Regulatory Policy Note

01

Strategic behaviour and foreclosure on telecommunications markets

A case study regarding new developments and the behaviour of parties with Significant Market Power

OPTA

INDEPENDENT POST AND TELECOMMUNICATIONS AUTHORITY

STRATEGIC BEHAVIOUR AND FORECLOSURE ON TELECOMMUNICATIONS MARKETS

A case study regarding new developments and
the behaviour of parties with Significant Market Power

Explanatory note

The Dutch Independent Post and Telecommunications Authority (OPTA) regulates the postal and telecommunication markets in The Netherlands. OPTA is an independent executive body that commenced its activities on 1 August 1997. OPTA's mission is to stimulate sustained competition in the telecommunications and post markets. In the event of insufficient choice OPTA protects end-users. OPTA regulates compliance with the legislation and regulations on these markets.

In terms of market conditions, market structure and regulatory framework, telecommunications and postal markets present a continuously changing landscape. In this environment, OPTA has committed itself to improving the economic reasoning on which strategic choices are made in such a way that market parties can contribute to and have a clear understanding of the development of OPTA-policies, now and in the future. In 2003 the OPTA bureau was complemented with the Economic Analysis Team (EAT) headed by the Chief Economist. EAT is responsible for developing economic reasoning and stimulating discussion on key issues within the telecommunications and postal markets. To achieve this, EAT produces two kinds of policy notes - short discussion papers. Economic Policy Notes focus on economic issues and principles. Regulatory Policy Notes focus on strategic economic issues in specific regulatory fields. To stimulate discussion EAT organises roundtables. With its products and activities the Economic Analysis Team expects to add value to the economic debate in Dutch telecoms and post.

Often, lessons can be drawn from past cases. Policy Notes will try to benefit from analyzing such cases. These Notes, however, are aimed at contributing to the development of future OPTA policies and are focused on providing sound economic reasoning to that effect. For the purpose of these Notes it is not necessary to take into account other considerations, either of a factual or of a policy nature, that may have played a role in these past cases. As a consequence, discussion of these cases should not be considered or construed as an attempt to revise or evaluate these cases. Furthermore, Policy Notes are not aimed at reviewing past policies or expressing future policies. They are solely intended to stimulate discussion and critical comment within as well as outside of OPTA, thus laying a basis for the development of future policies.

The analyses and conclusions expressed in Economic and Regulatory Policy Notes of the Economic Analysis Team (EAT) do not necessarily reflect the opinions of the Commission of OPTA. As such, the opinions of EAT, in whatever shape or form, do not have a legal status. Quotes from and references to these Notes can be made freely, provided that such quotes and references sufficiently express the preliminary character and purpose of the Notes.

Contents

Abstract

One of the objectives of regulators of communications markets is to promote competition, also within the new European regulatory framework. Competition may, however, be hindered by certain behaviour of market parties with a dominant position. Regulators will have to choose ways of preventing negative effects of this behaviour. This paper studies foreclosure as one of these possible effects with a focus on new services.

The first objective of this Regulatory Policy Note (RPN) is to identify strategic behaviour that may result in foreclosure, subdivided into three main problem sets:

- Vertically integrated operators with SMP upstream, leading to possible problems due to behaviour such as denial of access, tying, delaying tactics and pricing strategies.
- Operators operating in two horizontal markets with SMP in one of them, leading to possible problems due to behaviour such as bundling and cross-subsidisation.
- Operators operating in one market where they have SMP, leading to possible problems due to behaviour such as exclusive dealing, pricing strategies and investment strategies.

The second objective of this RPN is to investigate economic aspects of policies with a view to a consistent way of dealing with identified problems regarding foreclosure.

1 Introduction

A party with Significant Market Power (SMP) can develop strategic behaviour in an attempt to exclude other parties from the market. In these notes, foreclosure is understood to be the exclusion of other parties (competition) of a market by means of strategic behaviour. These notes contain the analysis of four cases in which (potential) strategic behaviour by parties with SMP might have been displayed during the introduction of new products and/or services.

The structure of this RPN is as follows. Section 2 explains the concept of foreclosure and the behaviour that may result in foreclosure from a theoretical perspective. Sections 3 through 6 discuss the four cases from OPTA's regulatory practice of (potential) strategic behaviour by KPN that might have resulted in foreclosure. The following cases will be discussed:

1) The telephone directory as a combination of a universal service obligation and a commercial offer by KPN
2) Block of Time (BOT) offers as a new tariff structure
3) Voice mail
4) Unbundling of the local loop (RA-ULL)

As has been mentioned in the Explanatory Note, discussion of these cases should not be considered as an attempt to revise or evaluate of decisions made by OPTA. The discussion solely serves to illustrate problems following the concept of foreclosure. The discussion does not take into account that other considerations may play a role at least as important as foreclosure.

Section 7 finally presents conclusions and recommendations regarding the question of how new developments can be evaluated consistently from the perspective of the theory of foreclosure. This section also contains a framework for the considerations that might play a role in the evaluation of strategic behaviour with regard to foreclosure.

Note that within the scope of this RPN, only aspects that play a role with reference to the Telecommunications Act are discussed. A significant part of the behaviour discussed in the theoretical section could possibly be dealt with from the perspective of competition law, but this will not be discussed.

2 Foreclosure in general[1]

In a vertical context, foreclosure pertains to a situation in which a company holds a dominant position on the market for an essential input for another market and is also active on this other market. Foreclosure exists if the behaviour of the company with SMP on the 'upstream' input market ensures that competitors on the downstream market are excluded and forced to exit the market. The behaviour of the company that is active on the upstream market is intended to utilise that position to also acquire a dominant position on the downstream market.
In telecommunications markets, the logical example of foreclosure in a vertical context is the refusal of the incumbent to allow access on a wholesale market, therewith excluding competition on the retail market.

In a horizontal context, foreclosure may exist if a dominant company makes purchase of products or services on the market in which it is dominant dependent on simultaneous purchase of (complementary) products or services on a competitive market. By bundling the purchase of these products and/or services, the company can use its dominant position on one market to exclude competition on a second market, therewith acquiring a dominant position on the latter market as well.

The third type of foreclosure can exist on a single market on which a party holds SMP[2]. For this type of foreclosure, behaviour is used that excludes third parties from the market in which the party with SMP is active; entry barriers are created, e.g. by means of long-term contracts[3].

Definition of foreclosure:

”...Foreclosure refers to a **dominant** firm’s denial of proper access to an essential good it produces, with the intent of extending monopoly power from that segment of the market (the bottleneck segment) to an adjacent segment (the potentially competitive segment). Foreclosure can arise when the bottleneck good is used as an input (e.g., an infrastructure) by a potentially competitive downstream industry, or when it is sold directly to customers, who use the good in conjunction with other, perhaps complementary goods (e.g., system goods or after sale services). In the former case, the firms from the competitive segment that are denied access to the necessary input are said to be “squeezed” or to be suffering a secondary line injury. In the latter case, the tie may distort or even eliminate effective competition from the rivals in the complementary segment.”

Box 1. Definition of foreclosure[4]

The definition of foreclosure presented above discusses both vertical foreclosure (‘denial to the necessary input’) and horizontal foreclosure ('the tie may distort or even eliminate effective competition from the rivals in the complementary segment'). The following sections contain a discussion of the following topics: vertical foreclosure, horizontal foreclosure on a single market and horizontal foreclosure between markets by means of bundling.

[1] See also: Rey P. and Tirole J., *A Primer on Foreclosure, (*2003) Forthcoming Handbook of Industrial Organization III, edited by Mark Armstrong and Rob Porter
[2] See also: Draft joint ERG/EC approach on appropriate remedies in the new regulatory framework, (2003).
[3] See also Rey P. and Tirole J., *A Primer on Foreclosure, (*2003) Forthcoming Handbook of Industrial Organization III, edited by Mark Armstrong and Rob Porter
[4] Idem

2.1 Vertical foreclosure

Foreclosure in a vertical context can be caused by a refusal to supply as well as a series of other types of strategic behaviour. Examples of such behaviour that could also result in effective vertical foreclosure include[5]:

- Delaying tactics;
- Unjustifiable requirements for allowing access;
- Discrimination based on quality;
- Strategic design of services or products;
- Manipulation of information: the incumbent can abuse information received from competitors, refuse to provide information required by competitors, or provide an incomplete set of information;
- Price squeeze (excessive prices on the wholesale level and low prices on the retail level);
- Price discrimination.

Another possibility for vertical foreclosure not mentioned above is an upstream SMP party that vertically integrates with a downstream provider. As a result, this vertically integrated firm can favour the downstream entity, enabling it to effectively avoid competition or force competitors to exit the market. Vertical integration does not necessarily result in foreclosure, however, it can be a condition for incentives for the behaviour as described above, which will result in foreclosure.

However, foreclosure does not by definition result in anti-competitive effects. This is only the case if the following minimum conditions are met:

- There are no alternatives for the wholesale offer from the dominant firm (there are no other infrastructures or possibilities for providing products and services without the wholesale offer);
- The wholesale offer is essential to competitors and competition on the retail market.
- The dominant firm is active on both the wholesale and the retail markets;
- The probable effect of the behaviour is that competitors will exit the retail market[6]. If competing companies do not exit the market, there is no effective foreclosure.

2.2 Horizontal foreclosure

Horizontal foreclosure can occur on two levels: between two adjacent horizontal markets, and horizontal foreclosure on the market in which the dominant firm is active.

2.2.1 Horizontal foreclosure on a single market

Dominant firms can be active on multiple markets, but can also achieve foreclosure by means of strategic behaviour on a single market; for example by establishing entry barriers.
Rey and Tirole (2003) assert that this is particularly possible by entering into exclusive contracts with users. On markets in which economies of scale are important, the dominant party can specifically focus on a certain group of users to an extent that entrants will never be able to achieve the scale needed to enter the market[7].

[5] See also: Draft joint ERG/EC approach on appropriate remedies in the new regulatory framework (2003)
[6] See also: Crocioni and Veljanovski, Vertical Markets, Foreclosure and Price Squeezes, Principles and Guidelines, Case Research Paper No. 1, 2002
[7] Rey and Tirole (2003), Chapter 4 cf. The possibilities for the dominant party to discriminate between various users must exist; part of the monopoly revenue that the business acquires because there are no entrants (foreclosure) is given back in the exclusive contracts.

2.2.2 (Horizontal) foreclosure by means of bundling

Horizontal foreclosure refers to the situation in which a company that is dominant on one market attempts to use bundling to acquire a dominant market position on an adjacent market. In the telecommunications market in the Netherlands, this would refer, for example, to situations in which a firm bundles a new service on an emerging market with an existing service on an existing market in which it holds a position of SMP. In each of the examples presented in this RPN, behaviour of this type plays a more or less important role. It is for this reason that a number of theoretical aspects of bundling and foreclosure are discussed in more detail below.

The definition of foreclosure given above is based on a Post-Chicago school approach. The Chicago school (Schmalensee, 1982) diffused arguments pertaining to the leveraging of market power by a dominant company to an adjacent market by asserting that even in the event of vertical integration, the entity was actually active on a single market, and thus that only a single monopoly rent could be achieved. More recent theory, however, makes clear that the dominant company is in fact capable of leveraging market power under certain conditions; e.g. by means of bundling.

The Chicago school asserts that bundling cannot be harmful because only one monopoly rent can be gained. However, an important condition under which this is true is that the adjacent market is effectively competitive. This situation occurs relatively infrequently in telecommunications markets.[8]

Pure bundling (Tying / coupled sales)	Buyers can only purchase two products together. The bundled products are therefore not available separately. Tying enables a dominant party to use its power in one market to acquire market power in the competitive market. One of the conditions for a negative impact on the competition is that the provider commits to pure bundling; and that competitors cannot (easily) enter the market in which the bundling party is dominant. A second consequence that could result in foreclosure is that competitors exit the bundled market.
Mixed bundling	Mixed bundling (with a new service) gives the buyer the option of purchasing separate products or a bundle. A condition for mixed bundling is that the bundle offers a reduced price as compared to the individual products[9]. In principle, this type of bundling is beneficial to the prosperity unless the reductions in the bundle mean that competitors who are not able to bundle are eventually forced to exit the market[10i].

Box 2. Main types of bundling

Box 4 shows two different types of bundling. Under certain conditions, pure bundling can have a negative effect on competition; mixed bundling is only detrimental to competition in exceptional cases.

By definition, bundling of products/services is not detrimental to competition on markets. The bundled offer may be more efficient than the offer of the individual products (lower costs), for example, or the transaction costs may be lower (buyers do not search as long for a good combination of products[11]). Consumers may also attribute a higher value to purchasing bundled products, for example because they perceive that the use is easier[12], or because they believe that 'bundling gives both the provider and the

[8] See also: "Bundling", Barry Nalebuff, YALE international center for finance, 22 November 1999.
[9] Nalebuff 2003, DTI report
[10] See also: Lexecon, 2001, Competition memo, The Economics of GE/Honeywell).
[11] Idem
[12] See also Nalebuff 2003

consumer better guarantees for the quality of the product' [13]. In situations in which bundling plays a role, these potentially favourable effects must be considered in the assessment, and in any event it must not be presumed that bundling is undesirable.

In addition to the positive examples explained above, four examples of the ways in which bundling can result in foreclosure are discussed below. The European Regulators Group (ERG)[14] has indicated that bundling or tying (coupled sales) is an important instrument that can result in horizontal foreclosure. However, it must be noted that in vertical relationships, bundling/tying can be applied in the same ways. The following list is not exhaustive; for a more detailed discussion of reasons why firms would want to bundle, see Nalebuff (2003).

2.2.3 Bundling as an aggressive response to an entrant (prices)

If consumers have a homogeneous demand for products A and B, and the incumbent bundles these two products, a consumer can opt to purchase the bundle (products A and B) or only product B (offered by a new entrant); the company that offers only product B can be forced from the market as a result. Requirement is that the incumbent commits to the bundling and does not undo it once a new party has entered market B.
Thus it ensues that the incumbent commits to an aggressive pricing strategy because one less sale of product B immediately results in one less sale of product A.

2.2.4 Bundling as an aggressive response to an entrant (R&D)

In addition to aggressively responding by means of pricing, the dominant company can also respond aggressively with R&D investments. If products are not bundled, the dominant party will make separate considerations for its R&D investments in markets A and B. Threatened by a potential entrant in market B, the company may invest more in R&D (new services) to prevent the entry. By bundling the two products, the R&D investments are divided over the two markets; the expectations that this creates among possible entrants will induce them to hesitate to enter the market.

2.2.5 Bundling to increase the costs of entering the market

If two products are highly complementary, it is not very useful for the consumer to purchase only product A or product B. In this case, pure bundling of products A and B can mean that the entrant must enter both market A and market B. This results in an increase in entry barriers.

2.2.6 Bundling to protect original market power[15]

In the options described above, the incumbent's objective is to leverage market power to a second market. In this option, the objective of the bundling is to preserve the original market power (Whinston, 1990). Requirements in this case are that the products are bundled only in a pure manner and that the provider makes a long-term commitment to the bundling strategy. By purely bundling products A and B, the incumbent can offer product B at a low price and use cross-subsidising with product A to prevent entry, and therewith protect its market position on market A.

[13] Ahlborn, Evans and Padilla, *The antitrust economics of tying*, (2003), pages 40-41
[14] On the joint ERG/EC Approach on appropriate remedies in the New Regulatory Framework, CN (03) 59h
[15] Dennis W. Carlton, Waldman M., *The strategic use of tying to preserve and create market power in evolving industries,* (2000)

2.3 Foreclosure and new developments

This RPN provides a more detailed discussion of foreclosure as it relates to the development of new services. When parties with SMP develop new services, they can apply foreclosure strategies to acquire market power on new markets or to use the new products to preserve their existing market power.

A party with SMP can undertake new developments on its own initiative, or may be induced to do so by regulatory measures. With developments that are self-initiated, it is important to carefully consider whether behaviour is being demonstrated that could result in foreclosure. It is entirely possible that certain developments are undertaken from on a position of 'normal' competitor on a certain market. However, these are often developments that the party with SMP will undertake from its position on a horizontal market or on multiple markets that may be/ are horizontally related. Foreclosure in such developments will therefore primarily be seen horizontally.

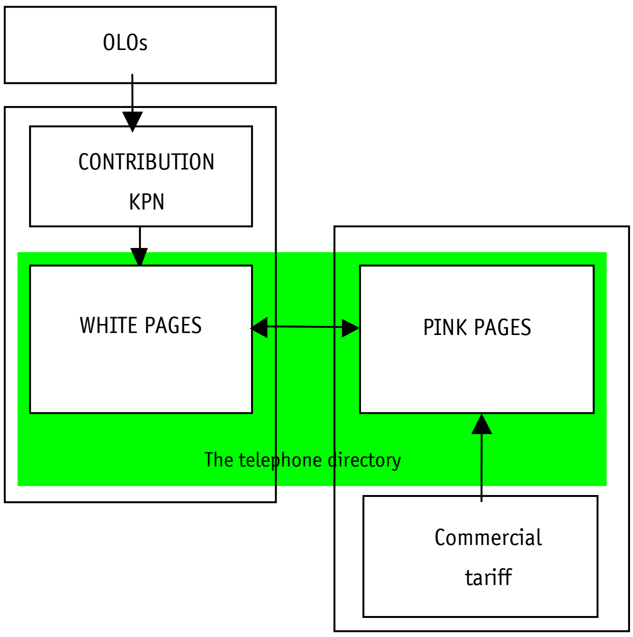
An important inducement for a party with SMP to develop services within vertical markets, however, will normally be an obligation ensuing from regulations. Regulation can create wholesale markets in which it may be beneficial for a company with SMP to employ a foreclosure strategy. A party with SMP can manipulate essential facilities, prices, delivery periods and conditions, the supply or use of information, etc., in such a way that dependent competitors are actually forced to exit the market.

3 Telephone directories

3.1 Characteristics

Telephone directories are a part of the Universal Service Obligation (hereinafter: USO). This means that there must be at least one party that supplies this service (a directory of all telephone numbers) at an affordable price. If no provider is willing to offer this service voluntarily, the Minister (of Economic Affairs) will appoint a party to provide it. In the Netherlands, KPN has been appointed to provide the telephone directory to end-users in the Netherlands at an affordable price.

The existing telephone directory consists of a white section with subscriber information according to the USO. The directory also has a commercial pink section, in which telephone numbers can be included at a certain unregulated price. The directory is distributed to all end-users free of charge. KPN indicated that publication of the white pages was loss making. KPN suggested that other operators (OLOs), which are obliged to supply the data for directory enquiry services under conditions that have been determined by law[16], pay a fee to have the numbers of their subscribers included in the directory[17]. With this contribution from the OLOs, KPN wanted to cover the costs of publication of the white pages.



Box 3. Relationship between the various building blocks and parties involved in the compilation of telephone directories.

However, if KPN cannot provide the USO-part of their telephone directory in such a way that its costs are covered, it can apply for additional funding from a USO fund, stop providing the USO or have end-users pay separately for the telephone directory service. In essence, KPN attempted to establish its own USO fund at the expense of alternative providers, therewith preventing the costs of publishing the telephone

[16] See the stipulations in sections 42 and 43, ONP Leased Lines and Telephony Decree
[17] The operators do not reimburse the costs for supplying and including the data, but for the supply, inclusion, printing and free distribution of the telephone directory.

directory from increasing. KPN did not want to use the income from the pink (commercial) section, which in part derives its value from the white pages with subscriber information[18], to finance the provision of the USO.

3.2 Structure and conduct

With the telephone directory, KPN is actually active in two different market segments. The subscriber details that are part of the USO (the white pages) constitute the first segment; the data that can be sold commercially (the pink pages), the second. In practice, these two segments are bundled into a single product. The way this is done and the conditions under which this is allowed, determine the risk of foreclosure.

Initially, KPN tried to recoup the costs of producing and distributing the white pages from other market parties. This might have led to an increase in costs for other parties relative to the cost base of KPN. At the same time, KPN wanted to provide a bundled offer by tying the white pages to the pink pages. On the one hand, this bundling is considered valuable (increasing welfare), as the directory services are more complete. Moreover, bundling makes advertisements in the pink pages interesting because of the use and distribution of the white pages. On the other hand this bundling cannot be copied by other parties.

By keeping costs and revenues involved in the pink part completely separate from publishing the USO-part of the directory, KPN could achieve higher margins on the pink part or compete with alternative telephone directory providers in an undue manner by asking low rates for the publication of information in the pink section. This would create an entry barrier for alternative providers also wanting to publish white pages. It will be more difficult to find customers for the commercial section (because it is less expensive for KPN), while the data for the white pages must be purchased under the same conditions that apply to KPN. OPTA believed that the effect of this behaviour might be foreclosure, in the sense that the costs incurred by competitors are artificially raised because KPN bundles the services without bundling the costs and the revenues.

Another structural characteristic is that KPN has free access to the majority of the 'ingredients' for the telephone directory: the underlying subscriber data. The behaviour that might follow is that KPN could place requirements on 3rd parties managing less numbers, but with an obligation to supply their subscriber data, that would raise costs for these other parties. Other behaviour might be to refuse business entirely or threaten these 3rd parties with legal proceedings. This is a type of upstream cost raising for others. This possible behaviour will not be discussed, so we will focus on the effect of bundling.

3.3 OPTA's decision

In 2001 OPTA decided that KPN could no longer ask a fee from OLOs for including their subscriber data in KPN's telephone directory[19]. After all, KPN can apply for additional funding to cover shortfalls from a USO, stop providing the USO or have end-users pay for the telephone directory service.[20] Creating an alternative USO fund at the expense of alternative providers is not in accordance with the Act. Moreover,

[18] This results in a complete telephone directory that is widely distributed and used.
[19] Decision of 19 June 2001, reference OPTA/EGM/2001/201706. Published on www.opta.nl.
[20] In the first case, a US fund would have to be established by the Commission. In the second case, the universal service would be assigned to a different party who could supply the guide at the lowest cost. In the third case, the end-user could pay for the guide because 'affordable' does not automatically mean free of charge. KPN believes that this third option would result in unacceptable rates for end-users.

OPTA believes there is no financial shortfall. In the OPTA's view, it was reasonable to compensate the loss for supplying the white pages by a part that was profitable but which also gave the telephone directory the majority of its (advertising) value: the pink pages. Thus there was no need for any measures to cover financial shortfalls in the provision of the white pages. This not only did justice to the financial requirements for the USO, but also created a level playing field.

3.4 Foreclosure

By requesting funding from the USO fund and bundling the white and pink sections, KPN would gain a competitive advantage over other providers of free telephone directories. What is more, vertical foreclosure could arise because the costs for other operators are raised.

If KPN had stopped offering the USO, competitors could have produced a telephone directory in which the commercial and obligatory information is combined. This would have made it unlikely that a financial shortfall would exist, even if the directory is distributed free of charge. The Yellow Pages, a private initiative, are currently compiled in the same manner as KPN's telephone directory. If KPN had been allowed to charge end-users a fee for their telephone directory, competitors would have had a fair chance to provide an alternative at a lower price. In short, the solution opted for, appears fair compared to the alternative outcomes that were expected if one of the other options would have been applied.

3.5 Lessons learned

OPTA allowed KPN to tie the regulated service to a non-regulated service. A requirement, however, was that the bundled services were not entered separately in KPN's financial records. As a result, the threat of foreclosure was avoided. A remarkable fact is that this case is an example in which pure bundling proved to be a tool for preventing foreclosure, despite the fact that pure bundling could lead to foreclosure in other situations.

A point for consideration is the fact that potential competitors need the same end user data for offering telephone directory services as KPN does. For a level playing field, these data should be available against the same conditions for all parties.

4 Block of time tariffs

4.1 Characteristics

In 2003, KPN submitted various block of time (BOT) tariff proposals to OPTA. A BOT tariff means that for a single periodic up-front fee, calls can be made for a certain amount of minutes during a certain period, e.g. during off-peak hours and during weekends. At the same time, discounts can be acquired for other tariffs. A BOT tariff is based on an average minute tariff which is in its turn based on call profiles of KPN customers. Since tariff proposals are confidential, we will work with an imaginary proposal in this case. In this imaginary proposal we will use a BOT tariff of €3.00 for one hundred minutes, with 10% discount on the tariffs for calls within the Netherlands. For the first ten calls, call setup is not charged.

Based on the average user profile as shown in box 5, the end-user tariff for this bundle would have to be at least €3.44 (=(€ 1.20 + € 0.90 + € 0.50 + € 0.20) + 23% retail increment[21]). This end-user tariff is the minimum tariff that KPN must charge in order to cover the purchasing costs for the call profile as described[22].

Purchasing	Fictitious call profile end-user (% of the total):	Bundle of 100 minutes:
off peak buba = 4 €c/minute	off peak buba 30%	30 x 4 €c off peak buba = €1.20
off peak biba = 3 €c/minute	off peak biba 20%	20 x 3 €c off peak biba = €0.90
weekend/night = 1 €c/minute	weekend/night 50%	50 x 1 €c weekend/night = €0.50
Call setup = 2 € c	10 times	10 x 2 €c = €0.20

Box 5. Example of a BOT. Biba = inside area code; buba = outside area code; weekend/night = Saturday, Sunday and nights

4.2 Structure and conduct

When using a BOT, various segments of a market are offered in a bundle. Each segment has a downstream building block that is segmented alike. In the case of BOT, however, there is no downstream BOT available. The bundled retail service therefore is offered, without comparable wholesale input that must be procured to build this retail product. In this case, foreclosure might occur as a result of the use of certain information from the retail market needed to acquire wholesale input, cross subsidising and the composition of wholesale input, as a result of which a price squeeze can occur.

The first observation is that there is a party with SMP on the fixed network, thus there is a risk of foreclosure. On the short term, this risk seems small. Third parties are not forced to exit the market, and entry barriers are not raised since other parties (e.g. Carrier Pre-selection providers) may offer the same type of BOT. However, the actual call profile might deviate from the call profile used as a basis for the wholesale input, if peoples calling behaviour changes after acquiring a bundle. Squeeze problems might occur. Squeeze problems, however, would also apply to KPN. The other providers can take this effect into account when creating their products.

[21] The minimum contribution to purchasing costs for marketing, advertising, management and other costs for KPN that would have to be recouped with this tariff. OPTA set this increment at 23%.

[22] Actual calling profiles of course contain more variables, such as calls during peak hours etc. For the purpose of this case, the BOT is kept more simple.

The actual effects of the introduction of a BOT on calling behaviour can only be established after introduction. On the short term there may be transitions problems: a bundle based on average calling behaviour is introduced, leads to a change in calling behaviour, leads to squeeze, requires adaptation of the bundle. A new balance has to be found. Information about calling patterns in the retail market can be crucial. The SMP party has an information advantage that could be used strategically leading to foreclosure. On the longer term the situation is much less clear. Finding a new balance could force the various providers to suffer significant transition/start-up losses. This might have less impact on KPN than it will have on other parties. From the perspective of competition, in that case a situation would exist that is justifiable in itself, but which also results in a monopoly. In other words, foreclosure has occurred.

4.3 OPTA's decision

OPTA decided to reject the BOT proposal from KPN. OPTA wanted to prevent price squeeze caused by the introduction of alternative pricing structures, and therefore defined two requirements:

- the retail tariff should cover the costs of the most expensive input element (usually the maximised call setup fee and off-peak buba) plus the increment for retail costs;
- an equivalent wholesale product for BOT products must exist.

If one of these requirements is not met, vertical bundling could result in a price squeeze, as a result of which possibilities for competitors would decrease or disappear altogether. This statement can be explained as follows. In order to offer a BOT, KPN and its competitors should procure each element of the BOT offer (off-peak biba, off-peak buba, weekend/night, call setup) separately. Because it is hard to determine in advance what type of call is made at what time, the BOT may be used exclusively for the most expensive calls (buba off-peak), or, as the opposite, just for only the most inexpensive calls. Crucial in the disaggregate level of the squeeze test is the fact that the current markets are indicative. If the actual markets would be smaller a more aggregate level of testing could lead to squeeze. If the markets are indicative it is not guaranteed that OLOs are able to offer a BOT just as KPN.

Perhaps it goes without saying, but it should be noted that a comparison with the tariffs for internet access via 06760 could be interesting. Here BOTs are permitted. However, for internet access there is a wholesale product in which no distinction is made between the tariff elements: FRIACO (flat rate internet access call origination).

4.4 Foreclosure

It is unlikely that the short-term effects of introducing a BOT leads to foreclosure. As already explained, in principle every party is able to compose and sell BOT products based on the determinations of call profiles from their customers, if the market is properly defined. Therefore, bundling does not necessarily result in foreclosure or price squeeze on the short term.

On a longer term (dynamic), there is a risk of foreclosure, due to problems with regard to finding a new balance based on possibly changing calling behaviour. One of these problems may be the fact that parties are forced to some extend to sell BOT products below cost price for a period of time. A complication herein is that finding a new balance requires retail information.
Thus, on the one hand, allowing the BOT proposal may result in monopolisation on the long term because other providers are "squeezed" out of the market, even without certainty whether a new balance in call

profiles will ever be found. On the other hand, BOT is a tariff innovation that could have a positive welfare effect, in terms of a larger market output. Therefore it should not be obstructed.[23]

4.5 Lessons learned

The economic consideration in this case is a judgement between foreclosure on the short term (static) and on the longer term (dynamic). To begin with, foreclosure is not expected on the short term. Other parties may also offer BOT products, thus they will have no reason to exit the market on the short term. Moreover, the effect that the process of finding a new balance in call profiles will have the same effect on all parties. However, it must also be considered that finding a new balance may take a long time. Losses during this process due to a lengthy sale below cost price, may be bearable only for KPN. This could create a risk of exclusion of other parties on the longer term, indicating foreclosure.

[23] See also OPTA, EAT, *EPN02, Price discrimination* (2003)

5 Voice mail

5.1 Characteristics

Voice mail is based on call divert services on networks. A voice mail user diverts his connection to a platform that plays a standard message or a message of the user's choice. This platform can also save messages. The divert service is a network function activated by a special code (in this case *61). This code indicates under what conditions a call is to be diverted (in this case after a delay, which means in practice a diversion after the telephone rings 4 or 5 times). When voice mail is used on the fixed network of KPN, the platform to which the call is diverted is addressed with the number 084-2333. However, in principle a call can be diverted to any connection.

In the service description of voice mail it is generally accepted that there are two types of calls to a voice mail platform. First there are calls, initiated by diversion of the original call. Second there are direct calls traffic to the voice mail platform. This second type of call may either be a direct call by the voice mail user to listen to messages or may be a direct call to leave messages. Since KPN does not use a separate number per voice mail user, their voice mail service only allows direct calls made from the user's own connection, usually made to listen to messages. Some mobile network providers have given each of their clients a separate voice mail number. These networks allow also direct calls from other connections then the user's own to leave messages without diversion.

5.2 Structure and conduct

To date, the market for voice mail services seems strictly network related. Without factual technical need, each telephony network (fixed or mobile) allows its customers exclusively the use of the own voice mail service. For a short period, the voice mail market appeared to become more competitive when mobile operators were considering the integration of fixed and mobile voice mail (for example: KPN fixed and KPN mobile temporarily integrated their voice mail services). During this period also third parties considered offering voice mail services. Nevertheless, the indication of a competitive voice mail market seemed short lived. Even more, the perception of many users is that voice mail is a service that automatically comes with a subscription, not realising that others could also provide the same service.

KPN's (potential) behaviour with reference to voice mail services may be summarised as follows:

- Horizontal issues: The position KPN has on the market for fixed telephony makes it relatively easy to bundle it with additional products, such as voice mail services. KPN may thus acquire a strong position on markets for these value added products. The way in which KPN sells voice mail as a part of a subscription rather than as a separate service anyone could provide, may be seen as part of the concept of 'strategic design'.
- Cross subsidising: KPN asserts that a connection can be diverted to the voice mail platform free of charge because the costs are covered by additional call back calls. Calls generated to listen to messages are charged.
- Vertical issues: In principle, no one can have calls diverted to their voice mail platform free of charge, unless KPN's voice mail offer is exactly matched. Call diversion as part of any other service is therefore unlikely to be achieved free of charge.

5.3 OPTA's decision

KPN's proposal to offer call diversion to its voice mail platform free of charge and only charge calls to listen to messages, was approved by OPTA as beneficial to KPN's end consumers. However, charge free diversion only applies to the number 0842-2333. Call diversion to other numbers is charged, unless it can be proven that the call profile for the connection to which calls are diverted exactly matches the call profile of calls diverted to KPN's voice mail platform. Diverted calls to KPN's voice mail platform, free of charge, are partly subsidised by the revenues coming from direct calls. What is more, in this way voice mail is made virtually inseparable from a connection and the telephony service to receive calls.

5.4 Foreclosure

Practice shows that it is difficult for other parties to play a significant role on the voice mail market. On the one hand, call diversion to a voice mail platform, free of charge, cannot be achieved by anyone. Parties will find it hard to match KPN's retail offer exactly and thus cannot use free of charge call diversion. If parties need call diversion as part of another (voice mail) service, they will unlikely be able to use it free of charge. On the other hand, KPN positions voice mail as part of its network services. This makes it difficult for other parties to shake consumers free from KPN's voice mail. This is probably the reason why no other party, not even mobile network providers that already have the infrastructure for voice mail, has offered a competitive service to users of the fixed network. It can therefore be concluded that a certain degree of foreclosure exists.

Foreclosure can also be identified from a theoretical perspective. KPN is a party with SMP, purely bundling its primary service (fixed telephony) with a second service (voice mail). In addition to this bundling, voice mail is positioned in such a way that end-users are locked in (strategic design). High costs could be involved in shaking these end-users free from KPN. Certain parts of the voice mail service are also subsidised by other services and call types. Lastly, a vertical complication may exist with reference to call diversion when other parties need this from KPN for their own voice mail offer. It appears impossible to meet KPN's wholesale demands for call diversion free of charge. It therefore appears probable that third parties will not enter the market for voice mail services, indicating foreclosure.

As a last remark, it is also noticed that other network providers position voice mail in such a way that alternative voice mail providers cannot offer their voice mail services to the users of these networks. Since network providers may block calls to specific connections[24], either direct or diverted, it is conceivable that call diversion to alternative voice mail providers on other networks is hindered. Call diversion or, more generic, access to specific connections for offering value added services is a more often returning phenomenon.

5.5 Lessons learned

The decision to approve KPN's tariff proposal was driven by the benefits it presented to end users. It may, however, very well have contributed to the fact that third parties find difficulties in offering voice mail service competitively to users of KPN's fixed network. Similar cases where call diversion or access to value added services play a role, should take foreclosure on the market for this specific value added service into account.

[24] In fact legal obligations with regard to interoperability should ensure access to any connection, given that there rests an obligation for interoperability on the originating party. Blocking calls to specific connections therefore is only permitted from a legal perspective when both the originating and the terminating party agree so in the case of non-telephony services.

6 Unbundling of the local loop and the introduction of DSL

6.1 Characteristics

ULL (Unbundled Local Loop) is a service with which KPN's competitors can lease the local loop from KPN. This means that the local loop is actually disconnected from KPN's network and added to the competitor's network, who can then offer services such as internet access (based on xDSL) or. This case focuses on questions around the ULL itself (conditions for supply and maintenance) and relevant facilities (collocation, information services).

Unbundling was a new development in 1999, which KPN was obliged to offer based on regulation. As a technological innovation xDSL was developed simultaneously with the offer for unbundled access. xDSL utilises the higher part of the frequency spectrum of the copper line, which is not used for telephony. The revolutionary aspect of the DSL technology was that the capacity of the local loop increased significantly, as a result of which broadband applications such as broadband internet could be offered either combined with telephony or separately. Because of DSL, the economic value of an unbundled line increased spectacularly, thus accelerating the process of unbundling.

6.2 Structure and conduct

In order to be able to offer certain xDSL services (or telephony or a combination of the two), access to KPN's local loop network is needed. For this purpose, various wholesale services must be purchased from KPN. These include collocation and other facilities as well as leasing the local loop. According to theory, incumbents could have incentives to frustrate newcomers on this market by strategic behaviour that may result in foreclosure.

The first observation in this case is the vertical integrated position, combined with an upstream SMP which KPN has in this market. During the process of coming to a workable situation, market parties have complained about certain issues:

- Complaints about refusal of access
- Legal procedures (in principle all decisions made by OPTA were appealed in the course of 2000)
- Aspects regarding collocation (in the course of 2000): unreasonable conditions (tariffs, supply conditions, access to the buildings), unequal conditions (otherwise KPN collocates on the basis of co-mingling), the provision of information regarding the exchanges (no blueprints), agreements regarding delivery were violated.
- Spectral management resulting in both delays and cost raising for parties entering the market.
- High tariffs for collocation: In disputes regarding collocation tariffs, OPTA concludes that the tariffs applied by KPN are higher than if based on cost orientation. OPTA determines a maximum level of these tariffs.
- Other issues, possibly delaying and/or frustrating entry (2001 - 2002): bank guarantees, threats of termination followed by confiscation, mention of discriminatory behaviour.

The aforementioned issues appear to have contributed to KPN gaining a leading competitive advantage. It appears, for example, that KPN had its services up and running while its competitors were still involved in preparations. In the meantime, among others, problems with regard to collocation have been solved for the most.

Starting in 2002, other issues appeared to become more manifest:

- Since parties were leasing more lines, the high price per line has become more of a problem. KPN seemed to offer sharp retail tariffs. Based on ADSL by KPN (Mxstream, a bit-stream-like product) ISP's claim they cannot recoup their costs.
- Market parties assume that KPN has better wholesale conditions than given to competitors (SLAs) and entrants (longer delivery periods, malfunctions are not solved). KPN is required to report on the SLAs for the various parties, including itself.
- Strategic use of information: Vertically integrated parties with SMP need to have 'Chinese walls' between the wholesale and retail organisations. Market parties complain that they have the feeling that KPN's retail organisation may have access to information from internal systems and makes may use sensitive information such as competitors' orders.

6.3 OPTA's decision

The introduction of the unbundled local loop (ULL) in the Netherlands was imposed by OPTA on 12 March 1999, based on the Telecommunications Act applicable at that time[25]. This was followed by EC Directives for collocation on 20 December 2000[26] and a letter explaining the views on spectral management[27]. On 18 December 2000, the Telecommunications Act was supplemented by the European Commission with an Ordinance[28]. Based on these obligations, KPN compiled a reference offer for Unbundled Local Loop (the RA-ULL) in which agreements were made regarding the supply of services related to the unbundled local loop. The version of this Reference Offer, submitted in the course of 2001, was evaluated by OPTA on 29 June 2002[29], followed by policy rules on 2 July 2002[30].

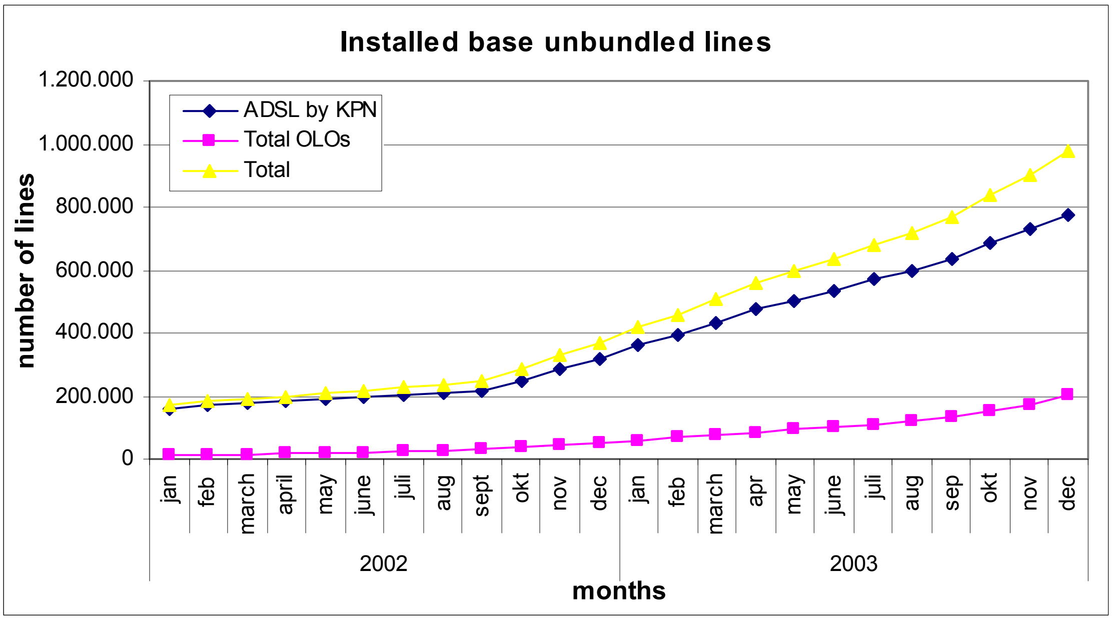
The introduction of unbundled access was considered essential in promoting competition on the local loop, based on the assumption that it is not realistic for entrants to roll out a complete local loop on the short term. After OPTA had also legally demanded unbundling, OPTA closely monitored the conditions under which competitors were able to use the offer, which had to be the same. The decisions made within the framework of RA-ULL therefore particularly included considerations regarding the question whether parties other than KPN were given the opportunity to offer, compose and market the same products as KPN on the local loop in a competitive manner. The conditions applied to KPN's RA-ULL offer are also outlined in the Ordinance. Based on this outline, OPTA has continually determined the best way to implement any of these conditions.

The set of instruments that OPTA could use seemed in itself sufficiently large. Particularly the regulation provided national regulators with powers to enforce unbundled access. A major problem, however, proved to be time consuming disputes with respect to the application of these instruments. In practice, it is also proved to be extremely difficult to prove discriminatory behaviour. Either consciously or unconsciously, new obstacles were raised. The competition was actually forced to lag behind as a result, e.g. with reference to use of information.

[25] Decision regarding unbundled access to the local loop ("MDF-access") of 12 march 1999, reference OPTA/J/99/1443.
[26] Directives on collocation and one-off costs with reference to access to the local loop of 20 December 2000, reference OPTA/IBT/2000/203357.
[27] Letter regarding spectral management of 14 December 2000, reference OPTA/IBT/2000/203165.
[28] Ordinance (EG) 2887/2000 of the European parliament and the council of 18 December 2000 regarding unbundled access to the local loop (PbEG 2000 L 336/4).
[29] Decision regarding the reference offer for unbundled access to the local loop and related facilities of 29 June 2002, reference OPTA/IBT/2001/201679.
[30] Policy rules regarding unbundled access to the local loop of 2 July 2002, reference OPTA/IBT/2002/201182.

6.4 Foreclosure

The aforementioned problems regarding RA-ULL possibly resulted in foreclosure. An indication for this effect is the following diagram, which shows that KPN was virtually the only provider of ADSL until mid-2002. After OPTA's decision in July 2002, most of KPN's initial behaviour was fielded. From that point onward, it seems that OLOs start to profit from the increasing demand. In the mean time, KPN seems to have established economies of scale and scope, because it could offer to existing clients and use existing resources for DSL. As a result, KPN seemed to be able to profit to a much greater degree from the increasing demand than the OLOs. In 2003, KPN had a share of 85% of the DSL market.



Box 6. Developments in the market for unbundled lines, divided into share held by KPN and share held by other parties.

A similar development was seen in other European countries. It is clear that the problems that may be contributed to strategic behaviour when a party is vertically integrated can hinder competition, depending on the extent to which other parties are dependent on a certain facility.

6.5 Lessons learned

An important conclusion learned from this case is that a certain behavioural pattern can be expected when vertically integrated parties with SMP have access obligations. In its decisions, OPTA will have to anticipate according to these patterns, on possible behaviour from the perspective of foreclosure, specifically with obligatory access services. If possible, conditions for the party with SMP in case of new (access) services must be such that it cannot or will not want to display behaviour that could result in foreclosure. On the one hand, this may be achieved by means of prohibitions and obligations with reference to wholesale input. On the other hand it may be possible to achieve a situation in which a party with SMP experiences more disadvantages than advantages associated with certain behaviour from the perspective of foreclosure.

Increasing the disadvantages can be done, for example, by issuing fines or restricting rollout. An example in this respect is the stipulation that a party with SMP may not roll out a downstream service itself, as long as other parties have not had the opportunity to make the necessary preparations, including the use of necessary facilities from the party with SMP. Under certain conditions, the party with SMP can even be forced to withdraw certain services from the market if it has been proven that it has violated the law. Pro-active measures could be, for example, to determine quality parameters and obligations to report them immediately when the service is introduced, or to make access to information necessary for other market parties mandatory much earlier in the process.

7 Conclusions with respect to evaluating foreclosure and new developments

After analysis, the cases discussed can clearly be divided into two main groups. Firstly, two cases were used where new services clearly were developed solely as a result of regulation. In the other two cases, the motivation for a new service was based on regular innovative behaviour. In all cases KPN's behaviour with reference to these new developments was reviewed within the scope of foreclosure as an effect that could restrict competition.

7.1 Analysis of the cases

7.1.1 The telephone directory

Based on foreclosure theory, it appears that KPN could have foreclosed the market for telephone directories. As a result of OPTA's decision, to mandate the supply of the regulated service bundled with a non-regulated service, the threat of foreclosure was prevented. This case shows that bundling may sometimes be an option to prevent foreclosure, though the circumstances should permit this. The complexity of this case lies in the fact that a bundle was made of a regulated service and a commercial service.

7.1.2 BOT tariffs

The economic consideration in this case proved to be a judgement between foreclosure on the short term (static) and on the longer term (dynamic). Since other parties might also be able to offer BOT products under the same circumstances, short-term foreclosure is not likely. However, offering BOT products might lead to a situation where a new balance in call profiles will be sought. The more complex this process works and the more time it takes, the greater the risk parties will be unable to bear the costs for it. Therefore on the long term a risk on foreclosure exists.

One aspect to take into consideration is the source for BOT offers, which is the fact that different segments are differently priced (biba and buba calls for example). The smaller this distinction, the sooner a new balance in tariffs for the various calls in a BOT will be found, and the smaller the risk of foreclosure on the longer term. Two other aspects are linked to this case. The first is the issue of non-discriminatory conditions for purchase. There is always a risk that wholesale products will be adapted to suit the incumbent's changing needs more quickly than they would be adapted to suit the needs of its competitors. The second is the issue of sharing necessary information for compiling wholesale products for BOT products. It must be made certain that retail and wholesale information from other parties is not abused.

7.1.3 Voice mail

The decision to approve KPN's tariff proposal, although beneficial to KPN customers, may have contributed to the fact that third parties cannot easily offer the voice mail service competitively to users of KPN's fixed network. Cases that have a similar nature as the voice mail case should therefore be considered carefully with regard to possible foreclosure.

7.1.4 Unbundling of the local loop and the introduction of DSL

An important lesson in this case is that a certain behavioural pattern seems to be present when vertically integrated parties with SMP have access obligations. In its decisions, OPTA should consider taking the opportunity to anticipate according to possible behavioural patterns. If possible, conditions for the party with SMP in case of new (access) services must be such that it cannot or will not want to display behaviour that could result in foreclosure.

7.2 Conclusions and recommendations

- In general, behaviour that restricts competition is undesirable. Regulation must focus on this, though other considerations could make a certain risk on foreclosure legitimate.
- If there is insufficient insight and cause, balancing between prevention of foreclosure and stimulation of innovation sometimes results in a temporarily restriction on innovations from a party with SMP. As insight grows, restrictions could be removed. Temporary restrictions on innovations of parties with SMP may very well result in significantly less permanent damage than the consequences of foreclosure.
- OPTA should substantiate any deviation from the logical choice between preventing foreclosure and stimulating innovations.
- The insight that behaviour with reference to innovations, as displayed by parties with SMP, shows a certain pattern can be used to accelerate certain processes.
- Bundling is often not damaging. Despite the fact that foreclosure theory gives us numerous examples that it could be, under the right circumstances bundling has positive effects.
- In its decisions, OPTA should always carefully consider whether other parties are able to provide the same service; if this is the case, there is usually no foreclosure.
- The risk of competition-restricting behaviour by parties with SMP is often present when new services are required on the basis of regulation, especially if it will bring (extra) competition for the party with SMP on a downstream market (RA-ULL).
- Competition-restricting behaviour involving new services initiated by parties with SMP without any legal obligations, is often limited. In these situations the party with SMP has a direct interest in the new service, which will motivate cooperation to have it approved of by OPTA.

7.3 Decision framework

In closing, a brief top-level decision framework has been developed than can be used as a guideline for future service introductions when considering foreclosure. It must be noted that it will be possible to address certain behaviour on the basis of the Telecommunications Act, e.g. by requiring what are known as remedies. Other behaviour can be addressed on the basis of competition law. The conclusions only determine *what* must be addressed; they do not indicate the manner in which any problems as identified can be remedied.

Obviously, while assessing and addressing risks of foreclosure is an important policy objective of OPTA, it should be noted that the aim of the decision framework presented below is not to suggest that every innovation by parties that hold SMP should be prohibited. Such innovations may very well present valuable new services to end-users. Their benefits need also to be weighed against the risk of foreclosure.

7.3.1 Framework

1. Does the party offering the new service hold SMP?
   a) If so, foreclosure problems may occur.
   b) If not, in general the innovation will have no effects detrimental to competition viewed from the perspective of foreclosure theory.

2. Is the party with SMP vertically integrated?
   a) If so, there is a risk of vertical behaviour that could result in foreclosure.
   b) If not, there is only a risk of horizontal behaviour that could result in foreclosure.

3. Vertical foreclosure: does the party with SMP control a wholesale facility that is necessary in order to allow other parties to offer (new) services?
   a) If so, there is an increased risk of incentives for and possibilities of vertical foreclosure.
   b) If not, vertical foreclosure is less likely to occur.

4. Vertical foreclosure: can the behaviour of the party with SMP result in competitors being forced to leave the market or not being able to enter it?
   a) If so, vertical foreclosure strategies are probable.
   b) If not, vertical foreclosure strategies are less probable.

5. Horizontal foreclosure: is the party with SMP also offering products on adjacent markets, or will it be doing so?
   a) If so, there is an increased risk of incentives for and possibilities of horizontal foreclosure.
   b) If not, horizontal foreclosure is less likely to occur.

6. Horizontal foreclosure: can the behaviour of the party with SMP result in competitors being forced to leave the market or not being able to enter it?
   a) If so, horizontal foreclosure strategies are probable.
   b) If not, horizontal foreclosure strategies are less probable.

7. Weigh all considerations in addressing the identified threat of foreclosure or the actual effects thereof against one another. Arrive at a cohesive tentative decision that covers all aspects.

8. Determine whether there are other considerations that should be involved in the decision, e.g. USO or other relevant factors. The result will ultimately be a consistent decision.

8 References and literature

- Ahlborn, Evans and Padilla, *The antitrust economics of tying* (2003)
- Nalebuff B., Bundling, *Tying and portfolio effects*, DTI Economics paper no.1 (2003)
- Nalebuff B., *Bundling as an entry barrier*, Yale University (2003)
- Inderst R., *Bundling, Lecture material for the workshop at Warwick Business School* (2002)
- Choi J., *Tying and innovation, a dynamic analysis of tying arrangements* (2002)
- Carlton W., Waldman M., *The Strategic use of tying to preserve and create market power* (2000)
- Rey P., Tirole J., *A primer on foreclosure*, Forthcoming Handbook of Industrial Organization III (2003)
- Choi J., Stefanadis C., *Tying, investment, and the dynamic leverage theory* (2000)
- Chemla, *Downstream Competition, Foreclosure, and Vertical Integration* (2003)
- Lexecon, *Competition memo*, *The Economics of GE/Honeywell* (2001)
- European Regulators Group (ERG), *joint ERG/EC approach on appropriate remedies in the new regulatory framework (2003)*
- OPTA (EAT), *EPN02 Price discrimination* (2003)

Economic Analysis Team

The **Dutch Independent Post and Telecommunications Authority (OPTA)** regulates the postal and telecommunication markets in The Netherlands. OPTA is an independent executive body that commenced its activities on 1 August 1997. OPTA's mission is to stimulate sustained competition in the telecommunications and post markets. In the event of insufficient choice OPTA protects end-users. OPTA regulates compliance with the legislation and regulations on these markets.

OPTA has committed itself to improving the economic reasoning on which strategic choices are made so that market parties have a clear understanding of what to expect from OPTA now and in the future. In 2003 the OPTA bureau was complemented with the **Economic Analysis Team (EAT)** headed by the Chief Economist. EAT is responsible for developing economic reasoning and stimulating discussion on key issues within the telecommunications and postal markets. To achieve this, EAT produces two kinds of policy notes – short discussion papers. *Economic Policy Notes* focus on economic issues and principles. *Regulatory Policy Notes* focus on strategic economic issues in specific regulatory fields.

With its products and activities the Economic Analysis Team expects to add value to the economic debate in Dutch telecoms and post. For further information visit **www.opta.nl** from where you can download EAT publications.

Contact: **EAT@opta.nl**

OPTA