The mobile telecommunications market in Sweden from a consumer and competition perspective

The Swedish Post and Telecom Agency, the Swedish Consumer Agency and the Swedish Competition Authority concluded in a joint report in 1999 that the Swedish mobile telecommunications market did not function satisfactorily. There has now been a follow-up of this report and it is indicated that the mobile market is still characterised by an oligopoly-like structure and that there are inadequacies in competition.

However, the measures that have been implemented in the last two years have started to yield positive results for the consumer. For example, the ‘pot subscriptions’ have been withdrawn and interconnection charges have been reduced. Competition may also be expected to increase through the introduction of mobile number portability, which will enable consumers to retain their telephone number if they change operator.

The Swedish Post and Telecom Agency, Swedish Consumer Agency and Swedish Competition Authority
1. Foreword

One of the fundamental aims of the Swedish Telecommunications Act is that everyone should have access to efficient telecommunications at the lowest possible socio-economic cost. The means for achieving this is to create scope for efficient competition within the telecommunications sector. A mobile telecommunications market that is subject to competition is thus the precondition that can supply the consumer with access to good services at fair prices.

The mobile telecommunications market is characterised by substantial barriers to establishment because access to radio spectrum is a limited natural resource. Only a small number of parties in the market, in relation to those who would wish to enter the market, can be granted a radio licence for mobile telephony. Furthermore, there are substantial expenses involved in constructing a mobile telecommunications network. At the same time it is important that these conditions do not constitute a barrier for more undertakings being allowed to provide telecommunications services in the mobile networks. The special preconditions of the mobile telecommunications market impose a demand that developments in the market are monitored carefully with the aim of creating preparedness on the part of the authorities concerned to implement measures, if necessary, and propose possible changes to the system of rules.

The Post and Telecom Agency, the Consumer Agency and the Competition Authority concluded in the joint report ‘The Swedish Mobile Telecommunications Market 1999 – from a consumer and competition perspective’ that the Swedish mobile telecommunications market did not function satisfactorily in a number of respects. These three authorities have now jointly followed up that report, and it is once again concluded that the mobile market is basically still characterised by the same oligopoly-like structure as previously and that there are inadequacies in competition within the mobile telecom sector. Indeed, various service providers have started to offer telecommunications services in the Swedish mobile market, but the scope of this is to date rather limited and their impact on competition has so far been comparatively small.

Upon a price comparison for various kinds of mobile telecommunications services within the Nordic Countries, the Swedish end user prices appear to be high, and this is particularly pronounced for SMS messages. This suggests that there is still scope for increased price competition in the mobile telecommunications market. At the same time it can be observed that the measures that have been implemented during the past period have resulted in improvements for the consumer, for example those measures that were conducted in order to reduce interconnection charges and to some extent release the market from different variants of pot subscriptions (i.e. subscriptions with inclusive minutes that are eligible to be carried forward) that were not favourable for the customers. However, the impact of certain measures will only be seen in the market over the next few years. Reference can be made here to the recently allocated licences for UMTS – the third generation mobile telephony system – but also to mobile number portability that entered into force in September this year.

As the mobile telecommunications market is not yet characterised by properly functioning competition, the three authorities will continue collaboration in order to jointly monitor developments in the market and, if necessary, propose measures to further enhance competition for the benefit of the consumer.

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2. **The market for mobile telecommunications services**

2.1 **Operators and service providers**

There are at present three mobile operators with their own mobile networks in Sweden: Telia, Tele2 and Europolitan. Tele8 Kontakt AB (subsequently owned by Telenordia AB) previously held a fourth licence for the provision of mobile telecommunications services based on GSM technology in the frequency band 1800 MHz. However, PTS revoked this licence at the turn of the year 1999/2000 as no activity had been commenced by the company. In addition to this, Tele2 AB had ceased to offer mobile telecommunications services in its analogue network (NMT 900), whereupon PTS, at the request of Tele2, also revoked this licence. Similarly, Telia has since 2 January 2001 stopped offering services in its NMT 900 network in conjunction with the radio licence running out. However, Telia will continue to operate its analogue NMT 450 network. PTS will in the future allocate further GSM licences in the frequency band 900 MHz.

In December 2000, PTS decided on four new licences for the provision of network capacity for mobile telecommunications services based on UMTS technology. The licences were allocated to Europolitan, Hi3G, Orange and Tele2. PTS’s decision was appealed against to the Stockholm County Administrative Court by Telia, Reach Out Mobile and Telenordia. However, the County Administrative Court, on 27 June 2001, decided to confirm the decision of the Post and Telecom Agency of 16 December 2000 relating to UMTS licences. According to the County Administrative Court, there was no cause to amend the decision of PTS. This decision was not appealed against and entered into final legal force on 31 July 2001.

In addition to the three mobile operators, there are service providers for mobile telecommunications services, such as Sense Communications AB, which commenced its operations in the course of last year, and Song Networks (formerly Tele1 Europe), which already started in 1999. Furthermore, the undertakings Dial n’Smile, Glocalnet, Djuice, LunarMobile, Tango (Optimal Telecom) and HemEl began offering their services under their own trademarks during the current year. ICA and Mobyson had previously announced that they would commence offering telephony, but have subsequently stated that their efforts have been discontinued. In addition to these undertakings, there are two that do not offer mobile telephony, but offer instead telematics: Wireless Maingate and WirelessCar.

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1 Information in this chapter is taken from the report The Swedish Telecommunications Market 2000 (May 2001, PTS) – also available in English.
2 Tele2 uses both Tele2 and Comviq as a product name.
3 See section Increase in number of licences for GSM activities.
4 Here used to mean both service providers and Mobile Virtual Network Operator (MVNO).
5 Zlato Communications AS is a subsidiary of Telenor Mobile Communications.
6 Telematics means mobile communication between equipment, something that has particular use within, among other things, areas such transport/logistics and alarm/security.
7 A further undertaking, Doubleway, previously offered telematics but has subsequently been put into bankruptcy.
### 2.2 Size and development of the market

#### 2.2.1 Subscriptions

During 2000, the number of mobile subscriptions continued to increase greatly, from 5,126,000 to 6,338,000 which corresponds to 1,212,000 more subscriptions. Computed as the number of subscriptions, growth has never been greater. As per cent, this corresponds to an annual growth of just under 24 per cent, which is marginally less than in the previous year when it lay at almost 25 per cent.

GSM is still the clearly dominant form for mobile telephony in Sweden. The number of NMT subscriptions, which only Telia offers and which has a steadily decreasing share of the market, was only 181,000 at the end of 2000. This corresponds to 3 per cent of all subscriptions in aggregate. Of these, 27,000 were NMT 900 and the remainder were NMT 450. At the end of 1999 the share of NMT subscriptions was almost 6 per cent, which then corresponded to 290,000 subscriptions.

The number of private subscriptions was at the end of the year 4,610,000 or 73 per cent of all subscriptions. Almost 60 per cent of these private subscriptions comprised pre-paid cards. The number of business subscriptions was at the corresponding time 1,728,000.

Of all GSM customers, pre-paid card customers comprise approximately 44 per cent, which is an increase of 5 percentage units from a level of just under 39 per cent at the end of 1999. At the end of 1998, the share was 25 per cent of the GSM customers. Of all the new GSM customers during the year, pre-paid card customers comprised just over a half.

Telia is Sweden’s largest mobile operator with a market share of 51 per cent of all Swedish subscriptions. Telia consequently has the same market share that it had at the end of 1999. If one only considers the GSM market, Telia has increased its market share somewhat. Tele2 is the next largest mobile operator with 33 per cent of the subscriptions, which involves a marginal increase of 1 percentage unit.
Europolitan has retained its market share of 16 per cent also for 2001. The new service providers for mobile telecommunications services are still small, and have an aggregate market share that hardly exceeds a few per mil of the total number of subscriptions.

2.2.2 Turnover

The turnover for mobile telecommunications services\(^8\) has increased from 12.7 billion kronor in 1999 to 14.4 billion kronor in 2000, which is an increase of almost 14 per cent. NMT only comprises a little more than 2 per cent of this turnover. 45 per cent of the total revenue is derived from private customers and the remainder from business customers. Although 44 per cent of all customers use pre-paid cards, revenues from these are less than 11 per cent of the total turnover for mobile telecommunications services.

![Diagram 2 – Market shares based on total turnover for mobile telecommunications services 1994-2000](image)

Telia had at the end of 2000 a market share for mobile telecommunications services of just under 53 per cent, and has thereby lost market shares to its competitors Tele2 and Europolitan. Tele2 had a market share of almost 23 per cent and Europolitan just under 25 per cent. Europolitan has thereby retained its position as number two in the market, viewed from the turnover perspective, even if the margins with Tele2 are reducing somewhat.

2.2.3 Average revenue per GSM subscription

The average revenue per GSM subscription (including pre-paid cards)\(^9\) has decreased during recent years. However, there is also here some uncertainty insofar as material is not available to consider the historic development broken down into private and business subscriptions, which is necessary in order to securely conclude declining average revenues. The development towards increased use of pre-paid cards

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\(^8\) Based on revenues (excluding value added tax) from end users, i.e. relates to subscription charges and traffic revenues for both subscriptions and active pre-paid cards, and also revenues from mobile value-added services. Interconnection revenues are excluded.

\(^9\) Corresponds to the English term ARPU (average return per user).
constitutes a further factor that has probably resulted in the reduction of the average revenues. In addition to this, the arrival of new customer groups, e.g. children\textsuperscript{10}, may be a cause. During 1998, the average revenue per GSM subscription (including pre-paid cards), amounted to approximately 2,950 kronor per annum, during 1999 it was 2,740 kronor and during 2000 it was 2,510 kronor\textsuperscript{11}.

There is a pronounced difference in average revenue between a normal subscription and a pre-paid card. For a normal subscription, the revenue during 2000 amounted to 4,030 kronor per subscriber and year, while the corresponding level for pre-paid cards was 640 kronor.

### 2.2.4 SMS

The use of SMS messages\textsuperscript{12} has undoubtedly taken off during 2000. As an effect of this development the economic importance of SMS services has been greatly enhanced for the mobile operators during the year. The turnover for SMS is rather substantial and comprised, with its approximately 502 million kronor, 4.4 per cent of the total turnover for mobile telecommunications services during the entire year 2000. For the first half-year 2000, SMS comprised just under 4.2 per cent of the total turnover for mobile telecommunications services, which means that SMS has strengthened its position somewhat as a source of revenue for the mobile operators.

There was a marked increase in the number of SMS messages sent during 2000, from 141 million in 1999 to 494 million in 2000, which corresponds to an increase of 250 per cent. Most things suggest that the growth in the number of SMS sent will also be substantial during 2001.

\textsuperscript{10} A legal precondition is that the mobile subscription is signed by a guardian or other person aged over 18.

\textsuperscript{11} The average revenue per subscriber is computed as the annual total GSM revenues for mobile telecommunications services divided by the average number of GSM customers (subscriptions and pre-paid cards) during the year.

\textsuperscript{12} Short Message Services, i.e. short text messages that are transmitted, among other things, between mobile telephones.
3. **The mobile market and competition legislation**

It is a function of the Competition Authority to counteract harmful restrictions on competition in an active manner and also propose amendments to rules in order to avoid barriers to efficient competition in private and public operations. Another important task is to work to promote general acceptance by society of an approach orientated towards competition.

The Competition Act is based on the EC’s competition rules and contains a prohibition against anti-competitive cooperation and abuse of dominant position. The Competition Act is of importance for how undertakings choose to act in the market. An undertaking that consciously or carelessly breaches any of the prohibitions contained in the Competition Act may be liable to pay a competition impairment penalty, i.e. a kind of administrative fine. The competition impairment penalty may amount to at most 10 per cent of the undertaking’s total annual turnover. An amendment has been made in the Competition Act to increase the prospects of discovering and eliminating restrictions on competition (anti-competitive conduct). The amendment means that undertakings that facilitate the investigation work of their own violation may be granted a reduction of the competition impairment penalty.

The Competition Authority is currently investigating whether the network collaboration between Telia and Tele2, and also HI3G and Europolitan respectively is compatible with the provisions of the Competition Act. As regards their respective collaboration, the undertakings have applied for negative clearance notification, alternatively exemption. A negative clearance notification comprises a declaration on the part of the Authority that no prohibition in the Competition Act has been contravened and that the Authority will therefore not intervene. An exemption can be granted for cooperation involving a restraint on competition (anti-competitive cooperation) if the positive effects of the cooperation exceed the negative effects.

The Competition Authority has also in reports and communications to the Swedish Government submitted proposals for measures aimed at promoting competition within Swedish business and industry. Furthermore, specific impediments to competition have been identified within the telecom sector, which are described in more detail below.

In the beginning of the year 2000, the Competition Authority published the report “Competition in Sweden during the 1990s – problems and proposals”. It has been analysed in the report, which was prepared on the assignment of the Government, how competition has developed in the Swedish market during the 1990s. Furthermore, a large number of proposals are made aimed at improving competition within various areas. Several proposals are orientated towards a general strengthening of the competition policy and to create increased opportunities to intervene against restrictions on competition that threaten the consumer interest. The report has formed the basis of the Government’s Competition Policy Bill (Government Bill 1999/2000:140). The Bill was dealt with by the Standing Committee on Industry and Trade during the autumn (2000/01:Standing Committee on Industry and Trade Report NU04) and in November 2000 the Riksdag (Swedish Parliament) decided to approve the proposal of the Government for the future orientation of the competition policy (Government Report 2000:16).
The report has also contributed to the Government appointing a Commission (Directive 2000:40), which was given the assignment of submitting proposals on how to combat cartels more efficiently. The basis for the work is the Authority’s proposal for reduction of the competition impairment penalty for undertakings that reveal cartels, enhanced secrecy protection and increased opportunities for exchange of information with competition authorities in other countries, criminalisation of the prohibition rules in the Competition Act and also rules concerning breaking up of corporate concentrations. The work of the Commission shall be completed not later than 31 October this year.

It is particularly important in a small economy, such as the Swedish, where the majority of sectors are still characterised by limited competition and similarly high concentration, to efficiently combat cartels and other restrictions on competition that seriously impair the consumer interest. It can, for example, be concluded that as regards several sectors the fact is that the four largest undertakings represent at least 80 per cent of the total domestic turnover. This also applies to the mobile telecommunications market, which still, despite the number of service providers having increased, is characterised by an oligopoly-like structure where mutual dependence prevails between the undertakings. For example, the Competition Authority has in different contexts pointed out that the mobile operators have limited incentives to maintain low interconnection charges\(^{13}\), which can result in the outcome in the market being worse than that desirable from the socio-economic perspective. A mobile operator that reduces its prices to the end users for outgoing calls with the aim of obtaining greater profits is in fact adversely affected in the form of increased interconnection charges when the call volume increases. One thereby has less interest in reducing the price, particularly when the interconnection charge comprises a considerable proportion of the end user price. Those decisions that PTS made pursuant to the Telecommunications Act during 2000 concerning reduced payment for transferring calls in Telia’s mobile network have enhanced the preconditions for properly functioning competition. This is explained in more detail in the section “Interconnection between operators”.

In the above-mentioned report to the Government, the Authority emphasised that it is also a precondition for properly functioning competition that the consumer is well informed and can make rational choices. As a result of the range of different services increasing in the telecommunications market, demand is also growing for the consumer to inform himself about the operators’ various terms. In connection with, for example, price comparisons, particularly between different mobile telecommunications subscriptions, there are many factors that the customer must take into account. This gathering of information can be made easier if the information concerning subscription terms, including charges for various services that are advertised by the operators, are readily available and clear. After the presentation of the previous report, PTS has commenced collaboration with a company that, via the Internet, reports upon what it costs to call from the networks of various mobile operators, which is described in the section “End user prices”.

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\(^{13}\) The meaning of interconnection is amplified upon in the section Interconnection between operators.
4. From oligopoly to diversity?

In the preceding report\textsuperscript{14}, it was concluded that the mobile telecommunications market was characterised by an oligopoly-like structure where mutual dependence prevailed between the three operating undertakings that owned their own networks and that there was no great incentive to price competition between these undertakings. It was considered in the report, for example, that several factors – for example accessibility to frequency space and increased competition – suggested that it should be possible to issue at least one further licence for GSM activity\textsuperscript{15}, something for which there was also support in the Telecommunications Act. It was also pointed out that there was a need to introduce certain competition promotion measures such as national roaming and an obligation to provide mobile network capacity. At the time that the report was issued there was a proposal by PTS for the introduction into the Telecommunications Act of an obligation to provide mobile network capacity. PTS also worked, during the autumn of 1999, with a proposal for the introduction of national roaming.

4.1 National roaming

Roaming is a service that provides the subscriber with the opportunity to use another operator’s network for mobile telecommunications services in areas where the subscriber’s own operator does not have coverage. National roaming requires a contract between two operators that both hold licences for the provision of mobile network capacity or mobile telecommunications services in accordance with Section 7 of the Telecommunications Act. The subscriber thereby does not need to conclude an individual contract with the operator where the roaming takes place.

In Sweden, there is at present no mobile operator that utilises national roaming. An introduction of national roaming was considered to be necessary as of the allocation of UMTS licences. To establish oneself as a new operator in the already well-developed Swedish mobile telecommunications market, without simultaneously obtaining the opportunity to utilise the pre-existing infrastructure for mobile services, would necessarily involve large difficulties and substantial costs. If an operator does not have the opportunity of providing good coverage during the development phase, it may be difficult to attract customers. In other words, it is important that a new network operator – irrespective of whether it is in the GSM or UMTS market – can by national roaming rapidly establish itself and overcome the competition disadvantages involved in not having a fully-developed network from the start.

At the end of December 1999, PTS proposed, as a result of the above, that the Telecommunications Act should be amended in such a way that an obligation to enter into contracts for national roaming was introduced. Section 23 b of the Telecommunications Act\textsuperscript{16} now prescribes that a party owning a telecommunications network for mobile telecommunications services and which has a licence to provide mobile telecommunications services or network capacity shall satisfy a request of

\textsuperscript{14} The Swedish mobile telecommunications market from a consumer and competition perspective; 1999; PTS, KOV and KKV; p. 28.

\textsuperscript{15} At the end of 1999, four undertakings had licences for GSM; currently there are three.

\textsuperscript{16} Entered into force 1 July 2000.
another licence holder to allow, upon fair market terms, the subscribers of the former to transmit and receive telecommunications messages via this network.

Views on how national roaming should be developed vary. First, national roaming can be used as a temporary measure in order for new operators to gain the opportunity of establishing themselves in the market; second national roaming can contribute to no further or more extensive mobile networks being built than are justified from the socio-economic perspective. In the latter case it is necessary that the scope and time of the right to national roaming is not limited.

At the same time as the introduction of national roaming, a rule was introduced into the Telecommunications Act whereby the right to roaming ceases after the licence holder that requested roaming has held its licence to provide mobile telecommunications services or network capacity for at most seven years. This rule influences primarily those operators that:

1. obtained a UMTS licence in Sweden
2. do not conduct GMS activities in Sweden
3. did not at the same time as when they applied for a UMTS licence also apply for a GMS licence.

When the legal right for these UMTS operators to request roaming from the GSM operators ceases, a possible need will arise to compensate this with certain network capacity, for example along the Swedish-European trunk roads. If this is compensated by the development of own UMTS networks, this will probably require substantial investments for the UMTS operator. The disadvantage with such a development may be that the UMTS operators that do not have their own GSM networks obtain a less favourable position in the market in relation to the UMTS operators that already have GSM networks in these areas. The authorities will in the future need to be vigilant to ensure that such a development does not result in higher prices for mobile telecommunications services than what would otherwise have been the case.

In order to further provide the new operator with scope to develop its networks and establish itself in the market, Section 23 b of the Telecommunications Act also contains a rule that the network operator should have held its licence for more than five years before another network operator can request a right to roaming in its network.

4.2 **Obligation to provide network capacity**

The oligopoly-like structure that characterises the Swedish mobile market – irrespective of whether one refers to the provision of network capacity or mobile telecommunications services – continues to comprise a manifest barrier to good development of competition in the Swedish market for mobile telecommunications services. The basic cause for the growth of this oligopoly-like structure is found in radio frequencies for mobile telephony comprising a limited resource and there is therefore only space for a few network operators. Furthermore, substantial costs
are involved in erecting mobile telecommunications networks. Large entry costs limit opportunities for establishment, which means that the threat of potential competition from undertakings that could establish themselves in the market becomes less effective – at least as long as this requires the development of own networks.

The fact that network operators may also be the parties that exclusively provide the services to the customers has not been questioned previously. There is logic in the reasoning that the scope for the number of mobile operators with their own networks is limited, but not in extending this to mean that they alone should be allowed to provide the services. Instead, there are opportunities to increase competition within the provision itself of mobile telecommunications services by network operators entering into contracts for leasing network capacity to undertakings that do not have their own networks. By in this way decreasing vertical integration, i.e. that the same undertakings are active and control several phases in the chain of product refinement, access can be afforded to the market for a diversity of service providers’ business concepts, which should lead to a wider range of services. Such development both promotes competition and increases the freedom of choice for the consumer. If the existing network capacity can be used by more undertakings, the preconditions exist for a more efficient utilisation of existing investments. Collaboration between network operators and service providers may very well prove to be a commercially justified activity for the benefit of all parties.

The issue of the provision of network capacity for mobile telecommunications services was observed by a request from the telecom operator Sense Communications AS (Sense) to be allowed to conduct interconnection with Telia in accordance with a form that requires access to Telia’s network in a way that was not customary in Sweden. In February 1999\(^{17}\), PTS gave its decision, which was founded on the provisions in the Telecommunications Act not imposing an obligation on Telia to satisfy such a request. However, on 2 March 1999 PTS already submitted a proposal to the Government for amendments to the Telecommunications Act. The final amendments to the Telecommunications Act\(^{18}\) entered into force on 1 May 2000, the effect of which is that a party owing a telecommunications network for mobile telecommunications services and which holds a licence for the provision of mobile telecommunications services or network capacity should satisfy a request to grant, upon fair market terms, network capacity in the network for the provision of mobile telecommunications services within a public telecommunications network.

Interest in entering into contracts for network capacity with service providers has increased among the network-owning operators (see section Operators and service providers). However, it is too soon to assess whether the origin of the contracts that are now being entered into between mobile network operators and service providers are necessarily directly linked to the demands imposed under the Telecommunications Act. The obligation to provide network capacity, as it is currently formulated in the Act, actually has certain limitations: the obligation

\(^{17}\) PTS reference number 98-11267.

\(^{18}\) Section 23 a of the Telecommunications Act.
exists only to the extent that there is capacity available in the network. In parallel
with the obligation laid down by the Telecommunications Act, the network operators
course have an opportunity to conclude other contracts for the grant of network
capacity, for example contracts in which network operators undertake to develop
network capacity in their mobile networks to the extent that there is a need on the
part of the service providers. It may thereby not be an issue of so-called ‘available
capacity’ in the network in the way that is described in the Telecommunications
Act. Experience to date shows that all contracts that have been concluded between
the network operators and service providers are of the kind whereby the network
operators undertake to develop network capacity according to the needs that exist.

The operations that are conducted by the service providers that concluded
contracts with network operators have to date rather limited scope and their
impact on the market is so far marginal. There are signs that suggest that service
providers have such a weak position in relation to the network-owner operators
that this in a serious way impedes their opportunities to efficiently enter into
competition with the established operators. A more thorough follow-up of what
effects the obligation for the grant of network capacity has caused in the Swedish
market will be implemented by PTS during the autumn.

The powers of PTS to influence mobile operators, as regards their obligation to
provide network capacity, will probably increase in the future. In line with other
types of disputes in the telecommunications market, PTS may upon request also
mediate in disputes that relate to the provision of network capacity for mobile
telecommunications services or national roaming (Sections 23 a and 23 b). However,
the authority may not make, in these type of matters, a decision concerning what
should apply between the parties in the event that mediation does not result in the
parties reaching agreement. In other disputes (for example, interconnection) PTS
has a mandate to make such decisions. However, according to a proposal for an
investigation\(^1\), PTS shall be afforded an opportunity to make decisions in matters
relating to network capacity and roaming. An amendment to these powers would
provide better preconditions for efficient management also of these kinds
of disputes.

4.3 Allocation of UMTS licences

In December 2000, PTS decided on four new licences for the provision of network
capacity for mobile telecommunications services based on UMTS technology. The
licences were allocated to Europolitan, Hi3G, Orange and Tele2. The decision of
PTS was appealed against to the Stockholm County Administrative Court by Telia,
Reach Out Mobile and Telenordia. However, the County Administrative Court
decided on 27 June 2001 to confirm the decision of the Post and Telecom Agency
concerning UMTS licences that was made on 16 December 2000. According to the
County Administrative Court, there was no cause to amend PTS’s decision. The
judgment of the County Administrative Court has entered into final legal force\(^2\).


\(^2\) The possibility of appealing against the judgment of the County Administrative Court expired on 30 July 2001.
In PTS’s Guidelines in preparation for the UMTS applications, a rule was included that the licence holders when developing radio infrastructure should ensure that at least 30 per cent of the promised population coverage takes place through own radio infrastructure. During the spring of 2000, Europolitan and HI3G have given notice that they are forming a joint company to develop a UMTS network to the extent that this is allowed. Orange may also later be included. Telia, which was not allocated a licence, and Tele2 have also commenced collaboration relating to the development of a UMTS network by a joint company.

The Competition Authority is currently investigating whether the collaboration of various operators regarding the erection and operation of UMTS networks is compatible with the provisions of the Competition Act.

4.4 Extension of number of licences for GSM activities

In connection with the invitation procedure for the third generation mobile systems (UMTS), new operators that had not previously held licences for GSM activities were invited by PTS to apply for such licences. A precondition for the grant of a GSM licence was that the operator had been allocated a UMTS licence. However, of those operators that obtained UMTS licences and which thereby satisfied the precondition to apply for a GSM licence, none submitted an application. It therefore remains for PTS to, as soon as possible, in accordance with demand facilitate that the remaining frequency space in 900 MHz and 1800 MHz bands\(^2\) is put into use for mobile telecommunications services in accordance with the GSM standard, as anticipated in the Post and Telecom Agency’s General Advice on Frequency Allocation\(^3\). The frequency space shall, if the preconditions are otherwise fulfilled, be allocated in accordance with a procedure with an open invitation to apply in accordance with Section 14 of the Telecommunications Act.

As it is a function of PTS to ensure that vacant frequency spectrum is put into use, PTS has during the early part of 2001 approached the actors in the market with an enquiry concerning their interest in order to gain an overview regarding the interest for frequency spectrum for GSM activities. This enquiry regarding interest is part of the information base PTS has in its work to formulate various alternative solutions for the efficient use of the, as yet, unallocated frequency spectrum. The alternatives for achieving the goals may be to issue licences to one or two new operators, or increase frequency spectrum for existing operators, or to combine these alternatives in a suitable manner.

An essential criteria in the selection of the model to be used by PTS for allocation of frequencies is that it should contribute to increased competition in the Swedish market for mobile telecommunications services. In other words, to limit the oligopoly-like structure that is currently considered to prevail in Sweden.

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21 It is also possible to use frequency space in the 1800 MHz band for mobile telecommunications services in accordance with the UMTS standard.

5. Interconnection between operators

In the preceding report, it was explained that Telia was reported by PTS in 1998 to the EU Commission as an undertaking with significant power in the Swedish market for interconnection. This entailed, among other things, a demand under the Telecommunications Act that Telia’s interconnection charges should be based on costs. It was concluded that the interconnection charges to mobile networks had great significance for the manner in which the mobile market functioned. It was also determined that Telia’s interconnection charges were not based on costs and that PTS had decided that they should be reduced. The reductions of the interconnection charges for calls to Telia’s mobile networks were considered to have positive effects for the end users: both Telia and Tele2 reduced end user prices a little for calls from fixed networks to mobile networks.

It was also observed in the previous report that direction of telecommunications traffic via abroad and back, so-called ‘hubbing’, had attained substantial volumes. A probable scenario, which was presented in the report, was that a differentiated pricing for international incoming calls would be introduced and that hubbing would thereby reduce significantly. However, a large number of international interconnection contracts would need to be renegotiated.

5.1 Interconnection charges

When a subscriber with one operator calls a subscriber who is connected to another operator, this necessitates one of the operators trafficking the other operator’s telecommunications network in order for the call to be connected. This telecommunications traffic, when telecom operators traffic each other’s networks, is called interconnection. All telecom operators that have an obligation to report in the Swedish telecommunications market are under an obligation to conduct interconnection with each other. The reason for this is to ensure that all subscribers are able to reach each other irrespective of which operator’s network the respective subscriber is connected to.

Interconnection to mobile telecommunications networks comes either from another mobile network or from a fixed network. The mobile operators impose an interconnection charge on interconnecting operators for the service of receiving and passing on a call to a subscriber in their own network. Interconnection charges are of great importance for the way in which the market functions. These charges comprise an important element of the end user price for calling to a mobile subscriber.

Telia has been reported to the EU Commission as an operator with significant power in the Swedish market for interconnection. Through this there is a requirement upon Telia Mobile to maintain cost-orientated interconnection charges. PTS initiated a review of Telia’s interconnection charges in the Spring of 1999. The first decision was made in May 1999 and involved a reduction of approximately 20 per cent, from 2.75 kronor per minute daytime and 1.60 kronor per minute at other times, to an average price of 1.89 kronor per minute. In conjunction with the reduction of interconnection charges, all operators reduced end user prices by about 20 per cent. The reduction of Telia Mobile’s interconnection charge thus benefited the end users to a very large extent.

Although the requirement for reduced interconnection charges was only orientated towards Telia, both Tele2 and Europolitan reduced their interconnection charges, even though following some delay. The authorities then made the
assessment that it was for market reasons difficult for Telia’s competitors to maintain price levels that differed significantly from the market leader.

In the former joint authority report it was observed that much still suggested that Telia Mobile’s interconnection charges are too high to be considered to be based on costs. PTS is therefore continuing the review of interconnection charges. This preliminarily review of Telia Mobile’s interconnection charges resulted in PTS, in March 2000, deciding that Telia’s interconnection charges should be reduced by a further 40 per cent (to 1.18 kronor per minute). Telia appealed against this decision but at the same time reduced on its own initiative the price by approximately 20 per cent (to 1.53 kronor per minute). PTS maintained its demand for a reduction to an average price of 1.18 kronor per minute. The County Administrative Court in Stockholm has on 28 February 2001 decided that Telia should reduce the interconnection charge to the level that PTS demanded. The new price of 1.18 kronor per minute started to apply as of and including 28 February 2001.

Telia Mobile has an obligation to prove that the interconnection charge is cost-orientated. PTS therefore requests annually a calculation base from the operator. This information base is then reviewed by the Authority in order to determine whether the prevailing charges correspond with the requirement for cost orientation. It also appears natural that a cost-orientated interconnection charge has a declining development in this GSM network, which is characterised by reducing investment needs and rapidly increasing traffic volumes.

Based on the new interconnection calculations and also the guidance that was given by the judgment of the County Administrative Court (28 February 2001) regarding how a cost-orientated interconnection charge should be computed, PTS concluded that the interconnection charge should be reduced further. PTS therefore ordered Telia to reduce the price to 98 öre as of 1 June this year. This decision has been appealed against by Telia and, pending the processing of the matter by the County Administrative Court, the decision has been suspended pending judgment. Telia is thus still entitled to charge 1.18 kronor per minute from other telecom operators to terminate calls in its mobile network.

The authorities consider that the situation that has now arisen in the mobile interconnection market is not desirable. To date, it has been characterised by recurrent interventions by the authorities and, following appeals and long legal proceedings calling for the use of extensive resources, price levels have had to be determined judicially. This creates uncertainty and unpredictability that does not benefit any actor in the market. The reason for the development being such is that PTS and Telia have different views on how the cost-orientated interconnection charge should be computed and it is this lack of concord that has resulted in the recurrent legal disputes in the sector.

PTS’s ambition is to create the preconditions for a dialogue with the actors in the market, aimed at promoting the development of common views on matters concerning how this interconnection charge should be computed. As a step in this work, the authority arranged in June of this year a seminar concerning calculation models for fixed and mobile interconnection where some fifteen operators participated. This seminar will be followed up by more activities in the same direction.
Europolitan and Tele2 have on this occasion not yet reacted to Telia Mobile’s reduced interconnection charges by reducing their own charges. The operators now apply different charges levels. Europolitan has the highest interconnection charges, thereafter follows Tele2 and Telia Mobile has the lowest interconnection charges.

Telia has, in conjunction with PTS’s order for the reduction of the interconnection charge to 98 öre per minute, declared that it will now renegotiate the interconnection contracts with other mobile operators. It appears obvious that Telia is not prepared to pay a substantially greater interconnection charge to other mobile operators than what it can obtain in payment. Europolitan and Tele2, which are not deemed to have significant market power in Sweden as defined by the Telecommunications Act, are entitled to base their interconnection charges on fair market terms.

PTS has in a decision determined that this charge may deviate by at most 10 per cent from Telia’s cost-orientated interconnection charge. This decision has been appealed against by Tele2.

The authorities consider it probable that the reductions of Telia’s interconnection charges, as a consequence of the cost-orientation requirement, will have the consequence that other mobile operators will also be compelled to reduce their charges, even if this may take place following some delay. If this is not the case, this will mean that further analysis is relevant to identify the need for a change in the general system of rules.

5.2 Hubbing

By directing telecommunications traffic via abroad and back, usually via Telia’s fixed network, to the Swedish mobile networks, certain operators have been able to utilise substantially lower international termination charges in the mobile networks. This opportunity, which is referred to as “hubbing”, “tromboning” or “studsning”, has for a number of years been used systematically and resulted in several “low-price alternatives”, as regards the kind of call ‘fixed to mobile’ offered in the market. This so called ‘hubbed traffic’ has now virtually ceased. This is primarily a result of Telia having renegotiated the majority of international contracts with other operators, which makes it significantly more expensive to hub traffic via abroad. The prices for incoming international traffic are nowadays differentiated, depending on whether the traffic shall go to a fixed network or a mobile network.

Fixed network operators that have previously offered their customers low prices for hubbed calls from fixed networks to mobile networks have therefore less opportunities to continue with this. Their margins are influenced negatively as the costs for these operators have been increased as a consequence of the opportunities for hubbing largely ceasing. This probably means that it will become more difficult to compete in the future with substantially lower end user prices for calls from fixed networks to mobile networks. However, there are examples of operators that have previously used hubbing increasing their end user prices for calls from fixed networks to mobile networks.
5.3 Effects on end user prices

The reduction of Telia’s interconnection charges in 1999 was rapidly followed by the corresponding reductions on the part of other mobile operators and subsequently also by price reductions in relation to end users for calls from fixed networks to mobile networks. The effects of the most recent reduction of the interconnection charge have not been equally clear at all. As described here, other mobile operators have not followed the reductions ordered for Telia as previously. The fixed network operators that reduced their end user prices for calls from fixed to mobile have reduced these prices for Telia Mobile and not to the same extent to the other mobile operators.

It is in the first instance competition that controls end user prices. The operators that have offered cheap hubbed traffic from fixed to mobile have previously had a positive impact on competition. A factor that may to some part influence efficient price competition for this sub-service is that the consumer does normally not choose mobile operator according to what it costs others to make incoming calls to the mobile telephone but according to what it costs to make outward calls. That is to say, when choosing mobile operator, regard is taken to one’s own expenses and not to the expenses of others.

As regards end user prices to major business customers, these have also in the future the opportunity to negotiate good prices for calls from fixed networks to mobile networks. It is today, as regards the majority of operators, less expensive to make calls from fixed networks to Telia Mobile’s networks than to other mobile operators’ networks, which may be assumed to be the result of Telia Mobile’s lower interconnection charge.

An interesting observation is that Telia Mobile now has the same interconnection charge for both peak and off-peak times. For interconnecting operators with large volumes of traffic in the daytime to Telia Mobile, the effect is rather that the cost for interconnection reduces. This may be reflected in lower end user prices for undertakings. For operators with larger volumes at off-peak times, costs increase for interconnection with Telia Mobile during off-peak times.

As regards the kind of call ‘mobile to fixed’, it can be observed that the price often differs very little compared with the kind of call ‘mobile to mobile’ although the interconnection charge for termination in a fixed network amounts to less than one-tenth of the interconnection charge for termination in, for example, Telia’s mobile network. This suggests that there should be a greater capacity for increased price competition in the market for calls from mobile networks to fixed networks. However, no such tendencies have yet been visible in the market.
6. Lock-in effects and adjustment costs

Both lock-in effects and adjustment costs were considered in the preceding report. Among other things, it was observed that all mobile operators offered so-called ‘pot subscriptions’ (i.e. subscriptions with inclusive minutes that are eligible to be carried forward) and that it was not uncommon for subscribers to have several thousand kronor accumulated in these pots. However, the subscriber lost this pot if the subscription was cancelled. In the report it was considered that pot subscriptions involved a manifest switching cost and a pronounced lock-in effect.

Lock-in effects were similarly observed as regards pre-paid cards. If a customer purchased a pre-paid card that included a subsidised telephone, the customer bound himself to, in some cases, being able to use the telephone only with the mobile operator in question (so-called ‘SIM-locking’). In order to ‘unlock’ the telephone, so that the customer could use pre-paid cards from alternative mobile operators, the mobile operator charged a rather high fee.

Mobile number portability was also a competition promotion measure that was included in the previous report and which was then investigated by PTS. Indirect connection via preselection and prefix for mobile telephony services were also given attention and it was stated then that PTS would investigate more detail forms for the introduction.

6.1 Pot subscriptions and long lock-in periods

In the previous report it was observed that pot subscriptions are a feature that can operate as a form of lock-in method. If the subscribers have collected relatively large call pots that are forfeited when the subscriber changes telecom operator, subscribers do not have a particularly strong incentive to change telecom operator. This results in the subscribers staying with their operator for a long period without deliberating on whether another operator could provide them with a better offer, which must be deemed to impede competition in the mobile telecommunications market.

Among others, Telia has offered so-called ‘pot subscriptions’ (Mobitel Pott and Mobitel Pott Bonus) to consumers, where the consumer paid the entry charge for the subscription, a fixed periodic charge in advance together with a call charge for calls made. The periodic charge formed a call pot that could be carried over to the following month if it was not used. In accordance with the conditions then applicable, this call pot was not repaid.

The consequences of this term – that the subscriber is not entitled to repayment of periodic charges – was noticed particularly when Telia decided to phase out the mobile telecommunications network NMT 900. A consequence of the discontinuance was that those who wanted to continue to use a mobile telephone were obliged to purchase a GSM telephone, as it is not possible to use NMT telephones in the GSM networks. Telia offered the customers who wanted to remain with Telia to transfer any call pot to a Telia GSM subscription and offered new GSM telephones at varying prices. If the subscriber did not want to continue to use a mobile telephone or change to another operator, the customer lost any accumulated call pot.

The Consumer Ombudsman (KO) submitted an application to the Market Court and claimed that Telia should be prohibited, subject to a default penalty, to use the term “The subscriber is not entitled to repayment of the Periodic charge” when offering mobile telephone subscriptions to consumers. KO considered that the pot subscriptions were marketed as subscriptions with an advance payment function, that the consumer understood the subscriptions in this way and that Telia applied the subscriptions as subscriptions with advance payment.
On 25 October 2000, the Market Court issued judgment in the case and concluded, among other things, that the periodic charge may contain several different elements, among other things payment for access to Telia’s services, but that the investigation in the case did not show that the periodic charge was understood by the consumers to be an advance payment for call charges. The understanding of consumers appears to be primarily based on the factor that the charge, to the extent that it is not consumed, may be carried over to a following charge period in order to be used to pay call charges. The Market Court considered that the periodic charge, to the extent that it may be used for payment of call charges or saved, is to be deemed an advance payment of such charges.

The Market Court also concluded that Telia, according to the terms, was entitled to give notice terminating the subscription contract without the subscriber giving cause for the termination and that Telia would then retain the paid, unused periodic charges. The term “The subscriber is not entitled to repayment of the Periodic charge” is not compatible with the EC Directive on unfair terms in consumer contracts (93/13/EEC). In item 1 d of the listed terms, an example is given of when a contract term is unreasonable; permitting the seller or supplier to retain sums paid by the consumer where the latter decides not to conclude or perform the contract, without providing for the consumer to receive compensation of an equivalent amount from the seller or supplier where the latter is the party cancelling the contract. The Market Court finally concluded that the term referred to is unreasonable according to the Consumer Contracts Act (1994:1512) and prohibited Telia from using the term in the future in connection with the offer of mobile telephone subscriptions to consumers.

The Market Court has thus, subject to a default penalty of 200,000 kronor, prohibited Telia AB, Telia Nära AB and Telia Mobile AB, when offering mobile telephone subscriptions to consumers for private use, to use the contract term “The subscriber is not entitled to repayment of the Periodic charge” or essentially the same term, which refers to paid, unused, periodic charges that may be used for payment of call charges.

The judgment has resulted in both Telia and Europolitan no longer applying the terms in question and the companies are working with the removal of these terms from their general terms of contract. Furthermore, the companies have undertaken to repay the remaining accumulated call pots to subscribers when the contracts terminate after the lock-in period has expired. However, Tele2 has not made any similar undertaking.

The Consumer Agency/KO has received several reports from consumers who have not been repaid their call pots from Tele2 when the contracts have terminated. In the general contract terms applied by Tele2, it is not stated at all what happens with the call pot when the subscription ends – neither when the subscriber nor when Tele2 cancels the contract. The issue of what is to happen with the remaining accumulated call pot at the cessation of a contract is thus not governed by written terms. However, according to unanimous information from the parties making the reports to the Consumer Agency/KO, it is indicated that Tele2 in practice actually does not repay call pots when subscriptions terminate. Nor are there, as far as has been established, any verbal contracts that provide Tele2 with a right to forfeit the advance payments. The Consumer Agency/KO have therefore been in contact with
Tele2 in order to investigate what grounds the company has for forfeiting the pots. Tele2 has stated that it is currently undertaking a review of its terms and that it has decided to repay call pots in certain circumstances when Tele2 terminates a subscription. If the consumer gives notice terminating the contract, the call pot is not repaid. KO has therefore submitted an application for a group action to the Public Complaints Board and requested that the Board should recommend Tele2 to repay the remaining accumulated pots to those subscribers whose subscriptions have been concluded after 25 October 2000.

Subscriptions where a consumer purchases a mobile telephone for one krona in return for agreeing to be tied to a particular operator for, for example, two years and pay a fixed charge per month, for which the customer completely or partially can make calls, have reduced following this judgment. Instead, the consumer pays a fixed monthly charge together with a pre-determined price per minute for the calls that the customer makes. This means that a lock-in method that can impede competition has reduced in scope. Furthermore, it becomes clearer what the consumer pays for with a fixed charge combined with a lower call price. However, the problem remains with long lock-in periods for various mobile subscriptions in the market. This lock-in method has not been eradicated following the judgment of the Market Court.

6.2 Pre-paid cards and SIM locking

The Consumer Agency has received several reports and telephone calls regarding Telia Mobile AB’s Special Terms for Mobitel Refill regarding the term “The subscription applies indefinitely.” However, if the pre-paid card is not refilled with call time during a consecutive period of 12 months or if the customer has not submitted the necessary information within the said period, the subscription ceases to apply with immediate effect without preceding termination by Telia. The call time that remains unused at the time of termination is lost and any supplementary services included cease. Charges that have been paid in advance are not repaid to the customer. The term thus means that the subscription ceases to apply and the call pot is lost for those consumers who do not refill their pre-paid cards every twelfth month.

After contacts between the Consumer Agency/KO and Telia, Telia has undertaken to reactivate the consumer’s card and reinstate the consumer’s remaining call pot for those consumers who were affected. Furthermore, Telia has given notice that it will investigate various alternatives to the obligation for the consumer to load his/her card every twelfth month. As a result of Telia’s undertaking, Telia’s pre-paid card customers no longer lose their subscriptions and their call pots if they for some reason forget to refill their pre-paid cards every twelfth month.

A further lock-in effect that was observed already in the preceding report, but which still remains, is that known as ‘SIM locking’. SIM locking means that a customer who is offered a subsidised mobile telephone in conjunction with the customer purchasing a pre-paid card, simultaneously enters into a contract with the mobile operator whereby the mobile telephone that is provided cannot be used for a subscription with any other operator for a certain time period, often 12 months, and that the telephone continues to be so-called ‘operator-locked’ even after this period. In order to unlock the mobile telephone, so that a new SIM card
can be used, the customer is forced to pay an unlocking fee\(^3\). Tele2 has been alone for a long period in using SIM locking, but in recent years Europolitan has also started to use this method.

6.3 Number portability for digital mobile telephony services

Number portability (NP) means that a subscriber is afforded an opportunity to retain his/her telephone number when he/she changes telecom operator. Mobile NP, which was introduced in Sweden on 1 September 2001, has primarily two aims.

1. To eliminate the inconvenience for a subscriber of changing a well-established telephone number, as such a change is often associated with significant expenses, particularly for businesses in the form of administration, information work and possibly also reduced revenues by loss of customers.

2. To achieve increased competition between mobile telecom operators and other service providers by reducing the adjustment costs for the customers. In other words, an introduction of mobile NP facilitates the exchange by a subscriber of operator and results in increased mobility, which in its turn paves the way for further development of competition in the telecommunications market.

Sweden introduced NP for fixed telephony services on 1 July 1999, but the reform has not yet had such a great impact on this market. This is partially the result of only a small fraction of all direct connections to fixed networks being owned by some other operator than Telia. Another contributory factor is found in the inadequacies existing in the current payment principles applied between telecom operators. This primarily relates to the management of additional traffic conveyance costs in the transferring (donor) telecom operator’s telecommunications network in connection with calls for the transfer of telephone numbers that under the current system of rules shall be paid for by the recipient operator. This means that all calls that (in the recipient operator’s networks) are made against ported numbers cost the recipient operator more than other calls. However, the recipient operator has little opportunity to compensate itself for this by imposing higher charges for these calls on the end user. A consequence of this is that the commercial incentives to take over telephone numbers from another operator were too small for the reform to have the desired impact in the market.

There has been a manifest need to implement changes in the Telecommunications Act to ensure that mobile NP, when this has entered into force on 1 September 2001, should have a material impact. An amendment of Section 42 of the Telecommunications Act entered into force on 1 July this year and amendments to the payment principles have thereby come into force before PTS’s regulations on the introduction of mobile NP started to apply.

In contrast with the introduction of NP for fixed telephony services, an introduction of mobile NP is expected to have a very manifest impact on the

\(^{33}\) An unlocking fee of 350 kronor has been noted.
market for mobile telecommunications services; the preconditions are in fact partially different. Today there are three mobile operators with rather equal radio access networks and each with a large number of directly connected customers.

A further aspect is also important to achieve a good result for mobile NP, namely accessibility to a reference database. A precondition for the efficient direction of traffic in connection with number portability is namely that there is access to reference data, i.e. information concerning telephone and mobile telephone numbers and also the time when these were transferred to a new recipient telecom operator and who the operator is. A number of large telecom operators have, within the framework of IT companies and under the supervision of PTS, worked with establishing such a central reference database. A company, SNPAC Swedish Number Portability Administrative Centre AB (SNPAC AB), has been formed with this aim. This company is owned in equal parts by Europolitan, Tele1 Europe, Tele2, Telia and Telenordia. The company shall provide reference data on competition-neutral terms and cost-based prices to all telecom operators. It is considered that this will create the preconditions for efficient traffic direction in the telecommunications networks and also the more rational management of the administrative porting process, which should have a positive effect on the number of portings and thereby the realisation of the aims of the reform. The Competition Authority has issued a negative clearance notification for the formation of SNPAC.

A consequence of the introduction of mobile number portability is that the current price information that exists in a mobile telephone number disappears. In practice, it has only been the fully initiated customers that have really understood what number series are held by the respective mobile operators and therefore been able to determine the price differences that exist for different kinds of calls. As regards price information, it is worthy of mention that the Danish telecom operators as of 1 July this year are liable to provide a call-up price information service concerning how much a call will cost. There are indeed no demands that calls to this kind of service should be offered to customers via a free-phone number but operators within the sector have considered that such a solution would be appropriate. According to a regulation\textsuperscript{24}, the service should either be free or based on costs.

\section{Indirect connection via preselection and prefix}

Indirect connection for mobile telephony services (including SMS messages) via preselection and prefix has not yet been introduced in Sweden and nor has any date been fixed for when this should be introduced. However, one possibility for the introduction of indirect connection is expressly referred to in the Telecommunications Act (TL). According to Section 40 of the Telecommunications Act, a licence holder that provides digital mobile telephony services shall offer its subscribers access to telecommunications services that are provided by someone other than the party with whom the licence holder conducts interconnection by a standing choice (so-called ‘preselection’). It should be possible to remove the preselection for individual telephone calls.

\footnote{Clause 4 of public proclamation number 1169 of 15 December 2000 on services of telecommunications networks and telecommunications services.}
There are various ways of introducing indirect connection. A preselection can either be introduced in only those cases when the subscriber makes a foreign call from his/her mobile telephone or the subscriber can direct all or parts of his/her traffic to another operator.

In connection with indirect connection via preselection or telecom operator prefix for foreign calls, the subscriber pays an ordinary tariff for that part of the mobile call that takes place within the borders of the country, in addition to which there is a foreign tariff that corresponds to the tariff that the chosen operator applies in connection with foreign calls in the fixed network. Preselection in this case only relates to the choice of operator for the international part of the outgoing traffic.

In the light of the current substantially lower telephony prices for international calls, it may appear that such a reform would be uninteresting, but at the same time PTS has been able to show that for international traffic to – in telephony contexts – less ordinary countries, the price differences can be exceptionally great. It may therefore, for certain groups of subscribers, be significant to obtain access to preselection of this kind. However, this variant of indirect connection does not contribute to increase competition between the Swedish mobile operators.

Indirect connection can, as already mentioned, also mean that the subscriber controls all or parts of his/her traffic to another operator than the access network operator in the same way as is now possible within fixed telephony. This can either be done call by call, by the use of telecom operator prefixes, or by a permanent preselection. The subscriber is invoiced for his/her mobile telephony traffic by his/her preselection operator and for subscription and any traffic by the access network operator. The operators have contracts for payment, etc. between themselves.

Introduction of indirect connection would possibly result in an increased price competition in the Swedish mobile telephony market. However, the importance of more comprehensive indirect connection for mobile telephony services is not as great as that for fixed network telephony where, in practice, there is only one access network. The intention with indirect connection is to create increased opportunities for mobility for mobile telephony customers, i.e. that it becomes easier for the customer to change between service suppliers of mobile telecommunications services. As we today see an increase in the use of pre-paid cards, some increase in competition by mobile service providers that have established themselves in the market and that pot subscriptions no longer have the same relevance, there are hopes that mobility will now increase. An introduction of indirect connection would then possibly result in further enhancement of competition, but it could also mean that such an introduction no longer has the same relevance.

The opportunities for a possible introduction of preselection of digital mobile telephony networks is currently being investigated by the Post and Telecom Agency and will be presented during the autumn of 2001. Among other things, the technical and financial consequences must be more clearly explained.

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25 Comparison of Telia’s prices with some other operators, September 2000, PTS.
7. End user prices

In the preceding report it was concluded that the mobile operators presented price and subscription information in various ways and that there were many different kinds of subscription. The result of this was that it could be difficult for customers to compare the offers made by the various operators. It was also concluded that the list prices for private subscribers had more or less remained unchanged since 1995. A price comparison was presented in the report, based on the usage patterns established by the OECD. It was concluded in the comparison that prices for private people were greater in Sweden than in the other Nordic Countries.

7.1 Price information to and marketing in relation to customers

It is a precondition for properly functioning competition that the consumer has sufficient information about the properties and prices of the products. In order to be able to compare call prices and different forms of subscription, the consumer must take into account a number of different aspects, for example whether the subscriber usually calls during low or high traffic tariff periods, whether there are volume discounts to take into account, what supplementary services one is interested in, whether it pays to purchase a subsidised telephone with lock-in period, etc.

It can be difficult to conduct a comparison of the various offers made by mobile telecom operators. Normally, one does not actually know in advance how much one will call for or what supplementary services one may need to use. The situation may, for example, be that there is a rather low price for a particular kind of mobile telephone, which is often offered for a limited period of time, which may be the reason for a person signing a subscription with the particular mobile telecom operator in question without taking into account in detail future consequences in the form of long lock-in periods or comparatively high call charges.

Following the judgment of the Market Court on 25 October 2000, both Telia and Europolitan have in principle stopped offering so-called ‘pot subscriptions’ to consumers, which has resulted in the range of forms of subscription changing character. Both Telia and Europolitan offer instead mobile telephone subscriptions where the consumer pays a fixed monthly charge and then a fixed price per minute for the telephone calls themselves. However, Tele2 has retained various kinds of pot subscriptions. It may still be questioned whether the consumer has sufficient information concerning prices and various forms of subscription in order to make a rational choice, which is a precondition for properly functioning competition.

As a step towards facilitating the possibility for the consumer to compare the price of various operators for telephony services and to create the various preconditions for efficient competition, in October 2000 PTS commenced collaboration with CintIndex AB (Cint). The intention is to present an information service, orientated towards the end user, via PTS’s website (www.pts.se). In practice, this operates so that the visitor is, via PTS’s website, linked to Cint’s information page. Cint is responsible for the material that is presented, while the service is paid for by PTS:

On Cint’s website, the consumer can find a schedule of the Swedish operators that provide services for private customers and that operate within mobile telephony, fixed telephony and the Internet. On the website the visitor has, first, the
opportunity of comparing prices of Swedish operators, secondly, of using the so-called ‘telecalculator’. The telecalculator is a tool for interactive price comparison, where the subscriber can describe his/her traffic pattern in order, on the basis of this, to be given information about what the price differences are between the various operators. The objective is that the information should make it easier for the consumer to obtain in a comprehensible manner guidance in identifying the operator that suits one’s own preferences best. It does not provide any recommendations concerning the choice of operator but only objective information.

Price information is also considered to be an important issue internationally, among other things within the Independent Regulators Group (IRG), a collaboration group in which PTS as representative for Sweden participates together with other European telecom regulatory authorities. A number of working groups have been formed within the IRG, which are working with a number of telecommunications issues. At present, various working groups within the IRG are looking at issues relating to price information and terms for, e.g. mobile roaming. Mobile roaming means that the subscriber uses the telephone in another mobile network than the one for which the subscription is concluded, something which Swedes come into contact with when travelling abroad.

One circumstance that not all users know about is that it is the subscribers who must pay not only for calls that are called from abroad but also for calls that are received abroad. The prices for calling and receiving calls abroad are comparatively high and greatly exceed the prices for making a national call. One working group within the IRG is preparing a contact with the EU Commission for a possible collaboration on matters concerning mobile roaming in particular. The Commission has expressed anxiety that prices for mobile roaming tend to increase at the same time as price competition between operators tends to deteriorate continuously. The Commission has also received complaints concerning the terms for mobile roaming and during the summer of 2001 took action against certain major telecom operators in Europe.

Another working group within IRG is orientating its work towards reviewing how the users in the various Member States gain access to price information about telephony and also how this information can be improved.

### 7.2 Transparency in price structures and forms of subscription

The differences in transparency between the price structures of fixed telecommunications services and mobile telecommunications services are manifest. Generally viewed, the price regulation for fixed telephony is also more substantial than for mobile telephony. Among other things, according to the Telecommunications Act, subscription charges and call tariffs for telephony services between fixed network termination points shall be based on costs for those operators that have significant power in the market (SMP status). To date, it is only Telia that has been assessed to have such status.

The mobile operators offer a multitude of forms of subscription for mobile telecommunications services. To begin with, the relationship varies between the...
fixed charge and the level of call tariffs for various kinds of subscription, where a high fixed monthly charge usually gives lower minute charges. The span of monthly charges, in those cases where monthly charges are debited, varies between 25 kronor and 369 kronor (including VAT). The mobile operators also offer volume discounts where those customers who call a lot enjoy lower prices.

In addition to this, there is also a subsidy of mobile telephones, which is often combined with longer lock-in periods\textsuperscript{27} and thereby ties customers to certain kinds of forms of subscription. The range of pot subscriptions and pre-paid cards\textsuperscript{28} available from the mobile operators is a further factor which makes it more difficult for consumers to compare prices for mobile telecommunications services between various operators. As regards pre-paid cards, the majority of all private customers pay between 5.50 kronor and 6 kronor per minute during peak time, i.e. daytime, Monday to Friday, and 0.40 kronor and 0.80 kronor per minute at other times if the customer calls within his/her own operator’s network. However, if the customer calls to someone who is connected to another mobile operator’s network, the price is often 2 kronor per minute. However, the mobile operators do not impose any fixed charges when a pre-paid card is used.

Besides the large flora of forms of subscription with varying call prices, the debiting interval applied by operators varies. Tele2 debits ordinary calls in 10-second intervals, while Europolitan and Telia debit in 1-second intervals. Tele2 thus debits each call with, on average, a five-second supplement.

Overall it can be concluded that it is anything other than simple to compare call prices and different forms of subscription, and therefore it is a challenging task to report on fair price comparisons. Viewed from a subscriber perspective, this inadequacy as regards good price information means that the customer is left to make a decision on the basis of information that is difficult to evaluate and thereby, ultimately, obtains a form of subscription that is not the best for the particular customer’s need for mobile telecommunications services.

7.3 Nordic/European price comparison

7.3.1 Mobile telephony prices

In order to compare mobile telephony prices in different countries, the OECD’s Residential Mobile Basket\textsuperscript{29} is used where an annual cost for a private mobile user is computed. The comparison shall be viewed as an indication of the annual charge for a customer in relation to the general price level in various countries. A corresponding study has also been used in the preceding report.

The Basket includes fixed costs\textsuperscript{30} and variable costs for a subscriber over a one-year period. Any subsidies of mobile telephones are not included. The annual costs exclude VAT and are adjusted with a purchasing-power parity index. The Basket is based on 200 national calls and two international calls per annum where

\textsuperscript{27} See section Lock-in effects and switching costs.

\textsuperscript{28} See section Lock-in effects and switching costs.

\textsuperscript{29} The OECD has determined the Basket’s parameters, the comparison (T-Basket) has been developed by Teligen Ltd (formerly Eurodata).

\textsuperscript{30} A three-year depreciation period is used for one-off costs.
each call lasts for three minutes. The calls are made mainly (approximately two-thirds) at low traffic tariffs, i.e. during off-peak times including Saturdays and public holidays. The kinds of calls that have been taken into account are calls from mobile to mobile, mobile to fixed and mobile to abroad. Calls from fixed networks to mobile networks are not included in the Basket comparison.

The operators that are represented in this study are either the incumbent national telecom boards or the major mobile operator in the respective country. On the part of Sweden, Telia’s subscriptions Mobitel Pott and Mobitel Volym are used for the comparison. It is not possible today to make a new subscription of either Pott or Volym, but they still remain for those who were previously subscribed for such contracts. As Telia does not now offer new customers any form of pot subscription, the comparison of Mobitel Pott with other subscriptions reported in the study becomes less relevant. However, the subscription Volym is more representative of those subscriptions that Telia offers today; in particular Mobitel Plus. However, the price plans differ between Mobitel Volym and Mobitel Plus.

It is indicated by the table that the differences in the annual expenditure in relation to general price levels for mobile users vary significantly between the European OECD countries. It is also indicated that the Nordic Countries comprise a group where the annual expenditure, in relation to general price levels, is lower compared with the majority of the other European OECD countries.

In the preceding report it was established on a corresponding comparison for a number of subscriptions in the Nordic Countries (Denmark, Finland, Norway and Sweden) that Telia Pott was the most expensive alternative, and Telia Volym the next most expensive. However, it may also be mentioned that several of the

![Diagram 4 – Price comparisons Europe – OECD Residential Mobile Basket, May 2001 (source: Teligen Ltd)](source: Teligen Ltd)
subscriptions have either stopped being offered by the mobile operators or are no longer included in Teligen's reporting. The OECD Basket also underwent a revision during 2000 and is therefore now defined differently to when it was used in the preceding report. The fact that an altered profile can therefore be observed results from both the redefinition of the Basket and actual changes in the price relations between the subscriptions.

The authorities consider that it is also of interest to compare the Nordic Countries separately, as the market preconditions and the history of mobile telephony are very much alike in these countries. Telia’s prices still appear to be comparatively high (see Diagram 5). Of the subscriptions compared in the Nordic Countries, Telia Volym is that which involves the highest annual expenditure for a private customer compared with the general price level in the country. Telia Pott is consequently not included in Diagram 5 because Telia ceased to offer new contracts for pot subscriptions in any form and none of the other Nordic Countries’ subscriptions included in Teligen’s study are pot subscriptions.

Diagram 5 – Price comparison Nordic Countries – OECD Residential Mobile Basket, May 2001 (source: Teligen Ltd)

Telia Pott is not included in the comparison because Telia ceased to offer new contracts for pot subscriptions in any form and none of the other Nordic Countries’ subscriptions included in Teligen’s study are pot subscriptions.
7.3.2 T-Basket – its limitations

Teligen’s OECD Basket makes use of parameters that are based on average user patterns in all the OECD Member Countries. The advantage of this is that one achieves a higher comparability between different countries. The limitation of the method is that the comparability is achieved at the price of the baskets not reflecting any individual customer. It is rather the case that we use baskets that are not representative of any individual customer or customer group. It would be advantageous to be able to use a series of baskets where each one had a characteristic feature related to various customer groups. Such a model would in a more modulated manner provide representative material. However, such material is not available for the preparation of this report.

The OECD Baskets do not take into account the price of mobile telephones, nor any subsidies that are given when the mobile customer contracts for a fixed-term subscription. This may be criticised as it can be argued that the subsidies influence the subscription prices and minute prices that the customer has to pay. However, there is reason to conduct a price comparison on the basis of only the fixed and variable costs that are billed to the subscriber, i.e. that subsidies are not included. The subscriber obtains, according to the authorities, a subsidised telephone in exchange for contracting for a fixed term.

If subsidies were to be included, it is unsure how the value of these would be computed. When making such a computation, regard should be taken to the impact of lock-in effects and switching costs a customer incurs in order to change subscription during the contract term and what value the lock-in period can be ascribed to the operator.
7.3.3 SMS prices

The price for sending an SMS reduced markedly in the beginning of 2000, from approximately 2.50 kronor to 1.50 kronor. This is connected to the service provider Sense, upon the launch of its mobile telephony operations, offering SMS at a price of 1.50 kronor. Other mobile operators fell in line and reduced their prices from approximately 2.50 kronor to approximately 1.50 kronor.

Upon a comparison of SMS prices in Sweden, Norway and Denmark (see Diagram 6), Sweden appears to be an expensive country for a private customer to send SMS in. The comparison in Diagram 6 is not comprehensive, but only takes into account SMS prices of the three major operators, Telia, Telenor and Tele Danmark, and also of one service provider per country. The service providers are selected on the basis of their having among the lowest prices for sending SMS in their country. As the material is not comprehensive, there may be undertakings that offer SMS at lower prices than those indicated here. It is also indicated by the Diagram that

31 According to information from the Ministry of Communications in Finland, SMS prices in Finland varied between 0.45 Swedish kronor and 1.53 Swedish kronor in March 2001. (Rate of exchange as of 28 August 2001 (Forex): from Finnish marks 1.5487.

32 For example, Europolitan offers through its subscription, Easy SMS. SMS prices that are dependent upon how many SMS the subscriber sends per month. The price reduces gradually and is at its lowest point after the subscriber has sent 30 SMS, when the price is 0.90 kronor. However, the subscriber has to pay 1.50 kronor per SMS when a new month starts.
The differences in prices between countries are significant: Telia’s price is almost 140 per cent higher than Tele Danmark’s price and a full 384 per cent higher than the Danish service provider. The price range between the established mobile operator and the service provider in the respective country also differs between countries. In Sweden, the range is small and the service provider offers a price that is only 17 per cent lower than Telia’s price. In Denmark, the service provider’s price is 50 per cent lower than the dominant mobile operator’s price and in Norway, 25 per cent lower. This suggests that price competition with SMS is poorer in Sweden than in Denmark and Norway.

SMS is considered by many to be the entrance gateway to mobile data. Through SMS, subscribers have already started to alter their behavioural pattern when using mobile telephones. Such a change in behaviour may be fundamental for the success of UMTS. It would be unfortunate to counteract an even stronger development in the use of SMS by high prices of SMS. In Sweden, every GSM subscriber sent on average 90 text messages during 2000, in Denmark the corresponding average was 244º and in Norway 430º, i.e. a subscriber in Norway sent on average almost five times as many SMS messages than a subscriber in Sweden. The prices for sending SMS in Sweden have in principle remained unchanged since the spring of 2000. These continued high prices suggest inadequacies in the way in which the market functions and that there is continued scope for increased price competition.

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33 Based on statistics from the National Telecom Agency in Denmark.

34 Based on statistics from the Norwegian Post and Telecommunications Authority.
8. **The future mobile market**

Possibilities to achieve a more diversified market situation for mobile telecommunications services are clearly linked to the technical development of mobile telephony. This applies irrespective of whether it involves achieving a more varied range of services or a diversity of service providers. Even if we can already now see tendencies to both changes in the user pattern for mobile telecommunications services and certain changes as regards the sector – such as new service providers entering the market – most things are rather similar; the mobile telephone has to date been considered primarily to be a tool for voice communication. It is true that it has been possible for sometime to use GSM for connecting to the Internet, but the bandwidth has then only attained a modest 9.6 kbps, which is considered to be insufficient. Together, the Swedish mobile operators have only 55,000 customers who link up to the Internet via GSM, something which must be compared with the 2.5 million Internet customers existing in total in Sweden. Nevertheless, both suppliers of telecommunications equipment and mobile operators are unanimous that there will, within a few years, be more people connecting to the Internet via mobile networks than via any other form of access, and that the flow of revenue for mobile telecommunications services will increasingly transfer to be derived from mobile data services. If this becomes reality, mobile telephony will face a conceptual change of great magnitude.

A first important step is the introduction of GPRS, a technology with which it is possible to upgrade the GSM networks so that the bandwidth is substantially greater: up to 115 kbps according to the telecommunications supplier Ericsson, though in practice often lower. Furthermore, this technology makes it possible for the subscriber to be continuously linked to the Internet. Improvements of the GSM networks will also be possible through the implementation of the technology EDGE, which is intended to provide bandwidths of up to 384 kbps or even higher. A further important step for mobile telecommunications services will be taken with the introduction of UMTS, or 3G (third generation mobile networks), which is the name the technology is usually known by. In Sweden, as mentioned above, four licences for UMTS have been granted in December 2000 and those mobile operators that received a licence shall in accordance with the terms of the PTS licence start to offer the first services in January 2002. The UMTS networks should be fully developed by 31 December 2003.

The mobile telecommunications market may be influenced in various ways by this rather rapid change of scene. One of the major advantages with mobile data

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36 General Packet Radio Service.
37 At the time of publication of the report only Europolitan had started to offer GPRS services in Sweden. The highest transfer speed Europolitan offers is 43.2 kbps.
38 Enhanced Data rates for Global Evolution.
39 Universal Mobile Telecommunications System.
services, viewed from a competition perspective, may be that they appear to be a driving force for the mobile operators to open their networks for other service providers and content suppliers. The cause for this is that the sector goes from supplying rather simple and homogenous services – namely voice telephony – to supplying a large and complex range of telecom, data and content services. The mobile operators would under such circumstances be driven to orientate themselves towards an increasingly narrow segment of the market with increasingly complex and diversified services. Such a development should increase the interest on the part of the operators to utilise the knowledge and ideas of other undertakings. The demands for profitability to which they are subject will require them in many cases to make major investments in the forthcoming years, among other things in the UMTS network, and impose great demands on success for the new services. Vertical integration may therefore be broken up more as it becomes increasingly financially advantageous for the network operators to enter into contracts with service providers.
9. Summary conclusions

The mobile telecommunications market appears to be an increasingly important part of the telecommunications market in Sweden and comprises just over one-third of the aggregate turnover in the market for fixed and mobile telecommunications services. During recent years, it has increased its share annually by 3 percentage units. The mobile telecommunications market is no longer a niche market, but a market that provides services of great importance for Swedish society. In such a situation it is not desirable that the mobile market is characterised by an oligopoly-like structure. It has been concluded in the report that the Swedish mobile market is still characterised by such a structure where mutual dependence prevails between the operators – in the same way as it did in 1999 when the predecessor to this report was published.

At the same time it can be concluded that processes have started – owing to both legal measures and technical developments – which are expected to lead to the number of actors increasing and the opening up of the vertical integration that is manifest in the mobile market, i.e. that the same undertakings are active and control several phases of the chain of refinement. In other words, there is a positive spirit in the development in the mobile market.

Several measures have been implemented during the period that has elapsed since the preceding report was published. Among other things, an obligation to provide network capacity has been introduced into the Telecommunications Act. It is too early to assess the extent to which this has influenced interest on the part of mobile operators to conclude contracts with service providers. A few service providers are now established in the market. During this period, the Post and Telecom Agency has also continued its review of the interconnection charges, which resulted in these reducing and a fall, at least initially, in end user prices for calls from fixed networks to mobile networks. As far as can be assessed, the preconditions exist to enable further reductions of these end user prices.

As regards prices for calls from mobile networks, it can be concluded that the mobile operators have great opportunities, via interconnection charges, to influence each other's costs. A mobile operator that reduces its prices to the end users for outgoing calls with the purpose of obtaining a larger profit is actually adversely affected by increased expenses for interconnection when call volumes increase. There is therefore less interest in reducing prices, particularly when interconnection charges comprise a substantial part of the end user price. However, the reduction in interconnection charges for transferring calls in Telia’s mobile network have improved the preconditions for a properly functioning competition.

The lock-in effects of pot subscriptions, which were examined in the preceding report, have partially disappeared as this form of subscription has been withdrawn both by Telia and Europolitan. Pot subscriptions have contributed to subscribers being tied to a particular operator, in particular when the customer might often have had several thousand kronor accumulated in these pots which the customer lost in the event that the subscription was cancelled. A contributing factor to the reduction in the extent of pot subscriptions is that the KO won a case in the Market Court establishing that a term whereby the pot can never be repaid is an unfair contract term. However, Tele2 continues to market pot subscriptions.
Despite somewhat declining prices for mobile telecommunications services such as telephony, primarily during so-called ‘low traffic times’ and during weekends, and although there are now a number of service providers in the market, the mobile market is still completely dominated by three mobile operators, which are also the network owners, Telia, Tele2 and Europolitan. Among other things, this is reflected by the fact that end user prices in Sweden are high compared with other Nordic Countries. According to the authorities there should be scope for increased price competition between the operators. A factor which may to some extent have a positive influence on the competition situation was the introduction of mobile number portability on 1 September 2001. Mobile number portability reduces switching costs for customers and results in increased mobility in the market. The work with the allocation of licences for GSM activities was also commenced during 2001, which will probably result in Sweden obtaining at least one further GSM operator.

At the end of 2000, four UMTS licences were allocated in Sweden. UMTS may be expected to influence competition in the mobile market by a further two operators, in addition to the three that already have their own network capacity. The Competition Authority is currently investigating whether the collaboration between various operators to erect and operate UMTS networks is compatible with the provisions of the Competition Act. For example, collaboration that influences competition in a noticeable manner may not result in co-ordination of competitive behaviour in neighbouring markets.

The UMTS emphasis on mobile data may also influence competition. If mobile data becomes an important service in the Swedish market, this will mean that the operators will go from supplying relatively simple and homogeneous services – such as voice telephony – to supplying a large number and complex range of telecommunications, data and content services. The mobile operators would under such circumstances be driven to orientate themselves towards an increasingly narrow segment of the market with increasingly more complex and diversified services. Such a development would probably make the operators increasingly interested in utilising the knowledge and ideas of other undertakings.

It can be concluded that the mobile market is not yet characterised by properly functioning competition and measures to achieve increased competition and consumer benefits will also need to be implemented in the future by all three authorities. For example, interconnection charges will continue to be examined. Another important area to monitor is what impact the obligation for network-owning operators to provide network capacity has in the market and whether there are any prospects of achieving the aims of the reform with the current system of rules. The three authorities will therefore continue their collaboration to jointly monitor developments in the market.
The Mobile Telecommunications Market in Sweden from a customer and competition perspective
The mobile telecommunications market in Sweden from a consumer and competition perspective

The Swedish Post and Telecom Agency, the Swedish Consumer Agency and the Swedish Competition Authority concluded in a joint report in 1999 that the Swedish mobile telecommunications market did not function satisfactorily. There has now been a follow-up of this report and it is indicated that the mobile market is still characterised by an oligopoly-like structure and that there are inadequacies in competition.

However, the measures that have been implemented in the last two years have started to yield positive results for the consumer. For example, the ‘pot subscriptions’ have been withdrawn and interconnection charges have been reduced. Competition may also be expected to increase through the introduction of mobile number portability, which will enable consumers to retain their telephone number if they change operator.