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# ERG Report
# on
# price consistency in upstream broadband markets

**June 2009**

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# Executive Summary

This document deals with potential issues arising from regulatory intervention in wholesale broadband markets. In particular, the setting of prices could imply competitive risks either when it is the National Regulatory Authority (NRA) which fixes them or it is the vertically integrated incumbent operator which determines them. For this reason the document is divided in two parts, given that the regulatory tools are different in these two cases, depending on whether one of the price components is set by the vertically integrated incumbent operator or not.

When prices are regulated, a major concern underlying regulatory intervention when setting the terms and conditions of access pricing is that a vertically integrated incumbent may be able to foreclose entry by denying access to its network to potential competitors, or by foreclosing the market when competitors exist but depend on its infrastructure.

However, as NRAs are regulating wholesale services across the broadband value chain to reduce entry barriers, they have also to be aware that bitstream related infrastructures may be duplicated in an efficient manner from a technical and economic perspective. Therefore, NRAs may want to pay attention to the relative prices of wholesale services on the value chain if their ultimate aim is to promote efficient investment in infrastructure (to the deepest level possible).

The first part of the Report thus deals with consistency problems derived from this dual objective behind wholesale prices: reduce barriers to entry and promote efficient investment. Using the concepts already introduced by ERG[1], some guidance is given how on NRAs might consider the creation of sufficient economic space and the consistency between prices of different “rungs” of the ladder of investment. The Report also points out to the potential risks of “too much” economic space, as it could result in high prices at retail markets level and inefficient entry in broadband markets.

The second part of the Report deals with price squeeze issues and the option for ex ante regulatory intervention in the particular case where the upstream market involved in the squeeze issue is regulated and the downstream one is not. In these instances, pricing of one of the services (be it a wholesale input or a retail service) is not set by the NRA, but by the vertically integrated incumbent operator. The issues that may arise are thus likely to be similar, regardless of whether the price squeeze takes place between two wholesale inputs (one regulated and one non-regulated) or between a wholesale input and the (unregulated) retail service.

NRAs’ intervention with regard to margin squeeze cases takes place within the scope of *ex ante* regulation as at least one regulated price level is involved. In such an occurrence, it is relevant to raise on the one hand the issues concerning the design of the price squeeze test and on the other hand the options available to NRAs to effectively intervene.

Concerning the design of the test, NRAs will have to evaluate which imputation test (an equally efficient competitor test, a reasonably efficient competitor test, or a combination of both) is better suited to attain the regulatory objectives pursued. According to this Report, NRAs should have a sufficient margin of discretion in determining the appropriate imputation test, as the test depends significantly on the specific national circumstances of the case and the prevailing national market dynamics. Moreover, given the multi-dimensional nature of a margin squeeze test for broadband services, NRAs may also find it relevant to consider a combination of upstream products that are available to an efficient operator, or a unique upstream product. Additional factors, such as the consideration of specific costs, and issues

[1] See ERG Common Position on best practice in wholesale unbundled access (including shared access) remedies imposed as a consequence of a position of significant market power in the relevant market (ERG (06) 70 Rev 1) and ERG Common Position on best practice in bitstream access remedies imposed as a consequence of a position of significant market power in the market for wholesale broadband access (ERG (06) 69 Rev 1).

stemming from wholesale price de-averaging on the basis of differentiated geographic conditions, should also be taken into account.

As far as NRAs options to intervene, it is noticeable that a margin squeeze can have effects both in non-regulated and regulated markets. NRAs will thus need to consider the overall effects of such practices in the marketplace and for the fulfilment of its regulatory objectives, and act accordingly. With regard to *ex ante* intervention in non-regulated markets, potential means of action available to NRAs include (i) the possibility to monitor the market via requests for information; (ii) the imposition of *ex ante* communication obligations / development of a methodology for the assessment of the vertically integrated incumbent operator's offers. With regard to intervention in markets that are subject to *ex ante* regulation, the main means of action for the NRA include (i) the revision of the regulated wholesale prices; (ii) the prohibition that the SMP operator self-supplies the relevant input until that input is made available on reasonable terms and conditions to third parties; and (iii) the initiation of fining proceedings.

# 1 Introduction

The principle of promoting competition at the deepest level in the network where it is likely to be effective and sustainable is appropriate for the regulation of enduring economic bottlenecks in electronic communications networks. In cases where it is technically and economically feasible and reasonable to promote infrastructure-based competition, this should be the goal of NRAs.

Note that, in those cases where replication of access is not considered to be feasible or desirable, promoting service competition is also a key goal for NRAs. As ERG is indifferent concerning different business models, it is in most of the cases economically efficient to have a right balance between infrastructure competition and service competition.

The wholesale prices at the different levels of the value chain of broadband services are a key element to achieve the regulatory and competitive objectives on broadband markets pursued by the Regulatory Framework.

As pointed out in the ERG's Common Position on the approach to appropriate remedies in the ECNS regulatory framework[2], vertically integrated incumbent operators (and therefore operators exerting significant market power – SMP) have the ability and the incentives to foreclose downstream markets by restricting access to wholesale/upstream inputs, often facilitated by excessive pricing at the wholesale level, that ultimately lead to unfair pricing to end-users at the retail markets level.

Dealing with potential foreclosure and excessive pricing are in the scope of NRAs' objectives. Furthermore, still according to this Common Position, NRAs must ensure that investment incentives are such that alternative operators are able to replicate the incumbent's infrastructure where this is technically possible and economically feasible. In this sense, the concept of the "ladder of investment"[3] is an implementation tool for ensuring coherent access regulation and pricing across the value chain. Not only the absolute level of the wholesale prices is important, but also the level at which the prices of the wholesale offers, compared to each other and to the incumbent's retail offers, are set.

Regulatory measures should therefore ensure that providers of broadband services at different steps of the ladder of investment are able to compete effectively. The present Report focuses on how to ensure consistent price levels for the different wholesale products, especially to give incentives for efficient infrastructure investments.

For wholesale services based on the copper pair network from the vertically integrated and SMP incumbent, ERG has already analysed the most appropriate remedies[4] considering, when assessing the consistency between upstream and downstream services prices when competition at wholesale level is not sufficient, that NRAs can create an "economic space" so as to:

- Create incentives for efficient new entrants to further climb the ladder of investment;
- Give assurance of protection against downstream price eviction.

Although creation of an economic space can give new entrants incentives to climb the ladder of investment and can protect against downstream price eviction, it is worth noting that creating (too much) economic space may also have some drawbacks. In particular, this may lead to:

[2] ERG (06) 33.

[3] Cave and Vogelsang (2003), "How access pricing and entry interact", Telecommunications Policy 27: 722.

[4] See ERG Common Position on best practice in wholesale unbundled access (including shared access) remedies imposed as a consequence of a position of significant market power in the relevant market (ERG (06) 70 Rev 1) and ERG Common Position on best practice in bitstream access remedies imposed as a consequence of a position of significant market power in the market for wholesale broadband access (ERG (06) 69 Rev 1).

- Higher prices for underlying wholesale and retail products, to the short term detriment of the end-users;
- Incentives for inefficient entry, which may lead to inefficient duplication of infrastructures.

Note at this stage that as the ERG Common Position on best practices concerning ULL and bitstream remedies is related only to copper pairs. Access obligations and price consistency in an NGA environment may differ significantly from those described. For this reason, this Report relates only to traditional copper pair access networks and not to NGA. It should be stated that when it comes to ensuring consistency between the price of LLU and the costs of rolling out NGA networks, there will exist challenges similar to the ones described in this Report[5]. For instance, it could be argued that the price level of LLU may affect the investment incentives for alternative operators rolling out NGA networks or contemplating to do so. In any event, the relationship between LLU pricing and incentives for NGA rollout is outside the scope of this Report.

It may be the case that some levels in the broadband value chain based on the copper pair network (corresponding to steps of the ladder of investment) including the retail level, are not subject (any more) to *ex ante* regulation. In these instances, problems of margin squeeze may arise where it is not the NRA (any more) but the incumbent operator who is setting the price. As the European Commission states in its Explanatory Note[6] to the 2007 Recommendation on relevant product and service markets susceptible to *ex ante* regulation[7], *"when there is regulation at wholesale and/or retail level, the possibility of price or margin squeezes can result from regulatory intervention and it should be assessed in that context. (…) For the assessment of a margin squeeze it is irrelevant whether both wholesale and retail prices are regulated or only one of the two"*.

As it will be further detailed below, the regulatory framework allows NRAs to ensure the consistency of wholesale prices across the broadband value chain, both when wholesale prices are regulated and when it is the incumbent operator who is setting the prices. This Report aims to identify the situations where these problems may arise and assesses which regulatory options may be fit to address them.

In the second section of the Report, a description of the value chain for broadband is provided, shedding light on intermediate levels/markets existing in Member States (this description is conform with the ERG Common Position on Best Practices already mentioned). The section also provides the result of a questionnaire on the current price regulation implemented by NRAs at these different levels (18 answers collected).

The problem of consistency among regulated prices at different levels of the value chain is then covered in the third section of the document, while price squeeze issues and options for regulatory intervention are dealt with in the fourth section. Section five deals with the options available to NRAs for intervention in margin squeeze cases. In section six we come to a conclusion.

[5] In this regard, the ERG Opinion on Regulatory Principles of NGA (ERG (07) 16 Rev2 notes that *"Given that next generation access networks may be more likely to reinforce rather than fundamentally change the economics of local access networks, NGA may be likely to, at least, provide the same competition challenges to regulators as current wireline access networks"*.

[6] Explanatory Note - Accompanying document to the Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, SEC (2007) 1483 final.

[7] OJ L344/65 of 28 December 2007.

# 2 Value chain in broadband services and corresponding price regulation across Member States

The present section gives a description of what is meant all along the report by "broadband value chain". This description is based on what is effectively observed in each Member State.

In order to provide broadband services, alternative operators may resort to a number of alternatives:

1. Invest in one's own infrastructure and copper local loop. This is the option that allows for greater differentiation from other players, as it enables the operator to develop its own network and thus to offer retail services independently from third parties[8]
2. Invest in one's own infrastructure up to the incumbent's copper local loop and make use the incumbent's copper local loop network, which was originally developed for the provision of voice telephony services but that has been adapted to also support xDSL services. Access to the copper pair network of the incumbent is generally provided for via Local Loop Unbundling (LLU) and Sub Loop Unbundling (SLU) obligations imposed to the therefore SMP incumbent operator. Operators that make use of the corresponding wholesale offers (LLU, SLU) also retain an important degree of differentiation from the incumbent, as they control the active network elements that are necessary for the provision of differentiated and value added retail services.
3. Connect its own transportation network with the activated network of another operator in order to access the end-users from a pre-designated point of access (namely bitstream access).

   Operators that make use of this option have a more limited possibility of retail services differentiation from the incumbent. With regard to the different types of bitstream access that may be available, reference is made to the discussion on this topic in ERG's Revised Common Position on wholesale bitstream access[9].

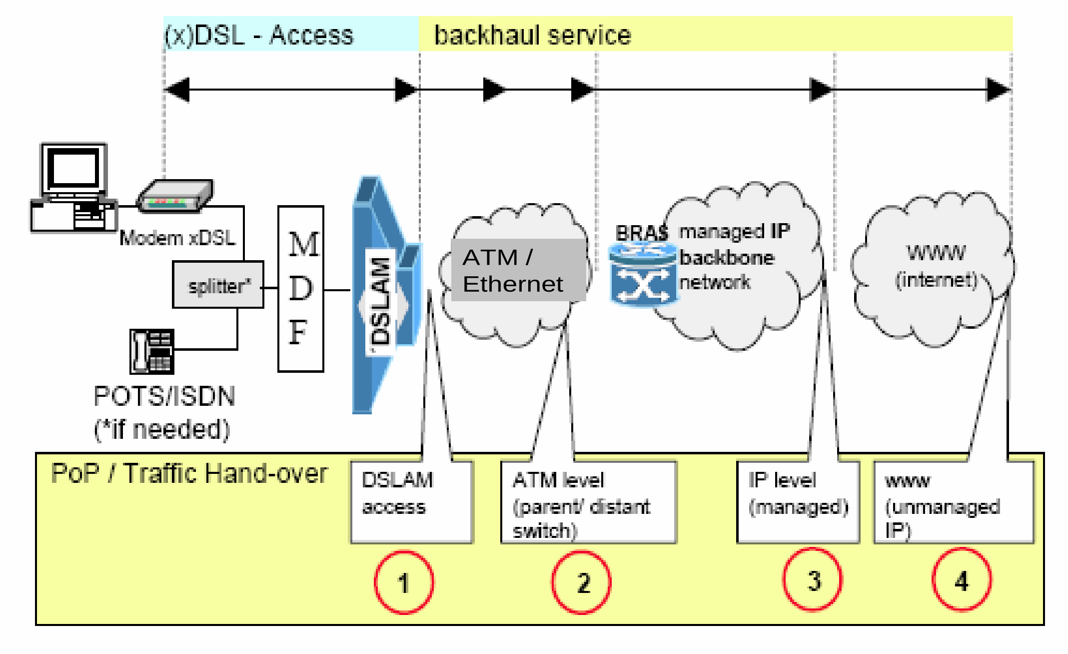
   In this Revised Common Position, four bitstream access options are classified. The possibility to differentiate the service offered to the end user from that of the incumbent operator (and thus the extent to which value can be added by the new entrant) declines from Option 1 to 4:

   - Option 1: The incumbent provides the DSL access link and hands over the bitstream to the new entrant directly after the DSLAM.
   - Option 2: The incumbent provides the DSL access link plus a backhaul service and hands over the bitstream to the new entrant at an ATM-PoP (or other "equivalent" technologies).
   - Option 3: The incumbent provides the DSL access link plus a backhaul service and hands over the bitstream to the new entrant at an IP-PoI (at IP level).
   - Option 4 i.e. Resale: The incumbent provides the DSL access link plus a backhaul service and also provides the connectivity to the public IP network of the World Wide Web. At this level, the product the incumbent sells to the alternative operator (Internet Service Provider – ISP) is technically the same as the one the incumbent sells to his own customers. The ISP, that does not own any infrastructure, brands, distributes and bills the product to the end-users.

[8] Apart from the fixed incumbent, cable operators or mobile operators are relevant examples of competition based on the development of one's own infrastructure.
[9] ERG (03) 33rev2.

The following Figure illustrates these different wholesale services:

Figure 1. Wholesale broadband value chain and corresponding services




Investments required for entry in the broadband markets will tend to be higher the greater the degree of differentiation the alternative operator wants to achieve from the vertically integrated incumbent operator's services. In a sense, entry at the wholesale level will give the ISP or alternative operators the opportunity to compete with the vertically integrated incumbent at the retail level, without however having a significant degree of differentiation. Indeed, operators can easily access the market via simple resale models, where the degree of differentiation from the incumbent will be very limited. The progressive ascension in the "ladder of investment" (from pure resale to bitstream alternatives and from there to the development of one's own local loop infrastructure or LLU) will require greater investment, but will also afford to third-party operators the possibility of greater differentiation from the vertically integrated incumbent operator (including the direct management of aspects such as the quality of the service or the bandwidth available; the possibility to select the nominal speed for upload/download transmission; or enhanced possibilities to offer integrated retail solutions - including e.g. voice and/or TV as well as broadband Internet services).

Experiences at national level on broadband access have been gathered via the submission of a questionnaire to NRAs.

LLU is a remedy that is generally available in all Member States. Likewise, and in line with Regulation (EC) 2887/2000 of 18 December 2000 on unbundled access to the local loop[10], LLU prices are set on a cost-orientation[11] basis.

Bitstream access regulation is much more diversified. The results of the questionnaire are detailed in the table below[12]. This table describes what kinds of pricing regulation have been implemented by NRAs at the different wholesale levels of the broadband value chain.

[10] OJ L336/4 of 30 December 2000.
[11] As provided for in article 3(4) of Regulation (EC) 2887/2000 of 18 December 2000 on unbundled access to the local loop, OJ L336/4 of 30 December 2000.
[12] The following NRAs have provided answers with regard to the topics covered by the table: ANC, AGCOM, OPTA, OFCOM, NITA, UKE, SPRK, PTS, ECA, BNETZA, ANACOM, OCECPR, APEK, CMT, EE.TT., MCA, ARCEP, NPT.

| Nº of NRAs | Bitstream Type 1 | Bitstream Type 2 | Bitstream Type 3 | Bitstream Type 4 |
|---|---|---|---|---|
| Availability of WBA offers | 7 (*) | 16 (**) | 16 (**) | 3 |
| Pricing obligations imposed on regulated WBA offers | C : 5<br>RM : 1<br>N.R. : 1 | C : 7<br>RM : 7<br>N.R. : 2 | C : 8<br>RM : 5<br>N.R. : 3 | C : 1<br>N.R. : 2 |
| Inclusion of a mark up / eviction pricing | Yes : 1<br>(WACC)<br>No: 6 | Yes : 5<br>(3 WACC and 2 E.P.)<br>No: 11 | Yes : 5<br>(3 WACC *** and 2 E.P.)<br>No: 11 | |
| Availability of non-regulated WBA offers on the market | 1 | 1 | 2 | 11 |
| Existence of geographically differentiated offers by the vertically integrated incumbent operator | | 2 | 2 | |

(*) AGCOM: Only where LLU is not available.
(**) ANACOM and OFCOM: only in regulated geographic areas. OPTA only for high quality offers.
(***) Some NRAs have answered that an additional margin was included in bitstream prices through the WACC, either considering the alternative operator's rate or fixing a higher rate (mark up).
C: Cost oriented prices; RM: Retail Minus; N.R.: Non regulated; E.P.: Eviction prices.

# 3 Price consistency across the upstream broadband value chain

A major concern underlying regulatory intervention when setting the terms and conditions of access pricing is that a vertically integrated incumbent may be able to foreclose entry by denying access to its network to potential competitors or by foreclosing the market when competitors exist but depend on its infrastructure.

NRAs are therefore (and among other) regulating wholesale services across the broadband value chain to reduce entry barriers, thus allowing efficient alternative operators to gain economies of scale and scope. Even when prices of the relevant wholesale services are regulated, NRAs should however be aware of the potential risks deriving from regulatory intervention. According to the collected answers to the questionnaire, NRAs regulate LLU in each Member State whereas bitstream access may be available either on a regulated basis or through non regulated commercial agreements of the incumbent operator, or alternative wholesale providers.

Despite the fact bitstream markets could be effectively competitive, as bitstream related infrastructures could be duplicated in an efficient manner from a technical and economic perspective, NRAs should pay attention to the relative prices of wholesale services on the value chain to promote efficient investment in infrastructure.

This section deals with consistency problems that could arise when NRAs are regulating prices of wholesale services at two or more levels of the broadband value chain. Such issues are different, both from a theoretical and a regulatory perspective, from the problems arising when the incumbent operator is the one setting the prices (essentially because it is not designed as having SMP and is therefore not regulated) and potentially generating margin squeezes (see section 4).

When determining relative prices at different levels of the broadband value chain, NRAs should ensure not only a sufficient margin for an efficient alternative operator to stay on the market (to avoid complete foreclosure), but also give incentives to an efficient alternative operator to climb the ladder of investment to ensure efficient infrastructure competition and to promote sustainable competition.

To some extent, these issues have already been covered by the ERG's Report on Best Practices on Regulatory Regimes in Wholesale Unbundled Access and Bitstream Access[13], in particular through Best Practices # 10-12.

Note that NRAs should not only consider wholesale unbundled access and bitstream access offers but also key associated wholesale products such as copper pair, associated facilities and backhaul for LLU and mainly xDSL line and backhaul for bitstream within the scope of broadband value chain regulated prices.

The following paragraphs deal with some basic economic grounds related to investment incentives applied to broadband access and infrastructures deployment, and give some guidance on the way to address related issues.

## 3.1 Basic economics of the broadband "ladder of investment"

According to the answers to the questionnaire, the "ladder of investment" on broadband markets is implemented in the majority of Member States. Indeed, all NRAs agree on the fact that efficient access regulation and pricing should stimulate entry by efficient entrants, which would otherwise have difficulties in replicating the network of the incumbent.

Starting point in the dynamics of the ladder of investment is such that entrants initially occupy the lowest "rung" of the ladder, reselling the vertically integrated incumbent's services, operating as an ISP (in a pure services based competition). After that, the entrant climbs up the ladder i.e. investing in infrastructure and deploying a network to offer services progressively closer to the end user.

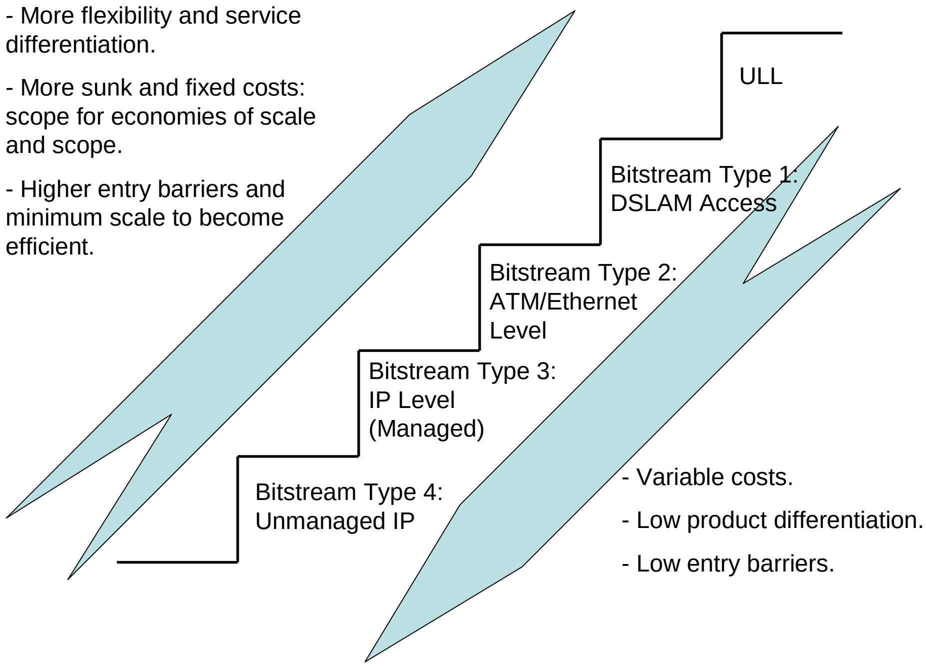
Pricing at the different levels of the value chain should then be set such that the entrant operators can consolidate their market position in particular by increasing their customer and revenue bases, and thus become able to provide more facility-based services to end customers. As a result, efficient entrants who have gained sufficient financial strength can start to move up the ladder for the purpose of searching for better margins created by the wholesale and retail prices differences and the increased scale economies owing to the customer base.

In the case of broadband services, the different "rungs" of the ladder of investments are described below[14]:

[13] ERG (07) 53.

[14] As noted, with Bitstream Type 4, the delineation between bitstream access on the one side and simple resale on the other side is difficult. It could be said that bitstream is a technical term whereas resale is an economic term. For a more detailed discussion, see ERG's Revised Common Position on wholesale bitstream access (ERG (03) 33rev2).

Figure 2. “Ladder of investment” of broadband services

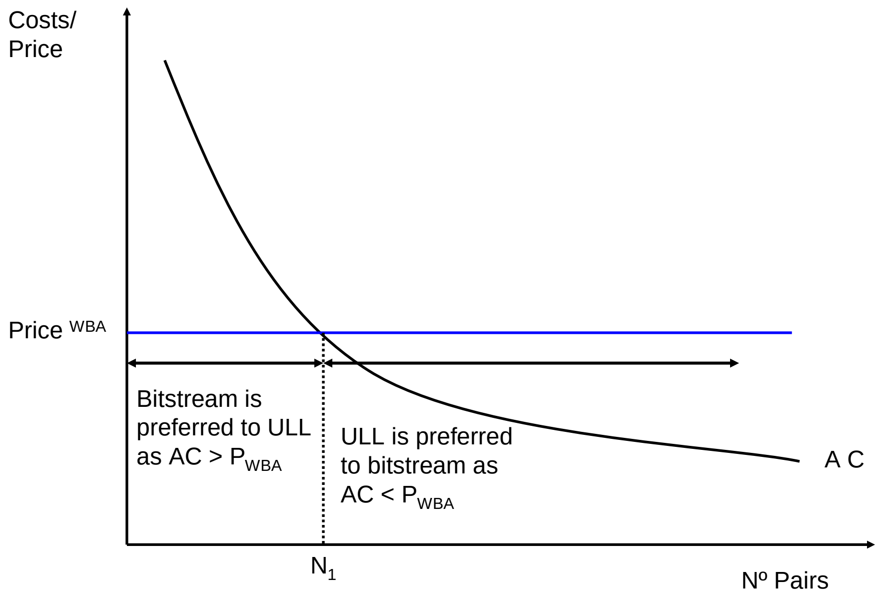



In Figure 2 it is detailed how access to less integrated wholesale (i.e. towards ULL) services requires higher investments and could imply higher sunk costs. For example, LLU requires that some infrastructure is deployed by the alternative operator to reach the local exchanges of the incumbent (DSLAM, backhaul, IP Network) generating higher investments and sunk costs while variable costs decrease.

On the contrary, wholesale bitstream access (WBA) implies higher wholesale costs but requires lower investments. Given this technical situation, alternative operators will replicate the incumbent’s assets only if they can produce the wholesale product at the same or at lower costs than the regulated price for this wholesale product.

An alternative operator analysing the decision of co-locating in a particular local exchange will assess several economic indicators. On the one hand, the alternative operator will consider the average cost per connection derived from co-location and LLU (see AC curve in Figure 3), which is decreasing with the number of connections reached, because of the involved fixed costs. On the other hand, the alternative operator will take into account WBA prices, which are assumed to be constant regardless the number of connections achieved by the operator (this example is a simplification because some bitstream levels also require some fixed costs).

Figure 3. Costs and prices of WBA and LLU at local exchange level
from the alternative operator point of view




In figure 3, an alternative operator will find it profitable to reach the vertically integrated incumbent's local exchange and use LLU instead of WBA if it could reach at least $N_1$ connections. This level can be reached only if the alternative operator achieves a sufficient market share in this particular local exchange. On the contrary, if the demand faced by the operator is lower than $N_1$, LLU will not be the preferred wholesale service as the cost associated is higher than the costs faced by the operator by using WBA offered by the incumbent.

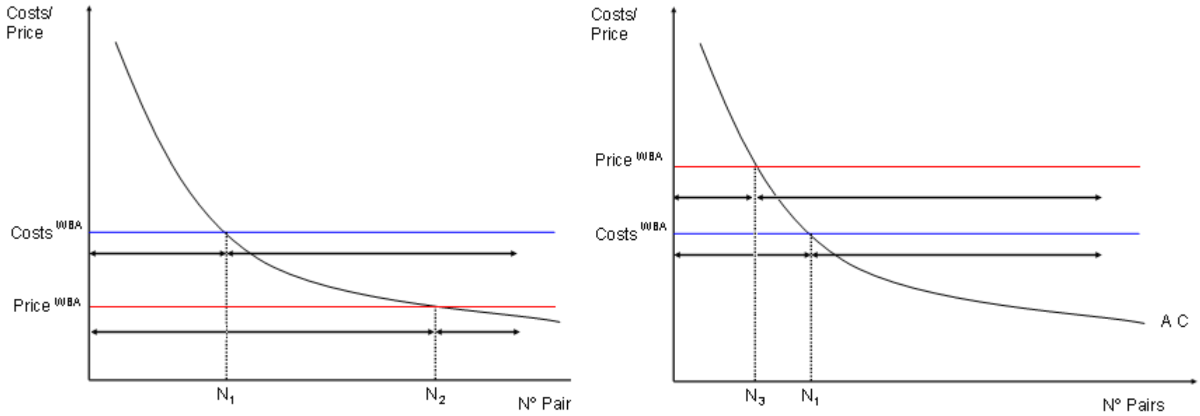
In Best Practice # 11 of ERG's Report on Best Practices on Regulatory Regimes in Wholesale Unbundled Access and Bitstream Access[15] it is described that NRA's should ensure that the economic space between WBA and LLU prices should be wide enough so as to avoid eviction prices and not hinder competitors investments in LLU in alternative infrastructure by artificially restraining LLU extension. Furthermore NRAs should ensure that the economic space between WBA and LLU prices should be not too wide in order to avoid excessive pricing in the retail market especially in underserved areas.

[15] ERG (07) 53.

Figure 4. Impact of WBA prices on efficient entry

Figure 4a. Price WBA < Costs WBA

Figure 4b. Price WBA > Costs WBA




As explained in figure 3, an alternative operator will find it profitable to reach the local exchange and use LLU service instead of WBA if it can reach at least $N_1$ connections, which represents a specific market share in this particular local exchange. If the demand faced by the operator is lower than $N_1$, investment in LLU can be considered as inefficient and an efficient operator will decide to make use of WBA.

Figure 4a describes the situation in which the price of WBA set by the incumbent is lower than the costs of WBA. Confronted with this price of WBA, an alternative operator will find it profitable to reach the local exchange and use LLU service instead of WBA if it can reach at least $N_2$ connections. An alternative operator with a market share which represents $N_1$ to $N_2$ connections will not roll out to the local exchange, although this is considered to be efficient. This leads to the conclusion that, in the situation described in figure 4a, the economic space between WBA and LLU prices is too small and hinders efficient alternative operators to invest in LLU.

Figure 4b describes the situation in which the price of WBA set by the incumbent is higher than the costs of WBA. Confronted with this price of WBA, an alternative operator will find it profitable to reach the local exchange and use LLU service instead of WBA if it can reach at least $N_3$ connections. An alternative operator with a market share which represents $N_3$ to $N_1$ connections will roll out to the local exchange, although this is not considered to be efficient. This leads to the conclusion that, in the situation described in figure 4b, the economic space between WBA and LLU prices is too wide to avoid inefficient entry and excessive pricing in the retail market.

To avoid both situations described in figure 4a (economic space too small) and figure 4b (economic space too wide), the price of WBA should be equal to the WBA costs of the efficient operator. As it is discussed below (see paragraph 3.2), the definition of the efficient operator implies some assumptions regarding broadband penetration, market share achieved by the alternative operator and the costs of providing the service. Depending on how NRA calculates these costs (considering the costs of the incumbent or a theoretical operator), both an 'equally efficient operator' and a 'reasonably efficient operator' can be considered as 'the efficient operator' (see paragraph 4.4 for further explanation).

## 3.2 Consistency of wholesale prices and concept of "economic space"

According to the ERG's Report on Best Practices on Regulatory Regimes in Wholesale Unbundled Access and Bitstream Access, the prices of LLU and bitstream services should be consistent (Best Practice # 10), providing a sufficient economic space between them (Best Practice # 11).

According to these principles, NRAs should monitor that:

| **$WBA_{\text{minimum price}}$ = $Price_{LLU}$ + Efficient operator incremental costs of providing WBA** |
|---|

(Best Practice # 12).

Such an assessment should be done on a regular basis, taking into account market evolution impacts on the main underlying drivers: costs of components and technologies, economies of scale achieved by an efficient operator, and LLU roll out prospect...

Given this price setting rule, it may happen that prices of WBA could differ from the costs incurred by the vertically integrated incumbent to provide it. This would result from higher costs generally faced by the alternative (reasonably efficient) operator because for example of lower economies of scale. In this sense setting prices of bitstream services equal to the costs of the incumbent could prevent an efficient ascension in the ladder towards LLU services. Therefore economic space would be understood as the difference between the costs of the vertically integrated incumbent operator for providing WBA services and the minimum price set according to the expression above. It should be also taken into account that the wider this difference is, the more probabilities of having high prices at retail level and thus promotion of inefficient entry. This is of the special importance when NRAs regulate WBA at different steps of the ladder of investment – for example, regional and local levels – as the economic space is cumulative.

Infrastructure investments are progressive as alternative operators gain market share. Thus, market dynamics may create incentives to invest on one's own infrastructure, as the risk associated with infrastructure investments is mitigated as the customer base of the alternative operator develops and more experience is gained.

In fact, it is generally observed that operators are gradually rolling out their networks making use of different access products. According to the report "Broadband access in the EU: situation at 1 July 2008"[16], *"[L]ocal loop unbundling (fully unbundled lines and shared access) is the main wholesale access for new entrants with 65.3% of DSL lines, up from 55.0% in July 2007. New entrants continue to replace bitstream access (down by 2.6 percentage points since July 2007) for local loop unbundling in the provision of broadband services, (…). Share of resale, which represents a type of access for low-investment intensive new entrants, has shrunken by 8.1 percentage points during the last year"*.

As it has been noted, in the case of broadband services, the incumbent's network is normally available to competitors at more than one level. Therefore, NRAs have to be careful to correctly design the relative prices of the different options in relation to one another. In this sense, consistency in the structure of LLU and WBA prices would avoid that excessively low prices in one step (for example, WBA) inhibit investment at a higher level (that is, LLU).

According to the figure above, consistency implies that $Price_{WBA} \geq IC^{WBA}$.

On the other hand, as it has been pointed out by the ERG, infrastructure competition has a number of advantages that are sufficient to justify its promotion (as a priori this model puts additional pressure to minimise costs and foster innovation and differentiation). For this reason, NRAs also have to consider how to encourage replication of infrastructure when feasible and economically efficient, taking into account access and price obligations. Price is of essential importance in this context, as alternative operators will calculate the trade-off of extending LLU coverage taking into account the cost of new co-locations and WBA prices. In this case, NRAs should set relevant prices taking into account the costs of an efficient or reasonably efficient operator which is deploying its own network.

It has been detailed how average cost of LLU decreases with the number of connections within a local exchange, due to the fixed costs that are needed to reach the local exchange (see Figure 3). Mathematically, this trend can be expressed as follows, where AC is the average cost of LLU, FC is the fixed cost related to LLU, C is the number of connections based on LLU in the local exchange and VC is the variable cost of LLU:

[16] COCOM08-41 final.

$$AC = \frac{FC}{C} + VC$$

On the other hand, the number of connections (C) is correlated with the size of the local exchange (S), broadband penetration (P) and the market share of the alternative operator (M):

$$C = S \ x \ P \ x \ M$$

Therefore, it is possible to find a relationship between the price of bitstream services (Price $_{WBA}$) and the minimum size of the local exchange where an alternative operator with a given market share will find that AC < Price $_{WBA}$:

$$S = \frac{FC}{(\mathrm{Pr}ice_{WBA} - VC) \ x \ P \ x \ M}$$

It can be concluded that the size of the local exchange where LLU becomes attractive instead of WBA is negatively correlated with Price $_{WBA}$. Therefore, the lower the price of bitstream services, the larger will need to be the size of the local exchanges for alternative operators to find it profitable to co-locate. The creation of an economic space, by setting the price equal to the costs of an efficient or reasonably efficient operator which is deploying its own network, should therefore give incentives to rational efficient operators to reach the optimal number of local exchanges. The optimal number is not equal to the maximal number of local exchanges, because roll out to some exchanges in rural areas will be inefficient. However it is clear that any view concerning the optimal number of local exchanges that might be targeted or reached by the alternative operators will depend among other things on the assumptions taken by NRAs according to the conditions above (broadband penetration, market share and costs).

Taking into account the need to undertake a prospective analysis of broadband services (determining the penetration) and to define the theoretical operator (market share), the economic space fixed by the NRA would allow such theoretical operator to replicate in a profitable manner bitstream services at local exchanges to which roll out can be considered as efficient.

As such, when setting regulation, it will not be a simple task to establish a general definition of an efficient operator with all its commercial characteristics (such as network size, number of customers). The required efficiency may have to be determined independently of individual company conditions. But this should not be done without referring to real market conditions (market shares, market penetration etc.), since these best reflect efficient conditions of competitive undertakings. In this regard, it should be pointed out that national circumstances are important in determining the threshold up to which LLU is feasible, as this depends on factors such as network topology (size of the local exchanges and their differences), broadband penetration, and the relative size of alternative operators.

According to the questionnaire, NRAs are setting prices according to different mechanisms in order to promote consistency of WBA prices. However, only five out of 18 NRAs explicitly refer to this objective when setting the regulated prices.

## 3.3 Price regulation mechanism

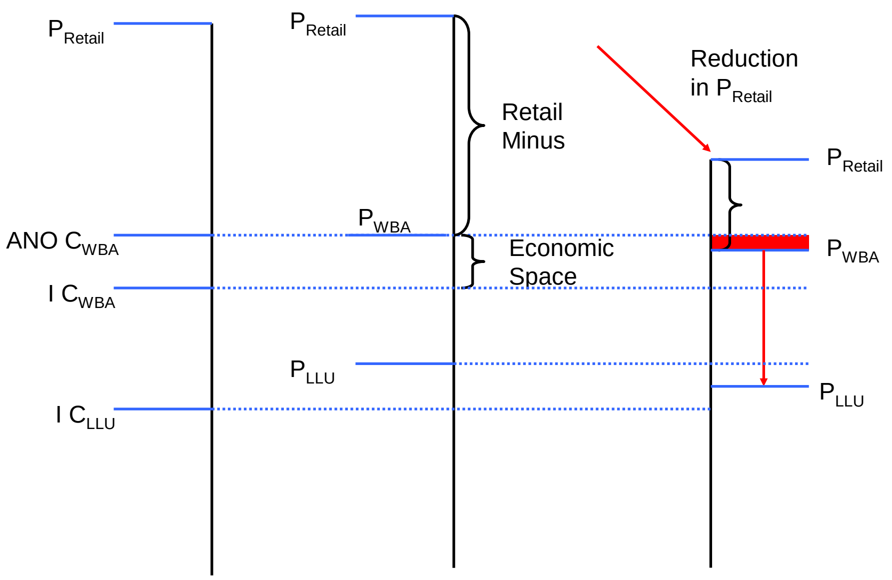
NRAs are regulating wholesale services (LLU and bitstream services) with different pricing obligations, sometimes differentiating them along the broadband value chain. For example, LLU prices are generally cost oriented, whereas bitstream prices, when regulated, may be cost oriented with reference to “costs” or with respect to a retail minus mechanism. Note that these different implementation methodologies are suitable to monitor wholesale services prices consistency. However, each of them has some specificities that should be considered.

Assume that LLU prices are cost oriented and costs based and therefore set close to the costs incurred by the vertically integrated incumbent operator. To regulate bitstream services prices also on the basis of cost orientation, NRAs may engage in a consistency analysis if, according to national circumstances, a sufficient economic space needs to be guaranteed to give incentives to replicate infrastructure if it is deemed to be likely to be efficient. It could be the case that cost oriented prices for bitstream services ($IC_{WBA}$) are lower than the costs of an efficient alternative operator (ANO $C_{WBA}$) of producing bitstream services based on LLU. If the duplication of infrastructure is efficient and feasible, NRA's may want to fix the WBA price above this threshold ($P_{WBA}$) creating an economic space with respect to $IC_{WBA}$ .

It can be argued that some costing methodologies may fail to provide the right investment incentives to the new entrant and stifle its investment incentives. The costing methodology chosen by the regulator will also have an impact over these issues as LRIC/LRAIC (long-run incremental costs/ long-run average incremental costs) for example result in lower prices than FDC/FAC (fully distributed/allocated costs). In conclusion, this kind of problems should be taken into account by the regulator when fixing wholesale prices, if bitstream is to be set on the basis of cost orientation.

When regulating prices on a retail minus mechanism, the level of the wholesale price depends on the retail price of the incumbent operator. In contrast with the situation described above, a retail minus generally assures a sufficient economic space, as the wholesale price is derived from the price of a service which is situated further downstream[17] on the value chain. Given that the wholesale price is calculated as the retail price minus the costs of an efficient undertaking, an excessive retail price will automatically feed into an excessive wholesale price. On the other hand, as noted, this ensures in principle the economic space between the different steps in the ladder of investment (second situation in Figure 5).

Figure 5. Economic space when bitstream prices are fixed via retail minus




It may be the case that the incumbent operator reduces its retail price once the retail minus mechanism is in place because of competitive pressure (for example through the provision of a new bundled service). As the wholesale price is linked to the initial retail prices, the final

[17] The classical form of Retail Minus price is calculated on the basis of the incumbent's retail price and its costs of providing the retail service:

$$P_A = P_R - C_R$$

where $P_A$ is the access price, $P_R$ the retail price, and $C_R$ the incumbent's costs at the retail level.

price could be too low to assure the economic space and incentives to duplicate infrastructure. In this case, NRA may want to consider modifying the minus term of the mechanism (adopting a more efficient approach), consider a regulatory price floor for WBA, or reducing the LLU price if this is feasible.

### 3.4 Conclusion

Competitive problems identified in non effectively competitive wholesale markets are generally related to vertical leveraging, including excessive prices. For this reason, NRAs usually regulate the prices of the SMP operator in order to ensure that efficient entry is not prevented by the incumbent via the setting of unfair prices. However, the broadband value chain has several levels that interact among them, and may contribute to modify the investment decisions of alternative operators. Given this fact, NRAs should not only strive to prevent excessive prices by regulating the price levels, but should also consider the relationship between prices in the upstream and downstream levels.

Consistency in this relationship is fundamental in broadband markets, where it is feasible to replicate some of the infrastructure needed to provide the retail services. It is generally agreed that development of sustainable competing infrastructures will lead to more efficient outcomes, so NRAs should in principle aim to promote such efficient replication[18].

Alternative operators take prices as signals which give incentives either to climb up the ladder of investment (when prices of the wholesale service are high compared with an equivalent self-supplied upstream service) or remain in the same step (when it is cheaper to use the wholesale service rather than invest in additional elements of the network).

Given this trade-off, NRAs should try to ensure consistent prices in a way that once an alternative operator has reached a given size, it would be worthwhile for it to access to the next rung in the ladder of investment. Moreover, the prices set for the lower levels of the value chain could be designed to give incentives to alternative operators to climb up the ladder even before they have reached this size. On the other hand, when making their regulatory decisions, NRAs should take into account the potential drawbacks of creating (too much) economic space, including the possibility of higher prices for underlying wholesale and retail products, or creation of incentives for inefficient entry, which may lead to inefficient duplication.

# 4 Margin squeeze problems on broadband markets

The remainder of the report will focus on situations where the price of a wholesale product (or of the corresponding retail product) is not set by the NRA (any more, because of deregulation), but by the vertically integrated incumbent operator.

To date, margin squeeze cases have generally involved the assessment of pricing of a wholesale input and downstream (retail) prices. However, the same kind of problems can arise – and in fact have been addressed by NRAs - also between two wholesale products, when the price of one of the products is set by the vertically integrated incumbent operator. The report will thus also pay attention to margin squeeze issues that may arise in upstream broadband markets.

[18] In line with the objectives set in article 8 of Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services, 2002 OJ L108/33 (hereinafter, the “Framework Directive”), which states that NRAs *“shall promote competition in the provision of electronic communications networks, electronic communications services and associated facilities and services by inter alia: […] c) encouraging efficient investment in infrastructure, and promoting innovation”*.

As a preliminary note, it is worth stressing that margin squeeze issues between a regulated and a non-regulated wholesale product may *de facto* have similar implications to those discussed in the earlier sections when considering issues arising in the context of economic space. However, in this case the NRA has direct regulatory control over only one of the wholesale products, the availability and price of the other being initially determined by the vertically integrated incumbent operator. Thus, even if conceptually the links between regulated and non-regulated wholesale inputs may be similar to those debated in Section 3 (Consistency in prices across the value chain of broadband services), the means of intervention available to the NRA will be closer to those at its disposal in a traditional wholesale-retail pricing scenario,

The practical and conceptual links and differences between (i) the setting of prices for regulated products; (ii) the relationship between regulated and non-regulated wholesale products prices; and (iii) the wholesale-retail relationship, will however need to be carefully taken into account by the NRA when crafting adequate remedies to ensure price consistency in upstream broadband markets.

## 4.1 Definition

There is no standard definition of margin squeeze. In spite of this lack of a clear-cut definition, price squeeze issues are particularly relevant in the electronic communications regulatory framework, and have to be dealt with by NRAs in their day-to-day activity. For instance, the Access Directive[19] places particular emphasis when making reference to price control obligations to the powers afforded to NRAs to *"impose obligations relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems, for the provision of specific types of interconnection and/or access, in situations where a market analysis indicates that a lack of effective competition means that the operator concerned might sustain prices at an excessively high level, <u>or apply a price squeeze</u>, to the detriment of end-users*"[20] (emphasis added).

Some attempts to define what a margin squeeze is have been offered by the Court of First Instance ("CFI"). In *Industrie des Poudres Sphériques*[21] the CFI noted that *"price squeezing may be said to take place when an undertaking which is in a dominant position on the market for an unprocessed product and itself uses part of its production for the manufacture of a more processed product, while at the same time selling off surplus unprocessed product on the market, sets the price at which it sells the unprocessed product at such a level that those who purchase it do not have a sufficient profit margin on the processing to remain competitive on the market for the processed product*"[22].

The Notice on the application of the competition rules to access agreements in the telecommunications sector (hereinafter, "the Notice"[23]) indicates at § 117-118 that *"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 upstream operating arm of the dominant company. A loss making*

[19] Art. 13 of Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities, 2002 OJ L108/7 (hereinafter, the "Access Directive").

[20] See also Recital (20) of the Access Directive: *"Price control may be necessary when market analysis in a particular market reveals inefficient competition. The regulatory intervention may be relatively light, such as an obligation that prices for carrier selection are reasonable as laid down in Directive 97/33/EC, or much heavier such as an obligation that prices are cost oriented to provide full justification for those prices where competition is not sufficiently strong to prevent excessive pricing. In particular, operators with significant market power should avoid a price squeeze whereby the difference between their retail prices and the interconnection prices charged to competitors who provide similar retail services is not adequate to ensure sustainable competition"*.

[21] Case T-5/97, judgment of the Court of First Instance of 30 November 2000.

[22] For a more recent manifestation of this principle, see Case T-271/03, *Deutsche Telekom*, judgment of the Court of First Instance of 10 April 2008. The CFI notes that, according to the position set by the Commission in its Decision *"there is an abusive margin squeeze if the difference between the retail prices charged by a dominant undertaking and the wholesale prices it charges its competitors for comparable services is negative, or insufficient to cover the product-specific costs to the dominant operator of providing its own retail services on the downstream market"*.

[23] 1998 OJ C265/2.

*downstream arm could be hidden if the dominant operator has allocated costs to its access operations which should properly be allocated to the downstream operations, or has otherwise improperly determined the transfer prices within the organisation. […] In appropriate circumstances, a price squeeze could also be demonstrated by showing that the margin between the price charged to competitors on the downstream market (including the dominant company's own downstream operations, if any) for access and the price which the network operator charges in the downstream market is insufficient to allow a reasonably efficient service provider in the downstream market to obtain a normal profit (unless the dominant company can show that its downstream operation is exceptionally efficient)"*.

The criteria set out in the above-mentioned judgements are thus relevant to determine the existence of a price squeeze. In this regard, reference is also made to ERG's Report on the Discussion on the application of margin squeeze tests to bundles[24].

## 4.2 Significant Market Power - Dominant position

An issue that arises with regard to margin squeeze cases relates to the market in which the operator who allegedly is involved in an anticompetitive practice should be deemed to have SMP.

In margin squeeze cases, the operator will normally be dominant in the upstream market, and be active in a related downstream market. However, according to § 81 of the Notice, it will often be necessary in the electronic communications sector to examine a number of additional markets, one or more of which may be dominated by a particular operator. In these circumstances, there are a number of possible situations where abuses could arise:

- conduct on the dominated market having effects on the dominated market;
- conduct on the dominated market having effects on markets other than the dominated market[25];
- conduct on a market other than the dominated market and having effects on the dominated market[26];
- conduct on a market other than the dominated market and having effects on a market other than the dominated market[27].

Preventive action by NRAs may therefore be necessary not only in the market or markets where an operator is deemed to be dominant, but also in other markets where there is a risk that the price squeeze may also lead to anticompetitive harm. In any case, as noted below, in some instances application of the *ex post* competition rules may also be an alternative, as the key issue is that the margin squeeze issue is addressed in one way or another.

## 4.3 Margin squeeze scenarios

When addressing margin squeeze cases, a number of factors need to be considered. First, as noted, margin squeeze issues may arise with regard to upstream inputs needed to provide the retail service (i.e. between two wholesale services) but also with regard to an upstream input and the corresponding retail prices (wholesale-retail margin squeeze).

Likewise, for a margin squeeze to exist it will not be necessary that SMP has been found in all the relevant markets affected by the anticompetitive practice, nor that both services are regulated by the NRA.

[24] ERG (09) 07 of March 2009.
[25] Joined Cases 6/73 and 7/73, Commercial Solvents v. Commission, judgment of 6 March 1974; Case 311/84, CBEM v. CLT and IPB, judgment of 3 October 1985.
[26] Case C-62/86, AKZO v. Commission, judgment of 3 July 1991; Case T-65/89, BPB Industries and British Gypsum v. Commission, judgment of 1 April 1993.
[27] Case C-333/94P, Tetra Pak v. Commission, judgment of 14 November 1996.

In the light of the considerations above, the following scenarios may be envisaged:

Scenario 1. There may be a price squeeze between a regulated wholesale service (e.g., mandatory WBA) and a non-regulated wholesale service (e.g., other forms of bitstream access or resale);

Scenario 2. There may be a price squeeze between a regulated wholesale service (e.g., LLU or WBA) and the (unregulated) retail service that is provided via that input;

Scenario 3. There may be a price squeeze between two non-regulated wholesale services (e.g., between two forms of bitstream access), or between a non-regulated wholesale service and the (unregulated) retail service that is provided via that input[28].

### 4.3.1 Margin squeeze issues outside the scope of *ex ante* regulation

It is worth analyzing whether in all of the factual scenarios listed above there may be scope for NRA intervention. In particular, as it will be discussed, the usual means of action for NRAs will be via intervention in the regulated wholesale services (e.g. by applying a reduction in the wholesale prices in order to widen the margin that is available to alternative operators).

Such sort of NRA intervention will generally not be available when the price squeeze affects two non-regulated wholesale services (e.g., two forms of bitstream access), or the price squeeze relates to a non-regulated wholesale service and the corresponding retail prices (Scenario 3). In those instances, if the (suspected) price squeeze has no impact over the services that are mandatorily available on the basis of an *ex ante* decision by the NRA, it may be queried whether any form of intervention could be expected from the NRA[29].

In these cases, it could be argued that the best way to tackle the margin squeeze issue would be via the application of the *ex post* competition rules. While under the *ex ante* regulatory framework intervention may prove to be unwarranted, this is not necessarily the case under the competition rules, in particular once it has been concluded that the (vertically-integrated) telecoms operator is dominant in the affected upstream market and the wholesale input is necessary for competitors to operate at the retail level. When making such assessment under the *ex post* competition rules, however, account will need to be taken of the extent to which a dominant position may be deemed to exist with regard to non-regulated wholesale products when regulated wholesale inputs are available and are being consumed by alternative operators[30].

### 4.3.2 Margin squeeze issues within the scope of *ex ante* regulation

For all the other scenarios (Scenarios 1 and 2) it may be argued that the NRA is well positioned to deal with potential margin squeeze issues. Once the margin squeeze affects a regulated service, or it has spill-over effects over a regulated service, there is no reason for precluding regulatory action.

The Commission Guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (hereinafter, "the Guidelines"[31]) state at § 31 that *"it cannot be excluded that parallel procedures under ex-ante regulation and competition law may arise with respect to*

[28] In these cases intervention via *ex ante* regulation may have proved to be unwarranted, for instance if it was deemed that with regard to the application of the three cumulative criteria set in the 2007 Commission Recommendation, the application of competition law was sufficient to deal with potential anticompetitive issues arising in the analyzed market.

[29] Again, in this scenario it is assumed that the anticompetitive practice has no impact over the regulated wholesale services that are available, and therefore e.g. a revision of the prices of the regulated wholesale services is not appropriate to solve the problem.

[30] Absent the "indispensable" nature of the upstream product, it would be questionable the extent to which the alleged margin squeeze may lead to foreclosure in the affected markets.

[31] OJ C165/6 of 11 July 2002.

*different kinds of problems in relevant markets".* The Guidelines go on to stress that *"it is expected that effective cooperation between NRAs and NCAs would prevent the duplication of procedures concerning identical market issues"*. In the same line, § 149 of the Notice states that *"competition rules and sector specific regulation form a coherent set of measures to ensure a liberalised and competitive market environment for telecommunications markets in the Community"*.

In this context, the possibility of resorting to swift remedial action (such as that discussed in the next Section) via the NRA's intervention should always remain open, and in many instances will be more capable of redressing the problem than the *ex post* application of the competition rules.

In particular, with regard to the most common instance triggering regulatory intervention up to date (margin squeeze between a regulated wholesale service and the retail service that is provided via that input, i.e. Scenario 2), the Explanatory Note to the 2007 European Commission Recommendation on relevant product and service markets susceptible to *ex ante* regulation indicates that *"for the assessment of a margin squeeze it is irrelevant whether both wholesale and retail prices are regulated or only one of the two. The relevant questions in this context are (i) whether the spread between wholesale and retail prices cover the retail costs of the dominant firm and (ii) whether the dominant firm is free to avoid the margin squeeze on its own initiative"*.

There is thus no doubt that regulatory intervention will be possible and required in this factual scenario. Intervention may arise with regard to individual products offered at the retail level, but also – as noted by several NRAs in their answers to the questionnaire – in the context of bundled retail services. In this regard, and without prejudice to the discussion below on NRAs means of action to address concerns at this level, reference is also made to ERG's Report on the Discussion on the application of margin squeeze tests to bundles, where the implications of a margin squeeze strategy in the context of bundled offers are discussed at length. While the concerns regarding margin squeeze issues between regulated and non-regulated wholesale products appear to be lower that with regard to the retail level, in their answers to the questionnaire some NRAs have acknowledged that this is also an issue that may require some degree of oversight.

From the point of view of the SMP operator, its freedom of action to engage in potentially abusive conduct will be narrower the tighter price regulation is. For instance, for as long as the prices are correctly set, there should be limited concerns about a potential margin squeeze between a cost-oriented wholesale input and the related retail service[32]. However, even in the presence of regulatory intervention the possibility of margin squeeze cannot be eliminated totally. In this sense, this Report relates to the application of regulatory measures by NRAs regarding margin squeeze tests. This Report does not consider the possible application of Article 82 of the EC Treaty by the Commission or the National Competition Authorities.

## 4.4 Margin squeeze test

### 4.4.1 Imputation test (equally efficient vs. reasonably efficient operator)

One of the main issues to be considered by the NRA when applying a margin squeeze test (be it between wholesale services, or between a wholesale input and a retail service) is the

[32] See ERG Common Position on best practice in bitstream access remedies imposed as a consequence of a position of significant market power in the market for wholesale broadband access (ERG (06) 69 Rev 1) (hereinafter, "ERG common position on WBA"): *"where cost-based access is imposed, this should alleviate concerns about downstream margin squeeze"*. On the other hand, the ERG common position on WBA also notes that *"as a consequence of economies of scope and scale, cost-based bitstream pricing may give rise to an eviction price in respect of the upstream (unbundled loop and shared access) services. Consequently, NRAs may need to impose additional controls to ensure the maintenance of a margin sufficient to avoid this […]"*.

imputation test that should be run to determine whether the conduct may in fact be harmful to the market[33].

As noted in ERG's Report on the Discussion on the application of margin squeeze tests to bundles, two imputation tests may be considered: (i) the equally efficient operator ("EEO") test and (ii) the reasonably efficient operator ("REO") test. Both tests are referred to in the Notice on the application of the competition rules to access agreements in the telecommunications sector.

With regard to the EEO test, as indicated before the Notice states at §§ 117-118 that *"a price squeeze could be demonstrated by showing that the <u>dominant company's own downstream operations could not trade profitably</u> on the basis of the upstream price charged to its competitors by the upstream operating arm of the dominant company"* (emphasis added).

With regard to the REO test, the Notice goes on to state that *"in appropriate circumstances, a price squeeze could also be demonstrated by showing that the margin between the price charged to competitors on the downstream market (including the dominant company's own downstream operations, if any) for access and the price which the network operator charges in the downstream market is insufficient to <u>allow a reasonably efficient service provider in the downstream market to obtain a normal profit</u> (unless the dominant company can show that its downstream operation is exceptionally efficient)"* (emphasis added).

Experiences on the way the imputation test is run at Member State level have been gathered via the submission of a questionnaire to NRAs. While most NRAs use the EEO imputation test, several NRAs do make use of the REO test, in particular in instances where the gathering of competitor's data is understood to be feasible. With regard to the application of the EEO test, it is important to stress that in many instances the standard has been applied in a flexible manner, in order e.g. to take into account the different economies of scale and scope attainable by the SMP operator and alternative operators (in what has sometimes been categorized as a "similarly efficient operator" imputation test[34]). The possibility of making such adjustments in the EEO test has also been dealt with in ERG's Revised Common Position on the approach to appropriate remedies in the ECNS regulatory framework[35].

What is important to note is that both tests are at the disposal of NRAs in an *ex ante* scenario. This may be different from the tools that may be available in an *ex post* context. In the *Deutsche Telekom* case, the CFI ruled that *"the abusive nature of a dominant undertaking's pricing practices is determined in principle on the basis of its own situation, and therefore on the basis of its own charges and costs, rather than on the basis of the situation of actual or potential competitors"*, thus in principle stating a preference for the application of the EEO standard in competition law cases (article 82 EC Treaty).

This appears to be reasonable in an *ex post* scenario, in particular due to the fact that to be able to determine the legality of its actions the dominant operator cannot rely on the cost structure of alternative operators, which are unknown to it. On the other hand, this problem can be mitigated in an *ex ante* context, e.g. via the requirement that wholesale and/or retail offers of the SMP operator are notified to the regulatory authority in advance (thus limiting the risks of legal uncertainty)[36]. It should also be borne in mind that, in an *ex ante* environment, the logical outcome of a margin squeeze test would generally be revision of the prices set for the (regulated) wholesale offers of the SMP operator, rather than the imposition of a fine as foreseen in an *ex post* context[37]. In such an environment, it would be difficult to argue that the application of a REO test reduces legal certainty for the incumbent

[33] The issue of what is the appropriate imputation test may also arise in the context of setting the prices of two regulated wholesale products.
[34] For a detailed discussion on such approach, see Ofcom, Direction setting the margin between IPStream and ATM interconnection prices, August 2004.
[35] ERG (06) 33.
[36] Legal uncertainty should not be such an issue when the REO test is used by the NRA to set the prices of the regulated wholesale services (e.g., to prevent eviction pricing between LLU and bitstream services).
[37] However, a fine could be imposed in an *ex ante* environment as a deterrent against future margin squeeze.

operator. In any event, issues relating to legal certainty may also be prevented by NRAs through the publication of a methodology for the *ex ante* assessment of the wholesale/retail offers of the incumbent operator, as foreseen in ERG's Common Position on WLA/WBA[38].

From a regulatory viewpoint, there is no clear-cut rule as to which imputation test is more convenient for the fostering of competition. As noted in ERG's Report on the Discussion on the application of margin squeeze tests to bundles, there is no consensus on which particular test should be used, as there are pros and cons for each of the tests. The test to be applied is very dependent on the specific circumstances of the case and the objectives of the NRA. For example, if the market is mature and the main aim is to promote competition then there might be merit in using the REO test[39]. However, if there is a concern to protect the investment and innovation incentives for the SMP operator then the EEO test might prove more suitable[40]. It should also be noted that application of a more protective standard (the REO test) may lead in exceptional cases to outcomes such as the prohibition of rate reduction measures or even to increases in the downstream prices of the SMP operator, thus affecting – at least in the short term – the interests of the end user[41].

Along similar lines, in its Communication on Guidance on the Commission's enforcement priorities in applying Article 82 EC Treaty to abusive exclusionary conduct by dominant undertakings, the European Commission notes when dealing with price based exclusionary conduct that "*in certain circumstances a less efficient competitor may also exert a constraint which should be taken into account when considering whether a particular price-based conduct leads to anticompetitive foreclosure. The Commission will take a dynamic view of this constraint, given that in the absence of an abusive practice such a competitor may benefit from demand-related advantages, such as network and learning effects, which will tend to enhance its efficiency"*[42].

### 4.4.2 Relevant wholesale service

A price squeeze analysis is based on the comparison of the incumbent's wholesale and retail prices. However, broadband services have some specific conditions that complicate this analysis.

On one hand, the same retail broadband service can be provided on the basis of various upstream services at different levels of the value chain. Depending on the wholesale service considered, the cost share of the retail product that is not included in the upstream service product varies significantly[43].

On the other hand, depending on Member States (see results of the questionnaire in the table in Section 2) regulated and non-regulated upstream services co-exist in the marketplace. The prices of these services are fixed according to different rules (cost based or retail minus mechanism), and further more could include an economic space to promote investments.

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[38] ERG Common Position on best practice in wholesale unbundled access (including shared access) remedies imposed as a consequence of a position of significant market power in the relevant market (ERG (06) 70 Rev 1) (hereinafter, "ERG common position on WLA") and ERG common position on WBA. In connection with these Common Positions, see also ERG's Report on best practices on regulatory regimes in wholesale unbundled access and bitstream access, ERG (07) 53, June 2008.

[39] On the other hand, the REO test may also be an appropriate benchmark if the incumbent's costs are higher than those of more efficient competitors. In these cases, an EEO standard could result in incorrect findings of margin squeeze derived from the inefficiencies of the SMP operator.

[40] See also ERG common position on WBA: *"In considering the minimum acceptable margin, NRAs will have to strike a balance between short term efficiency, derived from the economies of scale and scope realisable by an SMP player, and the longer term benefits (assessed on a realistic basis) of a more competitive downstream market, brought about by new entrants which should, in due course and to a reasonable extent, be able to match those economies"*.

[41] It should also be evaluated whether application of the REO test may lead if wrongly applied to protecting inefficient competitors.

[42] § 23.

[43] While no detailed discussion on this issue is included in the report, as it is not part of the scope of the project, it should be noted that this fact complicates significantly the calculation of relevant margins.

Given the multi-dimensional nature of a margin squeeze test for broadband services, it is also important to develop some general indications regarding the term “efficient operator”. As a first approach, it may be possible to consider that an “efficient operator” needs to use necessarily all of the wholesale services offered by the incumbent. If this is the case, NRAs should monitor the margin squeeze between all steps of the value chain. However, this standard could limit the pass-through of costs savings at upper levels to downstream markets, thus reducing price competition.

An alternative approach could assume that an “efficient operator” has climbed the ladder of investment and is using a combination of wholesale services. This “efficient operator” could therefore coincide with the theoretical operator defined by the NRA when determining the economic space (see section 3.2 above). The outcome of this approach would mean weighting prices of different wholesale services in the design of the price squeeze test.

Finally, NRAs could also consider it “inefficient” in terms of price squeeze calculations that operators use wholesale services which include infrastructure whose replication is feasible. In these cases, the relevant wholesale services to be considered would primarily be regulated services on markets 4 and 5. NRAs opting for this approach may be conscious that considering a more aggregated wholesale service is limiting the capacity of the incumbent to reduce prices in the downstream markets. This could amount a protection of inefficient operators against the interest of consumers at those levels (either operators or end users if the test is done with regard to the retail market). On the other hand, if alternative operators have not reached a sufficient scale and/or require the incumbent’s bitstream services in some areas (e.g. in rural areas), considering exclusively the prices of the wholesale services available at the top of the ladder of investment might prove too demanding, thus making entry unprofitable and therefore inefficient.

### 4.4.3 Consideration of specific costs

Generally, wholesale services do not include the entire infrastructure required to provide retail services. In addition, common and retail costs are also normally excluded from the determination of the relevant upstream services. NRAs should therefore strive to estimate these costs consistently with the chosen efficiency standard (see section 4.4.1).

These elements could be measured according to different cost standards, such as LRIC or FDC. The cost standard is not neutral as, for example, the LRIC standard does not include common costs, so an efficient operator would bear with this methodology an additional pressure on its margin compared with the incumbent. On the other hand, distribution of common costs obtained according to FDC could be arbitrary if the production function exhibits economies of scale and scope both at upstream and downstream levels. A more detailed discussion on the elements which characterize these cost standards and the problems that could arise given its allocation rules is contained in paragraphs 57-64 of ERG’s Report on the Discussion on the application of margin squeeze tests to bundles[44].

For the consideration of specific costs, accounting separation might provide NRAs with useful information to determine the internal margins of the incumbent’s services (regulated and unregulated), and thus facilitate the possibility of setting criteria to allocate costs in an appropriate manner among retail and wholesale levels. It is important to recall that Article 5 of the Framework Directive provides NRAs with the legal basis to obtain any and all pertinent information, regardless of whether the market is identified in the Annex to the Recommendation on relevant product and service markets susceptible to *ex ante* regulation or not.

[44] ERG (09) 07 of March 2009.

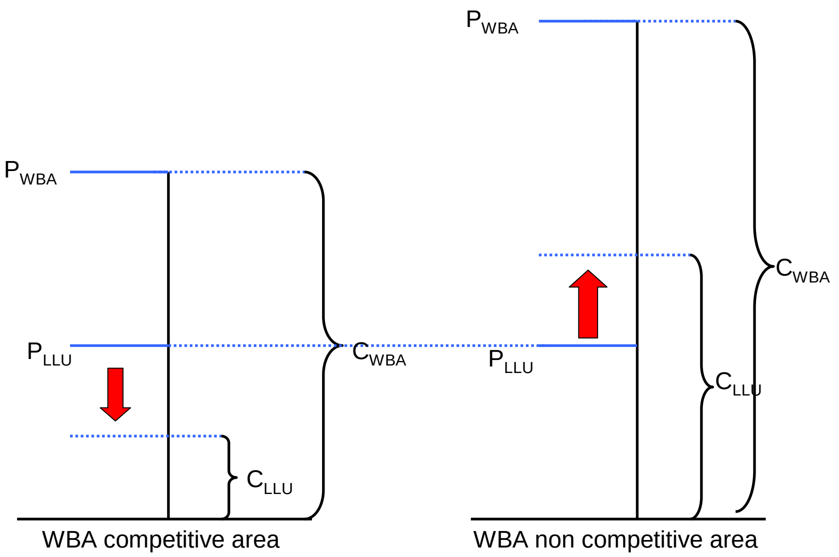
### 4.4.4 Geographical issues

The analysis above may become even more complex if prices of wholesale services are de-averaged according to geographical competitive conditions. Price differentiation would affect in principle the lower “rungs” of the ladder of investment – when alternative operators use resale or bitstream services - given that NRAs normally regulate LLU prices on a national basis. In these circumstances, price and cost differences within the national territory may lead to geographic price squeeze issues.

A factual scenario similar to the one described in figure 6 below may require a further reduction of LLU prices, in order to maintain consistency at wholesale level and avoid a price squeeze on the competitive area:

Figure 6. Geographical price differentiation on WBA prices

Source: “Conceptual considerations in sub-national markets”, WIK Consultant.




Price squeeze and cross subsidisation could in these instances distort competitive conditions in the more competitive areas, as the incumbent may try to recover some of the costs incurred in the competitive market via the market where it holds SMP, thus undermining the prospects of competition. As in the national case, accounting separation may here also prove to be a useful tool to prevent the leverage of market power although a geographical differentiation could cause several practical problems.

# 5 NRAs intervention in margin squeeze cases

As it has been discussed above, both European case-law and regulatory practices confirm the possibility of ex ante intervention to address margin squeeze issues in a regulated environment. In particular, NRAs intervention may be triggered in instances where it is determined that a margin squeeze exists between a regulated wholesale input and a downstream retail service, or between a regulated and a non-regulated wholesale service.

The effects of a margin squeeze practice may be perceived not only in a regulated environment but also in non-regulated markets, as considered in section (i) below. The remaining sections deal with the options available to NRAs in the context of (ii) regulated markets; and (iii) non-regulated markets.

## 5.1 Effects of margin squeeze practices in non-regulated markets

When dealing with margin squeeze cases, NRAs must be aware of the potential effects of such practice not only in regulated but also in non-regulated markets. The prototypical case is a margin squeeze between a wholesale input and a (liberalized) retail market, where the effects of the conduct may be as prominent at retail level (reduced consumer welfare in the long run) as at wholesale level.

Likewise, a margin squeeze practice in a non-regulated market may have spill-over effects over a regulated market, thus requiring NRA intervention. The need to maintain the coherence of the regulatory scheme may justify intervention with regard to non-regulated WBA offers, if the price unilaterally set by the SMP operator is so attractive that in practice it reduces the incentives of alternative operators to invest in alternative means of access that would enable further differentiation from the incumbent's offers. This will be particularly true in cases where the conduct pertaining to a non-regulated WBA offer has distorting effects over the policy objectives set by the NRA for alternative operators to climb the ladder of investment (including creation of economic spaces between wholesale services).

NRAs will thus need to consider the overall effects of the margin squeeze in the marketplace and for the fulfilment of its regulatory objectives, and act accordingly. As noted below, alternatives for action are available both in regulated markets as well as in unregulated markets. As mentioned by some NRAs in their answers to the questionnaire, in addition to the alternatives discussed below there may be some scope for alternative forms of remedial action – if foreseen by national law – such as direct prohibition of the retail offers even if they are in principle unregulated; direct referral of the case to the competition authority; or the development of rules of conduct where the position of the regulator with regard to price squeeze issues is explained.

## 5.2 *Ex ante* intervention in regulated markets

With regard to intervention in markets that are subject to *ex ante* regulation, there are several options at the disposal of NRAs. The most important means of action include (i) the revision of the regulated wholesale prices; (ii) the prohibition that the SMP operator self-supplies the relevant input until that input is made available on reasonable terms and conditions to third parties; and (iii) the initiation of fining proceedings.

<u>First</u>, the finding of a margin squeeze may trigger the need to revise the wholesale prices of the relevant inputs. It is worth recalling that, only one of the services that is being subject to margin squeeze scrutiny will be covered by *ex ante* regulation (e.g. LLU, or one form of WBA access). In these instances, the finding of a margin squeeze should normally lead to intervention via a reduction in the price of the regulated (wholesale) service, so that a sufficient margin exists between the regulated and the non-regulated wholesale services that are being analysed, or between the regulated wholesale service and the related downstream service[45].

NRAs should ensure that intervention is also coherent with the regulatory model that is available, in that e.g. a reduction in WBA prices due to the existence of a margin squeeze may also lead to a further reduction in the prices of LLU, to ensure that sufficient incentives

[45] Such measures are without prejudice to further action that may be undertaken by the SMP operator to prevent the price squeeze, e.g. via an increase in the prices of the downstream service.

are available for alternative operators to climb up the ladder of investment[46]. In this regard, it is fair to note that difficult issues may arise when proceeding to a revision of wholesale prices along these lines, e.g. in instances where the prices have been set on the basis of a particular cost methodology adopted by the NRA, or when a further reduction of LLU prices may imply below-cost pricing. Also, difficult issues may arise in determining by the required amendment the wholesale prices of the relevant inputs.

Second, as the revision of the wholesale prices may be a lengthy process, NRAs may need to take further steps to limit the effects of the anticompetitive practice. In this regard, ERG's Common Position on WBA states that *"NRAs should consider whether a special form of non-discrimination obligation, namely ex-ante controls on the introduction of downstream services by the SMP player, should be imposed in order to ensure that the bitstream services which would permit effective competition in the downstream market are made available and are fit for purpose in a timely way. An appropriate method of control could be an obligation not to make available to itself the wholesale inputs which permit introduction of a new or enhanced downstream service until the corresponding wholesale service components required to deliver an equivalent competitive downstream service are available and fit for purpose"* (emphasis added).

This means that NRAs also have at its disposal the possibility of preventing the reputed anticompetitive conduct by prohibiting that the SMP operator self-supplies the relevant input until that input is made available on reasonable terms and conditions to third parties[47]. Once the technical and economic conditions of the regulated wholesale services would be apt to ensure that alternative operators can compete with the incumbent operator on equal terms, the prohibition for the SMP operator to self-supply the relevant input would be lifted.

Last, the existence of a price squeeze abuse may lead to the initiation of fining proceedings against the SMP operator for non-compliance with existing regulatory provisions. This will generally be the case if prohibition of margin squeeze abuses has been introduced as a remedy in *ex ante* regulation (either directly or indirectly, the margin squeeze being construed as a "constructive" refusal to supply), or if NRAs are empowered to do so directly on the basis of their national legislation. In their answers to the questionnaire, reference has also been made to the possible invocation of the non-discrimination principle as a basis for action by NRAs. That is, it could be assumed that a margin squeeze reveals that a more favourable treatment is being afforded by the SMP operator to its retail arm, this leading to non fulfilment of the non-discrimination obligations usually imposed upon the incumbent operator.

## 5.3 *Ex ante* intervention in non-regulated markets

With regard to *ex ante* intervention in non-regulated markets, potential means of action available to NRAs include (i) the possibility to monitor the market via requests for information; (ii) the imposition of *ex ante* communication obligations / development of a methodology for the assessment of the SMP operator's offers.

In relation to monitoring activities, Article 5 of the Framework Directive provides NRAs with the necessary tools for assessing potential margin squeeze issues even with regard to non regulated services. According to para. 1 of this provision, *"Member States shall ensure that undertakings providing electronic communications networks and services provide all the*

[46] See Report on ERG best practices on regulatory regimes in Wholesale unbundled access and bitstream access: *"It is best practice for NRAs to ensure consistency between the prices of all SMP player's products available along the whole value chain of DSL. […] This primarily would involve for NRAs the need to ensure sufficient economic space between WLA and WBA in order to allow efficient competitor to profitably compete: (i) against WBA on the intermediate markets (wholesale market); (ii) against the SMP retail offers"* (Best Practice # 10). In the same line, see also Best Practice # 11 and # 12.

[47] Along the same lines, the Common Position also stresses that for avoidance of unfair first-mover advantage, *[NRAs] may find it useful to clarify (e.g. through published guidance) that the introduction of a new or enhanced downstream services would be considered a serious breach of the non-discrimination obligation where the wholesale service components required to deliver an equivalent competitive downstream service are not available to third parties"*.

*information, including financial information, necessary for national regulatory authorities to ensure conformity with the provisions of, or decisions made in accordance with, this Directive and the Specific Directives. These undertakings shall provide such information promptly on request and to the timescales and level of detail required by the national regulatory authority. The information requested by the national regulatory authority shall be proportionate to the performance of that task. The national regulatory authority shall give the reasons justifying its request for information".*

Article 5 of the Framework Directive does not, therefore, prejudge the possibility that NRAs obtain relevant information on markets that are not subject to *ex ante* regulation, if this is necessary to assist the regulatory authorities in the pursuit of the objectives set by the regulatory framework[48].

As to the imposition of *ex ante* communication obligations, a number of NRAs have required from SMP operators *ex ante* communication of the retail services that they are about to launch, regardless of whether such retail services are themselves subject to *ex ante* regulation or regulation stems from a closely connected or adjacent market (e.g. wholesale broadband inputs). Several NRAs apply systematically an *ex ante* margin squeeze procedure, in particular in instances where wholesale and/or retail prices of broadband products are changed. NRAs have also applied *ad hoc* control procedures, in particular to prevent price squeeze issues arising with regard to retail offers.

By the same token, NRAs are empowered to require from SMP operators notification of non-regulated wholesale offers that are available on commercial terms, to ensure that such offers pose no prejudice to the regulatory incentives created by the NRA to foster ascension in the ladder of investment.

This obligation is fully in line with the existing regulatory framework, as well as with ERG's Common Positions on WLA/WBA, which state that *"when judged necessary to facilitate downstream entry, specific forms of ex ante margin control could be necessary. Suitable forms of control include advance publication of the methodology for assessment of margin squeeze (or eviction pricing)".* Also in line with ERG's statements in this regard, some NRAs have adopted measures detailing the methodology that will be applied for the assessment of the incumbent's retail offers. In their answers to the questionnaire, a number of NRAs have pointed out the usefulness of developing such methods of *ex ante* control.

Enactment of a methodology may increase transparency in the way the affected markets will be monitored, and should assist both NRAs and electronic communications operators in determining which offers could be most harmful for the development of competition, thus preventing such retail offers from being introduced in the marketplace until wholesale prices are modified to take due account of the changes produced at retail level. The setting of a methodology may also shed light in the way the NRA will deal with important issues such as the potential retroactive nature of any wholesale modification that takes place on the basis of the retail conduct of the SMP operator[49].

# 6 Conclusion

Consistency in wholesale prices is of critical importance in the context of broadband services. Prices should be set so as to enable efficient operators to compete in the retail market, in order to translate the benefits of competition to end consumers. At the same time,

[48] The Explanatory Note adds that *"Article 5 of the Framework Directive provides NRAs with the legal basis to obtain any and all pertinent information, regardless of whether the market is identified in the annex to the Recommendation. This applies not only to costs but also to retail pricing in order to allow the NRA to establish and monitor justified and appropriate remedies with respect to wholesale access"*

[49] In this regard, see comments letter of the European Commission of 8 December 2008 in *Cases NL/2008/0826 and NL/2008/0827.*

prices should provide correct incentives to operators to climb the ladder of investment, in a way sustainable competition in the long run can be achieved.

NRAs should monitor consistency in prices regardless of the means through which ex ante regulation takes place. The regulatory approach may shift from an incentives policy - where NRAs directly regulate prices - to margin squeeze surveillance where competition is already in place.

NRAs are regulating prices at several steps of the broadband value chain (LLU and bitstream services). In this case, prices should be designed to ensure that operators substitute in an efficient manner the services available on a lower step of the ladder of investment by others closer to the customer premises (in particular, LLU). This would imply setting the prices of bitstream services taking into account the costs of an efficient operator, as otherwise it would not find this substitution economically efficient.

This situation is different from the one where the downstream market is not regulated (at least, with regard to prices). In this case, it is clear that the incumbent could affect competitive conditions through the margin allowed between two levels of the value chain. In this report it has been argued that NRAs may also want to monitor these situations, although the objectives may be different from those referred to above. In these instances, operators are already active in both levels of the value chain, so incentives are not so relevant anymore. Therefore, the focus of NRAs should be whether alternative operators can act in a profitable manner allowing the maximum pass-through of competitive benefits to end consumers. For this reason, in cases where competition is in place, NRAs may consider applying cost standards that minimise the gap that is required to the incumbent operator between upstream and downstream levels.