹¹³.

Nonetheless the high price further strengthens the proof of positive club externality in the industry. As seen in Table 6.1 the value per customer in the mentioned deals increases consequentially with the number of customers in the acquired network. While the increase is clearly exponential, it is not exponential in the power of 2 as predicted by Chakravorti (see chapter 6.1.1). A better approximation is that the normalized price is proportional to $n^{1,43}$, as illustrated by the red line in figure 6.5. The result is nonetheless showing a clear trend of club externality in the context of telecom M&A:s, which could indicate that the trend will continue with mergers of even larger scale in the near future.

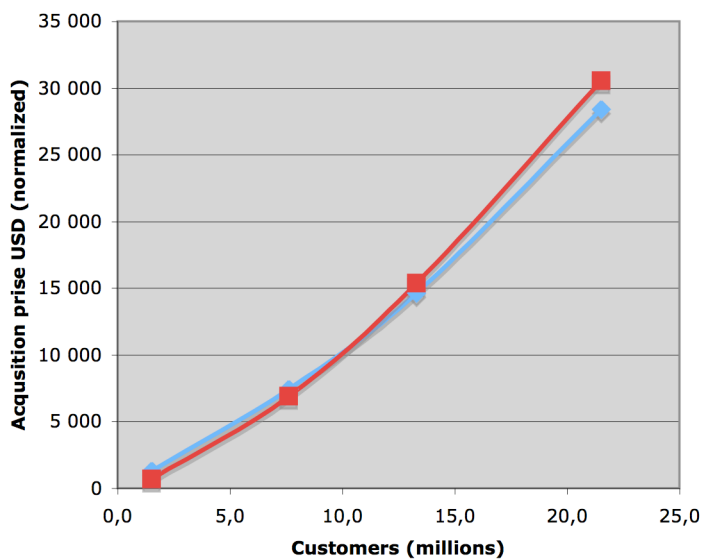


Figure 6.5 Prices of recent MNO acquisitions

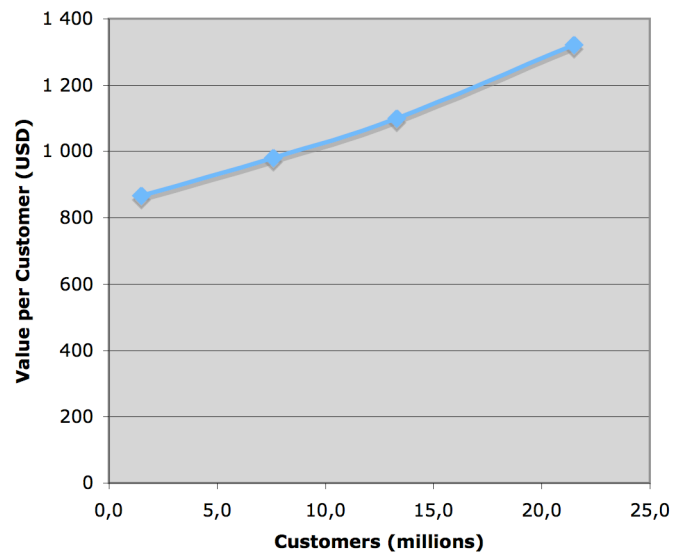


Figure 6.5 Value per customer in recent acquisitions

¹¹² Official operator websites (2006-11-20). Own calculations

¹¹³ Telefonica grabs O2 from under T-Mobile's nose, Guy Kewney, Newswireless (2005-10-31)

Resistance to mergers of incumbents

In spite of the consolidation trend there are still some “independents” left in the sector, such as France’s Bouygues and Swedish Tele2 and Dutch Telfort, which are all third- or second tier players in their respective markets. Nevertheless, the pickings are getting slimmer for the peckish dominants and analysts predict that even most of these will be overtaken during 2007¹¹⁴. At this point, the industry development could logically take two directions. Either the large MNO:s will spend a year or two getting into trim before going after each other in search of growth and economies of scale. Such large-scale deals have been seen recently on the US market, with Cingular’s \$41 billion acquisition of AT&T Wireless as the obvious example¹¹⁵. The other option is that consolidation in the sector will cease as a result of the political resistance to mergers between incumbents. The only such merger seen so far in Europe is that between former Swedish monopoly Telia and its Finnish equivalent Sonera, which according to Business Week’s Andy Reinhardt has “caused more boardroom fireworks than cost synergies”¹¹⁶. “Merging two national champions is tough for political and cultural reasons. It’s not that different to trying to merge flag-carrying airlines”, says Julian Hewett, chief analyst of British OVUM, in a comment of Telefonica’s recent €20 billion bid for Holland’s KPN on December 6¹¹⁷. Three out of the four major players (Orange, T-Mobile, and Telefonica. Vodafone exempted) on the European arena are former monopolies. Furthermore, France Telecom (Orange) and Deutsche Telekom (T-Mobile) are still partly owned by their respective governments, making their agendas into national concerns. As will be discussed in chapter 7 it is even possible that these national concerns in MNO:s have had effect on the design of the proposal for regulation.

At this point it seems impossible to predict the future movements in the industry, which can be illustrated by the large divergence of opinion among analysts. Hewett, for instance, predicts that the European telecom sector will likely evolve towards two or three large MNO:s in each country, with many other providers selling services through use of their infrastructure¹¹⁸. Handelsbanken’s Andreas Ekström and Kaupthing’s Stefan Pettersson on the other hand await further consolidation in a nearby future. “A new boom of MVNO:s is not likely. The MNO:s have learnt their lesson”, says Ekström¹¹⁹. Pettersson pictures a pan-European oligopoly, with Vodafone, Telefonica, Orange and T-mobile as the four dominant players.

¹¹⁴ Interview with Hannes Wittig, Dresdner Kleinwort London (2006-12-01)

¹¹⁵ CNN Money (2004-02-17). http://money.cnn.com/2004/02/17/technology/cingular_att/

¹¹⁶ *Europe’s dealmakers are dialing again*, Andy Reinhardt (Business Week 2005-04-25)

¹¹⁷ *Telefonica + KPN doesn’t make sense*, Julian Hewett, Ovum Comment (2006-12-06)

¹¹⁸ *Telefonica + KPN doesn’t make sense*, Julian Hewett, Ovum Comment (2006-12-06)

¹¹⁹ Interview with Andreas Ekström, Handelsbanken Capital Markets (2006-10-30)



Figure 6.6 NASDAQ Telecommunications Index Jan 2000 – Oct 2006

6.2.2 Strategic Alliances as Oligopolistic Forces

Freemove & Starmap strategic alliances

In late 2003, European operators gathered up to form two strategic alliances under the brand names *Freemove Alliance* and *Starmap Alliance*. Freemove, which was established through a cooperation agreement on December 11, included Telefonica, Orange, T-Mobile and TIM (Telecom Italia Mobile) and thus represented the major European incumbents and some 170 million users in Europe. Starmap was launched about a month earlier and consisted of nine smaller operators, including already mentioned O2, Wind and Telenor, together representing about 40 million subscribers. Both alliances claim to work for the common purpose of providing “seamless” roaming services through integration of a greater geographical footprint than the one offered by the members separately. The customer benefits would include standardised use of voice mail and short commands when travelling abroad, but also price reductions to some (not officially specified) extent. As put by Starmap themselves: “no matter where you are, everywhere will feel just as good as home”¹²⁰, or Freemove’s equivalent slogan: “discover mobility without

¹²⁰ Starmap Alliance official website: www.starmap.com (2006-12-06)

complexity”¹²¹. The benefits of “seamless” roaming are achieved through smart directing of roaming traffic into the networks of other member operators when customers are travelling abroad. To determine which network to connect to when there are several opportunities operators use so-called “preferred lists” to prioritize¹²². This function is usually built into the SIM cards, which is why operators request subscribers to have those updated once in a while. According to a market investigation performed by the Commission (for its impact assessment on regulation of international roaming¹²³. See chapter 3.3), the percentage of roaming traffic that MNO:s can steer into preferred foreign networks arrive to 75-80% with today’s technique.

Aiming at Vodafone

Apart from providing customer benefits, the obvious motif for the formation of pan-European alliances is to combat Vodafone. Vodafone has spent much of the last five years acquiring and integrating local networks, and at the time of the alliances’ establishment it had some 90 million subscribers in own networks throughout most of Europe. The large geographical coverage had given Vodafone, apart from economies of scale, advantages in their marketing towards the business segment through the ability to offer unified pricing schemes across the region (under the brand name “Vodafone Passport”). As business-consumers, according to the GSMA, make up around three quarters of Europe’s roaming traffic (see chapter 7.1.2), the alliances has logically targeted their services specifically towards this group. The European market for corporate communications is estimated to be worth €4 billion a year¹²⁴, and the aim is that the alliance membership becomes a selling point for the members respectively when pitching for corporate contracts against Vodafone and smaller independents. Freemove even claims to have aligned its members’ international bidding processes, hence creating a single point of contact for MNC (multi-national corporations) contracts¹²⁵. The alliances’ business orientation can also be spotted through the service output, such as Freemove’s flat rate for Blackberry¹²⁶ roaming.

Economies of scale

Apart from the marketing benefits, there are also several possibilities how to achieve economics of scale from cooperation within the strategic alliances; some of which have already been effected and others that are still in the pipeline. The most significant use so far has been pooling of negotiation power to obtain discounts on handsets. The members of Freemove started buying as an entity already in 2004 and have since said to lower prices by about 10% compared to what they would have commanded individually.¹²⁷ Another possibility would be to co-negotiate investments in infrastructure, either by sharing or by increasing order quantities. Such experiments have not yet been performed, but have been heavily discussed in the press and most likely also in the boardrooms of member companies. Handelsbanken analyst Andreas Ekström deems it logical for alliance partners to join forces in negotiations of infrastructure discounts: “It’s simple math. Larger volumes get you lower prices”¹²⁸. Stefan Pettersson of Kaupthing on the other hand believes that such cooperation will be difficult to pull off because of the differences in timing among members. “If alliances like Freemove and Starmap had been established before the 3G roll-outs, they might have had a greater potential of obtaining economies of scale”¹²⁹ argues Pettersson, referring to that much procurement was condensed in a short period of time in the early 21st century.

¹²¹ Freemove Alliance official website: www.freemove.com (2006-12-06)

¹²² Interview with David Mothander & Pontus Berg, Hi3G (2006-10-12)

¹²³ COM(2006) 382 final – Impact assessment (2006-07-12)

¹²⁴ Estimate by Freemove 2004: *Operators tout Freemove “easy roaming” alliance*. Tony Smith (The Register 2004-03-29)

¹²⁵ *Starmap & Freemove – Partners in time?* Ken Weiland (Telecommunications International July 2004)

¹²⁶ Manufacturer of PDA-like handsets, targeted primarily towards corporate clients. (www.blackberry.com)

¹²⁷ *Freemove mounts its challenge towards Vodafone*. Wireless Watch (2005-04-02)

¹²⁸ Interview with Andreas Ekström, Handelsbanken Capital Markets (2006-10-30)

¹²⁹ Interview with Stefan Pettersson, Kaupthing Bank (2006-10-24)

6.2.3 Sector Development – Two Alternative Scenarios

So how is the European telecom sector going to evolve in a nearby future? As it appears, there are two possible paths for it to take, *not* taking into account the possibility of a roaming regulation. My analysis is that the path will be determined by whether or not the resistance to incumbent mergers will hold on in the 1-2 years to come. In the present situation the alliances are the only serious rivals to Vodafone in the increasingly important MNC market segment, but the possibility of incumbent mergers makes their future look most uncertain. Unfortunately one can only speculate about the chance of such mergers. “There is certainly money to spend on mega deals among Europe’s large MNO:s, but the size of political barriers are hard to quantify”, wrote *Business Week* in mid-2005¹³⁰. “Incumbent operators are for the time being protected by their parents, but only through alliances or full scale mergers can they hope to play effectively outside their home country in the future”, wrote *Wireless Watch* on the same subject¹³¹. The question is thus: *will the pressure from MNO shareholders to scale up operations exceed those political barriers?* The question is of course impossible to answer without insider knowledge, but discussing the effects of its outcome is nevertheless interesting.

Case #1 – Incumbents remain separated

In the case that incumbent MNO:s avoid going after each other in search for growth, chances are good that the strategic alliances will subsist as oligopolistic forces in the battle for European MNC contracts. However, their configurations might see some drastic changes in the time to come. Actually, reconfiguration started already in the aftermath of Telefonica’s cross-alliance purchase of O2. In the following EC competition law investigation¹³², the merger was given EC’s acceptance under the condition that Telefonica left Freemove Alliance and not re-joined until 2011¹³³. Telefonica did so in February 2006 and is currently not tied to any cooperative agreements. A frequent subject of discussion during the year has thus been: *will Telefonica join Starmap?*

If it did, the power balance between Freemove, Starmap, and their common target Vodafone, would change dramatically. “There would be a lot of integration and back office changes to turn Telefonica’s roaming contracts from Freemove into Starmap, but a switch-over is far from impossible”, concluded *Mobile Europe* in an analysis from February 6.

Date	2005			2007				
	Freemove	Users	Starmap	Users	Freemove	Users*	Starmap	Users*
Members:	Orange	63	O2	29	Orange	63	O2	29
	T-Mobile	61	Wind	14	T-Mobile	61	Wind	14
	TIM	26	Telenor gr. ¹³⁴	15	TIM	26	Telenor gr.	15
	TeliaSonera	13	Eurotel	5	TeliaSonera	13	Eurotel	5
	Telefonica	25	One	2			One	2
			Sunrise	3			Sunrise	3
							Telefonica?	25
Total users:		187		67		162		92

Table 6.2 Number of users in European strategic mobile alliances 2005 and 2007¹³⁵ (European markets only)

¹³⁰ *Europe’s dealmakers are dialing again*, Andy Reinhardt (*Business Week* 2005-04-25)

¹³¹ *Freemove mounts its challenge towards Vodafone*. *Wireless Watch* (2005-04-02)

¹³² Case No COMP/M.4035 – Telefonica/O2 (2006-01-10)

¹³³ Case No COMP/M.4035 – Telefonica/O2 – *Annex A* (2006-01-10)

¹³⁴ The Telenor group (Europe) consists of the *Telenor* (Norway & Sweden), *Pannon* (Hungary) and *Sonofon* (Denmark)

¹³⁵ 2005 numbers from operators’ official websites. *Assumed that user numbers remain constant between 2005-2007

The left columns of table 6.2 show the configurations of Freemove and Starmap as they were at the end of 2005, just before the Telefonica/O2 merger. At this time Starmap was just over a third of Freemove's size counted in users, and could not compete with Vodafone and Freemove for large-scale MNC contracts because of its comparatively narrow footprint. However, in the case of Telefonica joining in 2007, Starmap would have comparable geographical coverage and a customer base almost 60% the size of Freemove's. And that is only in Europe. Telefonica has over 40% of its revenue in Latin American markets, which would further strengthen Starmap's international profile. Adding Vodafone with its 90 million customers to the equation would hence give a three-part oligopoly on the European market for MNC contracts.

However, another possibility is that Telefonica, instead of joining Starmap, decides to pull O2 out of it to remain fully independent. The relative size of the two would certainly decrease the need to cooperate with smaller partners. Starmap would then have lost its initiator and largest member, and its survival would be seriously threatened.

Case #2 – Mergers between incumbents

“Are we at the beginning of large-scale consolidation of European telecoms, rather like what we're seeing in the US? The combination of strong cashflow, reasonable valuation and cheap debt is certainly increasing the probability”, stated OVUM's Julian Hewett when commenting on Telefonica's approaching of KPN in December¹³⁶. But what would the synergies be? Both Hewett and Reinhardt agree that mergers of nationally fixed networks don't hold out much prospect for cost saving, since costs of both purchasing and maintaining equipment are fairly proportional to the networks size. The big perks seem to lie in network externalities and the marketing benefits of larger geographical coverage. Whether mergers of incumbents took place within or across existing alliance formations, it would definitely weaken the strategic significance of those and thus threaten their existence. If for example France Telecom were to buy Telenor, it would ultimately lead to decomposition of Starmap, believes Pettersson. On the other hand, if mergers between Freemove partners or between Starmap partners became reality, the alliances would lose much of their value since the merged company would likely have a wide enough footprint to manage without its partners.

Conclusions

So which path is the industry bound to take? My conclusion is that increased negotiation power as well as a widened international presence would likely be achieved in both cases, while significant cost-synergies in neither. The determining factors hence come down to club externality, favouring mergers, and the political barriers in their opposition. Another political factor that may help Freemove and Starmap increase their chances is that they both have a common enemy in Vodafone, which should help them focus their minds. However, politics could also pose problems within the alliances. Members will increasingly overlap each other on national markets as they continue to widen their own footprints. Already in 2004, Freemove members T-Mobile and Orange had a dispute over who would control the business in UK, where both have networks, and more similar issues will certainly arrive. In each case, the European telecom sector seems to be evolving towards a three-part oligopoly, consisting of Vodafone combated by either the strategic alliances and or merged pan-European and fully-integrated MNO:s.

¹³⁶ *Telefonica + KPN doesn't make sense*, Julian Hewett, Ovum Comment (2006-12-06)

6.2.5 Consolidation & Competition Law

An obvious question arising when investigating the development of the European telecom sector is whether or not the increasing density is compatible with competition law. As described in chapter 6.1.3, the Commission enforces competition policies by applying articles 81 and 82 of the EC Treaty, prohibiting abuse of dominant positions and collaborations that cause harm to competition on a market. During the last years, both mergers and alliance formations have been subject to EC competition law investigations, some of which have been revoked while others have resulted in quite drastic measures. Here follow a few examples:

Though the EC investigation of the Telefonica/O2 merger (see chapter 6.2.3) is not only antitrust case concerning European MNO:s lately, it is definitely one of the most interesting as it emphasizes the strategic importance of the alliances. The condition of Telefonica leaving Freemove did reportedly have its background in that the Commission was worried that following the merger, O2 was likely to quit Starmap and join its new owner in Freemove¹³⁷. This would according to EC's judgement give Freemove a dominant position and thus risk non-compliance with article 82.

Another antitrust case with an interesting outcome is the recent clearing of T-Mobile's acquisition of Austrian Tele.Ring. The Commission found that the merger would have substantially restricted competition in the Austrian market by eliminating Tele.Ring, its fourth-tier operator and most significant source of price competition¹³⁸. In order for the Commission to clear the deal, the parties had to divest UMTS (3G) frequencies to operators with smaller market shares than T-Mobile. Such a commitment should specifically enable 3, who recently entered the market as 3G operator, to expand on the market.

An example where MNO:s have actually been fined for collusive behavior can be drawn from the French market. The EC found in 2005 that Orange, SFR and Bouygues Telecom had been sharing information and divvying up the market between themselves¹³⁹, thus acting in non-compliance with article 81 of the EC Treaty. The parties were fined a collected €533 million, about the same sum that the EC fined oil companies Shell, Bayer and Dow on similar charges in November 2006¹⁴⁰. The trio appealed the ruling, but the fines were upheld in the French Cours d'Appel in December 2006. The French consumer organization UFC estimates that 20 million callers have been overcharged some €1.2 billion between 1997 and 2003 because of the cartel. Just a month prior, Orange's parent France Telecom was fined another €80 million for not opening up its network to rival broadband suppliers.

The Commission is also currently pursuing an investigation into Freemove's and Starmap's compliance with article 81 EC¹⁴¹, an investigation commenced already in early 2004. Staffan Martinsson of the Swedish competition authority does not want to speculate on the investigation's outcome, but pinpoints an interesting paradox: "If two competitors agree to fix prices it is considered collusion according to article 81, while if they decided to merge it would likely be accepted even though the effects on competition would probably be similar"¹⁴². However, the competition laws of the EC Treaty actually recognize this paradox, as illustrated by the similarity between paragraph 1d in Articles 81 and 82 respectively:

¹³⁷ *EC Competition Report January-March 2006*. Cleary Gottlieb (2006-04-12)

¹³⁸ *Antitrust & Trade Regulation Update June-July 2006*, Squire Sanders & Dempsey (2006-08-11)

¹³⁹ *French Fines*. Tim Richardson, *The Register* (2005-12-01)

¹⁴⁰ *EU fines oil cartel*. Bloomberg News (2006-11-29)

¹⁴¹ EC Press Release IP/06/16 (2006-01-10)

¹⁴² Interview with Staffan Martinsson, Konkurrensverket (2006-11-03)

Paragraph 1d of article **81 EC** prohibits: “*Any agreement between associations that apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage*”. Paragraph 1d of article **82 EC** in its turn prohibits: “*Any abuse of a dominant position by applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage*”. Yet as will be shown in chapter 6.3 this is just how independent MNO:s perceive the behaviour of Vodafone and the strategic alliances.

6.3 Signs of Collusion

We have shown that consolidation is beneficial for the firms in the core of the pan-European oligopoly, but is it really beneficial for the sector as a whole? With the formation of a pan-European oligopoly of mobile telecom service providers comes not only scale economy and international service compatibility (access to voice mail, standardized commands etc), but also risks of increased collusion. Already in 2001, Dutch MEP Wim van Veltzen warned about collusive behaviour among European operators in their pricing of roaming services¹⁴³. However, the discussion was silenced by operators and even some commissioners, referring to “the formidable success of the mobile market in Europe since the introduction of GSM”, because of which any intervention was considered fixing something that was not broken. Yet cartel-like tendencies continue to appear, on national markets as well as on the European arena. “In Europe we have a cartel in mobile telephony that overshadows any other cartel in comparison”, said analyst Per Lindberg in a recent interview for Affärsvärlden¹⁴⁴. This chapter aims to identify signs of collusive activity on the pan-European scale, and its consequences for the sector’s development.

6.3.1 Rigging the Roaming Market

“The roaming situation is perhaps the best illustration of that the European telecom sector is a cartel, and of EU’s failure to fulfil its objectives”, continues Lindberg. As established in chapter 6.1.4, roaming is one of the primary drivers of consolidation in the sector, the reason being that the market for international roaming services is becoming increasingly synonymous with the market for lucrative MNC contracts. Given that corporate usage represents a major portion of the industry’s total revenue (For example, Orange and Vodafone are estimated to derive some 30-35% of their revenues, and an even larger portion of their profit, from the business segment¹⁴⁵), this should logically result in fierce competition between operators, or between alliances, driving prices down towards the level of cost. But as observed by the Commission and national regulators prices yet remain relatively stable¹⁴⁶, which clearly suggests some level of collusion. In my opinion, collusion in the roaming market can be roughly divided in two “activities”:

1. Maintaining high price levels towards end-users through *price collaboration*.
2. Keeping competition out of the marketplace through *margin squeezing*.

Furthermore, these activities are interconnected since the both derive from the improved possibility to steer traffic into preferred roaming partners’ networks (see chapter 6.2.2). As will be discussed in this chapter they also share similar consequences.

¹⁴³ *Pan-European mobile users demand competition action*, Joanne Taaffe (Communications Week International 2001-02-19)

¹⁴⁴ *Telekomspecial*. Calle Froste, Affärsvärlden (2006-10-18)

¹⁴⁵ *Mobile Data Services – European operators get the message, finally*. GP Bullhound (2006-12-11)

¹⁴⁶ For example, see *Svensk Telemarknad 2005 – chart 22*. (PTS 2006)

Price collaboration

The possibility to steer calls could give alliance partners another strategic benefit, apart from the homogenisation of services, and the principle is once again economy of scale. By routinely offering other members the lowest roaming wholesale prices on its home markets, an alliance partner can be “guaranteed” to have all traffic generated there by other members directed into its network. In this way volumes are traded for discounts, securing the inflow of lucrative roaming traffic for alliance partners. It is however uncertain how organised price collaboration within the strategic alliances really is. Gunnar Forsgren of TeliaSonera, a member of Freemove Alliance since March this year, argues that the purposes of forming alliances are to provide practical solutions and not to cooperate on pricing¹⁴⁷. Many outsiders however believe that price collaboration in particular is the principal benefit of being an alliance member. “Alliance members are obliged by contracts to trade traffic volumes for discounts”, says Pontus Berg of Hi3G¹⁴⁸. “Wholesale discounts can then be used either to lower prices on the retail level enough to squeeze outsiders, or to just maintain unreasonably high margins. The second alternative seems to be the most commonly chosen”. This on the other hand appears somewhat illogic as low roaming cost is the factor that European MNC:s value the highest when considering telecom supplier, according to the EVUA survey in figure 6.2. Wireless Watch wrote in March 2006: “Freemove has failed to deliver what international companies place as their top priority when choosing a mobile provider – lower roaming tariffs”¹⁴⁹. This further supports the discussion that wholesale price collaboration might actually be on top of the alliances’ agendas.

Showing that the alliances are price collaborating internally in variance with article 81 EC seems fairly easy (even though it has taken the EC over 3 years so far without result). But no explanation is given through my research and interviews to why competition hasn’t kicked in *between* the big players: Freemove, Starmap and Vodafone. With such clear indications of what the targeted MNC customer base prioritizes, and with total margins well above 80%, there should without a doubt be strong incentives.

Margin Squeezing

In order to avoid or delay fierce price competition, cartel players on the roaming market strive to keep entrants from the market by raising its barriers. Their failure to do so on domestic markets resulted in massive price falls on regular voice calls, which boosted usage but consequentially cut margins across the whole sector (see chapter 5.1). However, much points towards that this pattern will not repeat itself. “The incumbents have learnt their lessons” argues analyst Andreas Ekström, predicting that the sector will not see another boom of new entrants for some time to come. According to David Mothander of Hi3G, the alliances and Vodafone are consistently using their internal rebates and geographical scope to “margin squeeze” challengers like himself out of the roaming market.

Effectively, an operator with SMP (Significant Market Power) performs a margin squeeze by reducing the margin between the wholesale price that is offered to another operator, and the retail price that he himself offers to end customers. In that way, an operator depending on the service must either:

- a. Retail the service below cost or at break-even to be able to compete.
- b. Exit (or avoid entering) the market.

Margin squeezing has been a frequently debated subject surrounding post-liberalization competition on national markets, where incumbents have been accused of applying such

¹⁴⁷ Interview with Gunnar Forsgren, TeliaSonera (2006-09-29)

¹⁴⁸ Interview with Pontus Berg, Hi3G (2006-10-12)

¹⁴⁹ *TeliaSonera joins Freemove Alliance*. Carl Simon (Wireless Watch, March 2006)

methods on interconnect fees to deter MVNO:s from entering “their” market. Competition law proceedings have been launched in such cases in several EU member states, but abuse has shown hard to prove. The €152 million fining of TIM (Telecom Italia) on charges of margin squeeze abuse in early 2005 is a rare case¹⁵⁰.

In the case of roaming this would normally not be a problem since the seller and the buyer at the wholesale level do not retail on the same market. However, this is where Vodafone and the alliances come in to the picture and become a problem.

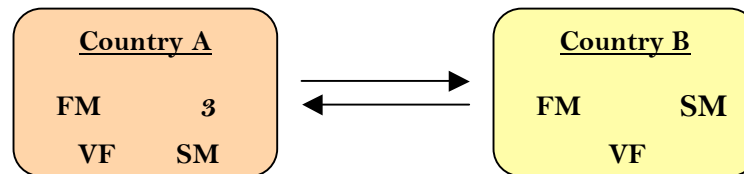


Figure 6.6 Schematic sketch of roaming traffic between two European countries

Picture the situation in Figure 6.6, where countries A and B each have three MNO:s. In country A, Vodafone, a Freemove partner, a Starmap partner and 3 (exemplifying an independent operator) supply the market. Country B is also supplied by Vodafone, and a different Starmap- and Freemove partner. To allow roaming in country B, all operators in country A need to sign wholesale agreements with the country’s MNO:s. Let’s say prices are agreed as in table 6.3:

		Roaming in Country B		
		VF	FM	SM
Country A	VF	2,2	2,8	2,7
	FM	2,7	2,2	2,7
	SM	2,8	2,9	2,1
	3	2,8	2,8	2,7

Table 6.3 Fictive wholesale roaming tariffs (4 minute calls)

In the example, all MNO:s in country A have alliance partners (or a subsidiary in the case of Vodafone) in country B except for 3, and can hence access wholesale rebates from their partners respectively. All others are charged higher fees. For 3, this means that the best available price is €2.7 while its competitors can steer 80% of their traffic into preferred networks and thereby get an average price of about €2.3¹⁵¹.

Now look at the MNC retail market. If the retail prices offered lie around or under the €2.7 then 3 must supply roaming under cost or at break-even in order not to be the market’s most expensive alternative, and is thereby margin squeezed. In a different country, the independent operator might have a better wholesale deal, which should allow it to compete on equal terms in the retail market. However, this would not necessarily prevent a margin squeeze, since an alliance member could himself retail below cost on that specific market, forcing the independent operator to do the same. When considering the MNC market for roaming, prices on single markets are bundled together to determine the overall roaming cost. Alliances can thus afford to retail below cost on single markets in order to compete for a contract, *if* the loss is compensated for elsewhere. “Internal rebates give Vodafone and the alliances possibility to move profits

¹⁵⁰ Cleary Gottlieb LLP working paper: *Margin Squeeze Abuses in the Telecom Sector*. Robert O’Donoghue (February 2005)

¹⁵¹ Average wholesale price for Freemove member: $0,8 * €2,2 + 0,2 * €2,8 = €2,32$

around between countries, and thus use their geographical scope to raise competitive strength where best needed” argues Pontus Berg of Hi3G¹⁵².

So what are the consequences of margin squeezes on the European telecom sector? Considering the profits from roaming alone, one might think that losing these would be a minor problem because of the small proportion they represent of total revenues (see figures 7.2 and 7.3). However, roaming services are not sold separately but are parts of a greater offer, and may thus not be isolated in the context. And as the price of roaming is clearly a top priority among the largest buyer group of this offer, its strategic importance should be considered massive.

If traffic steering and margin squeezing is this effective in keeping independent MNO:s out of the market place, then why is the commission not acting? As described above, it certainly looks like a clear-cut case of “applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage”, as prohibited by article 81.1 EC. As brought up in chapter 6.2.5, the EC is currently pursuing an investigation into the alliances compliance with EC antitrust law. According to Martinsson however, such investigations take time since they must detect patterns over longer periods in order to be valid¹⁵³. Berg has another theory: “The Commission is using Vodafone as some sort of benchmark in the context, which is why the alliances are allowed to abuse their market power as long as Vodafone is considered more dominant”¹⁵⁴. Performing own calculations to show actual proof of margin squeezes has proven very difficult given the low transparency of figures.

To address the problem with incumbents margin squeezing MVNO:s on national markets, the Commission held a conference on the subject in mid-2005¹⁵⁵. Two approaches to deal with margin squeeze were presented:

- Ex ante intervention: Price control through regulation
- Post ante intervention: Claiming abuse of dominance under article 82 EC

However, what separates this situation from the proceedings that have been launched so far is that margin squeezes are carried out by alliances not on national markets, but on a pan-European market for MNC contracts. This market is evolving as described in chapter 6.1, but is not yet fully defined and may thus be more difficult to attack. Furthermore, the problem in this case derives from cooperation, which would rather call for filing under article 81 EC. My conclusion is thus that the most effective way of dealing with margin squeezes by alliances (and Vodafone) is by regulating wholesale prices, and not through antitrust procedures.

6.3.2 Delaying 3G – Defending GSM

”Some say 3G stands for ‘games, gambling and girls’, I say it stands for ‘gullibility, greed and grief’”, said INTUG CEO Ewan Sutherland at a Mobile Roaming & Interoperability conference held in London in mid-2004¹⁵⁶, meaning that the positive effects of the new technology so far had been overshadowed by the troubles it has created. Since its introduction, the breakthrough of 3G technology has been surprisingly slow and entrants into the 3G market have all over Europe been forced to build customer bases through aggressive pricing strategies rather than through diffusion of new applications as expected. Vodafone for example, have only some 29

¹⁵² Interview with Pontus Berg, Hi3G (2006-11-13)

¹⁵³ Interview with Staffan Martinsson, Konkurrensverket (2006-11-03)

¹⁵⁴ Interview with Pontus Berg, Hi3G (2006-11-13)

¹⁵⁵ *Margin Squeeze in EC Competition Law*, LUISS, Rome (2005-04-19)

¹⁵⁶ *Europe’s operators accused of operating price cartel*. Mobile Europe (2004-06-24)

million out of its total 189 million customers using its 3G networks¹⁵⁷. Sven-Christer Nilsson, ex-CEO of Ericsson and current board member of TeliaSonera, blames the sector's conservative structure in a recent interview for Affärsvärlden: "Operators employ only a fragment of the service opportunities out there. They are still driving voice traffic and not services like they should"¹⁵⁸.

An interesting benchmark is Japan, where 3G networks already carry 15 times as much traffic as the old 2G networks. One may thus ask why Europe has fallen behind technology-wise, despite that it has more subscribers, a similar GDP per capita, longer experience with both GSM and UMTS and far more profitable operators according to sector analysts¹⁵⁹. Dresdner Kleinwort Investment Bank estimates European MNO:s to operate margins around 25-30%, whereas most American and Japanese colleagues lie just over 5%¹⁶⁰. Logically, the industry will work to protect its profitability and is therefore clearly resisting a substitution of standards in order to bring maximum return from investments in GSM infrastructure. My conclusion is that resistance to 3G penetration is made possible by the dense and conservative industry structure, as proclaimed by Nilsson, in combination with passive regulation.

The first sign of collusion in the 3G market was probably the licensing procedure itself, which was carried out in 2001 either as auctions or in the format of "beauty contests" depending on the country. A common requirement though was that *at least* one licence on each market should be rewarded a new entrant. However, five years later very few European countries actually meet this requirement.

Country	Licensing procedure	Nr of 3G operators	Nr of GSM operators	License fee	License duration	New entrants ¹⁶¹
Austria	Auction	6	4	€135 m	20 years	Hutchison Connect (EON)
Denmark	Auction	4	4	€127 m	20 years	Hutchison
France	Beauty cont.	3	3	€620 m	20 years	-
Germany	Auction	6	4	€850 m	20 years	-
Greece	Auction	3	3	€161 m	20 years	-
Italy	Auction	5	4	€2,2 bn	15 years	Andala (Hutchison)
Spain	Beauty cont.	4	3	€131 m	20 years	Xfera
Sweden	Beauty cont.	4	3	€ 11 000	15 years	Hi3G (Hutchison)
UK	Auction	5	4	€7,2 bn	20 years	Hutchison

Table 6.3 Overview of 3G licensing in selected EU member states¹⁶²

¹⁵⁷ *Mobile Data Services – European operators get the message, finally*. GP Bullhound (2006-12-11)

¹⁵⁸ *TelekomSpecial*. Calle Froste. Affärsvärlden (2006-10-18)

¹⁵⁹ Ekström (Handelsbanken), Pettersson (Kaupthing) and Lindberg (Dresdner Kleinwort) all agree that European operators in general have substantially higher operational margins than American and Japanese colleagues.

¹⁶⁰ Interview with Per Lindberg, Dresdner Kleinwort (2006-11-20)

¹⁶¹ Entrants with no previous engagements in GSM on the domestic market.

¹⁶² GSM Europe official website. 3G licensing FAQ (www.gsmworld.com/gsm europe/faq/3g.shtml)

As shown in table 6.3, license fees varied much between markets, depending foremost on the market size and whether they were determined through auctions or beauty contests. Germany and Italy both raised over €5 billion respectively, but the biggest auction by far was the British. “22.5 billion pounds (€37 billion) is a great deal of money to raise selling air”, wrote Oxford professor Paul Klemperer in a consultation from September 2001¹⁶³, referring to the total sum raised by the British government in its auction for five 3G licenses.

With such massive investments in licenses, one might think that operators should be anxious to start reaping returns as soon as possible, which is certainly contradicted by the pace of penetration seen so far in most European markets. Some say that the reason is spelled cartel. “Expensive 3G licenses were the prices GSM operators had to pay to keep entrants out of the market and thereby maintaining their dominance”, argues Lindberg, and this could certainly be a legible strategy. Dresdner Kleinwort has estimated the average tariffs on different national markets. In UK for example, call tariffs (including roamed calls) average €0.20, whereas they in the US average €0.05¹⁶⁴. The reason prices have fallen steadily in the US is assumed to be fierce competition due to market entries protected by the FCC. Now look at the UK market. Table 6.4 shows traffic minutes (including roaming) among GSM operators on the UK market 2004, totaling 58 billion over the year.

Operator	Vodafone	O2	T-Mobile	Orange	All
Q1 2004	4 144	2 997	3 064	3 773	13 978
Q2 2004	4 185	3 209	3 293	3 970	14 657
Q3 2004	4 198	3 458	3 415	4 057	15 128
Q4 2004	4 192	3 472	3 443	4 091	15 198
Total	16 719	13 136	13 215	15 891	58 961

Table 6.4 *Mobile traffic minutes (millions) among UK GSM operators 2004*¹⁶⁵

This means that the “excessive” license fees, given that the alternative would have been US-style price competition, should be compensated for by maintained revenues in between 3 and 3.5 years. And since the cost of infrastructure is virtually uniform globally¹⁶⁶, the majority of these revenues should be pure profit. Making it 5 years, including a transition period of 1.5 years, it would bring us till today. In Germany, with a market size around 75%, but with license fees landing at a tenth, of those in the UK, the corresponding “compensation period” would be less than six months

On the other hand, consider the license durations in Table 6.3, most of which are for 20 years i.e. until 2020. By then, most analysts would probably agree that some new technology, presumably IP or WiMAX, has conquered the market, which means that operators have paid license fees for a longer period than they can expect return from. Shouldn’t this mean that 3G operators have great incentives to start reaping the rewards of their initial investments as soon as possible, before even 3G becomes outdated? This would certainly seem logic. However, instead of speeding up penetration it appears in many cases as if though operators are rather waiting out replacing technologies and in the meantime saving money by minimal capex (capital expenditure) in infrastructure etc.

¹⁶³ *The Biggest Auction Ever – The Sale of British 3G Licenses*. Klemperer & Binmore (September 2001)

¹⁶⁴ Interview with Per Lindberg, Dresdner Kleinwort (2006-11-20)

¹⁶⁵ *The British Communications Market 2004 – Appendix 2: Mobile Telecoms*. Office of Telecom (UK) (August 2005)

¹⁶⁶ Interview with Jan Uddenfeldt, Ericsson (2006-10-10)

This discussion is supported by the fact that very few operators have actually realized their commitments of network coverage¹⁶⁷. In most countries, the license commitments consist of covering a certain percentage of the population after a certain period of time. In Germany for example, 3G operators were required to cover 25 percent of the population by 2004 and 50 percent by 2006, whilst in Sweden the requirements were much stricter.

Interesting examples can be drawn from Germany and Spain. In the spring of 2006, the German parliament passed a law change giving its former monopolist Deutsche Telekom (in which it still has a large ownership) what media referred to as a “regulatory holiday”¹⁶⁸. The law effectively guaranteed Deutsche Telekom freedom of access regulation on the fixed broadband market, under the condition that it expands its 3G network to agreed license standard. However, the Commission finally acted against the law change on antitrust grounds, making it invalid. In Spain, 3G license commitments consisted solely of “covering all cities with a population of over 250 000 by 2002”. To minimize infrastructure spending, Spanish incumbent operators have therefore limited 3G roll-outs to urban areas. However, the entry of newcomer Xfera into the 3G market, expanding its network to rural areas, forced Vodafone, Amena and Telefonica to suddenly rethink their sparse 3G capex formulas. Nevertheless, the three decided to *share* some 5000 base stations required to keep up the pace with Xfera, instead of expanding their networks independently. “Detecting a cartel, in my eyes, couldn’t be easier” wrote analyst Daniela Ventrone in a comment to the event¹⁶⁹. According to Ventrone, Hutchison is the only European operator to have rolled out its 3G network according to the agreed license commitments of its markets.

6.3.3 Equilibrium Test

David Mothander of Hi3G uses an illustrative metaphor to describe his view of the situation: “The European telecoms market is comparable to a greyhound race, where 3 and other independents are the rabbits! But what happens when the rabbits’ chords are cut? The dogs will off course stop running”¹⁷⁰. Once again referring to Chakravorti, these are all good examples of that well-networked markets resist innovation that can disrupt the equilibrium. Applying his three-step test on the European telecom market illustrates the point clearly (see chapter 3.2.1):

1. Change is indisputably the “best choice” for callers, both regarding price cuts and the technology aspect.
2. Change is however not the best choice for operators, both regarding price cuts and the technology aspect.
3. Judging from the 3G experience for example, consumer behaviour has been difficult to predict.

The conclusion is that the market has reached, or is striving towards its point of equilibrium, where consumers share no incentives to switch and operators share no incentives to innovate.

¹⁶⁷ Interview with Per Lindberg, Dresdner Kleinwort (2006-11-20). See GSMA website for details on license commitments (www.gsmworld.com/gsm europe/faq/3g.shtml)

¹⁶⁸ *Reding Blasts Germany’s Draft Telecom Law*. Ken Weiland, Telecommunications Online Edition (2006-06-28)

¹⁶⁹ *Spain’s rural 3G rollout*. Daniela Ventrone, Dresdner Kleinwort (2006-11-08)

¹⁷⁰ Interview with David Mothander, Hi3G (2006-10-12)

6.4 Conclusions

Driven by network externalities, competition law and the changing demands of the lucrative MNC segment, the European mobile operators industry is evolving towards becoming a cross-border oligopoly. Today the dominating players of the oligopoly are Vodafone, with some 95 million subscribers in Europe alone and a continent wide footprint, and the two strategic alliances Freemove and Starmap. The pace of consolidation has been fast during the past 2 years, and most of the MVNO:s that entered the European markets in the early 2000:s have either vanished or become incorporated in the dominating players.

The oligopoly's future configuration is however uncertain. Not taking a regulation of international roaming into account, there are two likely scenarios:

1. *Strategic alliances subsist as oligopolistic forces by incorporating the few remaining independent operators, maintaining the power balance between themselves and Vodafone.*
2. *Strategic alliances fall apart as a consequence of cross-alliance mergers, such as Telefonica's (Freemove) acquisition of O2 (Starmap).*

My conclusion is that increased negotiation power as well as a widened international presence would likely be achieved in both cases, while significant cost-synergies in neither. The oligopoly's future configuration, given today's driving forces, thus comes down to whether or not the pressure from MNO shareholders to scale up operations (driven by network externality) will exceed the political barriers to large-scale mergers between Europe's incumbents

There are still independent operators taking on the role of rabbits (Spanish Xfera is another good example), but they are getting fewer and fewer. My conclusion is that this development is a result of the collusive techniques employed by the alliances and Vodafone in order to defend their GSM empires. With few or no such rabbits left to lead the way, the result will be continued slow development in technology penetration as well as downward pressure on prices, logically causing Europe to fall even further behind its American and Asian colleagues. This development would thus be the exact opposite of what the EU planned when introducing the Internal Market (see chapter 1.2).

7. Influence of regulation depending on market position

In order to discuss the regulation's potential effects on competition across the sector, we must first analyse how it will affect the different players respectively. This chapter discriminates between operators of different character and aims to determine how these characters will make them more or less sensitive to regulation, and hopefully find a pattern.

7.1 Operator characteristics

As brought up in chapter 2.2.2, network industries are generally characterized by fairly homogenous product supplies. This is clearly also the case with mobile telecoms and it might be the reason for which the Commission appear to have treated operators as a homogenous group of companies, for example in its impact assessment (see chapter 3.3). However, there are certain aspects by which we can discriminate operators from each other in terms of characteristics. According to Mattias Revelius, the most important ones are:

- Geography: *Origin of operations*
- “Demography”: *Size and maturity*
- Network technology: *GSM or 3G*
- Business model: *Revenue driving structure*

Fredrik Blomström of PTS stresses that the regulation, according to “proper regulatory practice”¹⁷¹ should be carried out in a non-discriminating manner, which is off course a next to impossible task for regulators. In a world without externalities, interconnection costs would be shared based on the costs and benefits obtained by each party. In the real world however, parties have different opinions of their cost and benefits, since these are more or less intangible. Whereas all parties in the situation seem to agree on that regulation will affect operators differently, depending on the factors above, they are significantly divided on how the discrimination will strike. This can be illustrated by their different responses to the proposal (see chapter 5.3.3). This chapter aims to investigate these relations on the basis of the first three factors, which to a large extent together determine the fourth.

7.2 Geography

Most mobile network operators have developed, and are still largely tied to their respective home market by large infrastructure investments. Since both customer bases and regulatory frameworks have also been nationally embedded, markets have up until recently been allowed to mature principally unaffected by each other. With a uniform regulation of a cross-border service such as international roaming coming into the picture, operators will suffer or benefit differently on different geographical markets. According to Gunnar Forsgren of TeliaSonera, the two most important factors in the context are the inflow of travellers and the level of MTR (Mobile Termination Rate). “In general, operators in southern Europe will be struck harder by regulation because of their higher price levels and the greater stream of tourists” argues Forsgren¹⁷².

¹⁷¹ Free translation of “god regleringssed”. Interview with Fredrik Blomström, PTS (2006-10-03)

¹⁷² Interview with Gunnar Forsgren, TeliaSonera (2006-09-29)

7.2.1 Price level

As explained in appendix 2, regulatory bodies can have different levels of specialisation, independence and power, which determine the influence they exert on their industries. As for telecom regulators in Europe, most work similarly in respect to levels of specialisation and independence according to Fredrik Blomström of PTS¹⁷³. They however differ somewhat in their levels of power. “In general, Nordic regulators are more powerful than their southern colleagues and can thus put more pressure on operators to lower prices” argues Stefan Pettersson, telecom analyst at Kaupthing Bank¹⁷⁴. The difference often lies in whether or not the regulator has the power to investigate and impose penalties, which for example is the case with PTS but not with CMT of Spain. The difference in regulatory power, argues Pettersson, has contributed to a significant spread in MTR between countries. According to Tjernell, MTR:s vary between approximately 5€c and 18€c across Europe, which can be compared to the AMTR established at 12.7€c per minute. The significant spread causes many to believe that a regulation of wholesale prices based on the AMTR will be skew. To illustrate, I will compare the mass of cost and income for nationally and internationally terminated roaming in networks with high and low levels of MTR respectively. Consider a case of roaming between country X (average national MTR = 18€c) and country Y (average national MTR = 5€c) as in figure 7.1:

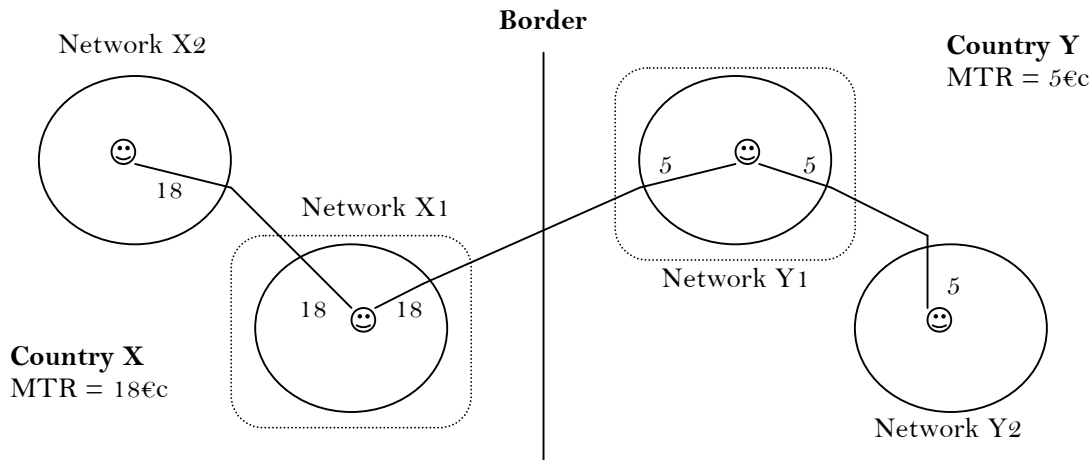


Figure 7.1 *Schematic illustration of roaming between countries with large MTR spread*

¹⁷³ Interview with Fredrik Blomström, PTS (2006-10-03)

¹⁷⁴ Interview with Stefan Pettersson, Kaupthing Bank (2006-10-24)

Y1 customer roaming in network X1				X1 customer roaming in network Y1		
Receiving call	Network X1	Network Y1		Network X1	Network Y1	Receiving call
MTR network X1	-18	-12	AMTR	-12	-5	MTR network Y1
Income	+12	+12*1,3	AMTR*1,3	+12*1,3	+12	Income
	-6	+3,6		+3,6	+7	
National term.	Network X1	Network Y1		Network X1	Network Y1	National term.
MTR network X1	-18		2*AMTR		-5	MTR network Y1
MTR network X2	-18	-2*12	2*AMTR*1,3	-2*12	-5	MTR network Y2
Income	+2*12	+2*12*1,3		+2*12*1,3	+3*12	Income
	-12	+7,2		+7,2	+14	
International term.	Network X1	Network Y1		Network X1	Network Y1	International term.
MTR network X1	-18					MTR network Y1
MTR network Y2	-5	-3*12	3*AMTR	-3*12	-3*12	MTR network X2
Income	+3*12	+3*12*1,3	3*AMTR*1,3	+3*12*1,3	+3*12*1,3	Income
	+13	+10,8		+10,8	+10,8	

Table 7.1 *Mass of cost and income for networks X1 and Y1 while roaming in each other's networks*

As shown in table 7.1, network X1 can be considered to lose money from supplying roaming to travellers from network Y1 in the cases of receiving and national termination (e.g. calling a taxi or a restaurant in the visited country) because the costs deriving from the high MTR is not compensated by the income, which is based on the lower AMTR. The effect when a subscriber to network X1 is roaming in network Y1 is the opposite, since MTR in country Y is significantly lower than AMTR.

However, part of the cost mass in the cases above consists of MTR in the own network, that is to say the actual processing cost. Tjernell argues: "Cost of terminating a call in the own network is really only funny money, since there is no actual payment involved"¹⁷⁵. Furthermore, this cost should not be considered correlated to the MTR level, but rather to network investments. According to Uddenfeldt, equipment prices are fairly uniform across the continent¹⁷⁶. My conclusion is therefore that the proposed regulation will be less skew than what table 7.1 indicates. The largest effect of the MTR spread will be on nationally terminated calls, (since they involve an MTR payment to the another national network), but such calls represent only some 10% of the total roaming volume in Europe according to the Eurobarometer Roaming survey¹⁷⁷.

7.2.2 Tourism

The other important geographical aspect is the inflow of roaming customers to a market. Of course, a market with a heavy stream of roamers is more dependent on the service and will thus suffer a greater loss from regulation. This stream is of course highly correlated with the amount of tourism and differs significantly between European markets. According to the European Travel Commission (ETC)¹⁷⁸ the tourism ratio between Spain and Sweden, to state an example,

¹⁷⁵ Interview with Jan Tjernell, Tele2 (2006-10-18)

¹⁷⁶ Interview with Jan Uddenfeldt, Ericsson (2006-10-10)

¹⁷⁷ Eurobarometer – Roaming. TNS Opinion & Social (November 2006)

¹⁷⁸ ETC official website: www.visit europe.com/statistics/ (2006-11-25)

is close to 1:1000 in size. Still, as concluded by the Commission, 110 million out of the total 147 million roamers per year in Europe are business travellers. Thereby financial hot spots such as London and Frankfurt also make up for large portions of Europe's roamed traffic.

To sum up, operators on markets with high average MTR:s and large inflow of tourists and business travellers are to a greater extent dependant on roaming, and should therefore be more sensitive to regulation. Roaming charges here represents a larger relative portion of operator revenues and a forced price cut would therefore strike harder. Generally, this situation is characteristic of southern Europe, with countries like Spain, Greece and Italy. The discussion can be illustrated by the fact that the Spanish regulator is the only national regulator to fully oppose regulation of any kind, as shown in chapter 1.3.2¹⁷⁹. A similar pattern can be seen in the Council discussions, according to Revelius, where the Spanish and Greek representatives oppose any regulatory intervention. This relation also emphasizes the firm national interests in the matter. Tjernell argues that the Nordic markets are net-outpayers in the context of wholesale roaming and therefore generally have less to loose from regulation.

7.3 Demography

By "demography", I refer to the operator's level of maturity and the size of its operations. However, I deem that these factors show strong correlation and can therefore be treated as one. As shown in figure 7.2, market shares (y-axis) for respective entrants have generally converged over time and thereafter remained static. The relation is primarily a result of market saturation (over 90% penetration in Europe) and high switching costs. The simple conclusion is that a "young" mobile operator is most likely a small player on its market. The market leaders on almost all European markets are former monopolists, which is the case with France Telecom, Deutsche Telekom, TIM, Telefonica, Telenor and TeliaSonera among others. Vodafone, not being a former monopolist, differs in the context even though the company has been around for a long time.

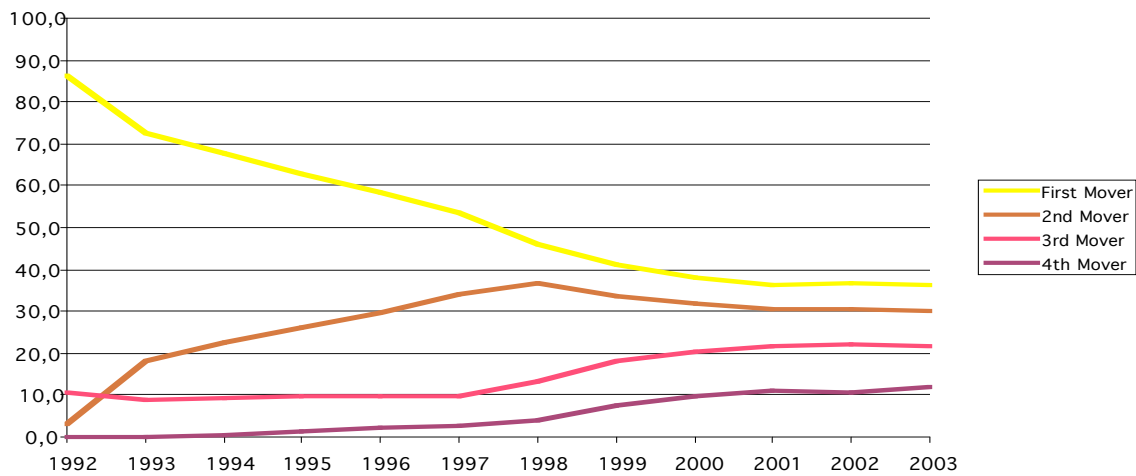


Figure 7.2 Market share development for 1st, 2nd, 3rd and 4th movers in European mobile operators markets¹⁸⁰

¹⁷⁹ CMT Response to the European Commission's second phase consulting... (2006-05-11)

¹⁸⁰ First-mover advantages in mobile communications, Hannes Leo (October 2004)

Concerning the regulation of international roaming, representatives from different sides of the industry appear surprisingly divided on how it would affect operators of different demographics:

- On one hand, it would be reasonable to believe that younger operators are more vulnerable and therefore would suffer more from being regulated. “In the early stages operators usually carry a heavy load of investments in network construction, licence purchases and the building of customer bases. Cutting of margins can in this phase be fatal” says Gunnar Forsgren¹⁸¹. Most likely, an established operator has a higher solidity since investments to a greater extent are written off and is thus less sensitive to external influence. Also, a company operating networks on many markets has the advantage of keeping a larger portion of its transactions internal. “By the possibility of directing of traffic into the own network, international operators do not need to pay for roaming within its own networks” says Blomström, and argues that this advantage could make a pan-European operator, such as Vodafone or Orange, less sensitive to wholesale regulation.
- On the other hand, a less mature operator could just as well benefit from regulation by being spared its inferior position in contract negotiations. “Today, small operators lack negotiation power since they cannot provide large volumes in exchange for favourable wholesale prices” says Revelius. Pettersson confirms the problems brought up in chapter 6.3.1: “Small operators have a hard time competing for large-scale business customers, not being able to provide good international coverage to a competitive price without suffering from low, or even negative, margins”. David Mothander of Hi3g emphasizes that the problem goes further than just poor margins: “Non-members (of alliances) have a hard time getting any traffic at all”, a description that is supported by Jeding: “It is an obvious risk that operators quit entering into contracts outside of their alliance”. By capping wholesale prices, the scope for margin squeezes should diminish, and consequently the incentives to cooperate on roaming traffic within alliances. However, as the proposed regulation as the present framework lacks the duty of providing contracts, as will be discussed in chapter 8, a regulation is no guarantee for this effect. Hi3G are non the less convinced that a low enough wholesale cap (the company’s own proposal is €0.25 per minute for voice calls¹⁸²) will decrease the possibilities of collusive cooperation.

Some conclusions could be drawn from the divergence of opinion. By describing the own position as favourable, Hi3G as well as TeliaSonera both strive to calm shareholders and run their respective agenda simultaneously. What appears certain however is that the power today lies within the alliances and Vodafone. A regulation would undoubtedly weaken this power and thus benefit non-member operators such as Hi3G in negotiation contexts. The remaining question is how this positive effect weighs against lowering of margins. Logically, the two effects should be somewhat correlated. As concluded, the cost disadvantage prevents small operators from getting large-scale business contracts. Since business customers make up for at least 75% of roaming revenues the situation virtually exclude smaller operators from a market worth €8.5 billion annually. Consequentially independent operators generally have a small portion of their revenues, and an even smaller portion of profits, represented by roaming charges, and should therefore be less sensitive to intervention. In other words: young, independent operators such as Hi3G have more to win from increased negotiation power than it has to loose from lowered margins.

¹⁸¹ Interview with Gunnar Forsgren, TeliaSonera (2006-09-29)

¹⁸² *The facts about the failure of Europe’s roaming market* (Hutchison Europe 2006-10-03)

A quick analysis of the correlation between entry timing of operators on the Swedish market and attitude towards regulation also makes a good illustration: The market leader TeliaSonera opposes any kind of regulation. 2nd mover Tele2 appears understanding but worried and newcomer Hi3G welcomes regulation, if only the wholesale level. As illustrated in figure 7.1, the entry timing even corresponds well with market shares.

7.4 Network Technology

As described in appendix 4, the entry of new players into the markets in connection to the introduction of 3G lead to downward pressure on prices rather than an expected technological revolution. Nonetheless, players having entered the markets with 3G technology depend to a greater extent than GSM incumbents on increased usage of data services to make their business models work. Such operators are thus logically negatively affected by today's situation on the roaming market, with data traffic still priced at levels making large-scale use virtually impossible. As concluded in chapter 6.3, the pan-European oligopoly has great economical incentives to protect GSM, and that the situation would evolve by itself towards that of for example Japan is therefore unlikely. However, dealing exclusively with voice traffic, neither a regulation in its proposed format should lead to any direct improvements. Given that pure 3G players, such as 3, are young and hence have small market shares (see figure 7.2) they should to some extent share the benefits of regulation with young/small GSM players, but the data issue remains. Actually, as the proposed regulation would further increase the price *difference* between roamed voice and data traffic, chances are that the users might get even fewer. Such indirect effects can only be speculated about, but conclusion is still that the effects of the proposed regulation will not discriminate directly between 3G and GSM players because of its exclusion of data traffic.

7.5 Conclusions

All in all, most factors indicate that the regulation in its proposed format would have the most *negative* impact on operators that:

- a. Service markets with large streams of tourists and/or business travellers and high price levels.
- b. Depend on alliances to secure low wholesale prices and large traffic volumes.

The different stakes in the situation can be illustrated by the revenue splits of different operators. Take Vodafone for example: Vodafone's operations in Europe are mainly located on markets with high MTR:s and large inflows of travellers, such as UK and Germany (business), and Spain, Greece and Italy (Tourism). Furthermore it has the advantage of having secured roaming volumes on each market by consistently directing roamed calls into its own networks. As shown in figure 7.3 (based on estimates from Handelsbanken Capital Markets) roaming represents 9.5 percent of the company's total revenue, with a possible upward trend.

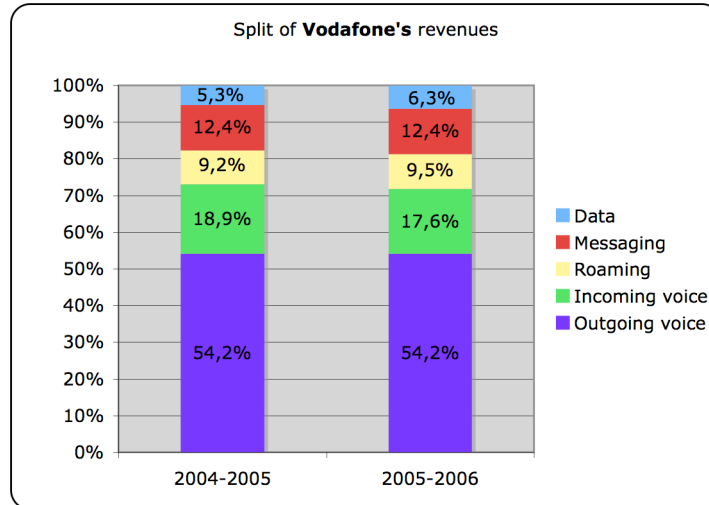


Figure 7.3 *Split of Vodafone's revenues*¹⁸³

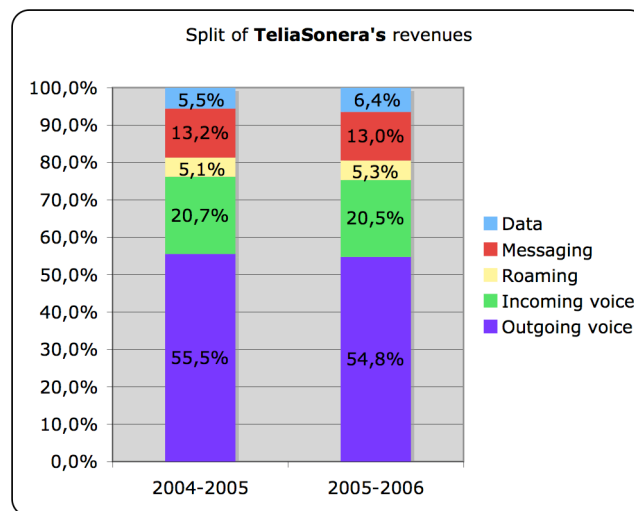


Figure 7.4 *Split of TeliaSonera's revenues*¹⁸⁴

For TeliaSonera, the Swedish incumbent with operations in smaller and more regulated markets such as Sweden, Finland and the Baltic States, the portion of roaming is just above 5% as shown in figure 7.4. However, as a member of Star Map Alliance, TeliaSonera is granted all roaming traffic (at least the 80% that can be steered) from alliance partners Orange, TIM and T-Mobile among others. The corresponding distributions of profit drivers would of course be even more interesting to analyse, but are difficult to determine since operators rarely share such figures. Andreas Ekström, telecom analyst at Handelsbanken Capital Markets, estimates that around 20% of Vodafone's earnings, and some 10% of TeliaSonera's earnings, derive from roaming services. This also further indicates unproportional margins. The high stakes of pan-European operators such as Vodafone can also be illustrated by their fiercely negative responses to the proposal, as presented in chapter 5.3.3. Comparison with 3G operator Hi3G further supports the pattern. Its Swedish fraction Hi3G claims that roaming represents some 7% of ARPU (average

¹⁸³ *Wireless Watch Q2 2006*, Handelsbanken Capital Markets (2006-09-11)

¹⁸⁴ *Wireless Watch Q2 2006*, Handelsbanken Capital Markets (2006-09-11)

revenue per user), which is higher than what is estimated for TeliaSonera. However, with virtually no wholesale income the company just about manages to break even on selling roaming services¹⁸⁵. Mothander comments: “Today, northern Europe subsidizes southern Europe, and 3G subsidizes GSM, which makes life pretty hard for a Nordic 3G operator”¹⁸⁶.

To sum up: The larger the scale of operations and the more cooperative a mobile operator is, the greater the proportion of profits from roaming. A large proportion of roaming profits makes an operator dependent on the service, and thus more sensitive to regulation. For young independent operators the proposed regulation could actually be positive, as it will likely contribute to breaking up the market. It would however not likely have any positive effect on the usage of data services and it will not guarantee wholesale contracts.

¹⁸⁵ Interview with David Mothander, Hi3G (2006-10-12)

¹⁸⁶ Interview with David Mothander & Pontus Berg, Hi3G (2006-10-12)

8. Alternative Recommendations

As concluded in the previous chapter, the proposed regulation could, in the same time as cutting margins for Europe's dominating operators, actually benefit those independent players that are today disfavoured in the roaming market, and consequently cannot compete for MNC contracts. However, some concerns that have been specially stressed by those players are strangely left out of the discussion. This chapter addresses those concerns and discusses why the Commission, using an interest-based perspective, might have overlooked them. The discussion leads up to concrete recommendations, directed to the Commission, that could contribute to achieve important EC objectives if included in the regulation's design. Finally we benchmark an alternative concept that is currently considered for regulation of ICC:¹⁸⁷ in the US.

8.1 Motifs of Regulation

8.1.1 The Proposal's Compliance with its Objectives

As summarized in chapter 5.3.1, the two principal objectives for regulation of international roaming that have been communicated by the Commission are:

- Making it cheaper for corporate and private consumers to call while travelling within Europe.
- Cutting a large cost driver for European businesses, and thereby boosting the union's overall economic competitiveness.

“Unjustifiably high roaming charges limit the use of mobile phones. This is harmful to consumers, European businesses and the Union as a whole”, stated Reding in a press release on November 7 2006¹⁸⁸. This statement sums up the regulation's official objectives. Referring to Arne & Brunsson's theories on different perspectives on regulation (see chapter 2.1.1), it appears clear that the Commission aims to regulate according to the *normative* perspective, or in other words to primarily enhance common welfare. According to theory, rule-makers with a normative perspective need to strive after broad public support in order to ensure legitimacy, which is demonstrably the case concerning the regulation of international roaming. However, during my research I have come across many sources suggesting that the relation to a large extent is the opposite: that the Commission by regulating aims to enhance its public support in general. More about that in the next chapter.

The stated objectives will in the short term likely comply well with the regulation's design. By including a retail price cap, despite vast criticism from virtually all groups of interest, low retail prices will be achieved without delay to the delight of both private and corporate consumers. But what about the dynamic effects? All major operators have, and are still, raising their voices arguing that a regulation will harm competitiveness in the sector. Looking at its impact assessment (see chapter 3.3), the Commission takes a clearly defensive stance when addressing the regulation's impact on competitiveness etc. It focuses on defending itself from critique arguing that the regulation will hurt the sector, rather than investigating how the sector can actually benefit from it.

My findings in chapters 6 and 7 clearly suggest that the regulation in its proposed format would, at least in one respect, have significant positive impact on the competition dynamics in the sector. This by capping wholesale prizes and thus lowering incentives to cooperate through

¹⁸⁷ ICC = Intercarrier Compensation \approx Roaming

¹⁸⁸ European Commission press release: *Brett stöd för att tvinga ner mobilkostnader utomlands* (2006-11-07)

alliances and diminishing the possibilities to margin squeeze independent players out of the market for MNC contracts. However, in order for those players to really benefit from a regulation, I deem that the following should be seriously considered to add to its design:

- *Wholesale price caps on data roaming.* Operators having entered the markets with 3G technology largely rely on such services to make their business models work in the longer term. Given any measure of price elasticity, capping of prices that are today high enough to virtually preclude international use would certainly help the diffusion of 3G-based services and applications.
- *Duty of providing contracts.* On most domestic markets, operators are obliged to provide each other with contracts for intercarrier traffic in order to allow the existence of MVNO:s. A such duty does not exist for international roaming. An operator that cannot provide large enough volumes in return can thus be denied roaming contracts and thereby not be able to offer its customers full international coverage.

Furthermore, one may ask why the Commission so promptly insists on going through with its plan to regulate even the retail market, despite opposition from virtually all interest groups (including most consumer organisations) and, as stressed specifically by ERG¹⁸⁹, despite that it goes beyond the tools provided by the EU's current regulatory framework. ERG, representing Europe's gathered NRA:s, considers that wholesale roaming markets are very similar throughout the union, which allows for a uniform regulatory approach, but not the retail roaming markets. A uniform retail price cap would therefore in many cases harm competition and thus get negative effects in the medium term.

8.1.2 Political Prestige

While the communicated objectives of the proposed regulation appear very clear, there have been many indications that the Commission might also have a higher political agenda. "Roaming charges has for long been a distraction to the vision of the perfectly harmonized union", says Fredrik Blomström at PTS and suggests that the motifs to a large extent are ideological¹⁹⁰. Mattias Revelius, Swedish representative in the European Council, and Carl Jeding of the Swedish Ministry of Industry agree with Blomström referring to EU's fading reputation¹⁹¹: "The EU's has experienced some backlashes during the past few years and has been struggling a lot with loss of public support. Most people perceive EU as bureaucratic and ineffective" says Revelius. The most notable backlash is perhaps the lukewarm reception of the EU constitution, which was rejected by public voting in both France and the Netherlands in 2005. For this and other reasons, people on both sides of the line of fire seem to agree that the union is now more than ever in need of boosting its image, which could give the roaming regulation an extra political twist.

"A regulation of international roaming charges would demonstrate the Commission's ability to take action in an area that ordinary people can really understand and relate to", argues Revelius. Gunnar Forsgren of TeliaSonera also points to the fact that the first proposal (of regulation according to the home pricing principle) was rejected by the industry as well as the parliament¹⁹²: "It is now politically impossible for the Parliament not to adopt the redrafted proposal". This viewpoint is supported by the Commission's demonstrated unwillingness to respond to industry proposals according to Revelius: "The Commission is represented by very

¹⁸⁹ e.g. *ERG response to the EC's call for input on its proposed regulation in the international roaming market.* (2006-03-22)

¹⁹⁰ Interview with Fredrik Blomström, PTS (2006-10-03)

¹⁹¹ Interviews w. M Revelius, Sw Foreign Ministry (2006-10-20) & C Jeding, Sw Industry Ministry (2006-10-19)

¹⁹² Interview with Gunnar Forsgren, TeliaSonera (2006-09-29)

competent people, but it is clear that it has made its decision”, pointing to its rather embellishing impact assessment as an illustration.

Some of my references also suggest a large portion of personal prestige to be involved. Jan Uddenfeldt of Ericsson has followed the industry’s development from the start: “Commissioners all want their own ball to play, and Reding should be no exception¹⁹³”. Revelius agrees: “It is commonly accepted in Brussels that Reding views international roaming as her profile achievement, and that she sees hopes to win good PR by pushing it through”.

8.1.3 Interest-Based Perspective on the Regulation’s Design

Taking into account the underlying political prestige, and the involvement of economic and political interests, it appears more logic to view the regulation through the *interest-based* perspective (see chapter 2.1.1). This meaning that the greatest influence is not exerted by public opinion but by organized interests struggling for power. Evolution of a regulatory framework is according to the interest-based perspective driven by shifts in the balance of power, which is certainly true here. The shifts in this case being among other things the consolidation of the industry structure and EU’s loss of public support.

As summarized in chapter 5.3.3, all interested parties have certain attitudes and opinions concerning the regulation’s design, according to personal and professional agendas. Uddenfeldt stresses that the design is a very delicate and important matter: “Regulators must be extremely careful so that interventions don’t impede technological development and growth”. According to Revelius however, the only detail that is widely discussed in Brussels is whether or not the regulation should include a retail price cap. “Matters like data traffic and contract negotiations have been given virtually no attention at all”. Using an interest-based perspective could give some explanations to why the commission has chosen to leave the certain aspects listed in chapter 8.1.1 out of the discussions:

Wholesale price caps on data roaming

Some of my references suggest that the unwillingness to discuss other services than voice traffic in the regulation could well be a matter of convenience. “Everyone knows that the data issue is very important, but it is easier to carry on a one-track matter”, argues Carl Jeding of the Swedish Industry Ministry, something that Uddenfeldt as well as Revelius agrees with. Limiting the scope could hence with an interest-based perspective be viewed as a method to pull the proposal through quickly in order to demonstrate a power to act. Conveniently enough it would also give Reding incentives to start a new “campaign” as public pressure starts developing on lowering prices on data roaming.

Uddenfeldt and others stress the significance of forward-looking regulation in order to enable technological movement in the sector. Hi3G, whose business model depends on diffusion of data services, are especially worried. “If no price caps are put on data roaming, this will remain another area for the industry giants to exercise margin-squeezes on us newcomers¹⁹⁴”, argues Mothander. With wholesale charges on data roaming varying between €5 and €12 per Mb, plus a retail margin on top of that, the services are virtually impossible to use in a larger extent, even though loading 1 Mb of data does not use more network capacity than a 1-minute voice call. Furthermore, excessive charges for data roaming also preclude spreading of alternative technologies that operate through mobile networks. “The emergence of WiMAX and IP clients such as Skype is an obvious threat, and a strong incentive for us GSM operators to maintain a high price level” says Jan Tjernell of Tele2, who shares its 3G licence with TeliaSonera¹⁹⁵.

¹⁹³ Interview with Jan Uddenfeldt, Ericsson (2006-10-10)

¹⁹⁴ Hi3G has proposed a price cap of €0.5 per Mb

¹⁹⁵ Interview with Jan Tjernell, Tele 2 (2006-10-18)

Whether or not this relation has had any influence on the design of the Commission's proposal, the discussion further supports an interest-based perspective on the regulation.

Exclusion of contract procedures

Another area that has been fronted as causing problems for smaller MNO: and MVNO:s is the lack of structure surrounding negotiations of roaming contracts. "Even if wholesale prices drop, there is still nothing that will guarantee us getting deals in the first place. What is the point of a Christmas sale if you cannot even get into the store?" says Pontus Berg of Hi3G, though maintaining that total exclusion is not common in the present situation¹⁹⁶. Berg compares the situation with what has happened on the Swedish market during the last years. Some fifteen operators (most of which MVNO:s) have been reduced to four in a short period of time through acquisitions and bankruptcies. "The principal reason is that PTS has focused its regulation strategy solely on interconnect prices, and not on contract relations" states Berg, who predicts a similar development on the pan-European market. The biggest threat as perceived by Hi3G is that special deals are made to greater extent within the strategic alliances. Uddenfeldt agrees on the problem and suggests that contract procedures be more standardised to encourage competition".

Most parties agree on that dealing with contract procedures would lead to a greater pricing transparency, which is exactly what the commission has pushed for in its public argumentation. Then why not take this further step? "The balance lies between the simplicity of the Commission's proposal, and more market adjusted models" says Revelius of the informal talk in Brussels. An interest-based perspective would once again suggest that ease and speed of evaluation and implementation is prioritized higher by the commission than the dynamic effects of regulation.

Uniform retail regulation

An interest-based perspective would also provide a logic explanation to the Commission's stubbornness concerning the retail part of its proposal. In fact no interest groups, including national regulators and the ERG, have spoken in favour of a retail price cap. The common motivation being is that it would stagger competition and thus only result in short term gains for consumers. However, in the short term it guarantees clear and direct results, which is exactly what is needed to demonstrate the value of EU's commitment. Providing the industry with a transition period, as would be the case if a sunshine clause was chosen, would deny the commission its opportunity to publicly "launch" the new regulation, hence making its effect less apparent to consumers.

8.1.4 Influence by the Industry?

There is even the possibility that the operators industry have exerted greater influence on the proposal than what has come forth in public consultation documents. As discussed in chapter 6.3.2, operators with major investments in GSM networks share great incentives in keeping usage of 3G data services on a low to prolong the life cycle of GSM and thus increase return on investments. "The EU suffers from massive corruption, and operator interests are constantly adopted by commissioners and MEP:s." argues analyst Per Lindberg¹⁹⁷. Moreover as mentioned in chapter 6.2.1, incumbents such as T-Mobile (Deutsche Telekom), Orange (France Telecom), TeliaSonera and Telefonica are still partly owned by their respective governments, making their agendas into national concerns.

An interest-based perspective could thus suggest a compromise between the Commission and the industry, with exclusion of data traffic being traded for a retail price cap. The discussion fits

¹⁹⁶ Interview with David Mothander & Pontus Berg, Hi3G (2006-10-12)

¹⁹⁷ Interview with Per Lindberg, Dresdner Kleinswort Investment Bank (2006-11-20)

well with Sholtz's game theory, as presented in chapter 2.1.1, suggesting a win-win equilibrium between regulators and business organisations as long as they choose to cooperate¹⁹⁸. However, this discussion is merely based on speculation and therefore lacks validity.

8.2 Recommended Modifications to the Commission's Proposal for Regulation

8.2.1 Include price caps on mobile data and uniform duty to provide contracts

In order to support those operators that suffer the most from today's situation, I would strongly recommend the EC to add to its regulation wholesale price caps on data traffic, similar to those proposed for voice calls, and a uniform duty to provide roaming contracts to all carriers. Analysing the situation, I can see no *rational* reason for the Commission to exclude these bullets. Inclusion would not likely create any further asymmetries in the competition between operators, and neither would it more difficult to implement and monitor since the traffic runs over the same infrastructure. Au contraire, much seems to speak in favour of inclusion. Lowering of rates, today at levels that virtually makes data roaming unusable, would (given a reasonable assumption of price elasticity) spawn increased usage of the services. Likewise would the carriers that share the biggest interest of diffusing those services be enabled to do so freely, even across borders, by being guaranteed roaming contracts for all markets their customers travel to.

Regarding mobile data, I consider it highly important that the wholesale price is capped on a level that is carefully thought out in order to support its goals. These goals should be to:

- Provide fair compensation for the strain on network capacity caused by roaming, which cannot be recovered from charging own subscribers.
- Preclude the possibility to margins squeeze, as is apparent in the market for voice roaming (see chapter 6.3.1)
- Support expected future usage patterns.

To meet these goals, the following factors should specifically be taken into account:

- Trends in equipment prices. A higher traffic load will require expansion of infrastructure, which must be financed with income from the underlying services.
- The expected price elasticity.
- Capacity requirements of present/future applications
- Trends in the development of new pricing schemes (e.g. flat rates, pay per hour etc) that follow with new applications.

This leaves regulators with a distinct task, which is to determine the point of equilibrium where the cost of lowered margins meets the benefit of increased usage and competition. Calculating a such point will be difficult since many of the variables are intangible because of network externality, price elasticity etc. However, it would likely be sufficient to reapply the model used to determine the wholesale price cap for voice traffic.

A duty to provide contracts would likely be easier to implement, and the concept has been often been applied on domestic markets to require MNO:s too provide network capacity to MVNO:s. An reasonable model could be to impose a duty to provide wholesale roaming contracts to all interesting parties, *if* there is available capacity. Making such a model work would require a certain level of transparency for wholesale buyers to know in which network capacity is available. An option here could be to establish a market place where capacity is traded.

¹⁹⁸ G Ahrne & N Brunsson, *Regelexplosionen* (2004)

A development towards increased competition and usage of international data services would not only benefit the 3G carriers but the industry as a whole. Players both upstream and downstream of the bottleneck resource, i.e. equipment vendors and content providers, but even producers of high-tech handsets, would likely increase business from widening of this bottleneck.

8.2.2 Give NRA:s responsibility for handling retail issues

It has clearly come forth in my research that the 30% maximum retail mark-up has been the most controversial part in the proposal for regulation. The Commission has stubbornly refused to allow free retail competition despite fierce complaints from the industry as well as NRA:s. My recommendation on how to handle the retail market may therefore seem little controversial:

- The question of whether or not, and in that case how, to regulate the retail markets for international roaming should be decided by the NRA:s.

I give this recommendation on the basis of two findings, the first being that it applies with the *Principle of Subsidiarity* (see appendix 2). I see a clear need to discriminate between the retail and wholesale markets for roaming services within the union, which has been done in some of the feedback given to the Commission during its consultation phase. ERG, for example, concluded in its market analysis that the European wholesale market for roaming appears to be fairly uniform while the retail markets differ in character between different member states¹⁹⁹. The reason is logically that roaming contracts on the wholesale level are traded internationally, which defines a market on the pan-European level rather than on national levels, which is arguably the case with retailing. The dominance of MNC:s in the roaming market, which is discussed in chapter 6, has to some extent made even the retail market international. However, the offers still consist of bundled national prices, and must continue to do so as long as the infrastructure is nationally established.

Regulating the wholesale market centrally, by applying a uniform price cap, removes the status quo that is generally considered the reason for which international roaming has been ineffective to regulate nationally (see chapter 5.2.4). This actually leaves us with the *possibility* to deal with the retail issue on a level closer to user, as required by the Principle of Subsidiarity.

Secondly, I recommend national regulation on the retail level on the basis of the objective to support *effective competition*. NRA:s should be better suited to apply regulatory measures tailored to encourage competition on their respective domestic markets. This model should thereby provide better tools to avoid geographical discrimination, as discussed in chapter 7.2, and rather focus on evening out inequalities deriving from “demographical” differences. Furthermore, judging by their responses to the commission’s proposal, most NRA’s (CMT of Spain excluded²⁰⁰) speak in favour of using a sunshine clause, which would allow a certain leeway for operators to compete freely. Allowing free competition on the retail level would give operators across the sector strong incentives to market improvements in services and price reductions. The Swedish Telecom Consumers Agency emphasizes specifically the importance that operators communicate such improvements clearly in order to realize the supposed price elasticity²⁰¹. If this would prove true, it would certainly help to speed up the introduction of new applications and price reductions.

¹⁹⁹ ERG common position on the coordinated analysis on the markets for wholesale international roaming. (2005-11-10)

²⁰⁰ CMT Response to the European Commission’s second phase consulting... (2006-05-11)

²⁰¹ Interview with Mattias Grafström, KTIB (2006-10-27)

Basing this recommendation on ERG's market analysis however poses a problem. An interest-based perspective (which I generally prefer to use) must suggest some questioning of ERG's motifs. According to the famous Parkinson's Law²⁰², public administrations have autonomous tendencies to grow both in terms of members and of activity. As a representative of several national administrations, it should thus lie in ERG's nature to striving for expansion of the scope of its members' activity.

8.2.3 Bill and Keep – benchmarking the FCC

Alternative ways of dealing with the wholesale/retail problem are currently discussed also in the US, where the wholesale market for ICC (Intercarrier Compensation) in mobile networks has likewise been judged as dysfunctional. Also similar to Europe the FCC (Federal Communications Commission) has held a public consultation round for a new regime, and a comparison is interesting even though the underlying markets appear very different in character. Prior regulatory moves by the FCC have lead to a massive fragmentation of the market, with a large number of smaller carriers operating locally or in specific niches complemented with a smaller number of large MNO:s (Cingular, AT&T, Verizon etc.) covering the entire continent. The different proposals can roughly be divided into two camps²⁰³:

- Unified *calling party pays* (CPP) compensation. This line is in general similar to that proposed by the EC, exempt the retail price cap. In other words, a uniform wholesale rate paid by the caller for all interstate as well as cross-state call termination.
- *Bill and Keep* (B&K). Pricing schemes where the reciprocal wholesale rates for interconnection are zero. In other words, each operator is obliged to terminate calls from other operators free of charge. All related cost must hence be covered by the network's own subscribers.

Could B&K be an alternative model for the pending regulation of international roaming in the EU? By cutting the wholesale part of the market, a B&K regime would effectively get rid of the many of the obstacles that precludes natural competition on today's markets (see the last bullet in chapter 5.2.2). For two reasons however, I believe that this alternative would come out unjust and have a hard time winning support with neither operators nor regulators in Europe:

1. As discussed in chapter 7, there are *significant differences in the inflow of roaming customers* between the different geographical areas in Europe. This imbalance of traffic would, with a B&K regime, lead to that the income from providing roaming services would stand in no proportion at all to the use of network capacity. MNO:s in for example Spain would thereby be severely disfavoured, which goes against the EC's non-discrimination policy. An interesting comparison is that the principal group that has been lobbying against B&K in the US consists of smaller providers, often operating in rural areas²⁰⁴. The reason seems to be that such operators heavily depend on interconnection charges from serving local internet providers, whose traffic to the greatest extent is incoming (downloads etc), thus creating a similar imbalance of traffic.
2. Another factor speaking against B&K in Europe is the documented *difficulty of implementation*. The FCC has been working on its proceeding since 2001, and most of its American proponents suggest a further transition period of 4-6 years to allow operators to restructure their business models²⁰⁵. As discussed in chapter 8.1.3, an interest-based

²⁰² *Parkinson's Law and other Studies in the Art of Administration*. C. Northcote Parkinson (Bonniers 1957)

²⁰³ *Intercarrier Compensation: A Balancing Act*. Susanna Schwartz, Billing World Online (2005-08-15)

²⁰⁴ *The Bill and Keep ICC Hot Potato*. Telecom Policy Report (2005-03-30)

²⁰⁵ *Analysts: Bill and Keep proposal calls for a four-year transition period*. Donny Jackson, Telephony Online (2004-03-31)

perspective on the roaming regulation clearly suggests that speed of implementation is a high priority within the EC. Furthermore the concept of B&K is based on free competition on the retail level and thus lacks direct control over consumer prices. An interest-based perspective would suggest that direct influence on retail prices is also a prioritized issue within the Commission.

On April 4 2006 the German institute for communication services (WIK) held a workshop about B&K as an alternative model for roaming compensation²⁰⁶. On the subject of implementation, Ingo Wogelsang of Boston University laid out the possibility of using dual schemes during a transition period towards a B&K regime²⁰⁷. Such dual schemes could be using B&K for data services while keeping CPP compensation for voice, or to use the different models for different stages in the call connection (see figures 5.1 and 5.2.). I however believe that such compromises would create an even bigger confusion among suppliers as well as consumers, and would likely spawn attempts from players looking to profit from “arbitrages” that may arise.

By keeping compensation on the wholesale level, even though capping it uniformly, proportionality between strain on network capacity and compensation would be maintained, while still enabling sizeable cuts in retail prices through competition. For this reason I believe that a modified CPP regime is better suited for the European roaming market. Furthermore, without proportional compensation it would be difficult to require operators to provide roaming contracts to carriers operating on markets to which they little or no outgoing roaming traffic themselves. Thereby could a B&K regime well strengthen the tendencies towards alliance cooperation, by forcing operators to reciprocal exchanges of roaming traffic in orders to balance compensation with strain on network capacity. As shown in chapter 6, such cooperation has serious negative impact on competition.

However, an interesting exercise for regulators would be to search for a point of equilibrium, concerning the wholesale price cap, where cost of asymmetry meets the benefit of competition. If found, a such equilibrium could be used to model a compromise between CPP and B&K, which could make an interesting alternative to its current proposal.

8.3 Conclusions

Depending on whether the Commission’s proposal for regulation is viewed through a normative or an interest-based perspective, its motifs appear significantly different. An interest-based perspective clearly suggests that speed of implementation and control over results are high priorities. The obvious risk is that these priorities create a focus on short-term gains rather than sustainable development. The common opinion among sector analysts is that sustainable development can only be obtained through functioning competition.

An interest-based perspective provides a logic explanation of the proposal’s design, which has received thorough questioning from most parts of the industry. Most significantly, it avoids dealing with some matters that have been stressed as very important by the operators that suffer the most from today’s situation: data traffic and contract procedures. In addition it goes against virtually all groups of interest by promoting a uniform retail price cap. My conclusion: the Commission is deliberately limiting the scope of regulation in order to achieve quick and safe results that are easily demonstrated. Prioritizing speed and control is not necessarily a bad idea, but it should not risk being employed at the expense of sustainable development.

²⁰⁶ *Bill and Keep: A new model for intercarrier compensation arrangements.* WIK International Workshop (2006-04-04)

²⁰⁷ *Implementation of Bill and Keep, and Transitioning to it* (slides from presentation). Ingo Wogelsang (2006-04-04)

Considering this, I want to recommend the following to the Commission:

1. Add to the model a uniform wholesale price-cap for international roaming of mobile data traffic, determined on the basis of a forward-looking market analysis.
2. Add to the model a uniform duty to provide roaming contracts to all interested parties across the sector, *if* excess capacity is available.
3. Give NRA:s the responsibility to independently handle retail issues, on the basis of the Principle of Subsidiarity and to encourage effective competition.

I firmly believe that these modifications will make strong contributions to some positive dynamic effects that will be further discussed in the next chapter.

9. Dynamic effects of regulation of international roaming

As concluded in the previous chapter, the Commission appears to focus its attention on achieving results that have immediate impact and are directly measurable. In order to promote sustainable development in the sector, it is however equally necessary to consider the dynamic effects of new legislation. This final chapter refers to the findings made in chapters 6 and 7 and looks to analyse and discuss how the pattern of development could be affected by an implementation of Commission's proposal, with and without the recommended modifications. It also looks at up- and downstream markets. Finally it refers back to objectives set up for the Internal Market, showing that these comply well with my findings.

9.1 The Service Sector

9.1.1 Breaking up the Pan-European Oligopoly

As discussed in chapter 6, the European mobile telecom sector has over the past years seen a steady development towards a cross-border oligopoly, in which international roaming appears to be one of the major drivers. This by first adding to the already significant network externalities, since large volumes of outgoing roaming traffic guarantee cheaper wholesale deals through reciprocal exchanges. But foremost because of its decisive importance in the formation of cooperative alliances. As in any oligopolistic market, the winners are its dominating players, in this case Vodafone and the cooperative alliances, because of their power set the pace of price development and diffusion of technology. The losers are the small, independent and often technology driven players that lack possibilities to buy wholesale roaming to a fair price, and can thereby not compete in the retail market for volumous but price sensitive MNC customers.

As concluded in chapter 7, a regulation of international roaming as proposed by the EC will foremost benefit such players, by its appliance of a wholesale price cap:

- The wholesale price cap significantly lowers the incentives to maintain cooperation within the cooperative alliances
- The wholesale price cap, if proven low enough, will make it impossible for the market's dominating players to exert margin squeezes on competitors that cannot access low enough wholesale deals.

Adding certain modifications, as recommended in chapter 8, will further benefit independent operators by:

- Guaranteeing access to wholesale deals and thus the full geographical coverage that is mandatory for competition in the MNC market. Furthermore, forcing operators to enter into wholesale contracts (with price caps) with all interested parties fully removes the incentives to cooperate within alliances. Without a such clause, members could still gain from excluding outsiders and thereby keep traffic internal.
- Capping wholesale prices for roaming of data services, and thereby remove a potential area for future margin squeezes. In addition, capping prices for data roaming would open up a market for services that were previously impossible to use cross-border because of its price levels. This would be of specific interest for those players having entered the markets with 3G technology.

All in all: By breaking up alliances and bringing small MNO:s and MVNO:s to the same basic conditions as the dominating players, a smart regulation of the roaming market should logically give the entire European mobile telecoms sector back some of the dynamics that it has lost during the last years of consolidation. However, while network externalities will arguably be affected (volume not longer being a prerequisite to get fair wholesale deals) these WILL continue play an important role in the sector, spawning further consolidation through M&A:s in the years to come.

9.1.2 From Oligopoly to Monopoly?

A question that arises when considering the dynamic effects of a regulation is if the weakening of the cooperative alliances will create an even more dominating position for Vodafone. Even though the advantage in the wholesale market will diminish significantly, the practical benefits (see chapter 6.2.2) of a wide geographical presence will remain. With Freemove and Starmap out of the picture, these benefits will be exclusive to Vodafone (if considering only the European markets). How significant such benefits will become is yet to see, but a chance is that it will increase the pressure on competitors to consolidate through M&A:s. To prevent abuse of a potentially dominating position it is therefore most important that competition law is applied effectively and proactively.

9.2 Up- and Downstream Markets

Breaking up an emerging oligopoly would in itself be a sufficient motif for a regulation of international roaming in the EU. Analysing the situation from a macro perspective however, it appears reasonable to predict certain positive dynamic effects that reach not just the operators industry and its customers, but also across its up- and downstream markets (see chapter 2.2.1 for a description of the vertical structure of network markets). The analysis is based upon a assumption of reasonable price elasticity²⁰⁸ in the retail markets, of which all analysts that have participated in this study agree on. Andreas Ekström of Handelsbanken Capital Markets estimates price elasticity to be >1 , i.e. the relative increase of demand is normally higher than its corresponding reduction of price²⁰⁹. Consequentially capping wholesale prices to a fraction of their present level will, if transferred onto retail prices through competition, lead to a significant increase of roaming traffic across the sector. A study publicised by TNS Opinion & Social in November 2006²¹⁰ shows clearly that Europeans limit their use of mobile Communications while travelling, and that high costs is the major reason (81%). In addition, only a very small minority (2%) buy domestic SIM-cards in the visited country to compensate.

9.2.1 Increased Capex Levels

That high price levels are connected with low usage is verified by estimates from Dresdner Kleinwort, showing that Europeans on the average speak only 5 minutes a day over mobile networks²¹¹. The corresponding figure for the US is estimated to 25 minutes. Of course this difference is not entirely explained by high roaming charges. Even domestic prices are significantly lower in the US. According to the CTIA (Cellular Telecommunications & Internet Association) mid-year survey, the average price per minute for mobile calls was just over 7 cents²¹² (≈ 6 €-cents) compared to 20 €-cents in Europe (in which roaming is included). Either way, the difference in telecom usage is significant.

²⁰⁸ Price Elasticity = change in demanded quantity (%) / change in price (%)

²⁰⁹ Interview with Andreas Ekström, Handelsbanken Capital Markets (2006-10-30)

²¹⁰ *Eurobarometer – Roaming*. TNS Opinion & Social (November 2006) 24565 participants from 25 EU member states.

²¹¹ Interview with Per Lindberg, Dresdner Kleinwort (2006-11-20)

²¹² *CTIA Semi-Annual Wireless Industry Survey*. CTIA – The Wireless Association (2006-06-28)

USDbn	Q104	Q204	Q304	Q404	Q105	Q205	Q305	Q405	Q106	Q206
W Eur	16.8	17.6	18.3	18.9	19.5	19.8	19.4	18.2	17.6	17.4
E Eur	3.0	3.4	4.0	4.9	5.4	6.0	6.2	6.6	6.4	6.1
N Amer	18.7	20.3	20.6	20.1	20.0	20.7	20.9	21.8	22.5	21.3
L Amer	2.8	2.8	3.7	4.1	4.3	4.8	4.9	5.5	5.4	5.2
MEAFR	1.2	1.5	2.0	2.3	2.3	2.6	2.7	3.0	2.9	2.8
Asia	26.5	27.3	27.9	28.6	29.5	29.7	30.1	30.8	31.7	33.1
Total	69.0	72.9	76.5	78.8	81.1	83.6	84.3	85.9	86.5	86.0

Table 9.1 *Operator Capex (billion USD invested) 2004-2006²¹³*

A direct effect of the relatively low usage level is a lower strain on the networks and consequentially a lower pressure to invest in new infrastructure. This relation can be clearly illustrated through a comparison between capex levels among operators in Europe and the US. Looking at table 9.1, capex levels are over 50% higher in the US than in West Europe, despite a smaller market. US revenues are about 5% lower as shown by a comparison between tables 9.2 and 9.3.

EURm	Q104	Q204	Q304	Q404	Q105	Q205	Q305	Q405	Q106	Q206
Revenues	114,063	117,026	119,745	121,588	122,545	123,872	125,062	126,661	127,902	129,739
YoY chg %	10.2%	10.4%	10.6%	9.7%	7.4%	6.8%	4.4%	4.2%	4.4%	3.9%
EBITDA	44,623	45,769	46,925	47,741	48,119	48,409	48,459	48,390	48,488	48,359
YoY chg %	29%	23%	17%	10%	8%	6%	3%	1%	1%	0%
Margin %	39.1%	39.1%	39.2%	39.3%	39.3%	39.1%	38.7%	38.2%	37.9%	37.6%
Capex	13,494	14,313	14,826	15,029	15,528	15,491	15,276	14,705	14,384	14,273
YoY chg %	6%	17%	20%	16%	16%	8%	3%	-2%	-7%	-8%
% of sales	11.8%	12.2%	12.4%	12.4%	12.7%	12.5%	12.2%	11.6%	11.2%	11.1%
Cash marg %	27.3%	26.9%	26.8%	26.9%	26.6%	26.6%	26.5%	26.6%	26.7%	26.5%

Source: Company accounts, Handelsbanken Capital Markets

Table 9.2 *Key stats for mobile operators in Western Europe²¹⁴*

USDm	Q104	Q204	Q304	Q404	Q105	Q205	Q305	Q405	Q106	Q206
Revenues	91,203	95,114	99,388	101,832	105,533	109,046	112,596	116,520	120,484	123,981
YoY chg %	16%	16%	17%	16%	16%	16%	14%	14%	14%	14%
EBITDA	26,972	28,292	29,503	30,393	31,359	32,302	33,475	36,116	38,305	39,993
YoY chg %	16%	17%	16%	16%	16%	14%	13%	19%	22%	24%
Margin %	29.6%	29.7%	30.0%	29.8%	29.7%	29.6%	29.7%	31.0%	31.8%	32.3%
Capex	18,711	20,304	20,555	20,111	19,993	20,736	20,936	21,799	22,496	21,324
YoY chg %	-2%	13%	16%	16%	7%	2%	2%	6%	13%	3%
% of sales	20.5%	21.3%	20.9%	19.7%	18.9%	19.0%	18.5%	18.7%	18.7%	17.2%
Cash marg %	9.1%	8.4%	9.1%	10.1%	10.8%	10.6%	11.1%	12.3%	13.1%	15.1%

Source: Company accounts, Handelsbanken Capital Markets

Table 9.3 *Key stats for mobile operators in North America*

²¹³ *Wireless Watch – Q2/2006 Table 5*. Handelsbanken Capital Markets (2006-09-11)

²¹⁴ *Wireless Watch – Q2/2006*. Handelsbanken Capital Markets (2006-09-11)

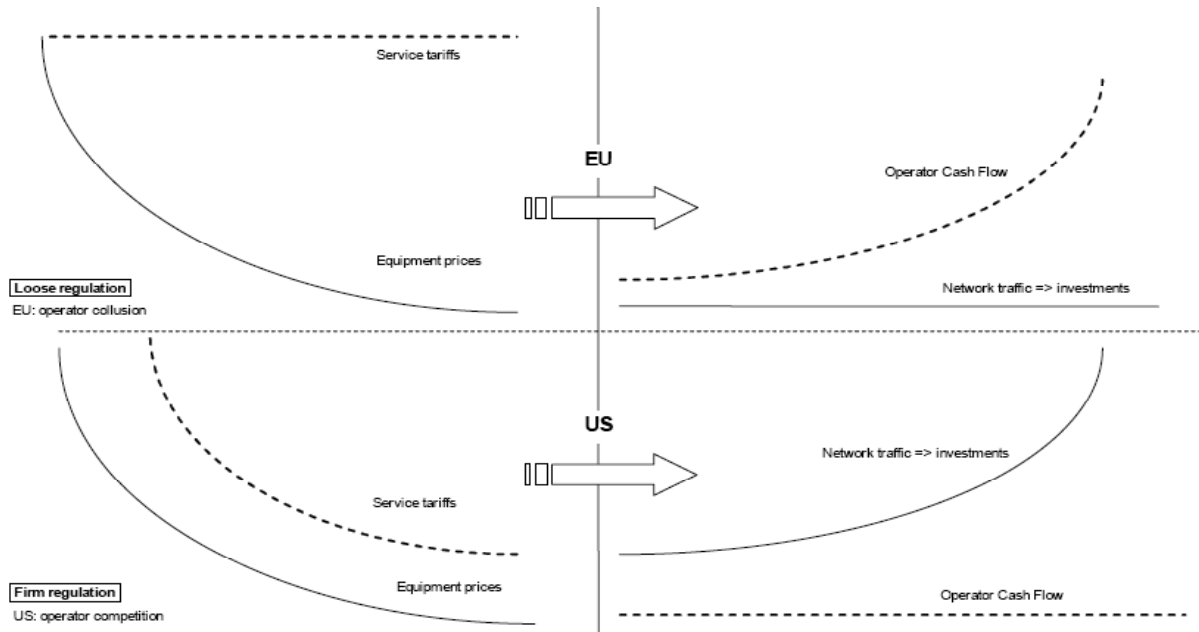


Figure 9.1 Increased investments as an effect of firm regulation. Comparison between EU and US²¹⁵

By lowering prices and in the same time enabling competition on the previously static roaming market through regulatory intervention, traffic volumes should increase by price elasticity as discussed above. Increased traffic volumes would directly lead to heavier loads on the networks. With competitive pressure the consequence should effectively be a boost in the demand of infrastructure equipment, thus benefiting upstream vendors such as Ericsson, Nokia, Nortel and Siemens among others. Figure 9.1 illustrates the dynamic effect of regulatory intervention (in combination with firmer application of competition law) on investment levels. Equipment prices, that can be considered uniform globally according to Uddenfeldt of Ericsson²¹⁶, have fallen steadily during the past few years. Allowing service tariffs to drop, this has led to increased usage and consequentially increased capex among operators (showing an indirect price elasticity even in the upstream market). In the EU however, lower equipment prices have not resulted in lower service tariffs but have rather helped increasing operator cash flows (thus showing no price elasticity in the equipment market). It is my conclusion that lowering prices and contributing to breaking up the service oligopoly through firm regulation will increase business for upstream equipment vendors.

9.2.2 Diffusion of New Technology

As brought up in the thesis's introduction, international roaming was meant to play an important part in the transfer from closed national standards to GSM in the early nineties. Figure 9.2 shows the expected life cycles for the NMT (could be any other closed pre-GSM standard), GSM, UMTS (3G) and emerging standards Wimax and IP, represented by outgoing traffic minutes for each standard respectively. From 2006 an onward the graph is estimated, purely in illustrative purpose. Standing in 2006 the GSM market appears mature, while the market for 3G *should* experience heavy growth. However, as discussed in chapter 6.3.2, the industry is today clearly resisting a substitution of standards, most likely to bring maximum return from investments in GSM infrastructure. Consequently the maturity period of GSM standard could well be prolonged and not begin its decline until 2009 or 2010, in which case the break-through of 3G would off course be delayed.

²¹⁵ Figure based on slideshow *Cracking Europe's wireless service cartel*. Ventrone & Lindberg (2006-10-16)

²¹⁶ Interview with Jan Uddenfeldt, Ericsson (2006-10-10)

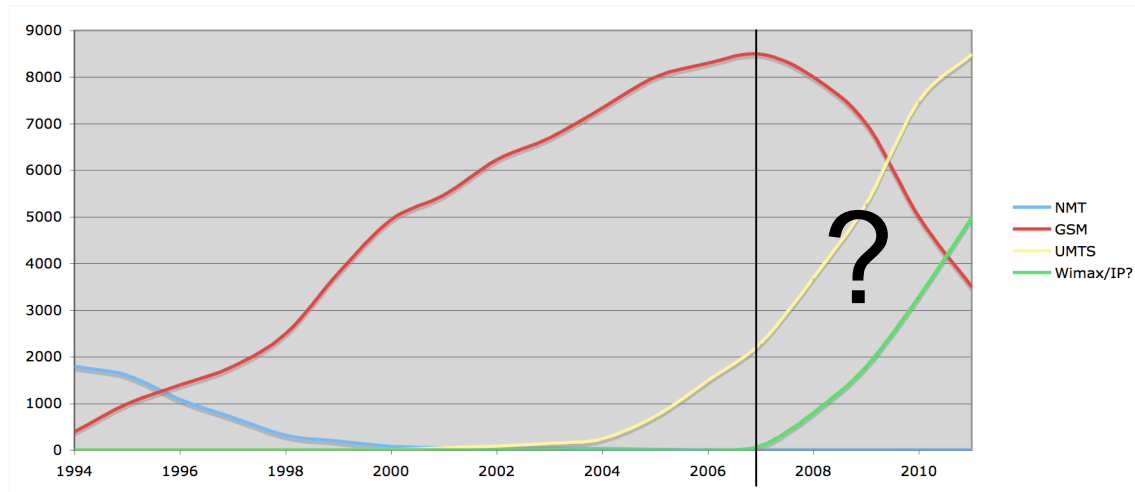


Figure 9.2 Outgoing traffic minutes (millions) on the Swedish market 1994-2011²¹⁷

The situation ties in with the findings Chakravorti made while studying a variety of network markets between 2000-2004: “A market’s hostility towards innovation becomes stronger the more interconnected its players are”²¹⁸. One may even draw parallels to Moore’s law²¹⁹, according to which the data capacity doubles every other year. This has proven accurate in the computer business, but in European telecoms, the speed of which innovation hits the market is only about *half* of that according to Jan Uddenfeldt of Ericsson²²⁰.

In order for 3G to break, operators as well as analysts seem to agree that the demand for data applications must boom. The most frequent users of such services today are corporate users, reading and sending email, getting news updates through the Internet, checking stock rates etc. However, as shown in figure 6.3, only about 1% of European MNC:s mobile telecom expenditure derives from roaming of data services. Given prices of up to €12 per Mb²²¹, the usage of data roaming must thus be minimal. “Just to replicate your inbox in your hotel room could cost a hundred euros. No wonder people avoid doing it”, says Mothander as an illustration.

Benchmarking against other markets provides further illustration of EU’s problem. Ericsson has recently finished its roll-out of the world’s most extensive 3G network for Australian ex-monopolist Telstra across the continent. In addition to its size, the network features “turbo-3G” equipment to allow maximum speed for data transfers. “As incumbent we could never win the price war. With a turbo-charged 3G network we can instead win over customer through a technological edge”, commented Telstra CEO Sol Trujillo on the move²²², which shows how competition drives technological development. Another example can be drawn from the US, where Nokia, Motorola, Samsung and Intel were recently contracted to build a nation-wide 4G/Wimax for Sprint Nextel²²³. The order is estimated to be worth \$2.8 billion by 2008. Sprint Nextel is obviously betting that 4G will be about gaining mobile access to the Internet and not really much about voice telephony” commended The Inquirer²²⁴ on the deal.

²¹⁷ Chart based on *Svensk Telemarknad 2005* – table 19 (PTS 2006). Figures 2006-2011 are own estimates.

²¹⁸ *New rules for bringing innovations to market*. Bhaskar Chakravorti (Harvard Business Review March 2004)

²¹⁹ After Intel’s co-founder Gordon Moore, who predicted in the 60’s that the number of transistor on a semiconductor chip should double every 18-24 months, a prediction that has been fairly accurate up until today.

²²⁰ Interview with Jan Uddenfeldt, Ericsson (2006-10-10)

²²¹ Interview with David Mothander, Hi3G (2006-10-12)

²²² *Ericsson byggde världens största 3G-nät i turbofart*. Carl Thulin, Dagen Industri (2007-01-03)

²²³ *Nokia får miljardorder på 4G-nät*. Nyhetsbyrån Direkt (2007-01-05)

²²⁴ *Sprint Nextel picks Wimax for 4G*. Tony Dennis, The Inquirer (2006-08-09)

So how could regulation of international roaming help the European telecom sector to catch up with its former followers? I believe that the answer will depend on the regulations design:

- By breaking up the service oligopoly, regulation as proposed by the Commission will disrupt the sector's current equilibrium, as described by Chakravorti, and thus make it more perceptive to innovation. Innovation can take place within the current standards or by introduction of new standards (disruptive) as seen in the Sprint Nextel case. The possibilities for dominating players to defend GSM will diminish.
- Given a reasonable assumption of price elasticity, the addition of a wholesale price cap on data roaming would directly generate increased cross-border data traffic in the same way as the current proposal would with voice traffic. Increased usage will in its turn give incentives to further innovation, but also generate investments in infrastructure and thus benefit the upstream markets.

Just like competition generates infrastructure investments, as shown in figure 9.1, it will likely also create business opportunities in downstream markets. Not least for content providers. An example could be Wayfinder (www.wayfinder.com), a Swedish firm providing software applications for online road navigation. With today's charges on data roaming, the application (simple named *Navigator*) is virtually useless outside the home country, for which reason it hasn't yet found a market internationally. Lowering of tariffs through regulation would enable use of the service when driving in foreign cities, where it is probably best needed. The same relation can be assumed for other types of applications, such as restaurant directories, mobile banking services, flight finders etc.

9.3 Strengthening the Internal Market

Viviane Reding has in her public argumentation been stressing the fact that international roaming (enabled through GSM) is an important tool in the implementation of the EU Internal Market. Access to international mobile communications is a prerequisite in the Internal Market's freedom of movement of people and services, and thus of great strategic importance to European businesses according to Reding²²⁵. This has been one of the Commission's primary motifs to take regulatory action in the area (see chapter 8.1.1).

Already at the Lisbon Summit in 2000 (see appendix 1) the *European Council of Heads of State* found that Europe was falling behind other regions in its transition to a knowledge-based economy. Benchmarking against the US however, technology in itself did then not seem to be the critical issue: "America is better conditioned to seize opportunities created by IT innovation through its dynamic and competitive domestic markets", concluded the analysis²²⁶ and strengthening the Internal Market was considered the most important tool to catch up. Considering today's situation, it is obvious that the EU has not succeeded in this task (see chapter 6.3.2 for example), which gives further reason to question the design of the proposed regulation. My analysis concludes that the Commission has a great opportunity to make the Internal Market more receptive to innovation in the IT sector through regulation of international roaming. Breaking up the service oligopoly is a good start in making the Internal Market more dynamic and competitive. However, the most straightforward method to condition the market in the desired direction would be to cap wholesale prices on mobile data transfers. This would directly open up the bottleneck that is now restraining international use in Europe's far more fragmented market.

²²⁵ SPEECH/06/427: *The importance of reducing roaming charges for the competitiveness of Europe's business customers.* (2006-06-29)

²²⁶ *Lisbon Summit: Concrete action to stimulate European competitiveness.* Single Market News (2000-05-21)

An objective set up already at the Lisbon Summit was to focus attention on service markets. Services currently account for around 65% of the total EU GDP. With e-commerce not demanding proximity between buyer and provider, the service markets should be allowed to spread geographically, which is why the lowering of trade barriers, such as roaming charges, is vital to brace the Internal Market. What more efficient way to seize opportunities arising from new application technologies etc, and thus allowing cheaper and more effective communications, in particular for European businesses?

I firmly believe that a regulation of international roaming is an important step in achieving the goals of the Internal Market, but that the Commission should seriously consider the recommendations that I put forward in chapter in order to achieve maximum output of its effort.

9.4 Conclusions

The Commission promotes its proposal for regulation by pointing towards the direct benefits it will represent for European consumers, whether private or business, in terms of lower retail prices. My analysis however concludes that a regulation could have other, and perhaps even more important, impacts if considering its dynamic effects. Most importantly, it will strongly contribute to breaking up the service oligopoly, which is currently making the European mobile telecoms sector static and uncompetitive compared to other regions. Adding price caps on mobile data roaming and duty to provide wholesale contracts would further contribute to evening out the conditions between dominating multi-national operators and smaller independent ones.

In addition, based on an assumption of price elasticity around or above 1, a regulation of the service sector could have significant impact on up- and downstream markets. Upstream by spawning increased capex levels among Europe's dominating operators and downstream by disrupting the current equilibrium, and thereby make the market more perceptive towards new innovations in the applications (content providers) sector. All in all, the dynamic impact of a regulation of international roaming, with recommended modifications, complies very well with the objectives set up for the Internal Market, in order to increase Europe's competitiveness towards other regions.

10. Conclusions

This chapter will summarise the thesis's findings by referring back to the problem formulation in chapter 1, and discuss how the results can be used. Finally suggestions to further research on the subject are presented.

10.1 Summary of Findings

As presented in chapter 1, the thesis's problem formulation is broken down into four fairly open questions:

1. In what direction is the European mobile telecom sector developing? Who are its dominant players today and tomorrow?
2. What role does international roaming play in this development?
3. What are the purposes of the proposed regulation, and how would it change the conditions for effective competition?
4. Could the regulation's design be modified to better fulfil its purposes?

The following principal findings have been made and presented in the thesis:

- 1. The industry is evolving towards a pan-European service oligopoly. However, the future configuration of this oligopoly is uncertain.**

Driven by network externalities, competition law and the changing demands of the lucrative MNC segment, the European mobile operators industry is evolving towards becoming a cross-border oligopoly. Today the dominating players of the oligopoly are Vodafone, with some 95 million subscribers in Europe alone and a continent wide footprint, and the two strategic alliances Freemove and Starmap. The pace of consolidation has been fast during the past 2 years, and most of the MVNO:s that entered the European markets in the early 2000:s have either vanished or become incorporated in the dominating players.

The oligopoly's future configuration is however uncertain. Not taking a regulation of international roaming into account, there are two likely scenarios:

3. *Strategic alliances subsist as oligopolistic forces by incorporating the few remaining independent operators, maintaining the power balance between themselves and Vodafone.*
4. *Strategic alliances fall apart as a consequence of cross-alliance mergers, such as Telefonica's (Freemove) acquisition of O2 (Starmap).*

The thesis concludes that increased negotiation power as well as a widened international presence would likely be achieved in both cases, while significant cost-synergies in neither. The oligopoly's future configuration, given today's driving forces, thus comes down to whether or not the pressure from MNO shareholders to scale up operations (driven by network externality) will exceed the political barriers to large-scale mergers between Europe's incumbents. The question of power balance is also important

- 2. Roaming has played an important role in the development towards a pan-European oligopoly by adding to the industry's already strong network externalities.**

The reason derives from changes in consumer priorities and a seriously dysfunctional wholesale market: As the cheaper international roaming has sailed up as the top priority among telecom buyers in the lucrative MNC market segment, cost-efficient supply of roaming has become a key

success factor for European mobile operators. The cost of providing roaming services is almost exclusively made up by wholesale elements and cost-efficiency is thereby obtained through internalization of wholesale payments by owning a broad international coverage (Vodafone) or collaborating (alliances). The possibility to steer traffic into desired host networks allow operators on different markets to trade volumes of roaming traffic for wholesale discounts through reciprocal agreements, which is the basic background to the formation of strategic alliances. By internalising, and thereby lowering, wholesale spending alliance formations achieve a similar effect to that of a self-owned network.

As margins on regular voice traffic, which is still the industry's major profit driver, have decreased with recent years heavy price competition, roaming services have come to represent an increasing portion of profits for many operators. However, small and independent players who lack access to wholesale discounts face an immediate risk of being margin squeezed and thereby forced to supply roaming at or below cost. The oligopolists can furthermore use their geographical scope to move profits between countries in order to increase competitive strength where it is best needed.

3.1 Regulation as proposed by the Commission would even out the competitive conditions across the industry by reducing the incentives to scale up or cooperate in order to obtain cost-efficiency in the roaming market.

By applying a wholesale price cap on roamed voice traffic, the thesis argues that the scope for margin squeezes will be significantly reduced along with the incentives to cooperate in the wholesale market. In this way, the proposed regulation would be directly harmful to Vodafone and alliance members while in the same time possibly even advantageous to small-groupers and free radicals. This relation is clearly illustrated by the variance in attitude towards the Commission's proposal as came forth in the consultation phase.

If a price cap based on the AMTR measure is low enough to encourage effective competition is still yet to see.

3.2 However, the regulation's design suggests that the Commission rather prioritises direct and measurable results over dynamic effects.

An interest-based perspective provides an interesting explanation to why the Commission insists on a retail price cap (despite vast criticism from virtually all groups of interest) while in the same time leaving more looked-for aspects completely out of the discussion:

- The EU is in need of public support, especially given the lukewarm reception of the constitution in France and the Netherlands. The administration is perceived by many as bureaucratic and somewhat corrupt and lowering of prices of international is therefore a good opportunity for the Commission to demonstrate its power to act. A retail price cap guarantees direct and measurable results that allow fast and accurate demonstration of the benefits to EU citizens and businesses.
- By limiting the scope of intervention to voice traffic price caps, the assessment process is less demanding and the regulation should therefore pass through faster.

4. The proposed regulation *could* be modified to better comply with EU objectives.

Prioritizing speed and control is not necessarily a bad idea, but it should not risk being employed at the expense of sustainable development. The thesis argues that the Commission

could modify the regulation to better comply with some of its principal objectives, by the following recommendations:

4. Add to the model a *uniform wholesale price-cap for international roaming of mobile data*, determined on the basis of a forward-looking market analysis.
5. Add to the model a *uniform duty to provide roaming contracts* to all interested parties across the sector, *if excess capacity is available*.
6. *Give NRA:s the responsibility to independently handle retail issues.*

Inclusion of data services is crucial to enable international use of internet based applications, which are now virtually useless outside the home country, and to prevent mobile data roaming from becoming subject to future margin squeezing. It would furthermore comply with the principal objective for European ICT:s set up in the Lisbon summit: making Europe better conditioned to **seize opportunities arising from technological innovation**.

Wholesale price caps alone will not guarantee full cooperation between operators, which is why a duty to provide contracts is needed to ensure **competition on equal conditions**.

The Commission has rightfully presumed international roaming to demand centralized regulation. A uniform wholesale price cap across the union however leaves the possibility to regulate retail markets (if needed) nationally. NRA:s should be better suited to tailor regulatory measures to encourage competition on their domestic markets. The **principle of subsidiarity** being one of EU's cornerstones, decentralisation of such decisions should be preferred in any case.

5. Regulation as recommended has furthermore a good chance of generating positive dynamic effects in upstream and downstream markets.

Upstream

Presuming a reasonable price elasticity lowering of prices through competition should, if marketed properly, spawn increased usage fairly quickly. Increased usage would mean a higher strain on infrastructure, and thus boost the demand for equipment to the delight of upstream vendors such as Ericsson and Nokia. The relation between regulation and capex levels is supported by a comparison between the EU and US market.

Downstream

The thesis argues that today's oligopolists share great incentives to postpone a 3G breakthrough. By disrupting the current equilibrium, the proposed regulation could therefore well make the market more perceptive towards new innovations in downstream (content providers) markets. Furthermore, again presuming price elasticity, the addition of a wholesale price cap on data roaming would furthermore generate increased cross-border data traffic and thereby increasing business opportunities for

10.2 Contributions

By approaching the situation from an objective perspective, the findings presented above should make interesting contributions to the dialogue surrounding the forthcoming regulation. Today's dialogue much resembles a tug of war between the Commission (pleading full regulation) and the oligopolists (pleading no regulation). Considerable economical and political interests drive both parties' agendas, and a regulation will, irrespective of design, have a big impact on the European society. It is therefore crucial that interventions are based on sound motifs in order to encourage the best possible outcome. This thesis's results provide an alternative approach to the subject and contrasting ideas for the regulations design.

10.3 Ideas for Further Research

During the process of putting this thesis together, I have come across a few interesting ideas for research of related subjects:

- *Roaming on a global perspective*: Is there a possibility, or even a reason, to control international roaming on the global scale? Will a global regulatory authority be necessary in the future?
- *The effect of disruptive technologies*: How will VoIP and other Internet-based standards change the scenario? Will roaming persist as a service?
- *3G in Europe?*: Will 3G ever break in Europe, or are operators holding back investments in order to move directly onto 4G technologies such as WiMAX?
- *Compromise between CPP and B&K*: An interesting exercise would be to search for a point of equilibrium, concerning the wholesale price cap, where cost of asymmetry meets the benefit of competition. If found, a such equilibrium could be used to model a compromise between *Calling Party Pays* and *Bill & Keep* regimes, which could make an interesting alternative to its current proposal.

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Appendix

In order to make the thesis more fluent, some of the concepts and information needed for understanding are placed as appendix instead of directly in the text. By referring to appendix the reader can choose to learn more about the concept in point, or move on if he or she is already familiar with it. The first part of the appendix gives a thorough account of the EU Internal Market concept, which serves as a background to the political agenda of the EC. Appendix 2 gives a run-through of the EU legislative process, aiming to give the reader an insight to the practicalities of regulation and to the roles of some key players. Next follows a brief account of EU Regulation 2560/2001 of charges for cross-border money transfers, which is said to serve as a model for the regulation of international roaming. Finally, appendix 4 presents a brief time-line with some important events that have shaped the European mobile telecom industry to what it is today.

Appendix 1: The EU Internal Market

The principle of free movement in Europe dates back to the creation of the EEC, but was first formalized in 1993 through the inception of the *EU Internal Market*. The Internal Market aims to make it possible for EU citizens to work, travel and do business freely within the union, and to encourage business competition on union level. The concept is based on the “four freedoms”: freedom of movement of *people, goods, services* and *capital*.

Free movement of people

Today, with the lifting of most border controls, EU citizens can move as freely around Europe as within their own country. EU citizens also have the legal right to work, study or retire in other countries within the union. However, the EU Commission still recognizes a number of barriers that prevent people to fully take advantage of their freedom of movement. These may be legal or practical and it is one of the major objectives of the commission to remove them. An example is the European policy of mutual recognition of academic diplomas²²⁷.

Free movement of goods & services

Today, service industries account for between 60 and 70% of the economic activity in the EU, and a similar (and rising) share of overall employment. The EC Treaty give European companies the legal right to establish operations in other member states, and to sell goods and provide services in other countries and across borders. Since the Internal Market was introduced, EU claims that “at least” 2.5 million extra jobs have been created in the union as a result of removing such barriers²²⁸. However, most of the benefits seen so far from the Internal Market have occurred in goods markets. As for services, EU still recognize a large gap between its vision of an integrated European economy and the reality as perceived by citizens and service providers. The barriers mainly consist of unsynchronized legal and administrative requirements between states. Barriers to trade are generally considered to be particularly hard on SME:s (small and medium sized enterprises) in comparison to larger corporations. In January 2004 the commission for a *Directive on Services in the Internal Market*, aiming to actively eliminate discriminating obstacles to trade in services and thus stimulation the development of cross-border operations.

Free movement of capital

Before the inception of the internal market, EU citizens were generally obliged to manage and invest their money predominantly in their home country. With free capital movement, it is possible, or at least easier, to open foreign bank accounts, buy shares in foreign companies and purchase real estate abroad, to name a few examples. Like in the case with people and services,

²²⁷ Directive 89/48/EEC (1988-12-21)

²²⁸ EU Internal Market web site (http://ec.europa.eu/internal_market/index_en.htm)

there is however still obstacles to overcome. Many rules concerning capital management are still legislated on the national level and may thus vary between states. Apart from being obstacles in themselves, unsynchronized rules for capital management create difficulties for other industries engaging in cross border operations. Efforts have been made by the commission to eliminate such barriers. A good example is *Regulation 2560/2001* (see appendix 2) regarding charges for cross-border capital transactions.

The four freedoms are important tools in EU's outspoken quest to "harmonize Europe". The harmonization aims at helping companies to operate freely throughout the union on the basis of a internal set of rules, by reducing bureaucracy and other forms of red tape. It is considered an important tool in Europe's strive to match US growth rates, which is often mentioned as the primary objective of the Internal Market.

Trans-European Networks (TEN)

A particularly vital factor in making the Internal Market work is the networks making up its infrastructure. A TEN (Trans-European Networks) initiative was therefore taken in connection to the inception of the Internal Market in 1993. The development includes among other things the linking of national networks through enhanced interconnection and interoperability. The treaty concerns three sectors: Transport, Energy and Telecommunications. The European Investment Bank (EIB) has been a major financial contributor to the projects through loans²²⁹.

The Lisbon Summit

The Lisbon Summit was held by the European Council of Heads of State in March 2000, with the purpose of setting out a strategy for Europe's transition into a *knowledge-based economy*. At the time Europe was facing a growing awareness of the economic paradigm shift driven by the quick emergence of new technologies (most significantly in the IT sector) and globalisation, popularly referred to as the "new economy". The US had already made progress in the field, with many positive outcomes, and Europe risked being left behind if no action was taken. For the last ten years, the US had experienced higher economic growth, without fuelling inflation, and for every percentage of growth created more jobs than Europe. However, technology in itself was not the major issue. The analysis presented on the summit was clear and generally accepted: America was better conditioned to *seize the opportunities* created by new information technologies from its *dynamic and competitive domestic market*. Thus, strengthening the EU Internal Market was considered the most important tool in stimulating European competitiveness. In comparison with the US, Europe was, and still is, disadvantaged by much more fragmented markets. Particular emphasis was placed on:

Liberalisation

Prior to the summit, the commission's initiative to liberalize European telecom markets had shown good results. Between 1997, when the EU regulatory framework was first introduced, and 1999, prices had fallen over 40% for private users thanks to increased competition. Following the success of the telecom market, the Lisbon Summit called for liberalization in other network markets to be speeded up as well.

Service Markets

US examples had shown that labour-intensive service markets logically have large potential in job creation. This potential had however been harder to realize in Europe much because of its national fragmentation, which had a smaller effect on goods markets. An explanation could be that many services had traditionally required proximity between buyer and provider. With the

²²⁹ EC Information Society web site (http://ec.europa.eu/ten/index_en.html)

growth of e-commerce however, services allowed to spread geographically. The focus was thus on removing other barriers of trade, such as transaction fees. At the time of the summit, services accounted for over 60% of the total EU GDP.

The Lisbon Summit was said to be characterized by a high degree of consensus among national leader as to the strengths and weaknesses of the European economy, as well as to the actions that needed to be taken²³⁰.

²³⁰ EU press release: *The Lisbon Summit: Concrete action to stimulate European Competitiveness*. (2000-03-25)

Appendix 2. Legislative processes within the EU

The need for a supranational regulatory body in Europe followed the forming of the European Union, but also the increased globalization of many important markets. In order to allow freer cross-border trading and international cooperation, and in the same time maintain effective competition, application of a common regulatory framework was deemed necessary. The solution was, and still is, an integrated legislation, named *EUR-Lex*, under the administration of the European Union. The following description of the EU regulatory body is based on information from the official website of the EC²³¹.

Key players

The functions in EU legislative processes, which are continuously ongoing, are divided between three key players: *the Commission*, *The Council* and *the Parliament*. Very simplified, these authorities each hold one of the three powers explained in the previous chapter. The Commission lays down regulations, the Council legislates and the Parliament investigates, settles disputes and imposes penalties. However, the structure of the body is complicated and the three players often have overlapping responsibilities, which may seem confusing for people on the outside (http://europa.eu.int/eur-lex/sv/about/pap/process_and_players3.html 2006).

The EU Commission

The Commission plays a very important part in the legislative process being the main enforcer of EU law. It operates in a wide range of contexts and has *three main functions*:

- Initiator of proposals for legislation
- Guardian of the EU treaties
- Manager and executor of EU policies and international trade relations

As the exclusive initiator, the Commission drafts proposals to be evaluated by the two decision-making institutions: the Council and the Parliament. Once a proposal is formally presented the law-making process depends on effective cooperation between the three. Commission proposals are guided by *three core objectives*: identifying the interests of the Union, organising broad consultation with affected parties and respect the *principle of subsidiarity*. The second function of the Commission means controlling that EU law and regulations are applied properly in the member states. Under some circumstances it can also fine states and organisations for not acting satisfactory according to the rules that are set up by the Union. Finally the Commission is also responsible for managing the Union's annual budget.

The Council of Ministers

The Council is considered the EU's most important legislator and decisive body and should not be confused with the *European Council*, which brings together the heads of state of the member countries. When a proposal is presented by the Commission, the Council may adopt it, amend it or ignore it. However, the decision must follow a critical examination by experts and politicians. Interest groups are consulted through an *Economic* and a *Social Committee* and local authorities through the *Committee of Regions* for the given field. Depending on the matter, the Council base its decision on voting either by simple majority, a qualified majority or by a unanimous decision. When the Council acts by a qualified majority the votes of each member state are weighted in proportion to populations.

The EU Parliament

²³¹ <http://europa.eu.int> 2006

The Parliament represents the Union's 370 million citizens and is the largest multinational parliament in the world. Its composition is formed through direct elections in the member states every fifth year. From originally having a consultative role only, the Parliament's power was strengthened by the treaty of Maastricht to full involvement in the Union's legislative processes. Consequentially, the Council and the Parliament share the decision-making power in many areas. If the two institutions are not able to agree in a certain matter a compromise is settled by a *conciliation committee*, formed by equal number of members from each party. The parliament also has the overall supervisory function in the Union, controlling the way policies are conducted by other institutions. In cases when treaties are violated the parliament may begin proceeding in the *EU Court of Justice*.

The Principle of Subsidiarity

The principle of Subsidiarity is one of the key principles in the treaty of Maastricht through which the EU was founded. It is intended to ensure that decisions are taken as closely as possible to the citizen. Effectively it means that the Commission should not intervene in matters that can be handled national, regional or local levels. If a national government or any other organisation considers the a Commission proposal to violate the Principle of Subsidiarity, they may ask the Commission for a review.

Regulations & Directives

EU legislative acts may take a number of different forms. The two most common are regulations and directives. A regulation is in comparison a more powerful legislation. It is directly applicable in all member states and is obligatory in all its elements. Furthermore regulations are supreme over any contradicting local laws and therefore member states have to legislate in the light of EU regulations. Directives also require states to achieve a particular result, but do not intervene in dictating the methods to achieve this result. In other words directives leaves freedom of choice. However, if a member state fails meet the objectives set out in the directive within a certain period of time the Commission can commence proceedings in the *European Court of Justice*. Another factor that separates a directive from a regulation is that it is only binding on the state to which it is addressed.

Appendix 3 EU Regulation 2560/2001

Viviane Reding gave a speech on February 8 2006 to the *ERG* (European Regulators' Group) in which she proposed the idea of regulation international roaming charges within the EU. As a reference Reding explained that the proposed regulation would follow the example of Regulation 2560/2001, which concerns charges for cross-border payments in Europe²³².

About Regulation 2560/2001

Regulation 2560/2001 was adopted by the Commission in 2001 and mandates that charges for money transfers and payments in euros between EU member states must not be higher than for domestic transactions. The main objective was to create a *Single Euro Payments Area* (SEPA) by 2010. The institution *EPC* (European Payments Council) was been created to lead the progress. The regulation, which according the Commission aims to promote prizing transparency and to further strengthen the Internal Market concept (see appendix 1), requires the following²³³:

- Charges for cash machine withdrawals, money transfers and use of credit cards and checks to be the same, when denominated in euros, for both national and cross-border transactions within the EU.
- Customers must be properly informed in advance of the charges they will pay for cross-border transactions. Any price changes should be informed of as well.
- Mandatory use of *IBAN* (International Bank Account Number) and *BIC* (Bank Identifier Code) standard codes, in order to allow banks fully automated processing of credit transfers no matter their origin.

The surrounding conflict

Just like in the case with international roaming, the regulation of charges for cross-border payments received much criticism when first proposed by the Commission. The strongest resistance came, not surprisingly, from large banks with large revenues from the fees. Much effort was also put in to head off the regulation with promises to cut charges voluntarily. However, the Commission consequently refused to meet the demands from the banks, claiming that similar promises had been made for over ten years without any action taken.

Impact review

Studies made by different consumer organisations in Europe have determined that cross-border transfers really have become cheaper since the introduction of regulation 2560/2001. Today prizes are generally considered to be equalized. However, the regulation appears to have had some negative effects as well. When the regulation was proposed, some experts predicted that cutting charges for cross-border transfers would affect charges for national transfers and other banking services. Studies have since been made on the area with different findings. VZBV (the Federation of German consumer organisations) for example, have not seen any change in charges for national credit transfers or payment card purchases in Germany. They did however notice a substantial rise of charges for ATM cash withdrawals²³⁴. British *Retail Banking Research Ltd.* also found that annual credit card fees generally had increased (above the rate of inflation) on most European markets. Many banks have also introduced annual fees for simple debit cards, which before 2001 were offered free of charge²³⁵. A common conclusion is that regulation 2560/2001 has lowered costs for companies using banking services, whilst leading to higher, if even marginally, costs for individuals. The reason simply being that most individuals seldom transfer money across borders and thus cannot benefit from the cut charges.

²³² EC SPEECH/06/69: *Towards a true internal market for electronic communications*. Viviane Reding (2006-02-08)

²³³ IP/01/1668: *Commission welcomes Council's political agreement on cross-border payments proposal*. (2001-11-27)

²³⁴ *Application of Regulation (EC) No 2560/2001 – VZBV Comments*. VZBV (2005-08-30)

²³⁵ *Study of the impact of regulation 2560/2001 – final report*. Retail Banking Research Ltd (2005-09-11)

Appendix 4. Mobile telecommunications in Europe – Timeline to date

In order to understand today's driving forces in mobile telecoms it is vital to be familiar with the events that has brought the market to the state it is in today. Since its birth the industry has matured very quickly and has done so through entrepreneurial activity as well as political leverage and intervention. Here follows a quick run-through of some of its most influential events up to date.

-1993 Closed national standards

The first generation systems for mobile communication were developed and introduced simultaneously on different markets in the 1980:s. For example, American networks used the AMPS (Advanced Mobile Phone Service) system while TACS (Total Access Communication System) was used in Great Britain and C-Netz (predecessor of A-Netz and B-Netz) in Germany. These systems were based on individual and closed standards, which made them incapable of interoperating between themselves. In 1981 the Nordic countries together introduced NMT (Nordic Mobile Telephony), which was the first attempt to create an open standard, even though on a small scale.

1993 GSM and the EU Internal Market

The GSM project dates back to the early 1980:s (the EC started endorsing its development in 1984²³⁶) but was first launched with the inception of the EU Internal Market in 1993. GSM was intended as a pan European open standard in order to facilitate the free movement of people and businesses in the Internal Market, by allowing interconnection between national networks and international roaming. The open standard was considered a success and in its first year over 100 members were signed to the GSM MoU (Memorandum of Understanding) and used its technology to operate networks.

1994 Market liberalization

Early on, mobile telecommunication networks were generally initialized and maintained as government-controlled monopolies. High pace of development and profitability however spawned a huge market interest in the sector, to which the European Council responded in 1994 by setting up principals and a timetable for the liberalization of telecom infrastructures²³⁷. According to the resolution, all European networks should be liberalized from government controlled and opened to competition by 1 January 1998.

1994-2000 Rapid growth

From the point where markets were opened to competition, until the year 2000, the EU mobile phone markets grew in a rapid pace. Across Europe subscribers increased by more than 50% per year over a period of seven years²³⁸, much thanks to aggressive marketing by the hundreds of new entrants that followed the market liberalization. By the year 2000 however, most markets had reached their saturation level and growth rates dropped to around 10%.

2001 First 3G network

After the auctioning of licenses began in 2000, the first 3G networks started operating in 2001. However, huge investments in license bids and network construction coincided with the collapse of IT and telecom markets, and the whole industry faced a massive crisis across Europe. With the birth of 3G followed a rapidly growing range of data services and applications for mobile handsets.

²³⁶ GSMA official website: www.gsma.com. *Brief history of GSM & GSM* (2006-11-08)

²³⁷ Council resolution 94/C 379/03 (1994-12-22)

²³⁸ *First-mover advantages in mobile communications*, Hannes Leo (2004-10-04)

2001-2006 “Price wars”

When the usage of the new services did not receive expected impetus, new entrants into the 3G markets had to find other ways of covering their huge investments in infrastructure, licence bids and marketing efforts. With the prevailing market saturation this most often meant attracting customers from the established operators by lowering prices, which was necessary to overcome switching costs. The result was a downward spiral of prices. Prices on domestic voice calls in Sweden fell from an average of 2.83 SEK per minute in 2000 to 1,16 SEK per minute in 2006²³⁹. The development caused many MVNO:s, whose profits are based purely on the difference in retail and wholesale pricing, to leave the market or to be bought by network operators.

²³⁹ *Svensk Telemarknad 2005* – chart 19. (PTS 2006)

Appendix 5. Operator Clusters

European operators could be divided into different clusters in order to facilitate forthcoming analysis. Such clustering can of course be performed in many ways depending on which basis is used. To suit the context, I choose to group operators based on:

- Operator characteristics, as discussed further in chapter 7.
- Level of cooperation, as discussed further in chapter 6.
- Attitude towards regulation, as presented in chapter 5.3.3.

In the context, European operators can based on these factors logically be divided into four groups:

1. **“Vodafone”**: Vodafone constitutes a group of its own because of its incomparable size, international footprint and independence from other operators. It is furthermore the operator that has shown the firmest resistance towards any kind of regulation, as comes forth in its 129-page response from the consultation phase.
2. **“Alliance Members”**: Members of either Freemove or Starmap logically form a group because of their interdependence in the marketing context. The group consists to a large extent of ex-monopolies (T-Mobile, Orange, TIM, TeliaSonera, Telenor etc) and their subsidiaries. Alliance members share, just like Vodafone, a strong opposition towards any kind of regulation.
3. **“Small-Groupers”**: Members of smaller groups, such as the 3 and KPN groups, can be clustered together based on their similar stance in the roaming issue. These groups have to small footprints to not be dependent on external wholesale arrangements to supply their roaming need, and therefore share a positive attitude towards capping wholesale prices.
4. **“Free Radicals”**: Despite the pressure from the market to consolidate, there still remains a few fully independent “free radicals” that logically form the final group. Members of this cluster are fully dependent on external wholesale arrangements and are generally small in size and specialized on certain market segments or new technologies (for example VoIP and WiMAX). Examples of more established free radicals are Swedish Tele2 and French Bouygues Telecom. Just like the Minor Groupers, free radicals tend to favour wholesale regulation but oppose interventions on the retail level.

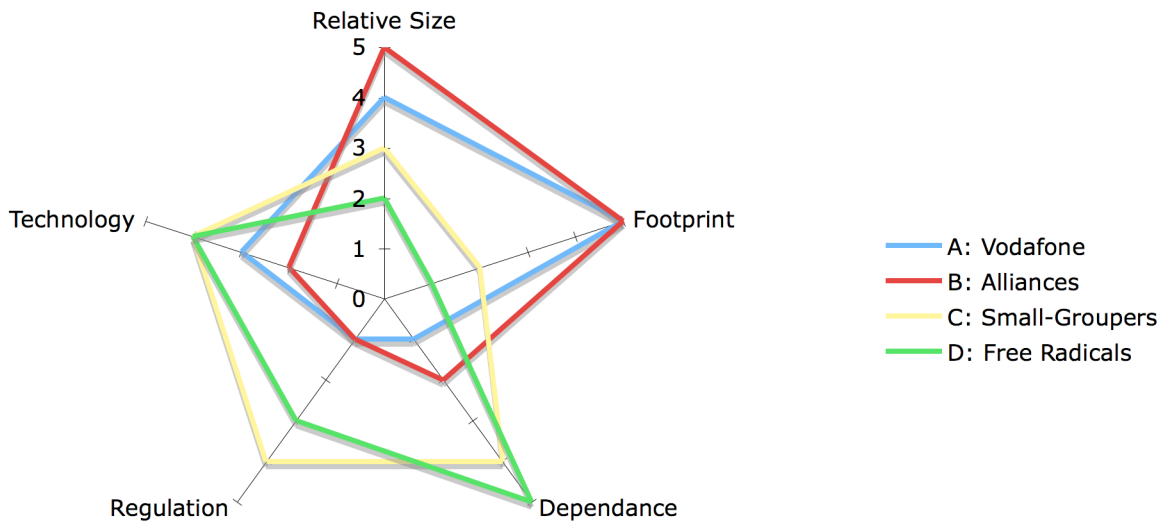


Figure A5 Generalising illustration of cluster characteristics

Relative Size

Refers to the total customer base represented by each cluster. Due to the heavy trend of consolidation seen in the sector during the past few years, groups A and B have grown in comparison to groups C and D. This development and its drivers are thoroughly analysed in chapter 6.

Footprint

Refers to the geographical coverage (within the EU) accessed by the group members included their cooperative partners. Vodafone, for example, accesses an almost complete coverage through fully- or partly owned subsidiaries, while Alliance members achieve similar footprints through cooperation agreements.

Dependence

Refers to a group members' dependence on external (non partners) players to supply wholesale roaming contracts. While members of group B can to a large extent manage such issues within the alliance, Free radicals are 100% depending on external agreements.

Regulation

Refers to the group's general attitude towards regulation of international roaming. Groups A and B have shown firm opposition, in both speech and action, towards *any* kind of regulation, while groups C and D are generally positive to the concept but criticize the proposed design for its retail intervention.

Technology

Refers to the group's staking in new technologies. Logically groups A and B, whose members appear to share great incentives to defend GSM, resist the change of technological standards and thus innovations in the applications industry. Groups C and D are mixed in this aspect. 3 for example has a far more innovative focus than KPM, and the same goes for a comparison between Tele2 and a VoIP operator.