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ON THE LAW AND ECONOMICS OF PRICE SQUEEZE IN TELECOMMUNICATIONS MARKETS

A PROJECT FOR KPN[§]

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1. INTRODUCTION AND RESEARCH QUESTIONS

The recent evolution of the telecommunications sector has been marked not only by technological progress, but also by new methods of marketing services to consumers. The classical "metered" retail tariffs have given way to a myriad of pricing formulae, sometimes going in the direction of a "lump-sum" payment for a certain amount of use, sometimes comprising various rebates depending on the time of a call, its destination, etc., or even grouping many different services together in "bundled" packages. The success of these new offers in the countries where they have been introduced bears testimony to their attractiveness to consumers, which leads one to assume as a starting point that they are advantageous to consumers and providers alike.

At the same time, these new offers attract regulatory scrutiny when incumbents make them. Regulatory authorities may be concerned about the possibility that these offers would distort competition at the retail level. These concerns are often put under the heading of "price squeeze" or "margin squeeze", that is, the authorities are concerned that these offers involve such a small profit margin that players that have entered the market only recently may be induced to exit the market. At this point in time, in the course of the implementation of the new Telecommunications Act,[1] which translates into Dutch law the new EC regulatory framework for electronic communications,[2] OPTA is in the process of reconsidering its treatment of such "price squeeze" issues.

OPTA's current policy with respect to "price squeeze" dates from 2001 when OPTA published, together with the Dutch Competition Authority, NMa, "Price Squeeze

[1] *Telecommunicatiewet 1998*, Stb. 1998, 610, as amended by the *Wet implementatie Europees regelgevingskader voor de elektronische communicatiesector 2002*, Stb. 2004, 189, consolidated version available at www.overheid.nl.

[2] The new framework is made up of the following directives:

(i) based on Article 95 EC: Directive 2002/19 of 7 March 2002 (Access Directive) [2002] OJ L 108/7, Directive 2002/20 of 7 March 2002 (Authorization Directive) [2002] OJ L 108/21, Directive 2002/21 of 7 March 2002 (Framework Directive) [2002] OJ L 108/33, Directive 2002/22 of 7 March 2002 (Universal Service Directive) [2002] OJ L 108/51 and Directive 2002/58 of 12 July 2002 (Privacy Directive) [2002] OJ L 201/37, and

(ii) based on Article 86 EC: Directive 2002/77 of 16 September 2002 on competition in the markets for electronic communications networks and services [2002] OJ L 249/21.

Guidelines". These Guidelines define there to be a price squeeze if the margin between the wholesale tariffs and the retail tariffs of the SMP telecommunications operator (in practise KPN) is so small that efficient competitors are no longer able to profitably offer their services:

> "Er is sprake van prijssqueeze als de marge tussen de inkoop- en verkooptarieven van de aanbieder met aanmerkelijk macht dan wel van een onderneming met een economische machtspositie zo laag wordt dat (efficiënte) concurrenten hun diensten niet meer rendabel kunnen aanbieden" (Richtsnoeren prijssqueeze, paragraph 4).

In line with OPTA's mission of stimulating effective competition on the Dutch telecommunications market, OPTA has since then developed tests to check for price squeeze and it has forced lower bounds on the retail tariffs of KPN in order to prevent such a squeeze from occurring. In the "Consultatiedocument Ondergrens tariefregulering van de eindgebruikersdiensten van KPN" dated October 31, 2002, OPTA has clearly stated the goal that such a price squeeze test and the accompanying regulation should achieve:

> "Het doel van ondergrens tariefregulering is het voorkomen van te lage en daarmee anticompetitieve prijzen. Voor het college betekent dit dat een juiste ondergrenstoetsing ervoor zorg draagt dat een efficiënte toetreder in staat is te concurreren met de verticaal geïntegreerde AMM aanbieder op de relevante markt" (Consultatiedocument, p. 4 "Doelstelling College").

The goal, hence, is to prevent anti-competitive pricing of the incumbent; it should be ensured that efficient operators be able to profitably compete on the relevant market. When reviewing the price squeeze documents that OPTA has published over the years 2001-2004 (the most recent one being the "Nota van Bevindingen" published in August 2003), and the reports on the consultation procedures on these documents, it, however, becomes clear that the price squeeze test, as it has been implemented in the past, is more wide ranging than is needed to achieve the stated purpose. The test does not start from the relevant market, but imposes a price floor on each element of each type of call, while also the issue of "efficient operators" sometimes seems to have

been lost out of sight. Since the regulations go (much) further than necessary to reach the stated aim, they may hinder welfare and the competitive process rather than stimulating these. In addition, as we will describe in more detail below, the test and the accompanying regulations may not be compatible with the new EU telecommunications framework.

When reviewing the "price squeeze documents", one notices that the following issues stand out:

(i) The price squeeze test leads to OPTA imposing price floors on several retail tariffs of KPN, and it is not clear that such an imposition is allowed under the new EU regulatory framework in telecommunications;

(ii) The price squeeze test is conducted at a very detailed level, very likely at a much lower level of aggregation than the level of the relevant market, and as such, the test may no longer be useable under the new EU framework;

(iii) While the policy goal only refers to efficient operators, the existing documents on price squeeze do not discuss the extent to which such operators do need KPN's network; it is simply assumed that access is essential to be able to compete, hence, the test may allow inefficient entry to the market and may lead to too high prices, thus hurting consumers;

(iv) The test seeks to prevent anti-competitive pricing, but it does not take into account the fact that such pricing may be a rational business strategy only in a very few cases; as a result, the price squeeze policy runs the risk of making relatively many type II errors ("blocking normal competitive behaviour") and, hence, hurting consumers rather than helping them; more generally, there is no discussion about whether ex post intervention could be more desirable;

(v) OPTA's proposal to bring more innovative bundles under the price squeeze test by evaluating them at the highest possible traditional cost level, in OPTA's own view, has prevented KPN from introducing innovative (hence, possibly welfare enhancing) calling packages.

In short, there are both economic and legal reasons to revisit the price squeeze test. The main legal issue is whether, in the new EU framework, a price squeeze test is a valid and proportional instrument to achieve the goals that it is supposed to achieve.

From the economic side, the current test has the drawback that it may limit innovation, and that it may impose too high a price floor, both of these ultimately at the expense of end-users.

In light of this, KPN requested TILEC to look into the following questions:

1. What should be the test applied by OPTA to prevent "price squeeze" across KPN's retail prices under the new legislative framework? Is the proposal that KPN has made for a price squeeze test adequate?

2. In particular, at what level of aggregation should the examination take place?

3. In particular, how should the test be conducted when product bundles (especially between services where KPN has SMP and others where it does not have SMP) are being assessed?

In this paper, we provide answers to these questions. The paper is structured as follows. Section 2 surveys the evolution of the legal framework and of OPTA's price squeeze policy. Section 3 deals with the first research question, namely the general approach to price squeeze issues. The level of aggregation in the price squeeze test is discussed is Section 4. Section 5 examines the bundling of various services. KPN's proposed test is analysed in Section 6. Section 7 concludes.

2. EVOLUTION OF THE LEGAL FRAMEWORK AND OF OPTA'S POLICY CONCERNING "PRICE SQUEEZE"

Over the years, OPTA's policy towards the lower boundary of KPN's retail prices evolved (or more precisely: OPTA sought to have it evolve), although in practice nothing much has changed yet. In Section 2.1 we describe how the original OPTA policy implemented the piecemeal approach of the old ONP framework. On the legal side, the main factor of change is the replacement of the old ONP framework with the new electronic communications framework at EC level, and the corresponding implementation in the Netherlands; see Section 2.2. Section 2.3 describes how, for the past two years, OPTA has been struggling to try to adapt its policy to the new electronic communications framework, which might require a larger change than some market parties, and perhaps even OPTA, are willing to contemplate. Recent documents such as the ERG Common position on remedies and recent decisions of the European Commission, such the *DT* case and the *Wanadoo Interactive* case also point in the direction of a lighter regulatory framework, as we show in Section 2.4.

2.1 OPTA's original policy, in implementation of the old ONP framework

Directive 98/10 (ONP – Voice Telephony) provided at Article 17 that the tariffs of SMP operators (in practice the incumbents) on the "market for fixed voice telephony" had to be cost-oriented (among other requirements).[3] A separate provision, Article 19, required that the discount schemes of those same SMP operators be "transparent, public and non-discriminatory".[4] In principle, Articles 17 and 19 are part of a single approach towards retail pricing. However, these two provisions of the Directive were implemented in separate provisions in the Netherlands, and this led to OPTA pursuing two separate policy tracks,[5] the one concerning the regulation of KPN's basic

[3] Directive 98/10 of 26 February 1998 (ONP – Voice telephony) [1998] OJ L 101/24, Art. 17-18.
[4] Directive 98/10, ibid., Art. 19.
[5] The Telecommunications Act 1998, Art. 7.1 (as it was then) left these matters to be dealt with in implementing decrees. The Besluit ONP Huurlijnen en Telefonie (BOHT) created a regime of retail tariff regulation at Art. 35-36 and then dealt with discounts separately at Art. 38.

(generic) tariffs (including the policy on price squeeze), and the other relating to the regulation of KPN's discounts on those tariffs. In the next two subsections, we discuss these two policy lines in more detail.

2.1.1 The OPTA policy on price squeeze

OPTA defined its policy regarding price squeeze in Guidelines on price squeeze adopted jointly with the NMa in 2001.[6] The Guidelines seek to prevent retail prices of the incumbent that are too low. Until the publication of these Guidelines, OPTA had focused mainly on the question of whether retail prices were not too high and it had imposed price caps. With increased competition on the Dutch telecommunications market, according to OPTA, regulation had to focus more on the question of whether the incumbent's tariffs were not too low, so as to frustrate emerging competition. As a consequence, the Guidelines proposed price floors for KPN's tariffs and a method for determining these.

As far as OPTA was concerned,[7] the NMa/OPTA Guidelines were based on the articles 16, 17, 35 and 36 of the "Besluit ONP huurlijnen en telefonie", the BOHT. These articles state, among others, that the SMP operator (KPN) has to submit its retail tariffs to OPTA, that OPTA has to judge whether these tariffs are cost oriented, and that OPTA has to approve these tariffs. It must be underlined that OPTA's power to control the retail tariffs of the incumbent on the "markets" for fixed voice telephony and leased lines, arose from the Dutch implementation of the then-existing ONP Framework. Under the old ONP framework, the "markets" to be scrutinized by the NRA (National Regulatory Authority?) were not defined in a way that sought to echo relevant market definition under competition law.[8] Furthermore, the ONP

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[6] OPTA and NMa, *Guidelines on price squeeze (Richtsnoeren prijssqueeze)*, OPTA/EGM/2000/200494, NMa/2201/12 (28 February 2001).

[7] The powers of the NMa in this domain derive from Article 24 of the Dutch competition law, the equivalent of Article 82EC. In this respect, the Guidelines refer to predatory pricing ("onbillijk lage prijzen"). Of course, an essential difference is that OPTA can regulate ex ante, whereas competition law enforcement takes place ex post.

[8] In the Guidelines, *supra*, note 1, the NMa did not necessarily follow the "market definitions" of the ONP framework in its own discussion. Rather, it relied on the Commission Notice on Access Agreements [1998] OJ C 233/2, whose relatively unsophisticated market definition approach has in the meantime been superseded (see for instance Recommendation 2003/311 of 11 February 2003 [2003] OJ L 114/45).

directives directly mandated the remedies to be imposed by the NRA upon SMP operators, here prior control of retail tariffs with a cost-orientation obligation.[9]

According to the Guidelines (paragraph 4), there is a *price squeeze* if the margin between the wholesale and the retail tariffs of the incumbent operator is so small that (efficient) competitors are not able to offer their services in a profitable way. In paragraph 21, the Guidelines refer to the Commission Notice on Access: a price squeeze can be *demonstrated* by showing that, at the wholesale (network) prices determined by the network arm of the SMP operator, that operator's own downstream branch is not able to operate in a profitable way. Indeed, OPTA formalizes the *price squeeze test* along the latter lines in the Appendix to the Guidelines. The idea underlying this test, hence, is that the requirement of efficiency implies that an efficient competitor has to be at least as efficient as the incumbent.

The NMa/OPTA approach can thus be outlined as follows:

1. The price-squeeze test compares the retail tariffs of the SMP operator with its own underlying costs, defined as the costs which the SMP operator would incur were it to buy the building blocks for the service in question wholesale from itself. The resulting retail margin must leave room for an efficient operator to compete with the incumbent;
2. The wholesale costs are determined by using published interconnection and other wholesale tariffs;[10]
3. The retail tariffs are also the published ones, minus any applicable discounts set out in the tariff itself;
4. The price squeeze test is conducted at the level of the "various tariffs elements", hence, one looks at different types of calls, at different times of day, and of different length; for each of these one looks both at the start up costs and the traffic costs, and it is imposed that, at each of these elements, price be above cost.

[9] See Directive 98/10, *supra*, note 2, Art. 18, as implemented in the BOHT, *supra*, note 2, Art. 35.
[10] The original policy outlined in the Guidelines provided for a correction, if necessary, by deducting costs which would not be generated at wholesale level to serve the retail operations of the SMP operator (the so-called "wholesale specific costs"). However, in its Statement of findings of 26 April

In the next Section, we will elaborate upon these requirements in a somewhat more formal way.

2.1.2 The policy regarding discounts

OPTA's discount policy was set out in 1998 as part of a more general decision on the cost-orientation of KPN's retail tariffs.[11] It is based on the following principles:[12]

1. Discounts will not be allowed if it can be expected that they will lead to restrictions of competition on the market in question;
2. Discounts based on proven cost advantages will in principle be allowed;
3. Discounts arising from cost advantages that cannot be proven will be allowed only in a limited fashion, depending on the state of competition on the market in question, as long as competition is not restricted. The bottom limit is average total costs as determined per service, using an FDC (Fully Distributed Costs) method.
4. Discounts cannot result in a group of consumers being put at a disadvantage, and must benefit a large enough group of consumers.
5. Discount bundles involving traffic from various locations will not easily be allowed (demonstrable cost advantages independent from traffic volumes must be shown) and bundles of competitive and non-competitive services will not be allowed.
6. Fidelity discounts cannot be allowed.

This had led OPTA to establish a grid of permissible discount rates for KPN, renewed regularly. The 2004 grid is as in Table 2.1[13]

2002, *infra*, note 6, OPTA chose to factor in these costs for the SMP operator as well, on a proportionate basis (see para. 145).

[11] OPTA, Opinion on the amount of cost-orientation of KPN's proposed voice telephony tariffs (*Oordeel over de mate van kostengeoriënteerdheid van de door KPN voorgestelde tarieven voor de spraaktelefoondienst*), OPTA/E/98/2190 (2 September 1998).

[12] Ibid., para. 9.1.4. and 9.1.5.

[13] See OPTA, Allowed discounts for 2004 (*Kortingsruimte 2004*), OPTA/EGM/2003/204801.

Traffic type	Maximum discount allowable	Currently allowable percentage of maximum discount	Allowed discount
Local	17,4 %	25	4,4 %
National	22,7 %	100	22,7 %
Fixed to mobile	4,0 %	100	4,0 %
International	32,1 %	100	32,1 %

Table 2.1: The permissible discount rates in 2004.

2.2. The new EC regulatory framework for electronic communications

This section summarizes the main elements of the new EC regulatory framework as it applies to the issues discussed here.

Under the new EC framework, the actions of NRAs such as OPTA must pursue a set of three main objectives:[14]

- Promote competition in the sector
- Contribute to the development of the internal market; and
- Promote the interests of the citizens of the EU.

The most powerful tool at the disposal of NRAs in pursuance of these objectives (in particular the first one) is the ability to impose specific regulatory obligations on firms holding Significant Market Power (SMP). The revised SMP regime under the new framework is meant to be aligned as much as possible with competition law, in order to ensure consistency in economic regulation. This is reflected not only in the structure of the regime (market definition, market assessment and remedies), but also in the preference given for regulation via competition law inasmuch as possible. As stated in the Framework Directive:[15]

> It is essential that *ex ante* regulatory obligations should only be imposed where there is not effective competition, i.e. in markets where there are one or more undertakings with significant market power, and where national and

[14] Directive 2002/21 (Framework Directive), Art. 8.
[15] Ibid. Rec. 27.

> Community competition law remedies are not sufficient to address the problem.

The preference therefore goes to the application of competition law (or other regulation) on an *ex post* basis, unless the market is not effectively competitive and unlikely to become so.[16] Electronic communications regulation is meant to be light-touch to the greatest extent possible.

By the same token, NRAs enjoy a measure of discretion in determining which SMP remedies to impose. The new framework does not prescribe remedies. It requires NRAs, however, to ensure that their measures are:

- Proportionate,[17] i.e. they are able to reach their aim, they do not go beyond what is necessary, and the inconveniences that they cause remain in proportion to the advantages to be expected.
- Based on the nature of the problem identified.[18] This implies that, in a first stage, the problem with the functioning of the market is clearly identified, and that in a second stage a remedy is sought for that problem.
- Justified in the light of the objectives of the new regulatory framework, as sketched above.[19]

The Dutch implementation in the Telecommunications Act (*Telecommunicatiewet 1998*, as amended following a proposal of MP Blok) goes even somewhat further, requiring OPTA to

> "support its conclusion that the measure [to be adopted] is necessary to reach the aims [of the regulatory framework] and that less intrusive alternatives would not be effective, among others through a study of foreseeable consequences, qualitatively as well as – to the extent reasonably feasible – quantitatively".[20]

[16] See for further developments Recommendation 2003/311 on relevant product and service markets.
[17] Directive 2002/21 (Framework Directive), Art. 8(1), Directive 2002/19 (Access Directive), Art. 8(4), Directive 2002/22 (Universal Service Directive), Art. 17(2). These provisions are implemented in Art. 6a.2(3) of the Telecommunicatiewet.
[18] Directive 2002/19, ibid., Directive 2002/22, ibid.
[19] Ibid.
[20] *Telecommunicatiewet*, *supra*, note 1, Art. 1.3(4).

We here see that the Dutch Telecommunications Act formalizes proportionality by requiring that something like a cost-benefit test be passed. While the scope of this project does not enable us to perform such a test, we indicate that, in our view, the current policy is unlikely to pass it.

This orientation towards a light-touch *ex post* regulatory intervention is also reflected in the provisions applicable to the regulation of retail services in the Universal Service Directive.[21] As a starting point, retail regulation can only be envisaged if and once it has been concluded that wholesale regulation cannot suffice to achieve the regulatory objectives set out above at the retail level. Should the NRA conclude that retail regulation is desirable, it must then ensure that its intervention complies with the principles set out above. More specifically, the NRA is given a range of options, including retail price caps, individual tariff controls or measures to ensure that prices are cost-oriented or similar to prices in comparable markets. There is no specific indication as to whether price control should take place *ex ante* across the board in a systematic fashion, or rather in a more punctual fashion, in view of specific problems that might have been identified. Presumably this is an element to be taken into consideration where deciding which type of measure would fulfill the general criteria applicable, in particular proportionality.

2.3. OPTA's reflections on policy changes in view of the new electronic communications framework

Following a market consultation that was started in November 2001, in 2002, OPTA published a Statement of findings on tariff regulation under the new EC electronic communications framework.[22] In that Statement, OPTA notes that the new framework could result in broader "market definitions" (this time made on the basis of competition law principles) than the market breakdown which OPTA used under the

[21] Directive 2002/22 (Universal Service Directive), Art. 17.
[22] OPTA, Statement of findings – Integral tariff regulation for interconnection and retail services (*Nota van bevindingen – Integrale tariefregulering voor interconnectie- en eindgebruikersdiensten*), OPTA/EGM-IBT/2002/201084 (26 April 2002).

ONP framework.[23] On this point, it may be noted that the fears of OPTA did not entirely materialize, and the first Commission Recommendation on relevant product markets proposed to define a series of relevant markets at the retail level that come closer to what OPTA had in mind.[24] However, it is definitely true that the new framework insists on starting at a higher level of aggregation than that of the "various tariffs elements" as used to be the case under the "old" price squeeze test: a tariff element cannot be viewed as a relevant market; see Section 4 below. In recognition of this, as regards the regulation of the lower boundary of retail prices, OPTA envisioned the systematic imposition of minimal price thresholds on retail *markets* that are not effectively competitive (i.e. where there is SMP) and it announced a review of its price squeeze policy.[25] In this document, OPTA also announced that it would pay attention to selective rebates and bundling of "non-competitive" with "competitive" services by SMP operators on retail markets.[26]

The issues left open in the 2002 Statement of findings were picked up in the consultation document "Ondergrens Tariefregulering" from October 2002, with which OPTA started the process of integrating its various regulatory frameworks so as to bring them in line with the new EC regulatory framework.[27] Considering that the new electronic communications framework does not as such provide a basis to continue with the current split between policy tracks concerning generic tariffs (and "price squeeze") on the one hand, and discounts on the other hand, OPTA announced in this consultation that it would like to introduce a unified and unique test to cover all of KPN's retail pricing. Consequently, the new policy should not only integrate the existing frameworks on price squeeze and discounts, it should also be able to incorporate innovative tariff packages (bundles) for which no policy had been developed until then. In other words, all possible retail pricing formulae (from the

[23] Ibid., para. 25-26.
[24] Essentially, OPTA's fears were based on the Annex I of the Framework Directive (Directive 2002/21 of 7 March 2002 [2002] OJ L 108/33), which envisaged only two markets at retail level, namely access to and use of the public telephone network. Recommendation 2003/311, *supra*, made further distinctions between markets for access, local and/or national calls as well as international calls, each of which can be further refined by distinguishing between residential and non-residential customers. This comes closer to OPTA's practice (although OPTA also used to treat fixed to mobile calls and 0800/0900 numbers as two separate markets as well).
[25] Statement of findings, *supra*, para. 42, 50.
[26] Ibid., para. 43-44, 50.
[27] OPTA, *Consultatiedocument – Ondergrens tariefregulering van de eindgebruikersdiensten van KPN*, OPTA/EGM/2002/203544 (31 oktober 2002).

generic tariff to tailor-made pricing) would come under a single policy track and thus a single test.

In the consultation document, OPTA considered that this single test could be the "price squeeze test" which it applied under the old framework to assess the cost-orientation of generic tariffs. The definition of "price squeeze" would remain the same as before (a situation where the margin between the wholesale and retail tariffs of the SMP operator is so small that efficient competitors cannot offer their services profitably), but the test could be different and would apply to all retail prices of the SMP operator, be they basic tariffs, discounts or packages.[28] In other words, the floor price arising out of the price squeeze test would be valid for all retail prices. Clearly, given the trend towards differentiated pricing, the "unified" price squeeze test would be much more complex to apply than under the old ONP framework, where a limited number of KPN generic tariff elements had to be checked. Ultimately, the prices charged to each client might have to be individually tested for "price squeeze", if the policy remains to prevent "price squeeze" at all costs. In view of the absurdity to which this could lead, OPTA further signaled a willingness to conduct the price squeeze test at a certain level of aggregation, and proposed to accept KPN tariffs where a limited number of clients would end up under this floor price.[29]

The October 2002 consultation document was discussed in a meeting with market parties on May 6, 2003, and this led to OPTA publishing its "Statement of findings on the regulation of the lower boundary of KPN retail prices – Price squeeze, rebates and packages" in August 2003.[30] In view of opposition from all interested parties other than KPN, who argued that the proposals, when implemented, would not leave them enough room to compete, OPTA decided not to push its proposals further. OPTA also indicated that it did not intend to move away from examination at the tariff element level, subject however to the implementation of the new electronic communications framework, and in particular the new market definitions and the proportionality

[28] *Supra*, note 27, para. 12.
[29] Ibid.
[30] OPTA, *Nota van bevindingen ten aanzien van ondergrensregulering van de tarieven van de eindgebruikersdiensten van KPN, oftewel prijssqueeze, kortingen en pakketten*, OPTA/EGM/2003/202390 (6 August 2003).

requirement.[31] In the end, OPTA left any significant change for a later time, as the electronic communications framework is implemented. The issue is therefore open at the present time, ahead of OPTA's first market studies under the new framework.

2.4. Subsequent developments at the European level

While OPTA was considering how to adapt its policy to the new regulatory framework, the European Regulators Group (ERG), of which OPTA is part, set out its common position on remedies under the new framework (Section 2.4.1), and the Commission decided its *Deutsche Telekom* price-squeeze case (Section 2.4.2) as well as its *Wanadoo Interactive* predation case (Section 2.4.3), all of which are relevant here. A number of national cases are also relevant,[32] but they have either fed into the Commission cases or been inspired by them.

2.4.1. The ERG common position

In order to provide individual NRAs with greater guidance when exercising their discretion as to the design of remedies, the ERG produced a *Common position on the approach to appropriate remedies in the new regulatory framework.*[33]

The Common position does deal with the issues raised here, but not at the level of detail which is useful for the purposes of this document. Nevertheless, it is noteworthy that the ERG does not advocate extensive controls on the various tariffs and prices practiced by the SMP operator. The ERG is rather reserved towards the kind of approach contemplated by OPTA under the new framework (as set out above):[34]

> If the situation is such that predation can be expected to be profitable for the SMP undertaking, and wholesale remedies are likely to be insufficient, NRAs may want to impose some form of regulation on the undertaking's retail

[31] Ibid., para. 18.
[32] See D. Geradin and R. O'Donoghue, "The Concurrent Application Of Competition Law And Regulation: The Case Of Margin Squeeze Abuses In The Telecommunications Sector", paper presented at the GCLC/BT conference on price squeeze in the telecommunications sector (10 December 2004).
[33] ERG(03)30 rev 1.

> price… A common practice is, for example, to require the SMP undertaking to pre-notify changes in the retail price to the NRA. If the NRA considers the price as predatory, leading to a margin squeeze, and likely to have significant anti-competitive effects, it might prevent the undertaking from changing prices in the intended way. In such cases, NRAs may publish guidelines according to which the effects of a certain price will be assessed. Retail pricing is, however, considered to be a tool of last resort.

As will be discussed in more detail in Section 3, from the economic point of view, the "if" in the first sentence, and indeed the other "ifs" as well are strong "ifs": one should not necessarily assume that one is in a world where this assumption applies. The "if" clauses thus represent a significant hurdle: the underlying concern is predation, and it must be shown that it could be profitable, and furthermore it must be shown that upstream (wholesale) regulation cannot suffice to deal with the problem. Accordingly, it is not surprising that the ERG prefers a more light-handed solution at wholesale level (retail-minus pricing) to large-scale price control at retail level:[35]

> With a cost-oriented access price, the problem of margin squeeze reduces to a problem of compliance with the access regulation at the wholesale level and/or to a potential predation problem at the retail level. If a danger of predation exists, it might be appropriate – after due consideration – to regulate the retail price by means of Art 17 USD (regulatory cost controls on retail services) ex ante.
>
> A retail-minus approach in general should rule out the possibility of a margin squeeze as it links wholesale and retail prices exactly in a way such that all operators that are equally efficient as the dominant undertaking will usually be able to compete.

The ERG Common position is meant to develop further the new framework, in the light of the principles on remedies set out above (adequacy in light of problem identified, proportionality, compliance with regulatory objectives).

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[34] Ibid. p. 100-101.
[35] Ibid. p. 101.

2.4.2. The DT case

In 2003 the European Commission fined Deutsche Telekom (DT) for an abuse of a dominant position under Article 82 EC.[36] In short, the Commission decided that DT's wholesale and retail charges for access to the local loop amounted to a margin squeeze. That is, the spread between DT's wholesale tariffs for unbundled access to its subscriber lines and the weighted average of its corresponding retail services tariffs (analogue, ISDN and ADSL connections) left DT's competitors an insufficient margin to compete for retail subscribers, as the spread was lower than DT's own downstream product-specific costs.

In the circumstances, DT's wholesale tariffs for unbundled local loop access, and to a lesser extent also its retail tariffs, had been subject to an *ex ante* check by the German telecommunications regulator, RegTP. However, the Commission held that *ex ante* tariff approval decisions of national telecommunications regulators do not by themselves pre-empt *ex post* application of Article 82 EC.

The difficulties in the *DT* price squeeze case arose in great part from a negative spread between two regulated prices, and, more fundamentally, from a failure by Germany to rebalance its retail tariffs in the run-up to liberalization. As such, the case is not determinative for the research questions raised here. Nevertheless, a number of interesting points can be noted:

- The Commission defines price squeeze as "an insufficient spread between a vertically integrated dominant operator's wholesale and retail charges… especially where other providers are excluded from competition on the downstream market even if they are at least as efficient as the established operator"[37]. The benchmark retail margin is therefore that of the dominant operator.
- The price squeeze test compared, at the wholesale level, the tariffs charged by DT to its competitors for access to the local loop with, at the retail level, the basic monthly subscription. The Commission decided to leave

[36]Commission Decision of 21 May 2003, Case COMP/C-1/37.451, *Deutsche Telekom* [2003] OJ L 263/9.
[37] Ibid. at Rec. 108.

call charges out of the test (more on this below), and, accordingly, the test was not too complex. Nevertheless, there was a "level of aggregation" issue, since DT's wholesale offering (the unbundled local loop) could be used to provide a variety of retail services, i.e. analogue, ISDN and ADSL access. The Commission chose not to conduct separate price squeeze tests for each of these retail services. Instead, "all forms of retail access are aggregated on the basis of the number of each variant that the established operator has marketed to its own end-users".[38] Accordingly, the Commission starts from the principle that the retail side of the price squeeze test must be aggregated at the level of the relevant wholesale market for the essential input provided by the dominant operator.

- The Commission rejected DT's argument that call charges should be considered together with monthly subscriptions charges at the retail level. DT's argument was that the end-customer sees the monthly subscription and the call charges as a whole, and accordingly that the sum-total of both should be used for the retail level part of the price squeeze test. The Commission's main counter-argument is that tariff re-balancing should have taken place, thereby ensuring that monthly subscription charges are oriented towards the underlying wholesale costs (in other words, the wholesale cost of the local loop should be entirely recovered at retail level via the subscription charge).[39] This is not entirely consistent with the rest of the Commission's approach; this departure might reflect the fact that the basic cause of the price squeeze in the *DT* case is incomplete tariff rebalancing in the run-up to liberalization. Perhaps the Commission would accept to combine access and call charges in a case where tariff rebalancing had been properly conducted at the appropriate time in history.
- As an unfortunate consequence of the Commission stance on the combination of access and call charges on the retail side of the price squeeze test, the Commission left out of consideration all retail offerings (packages) where a higher monthly subscription is coupled with lower call charges.[40]

[38] Ibid. at Rec. 111.
[39] Ibid. at 119-129.
[40] Ibid. at 130-131.

2.4.3 The Wanadoo Interactive case

On 16 July 2003, the Commission fined Wanadoo Interactive (the Internet subsidiary of France Telecom) € 10 million for infringements of Article 82 EC between March 2001 and October 2002, consisting in predatory pricing.

Notable points from that decision include:

- As in *DT*, the service at stake was a monthly flat-fee service, here broadband Internet access (via ADSL), so that the case is not entirely conclusive on the issue of the "level of aggregation" for retail price control. Nevertheless, the Commission conducted its examination at the level of the relevant market and did not seek to break down its inquiry further.
- The Commission conducted a very detailed analysis of the costs of Wanadoo Interactive.
- The abuse test followed by and large established case-law (and the Areeda/Turner model), in the sense that pricing below average variable cost (AVC) is presumed to evidence predation, whereas pricing below average full cost (but still above AVC) requires further inquiry into the intent to eliminate competition. In any event, even where the Commission found that Wanadoo did not recover AVC, it still inquired into intent.
- Under EC competition law, the Commission adopted a broader perspective on predation than what is sometimes found in economic theory.[41] It held that behaviour less radical than the exclusion of competitors, i.e. mere inhibition, could also constitute predation under competition law.[42] Similarly, it was not necessary to prove that Wanadoo would or could recoup its losses,[43] although the Commission did show that the relevant

[41] In this paper, we also adopt the broader definition, as found, for example, in Brodley et al (2002).
[42] Commission decision of 16 July 2003, *Wanadoo Interactive*, available on the website of DG COMP, Rec. 266.
[43] Ibid. at Rec. 333-335.

market was characterized by entry barriers, which do make recoupment possible.[44]

- A key factor in the decision was the evidence that Wanadoo intended to drive its competitors out of the market. Such evidence was found in explicit statements contained in company documents[45] and in an objective analysis of Wanadoo's strategy.[46] Furthermore, none of the justifications put forward by Wanadoo was accepted by the Commission.[47]

[44] Ibid. at Rec. 336-367. Note that this supports the conclusion that *ex ante* regulation should be limited to the *narrow* predation case – putting the competitor out of business – whereas the rest can be dealt with *ex post*.
[45] Ibid. at Rec. 110-141.
[46] Ibid. at Rec. 274-299. As we ourselves note, indeed predation is more complex than just a price test.
[47] Ibid. at Rec. 305-331.

3. DEALING WITH "PRICE SQUEEZE" UNDER THE NEW FRAMEWORK

In line with the NMa/OPTA Price Squeeze Guidelines (paragraph 4), we may *define* a *price squeeze* as a situation where the margin between the wholesale and the retail tariffs of the incumbent operator is so small that (efficient) competitors are not able to offer their services in a profitable way. Note that this term "price squeeze" merely describes a relationship between upstream and downstream prices, without indicating why this relationship came to be the way it is and what the consequences can be on the functioning of the market. The term "price squeeze" does not indicate whether the "problem" is caused by the wholesale price being too high, the retail price being too low, or both. The term signals that there might be a problem, but it does not indicate who causes this problem (the regulator or the incumbent), or what the consequences might be.

In this Section, after having formalized the price squeeze test as implemented by OPTA in Section 3.1, we address these issues. Section 3.2 deals with the question of how a price squeeze test fits into the authorities' decision-making process: should a price squeeze be viewed as an anti-competitive behaviour, as an (anti-competitive) effect, or is it related to (used as) a remedy? Section 3.3 concerns "price squeeze" as a possible anti-competitive effect, in particular resulting from predatory pricing. In line with the regulatory framework, it asks whether the risk of (a strict form of) predatory pricing is so grave as to warrant *ex ante* regulatory intervention and to control the lower boundary of the retail prices of SMP operators. Section 3.4 discusses the relation between price squeeze tests and access price regulation, it argues that, if a standard price squeeze test is enforced, most forms of fixed cost allocation are incompatible with the goal of fixed cost recovery. Section 3.5 concludes our general discussion on price squeeze.

3.1 OPTA's price squeeze test

We start by noting that OPTA's definition of a price squeeze is similar to the one given by the European Commission in paragraph 118 of its Notice on Access; there the wording is that "the margin (…) is insufficient to allow a reasonably efficient service provider to obtain a normal profit". The formal *price squeeze test* that is proposed in the OPTA/NMa Guidelines, however, refers to paragraph 117 of the Commission Notice on Access: "a price squeeze could be *demonstrated* by showing that the dominant company's own downstream operations could not trade profitably on the basis of the upstream price charged to its competitors by the operating arm of the dominant company." The idea here seems to be that, if the incumbent's own downstream branch is not able to operate in a profitable way, then neither will a reasonably efficient operator be able to do so. In other words, the assumption is that the incumbent itself is reasonably efficient, at least at the downstream level. Indeed, OPTA formalizes the *price squeeze test* along the latter lines in the Appendix to the Guidelines. Of course, the incumbent need not be efficient and the resulting test may be misspecified; see Section 3.1.1.

3.1.1. Formalization

In general, one may define that there is *no price squeeze* if:

(3.1) $$w + r \leq p\,,$$

where w denotes the upstream price charged by the network arm of the incumbent operator, r is the cost at the retail level and p is the retail price of the incumbent. If a regulator wants to prevent a price squeeze and uses a test as in (3.1) for this purpose, then given w and r, he can impose that p has to be at least as large as the left hand side of the equation. With a test as in (3.1), the remaining questions are how to determine w, r and p, and to what services the test will be applied. The conditions (1)- (3) from Section 2.1.1 state that, as inputs in this inequality, OPTA uses the incumbents own

prices and costs. In other words, OPTA's price squeeze test is as in paragraph 117 of the Commission's Access Notice:

(3.2) $w + c \leq p$,

where c denotes the incumbent's own downstream cost. In fact, this is nothing else but the retail-minus rule that, under the current assumptions, is precisely the Efficient Component Pricing Rule: $w \leq p - c$.

In practice, OPTA's price squeeze test takes a slightly different form than in (3.2) since the retail costs c are approximated by a mark up of 23% on the wholesale cost. Furthermore, the test, as specified in its original form in the 2001 Guidelines, takes into account the generic discount ("Voordeelnummers") that consumers can get (a 10% discount on at most 10 numbers). OPTA includes this by including a generic discount of 5%, hence, in the final test, the left-hand side of (3.2) is replaced by $1.23w$, while the right-hand side is replaced by $.95p$, leading to an overall test of:

(3.3) $p \geq 1.295w$

Originally, as specified in the 2001 Guidelines, the test (3.3) referred only to the generic retail tariffs. As indicated in Section 2.3, with the consultation document "Ondergrens Tariefregulering" from October 2002, OPTA sought to also incorporate discounts in the price squeeze test. In OPTA's opinion, it was necessary to supervise discounts of the party having SMP to avoid cross-subsidisation; according to OPTA, the buffer of consumers that pay the generic tariffs would allow this SMP operator to offer below cost tariffs at those segments where the competition is intense, so as to drive competitors from the market.

In the October 2002 consultation document, OPTA discussed two ways in which its policy with respect to discounts could be integrated into its price squeeze policy. In the first possibility, the price offered to each end user could be allowed to fall to the level of the wholesale cost, as long as for the service as a whole, the price would be such as to earn back the average retail margin. In essence, this amounts to a price

squeeze at the aggregate level. OPTA sees risks in this possibility; hence, it favours the second possibility, which is to impose (3.3) on the retail prices for all consumers, although, in exceptional cases, when cost saving could be demonstrated to justify a lower retail margin, this could be accepted as well. Although this second possibility would give less room for KPN to offer discounts than the first, OPTA argues that the resulting policy would still be more generous than the existing policy on discounts. (For further details on this, see Figure 4, p. 26 of the Consultation document).

3.1.2. A comment on efficiency and misspecification

Assuming that a reasonably efficient entrant will not have higher retail costs than the incumbent, (3.2) implies that such an entrant is indeed able to profitably undercut the incumbent. However, it cannot be excluded that an efficient entrant has lower retail costs than the incumbent, hence, may be able to make a profit even with lower retail prices of the incumbent. Writing the downstream cost of a reasonably efficient competitor as *c'*, a more relevant test, therefore, is:

(3.4) $$w + \min(c, c') \leq p,$$

With this test, an entrant that does not product differentiate is able to profitably compete if and only if it is at least as efficient as the incumbent. In other words, the test from (3.2) may impose a too high price floor, and may hurt consumers. The test from (3.4), while informationally more demanding (as one has to estimate the cost of a reasonably efficient competitor) is preferable from the point of view of economic efficiency. Note, however, that even (3.4) assumes implicitly that operators compete mainly in prices and that there is not sufficient scope for product differentiation. In the case of product differentiation, it becomes ambiguous what the meaning is of a "reasonably efficient competitor" and a test as in (3.4) may be associated with both type I and type II errors; there is no guarantee that the test (only) induces efficient entry.[48] In particular, the test might be too stringent and may make life needlessly complicated for entrants that wish to follow a strategy of product differentiation. A

[48] A type I error is one in which anti-competitive behaviour is left undetected or unpunished, a type II error is one in which normal competitive behaviour is blocked.

similar remark applies for entrants that wish to follow a strategy of (partial) by-pass as for them, the wholesale cost *w* is not necessarily relevant.

On the other hand, one might argue that a test as in (3.2) (or (3.4)) is too weak as it ignores inefficient competitors as prey. While we acknowledge the fact that also inefficient entrants could exert some competitive pressure on the incumbent, in our view policy should not take the interests of such competitors into account as they will not be able to survive on the market anyway. In any case, the point remains that the idea, that a price squeeze test can be used to guarantee that efficient entrants can enter and that inefficient entry will be blocked, is based on strong assumptions.

3.2 Fitting in the price squeeze test

It is useful to set out, side-by-side, the decision-making processes under competition law and electronic communications regulation, in order to gain a better view of where price squeeze precisely fits.

In table 3.1 below, bold indicates a step where evidence must be gathered and a decision taken on the basis thereof. A shade of grey has been applied on what can be called the "triggering factor", i.e. the element which justifies intervention.

	Competition law (Art. 82 EC)	*Electronic communications framework*
1. *Starting point*	**Relevant market definition**	**Relevant market definition**
	-	**Selection of markets**
2. *Market analysis*	**Dominance**	**SMP**
3. *Conduct*	**Abusive conduct**	Presumed/expected problem
4. *Effect*	**(Effect on competition)**	Possible effects
5. *Remedies*	**Remedies**	**Remedies**

Table 3.1: The authorities' decision-making process.

It can be seen that, under Article 82 EC, a number of elements must be shown in order to warrant intervention by a competition authority or a court. In particular, it is not sufficient to hold a dominant position, abuse must be proven, including an anti-competitive effect.

Under electronic communications regulation, on the other hand, there is an extra step at the first stage, namely the selection of markets, which takes place through Commission recommendations.[49] Only those markets will be selected where (i) there are significant and lasting barriers to entry, (ii) competition is unlikely to develop by itself behind those barriers to entry and (iii) competition law cannot suffice to police the market. Regulatory authorities must then analyse these markets for SMP and impose appropriate remedies. The authority does not need to inquire and present evidence that the conduct of the SMP operator(s) is problematic in that it gives rise to anti-competitive effects. That part of the inquiry is based on assumptions; that is what is meant by *ex ante* regulation.

At the same time, the principles guiding remedies, as listed above in Section 2.2. – proportionality, adequacy, justification – imply that the regulatory authority should be careful not to assume too readily that the behaviour of the SMP operator will be anti-competitive; it should not be assumed that the SMP operator will automatically engage into such behaviour. Rather, in line with the principle of proportionality, a balance must be made between the aim to be achieved and the means used to that end (including the undesirable side-effects thereof). In other words, since *ex ante* regulatory intervention is generally likely to induce some market distortions itself and is more likely than *ex post* intervention to be erroneous (given the assumptions to be made), it should be limited to those problems which are so pressing that it is worth taking the risk that intervention would be costly or mistaken. Other problems can be left for the *ex post* stage, if they are not corrected by market forces.

Against that background, it is interesting to try to figure out where the notion of "price/margin squeeze" finds its place. It could be either a form of undesirable behaviour (line 3. in table 3.1), an anti-competitive effect (line 4.), or it could be

[49] See the first recommendation, Recommendation 2003/311, *supra*.

linked to remedies (line 5.). The latter corresponds to the traditional view under the old ONP framework: the test is accompanied by retail price regulation that guarantees that the test is satisfied. It should be realised, however, that a "price squeeze test", such as that put forward by OPTA, is a very intrusive form of retail price control. It will thus have to be justified by a very well-identified problem, which is very pressing, and for which it is the least intrusive response. In particular, it will have to be argued why the problem is so pressing that it cannot be left to competition policy.

Concerning the question how to best view a price squeeze test, the ERG Common Position on Remedies provides a useful starting point for the discussion. In Chapter 2, a generalization of problems and possible effects is made.[50] The ERG sees "margin squeeze" as an anti-competitive effect,[51] which can arise out of a number of cases of undesirable ("anti-competitive") behaviour in a vertical leveraging context, namely

- non-price issues: bundling/tying;
- price issues: price discrimination;
  cross-subsidization;
  predatory pricing.

For the ERG, therefore, "margin squeeze" is therefore but a general concept at the level of the "anti-competitive effects" (line 4. of the scheme above), which can stem from various types of behaviour. As the ERG itself notes,

> "[a]lthough margin squeeze also has a behavioural aspect, it is classified as an effect here, as it can be the result of different behaviours of the dominant undertaking. When designing remedies it might be important to be aware of the particular behaviour leading to a margin squeeze (i.e., in particular, price discrimination upstream and/or predatory pricing downstream)."[52]

Accordingly, a policy addressing "price squeeze" without further specifying which kind of underlying behaviour is actually aimed at might very well not comply with the principles concerning remedies under the electronic communications framework, as set out above.

[50] As summed up in Figure 1a on pages 44-45 of the ERG Common position.
[51] Although it notes at 30 that "margin squeeze" is on the borderline between behaviour and effects.

In the remainder of this Section we follow the ERG in classifying "price squeeze" as an effect. It is important, first of all, to distinguish between this effect being caused by regulation, or by anti-competitive behaviour of the SMP operator. Bouckaert and Verboven (2004) distinguish between three cases of price squeezes that require different regulatory treatments. If all wholesale and retail prices of the incumbent are regulated, then a price squeeze is an artefact of existing regulation, which can be dealt with by adjusting the level of the regulated prices. Similarly, if the regulated wholesale price is set at too high a level, lowering that price may eliminate the "squeeze". Consequently, our focus will be on the cases in which the determination of retail prices is, at least to a certain extent, left to the discretion of the incumbent. This situation, which Bouckaert and Verboven (2004) call 'partial regulation', may give rise to 'predatory price squeezes' (in the terminology of the same authors). As the ERG notes, in a context where wholesale prices are regulated, the possibility of price discrimination or cross-subsidization (in order to drain profits from the retail level) can be discounted. Of the types of behaviour described above, that would then leave, as sources of margin squeeze, predatory pricing and tying/bundling. The latter is dealt with below under Section 5 of this document. The following pages of this Section deal with the former.

3.3. Predatory pricing

The October 2002 consultation document on "Price Floor Regulation of Retail Tariffs" makes clear that OPTA is concerned that, given the (regulated) levels of access prices, KPN may set retail prices that are so low that efficient competitors at the retail level would be unable to make positive profits and would be driven out of the market, hence, OPTA is concerned about KPN engaging in predatory behaviour. Indeed, the opening sentence of Section 4 of that consultation document explicitly links price squeeze to predatory pricing, which is defined there as: a service being sold (for a long time) below cost so as to deter entry or induce exit.[53] OPTA thus

[52] At 42.
[53] Also in the discussion on discounts, OPTA explicitly refers to predation: the buffer of the consumers on the generic tariffs could enable the SMP operator to engage in predatory pricing.

adopts a somewhat restrictive definition of predatory pricing, it only considers price squeezes that inhibit entry or lead to market exit of competitors, and it seems to ignore price squeezes that aim at disciplining rival firms. On the other hand, the definition focuses on the relation between price and cost, and does not mention market structure, hence, it is not as restrictive as advocated by most economists.

At the outset, it is indeed important to sound a note of caution as to the different meanings of "predation" and "predatory pricing" that can be found in the literature. The most strict interpretation (frequently adopted by economists) corresponds to conduct whereby the "predator":

(i) sets its retail price below a certain cost level (which can be defined in various ways),

(ii) in order to drive its competitors out of the market,

(iii) with the aim of raising prices again after the exit of the competitors, so as to recoup the earlier losses made by selling below cost and to make an overall profit, and

(iv) such that there is no acceptable efficiency defence of the pricing strategy.[54]

It is obvious from the discussion of *Wanadoo Interactive* above that under EC competition law, as interpreted by the Commission, item (iii) might not be necessary, so that a broader notion of "predation" would be applied. "Predation" could be seen even more broadly by relaxing item (ii) to encompass also conduct that is likely to injure competitors without driving them out of the market. Predation can then be defined as a "price reduction that is profitable only because of the added market power the predator gains from eliminating, disciplining, or otherwise inhibiting the competitive conduct of a rival or potential rival" (Brodley et al., 2000, p. 2242). Finally, the loosest interpretation could imply a relaxing of item (i), so that even prices which are still above a certain cost level but "hard to match" for competitors would qualify as anti-competitive.

In the context of the regulatory framework for electronic communications, *ex ante* regulation designed to prevent predatory pricing should of course concentrate on the most serious instances of predatory pricing. In terms of the previous paragraph, this

means that *ex ante* regulation should entertain a relatively strict definition of predatory pricing. As seen in *Wanadoo Interactive*, other cases can be dealt with *ex post* with the help of competition law. Viewed in this light, OPTA is right in adopting a narrow definition of predation corresponding to (i) and (ii) above: cases of market disciplining, rather than exit, can be left to competition law.

In fact, on the basis of modern economic thinking, one can argue that it would be preferable for OPTA to adopt an even narrower definition, including requirement (iii) since otherwise the likelihood of type II errors (prohibiting normal competitive behavior and preventing normal competitive outcomes) is simply too large. William Baumol nicely sums up the economic thinking on predation in the following statement and the dangers involved when one neglects it:

> "There seems to be general consensus among informed observers that genuine cases of predation are very rare birds. As Areeda and Turner note, that does not relieve us of the necessity of guarding against those rare occurrences, of taking steps to prevent them and to rectify any damage they produce. But there is a painful trade-off here. Rules that make it excessively easy to secure conviction on charges of predation invite anti-competitive and rent-seeking litigation. Such rules tempt firms that cannot make it in the marketplace by virtue of superior products or greater efficiency and lower costs, to seek success over their more efficient rivals in the courts instead. (….) Long study of the subject has led me to the conclusion that litigation of this sort is a major handicap to the growth and competitiveness of the nation's economy."[55]

The warning that Baumol issues here,[56] may well apply to OPTA's policy on price squeeze and the way the new entrants to the Dutch market have responded to it. It is indeed worthwhile to note that KPN's competitors in the Netherlands have argued in favour of a more stringent price squeeze test. These competitors have argued that they have higher costs at retail level ($c' > c$) and that they have additional costs at the

[54] See Brodley et al. (2000). For an application of these ideas to a "real life" Dutch context, see Van Damme (2003).
[55] William Baumol: "Predation and the Logic of the Average Variable Cost Test", *Journal of Law and Economics* **34** (1996) 49-72
[56] Baumol refers to the broad definition of predation that includes "market disciplining" in addition to "market exit".

wholesale level as well. In addition, they have argued that, in order to attract consumers, they also need to offer a discount in comparison to KPN's prices, hence, that a proper price squeeze test should involve a higher price floor for KPN. Although these claims of the competitors concerning their price levels may all be true, this, however, does not imply that KPN's price floor should be higher. After all, these arguments can equally well be interpreted as the entrants being less efficient than the incumbent, and regulation should not lead to inefficient entry, nor should it force too high prices on end users.

While economists no longer hold the "traditional Chicago view" that predatory pricing can never be a rational business strategy, the above quote from Baumol shows that they are still worried that normal competitive prices may too often be deemed predatory. Economists are of the opinion that only in particular kinds of circumstances predation can be a profitable business strategy, specifically, that condition (iii) above ("recoupment") will typically not be met. OPTA, however, seems to think differently as, in Section 4 of the October 2002 consultation document, it notes that in telecommunications markets, small innovative firms are especially vulnerable to such predatory behaviour. That, however, is a one sided view: even if it were the case that entrants could be easily driven from the market, they would have nothing to fear if the incumbent would have no incentive to drive them from the market. Indeed, OPTA does not discuss this latter incentive and, as a result, that part of the document makes a somewhat biased impression: it can be read as OPTA taking the side of competitors rather than as OPTA promoting competition. To put it differently, while OPTA adopts a narrow definition of predation, it seems to think that such predation is likely. In our view, this points to an inconsistency and, given OPTA's stated goal, it cannot sidestep the question of whether and when the anticompetitive pricing that it is worried about can be in the interest of KPN.

In relation to this, we note that, since KPN is active both at the wholesale and at the retail level and since its regulated wholesale price is typically above marginal cost, the company has less of an incentive to engage in predatory pricing as when it would have been a pure retail company. This result, which among others was shown in Biglaiser and DeGraba (2001), has a simple intuition. If the wholesale price is above marginal cost, then the upstream branch of the monopolist makes more profit the

higher its sales, hence, the higher the wholesale price, the higher the incumbent's access revenues and the lower the incentives to engage in predation.

Returning to the discussion in the previous section, the above remarks lead to the following conclusion. If the concern underlying the price squeeze test is for predation, then, according to the state of the art in economics, the assessment of the market conduct of the incumbent should not consist just of a pricing test that compares the incumbent's price to its cost level; one also needs to check whether the market structure makes it possible for predation to be a rational business strategy. Without this additional step in the market analysis, it might easily happen that specific prices are mistakenly deemed predatory. To prevent such (type II) errors from occurring, a price squeeze test should be complemented by an elaborate analysis of the market, including a market definition. It does not make sense to label a pricing strategy as a price squeeze without verifying that it may actually lead to forced exit of competitors from a certain relevant market. Furthermore, given that predatory pricing is unlikely to be profitable, one would expect that it would suffice to deal with it ex post, hence, an ex ante price squeeze test may not be necessary to deal with this type of anti-competitive behaviour.

3.3.1 An example: the risk of misspecification

Keeping the above warnings in mind, let us consider the following example to illustrate the pricing test (hence one of the elements of a complete predation test). In order to make the strongest case for price squeeze testing, let us assume a classic Chicago-style environment: the upstream good *U* is used in fixed proportions (which, with a suitable choice of measurement units, can be taken to be one-to-one) for the production of the downstream good *D* and there is no possibility of by-pass; the downstream products offered by the monopolist and by potential entrants are perfectly homogeneous; there is price competition on the retail market. Consistent with the notation from section 3.1, let *c* and *c'* be the (constant) marginal cost of transforming the upstream good *U* into the downstream good *D* for the upstream monopolist and for potential downstream entrants, respectively; let the access price be *w* (the price of

the upstream good), while the monopolist's downstream price is denoted by p.[57] Finally, let C denote the monopolist's upstream marginal costs.

As pointed out by the Chicago school (e.g., Bork, 1978), in this environment, if the upstream price were not regulated, a price squeeze test would have no indicative value, hence, it would be superfluous. For any fixed price level w of the upstream good, efficient downstream entry requires that condition (3.4) be satisfied.[58] Under our assumptions, for given price levels, if the monopolist sells one more unit downstream, the entrants sell one less unit downstream and thus buy one less unit upstream. Therefore, the monopolist's opportunity cost of selling an extra unit in the downstream market is equal to its actual marginal cost $(C + c)$, plus the lost profits from upstream sales $(w - C)$, which sums up to $w + c$, while the entrants' opportunity costs are $w + c'$. If $c < c'$, then the monopolist is more efficient and he maximizes profits by setting its downstream price p at the monopoly level corresponding to its own costs, while setting the upstream price w at the downstream price minus its own downstream costs. If the entrant is more efficient ($c > c'$), then the monopolist maximizes its profits by setting its downstream price w just above the monopoly level corresponding to efficient costs $(C + c')$, its upstream price w at just below the downstream price p minus c', thus letting the entrants serve the downstream market while pocketing all the profits. In this second case, the monopolist's own downstream price is a "free variable" and in both cases, the price squeeze test, defined as in (3.2) or (3.4), is satisfied.[59] The test is superfluous.

If w instead is regulated and the monopolist cannot raise it to appropriate the gains from some entrant's superior efficiency or to increase its downstream rivals' costs, then it may be useful to detect and avoid price squeezes. In this case, the monopolist might prefer to prevent entry and exercise (unregulated) market power in the downstream market directly. Since regulation is now assumed to prevent foreclosure by "excessive" upstream prices, the only remaining anticompetitive pricing strategy is

[57] The entrants' costs should include whatever additional costs are necessary to adapt the upstream good to their use. If the monopolist incurs these costs, they should be reflected in the upstream price (see below for more details on this issue).
[58] Conversely, preventing inefficient entry requires that p be at most as high as $w + max\{ c, c' \}$, a restriction that competitive behaviour would enforce naturally.
[59] See also Armstrong (2002), section 2.6.

predation: lowering the downstream price below $w + c'$ until entrants are fought off and then raising downstream prices again. Despite what was said earlier in this section, let us assume that such a strategy could be profitable. One may now raise the question whether a price squeeze test, defined as in (3.2) or (3.4), may be used to prevent this kind of predation without adverse side-effects. Even in this very simple environment, the answer to this question is not straightforward: it depends on the proper definition (and, of course, measurement) of cost used in the test. This is a basic issue in the analysis of predatory pricing in general, but the proper definition of "avoidable costs" requires special care in the present context.[60]

For example, assume that the monopolist has to incur additional unit costs x in providing a version of the upstream good that would be usable by downstream entrants (say, because of extra compatibility or interconnection requirements). [61] Then such costs should be deducted from the monopolist's costs if the price squeeze test is to provide efficient signals for downstream entry, hence, the test should be

(3.5) $$p \geq w - x + c$$

To see this, note that total production costs per downstream unit would be equal to $C + c$ for units sold by the monopolist and equal to $C + x + c'$ for units sold by one of the entrants. If we impose a price floor $p \geq w - x + c$ on the monopolist in the downstream market, then the monopolist will be able to undercut the entrants if and only if $w - x + c < w + c'$, or equivalently, $C + c < C + x + c'$, which is precisely when it is efficient to do so, that is, when production costs are minimised when the monopolist serves the market. If one instead would use the price squeeze test $p \geq w + c$ as in (3.2), then there is misspecification, total costs are not necessarily minimized and consumers might have to pay unnecessarily high prices. Namely, consider the case where $c' < c < c' + x$, that is, the entrant is more efficient not taking into account the interconnection costs, but it is not when these costs are taken into account. Given

[60] See Brodley et al. (2000) for the arguments in favour of using average avoidable costs as a standard in predation cases. Note that the difference between average and marginal costs is not an issue in the present section because we are temporarily assuming constant marginal costs. In more general environments, one must still use only avoidable costs (without adding mark-ups to cover upstream or downstream common costs) in order to avoid using a misspecified test (see sections 3.4.1 and 4.2 below for examples).

[61] See Bouckaert and Verboven (2004).

$c' < c$ and $p \geq w + c$, it is clear that the entrant can undercut the incumbent for any level of w, hence, the entrant will serve the market, however, since $c < c' + x$, total costs are higher than when the market would be served by the monopolist. The test is misspecified and it leads to inefficient entry. In other words, in this case, a price that violates the price squeeze test from (3.2) but satisfies the test as in (3.5) should not be classified as predatory, but as normally competitive. We see that a misspecified price squeeze test could thus do more harm than good.

Let us briefly discuss how this relates to the price–cost test of predatory pricing as defined in EC law (*Akzo*, *Wanadoo Interactive*). As discussed in section 2 above, under EC law, predation is given if $p < AVC$ and predation is presumed if $AVC < p < ATC$ (in which case other factors such as intent, etc., have to be considered). In the example discussed above, since it was assumed that there are no fixed costs, if we interpret costs as production costs, we have $AVC = ATC = C + c$. Consequently, we would have predation, as defined in EC law, if and only if $p < C + c$. Note, however, that the network cost C do not play a role in either (3.2) or (3.5), hence, one may ask whether both of the tests are misspecified. The answer is no: it is the EC test of predation that is misspecified, at least that test should not be phrased in terms of production costs. The proper specification is in terms of opportunity costs. The reader may note that as long as (3.5) is satisfied, the monopolist's marginal profit of selling directly to the market is higher than when selling through the entrant; equivalently, if (3.5) is satisfied, the monopolist is not selling below opportunity cost. The proper test is $p \geq w - x + c$, not $p \geq C + c$.

The above conclusion (and the likelihood of misspecification) would be even stronger if we relaxed the rather restrictive Chicago-style assumptions. If potential entrants offered downstream products that are imperfect substitutes for the monopolist's and/or if entrants could by-pass (possibly at a cost) the monopolist's upstream input, then for given prices the sale of one unit of an entrant's downstream product is no longer associated with the monopolist's loss of exactly one unit sale downstream and with the monopolist's increase of exactly one unit sale upstream. In the jargon of the

access pricing literature, the *displacement ratio* is no longer necessarily equal to one.[62]

The added degree of freedom given by a variable displacement ratio has two major consequences. On the one hand, the incumbent upstream monopolist may want to engage into behaviour that would not pass a price squeeze test as in (3.2) for reasons other than predatory pricing. On the other hand, and more importantly for the scope of this paper, the price squeeze test itself may become meaningless.

First, if by-pass is a serious option, the absolute size of the margin *(p - w)* depends on the units of measurement used for the monopolist's upstream and downstream goods. These can no longer be assumed to be in one-to-one (or any fixed) proportions without loss of generality – indeed, even in equilibrium, the monopolist and the entrants would probably use the upstream input in different proportions.[63] Second, if the downstream goods are imperfectly substitutable, the fact that entrants could profitably price their goods below the monopolist's does not mean that they will be able to sell anything at all, let alone to sell the optimal quantity of them – and conversely, they may be able to sell their goods (even beyond the optimal level) also if the classic price squeeze test fails.

In sum, if we violate the classic (Chicago-style) assumptions, the price squeeze test cannot achieve the intended goal of forcing price to provide efficient signals for downstream entry.

3.4. Pricing and regulation at the upstream (wholesale) level

In the previous section, we have already seen that, whether the price squeeze test can detect predation and provides signals inducing efficient entry may depend on the level of the access price. In this section, we address the question whether the regulator will

[62] See Armstrong (2002).

be able to set the access price such that fixed costs are recovered and efficient entry is promoted. We will see that typically, if one insists on the price squeeze test being satisfied, this will not be possible.

In order to qualify the importance of the level of the access price, we first consider the case of an upstream monopolist who faces a competitive fringe of entrants, whose products are imperfectly substitutable to the monopolist's downstream good and which can bypass (at a cost) the use of the upstream input. In a telecommunications setting, suppose that there are entrants who offer local access. If access is mispriced, it is no longer clear that preventing a price squeeze would be efficient or benefit consumers.[64] As a consequence, it is not really possible to separate the analysis of price squeezes from that of access pricing. These issues are particularly important when one considers the role of fixed costs and, more generally, naturally monopolistic technologies.

Even when it can be shown that the SMP operator controls an essential input at the upstream (wholesale) level, the usefulness of testing for price squeeze as evidence of predation depends on the regulatory regime applicable at the wholesale level. As the new EC regulatory framework requires, the ineffectiveness of wholesale regulation must first be established before retail regulation is introduced.

More generally, in an ideal world, the upstream input should be priced at marginal cost; this is what is called the "first-best" option. If that is achievable, the downstream prices can be left unregulated, though possibly controlled for attempts at predation. A price squeeze test could be useful here, although the expectation is that downstream prices will also be set at an efficient level by the market. However, the thrust of wholesale regulation is not to achieve pricing at marginal cost; given the large fixed

[63] A similar test may be conducted in terms of total revenues instead of prices. That is the version of the test that would have to be implemented even in a Chicago-style environment with economies of scale, as indicated in the following subsection.

[64] For an extreme example, consider the case of an access price so high that adding downstream costs would lead to a price above the monopoly level even if there is efficient entry. In this case, consumers would rather live with entry foreclosure and monopoly prices. For an opposite example, consider an access price so low that it does not allow the monopolist to recover its costs. In this case, short-run efficient downstream entry might be just the cause of long-run disappearance of upstream supply. Efficiency – and consumers – might benefit from allowing the monopolist to extend its market power downstream and survive.

costs involved, this would put the SMP operator whose prices are regulated in a situation where it could not recover its fixed costs and would therefore not operate profitably. Accordingly, wholesale regulation generally opts for a "second-best" option (say, because the upstream industry is a natural monopoly and regulators cannot subsidize it), which is to set prices at a level higher than marginal cost, enabling the recovery of some of the fixed and common costs as well.

In a second-best world, different kinds of welfare distortions have to be traded-off against each other. In the present context, this means trading off the deviations from marginal cost pricing of the various downstream goods and the possibility of inefficient by-pass. The theoretically ideal solution to the problem would be a form of Ramsey pricing as detailed in Armstrong (2002). In practice, this is often considered unfeasible and regulators use some forms of so-called Fully Distributed Cost (FDC) pricing in which fixed and common upstream costs are allocated to the monopolist's goods in some more or less arbitrary proportion. The following example illustrates that the regulatory goals of upstream cost recovery and efficient downstream entry are compatible with "classical" price squeeze test only for specific FDC rules that depend on regulator's foreknowledge of which firm is the most efficient.

3.4.1 An example

Let us assume that the regulator has some target shares $f_U \geq 0$ and $f_D = 1 - f_U$ of fixed and common costs F to be recovered from the monopolist's sales upstream and downstream. In other words, the regulator would like the following equations to hold:[65]

(3.6) $$(w - C)Q = f_U F$$

(3.7) $$(p - c - C)q = f_D F = (1 - f_U)F$$

[65] In this paper, we take these as constraints. One possible extension of the analysis is trade-off deviations from these targets vs. the welfare gains that such deviations could allow.

where Q (respectively q) denotes the monopolist's sales at the wholesale level (to the entrants) and at the retail level (to consumers). The corresponding margin is then

$$p - w = c + \frac{f_D F}{q} - \frac{f_U F}{Q} \tag{3.8}$$

Higher levels of f_U (a larger sharer of fixed costs to be recovered upstream) will generally lead to a higher w and to inefficiently low entry (i.e., inefficiently low quantities sold downstream by entrants) and possibly to inefficient by-pass; lower levels of f_U will instead lead to downstream prices further above marginal cost (i.e., inefficiently low quantities sold downstream by the monopolist) in the attempt to recover its total costs – though the attempt may fail if there is entry.

If the target shares can be set in proportion to the corresponding quantities, i.e.,

$$f_U = Q / (Q + q), \tag{3.9}$$

then (3.8) reduces to (3.2) with equality, hence, the price squeeze test is satisfied and it would seem that FDC pricing can achieve the conditions for efficient downstream entry. However, recall that the price squeeze test gives the efficient downstream entry conditions only in the classical environment of perfectly homogeneous downstream goods, no possibility of upstream by-pass and fixed-proportions technology. And, in such a set up, there are only two systems of target shares that can achieve both upstream cost-recovery and efficient downstream entry: if entrants actually do have lower costs and enter the downstream market, only they would sell downstream, $q = 0$, so that allowing for upstream cost-recovery requires $f_U = 1$; if entrants are less efficient than entrants, then there are no upstream sales and $f_U = 0$. In other words, access pricing policies are fully determined by the efficiency of entry and Fully Distributed Cost pricing cannot be really "distributed" at all, if downstream efficiency is to be guaranteed. Moreover, if the target shares are not set at the "right" level, or the "classical" assumptions are violated, enforcing the price squeeze test may actually be welfare decreasing.

3.5. Conclusion

Under the new regulatory framework (and in line with economic theory), it is crucial to identify first the underlying problem before looking at the design of remedies. In this section, it was shown that in the current situation faced by KPN (regulated upstream prices), the main concern was predation through low retail prices. Any remedy put forward by OPTA on account of possible price or margin squeeze should therefore be focussed on predation. Furthermore, in the light of the principle applicable to remedies, only the strictest definition of predation should be of concern for *ex ante* regulation.

Even then, it is not certain that a price squeeze test as currently adopted will correctly identify situations where regulatory intervention might be justified. First of all, there are other important elements, such as market structure, to be looked at before a conclusion can be reached as to predation. Secondly, the situation at the upstream level must not be forgotten: exclusionary pricing ("predation") is a problem only if the SMP operator controls an essential input at the upstream level. Thirdly, if and when the SMP operator controls such an essential input, the design of upstream regulation can already address the concern: the use of a second-best solution (involving the recovery of some common costs over and above marginal costs) for wholesale price regulation already significantly reduces the incentives for exclusion through low retail prices.

Translating these conclusions back into the new regulatory framework, it already becomes apparent that widespread retail price control along the lines of a price squeeze test could easily be excessive (disproportionate) in view of the underlying problem. In other words, by using a one-dimensional price squeeze test rather than a complete assessment of exclusionary pricing, the regulatory authority is likely more quickly to conclude that there is price squeeze than general competition law would warrant. As was underlined above, regulatory intervention should quite to the contrary be reserved for the most pressing cases, leaving others to competition law. A widespread price squeeze test may thus go further than the regulatory framework in the EU allows and it may lead to errors in the identification of predatory prices. As a consequence, it may 'overshoot' the regulatory goal of preventing predation and tilt

the playing field towards entrants, including competitors that are less efficient than the incumbent.

The following section elaborates further on this point when examining the level of aggregation at which the price squeeze test could be conducted.

4. THE AGGREGATION LEVEL

As seen above, an important question concerns the aggregation level for the application of the price squeeze test. Currently, OPTA applies the test at *element* level: any element of any call of any type must pass the test. Specifically, the generic retail tariffs of KPN differentiate between destination (biba, buba,[66] international, internet, mobile), time of day (peak, off-peak, weekend) and length, while for each call, the price is composed of a start-up price, plus a price related to the length of the call. The existing OPTA price squeeze test insists that inequality (3.3) from section 3.1 be satisfied for each type of call and for each tariff element. In other words, there is not just one test, but, for each type of call, there are two:

(4.1a) $$p_s(x) \geq 1.295 w_s(x)$$

(4.1b) $$p_t(x) \geq 1.295 w_t(x)$$

where x denotes the type of call, s denotes start up and t is traffic. It should be noted though that, in practice, as far as the length of the call is concerned, a distinction is made only between short calls (1 minute), medium length calls (3 minutes) and long calls (30 minutes).

It should be clear that the conditions (4.1) impose many different constraints. We will argue that this may be too restrictive and may do more damage than good. First of all, we will argue to broaden the scope of application to what Cave (2001) calls the *competitive arena*: a well-demarcated market segment in which a competitor can reasonably be expected to compete. The concept of "competitive arena" was introduced by Cave under the old ONP framework, and it will be argued, in section 4.1, that under the new framework, the relevant market should in fact be the appropriate point of reference. Furthermore, as we show in section 4.2, testing at a lower level of aggregation than the relevant market may lead to inefficient entry in

[66] Biba calls are calls that originate and terminate in the same local area, buba calls are calls that terminate in another local area.

case the FDC method is used to allocate the underlying common costs. Section 4.3 shows that, in addition, testing at the level of the relevant market would also minimize the adverse effects of retail price control on dynamism and innovation. In Section 4.4, these findings are then fed into the new regulatory framework: it will be concluded that, since it cannot be expected that each separate "*x*" in the above inequalities (4.1) constitutes a relevant market of its own, the existing test is no longer applicable under the new framework.

4.1. **The relevant market as the appropriate level of aggregation**

We will now argue that the level of aggregation at which one applies a price squeeze test (or, equivalently, a predatory pricing test) cannot be decoupled from a definition of the relevant antitrust market. Our position here should not be controversial as indeed several regulators and competition authorities clearly share this view. As a matter of fact, already in the Introduction of this paper, we showed that OPTA itself states the goal of the price squeeze test in relation to the relevant market: "the purpose of a price squeeze test is to ensure that efficient competitors are not being excluded from the relevant market by anti-competitive practices of the incumbent". Furthermore, in Section 2, we showed that the European Commission performs its tests at that aggregation level, while in Section 3 we argued that predation can only be established at that level. Thirdly, in its response to the DG's Information Society's Working Document on Unbundled Access to the Local Loop, OFTEL (2000) has stressed the importance of identifying the relevant market:

> "OFTEL accepts the suggested test for assessing whether a margin squeeze has occurred, but suggests that the 'relevant retail market' should be more clearly defined. For the purposes of a margin squeeze investigation, the relevant retail market should include all of those services from which revenues are available to competitors as a result of their renting of the line from the incumbent."

> "The purpose of a margin squeeze test is to establish that more efficient competitors are not being excluded from the market by an anti-competitive practice. It is therefore clearly important that the tests should be set up in a way that reflects this objective. The market definition is particularly important when tariffs are unbalanced, because if too narrow a definition of the relevant market is adopted, the margin squeeze test might not achieve its objective. In particular, if the relevant retail market is defined as consisting only of the line rental, and excludes call services, the margin squeeze test could result in incumbents being required to provide loops at a price below cost."

While we agree with Oftel on all these points, we should note that, in the DT case discussed above, the Commission did not do what Oftel recommended in the final two lines of the quote: at the retail level, it only took into account the monthly subscription fee. Consequently, there seems to be a difference of opinion on these points. For our purposes here, that point, however, is not really important. What counts is that the objective of the test should not be forgotten and that this objective is to prevent efficient competitors being driven from the relevant market; a point on which the three authorities agree.

We will now provide several examples to illustrate our claim and to show that a price squeeze test may do more harm than good when it is conducted at a too low level of aggregation.[67]

4.1.1 A hypothetical example

As a first example, suppose that, in order to test if a price squeeze occurs, the regulator calculates the incumbent's retail profit margin for national *off-peak* calls of medium length, and compares it with the regulated price of access to the local loop charged to entrants offering the same product. Assume that the retail profit margin turns out to be smaller than the access price, so that an entrant without a local access network (and with the same downstream cost level as the incumbent) cannot profitably offer such calls on a stand-alone basis at a price at or below the

[67] On these issues, also see Bouckaert and Verboven (2004, section 7). Their conclusion 8 states: "The aggregation level at which a predatory price squeeze test should be carried out must be sufficiently high so that the services constitute a relevant antitrust market"

incumbent's retail price. The conditions (4.1) are violated for "*x* = off-peak of medium length" and, at first sight, it may seem that a price squeeze occurs. However, this need not be the case. National off-peak calls of medium length do not form a relevant market by itself, they form part of a larger relevant market, comprising also other calls. The prices of these products are determined together; hence, they cannot be evaluated in isolation. Furthermore, a competitor will not enter just the "market" for national off-peak calls of medium length. The relevant question, therefore, is whether new entrants' profit margins in the overall market are squeezed. This is a test at a much higher level of aggregation than a test as in (4.1) with *x* equal to national off-peak calls of medium length.

More generally, the level at which a price squeeze test is applied should not be lower (i.e., more detailed) than the relevant antitrust market, since that is the only level at which one can address the question whether a price increase is profitable. As we have seen above, the concern underlying the price squeeze test is predation and to see whether predation is possible, one has to check whether it is possible to profitably increase prices. The latter investigation, by definition, can only take place at the level of the relevant market. As Bouckaert and Verboven (2004) write "even if an operator would be able to drive its competitors out of the five-minute calls segment through a predatory price squeeze, this would not give rise to a substantial increase in market power because of the competition from the four-minutes and six-minutes call segments".

4.1.2 Biba and buba

Despite not being cheaper than biba at the retail level, buba might be more likely to qualify as a squeeze than biba because the underlying wholesale charges tend to be higher. The question is whether a price squeeze test should test biba and buba separately or collectively.

In principle, biba and buba should be tested collectively, because the consumer joins the two markets; if a firm targets the consumer, it targets both markets. If the consumer uses one and the same company for biba- and buba-calls, the relevant competitive arena is surely the joint combination of biba and buba. Hence, only the

overall package could possibly be squeezing. However, the buba markets were typically more competitive than the biba market and consumers can split their calls among different operators with carrier select. As a result, the biba-buba competitive arena was an example where it might have been unreasonable to expect the competitor to cover the combined market. However, the competitiveness of the biba market has increased significantly recently and meanwhile it can be defended that it is reasonable to expect competitors to cover both markets.

Overall, we may conclude that the aggregation of biba and buba is basically correct, but it ultimately depends on the assessment of the competitiveness (potentially or actively) of the biba market.

4.1.3 Peak and off-peak

Peak-load pricing is a classical case of joint production. The essential feature of joint production is that the products do not have competing claims on the available capacity; the peak production does not impede off-peak production. This crucially affects efficiency of pricing. Efficient pricing dictates that if the demand for peak and off-peak are sufficiently different, the off-peak price will be as low as short run marginal costs, while the remaining (fixed) costs will be recovered fully with peak demand.[68] Clearly, in such a situation it might happen that one concludes that there is a price squeeze during the off-peak periods.

The element-based approach, that is, making a distinction between peak and off-peak periods, can be criticised on a several accounts. First, it should be stressed that a (very) low off-peak price (reflecting off-peak excess capacity) is the efficient price. Second, this type of pricing corresponds necessarily to the competitive outcome.[69] Thirdly, the costs are recovered from peak demand. Fourth, there is no prior reason to assume that an entrant would compete on the off-peak market but not on the peak market. In fact, failure to do so would be a waste of resources and would be highly inefficient. Finally, the combination of peak and off-peak is the competitive arena.

[68] If peak and off-peak demand are sufficiently close, efficient pricing will take an intermediate form. Cf. the seminal contribution of Steiner (1957).
[69] Cf. Officer (1966).

National off-peak calls do not form a relevant market by itself, they form part of a larger relevant market, comprising also national peak calls. The prices of these products are determined together so that they cannot be evaluated in isolation. Furthermore, a competitor will not enter just the "market" for national off-peak calls. The relevant question, therefore, is whether new entrants' profit margins in the overall market are squeezed.

Overall, we may conclude that there are forceful arguments to aggregate peak and off-peak into one competitive arena. It can well be justified, that the off-peak prices at short run marginal costs should be allowed, as long as the aggregate of peak and off-peak is not squeezing overall.

4.2 . A disaggregated price squeeze test distorts the signals for efficient entry

As mentioned in Section 3, when carrying out a price squeeze test, regulators often deem it necessary to rely on cost data that include allocations of fixed or common costs. Implementing a price squeeze test with such data, however, may unnecessarily distort market entry decisions by forcing the incumbent to set downstream prices above entrants' marginal costs even if those are higher than the incumbent's. As a result, rather than preventing predation of efficient entrants, the price squeeze test may induce inefficient entry. The following example provides an illustration of this possibility.

Let us assume that there is an upstream asset that can be used as a (necessary) input for the production of two downstream goods *X* and *Y*. Consumer demand for each of these two goods is fixed at one unit for prices up to a given value *v* (which, unless otherwise noted, will be non-binding) and consumers are assumed not to care whether they buy both goods from the same firm or from different ones. The monopolist will operate the asset at constant unit costs C_x and C_y for the two uses and there will be two corresponding access prices w_x and w_y (no bundling of upstream goods). In order to complete production of the downstream goods, in addition to the services of the upstream asset, the incumbent and the (potential) entrants have to incur additional unit costs, (c_x, c_y) and (c'_x, c'_y) respectively, as well as fixed common costs *F* and *F'*. We assume no bundling or quantity discounts downstream either, so the goods will be

sold at linear prices (p_x, p_y) and (p'_x, p'_y). As a specific example, one may again think of peak and off-peak calls, which are jointly produced using the network; the fixed costs may be thought of as marketing costs.

In order to give the price squeeze tests their best chance of providing efficient downstream entry signals, we again stick to the traditional "Chicago-style" assumption that every unit sold by entrants downstream displaces a downstream unit sale by the monopolist and requires a unit of the corresponding upstream services. We assume, however, that, instead of using marginal costs, the price squeeze test uses FDC data. For simplicity, we also assume that fixed common costs are split equally between the two goods, and that, initially, the incumbent serves both markets, so that the (disaggregated) price squeeze test may be written as:

(4.2) $p_x \geq w_x + c_x + F/2$

(4.3) $p_y \geq w_y + c_y + F/2$

Suppose now that the efficient outcome would be for the incumbent to provide both goods. For example, let $F > F' = 0$, $c_x < c'_x < c_x + F/2$, $c_y < c_y + F/2 < c'_y$ and

(4.4) $F + c_x + c_y < min\{F + c_x + c'_y; F + c_y + c'_x; c'_x + c'_y ; 2v\}$.

The incumbent's opportunity cost of serving the X market is $w_x + c_x$, but the price squeeze test from (4.2) forces it to set a higher price, which is such that, on this market, the monopolist can be undercut by the competitor:

(4.5) $p_x \geq w_x + c_x + F/2 > w_x + c'_x$

As a consequence, we will have (inefficient) entry in market X, and the monopolist loses the entire X market to the competitor. Obviously, this implies that the former monopolist will have to earn his fixed costs in the Y market. The regulator, adopting a policy of full cost recovery, will respond by changing the price squeeze test in market Y to

(4.6) $p_y \geq w_y + c_y + F$

Consequently, if $c'_y < c_y + F$, the entrant could also undercut the incumbent in market *Y*. The incumbent's total downstream profits would then be negative and it would exit the market for *Y*, too. We would thus have inefficient entry in *both* markets.

It is easy to see that if instead the price squeeze test is conducted at the aggregate level for both downstream markets, i.e., if the test would simply be:

(4.7) $(p_x + p_y) - (w_x + w_y) \geq F + c_x + c_y$,

then the test would be compatible with efficient entry conditions.

4.3. **Dynamic and innovation aspects**

There might also be a dynamic dimension to the level of aggregation issue.

The regulatory framework concerning the prices of the incumbent has the effect of creating room for competition through access obligations and controls on wholesale and retail prices. Typically, "service-based" competition will emerge within the room created by regulation. The service-based competitors can then pursue a strategy of price undercutting, namely to track the service portfolio of the incumbent and offer similar services at a lesser price. This is not the only possible strategy, but it is a readily available one, in view of the regulatory framework.

If the newcomers are taking this strategy and therefore do not behave as trend-setters, then a very disaggregated price squeeze test essentially can deprive the incumbent of incentives to innovate in marketing through bundling/packaging, price-setting and discounting (knowing that any new offer would have to be conceived so as to allow competitors to step in with a replica which they can then price lower). It further reduces whatever incentive the competitors might still have to innovate in their retail offerings.

The market is then nailed down to those types of offerings which the incumbent sees fit to have in view of the disaggregated price squeeze test. If the market is technologically mature (as is the case for voice telephony, for instance), pricing and marketing are key dynamic factors. If firms are not given incentives to innovate there, then the market could stagnate (until a technological paradigm change can bring some dynamism again).

4.4. **Conclusion**

From the above, we conclude that the relevant market is the most appropriate level of aggregation for *ex ante* retail price control in order to prevent predatory practices (through a "price squeeze" test). This is the level where predatory behaviour liable to exclude a competitor from the market altogether should be observed. A more disaggregated testing would also catch instances where a competitor might be hurt, without however being excluded from the market altogether. Indeed, by applying a price squeeze test to market segments that are less aggregated than the relevant market under competition law, the regulator enforces more stringent conditions than those implied by general competition law. This may lead to 'overshooting' of regulatory goals and tilt the playing field towards entrants, similar to what we have seen in section 3. Moreover, attempts to conduct the analysis at a level of aggregation finer than the one allowed by data on marginal costs (e.g., by using FDC accounting rules) may introduce further distortions of market entry decision.

It would appear disproportionate to seek to test price squeeze *ex ante* at a lesser level of aggregation than the relevant market. At an *ex ante* stage, the justification for retail price regulation must be well-established (as discussed in section 3, this justification is not so strong as to support very detailed retail price control), and secondly price regulation should be limited to what is necessary to address the most pressing risk, namely exclusion from the market altogether.

5. BUNDLING

In line with the definition proposed by OPTA in its October 2002 consultation document “Ondergrens tariefregulering van de eindgebruikersdiensten van KPN”, we may define bundling as: various service elements, which can also be bought separately, are bundled together for a specific price. In Section 7 of that consultation document, OPTA outlined its plans for how it intended to deal with such bundles and other innovative service packages at the retail level. In essence, OPTA proposed to test such bundles for price squeeze at the level of elements, taking into account “adverse selection” at the demand side. As we will argue here, proceeding in this way may limit innovation and lead to lower consumer surplus. In Section 5.1, we start by discussing the basic economics of bundling. In Section 5.2, we describe the OPTA proposals on how to deal with bundled offers, while, in Section 5.3, we criticize some elements from these proposals. Section 5.4 illustrates our arguments by discussing KPN’s Belplus proposals. Section 5.5 concludes our discussion on bundling.

5.1 Some economics of bundling

Bundling may be defined as the sale of two or more separate components, products or services for one price. Bundling can be welfare enhancing, for example, it can save on costs of billing, it can reduce search costs and other informational costs for the consumer, and it can be a very effective marketing device. All these points related to cost savings are very obvious and will not be further commented upon here. We will focus instead on the fact that bundling can enhance welfare by creating a better fit to varying consumer preferences. However, bundling can also be used as an instrument to foreclose the market, and it is not clear a priori which effect dominates.

Two types of bundling are often distinguished: bundling of different products, and bundling of closely related products. As an example of the first type, one may consider a bundled offer of mobile telephony, Internet access and fixed telephony. An example of the second type is “Block of Time”: one can call T minutes in the

Netherlands for € *X*. Whereas the difference between these two types may be relevant empirically, from the analytical point of view they are the same. Hence, we will not make the distinction here.

At the conceptual level, three strategies are usually distinguished:

- a component strategy, which is the same as no bundling,
- pure bundling, meaning that only the bundle is offered and not the separate components,
- mixed bundling, which implies that the components are offered both as a bundle and separately, the key feature being that the price of the bundle differs from the sum of the prices of the components.

In what follows, we will focus on the case of mixed bundling.

5.1.1 Price differentiation and heterogeneous preferences

As stated above, we would like to focus on bundling as a device to price differentiate between consumers with different (heterogeneous) preferences. The key insights have been put forth by Stigler (1963), and more generally by Adams & Yellen (1976), whom we will follow here.

The crucial point is that, when consumer preferences differ, there is no 'one size fits all', (mixed) bundling helps finding a better fit for each consumer, and a ban on bundling will tend to reduce consumer welfare. Consider figure 5.1 (Adams & Yellen, 1976, figure iv, p. 482). In the figure, we assume that there are two goods *X* and *Y*, which are offered with prices p_x and p_y and, if bundled, p_B. In the example, there are four consumers (*A*, *B*, *C* and *D*), who differ in their relative preferences (and thus in their willingness to pay) for these goods, (with the separate reservation prices as depicted in the figure), but who are all willing to pay a maximum of 100 for the bundle. The incremental costs of providing the goods are $c_x = 20$ and $c_y = 30$. The optimal prices for the pure components, pure bundling and mixed bundling strategies are as in table 5.1. Note that the dilemma faced by the firm is that pricing too high results in losing customers, but that lowering the prices results in a loss of profit margin.

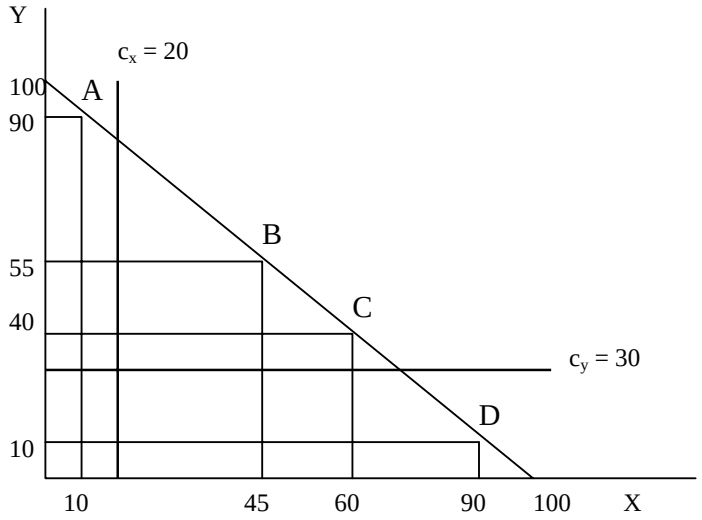

Figure 5.1: Bundling of different preferences (Source: Adams & Yellen, 1976, figure iv, p. 482.)

Case	Description	p_x	p_y	p_B	Profits
Case I	Pure components	60	90	-	140
Case II	Pure bundling	-	-	100	200
Case III	Mixed bundling	90	90	100	230

Table 5.1: Prices and profits in different bundling strategies.

	A	*B*	*C*	*D*
Case I	*Y*	-	*X*	*X*
Case II	*{X, Y}*	*{X, Y}*	*{X, Y}*	*{X, Y}*
Case III	*Y*	*{X, Y}*	*{X, Y}*	*X*

Table 5.2: Consumption of goods *X* and *Y* by consumers *A* to *D* for the cases as described below.

Consider case I, in which the firm is following a pure components strategy and sets prices equal to $p_x = 60$ and $p_y = 90$. The purchases are as in table 5.2. Multiplying by the prices and subtracting the costs gives a profit of 140. The important feature is that consumer *B* does not purchase any of the products and that consumer *C* does not consume good *Y*, whereas in these cases their willingness to pay is higher than the

incremental cost of offering the goods. This is clearly inefficient. Consumer *B* could be offered good *Y* by lowering the component price p_y to 55, but this would reduce the price for consumer *A* as well and thereby the producer's surplus. It turns out to be better for the producer not to supply consumer *B* at all.

Case II represents the case of pure bundling, with a bundle price of $p_B = 100$. All consumers buy the bundle and thereby all products. Profits are 200. The inefficiency of case I above is resolved as the products to *B* and *C* are now sold. However, pure bundling introduces a different inefficiency: consumer *A* purchases good *X* and consumer *D* buys good *Y* although their unbundled preference is lower than the components' costs. Considered in isolation, consumer *A* should not purchase good *X* and consumer *D* should not purchase good *Y*.

Thus far, we have seen that whereas no bundling results in selling too little, pure bundling sells too much. In case III, mixed bundling strikes a balance. The firm chooses optimal prices as in table 5.1, which gives sales as in table 5.2 and subsequent profits of 230. Consumers *B* and *C* purchase both products, which is efficient as the preference is higher than the components' costs, and at the same time, *A* does not purchase *X* and *D* refrains from purchasing *Y* which is efficient because the preference is below the components' cost.

The example shows that mixed bundling maximizes the monopolist's profit and induces efficient purchasing decisions. The reader may wonder about consumer surplus. It is easily calculated that, in this example, consumer surplus is 30 in case I, while it is 0 in each of the other cases. Consequently, while consumers prefer the pure components strategy, total welfare is highest in the case of mixed bundling. Adams & Yellen (1976, p. 495), from which this example was taken, study more cases and give examples were both the consumers and the firm are better off in the case of mixed bundling. They conclude more generally that a prohibition of (mixed) bundling might make society worse off.

5.2 OPTA's proposed price squeeze test for bundles

In the October 2002 consultation document, OPTA acknowledges that the jury on bundling is still out: bundling can be welfare enhancing, but it can also have anticompetitive effects. OPTA is aware of the fact that bundling can be used as an instrument to foreclose the market and it mentions three examples of bundling that, in its view, are definitely not allowed:

(i) no longer making available the individual service elements (tying);

(ii) abusive pricing of the bundle;

(iii) situations where bundling leads to foreclosure.

The first case corresponds to what above we have called pure bundling. The second case is orthogonal to the concerns of this paper and will not be considered here. Our focus is on the third case and, of course, the problem is to identify the situations in which bundling could lead to foreclosure. OPTA proposes that a price squeeze test may be used for this purpose.

It would be easy, at least conceptually, to conduct such a price squeeze test if the retail bundle would be accompanied by a corresponding wholesale offer: in that case, one just has the equivalent of an inequality like (3.3) at the level of the bundle. Frequently, however, such an accompanying wholesale offer will not exist, in which case one has to proceed differently. Indeed, in such a case, it is not immediately clear how to test the bundle for a price squeeze, as in calculating the wholesale costs involved in providing the bundle, one needs to make assumptions on the calling pattern that will be attracted by this bundle: the costs depend on the demand pattern that the bundle generates. Let us illustrate this by means of an example. Suppose KPN would like to offer "x minutes of national calls for €10", where there are no restrictions on time or place of calling. Should this offer be allowed? OPTA concludes that the bundle is particularly attractive for callers that wish to make many short national calls at peak times and that, with this calling pattern, the wholesale cost would be higher than €10. The conclusion that OPTA draws is that this calling pattern, when "costed" at element level, gives rise to a price squeeze, hence, that the offer cannot be allowed.

More generally OPTA argues that, when testing a bundle for the existence of a price squeeze, there are two possible ways to determine the associated calling pattern:

(i) the bundle will attract an average calling pattern;

(ii) the bundle will attract those consumers for which it is most expensive to provide the bundle.

OPTA argues, and rightly so, that the first assumption is not the proper one to make, as the bundle typically will not be equally attractive for all types of callers, and it expresses a preference for the second option.

5.2.1 Critique and an alternative

However, OPTA's assumption on the calling pattern may be just as unrealistic. The most natural assumption to make is that the bundle will attract those consumers that find the bundle to be the best deal on the market, and this part of the population need not be the group for which that bundle is most costly to provide. Clearly, OPTA's assumption is not justified from a business perspective: the incumbent will aim to offer bundles that are attractive not only for the users but also for the provider.

One may agree with OPTA that, as one may not have much information on the demand side, it may be difficult to identify the consumer groups for which the bundle is most attractive and to predict how these groups will respond to the new offer. Consequently, it may be difficult to specify the relevant calling pattern ex ante. This, however, should not induce the regulator to make an assumption that is unrealistic and to specify a pattern that most likely will not be realised. The fact that it may be very difficult to predict ex ante what types of callers are attracted to the bundle is an argument for allowing the incumbent to experiment with such a bundle and to use that information in a test ex post. This, however, is not the conclusion that OPTA draws. Even though OPTA is aware that proceeding along the lines of the "pessimistic" assumption (ii) above may have the implication that KPN would not be able to offer many bundles, as most would fail the price squeeze test, OPTA persists with that assumption.

In fact, even more remarkable is OPTA's view (expressed on page 40 of the consultation document) that KPN would not be allowed to offer bundles that match

the bundles that are offered by competitors. We would argue that the fact that competitors offer a bundle of a certain type provides evidence that this bundle cannot involve any squeeze, hence, that the incumbent should not be blocked from matching it.

We should also note that OPTA has indicated its intention to evaluate bundles at the level of service elements. In section 4, we already argued extensively that the appropriate level of aggregation for the price squeeze test should be the relevant market, and this argument extends to the situation in which any bundles are offered within that market. In section 4, we also noted that testing at a too low level of aggregation may hinder innovation, and that argument seems to be particularly relevant here, where the test may block innovative service packages. Let us remind the reader of Hausman (1997)[70] in which it was shown that intrusive regulation might lead to very high social costs. There is no reason to assume that it would be different in this case.

5.3 An example: KPN's BelPlus fixed telephony packages.

At the moment, KPN is offering three optional service packages, which go under the name BelPlus 60/200/300. For example, BelPlus 200 consists of a monthly fixed fee of €4.50 and 200 free calling minutes, applicable for both biba and buba, but off-peak hours only (evening/night and weekend). The package includes call set-up charges, up to a maximum number of calls per month, 30 for Belplus 200. The BelPlus 60 and 300 differ only in the fixed charges (€1.50 and €6.30), calling minutes (60 and 300), and the number of start up charges that is included (12 and 35). After the free calling minutes are used up, the normal rates apply albeit with 15% discount. Recall that *biba* (*buba*) is an acronym for calling *inside* (*outside*) the dialling code area.

[70] Hausmann's argument refers to regulation blocking new services (mobile telephony in particular), not to it blocking new pricing strategies, as is the case here.

OPTA's current price squeeze test examines, for each schedule separately and for each call duration of each type of call, whether the retail charge recovers the associated costs plus margin. As already seen in section 4, an element-based approach of a schedule (for example, exactly 200 minutes of buba calls at peak hours) is hard to justify. At a minimum, the entire schedule should be the competitive arena and possibly even reasonably closely associated optional schedules should be included as well. In this case, this would amout to evaluating all three BelPlus schedules together. In relation to these packages, there are thus four features that need discussion:

- the combination of *biba* and *buba*,
- the peak versus off-peak distinction,
- consumer profiling, which covers the fixed-fee and free-minutes combination (i.e. the number of minutes called *within* one schedule) and the option *between* the three schedules (60, 200 and 300), and
- the combination of the packages.

As the first two of these were already discussed in section 4, we will here focus on the latter two. We start with the consumer profiling issue.

As stressed in section 5.1, it is typical for price-differentiated schedules that the average prices for (different) consumers vary. As stated in section 5.2, this is also the primary difficulty of applying the price-squeeze test to bundles and packages: the outcome depends on the chosen consumer profile. In figure 5.2, we have depicted the average prices of BelPlus 60, 200 and 300 in relation to the number of minutes called. After the free minutes are use up, the normal charges apply which are taken to be €c 3/min.[71] It can be seen immediately from this figure how the average price depends on usage.

[71] This calculation uses the following profile assumptions, which gives a proxy for reasons of illustration: 0.5 biba, 0.5 buba, 0. 5 peak, 0.5 off-peak and a 3 minute call duration and taking a 15% discount into consideration.

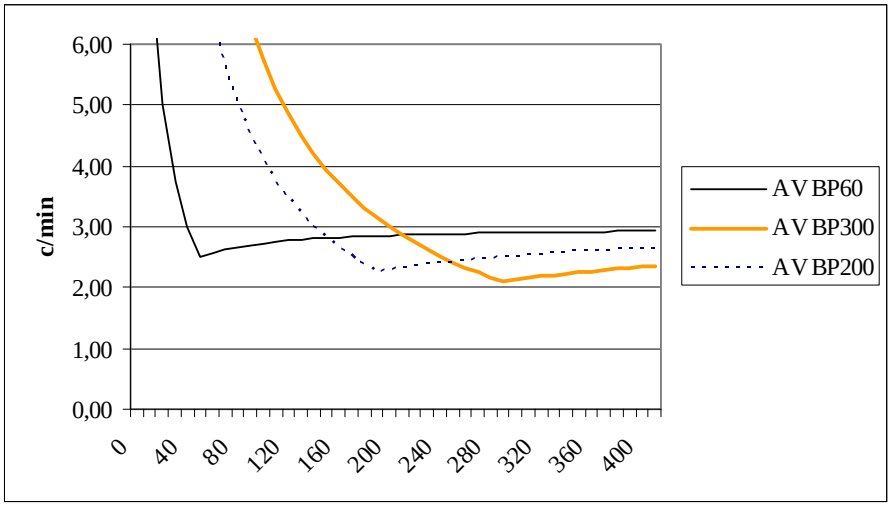

Figure 5.2: Average prices per minute for BelPlus 60, 200 and 300.

Figure 5.2 indicates that the effect of the schedule is that the average price drops until the number of free minutes is used up, and starts to increase again. Each of the schedules has a minimum average price at the full amount of free minutes. The element-based test (i.e. 100%-usage test) corresponds to testing whether the minimum average charge is squeezing or not, that is, one makes the conservative assumption that the Belplus *T* schedule will only be bought by people calling exactly *T* minutes. Of course, in reality, some subscribers to this plan will call more and other will call less than *T* minutes and these users pay a higher average price. Consequently, even if the minimum average charge is squeezing this might well be compensated by other charges under the same schedule. It is hard to see why competitors would not be expected to offer the same or a similar schedule and reach the same part of the market. At a minimum, the correct test is the market-segment covered by the schedule not only one element (here 100% usage; i.e. 200 minutes).

Clearly, this makes the test more difficult. As stressed in section 5.2, testing for the entire schedule requires making assumptions on the underlying distribution of consumers. This is unlikely to be uniform, but rather one would expect a distribution around 200 minutes, this being the target group. It may make the test more difficult, but this simply seems to be the price that has to be paid for doing the test correctly. As stressed above, the fact that it may be difficult to know what assumption is the

appropriate one to make, argues in favour of allowing experimentation and conducting the test ex post.

The critical reader will counter the above argument by noting that a significant part of the range below the 200 minutes is not relevant, because consumers with calling patterns in this range find it optimal to BelPlus 60. In fact only the lower envelope in figure 5.2, which is the combination of the three BelPlus options is relevant. It follows that one should not consider BelPlus 200 in isolation without considering the presence of BelPlus 60 and 300. This is entirely correct and exactly the point for the price-squeeze test. The level of aggregation is at least the (lower envelope of the) combination of the three optional schedules: the entire package.[72] By the same argument, one would extend the level of aggregation to related schedules, including the generic tariffs, which have not been covered in this example.

Note from the above that we are now back at the conclusion that we already reached in section 4: the price squeeze test has to take place at least at the level of the relevant market.

5.4 Anticompetitive effects

Whereas mixed bundling can enhance welfare, it is true that it can have a detrimental effect to competition as well: mixed bundling can give rise to similar concerns as pure bundling. Let us illustrate this by going back to the example of section 5.1. Suppose *X* is an SMP product and *Y* a non-SMP product: assume that an entrant cannot offer the product *X* and has to focus on product *Y*. One could argue that the incremental price for *Y* is (100-90=) 10, which is lower than the component's costs. Clearly, if a competitor cannot reasonably be expected to compete for *X*, then in this case *Y* could be argued to be squeezed.[73] The SMP operator can make the incremental consumer

[72] Technically speaking, the different optional schemes are connected by the *incentive compatibility constraint*: the precise details of say BelPlus 60 are constrained by the details of BelPlus 200.
[73] Note how this gets quite extreme for pure bundling: the incremental price is than zero, which almost certainly qualifies as a squeeze.

price of the non-SMP product so small that a competitor is foreclosed from the non-SMP market. Clearly thus, there may be reason for anticompetitive concern.

Bundling (or tying) relates closely to the theory of leverage of market power: the claim is that by tying a non-SMP product to an SMP product, the bundling firm can exclude competitors from the non-SMP market and thereby monopolise this market. This view raises two fundamental points. First, bundling of non-SMP products should not be of concern. If there is no market power to start with, bundling is highly unlikely to create market power. Second, the relation with the theory of leverage of market power questions the rationale of anticompetitive behaviour. The key insight is that the firm with the SMP product *can* exclude competitors from the non-SMP market by bundling the SMP and non-SMP product, but it is far from obvious that this enhances profits, hence, that the firm has an incentive to *do* so. The theory of leverage, as well as its application in actual antitrust cases is controversial (evidence being provided, for example, by the different treatment it received on both sides of the Atlantic in the Microsoft case) and this is not the place to discuss it in detail; nevertheless, we allow ourselves some remarks.

Return to the example from section 5.1 and assume that product *X* is an SMP product, that *Y* is a non-SMP product and that these products are complementary: increasing the price of one product, reduces the quantity consumed of the other. Furthermore assume the following setting: market *X* is a monopoly for firm 1 and market *Y* is competitive on which firm 1 and firm 2 are competitors. In an unbundled situation, firm 1 makes monopoly profits on market *X* and both firms make just a normal rate of return on market *Y*. Assume that with full bundling, firm 2 leaves the market, so that firm 1 also has a monopoly on market *Y*. Since the monopoly price of *Y* will typically be above the competitive price, the monopoly on *Y* reduces the demand for product *X*, which in turn reduces the profits on market *X*. If the complementarity is strong enough, the best the firm can achieve is to set a monopoly price for good *X* and a price equal to costs for good *Y*. Consequently, in the case of strong complementarities, even pure bundling should be of no concern.[74] A fortiori, this remark applies to the case of *mixed* bundling. In that case, there still is part of the market of component *Y*

[74] This follows the typical Chicago argument. Cf. Posner (1976, pp. 173 ff.)

that is unbundled. In the example in section 5.1, the price for the unbundled component is 90, which is highly contestable, given that the marginal cost is 30. It is an empirical question how large this submarket would be in practise.

For purely independent products, the analysis changes and leverage of market power can be profitable. Whinston (1990) is often quoted to bring the argument that bundling makes the firm credibly more aggressive on the bundled market and thereby excludes competitors. The analysis requires a commitment to bundle, and such a commitment may not be credible. The ability to commit may be increased by for instance technical integration, but this does not seem to apply here as the typical bundles are administrative and 'paper work' and can be changed all the time.

The conclusion is that, whereas at first it seems obvious that bundling would achieve higher profits by monopolising the additional market (through leverage), upon closer investigation, this turns out to be far from obvious. In fact, one has to look for case-sensitive circumstances why in a specific case bundling might be anticompetitive.

5.5 Conclusion

To sum up our discussion on bundling:

- Mixed bundling is likely to be a profitable device for price differentiation. It is likely to be good for consumers and the pricing in itself is not in an obvious sense contradictory to competitive markets. We should stress that most of our arguments concern the optional form of bundling, i.e. mixed bundling as opposed to pure bundling.
- OPTA's proposal to "cost" bundles at the most expensive level and to conduct the price squeeze test accordingly is unjustified, both from an economic point of view and from a business perspective.
- As OPTA has acknowledged, this proposal severely limits KPN in offering innovative bundles and packages, which is limiting innovation and reducing welfare.

- KPN should be allowed to offer bundles that are also offered by competitors
- It is desirable to allow experimentation and to test innovative bundles only ex post.
- Bundling may impede competition if market power from an SMP product is leveraged to a non-SMP product and excludes competitors. However, some arguments mitigate this concern. If bundling is mixed, it is likely that the unbundled part of the market of the squeezed component is in fact highly contestable. Further, only bundling of SMP and non-SMP products can give reason for concern. Bundling of two non-SMP products is highly unlikely to be a problem. Only in bundles of non-SMP and SMP products, it may be unreasonable to require competitors to meet the bundle rather than separate components. Lastly, even if bundling hurts competitors, it should be critically questioned whether the observed bundling is in fact rationally anticompetitive (i.e. intends to exclude competitors).
- In all, many cases of bundling may enhance welfare despite anticompetitive concerns. It seems disproportionate to ban bundling altogether for the sake of a set of cases where anticompetitive concerns would outweigh the benefits. The risk of prohibiting conduct that is actually good for society is real and the associated costs may be considerable.

6. ASSESSMENT OF THE TEST PROPOSED BY KPN

In recent times, KPN has put forward the following method for "price squeeze", to answer OPTA's query.[75] The method consists of a procedure and a specific combinatorial test. The proposed procedure is as follows:

Step	Content
1	Determination that the retail market is not functioning properly, that is, a specific problem should be identified
2	Market definition at the retail level
3	Market analysis at the retail level (SMP or not)
4	Price squeeze test applies only if there is SMP at retail level
5	Inquiry into relevant upstream market(s) that would play a role in the functioning of the retail market and market definition at wholesale level
6	Assessment of the wholesale market(s), i.e. whether there is an SMP operator providing an essential input (not duplicable and not available elsewhere)
7	Inquiry into the effectiveness of regulation on the competitiveness of the wholesale market. Only if such regulation appears not to be effective, a price squeeze test can be used.
8	Justification of the price squeeze test: adequacy for the problem identified, proportionality and conformity with purposes of the regulatory framework.

Table 6.1: KPN's proposed procedure for testing for price squeeze

Comparing table 6.1 to table 3.1 shows that this procedure is almost identical with the approach laid out in the new electronic communications framework, save perhaps for step 6, where it is insisted that the incumbent provides an essential input, hence, there are no possibilities for by-pass. This procedure will now be looked at in the light of the preceding discussion.

[75] As found in internal documents communicated to us.

Step 1 corresponds to a minimal requirement of intervention: if things are not broke, there is no need to fix them; a view that we support. The steps 2, 3 and 4 on the one hand and steps 5, 6 and 7 on the other hand can be seen as groups, dealing with the retail level and the wholesale level, respectively. As required by the new framework, it is first proposed that intervention takes place only if competition is not functioning properly on the retail market, that is, if there is an operator with SMP; see row 3, column 2 in table 3.1. Note that step 2 makes a case for the broader concept of the relevant market instead of narrowing the analysis down to an element-based approach. Above we have discussed this aspect extensively. In line with table 3.1, if there is no SMP on the retail market, the investigation ends without intervention. If there is SMP, a detailed market analysis of the associated wholesale markets follows. Step 6 of the procedure proposed by KPN at first sight seems to impose a stricter test than the SMP test from table 3.1: it requires examining whether the wholesale market, underlying the retail market where squeezing is under investigation, is an essential facility. In our discussions above, we have always assumed this to be the case, although, in the introduction, we stressed that this should be part of a prior investigation. Indeed, if the upstream product of the incumbent is not essential, if by-pass is a possibility, the price squeeze test may lose its meaning, as we have argued in Section 3. Furthermore, one may raise the question whether the incumbent can have SMP if the upstream input is not essential, hence, on second thought, it is not clear that step 6 from table 6.1 is more strict than step 2 from table 3.1. Of course, if the input is not essential, the analysis may shift towards classical predation of the entire supply chain (retail and wholesale taken together), but this is not at stake here. Finally, the steps 7 and 8 from table 6.1 are clearly in line with the new framework, as we have extensively argued in the sections 2 and 3 of this paper. In particular, a price squeeze should not be automatically translated into a lower bound on the retail price (the test is not a remedy), but it should be viewed as an effect of a certain type of behaviour that could perhaps be targeted with less intrusive means. Regulation of retail prices is a last resort, especially since it runs the risk of banning low pries that are both in the short-term and long-term consumer interests.

As is clear from table 6.1, this procedure puts a lot of emphasis on market analysis: the focus is more on this aspect than on the comparison of price to cost. This is in line with our general discussion on predation and anti-competitive practises in section 3.

Underlying an approach as proposed in Brodley et al (2000) (and earlier in Joskow and Klevorick (1979)) is the idea that cases against alleged predation can be very costly, both administratively and in terms of the risks of making (type II) mistakes. Accordingly, these economists propose a two-tier approach in which there is a detailed market analysis focusing on the question whether the case is worthwhile to pursue, that is, whether the incumbent could have an incentive to engage in the anti-competitive practise. In existing case law, this point is normally included as an intent test, which would require that the rationale of price squeezing be shown (cf. for instance Posner, 1976, pp. 188 ff; also cf. our discussion of *Wanadoo Interactive* in section 2). The question on the rationale of anti-competitive behaviour cannot be neglected. Accordingly, the first-tier of the approach favoured by economists makes a market power analysis: only if the current market structure and the existence of entry barriers indicate sufficient market power of the incumbent, it would be worthwhile to test for price squeeze and anti-competitive behaviour; the price squeeze test should be embedded in market analysis, it cannot stand on its own.

If all the requirements above are fulfilled a price squeeze test can be applied. KPN argues to follow the *combinatorial test*, which combines two separate tests, as put forth by, for instance, Professor Martin Cave. The combinatorial test aims at avoiding the difficulties of detailed cost allocation (of common retail costs). In describing the test proposed by Professor Cave, we largely follow the terminology from KPN's "Aanvullend Bezwaarschrift "(29 August 2002, p. 17).

The first step in the combinatorial test is an *incremental* test. The incremental test applies to a specific service offer to retail clients; the evaluation takes place at the service level, hence, at a more aggregated level than that of elements, but possibly (most likely) at a lower level than the level of the relevant market. This test requires that the service at least recovers its (directly attributable) average incremental costs. The incremental costs of a service are those costs that are caused by supplying the service in addition to all other services, hence, common costs are excluded. This implies that this part of the test will not be too complex. Note that the requirement that revenue is at least equal to incremental costs implies that at least part of the retail costs associated with this service can be recovered by the service itself. The second element in the combinatorial test is an *integrated* test, which insists that an efficient

competitor can recover overall costs. This integrated test takes place at the level of the relevant market, hence, it requires that the revenue of the competitive arena covers at least the total costs of supplying the competitive arena, where the total costs are the costs of wholesale purchase plus a predetermined mark-up (23%) to cover retail costs. Note that this definition of attributed retail costs is in line with the current element based approach; see equation (3.3).

As was argued earlier in this paper, *ex ante* regulation should not go further than strictly necessary, and it should not neglect the fact that intervention ex post is also possible. Accordingly, the combinatorial test would already be more than what is necessary. The incremental test might be considered as a kind of safety valve, which can guard against the potential danger of overestimating the relevant market. However, one should not forget that *ex post* intervention provides another safety valve, one that is associated with fewer errors. Accordingly, strictly speaking the integrated test would suffice.

7. CONCLUSION

Under the new EC regulatory framework for electronic communications, regulation is meant to be light-touch to the greatest extent possible. Ex ante regulatory obligations should be imposed only in those markets where there is no effective competition and where ex post measures, on the basis of competition law, do not suffice to address the problem. Remedies imposed by the regulator should be proportional, that is, they should reach their aim and should not go beyond what is necessary to reach that aim. Finally, retail regulation can only be envisaged after it has been established that wholesale regulation cannot accomplish the regulatory objectives.

The current OPTA price squeeze policy is based on the old ONP framework. Its aim is to prevent anti-competitive pricing strategies by KPN that could lead to efficient competitors being driven from the market. The policy interferes with (regulates) KPN's retail prices, which are not allowed to go beyond a certain floor. The policy does not simply impose a floor for the aggregate price level in the market, but imposes floors for various individual tariff elements. The policy is imposed even though detailed regulation is in place at the wholesale level, regulation that requires KPN to offer cost-oriented wholesale tariffs. As far as we are aware, there has not been a cost-benefit analysis of the existing price squeeze policy: has it served the consumer interests by increasing competition on the market and lowering prices? Has the policy served the consumer interest in the best possible way? Has the policy hindered innovation on the Dutch telecommunication market?

It is the conclusion of this paper that the current OPTA policy with respect to price squeeze is not compatible with the new EU telecommunications framework and, hence, is also incompatible with the new Dutch telecommunications law. As a result, the policy has to be revisited and reconsidered. To put it simply, the main reason for incompatibility is that the price squeeze policy is not proportionate to the problem it seeks to address, if, in fact, there is such a problem.

The price squeeze policy aims to prevent predatory pricing, or, more generally, prices that are so low that efficient competitors of KPN are not able to operate profitably on

the relevant market. Such predatory pricing is, however, rare; some economists have said “rare as a unicorn”. A problem that occurs only rarely should not be addressed with a heavy instrument, especially not when use of that instrument involves drawbacks (see below). The price squeeze test looks at only one element of predation, whether price is below (a reasonable estimate of) cost. However, this condition is not sufficient, or not even the most important, to conclude predatory pricing. Much more important is the question whether the market structure may make exit of competitors possible, and whether recoupment (getting the returns on the investment to induce exit) is feasible. Under the new regulatory framework, NRAs have to do detailed market analyses, hence they have to address this question directly.

Even if the NRA concludes that the market structure is such that predation might be feasible, it should not necessarily be concluded that such predation will occur. Predation is a costly strategy for the incumbent; hence, frequently it would not be a rational business strategy. As a result, there does not seem to be a need for ex ante intervention: ex post intervention on the basis of Article 82 EC (or the Dutch equivalent, Article 24 Mw) might suffice. In any case, if the NRA decides in favour of ex ante regulation, the new EU framework requires it to motivate its choice.

As we have argued in this paper, the fact that the incumbent is active both at the wholesale level and at the retail level, and that its wholesale prices are generally above marginal costs, implies that the incumbent is not very likely to find predation to be the most profitable strategy. In other words: predation is rare in general, but it should be particularly unlikely in this case.

OPTA’s price squeeze test is also not proportional because of the detailed level at which it is conducted. The test insists that each call element has a retail price which exceeds associated costs, however, this is going much beyond the requirement that anti-competitive pricing should be prevented. As we have shown in this paper, given that a considerable portion of cost is common cost, it will typically be welfare improving if some services are offered below cost[76] while others are offered above cost. Requiring the incumbent to set all prices above cost will imply a reduction of

[76] In the remainder of this paragraph, whenever we refer to cost, we mean FDC, not marginal cost.

consumer surplus and welfare. Furthermore, the incumbent setting some prices below cost need not be to the expense of competitors. Competition forces competitors to offer similar schedules, with some prices below cost and others above, and, as long as aggregate profits are sufficient, competitors will not be induced to exit. This simple argument shows that a price squeeze test, if any, should not be conducted at a lower level of aggregation than that of the relevant market: entry and exit decisions are not made at the level of individual products, let alone product elements, but at the level of markets.

OPTA's proposed price squeeze test for bundles and packages is based on the assumption that the aim of the incumbent is to drive out competitors, rather than to optimally serve consumers. As a result of this assumption, this proposed test is very conservative: it assumes that bundles will attract those consumers that the incumbent least prefers to have subscribing. This is an odd assumption indeed, as the typical business practice is to try to make offers that attract those that the provider would like most. In any case, it is just an assumption that is made, and any assumption may be problematic, as it might be difficult to predict which consumers will be attracted to such a new offer. It is in cases like these where an ex post policy is particularly appropriate: with an ex post policy one can see which consumers are attracted and whether the offer is in fact exclusionary or not.

As OPTA acknowledges, its proposal for bundles has the consequence that KPN does not have much room to offer new bundles. Consequently, we have regulation that inhibits innovation. Hausman (1997) has shown that regulation that inhibits innovative products can have high social costs and while here the concern is not about new products, but about novel ways of pricing existing products, it cannot be excluded that also such regulation will have social costs. In any case, the Dutch telecommunications law requires OPTA to take into account these costs in its cost benefit test. Given that predation is unlikely and given that the costs resulting from ex ante intervention can be very high, it is very unlikely that ex ante regulation of bundles will pass the test.

Not only does OPTA's proposal imply that KPN is not allowed to introduce new bundles, OPTA has also stated that KPN is not even allowed to match bundles of

competitors. Consequently, regulation limits competition as well: it shields competitors, probably at the expense of consumers. As the simple fact that a competitor offers a certain bundle most probably implies that the bundle is profitable, hence, that there cannot be a price squeeze, forbidding KPN from offering such a bundle on the basis of a price squeeze test cannot be proportionate.

The above makes clear that, under the new EU framework for electronic communications, a different type of price squeeze test is needed than is currently in place in the Netherlands. KPN has proposed such a test and, as we have argued in this paper, in broad lines it is consistent with this legal framework, which it is also sound from an economic point of view. Our paper makes clear that we can only endorse this alternative test.

REFERENCES

Adams, W.J. & Yellen, J.L. (1976), "Commodity bundling and the burden of monopoly", *Quarterly Journal of Economics*, Vol. 90, No. 3, pp. 475-498.

Armstrong, Mark (2002), "The Theory of Access Pricing and Interconnection" in *Handbook of Telecommunications Economics*, Elsevier.

Baumol, William (1996), "Predation and the Logic of the Average Variable Cost Test", *Journal of Law and Economics* 34 (1996) 49-72

Biglaiser, G. and P. DeGraba (2001), "Downstream Integration by a Bottleneck Input Supplier whose Regulated Wholesale Prices are above Costs", *RAND Journal of Economics* 32, 302-315.

Bork, R. H. (1978), *The Antitrust Paradox*, Basic Books, Inc.

Bouckaert, J. and F. Verboven (2004), "Price Squeezes in a Regulatory Environment", Forthcoming in the *Journal of Regulatory Economics*.

Brodley, J.F., P. Bolton, and M.H. Riordan (2000), "Predatory Pricing: Strategic Theory and Legal Policy", *The Georgetown Law Journal* 88, 2239-2330.

Cave, Martin (2001), "Observations on OPTA's price squeeze guidelines" mimeo.

Hausman, J.A. (1997), "Valuing the effect of regulation on new services in telecommunications", *Brookings Papers: Microeconomics*, 1-38

Joskow, P.L., & Klevorick, A.K. (1979), "A Framework for Analyzing Predatory Pricing Policy", *Yale Law Journal*, Vol. 89, pp. 213-270.

Motta, M. (2004), *Competition Policy: Theory and Practice*, Cambridge University Press.

Officer, L.H. (1966), "The optimality of pure competition in the capacity problem", *Quarterly Journal of Economics*, Vol. 80, pp. 647-651.

OFTEL (2000), "OFTEL's Response to DG Information Society's Working Document on Unbundled Access to the Local Loop", available at http://europa.eu.int/ISPO/infosoc/telecompolicy/unbundall/Oftel.htm

Posner, R.A. (1976), *Antitrust Law: An Economic Perspective*, University of Chicago Press, Chicago

Rey, P., and J. Tirole (2003), "A Primer on Foreclosure," forthcoming in M. Armstrong and R.H. Porter, eds., *Handbook of Industrial Organization*

Steiner P.O. (1957), "Peak loads and efficient pricing", *Quarterly Journal of Economics*, Vol. 71, pp. 585-610.

Stigler, G.J. (1963), "United States v. Loew's Inc.: A note on block-booking", *Supreme Court Review*, Vol. 152, pp. 152-157.

Tirole, J. (2004), "The Analysis Of Tying Cases. A Primer", mimeo.

Van Damme, Eric (2004), *Roofprijzen: het economisch perspectief*, TILEC DP2003-020. http://www.tilburguniversity.nl/tilec/publications/discussionpapers/2003-020.pdf

Whinston, Michael (1990), "Tying, foreclosure, and exclusion", *American Economic Review*, Vol. 80, pp. 837-859.