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Study for OPTA

Wholesale Line Rental as a Potential Remedy on the Market for Fixed Telephony

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List of Abbreviations

ADSL	Asymmetrical Digital Subscriber Line
BT	British Telecom
ComReg	Commission for Communications Regulation
CPS	Carrier Preselection
CS	Carrier Selection
DSL	Digital Subscriber Line
DTAG	Deutsche Telekom AG
ERG	European Regulator Group
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
LLU	Local Loop Unbundling
LRIC	Long Run Incremental Cost
MDF	Main Distribution Frame
NPT	Norwegian Post and Telecommunications Authority
NRA	National Regulatory Authority
ODTR	see ComReg
Ofcom	Office of Communications
OFTEL	Office of Telecommunications
OPTA	Onafhankelijke Post en Telecommunicatie Autoriteit
PSTN	Public Switched Telephone Network
RegTP	Regulatory Authority for Telecommunications and Posts
RPI	Retail Price Index
SMP	Significant Market Power
TV	Television
UK	United Kingdom
ULL	Unbundled Local Loop
VoDSL	Voice over DSL
VoIP	Voice over IP
WLR	Wholesale Line Rental

1 Context of the Study

1.1 Reasons for conducting the study

At present, OPTA is in the process of analysing the electronic communications markets in the Netherlands in accordance with the Framework Directive and the guidelines for market analysis issued by the European Commission to ensure a consistent and harmonised approach on analysing the relevant markets in the Member States. If OPTA will identify that certain markets are not effectively competitive and operators contain a position of significant market power, OPTA will impose appropriate remedies on such operators related to the observed market failure. The markets for access to the public fixed telephony networks are candidate markets susceptible for ex ante regulation due to lack of effective competition. OPTA is considering to oblige the incumbent operator to provide WLR as one of the relevant remedies for these markets. Such a remedy would not only have an impact on the access markets but would also influence the competitive landscape in the whole fixed telephony markets, in particular the markets for telephone calls. The complex competitive nature of this (potential) remedy results from the fact that the availability of WLR would enable competitors to bundle calls and access services as one-stop shopping offers to their customers. A WLR obligation may support more service-based than infrastructure-based competition. Therefore, the imposition of WLR as a remedy needs careful economic analysis on its competitive impacts. These impacts – that will be one of our main conclusions – will significantly depend on how such an obligation will be designed. The pricing rules for WLR in particular can balance the contributions and impacts of the obligation.

1.2 WLR in the context of market analysis and ex ante regulation

If the market analysis reveals a lack of effective competition and the existence of significant market power in a relevant electronic communications market, the NRA has to impose appropriate and proportional remedies to resolve market failure and improve the market efficiency. Markets to be susceptible for ex ante regulation (1) must be characterised by high and structural (or non-transitory) entry barriers, (2) the emergence of effective competition must not be foreseeable, and (3) the application of ex post controls based on competition law principles must be insufficient to address the market failures concerned. These criteria are also relevant for choosing the appropriate remedies. When imposing a remedy and / or choosing among the relevant set of available remedies the NRA must demonstrate, that the remedy at hand is appropriate to address the underlying competition problem identified within the market analysis, proportionate and justified in the light of the basic regulatory objectives (promoting competition, contributing to the development of the internal market and promoting the interests of users).

The Access Directive defines a set of standard remedies at the wholesale level. The provision of wholesale services for resale is set as one of the (potential) access obligations. Access obligations may include conditions of fairness, reasonableness and timeliness. In the context of an access obligation operators may be required to provide interoperability and operational support. Access obligations do not only have to serve the general objectives of the Framework Directive. They also and in particular have to take into account the viability of installing competing infrastructures and the need to promote long-term viable competition. Any access obligation including a resale obligation can be a stand alone remedy with a general provision to provide that particular type of access and to negotiate in good faith. Alternatively, it may be accompanied by the full suite of the predefined remedies in Article 9 to 13 of the Access Directive including cost and price control. To be effective, access obligations should at least be accompanied by transparency and non-discrimination obligations and may be accompanied by price control and accounting obligations.

2 The theoretical approach

2.1 The nature of resale

A reseller or service provider purchases a product from the producer of the product or service and sells it to the final customer under his own names. He brands the product and offers it under his own price plan. In a reselling relationship it is the service provider who bills (and therefore "owns") the customer and not the producer. Service providers actually do not produce the product. This means that they only have very limited ability to influence product quality or to offer it under a different quality compared to the producer, which in telecommunications is the network operator. The basic value added of a service provider lies in the retail side of the business. Here he can differentiate himself, e.g. in pricing, customer service and billing. "Pure" resale or service provision may not generate a viable long-term business depending on market conditions. The economic value added from pure resale is small. Viability depends on the retail / wholesale margin, perhaps some price distortions and the strength of the brand of the reseller. In certain areas of the economy there are stable industry structures based on the pure resale model. In certain areas like food upstream producers do not engage themselves in the retail business at all and leave that market to downstream providers. In telecommunications vertical specialisation is more the exceptional model than the rule. The more common structure in telecommunications is competition between vertically integrated operators and more specialized service providers.

Pure resale in telecommunications is a more transitory than a stable market model. Distorted retail tariffs often give incentives for such business models. Often such

models are driven by certain customer groups which give each other access to certain volume discounts which the producer is offering.

The more common approach for viable business models of service provision in telecommunications combines the resale approach with certain other services:

(a) value added services or

(b) a portfolio of other telecommunications services.

A good example for the first case are the activities of service providers in the German mobile market. Service providers offer their customers the value added to choose service from one of the network operators and give customers advise on that decision. The second example describes the situation that due to different barriers to entry a network operator may not be able or willing to offer all (relevant) telecommunications services on its own network infrastructure. To offer its customers one-stop shopping or a single point of contact this operator has a business interest to complete his service portfolio via resale of those elements which he is not producing himself. Resale then enables him to compete on a relevant range of product portfolio, thereby improving his competitiveness or compensating competitive disadvantages to vertically integrated operators. Similarly, resale may be a temporary entry strategy which is followed by an infrastructure-based entry model. In that sense resale may also be a help to enlarge the addressable market in cases the own roll-out takes time or cannot reach the whole potentially addressable market.

2.2 Infrastructure and service-based competition

Telecommunications policy discussions often seem to suggest a dichotomy between service competition and infrastructure-based competition. Such discussions assume that regulators have to decide whether they want to foster one or the other model of competition. Measures to support service competition are assumed to discourage infrastructure-based competition and vice versa. Typically, in such discussions there is a clear preference in favour of infrastructure-based competition. Only this type of competition, so the argument, is viable in the long run and generates sustainable competitive effects. Service competition on the other hand only is assumed to be a temporary and transitional phenomenon. Activities of service providers take away cash flow from infrastructure-based competitors via short term price competition which they need to finance their investment.

Is the opportunity for resale distorting the market entry decision in favour of resale competition at the expense of infrastructure-based competition? Within a static welfare economic world the answer is very easy: Pricing of wholesale products will develop the optimal balance between both types of competition. Proper discounts of wholesale

prices compared to retail prices are not only setting proper pricing signals, at the same time they generate the proper signals for service providers and network operators to determine market structure. Optimal wholesale discounts determine the proper degree of division of labour between network operators and service providers and therefore also the optimal relation between service- and infrastructure-based competition.

Not only prices are relevant for making market entry decisions. There are some non-price-factors which generate incentives for resellers to vertically integrate into the production of a service. Resellers can only to a very limited degree influence the quality of the product they are offering. By making their own investment they can improve and control product quality and therefore their competitive position much better. By making their own investment they are much less dependent on (potential) discriminatory actions from their main competitor and from regulation.

Even if there is a resale opportunity and proper wholesale discounts are in place, service providers have an incentive to vertically integrate into service production via network operation and to transform themselves into infrastructure-based competitors. Furthermore, there are significant economies of scope between production and sales of a service which can only be exhausted by vertical integration. Even if the service provider option is available as a business strategy, there is much to gain for an entrant from an infrastructure-based entry model. If such an entry model is economically viable, there is not to much reason to assume that entrants do not go for such a business model and that the possibility of resale generates negative incentives for them to invest.

Given these arguments, why may we have market entry on a resale basis at all? Market entry as a reseller is a lower risk entry strategy, is faster and requires less investments. In economic terms, service-based entrants are facing significant lower barriers to entry than infrastructure-based entrants. That also is the reason why regulators in certain areas of the market simply have no choice between both types of entry. They might see service competition or they see no competition at all. Service providers can in most cases easily generate nationwide market entry models. This opportunity enables efficient marketing and sales investments and activities in a similar way as incumbents do. Network operators who usually face network roll-out plans have much less ability for efficient marketing and sales investments. Market entry as a reseller generates a customer base and information about demand which can significantly reduce the risk of a follow up infrastructure-based entry model.

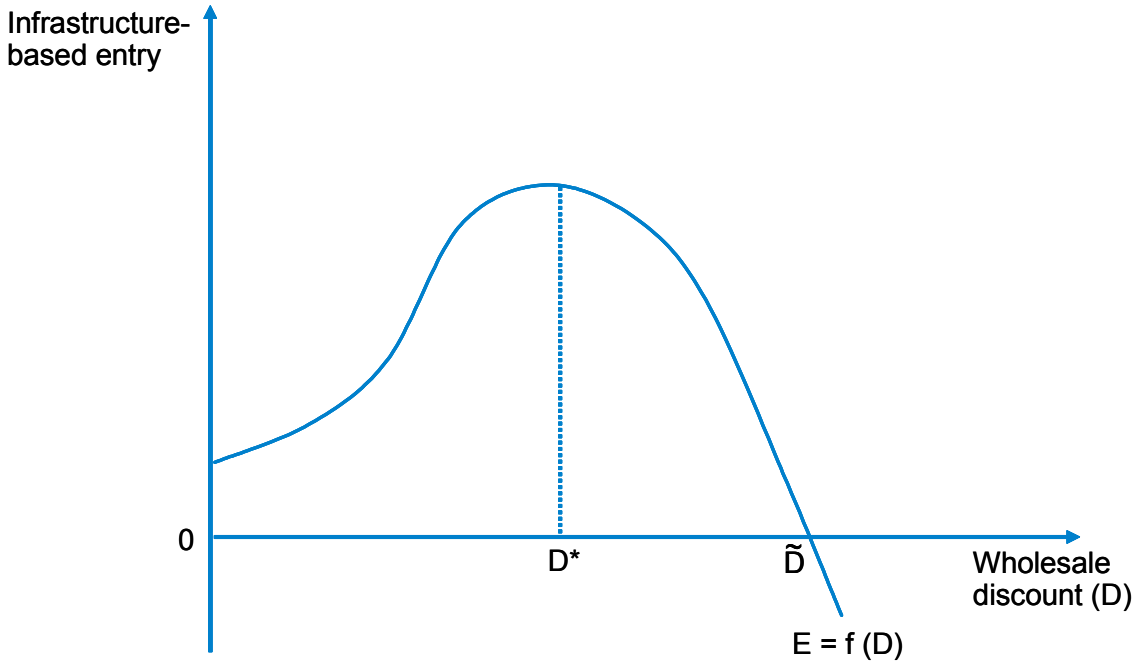
The previous arguments reveal a complementarity between both market entry strategies. Even combinations of both entry models are doable and make sense. A network roll-out in some areas of the country can be combined with a reseller approach in the rest of the country. Timewise and regionally the resale opportunity can complement an infrastructure-based strategy. At the same time the risk of the infrastructure-based strategy may be significantly reduced. The addressable market is right from the beginning much larger, making certain investments much more efficient.

The addressable market equals the total market taking away a relevant competitive handicap against any incumbent. Resale can reduce the competitive disadvantage of an infrastructure-based market entry at least partially.

Despite this complementary relationship between infrastructure-based and service competition regulators can determine wholesale discounts such that the balance between these two kinds of competition is influenced. We will derive the appropriate and optimal pricing relationship between retail and wholesale rates in section 2.4. In this context we will only deal with the impact of pricing on the balance between infrastructure-based and service competition in an abstract form.

In abstract terms: The larger the wholesale discounts, the more attractive market entry on the basis of resale becomes and the more it becomes a substitute for the production of the corresponding service. If we take together all the relevant effects which we derived earlier, the relationship between wholesale discount and infrastructure-based market entry can be presented in a stylized form as defined in Figure 2-1.

Figure 2-1: Balance between service-based and infrastructure-based competition



If there are no wholesale discounts for resale purposes (D=0), there is only a limited extent of infrastructure-based entry. Entry costs are high (in particular in the access market). The entry risks are not diminished by a resale option. Together with positive and increasing wholesale discounts the entry risk will be reduced for network operators

and their competitive position is improved against the incumbent. At a discount level of D* the maximum positive effect of resale is reached. If the discounts increase furthermore, the effects of resale become negative. The discounts induce negative incentives to invest or market exit until no market entry seems to be attractive anymore (at D̃).

The increasing part of the graph in Figure 2-1 results from the effects of resale which reduce risk and sunk costs of entry. The decreasing part results from "too" high discounts which make it unattractive or less attractive to enter the market infrastructure-based.

It is of course not trivial to empirically identify the relationship between wholesale discounts and entry; but we can rationalize our thoughts: Not the opportunity of resale as such generates negative incentives to invest but only an unjustified level of the underlying wholesale discounts. We will derive in section 2.4.5 that the optimal discounts should be set at the level of the avoidable costs of the incumbent. If the discounts are larger than the avoidable costs wholesale prices fall (under normal circumstances) below the production costs of the wholesale product. As Figure 2-1 reveals, over a large range of discounts both forms of competition are complementary to each other and not substitutes. Discounts below a discount level of D* generate negative incentives for infrastructure-based and for service competition. That means discounts above D* should be preferred to those which are below D*, because they generate at least positive impacts on service competition. Those which are below D* generate negative incentives for both types of entry. Any regulator should of course look for the optimal level of wholesale discounts. Given the asymmetry of effects as derived here, in case of doubt the regulator should choose the higher level of discounts.

2.3 The case for and against WLR

2.3.1 The case for WLR

In developing and assessing the arguments in favour of WLR it makes sense to look at the various constituencies which are affected by WLR:

(1) WLR makes customers better off.

(2) WLR improves the competitive position of competitors.

(3) WLR strengthens competition.

(4) WLR helps NRAs to deregulate the market.

We will analyse each of these impacts in detail.

2.3.1.1 Customers

Given the fact that entry costs are high in the access markets, customers in the Netherlands (as in most other parts of Europe and the world) have not very much choice whom to choose as their supplier. If they have not given up their fixed connection at all and only use their mobile phone for making or receiving calls residential and small business customers in the Netherlands more or less only have the chance to choose the service of KPN. The only alternative in certain areas of the country is cable telephony which so far has only attracted a limited number of customers. PSTN and ISDN 2 customers feel themselves in a quasi monopolistic relationship to the incumbent operator. Only customers having the traffic volumes for efficiently using ISDN 30 access face viable alternative operators in most parts of the country.

WLR if accepted as a concept in the market has the potential to provide all residential and business customers choice in the access market on a nationwide basis. It is often forgotten that it is often not better prices, better quality or innovative products which make the value of competition to customers. It is often only the opportunity to have choice which generates the only, the best or one of the benefits of competition to customers. As the ERG (2004, p. 64) points out: service competition increases consumer choice, which is an important end in itself.

Besides having choice at all and even only as an option value customers get a variety of concrete benefits from WLR:

(1) They save transaction costs when choosing a telephone service provider. Without WLR they are served by at least two service providers when they do not stay with the incumbent at all and in all service elements. They have the choice between several service providers which offer them the whole relevant package or portfolio of telephony services. In combination with having choice at all this opportunity saves transaction costs on the side of customers.

(2) The opportunities to make better deals become more transparent when customers can choose among service providers which are able to provide the complete portfolio of telephony services. This opportunity enables customers to make better deals and more rational comparisons.

(3) WLR enables customers, which want to switch their service from the incumbent, a get calls and access on one single bill. Customers no longer have to take care paying (at least) two bills for their telephony services. This ability not only saves financial transaction costs it also allows for a much better budget allocation and control on the communications budget. Having two bills is a relevant deterrent to customers to take advantage of competition. Customer surveys give evidence that having two bills is a switching cost on the side of customers hindering them

to make use of competitive opportunities which will be reduced by WLR to a relevant degree.

There is also an argument to be made that customers may lose choice in some areas due to WLR. Depending on the business policy of WLR service providers they might consider not to allow their customers access to other CPS or CS services. In such a case customers are obliged to use the whole service package of their service providers. There is evidence in the UK and in Ireland that WLR service providers actually follow such a business approach. From a regulatory or competition policy point of view there is no reason or justification to intervene in this situation and to oblige WLR service providers to open their networks to other CPS or CS providers. If this flexibility is key for customers they still have the choice to buy the access service from the incumbent and combine it with any CPS or CS option they want to. In abstract terms, this situation reduces opportunities of having choice, in real terms it does not because customers only switch to WLR service providers if they have a benefit which in the end is enlarging the opportunities for choice.

2.3.1.2 Competitors

We do not expect that WLR service provision will become a stand alone business. Instead we expect mainly CPS providers to make use of this (additional) business opportunity. The provision of access on the basis of WLR is a new business opportunity for them with a (very) limited possibility to make profits out of it. If WLR is priced at a retail minus pricing rule they only have an incentive to enter into that business if they can assume that they are at least as efficient as the incumbent on the retail side. If they are less efficient they make a loss. They also make a loss if they have to offer the access product at a lower price as the incumbent to get customers. If WLR is priced cost-based then the effects on profitability depend on the profitability of the incumbent's access pricing. If the incumbent is making a profit[1] on access and WLR is priced at cost then the service provider has a margin which improves his competitive position in a variety of potential dimensions. First of all that margins could give incentives for inefficient service providers to enter the market. Secondly, that margin could be used for price competition. Thirdly, that margin may generate profits for the service provider. If the incumbent is making a loss on access and WLR is priced at cost then there should be no incentive for a service provider to enter the access market because he would be making a loss. He could only do it if he assumes to be sufficiently more efficient than the incumbent in the retail of access. He might also be willing to enter the access market if he assumes that the cross benefits to other markets where he is offering may be sufficiently large enough for him to compensate for the loss in the access market.

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1 By profit we mean economic profit or excess profit. A just cost-covering price in that sense includes a fair economic rate of return on the capital to be employed to provide the service. This rate of return generates already a profit in bookkeeping terms.

So far, we mainly made a stand alone consideration of the costs and benefits for a WLR service provider. In reality, as we stated already, entry in the access market on the basis of WLR, will be mainly done by service providers who are already active in the markets for calls. Their main incentive to enter the access market will come from the opportunity to complete the telephony service portfolio and to offer their customers the whole set of relevant services. The incremental costs of doing that are low when they already serve the customers with CPS. In particular, the incremental billing costs are very low when they already bill the customer for calls. The efficiency of billing and payment increases significantly; the risk or costs of bad debt decreases at a relevant scale. Similar (or different) to the incumbent CPS providers will now become able to offer their customers different combinations, bundles or options between prices for access and calls. This opportunity so far only exists for the incumbent and will make CPS operators much more competitive in the market. They can address now that segment of the market which makes its buying decision service portfolio based. Together with the enlargement of their addressable market CPS operators have the chance to get a higher market share.

Together with the opportunity to offer the whole relevant service portfolio to a customer CPS operators have the chance to increase customer loyalty and to lower churn which is a significant cost burden to them. With higher customer loyalty they do not have to offer the price margin to their customers which they have to do now to compensate for competitive disadvantages which they have now in the eyes of the customers. Brand becomes more important as a competitive factor than price in such an environment. Altogether these competitive advantages generated by WLR increase the viability of competitors and let them compete much more in a level playing field than without WLR.

We mentioned already another aspect of WLR in section 2.2. There we argued that WLR may also reduce the risk of infrastructure investment e.g. on the basis of ULL. In that sense WLR may be the first phase of an infrastructure-based entry model. This phase has a relatively low entry cost. Competitors can use it to test and win demand and let infrastructure investment follow the demand which has already been attracted. Such a demand led investment path induces much lower risks for competitors than any up-front investment business approach. As a consequence and in the end, WLR reduces the risks and barriers to entry of infrastructure-based approaches in the access markets.

2.3.1.3 Competition

From a public policy point of view it is more important which impacts a certain regulatory measure has on competition than it has on certain competitors or groups of competitors. WLR will make the access market a competitive market from the customers' point of view. The degree of this competition is however limited because of relative small margins or value added at which service providers can operate. The margin they get

definitively limits them in price competition if they do not want to offer the access service at a loss.

Because WLR service providers act as resellers they cannot contribute to the basic quality of the access service (provided by the incumbent). By definition their contribution to innovation is limited to retail components of the product. Overall competition is strengthened because CPS operators become more competitive in the market for calls and can compete on a level playing field. Therefore the market power of the incumbent is reduced in the markets for access and calls. In particular, the potential transfer of market power in the markets for access to the markets for calls will be limited. Market results can now much more be interpreted as the outcome to the relative performance of competitors than as the result of competitive distortions like asymmetric market power, switching costs etc.

2.3.1.4 Regulation

If CPS operators have the chance to offer access via WLR the regulator can relax or lift certain retail price control measures. With WLR competitors can bundle access and calls in a similar way as the incumbent does. Therefore, they can cope with optional tariff plans. The regulator has to be less reluctant on the anticompetitive implications of such pricing structures.

Generally, by improving the competitive position and the degree of competition in the markets for calls and to a certain degree also access the regulator may leave retail prices up to market forces at all. At least he could experiment with such an approach. The Irish regulator gave Eircom the possibility to offer more flexible retail tariffs and to bundle call minutes in different calling plans. He offered this relaxation of retail price control in exchange for the introduction of a fully functional WLR product. In a similar approach the UK regulator Ofcom agreed with BT to relax the price control from RPI-RPI to RPI-O in return for BT providing a residential WLR offering which would meet a 'fit for purpose' test and would be actively used by competitors.

2.3.2 The case against WLR

Opponents of WLR put forward three arguments against WLR which are worthwhile discussing them:

(1) WLR reduces incentives for infrastructure-based investments both on the side of the incumbent and its rivals.

(2) WLR is backward looking and intended to encourage competition in a shrinking market.

(3) High costs of implementation could outweigh the competitive benefits due to WLR.

2.3.2.1 Incentives to invest

We have dealt with the argument that the availability of WLR may discourage competitors to enter the market with infrastructure-based entry models, already in section 2.2. Our basic finding in that section was that the argument is serious, both on a theoretical as well as on a practical level. We also concluded that proper pricing will generate the proper regulatory balance. There is a certain range of wholesale discounts such that there remain significant incentives to invest and that over a relevant range of discounts there is complementarity between both business models. Both pricing rules for WLR which we develop in section 2.4 are in that relevant range such that there are no disincentives to invest.

So far the theoretical part of the arguments. There is also empirical evidence which needs to be properly interpreted. Although ULL is available in the Netherlands for several years now it has not been used to provide voice access by alternative operators as in countries like Germany and Denmark. The local infrastructure investment was made just to provide broadband access to the internet. On that basis several alternative DSL-operators have a network roll-out realized covering more than 50% and up to 80% of the population of the Netherlands. How can WLR change that picture? Either the DSL-operators keep out of the voice access market as so far or they make a better use of their existing infrastructure by offering voice access. Given the market realities in the Netherlands, we do not see practical evidence and relevance of the argument that WLR may induce disincentives to invest by KPN rivals.

Can WLR reduce incentives to invest in infrastructure by the incumbent? According to this argument the incumbent will not be able to exploit the economic potential of its investment by the necessity to share this benefit with its competitors. We believe this argument is not valid for four reasons:

(1) As long as the benefits in question mean exploitation of market power, it is obvious that we are talking about economically unjustified benefits or profits. We may also talk about overincentives to invest due to monopoly power.

(2) From the observation and positioning of incumbents in the regulatory debate on WLR one may conclude that incumbents generally do not favour WLR and they may benefit economically from not being obliged to provide WLR or from postponing the introduction of WLR. From this argument, however, it does not follow that incumbent would create a situation of insufficient supply. Such behaviour would create harm to themselves which is not very rational to assume.

(3) As long as the incumbent has to provide WLR on a cost basis or at a retail minus price he gets proper economic compensation for the investment he has made. Why should he not make that investment at all? In particular where its rivals can only benefit from it according to their market share and he still gets compensation for 100% of its investment. A priori – prior to invest – the incumbent does not know which customer he makes in the end the investment for.

(4) The problem of the fixed network is not how to expand the network via new investment but how to make proper use of the existing infrastructure in front of strategic alternatives like the cable and the mobile networks. WLR helps the incumbent to better marketing the existing infrastructure.

If a regulator has the feeling that an incumbent may not invest enough in new access technologies and if he considers to set further incentives for such investments the best advice is not to hinder or exclude service competition. The more flexible and efficient approach is to accept a level of retail and wholesale prices which make such investments attractive enough. Service competition based on WLR cannot endanger such a regulatory policy because the service provider basically depends on the wholesale price for WLR independent of whether derived from a retail minus or a cost-based pricing rule.

2.3.2.2 Backward looking approach

It is often argued[2] that the concept of WLR is a backward looking approach because it is intensifying competition in a declining market. It is true, there is a general trend of traffic volumes on the fixed circuit switched networks to decrease. The same observation holds for connections over the fixed telephony network. The Netherlands are fitting well in this overall trend. Furthermore, 10% of all telephone users are mobile only users. They no longer have a fixed connection for making voice calls. The decline of traffic volumes and connections over the fixed network reflects the following main shifts in technology and demand:

(1) a switch from dial up narrowband to broadband internet access;

(2) a substitution of fixed voice traffic and connections by mobile services;

(3) a substitution of fixed voice traffic by email;

(4) a (beginning) substitution of fixed voice traffic by VoIP services.

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2 For a collection of such arguments see Ovum (2004).

These factors are a challenge for any operator in the fixed line market, the incumbent as well as its rivals.

Competition in the fixed line market will not stop these long-term trends or move them to a different direction. The same holds for WLR; it does not change the direction of the path towards migration to VoIP and mobile services. The migration trends will also not change the strong position of the fixed network in the market: within the next ten years the majority of users will make more phone calls over the fixed network than over its rival alternatives. Therefore the competitive conditions in the fixed line market are key to theses users.

From an overall policy point of view, a competitively organized fixed line market is a better prerequisite for an economically balanced and rational migration path towards mobile services and packet switched technology. If a competitively organized fixed line sector is more competitive against its technological rivals than a monopolistically dominated sector that helps to find the proper allocation of competitive advantages of different technologies. Things are not as simple as any new technology has to be fostered against the existing ones. From an economic policy and efficiency point of view the challenge and task is to find the proper balance and migration paths. Competitively organized processes are usually the better path finders. In that sense WLR is not a backward looking approach. It is more an enabler or contributor to the optimal path finding approach towards several competing technologies.

2.3.2.3 Implementation costs

From an efficiency point of view, the implementation costs of a certain regulatory measure have to be lower than the social surplus (in terms of consumer plus producer surplus) generated by that measure to make the measure welfare improving. This consideration or decision rule states that implementation costs do run against the economic benefits of having WLR. It also states that implementation costs are not an arguments per se against the introduction of WLR; it also states that if implementation costs reach a certain level they can make WLR economically (from the point of view of the regulatory decision maker) unprofitable or inefficient.

What are the costs of implementation? To provide WLR incumbents have to build or adopt interfaces to enable WLR service providers to order access lines and support their customers. These opportunities have to be linked to different systems like provisioning, customer records, repair systems and others. Ovum (2004) provides estimations of these implementation costs which range from € 4.5 mio in Ireland and € 45 mio in the UK. Ovum further breaks down these estimates to the size of KPN relative to Eircom and BT and expects costs in the Netherlands to lie at the mid point of these two cost estimates i.e. € 25 mio. Ovum further breaks down these costs to an estimated number of 1,1 mio WLR lines at € 23 per line.

If we believe in these numbers any WLR customer or the service provided to him has to generate a social surplus of € 23 to produce a positive cost-benefit-relation. There are, however some weak or wrong methodological assumptions in the approach presented. First of all, the nature of implementation costs are set-up cost of a one-time nature. The major part of it are system development or adaptation costs. There is no reason why such costs are related to the size of an incumbent or a country. If Eircom can provide implementation for € 4.5 mio, there is a priori no reason why KPN could not do it for the same amount of costs. Nevertheless, Ovum might have forgotten to report some other implementation costs which have to be taken into consideration: those on the side of the CPS operators and those on the side of the regulator.

Secondly, we will develop the argument in section 2.4.2 that implementation costs should be recovered by all customers, the WLR service provider customers and the incumbent's customers because the latter also get benefit out of WLR offerings of the incumbent following from its competitive reactions. Therefore, a relevant comparison of costs and benefits has to relate the implementation cost to the total amount of fixed line connections. When we start from the in our mind overestimated costs of € 25 mio, this makes € 2,5 for each fixed line connection in the Netherlands. If we assume an amortization period of five years, implementation costs of WLR amount to € 0,04 per month. This means if, for instance, access prices would be reduced by 5 cent per month the introduction of WLR has a positive cost-benefit balance. If we assume costs to be close to € 5 mio, the balance is already positive at an induced price decrease of 1 cent or 0.07% per month. We would conclude that a positive cost-benefit balance from the introduction of WLR should be expected.

Implementation time also has an impact on the costs of implementation, because implementation reduces (at least potentially) the time in which WLR may generate economic benefit. In economic terms implementation time reduces the amortization period of the (set up-) implementation costs.

Experience in Denmark, Ireland and the UK seems to suggest that implementation may take up to 18 to 24 months. In this period customer support interfaces for WLR service providers have been developed as well as specific product features for WLR. On the other hand, the current experience in Germany on the voluntary introduction of DSL resale by German Telekom will be implemented in about six months. This example seems to suggest that implementation can be handled in a relatively short period of time. Our conclusion would be that if the regulator can set the incentives for the incumbent to introduce WLR in a proper way, then implementation may be closer to six than to 24 months.

2.4 Pricing of WLR

2.4.1 Relevant cost categories of WLR

Proper pricing of WLR can only materialize on a proper understanding of the costs which occur in relation to WLR. According to our analysis it is useful to distinguish the following cost categories:

(1) System or WLR service set-up costs: Costs, which are generated by the introduction of WLR as a service. They may also be called implementation costs.

(2) Per service provider set-up costs: These costs are specific to get an (additional) WLR service provider to demand the WLR service.

(3) Per service provider ongoing costs: Costs which occur to administer the customer relationship of a WLR service provider.

(4) Per line transfer costs: Costs which occur to transfer the customer relationship of a single customer or its telephone access line from the incumbent to a WLR service provider

(5) Per line ongoing costs: The costs for providing the telephone access line (including ancillary services) on a monthly basis.

Recovery of those costs may require different treatment in pricing. Therefore we will discuss pricing separately according to each cost category.

2.4.2 System or WLR service set-up costs

Implementation or system costs are generated by the introduction of WLR as a service. They are set-up costs and have by definition a one-time nature. Implementation costs occur in building or adopting interfaces to enable WLR service providers to order access lines and support its customers.

One may argue implementation costs are caused by the demand of WLR service providers and may be recovered totally by them and their customers. Such allocation of implementation costs would not be competitively neutral. It would distort competition in favour of the incumbent because he would not have to bear those costs compared to its competitors. A similar conclusion on competitive asymmetry and unfair burden follows if these costs are allocated totally to the incumbent and to its customers.

The principle of competitive neutrality and efficiency requires a different treatment. System set-up costs are caused by the regulatory obligation to introduce WLR. They should be covered by the incumbent and its customers and the WLR service providers and their customers. In economic terms one would treat implementation costs as costs of competition which in the end, however, have to be recovered from the social surplus of competition. Instrumentally the proper way of implementing this principle would be to treat WLR setup costs as overhead costs of the incumbent to be allocated to its retail and WLR products. Another justification of this way of allocation comes from a benefit consideration. Given the positive competitive effects of WLR, not only the customers of WLR service providers benefit from this competition. The customers of the incumbent also benefit from the competitive reactions of the incumbent.

2.4.3 Per service provider set-up costs

Such costs result from the decision of an individual service provider to demand WLR. These costs, which should be clearly identified and separated from system set-up costs, should be recovered from WLR service providers. Pricing should be cost-based. Pricing may take the form of a set-up charge, it may be allocated as a mark-up on the line charge or the incumbent may set a minimum amount of monthly total payment of the service providers.

2.4.4 Per service provider ongoing costs

These costs result from the decision of an individual service provider to demand WLR. The major costs in this category are the costs to administer the customer relationship to WLR service providers. Therefore they shall bear these costs. Pricing should be cost-based and may take the form of a monthly handling fee, a mark-up on line charges or a minimum amount of monthly revenues to be paid by aservice provider.

2.4.5 Per line transfer costs

Per line transfer costs are caused by a WLR service provider requesting to transfer an access line from the incumbent to himself. These costs are basically process-related set-up costs. The incremental costs of this activity should be recovered by WLR service providers. Because a high transfer charge could deter switching of customers, attributable transfer costs should be limited to the direct labour costs of handling a transfer.

2.4.6 Per line ongoing costs

These costs cover the provision of access as reflected in the monthly rental charge. The service provided covers the link between the end-user and the remote concentrator unit at the local exchange and enables the customer to make and receive calls. The basic network element in that service is represented by the unbundled local loop. Therefore, the ULL costs are the basic building block of the costs of WLR. There may be some cost categories allocated for the provision of ULL which may not occur in the case of WLR. These have to be identified on the basis of the concrete allocation of costs for ULL and deducted from the ULL costs. One example of such costs may be ULL specific billing costs. Besides the ULL costs there are additional WLR costs. ULL costs do not include a set of services which are provided for access and WLR and not for ULL, e.g. billing for WLR and the provision of free phonebooks. Some other infrastructure-related costs have to be included in the WLR costs. The major example of these costs are the costs of the PSTN line card enabling users to receive calls and some collocation costs. The costing approach should not include the costs which occur at the retail level of the incumbent business to market and sale access services. Such costs are not caused by the wholesale service.

A cost-based pricing approach for WLR has to identify the various cost categories in detail and to derive them e.g. from a bottom up costing approach based on the principles of long-run incremental costs. The price of WLR on a per line basis should be set at such an incremental cost level. A coherent approach of this kind should quantify WLR costs which are above the per line ULL costs and below a cost-based subscription service. Alternatively, we are recommending a pricing approach which does not start from the costs of providing WLR but from the corresponding retail price. Under the retail minus pricing principle, the retail price would be reduced by retail costs of the incumbent in providing the access service. In the following sections we will further define and analyse the retail minus pricing and compare it with cost-based pricing.

At first sight one may assume that applying a retail-minus pricing rule is much easier to implement and to handle compared to a cost-based pricing rule. In practice that may not be the case. It may be equally complex to quantify and allocate retail costs and determining proper retail margins as it is to determine the network element and service element costs of WLR. We would conclude that regulatory handling or transaction costs do not favour one or the other pricing rule or give a (clear) preference for applying one of the pricing rules. Other more fundamental differences and implications will be decisive as we will show in the next section.

2.4.6.1 Comparison of pricing rules

We have introduced cost-based and retail minus pricing as two quite different pricing principles for the wholesale product in the previous section. Despite the very different

starting points and building blocks the two pricing principles can lead to the same results under the following conditions:

(1) The retail service has to be completely derived from the network elements which define the wholesale service. There are no additional service elements (besides the retail service elements) to produce the retail or the wholesale service.

(2) End-user tariffs have to be perfectly regulated according to the LRIC standard and are not to be subsidized.

If these conditions are met both rules are equivalent and lead to the same wholesale prices.

The application of both rules leads however and in particular to different results if the corresponding end user prices are not regulated strictly cost-based according to the LRIC standard. If end-user prices are above costs, the application of the cost-based pricing principle for WLR leads to a lower wholesale price than the application of the retail minus-rule. The profits, the incumbent is making in the end-user service is attributed to the retail level of the business and the WLR service provider has access to these profits under a cost-based wholesale pricing. The opposite conclusions occur in case the end-user prices are below costs. Applying cost-based wholesale pricing again attributes the incumbent's loss in the retail service to the retail level of the business. Therefore in this case the cost-based wholesale price is higher than the wholesale price derived from the retail minus rule.

To assess the different pricing rules in these situations we look at the implications for market entry and competition. For that purpose Table 2-1 lists the various combinations. In the first best regulatory world where we have cost-based end-user tariffs and cost-based wholesale rates we will find the proper balance of service- and infrastructure-based competition as we derived in section 2.2. Efficient network operators as well as efficient service providers have an incentive to enter the market if they feel that they are as efficient as the incumbent. If the end-user prices are above costs and wholesale prices are regulated cost-based not only efficient but also inefficient WLR service providers have the chance to enter the market because they can survive even if they have higher retail costs than the incumbent. One may argue, this may not be a sustainable market situation. Efficient service providers may decrease prices and push inefficient service providers out of the market. Whether or not that to be happening will depend on the degree of competition in the market. In any case the market has to cope with such inefficiencies and the transaction costs of doing so. Because that is not a zero-sum-game regulatory rules should as much as possible avoid inefficiencies or incentives for inefficient market behaviour. Of course, there is as an incentive for infrastructure-based operators to enter the market. This incentive is, however, reduced by WLR service providers having the chance to exploit the existing price-cost margins. Applying of retail minus in that situation only gives efficient WLR service providers a

change to enter the market while the incentives to invest are increased because network operators do not have to fear that the price-cost margin can easily be competed away by WLR service providers. Service-based competition is not the proper competitive or regulatory tool to reach efficiency at the wholesale level. The proper means and tool for efficiency at that level is infrastructure-based competition.

Table 2-1: Comparison of cost-based and retail minus pricing

Pricing rule for wholesale	**Retail price of incumbent**		
	above costs	**cost-based**	**below costs**
Cost-based	Incentives to invest for infra-structure-based competitors but limited through price competition of service providers; inefficient service providers can enter the market	Entry of efficient network and service providers	Disincentives to invest No service competition
Retail minus	Incentives to invest Entry of efficient service providers	Entry of efficient network and service providers	Disincentives to invest Entry of efficient service providers

Source: WIK-Consult.

If end-user prices are below costs infrastructure-based operators have no chance to make a profit and therefore no incentive to enter the market. At cost-based wholesale rates the same holds for WLR service providers. In this case there is no competition at the retail and the wholesale-level at all. Incremental cost pricing at the wholesale level therefore extends the monopoly to both levels of the value chain. Only the application of the retail minus-rule allows for efficient competition at least at the retail level of the market.

Regulators upon request of the incumbent sometimes combine the two pricing rules in the way that they generally apply the retail minus-rule but under the condition that the corresponding wholesale service at least covers its costs. This rule is regarded as pro-competitive and covers the interest of the incumbent at the same time. As our analysis so far proves that is not the case. Only in case of end-user prices below costs the condition becomes binding. In that case the rule is not procompetitive it is prohibitive towards service competition.

Our overall conclusion and recommendation is that the retail-minus-rule is the only one to provide the proper incentives to enter the market in all situations and configurations and should therefore generally be applied.

A retail-minus approach rules out the possibility of a margin squeeze against the service provider. It links wholesale and retail prices exactly in a way that operators which are equally efficient as the incumbent will be able to compete.

If access and call prices of the incumbent are regulated as part of a price cap approach one can normally not expect that access prices are set at their incremental cost level. According to some well established results of regulatory pricing theory, price cap regulation leads to a Ramsey-type pricing structure: Incumbents tend to generate higher margins for services with lower price elasticities of demand and vice versa. Access tends to have lower price elasticities than calls. Therefore, we expect that in the case of, the Netherlands access prices are not exactly fixed at their incremental cost level. Applying cost-based or retail minus WLR pricing would therefore not lead to the same results.

2.4.6.2 Avoided or avoidable costs

How to determine retail costs of the incumbent? Which costs does the incumbent save if he loses a certain amount of its retail customers? Should the retail minus rule be determined at the level of demand which the incumbent actually loses to competitors due to a WLR obligation? Is it the actually avoided costs according to the decision making of the incumbent which count and determine the proper cost standard? Or is it the potentially avoidable costs due to efficient cost avoidance behaviour which makes the basis for determining the appropriate wholesale discount?

Both costs standards differ in several dimensions:

(1) If retail volumes decrease more costs are avoidable long-term than short-term.

(2) If the operator obliged to provide WLR has to determine which costs are avoidable he may tend to assume lower costs to be avoidable than actually are avoidable.

(3) If one assumes that the incumbent no longer is active in the retail business all retail costs are avoidable and not only those which vary with volumes.

With regards to all three dimensions avoided costs are generally lower than avoidable costs. Like in any other regulatory context of wholesale pricing it is the long-run costs which are relevant. This means long-term that all retail costs are avoidable. Only under short-term considerations it is only the variable costs which are avoidable. Short-term avoided costs are smaller than avoidable costs. Under long term aspects all costs which

are avoidable can also be avoided. That is exactly the regulatory guideline. The reference model for determining the avoidable cost of retail is that the incumbent is not active in the retail business but is selling the product only to service providers at a wholesale level. One of them might be his arms-length retail arm, responsible for any retail activities. Only this determination of avoidable cots as a basis for pricing the wholesale product allows for competitive parity between the incumbent and service providers in the retail business. In this environment only efficient service providers have a chance to enter the market.

2.4.6.3 Avoidable costs at the retail level

What are the avoidable costs at the retail level? If the incumbent does not sell the product at the retail level, he can save the following cost items attributable to that particular service or group of services:

- Product development,
- product management,
- marketing,
- sales,
- advertising,
- direct and indirect price promotions,
- bad debt,
- customer care and service,
- billing,
- payment,
- working capital,
- as far as assets are concerned costs include capital costs,
- attributable common and overhead costs.

First of all avoidable costs depend on a clear specification of wholesale and retail products. Furthermore they depend on services which are carried out by the service provider itself and which are commercially negotiated to be carried out by the network operator.

2.4.6.4 Retail costs of incumbents and entrants

We introduced the retail minus pricing rule in section 2.4.6.1 such that the retail cost of the incumbent have to be deducted from its retail price to derive the proper wholesale price. Furthermore, we argued that static efficiency principles and the usual long-run incremental cost standards require the efficient avoidable cost to be identified and deducted. Such pricing ensures that only service providers at least as efficient as the incumbent have a chance to profitably enter the market. Applying the (static) pricing rule in such a way may not generate enough market entry under two circumstances from an overall economic point of view:

(a) In case the incumbent itself is inefficient in its retail business.

(b) In case there are economies of scale in the retail business.

Under these two potential circumstances modifications of the retail minus rule as defined so far may be necessary to achieve socially optimal and efficient entry.

If the incumbent is operating inefficiently in the retail business then the avoidable cost of an efficient operator are lower than the actual retail cost of this incumbent. Deducting only the efficient avoidable cost would then result in an excessive wholesale price. Service providers have no chance to make pressure on the incumbent's inefficiency in retail. The pricing rule protects the inefficiency of the incumbent. If the regulator has identified inefficiencies in the retail operations of the incumbents, if he has indications of that kind or if he cannot exclude that situation, he should better deduct the actual (avoidable) cost of the incumbent from the retail price to derive the proper wholesale price.

In the presence of economies of scale in the retail business and economies of scope between the wholesale and the retail business the (efficient) retail costs of the incumbent are lower than the retail cost of the entrant, because he is operating at a lower scale. A service provider operating at a lower scale than the incumbent cannot compete against the incumbent (profitably) even if he operates efficient (at his scale of operation), at least he is not competing on a level playing field. A classical margin squeeze situation may occur. The principle of static efficiency seems to give clear answers but may result in suboptimal levels of market entry, if there are long-run dynamic advantages of competition to gain. To realize such gains, the regulator may have to deviate from calculating retail minus on the basis of the incumbent's retail cost. He might have to set them at the costs of the (efficient) entrant(s) including unexhausted economies of scale or scope to avoid a margin squeeze. Such an approach which may generate a loss in (static) social surplus in the first round may be desirable if the short-run inefficiencies are more than outweighed by the long-run dynamic advantages of competition. In doing such cost-benefit analysis the regulator has to take into consideration that (more) entry in the retail market for access will lead

to (more) choice for customers, lower prices, efficient production at the retail level and more innovation in terms of pricing and service packaging.

The ERG (2004) common position paper[3] has developed a practical solution which is also applicable in our situation: The NRA should conduct the margin squeeze test on the assumption that the retail market will be reasonably competitive. It might be reasonable to assume that the incumbent will attract e.g. 20 to 25% of the retail market and to calculate the minimum margin under that assumption.

2.4.6.5 Methods to determine retail margins

To determine the wholesale discount or margin the regulator has to determine the avoidable costs of the incumbent's retail side of the business according to the approach we are recommending here. In principle the regulator has four different approaches at his disposal to generate the appropriate results:

(1) Bottom-up costing

(2) Top down calculations

(3) Benchmarks

(4) Target costs from business cases.

Ad (1) A bottom-up costing approach develops a functional model of retail operations, identifies the relevant cost drivers and sets up functional relationships between the cost drivers and the output of the retail business. Parameters for the relevant cost components have to be identified. This short description of the approach shows that the cost study approach is a complex exercise which requires a lot of business understanding and data. On the other side, the bottom-up approach is not too much dependent on data to be delivered by the incumbent. The regulator can use all relevant information in the market to derive efficient cost results. The regulator might also choose the approach to require a bottom-up costing approach to be done by the incumbent. He then understands his role to control the cost analysis and data provided by the incumbent on plausibility, coherence and efficiency.

Ad 2) While bottom-up costing approaches directly aim at and are designed for determining the costs of efficient operations, top down costing approaches directly rely upon and start from the cost accounting system of the incumbent. The relevant cost categories of retail have to be identified, sometimes on the basis of allocations, and added up. Typically, such approaches inherently gave a lot of discretion to the

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3 See the annex of the paper.

incumbent and need proper control of correctness, appropriateness and efficiency corrections by the regulator.

Ad 3) Benchmarks for wholesale margins can potentially be derived from three different sources:

- other telecommunications markets
- other national markets
- other industries

Other telecommunications markets where the resale concept is applied may be the mobile and the DSL market. Wholesale discounts which are offered here seem to be a most relevant source for benchmarks.

There is some international experience in the meantime with WLR. We indicate available data in section 4. These data give relevant indications of international best practice.

Ad 4) We recommend another approach which has a lot of similarities to the bottom-up costing approach. Everyone formulating a business case for the access business is assuming relevant target costs for the retail part of the business. A relevant source for the regulator may be the business cases which analysts or investbanks generate and provide when they analyse the various parts of the business of incumbents.

2.5 The ex-ante approach

If case of a WLR remedy the question may arise to what extent and at what level of the process the regulator has to be involved to take care of the efficient provision of WLR. The answer to this question may require analysis of incentives of the incumbent to provide WLR on a voluntary basis.

There are examples in the real world where dominant operators provide WLR or similar products on a voluntary basis. We could identify three comparable examples in that context:

(1) In some countries mobile operators offer their services for resale to service providers on a wholesale basis which compete with them in the retail market for customers

(2) Several incumbent DSL operators offer their service for resale through ISPs or other service providers. Just recently German Telekom offered its DSL access service for resale on a voluntary basis.

(3) BT, German Telekom and maybe some other incumbents offer a bundled access and call product for fixed-line services for resale purposes. This approach is similar to the relationship between mobile operators and their services providers.

There are some common characteristics in these relationships which may explain why resale arrangements with incumbents are possible on a voluntary basis. First of all, most of these examples come from growing and/or new markets. In this case service providers help the incumbent(s) to penetrate and develop the market. Because most of the value added remains with the network operator(s) the investments of service providers to win customers contribute to develop their own business. There is more a complementary than a competitive relationship between network operator(s) and service providers. Although they are not exclusively bound, de facto service providers act as distribution arm of the operators. There are limited or no impacts on other markets which may counterbalance the positive effects to the operators. In case of the bundled access and call products these effects are directly excluded by the incumbent. Altogether in the examples mentioned above the competitive impact of service providers to operators is very limited. There is also the interesting observation from the mobile market, the more mature the market becomes the less interested mobile operators are in "independent" service providers. They either try to bound them more or less exclusively and make them directly a distribution arm to themselves or they try to squeeze them out on resale conditions.

What is different in the case at hand? Why can't we expect a voluntary offer on WLR or a purely commercially agreed arrangement on this wholesale product? Different to most of the examples mentioned above, access of fixed telephony is not a growing but a mature market with decreasing demand. Therefore, WLR does not help the incumbent to win new customers. It may, however, help to keep customers and their access lines longer than otherwise. WLR is generating competitive impacts and may reduce market power of the incumbent. WLR also has competitive impacts on other markets, namely the markets for calls.

As a consequence, we would not expect voluntary commercial agreements to lead to WLR offerings. This assumption is coherent with any empirical observation around the world. If WLR is regarded as an appropriate remedy the regulator has to take care of proper implementation by regulatory ex-ante obligations. There are two basic strategic approaches at the disposal of the regulator. He could either set in detail the basic conditions of a wholesale agreement and involve himself heavily into the process of technical specification of the WLR product(s). Or he can set up an incentive regime related to other markets which gives the incumbent a positive incentive to develop a wholesale agreement which is acceptable to WLR service providers in due time. He

could make for instance a relaxation of certain aspects of the end-user price control regime dependent[4] on the successful introduction of a WLR service offering.

If the regulator intends to relax end-user price control due to WLR we would clearly recommend that he sets up an incentive regime. This approach has to define in addition the price setting rule for the WLR product and a price corridor in which the regular sees relevant wholesale discounts.

3 The competitive structure of the fixed telephony market in the Netherlands

3.1 The access market

3.1.1 Cable networks

The Netherlands have one of the best developed cable network infrastructures with (nearly) nationwide coverage. 94% of homes are passed by cable networks and more than 90% of all households are connected to cable. Cable network are not only used for transmitting TV programs. They are a major source for providing broadband access to the internet. Two broadband infrastructures have been rolled out in the Netherlands to almost all homes: The KPN's DSL network and the cable networks owned by the local cable companies. The major part of cable users also have the chance to get access to the internet via their cable connection. The national coverage of cable operators for internet access amounts to 70% (OPTA, 2004) in 2003. Cable operators seem to have stopped further digitisation of their cable networks. At the end of 2003 nearly a million cable customers made use of this option. Cable operators could get a market share of about 50% in broadband access. Only in 2003 the number of DSL connection lines surpassed the number of cable internet connections for the first time. A minimum of 60% of all households can choose between an internet connection via the cable or via the telephone access line with DSL.

Compared to the very strong market position of cable operators in providing broadband internet access, their market position in the telephony access market is nearly negligible. Technically only parts of the cable networks have been upgraded to be capable for transmitting voice. Therefore, only a limited number of customers can opt for telephony via cable. Less than 200.000 customers which are less than 2% of all telephony customers have subscribed to cable telephony. There are no signals for a

4 See section 2.3.1.4.

market take-off in the (near) future. Instead OPTA (2004) is reporting that the number of cable telephony customers of the by far largest cable TV operator UPC had decreased by nearly 9% in 2003 as compared to the previous year.

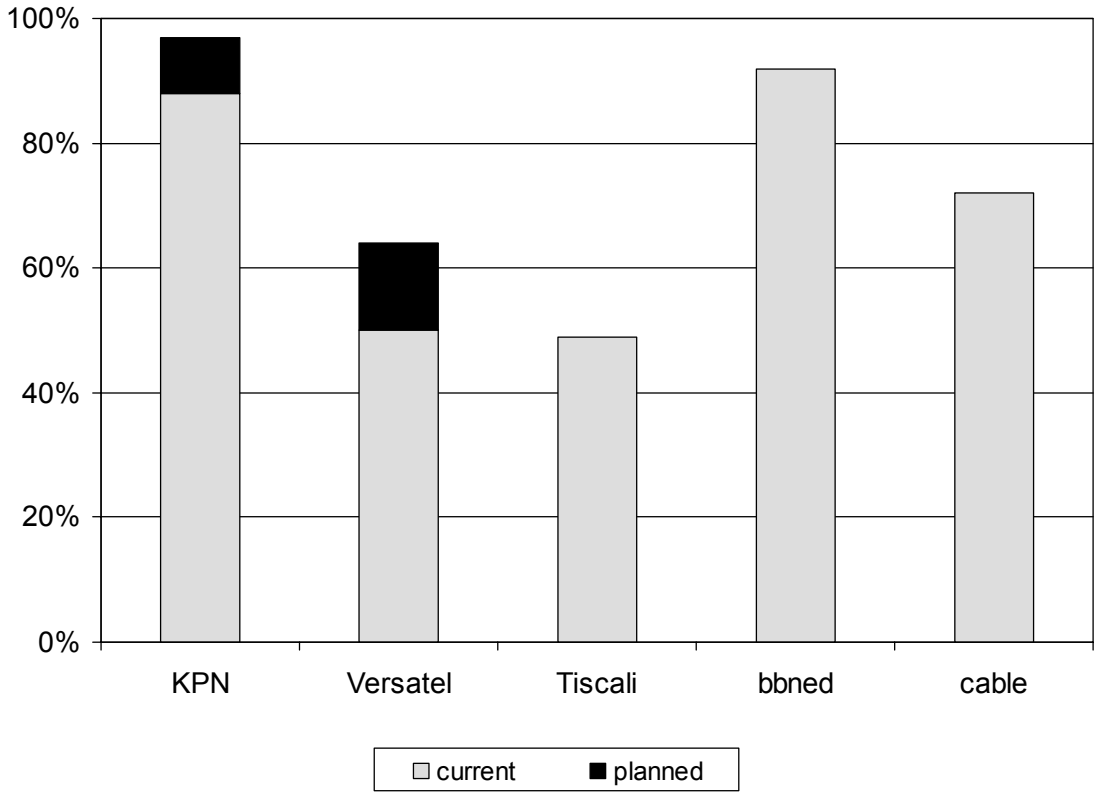
Given the current business strategies of cable operators cable networks are not an infrastructure-based competitive alternative for voice access to the fixed-line network of the incumbent. As the VoIP technology becomes mature currently, interesting and relevant for being introduced in cable networks, cable operators may organize and plan a second move to enter the voice access market. For the moment one cannot observe a major shift into that direction in the Netherlands. It remains to be seen in the next years whether beginning initiatives of offering VoIP in and over the cable networks will lead to products and services well accepted by the customers. In a positive development scenario at least potentially cable telephony based on IP can change the competitive landscape in the access market to a relevant degree. For the moment it is unclear what impact new technologies might have on the voice access market over cable networks. If cable network operators might decide to make a second move on the voice access market however, this might be a possible constraint on the decision if and how to impose WLR.

3.1.2 The role of unbundling

Several new entrants have rolled out their networks to the MDF level such that they have a coverage to connect the major part of customers via using ULLs of the incumbent. Combining its own infrastructure and ULL Versatel provides coverage of approximately 50% (see Figure 3-1) and has launched plans to boost its roll-out to 65%. Tiscali has a coverage of about 50%. BBned, which supplements the ULL approach with Bitstream access offers coverage of approximately 90%.

New entrants demanded 201.000 unbundled local loops at the end of 2003. This number increased to 273.000 at the end of the first quarter 2004. Unbundling may be realized via a fully unbundled line or a shared line. With a shared access line the telephony access service remains with the incumbent and only the DSL service is provided by the competition. To provide voice telephony access over ULL, entrants have to use the fully unbundled line; the same requirement follows from offering certain high capacity DSL lines.

Figure 3-1: Broadband infrastructure coverage



Source: OPTA (2004).

The dominant use of ULL in the Netherlands comes from line sharing and not from full unbundling. Only 17 % of the lines used by entrants were fully unbundled. Late in 2002 still 50% of the unbundled lines were fully unbundled. The absolute number of fully unbundled lines held by entrants even decreased during the last months of 2003. This already indicates that the access concept of unbundling is not used to provide competitive voice access lines. It is only used (so far) to provide DSL. Only a very few voice telephony access lines are provided via ULL. On this basis entrants could win a steadily growing market share of 23% of the DSL market at the end of the first quarter of 2004[5]. This means that de facto unbundling has no relevance so far to provide voice access in the Netherlands.

5 See Table 3-1.

Table 3-1: DSL market in the Netherlands

	Number of lines	% of total	% of KPN ADSL
Estimated number of ADSL-lines (total)	1.186.000	100 %	
ADSL – installed (KPN)	913.000	77 %	100 %
ADSL (KPN) sold via KPN ISPs	568.000	48 %	62 %
ADSL (KPN) sold via other ISPs	345.000	29 %	38 %
ADSL (other, ULL)	273.000	23 %	

Source: KPN, Q1 2004 results

This matter of fact in the Netherlands may be surprising if compared with the use of ULL in countries like Denmark and Germany. In Germany nearly all unbundled lines are fully unbundled. Only a few hundred shared lines are demanded so far. The vast majority of the unbundled loops are used to provide voice telephony access or both voice access plus DSL. Entrants demanded 1,35 mio ULLs[6] and provided 2,8 mio or 5,2% of all voice channels on that basis. Providing voice access for PSTN and ISDN 2 lines does not seem to be an element of the business strategies of the infrastructure-based competitive access providers in the Netherlands. This may be surprising because the wholesale ULL price is much more attractive compared to the corresponding end-user price for voice access in the Netherlands than in Germany for instance. While the monthly price for the (wholesale) unbundled local loop is 87 % of the corresponding monthly subscription for the analogue telephone line in Germany, this ratio is 66 % in the Netherlands. A year ago this ratio was even above 100 % in Germany.

The technology is available to provide voice over the DSL line. Bbned is one of the first operators in the Netherlands market to offer voice on that basis. Technology and marketing is still more at a pilot or experimental stage and not (yet) a relevant market reality. Can VoDSL become a relevant business strategy? If VoDSL is used for voice access substituting the voice access line of the incumbent then the DSL operators no longer have to pay for the shared line only but for the fully unbundled line. Given the significant difference between wholesale prices for line sharing and for full unbundling wholesale costs for the entrant would increase significantly. If the current behaviour of infrastructure-based operators is an indicator for their future behaviour, this does not

6 By the end of 2003.

support a significant VoDSL development in the Netherlands for the mass market of private households. Given the current behaviour of infrastructure-based operators, it is unclear what their future behaviour might be. Therefore it is unclear if and how VoDSL might develop. If VoDSL proves to grow unexpectedly towards a significant market share, this might be a possible constraint on the decision if and how to impose WLR.

3.1.3 Fixed-mobile substitution

The number of fixed connections increased in the Netherlands until 2001. Since then substitution of access lines accelerated. More than 7% of customers of the fixed network have switched to mobile already. The number of mobile only users is expected to further increase gradually over the next years. De facto the mobile networks are the only relevant infrastructure-based access competitive alternative in the residential market. Although OPTA currently concludes that mobile access does not belong to the same relevant market as fixed narrowband access, substitution needs further attention in the near future. If the degree of substitution develops at the same speed as in the last years, a critical loss analysis may generate a different conclusion in a few years.

3.1.4 Other access alternatives

Companies like Versatel, BT International and Colt run nationwide backbone networks and are able to directly connect customers to these networks at least in all relevant business agglomerations. These infrastructure-based access alternatives are only relevant for the business market. Alternative operators could get a market share of approximately 15 % in the high capacity access (ISDN 30) market.

Wireless local loop (WLL) frequencies have just been allocated in the Netherlands. But no commercial service exhibits market relevance yet. In other European countries which allocated frequencies to WLL earlier, WLL has not proven to become a relevant access alternative. Commercial services have reached only a few business customers. It remains to be seen whether WLL can win more market momentum in the Netherlands.

3.2 The market for calls

3.2.1 Strategy and market position of competitors

80 operators have registered to provide public voice telephony in the Netherlands. To 76 of them geographical numbers and/ or access codes have been allocated and they may actually offer public voice telephony. 6 of these operators run a relevant nationwide network connecting all 20 regional points of interconnection.

There is a clear trend towards CPS in the Netherlands. 26% of all users used CS; 74% of them also activated CPS. Alternative operators could steadily improve their market position over the last years. In 2003 their growth in market share was, however, lower that in previous years. There is a high concentration of market position among the alternative operators. Tele 2, the strongest competitor in the residential market (besides KPN) concentrates 80% of the customers using alternative CS/CPS operators which are 1,5 Mio customers or nearly 25% of the residential market.

Operators like Versatel, MCI, Enertel, Colt and BT Nederland focus almost entirely on the business user market.

3.2.2 The market position of KPN

The volume of KPN's traffic on the fixed telephony network decreased steadily since 1998. The number of national call minutes of KPN dropped from 35 billion in 1998 to 22 billion in 2003. In 2003 the volume of KPN's traffic on the fixed telephone network even decreased by 20% through

- the use of mobile telephony,
- the substitution of dial-up internet by broadband internet,
- the use of CS and CPS.

The overall market share of KPN in the market for calls is in the range of 70-80%, below that average in local calls and above the average in all other categories of calls. Only in the market for international calls it ranges below 50%.

Table 3-2: Market share of KPN in the markets for calls

Telephone calls (revenues)	Market share		
	2001 Q1	2002 Q4	2003 Q4
Local calls	85-95%	80-85%	75-80%
National calls	70-80%	65-70%	60-65%
Fixed-mobile calls	70-80%	65-70%	60-65%
International calls	60-70%	50-55%	45-50%
Total traffic		75-85%	

Source: OPTA.

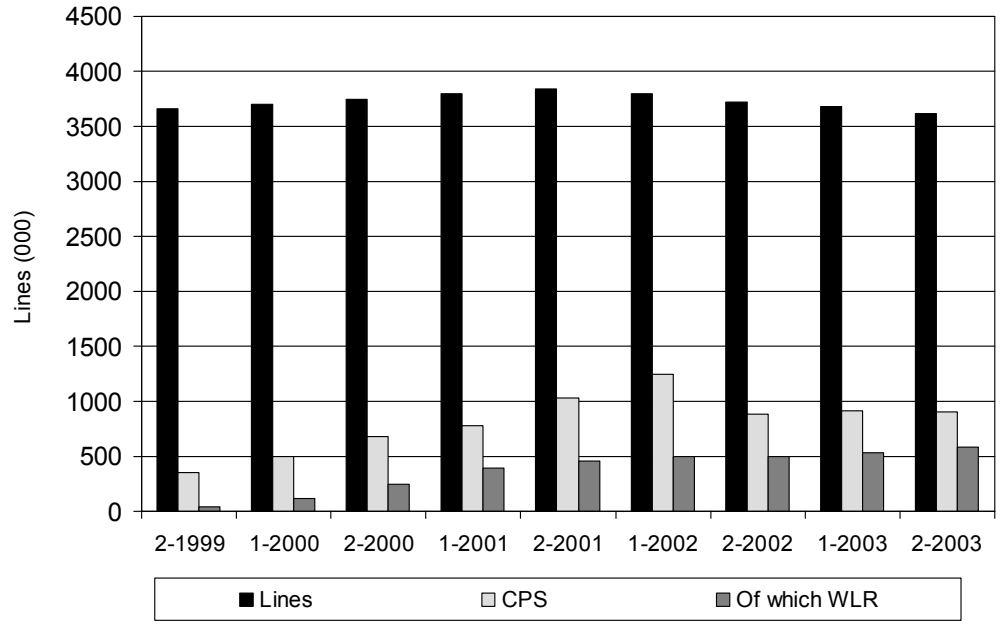
4 Status of WLR in other countries

4.1 Denmark

Denmark has the longest experience with WLR in Europe. The discussions on WLR began already during the development of telecommunications regulation in 1998. WLR was mandated by the NRA already in 1999 as part of the interconnection regulations. TeleDanmark began offering WLR services at the end of 1999 on the basis of a standard offer. The WLR price had to be calculated on a retail minus basis and the discount was mandated to 21%.

Access competition has received a relevant significance in the Danish market. Alternative operators have got approximately 580.000 lines or 16% of the whole access market. The vast majority of these lines are based on WLR. Competition on the basis of WLR is very much related to competition in the markets for calls. 60% of all CPS customers also demand access from their operator. Figure 4-1 shows that the number of WLR lines has been steadily increasing since the introduction of WLR in 1999. Demand for WLR increased since despite the fact of decreasing CPS demand. Therefore purchasing the whole telephony package based on WLR and CPS becomes the predominant usage pattern in Denmark. These figures alone do not sufficiently reveal the contribution of WLR to the competitive position of CPS operators in the markets for calls. This needs a thorough analysis of the whole market structure and its determinants. The Danish regulator at least is convinced that service competition based on WLR has been the by far fastest and successful approach for getting nationwide choice for customers in the access market.

Figure 4-1: WLR and CPS lines in Denmark



Source: OVUM (2004) based on NTA statistics, adjusted due to corrected figures from operators

Product specification for WLR as well as the service providers' access to the incumbent's ordering system was developed in an industry working group. The results and proposals of that work were approved by the NRA. The provision of the WLR product was not too much a critical issue in Denmark. Therefore, the regulator did not introduce an incentive-based regime or any other relaxation of retail price control to alleviate the introduction of WLR.

The case of Denmark not only proves the (potential) success of WLR. It also proves that crowding out between unbundling and resale is not obvious to happen.

4.2 UK

The discussion on and the introduction of WLR in the UK dates back to 2002. In January 2002 the UK regulator Oftel published a consultation document reviewing the competitive situation of the fixed voice telephony market. Oftel announced that, as a result of its review, it intends to introduce WLR for competitors on a non-discriminatory basis. WLR should enable competitors to offer a single bill to their customers. Oftel considered that the inability for most competitors to provide a single bill was a significant impediment to competition and that WLR might also put additional downward pressure on call prices. Oftel pointed out that access competition was mainly provided by cable network operators but limited to a 50% nationwide coverage of cable networks.

BT accounted for a market share of over 80% of the access lines for private households as well as for business customers. Oftel also emphasized that the introduction of WLR at reasonable conditions might reduce the necessity for retail price controls. Innovative tariff models introduced by alternative operators might also lead to a decrease of line rental prices, to a shift of such charges to call charges or to flat rate pricing models.

In its conclusion to the public consultation in June 2002 Oftel confirmed the necessity to intensify access competition via WLR. Oftel announced its intention to change BT's licence conditions accordingly and such that BT had to offer a WLR product on a non-discriminatory basis and at cost-oriented wholesale prices. Besides consulting industry Oftel set up various industry working groups to develop the product specification. In detail these working groups were responsible for

- the functional description of the product
- end to end process description and manual, including ordering and repair process
- a service level agreement
- a code of practice on marketing, including appropriate procedures to avoid slamming and mis-selling
- a consumer guide.

In August 2002 Oftel amended BT's licence in order to oblige BT to offer a WLR product.

In September 2002 BT introduced a basic WLR product (WLR 1) which encompasses access and incoming calls as well as maintenance and the possibility of making outgoing calls via BT or alternative CPS telephony service providers. WLR 1 was based on a manual process. BT's product was based on a previous calls and access product. The cost-based price for the WLR product started from BT's ULL charges removing costs for ULL specific activities and equipment and adding costs for WLR billing, costs for R&D related to fault repair and field engineer management and costs for providing free phonebooks as well as costs for the service provider gateway. WLR 1 still allowed WLR subscribers to use call-by-call features because Oftel did not want to impose the costs for the necessary modifications in BT's network to suppress those features. Such a possibility would have increased implementation costs which Oftel wanted to avoid.

Oftel also declared its intention to change the existing retail price cap regime within five months from implementation of a commercially viable WLR product. In detail, Oftel offered BT to relax the controls on BT's retail price from RPI – RPI to RPI - 0% when it is satisfied that a 'fit-for-purpose' WLR product has been made available by BT and is being actively used by competitors.

The basic WLR product has (only) been used by small service providers in the business market. Ovum (2004) estimates that WLR has been used for 100-150.000 lines.

After intensive discussions within several WLR working groups, Oftel issued a further consultation on WLR implementation in November 2002 and a statement in March 2003 requiring changes in the product specification for BT's WLR product. Oftel recognized that WLR 1 would need to develop further if it was to be a 'fit-for-purpose' product in the mass market. In particular, it was recognised that a highly automated ordering process and seamless interworking with CPS was necessary. This automated WLR 2 product should be made available by BT in April 2004. In the meantime the introduction of WLR 2 is being delayed until December 2004.

In parallel to the WLR introduction process presented so far, WLR came up in Oftel's market reviews under the new framework in a new context during 2003. In its market review Oftel found and concluded that the market for unbundled access to the local loop as defined by the EU-Commission did not cover wholesale exchange lines and therefore concluded and identified five separate wholesale exchange line markets:

- wholesale residential analogue exchange line services
- wholesale residential ISDN 2 exchange line services
- wholesale business ISDN 2 exchange line services
- wholesale ISDN 30 exchange line services.

As a result of its market analysis Oftel found BT to have significant market power on all markets mentioned above. Following an analysis of the options for potential remedies Oftel decided to impose the obligation on BT to provide WLR products for four of the five markets (all besides the wholesale residential ISDN 2 exchange line services). The obligation for ISDN 30 was imposed in accordance with functional specifications to be issued by the NRA. The analogue WLR product should be provided on an incentive basis on a 'fit-for-purpose' test. In return for BT providing a WLR product which is actively being used by competitors OFCOM has offered to relax the current BT price control from RPI-RPI to RPI-O.

Given that BT also has a SMP position in the wholesale residential ISDN 2 exchange line services market and that its market share in this market is nearly 100% and therefore higher than in the other access markets OFCOM did not impose a WLR obligation for that market. OFCOM did regard WLR in this case not proportionate and appropriate because

- the residential ISDN 2 market is much smaller than the business ISDN 2 market and

- although the residential ISDN 2 market is currently growing, it is not clear that this growth is likely to continue.
- imposition of WLR is likely to incur implementation costs.
- OFCOM is not convinced that there is sufficient demand for a WLR product to justify the potential cost of such regulation.

4.3 Ireland

WLR was originally mandated by the Irish regulator ODTR (which is now ComReg) in July 2002 as a result of a review of the effectiveness of CPS. In that review document ODTR came to the conclusion that the dual bill requirement is a major impediment of effective competition by CPS operators. Therefore it became a major concern of the NRA to enable CPS operators to provide a single bill to their customers covering services technically provided by Eircom and services provided by the CPS operators including line rental, all types of calls and ancillary services. ODTR refers to market studies indicating that 50% of customers churning back to the incumbent justify that by the single bill advantages. Among the various options for introducing single billing ODTR also mandated WLR.

Based on this analysis WLR implementation should in the first phase be limited to Eircom's existing IT infrastructure. Therefore, originally a manual process based on e-mail was introduced in July 2003. In a second phase a fully automated product was developed by industry working groups under very intensive involvement of ComReg. ComReg chaired working groups which wrote the product specifications.

The wholesale discount was set on the basis of a retail minus rule at minus 10%. Service elements which have no retail equivalent are priced cost-based.

4.4 Norway

As a starting point Telenor, the incumbent in Norway, offered a bundled wholesale product consisting of calls and subscriptions for resale to service providers. This product was not interesting for CPS-operators. The ULL product was regarded to be too expensive. Customers using the service of CPS operators received two bills: Making calls was billed by their CPS operator, for subscription they had to pay to Telenor. NPT and the Competition Authority regarded the bundled wholesale product as anti-competitive. As a consequence of the principle of non-discrimination between (other) service providers and its own retail unit Telenor had to provide subscriptions as a wholesale service in an unbundled form. NPT made its resale decision in October 2001

and ordered Telenor to submit a standard offer. On the basis of this decision service providers can combine resale of subscription with CPS offerings.

As a general rule in Norway pricing for WLR should have been on a cost-oriented basis. Because prices of subscriptions were not fully rebalanced, a retail-minus model was applied to avoid a potential price squeeze of service providers. The wholesale discount was fixed at 16%. The discount was based on the avoidable costs of marketing, billing, customer service etc. as calculated by Telenor.

Telenor appealed the NPT decision successfully to the Norwegian Ministry of Telecommunications. The Ministry rejected NPT's decision in 2003 due to a lack of a sufficient legal basis in legislation for mandating resale. Nevertheless, the Ministry signalled the appropriateness of WLR. On that basis Telenor introduced WLR on a voluntary basis later in 2003. Telenor priced WLR at the same wholesale discount as was originally imposed by NPT.

The Norwegian Competition Authority has stabilized WLR by signalling that should Telenor revoke its offer, the Competition Authority would come into action and oblige Telenor to provide WLR. WLR is further stabilized by the new Electronic Communications Act of 2003 and the Regulation on Electronic Communications Networks and Services. These legal documents enable the NRA to impose an obligation on SMP operators to provide WLR on a non-discriminatory basis.

4.5 Germany

WLR is not available in Germany. This status quo emerged after several rounds in the negotiation, the regulatory and the judicial battlefields over the last five years. Already in 1998 the regulator stated to deal with resale. In a landmark decision of March 2001 RegTP, the German NRA, ruled that German Telekom hat to provide WLR (and other local services) under certain conditions. The decision followed unsuccessful negotiations between DTAG and several operators and service providers. Implementation of that decision was stopped by a court decision. German Telekom then reacted by offering a bundled resale offer for access and calls, which was not what the demanding operators were asking for. In a follow-up proceeding in 2003 RegTP ruled that the incumbent had to come up with an unbundled resale offer. Although Germany's High Administrative Court supported the original decision of RegTP in December 2003 no resale offer was negotiated successfully before the enforcement of the new telecommunications law (24. June 2004).

The new telecommunications law entitles the NRA to impose WLR as a potential remedy on SMP operators. Prices for WLR shall be set on a retail-minus basis but at least cover the costs for providing WLR. Up to 30.06.2008 such an obligation can only

be imposed for a bundle of access and call services. De facto there seems to be no demand for such a bundled resale offering.

4.6 Austria

After more than two years of unsuccessful negotiations and regulatory proceedings Telekom Austria provided a WLR proposal on December 10, 2003. This proposal included a wholesale discount of 12% on average of all (relevant) line rental products with 5% discount for the lowest residential access charge and 14% for the highest rate. Furthermore, WLR operators shall make upfront payments to cover system adaptation and implementation costs of the incumbent. This pricing element had been significantly reduced by negotiations between the NRA and the incumbent. The offer was limited to PSTN access and ISDN 2 lines and did not include ISDN primary rate access. On the basis of this offer the Telecom Control Commission decided to close the regulatory proceedings on December 15, 2003. A few days later Telekom Austria withdraw its WLR proposal arguing with a modified cost situation due to the fact that implementation costs originally estimated in 2003 had been increased.[7] After reopening the regulatory proceedings Telekom Austria resubmitted its December 2003 WLR proposal on May 24, 2004. The NRA still has to decide on the compliance of the conditions of the WLR proposal with the incumbent's non-discrimination obligation. It is unclear at the moment whether the conditions offered may be accepted by interested parties.

4.7 Comparison

The experience with WLR in Europe so far is not too conclusive yet. In most countries the concept has not (yet) reached market relevance; in others not all implementation decisions have been taken. Table 4-1 summarizes the main WLR parameter of the countries considered here.

The most relevance and success WLR seems to have in Denmark. The success factors are obvious:

- WLR was introduced early in the liberalization process.
- The wholesale discount is in a relevant range.
- Pricing of subscription, WLR and ULL is consistent.

These positive success factors also may explain why WLR is not a success, a failure in any case only a niche concept (so far) in other countries:

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7 See Weber (2004)

- Late introduction in the liberalization process
- Negative wholesale discount
- No consistent pricing of subscription, WLR and ULL.

Table 4-1: Comparison of WLR experience

		Germany	Ireland	UK	Denmark	Norway	Austria
WLR introduced		**Not yet**	**From summer 2004**	**Since Sept. 2002**	**Since end of 1999**	**Since 2003**	**Since 12/2003**
Number of WLR lines		%	n.a.	100-150.000	580.000	n.a.	n.a.
Pricing principle	Cost- based		X 2)	X			
	Retail minus	X 1)	10 %		21 %	16 %	12 %4)
Prices for (in € per month)	Subscription	13,53)	17,93	14,39	11,92		14,533)
	WLR		16,14	16,94	9,42		12,7
	ULL	11,8	16,8	14,8	8,3		10,9

1) Costs as a minimum
2) For elements which have no retail equivalent
3) Standard tariff
4) Average discount depending on access service

Source: WIK-Consult

5 Feasibility of WLR as a remedy and recommendations

5.1 Relevant markets

OPTA has not yet finalized its market definition and market analysis process. To collect the relevant data from the market, OPTA has started the process with a tentative definition of relevant markets. The following analysis will rest on these tentative definitions and is not a contribution or a reflection on OPTA's final discussion and conclusion on the subject.

OPTA has separated wholesale and retail markets in the fixed narrowband access markets, to properly distinguish and design remedies. Wholesale services are sold and purchased by network operators or service providers rather than by end-users.

Wholesale services include the self-provided services to the retail arm of an integrated operator. This separation follows the general guideline of the Framework Directive to impose regulatory obligations on retail services only where and when relevant wholesale related measures would fail to achieve the objective of ensuring effective competition. Therefore, it is appropriate (not necessary) to define wholesale narrowband access markets although the relevant market conditions in these wholesale markets are very similar or even identical in the corresponding retail markets. Obligations related to the wholesale markets aim at competitive problems at the retail level.

In its tentative market definition OPTA does not follow the distinction between residential and business markets in narrowband access mainly because business and residential users demand the same PSTN and ISDN 2 services. Instead, OPTA defines two relevant markets according to a product line differentiation: The low capacity access market entails analogue PSTN and ISDN 2 access as one relevant market and high capacity access represented by ISDN 30 access services as the second relevant market. ISDN 30 services correspond directly to the residential / business market distinction in the sense that ISDN 30 services can (nearly) exclusively be attributed to the demand of business users. These defined wholesale markets directly mirror corresponding relevant retail markets. The demand for the relevant wholesale products is directly derived from the demand for the corresponding retail markets.

The fixed narrowband access markets at the retail level provide customers access to the switched telephony services on analogue or on digital channels (with a bandwidth of 64 Kbit/s). They also provide narrowband internet access in a dial-up functionality. The bandwidth of the service is considered as relevant and not the bandwidth of the underlying transmission network. Therefore ISDN 30 access is a narrowband service even though it is provided over a 2 Mbit/s bearer.

OPTA's tentative market definition rests on the implicit assumption that there is effective supply side substitution between analogue and ISDN 2 access for residential and small business customers. Furthermore, the tentative market definition implicitly assumes no demand side substitution between ISDN 2 and ISDN 30. ISDN 30 is only demanded by business customers and designed for larger business sites.

Because access tariffs are geographically uniform, OPTA assumes tentatively a nationwide geographic market for narrowband access services.

5.2 SMP

5.2.1 SMP in the access markets

The most important criteria relevant to the assessment of SMP in the narrowband fixed access markets are market shares, entry barriers and economies of scale. To assess wholesale SMP, OPTA will use market share and other data from the corresponding relevant retail markets, because there is (currently) no effectively operating wholesale market.

The market shares of KPN in analogue as well as ISDN 2 access lines amounts to more than 95%. This figure creates the tentative presumption that KPN possesses SMP in the wholesale low capacity narrowband fixed access market. Competition of cable operators and competition based on ULL to provide voice access can be neglected. Significant barriers to entry and to expansion due to economies of scale and sunk costs prevail in this market. The market power of the incumbent is not controlled by any countervailing purchasing power. There are no indicators of a relevant change of this situation to be expected in the relevant future. These are conclusions which we derived from our very short analysis in section 3. It will be up to OPTA's detailed market analysis to derive valid conclusions and results on market analysis and the position of the incumbent in the relevant market. Insofar our analysis here only leads to working assumptions and nothing more.

The market share of KPN in the high capacity access market also suggests KPN having a SMP position in this market, having a market share of 85 %. Different to the low capacity access market there are competitive alternatives available at least in the major business agglomerations. Several competitors are able to provide ISDN 30 access to their own fibre networks. According to information provided by KPN 7 to 16 providers offer direct access via optical fibre networks in the major business centres. In the majority of cities such direct access alternatives are provided by two or more (competing) operators. These market developments indicate relevant tendencies towards effective competition at least in the major business agglomerations.

5.2.2 SMP in the markets for calls

Although there is vigorous competition in the markets for calls our short market analysis still seems to reveal KPN to have a SMP position in this market. The overall market share of KPN is significantly above 50%.[8] Entry barriers in the form of economies of scale and sunk sots are still relevant in that market. Viability of competition still depends

8 For the distribution of market shares in the various call segments see Table 3-2.

on the proper regulation of wholesale prices. Switching costs of customers hinder competition to become effective. Given the current competitive structure of the access markets the incumbent can even strengthen its dominant position in the market for calls by leveraging dominance from the access markets.

5.3 Remedies

5.3.1 Impacts of a potential WLR remedy in the low capacity access market

5.3.1.1 Competitors

WLR may have different impacts on the various groups of competitors and telecommunications markets. Therefore, we have to discuss the different markets or market segments separately:

- CPS operators
- Cable operators
- Mobile operators
- DSL/ULL operators.

(a) CPS Operators

CPS operators will get additional business opportunities in the access market if WLR is available. Their competitive position in the markets for calls will improve. Furthermore, their overall competitive position against the incumbent and their viability as competitors will improve because of the (new) ability to bundle access and calls and to become full service providers. We discussed the arguments in detail in section 2.3.1.2.

(b) Cable operators

Whether or not there is an impact of a WLR remedy on cable operators first of all depends on their further voice telephony strategy. In the past and at present cable operators have not been very active as voice service providers in an environment where they did not see competition of WLR service providers in the access market. If they decide in the near future to actively position themselves as telephony access providers, they would face competition by CPS operators in access services which they would not face without a WLR remedy. Cable operators cannot and will not position themselves as voice telephony full service

providers only like the CPS operators. Their competitive advantage as triple play providers remains unaffected by WLR. It can, however, not totally be excluded that they may be discouraged to upgrade their networks to become voice access providers.

(c) Mobile operators

We do not see relevant or significant effects of WLR on mobile operators. Substitution between fixed and mobile access will not be affected because the fundamental reasons to use a fixed or a mobile access line remains unchanged by service competition on voice access at the fixed network. As we argued in section 3.1.3 the overall competitive position of the fixed network against the mobile networks will increase slightly through WLR.

(d) DSL/ULL operators

Different to other countries (e.g. Denmark and Germany) ULL operators in the Netherlands do not use LLU to provide voice access. Even in a situation where they did not face competition by WLR service providers they did not show up as voice telephony operators. Their business model for voice still has to be determined. At the moment they use ULL in the form of line sharing to provide DSL access. Paying for line sharing as a wholesale service amounts to only a fraction of paying for full unbundling. In case the customer subscribes to a VoIP service and no longer subscribes to the telephony access service of the incumbent, operators have to pay for the full unbundled line. This would significantly influence their competitiveness in offering voice. If they change their strategy in favour of voice we do not see negative incentives to invest due to WLR. Several DSL operators have already made their basic infrastructure investment. If offering voice makes sense for them at all then they could make better use of their infrastructure investment by offering voice. Fundamentally, the (potential) competitive advantages of DSL/ULL operators over service providers using WLR remain unchanged: They will have an innovative product, a higher value added and a better control over costs. If DSL operators go for voice, WLR also is an opportunity for them to enhance their competitiveness: WLR enables them to offer service in areas where they have not (or not yet) coverage at the MDF level to provide voice access. The same conclusions hold when we change our perspective and ask for the impacts of WLR on the ULL wholesale market. We do not see negative impacts on this market.

5.3.1.2 Users

We have worked out in section 2.3.1.1 that users will get more choice (or choice at all) and better deals. They will benefit in particular from getting nationwide choice in

telephony access in a relative short period of time. No other infrastructure-based option is able to have comparable immediate effects.

5.3.1.3 KPN

In applying both pricing rules as developed in section 2.4.6.1 KPN will not face economic harm resulting from WLR but will get a fair and economically justified and appropriate price for providing the wholesale service to its rivals. This is obvious in case of a cost-based pricing. In case of retail minus pricing KPN can even make an economic profit in providing WLR in certain cases. In case of a subsidized end-user price KPN is not worse off than selling access via its own retail distribution arm. Due to the pro-competitive effects of WLR and the limitation of market power KPN may not like WLR. Such impacts are however not justified reasons seriously to consider.

There may be two reasons why WLR also has positive implications for KPN. Via WLR KPN gets access to the marketing and sales power of its fixed network rivals which de facto helps KPN to keep more customers at the fixed network against its cable and mobile network rivals. Most of the value added in that case remains with KPN. We have argued in section 2.3.1.2 that WLR enables CPS operators to compete more on the basis of complete telephony service portfolios. This might have the implication that competition turns more towards quality of service and brand and may actually reduce price competition. KPN might also benefit from this shift in the form of competition.

5.3.1.4 Competition

WLR generates nationwide competition in the access market in a short period of time. No other infrastructure-based business model is able to provide a similar option within several years. WLR also has a positive impact on competition in the markets for calls. WLR will intensify competition by reducing switching costs in the form of churn.[9] The degree of intensity of competition is, however, limited to the retail part of the business. Retail minus pricing for WLR leaves (nearly) all existing benefits for infrastructure-based competition. The experience in the Netherlands so far does not support the argument of negative impacts on infrastructure competition.

5.3.2 Impacts in the high capacity access market

Availability of WLR in the high capacity access market can enable new entry in this market and enable existing operators to provide service in areas not (yet) covered by

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9 According to information provided by Tele2 the major part of churn of CPS customers results from their unwillingness to accept two separate bills for access and calls.

these providers. Insofar and in general WLR for ISDN 30 may also improve competitive service availability on a nationwide basis and may enhance competition. We do not expect these effects to be too strong because business customers demanding ISDN 30 access usually purchase customized and bundled products with relevant quality differentiation. Pure service provision on a resale basis will only to a very limited extent fit with that demand. Therefore, we would not expect too much demand for a WLR product for high capacity access and as a result not too much market impact.

Market analysis must prove to what extent the ability of competing providers to address the business ISDN 30 access markets critically depends on the availability of an ISDN 30 WLR product. The major issue is network coverage and the cost-effectiveness of addressing the major part of the relevant market.

5.3.3 Evaluation as a remedy

5.3.3.1 Appropriateness

Any remedy decision must be a reasoned decision which is in line with the obligations under the Directives. The remedy selected needs to be based on the nature of the problem identified. The nature of the problem to which the WLR obligation is addressed has been identified in the course of OPTA's market definition and market analysis.

What is the nature of the problem in our case? There are four basic competitive problems emerging and resulting in a rather low or negligible degree of competition in the access market:

(a) There is (nearly) no, in any case not enough entry in the access market because of high economic barriers to entry due to economies of scale and significant sunk costs.

(b) The incumbent materializes a SMP position in the markets for access and for calls.

(c) CS / CPS operators face competitive disadvantages against the incumbent by their inability to provide a complete telephony service portfolio.

(d) Given the market structure in the access market the incumbent leverages its dominance in the access market to the call markets reducing competition in theses markets to a level which is lower than in a more competitive market structure of the access market.

WLR is a nearly perfectly appropriate remedy because it addresses and relaxes all of the four competitive problems mentioned above:

(a) A WLR obligation and proper pricing of a corresponding and available wholesale product would enable nationwide market entry in the narrowband access markets at relatively low entry costs. Given the interest of at least the major CPS competitor in the market, nationwide (service-) competition can be expected in the narrowband access markets in a short period of time following the introduction of a WLR remedy.

(b) The incumbent would face competition in the access markets which may challenge its SMP position to some degree. At least competition based on WLR would increase the welfare of customers by providing choice, some pressure on price and some innovation on service provision. Competition in the markets for calls will also be indirectly positively affected.

(c) CS / CPS operators which make use of a WLR option reduce their competitive disadvantages against the incumbent. Similar as the incumbent they can bundle access and calls in one bill and can offer optional tariff plans consisting of different combinations of access and call charges.

(d) Because the incumbent no longer is the only provider of access and calls he looses the competitive advantage of having one bill for all telephony services, to bundle access and calls and to offer optional tariff plans. Those competitive parameters would then be available and at the disposal of all competitors which make use of WLR. The incumbent thereby significantly looses its ability to leverage its dominance in the access market to the markets for calls.

WLR also contributes to solve some typical competitive problems of pricing in the retail markets for access and calls, namely:

- excessive or predatory pricing
- undue price discrimination
- unreasonable bundling of services.

WLR decreases the incentives of such anticompetitive pricing strategies because the incumbent can no more totally internalize the benefits of such strategies but has to share it with service providers.

5.3.3.2 Proportionality

Obligations or remedies to be imposed on SMP operators should be proportionate. Proportionality of a remedy has to be discussed and assessed by considering alternative remedies where possible, so that the least burdensome effective remedy can be selected. Potential effects of the remedy in question on related markets have to be

taken into account. Furthermore, disadvantages caused by the remedy must not be disproportioned to the aims pursued.

Concerning WLR there seems to be no other access obligation available to meet the lack of competition in the access markets. Infrastructure-based alternatives have not developed so far and cannot be expected to develop in the next years to generate (nationwide) competitive alternatives. We do not see major disincentives to invest in alternative access options or services to be caused by WLR. Are there relevant alternative wholesale services for competing operators to provide an equivalent service as WLR? In principle LLU and voice services delivered over DSL-enabled loops using VoIP may be alternatives. The evidence in Europe and in the Netherlands proves that LLU does not represent a cost-effective option for delivering voice access on a nationwide basis. The access obligation to provide ULL has not lead to any relevant provision of alternative voice access lines in the Netherlands, although operators did not face any competition by access service providers. If WLR is priced at a retail minus rule the availability of WLR will not affect the attractiveness of taking ULL as a wholesale service. In case end-user prices are above costs only infrastructure-based competitors like ULL operators have access to these profits and not WLR service providers. Infrastructure- and service-based competition is promoted in a balanced way.

Proportionality also requires to have the minimum intervention required to achieve the objective set out. Because there are no competing obligations available to reach choice and competition in the access markets, a WLR remedy also is the least burdensome. Application of the pricing principles as presented in section 2.4 also is not creating a disproportionate burden to the incumbent because such prices do not generate (justified) economic harm to the obliged operator.

5.3.3.3 Effectiveness

A WLR remedy is very effective to generate service competition in the access markets. The barriers to enter the market on that basis are small. Nationwide market entry is immediately possible and should be expected. The degree of competition – as always with service competition – is limited because it concentrates on the retail part of the business. The major and very relevant effect results from providing choice for all customers. The effectiveness of a WLR remedy may be lower in the high capacity as in the low capacity access market. Besides enabling competing providers to compete in the retail access markets, WLR enhances the effectiveness of a indirect access and a CPS remedy in the markets for calls.

5.3.3.4 Incentive compatibility

"Remedies are much more likely to be effective if they are designed in such a manner as to give strong incentives for compliance".[10] On the basis of incentive compatible regulatory measures interested parties develop detailed solutions in commercial negotiations. If this approach is viable it is more efficient and effective than the regulatory intervention. We have derived in section 2.5 that in the case at hand WLR cannot be expected under an approach of purely commercial negotiations. (Some) ex ante regulation is necessary to make it happen.

Nevertheless, by developing an incentive compatible regulatory approach the regulator can delegate back certain design and implementation aspects of a WLR remedy to commercial negotiation. Incentive compatibility works if the advantages to the regulated party of compliance outweigh the benefits of evasion. To achieve incentive compatibility the regulator has to define the pay-off from non-compliance and set financial or other incentives for compliance.

In our case OPTA should consider to relax or even abolish certain end-user price restrictions or controls in exchange for the proper provision of a WLR product which also is demanded by entrants in a relevant amount. Product specification, time of availability of a wholesale product and perhaps even the price of the wholesale product could be left to commercial negotiations under a proper incentive regime. We have mentioned relevant examples in section 4. Linking regulatory remedies which refer to two different markets is proportionate in our case because the availability of WLR makes competitors more competitive in the retail markets for calls and enables new and more competitive options in end-user pricing. Therefore, there are practical links which make it justified, proportionate and effective to set an incentive in a different market to foster the availability of a wholesale product.

5.3.4 Final recommendations

5.3.4.1 Low capacity fixed narrowband access

All the arguments developed here in favour of a WLR remedy fit best for the low capacity fixed narrowband access services. Users in the Netherlands de facto do not have access alternatives for analogue and ISDN 2 telephone access. Cable networks and the access concept of ULL have not changed the quasi-monopolistic supply structure. We do not see indications, that infrastructure-based alternatives will be either revitalized or developed in the next few years so that the situation may change in the

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10 ERG (2004), p. 71.

relevant future. Service competition based on a WLR remedy is the only available option for getting choice for customers and competition in the market for low capacity fixed narrowband access services. Therefore we recommend to introduce a WLR obligation for PSTN and ISDN 2 access services.

Because there is the danger of excessive pricing of the wholesale product wholesale prices have to be controlled by the regulator. Depending on the method OPTA intends to control or set the WLR wholesale price an obligation of accounting separation may be required to identify the cost of the wholesale product and / or the retail costs of the incumbent.

Pricing of the wholesale product should be at the retail price minus avoidable cost of retail.

A WLR remedy should be accompanied with obligations on transparency and non-discrimination. The proper implementation can take the form of a WLR reference offer to be provided by KPN.

Even though most arguments in our analysis under present circumstances are in favour of WLR, care should be taken in making the final decision. Certain market developments, such as a second move from cable operators or an unexpected quick market penetration of VoIP/VoDSL, might prove to be serious constraints on imposing WLR. It's up to OPTA to draw a final conclusion regarding imposing a WLR obligation, based on a prospective analysis regarding the development of competition in the relevant market(s).

5.3.4.2 High capacity fixed narrowband access

The analysis developed mostly did not distinguish between the low capacity and the high capacity narrowband access markets. Do the theoretical arguments developed fit in the same way to the high capacity access market as they fitted for the low capacity access market?

KPN has a lower market share in the high capacity access market but still has a SMP position in this market as well. One major difference between the competitive situation in the two markets is the presence, the relevance and the potential of infrastructure-based competition. At least for the major business agglomerations there are one or more alternative infrastructure-based access options for high capacity access availability across the Netherlands. Competitors can directly connect customers to their networks via ISDN 30 access. For that reasons the SMP position of KPN in the high capacity access market may be the outcome of market performance and not (only) the outcome of market power. At least this conclusion cannot be excluded. This raises the question what a WLR obligation can contribute to improve the performance of that

market. There seem to be two dimensions or aspects in which WLR in the high capacity access market can improve market performance:

- Additional market entry from service-based competitors.
- In areas where alternative infrastructure is not (yet) available, WLR can enable operators to offer service as well.

According to our understanding of the high capacity access market users in this market demand and get normally service packages, which have a relevant degree of individualization or customization in it; the distinction between access and calls is more difficult than in the low capacity access market; service quality and product differentiation plays a much larger role to win and keep customers. If these observations are a representative description of user demand than one would not expect too much demand for a WLR based end-user product. In conclusion we would not expect a relevant or significant contribution of a WLR obligation in the high capacity access market on and for the competition in this market. On the other hand, we do not see (any) negative incentives to invest in alternative access infrastructure due to a WLR remedy in this market, because of the significant competitive advantages of a vertically integrated operator and because most of the relevant infrastructure investment has already been made. Furthermore, infrastructure-based alternative operators might also have an interest to sell their access service via service providers. In this market we might have an excellent example of complementarity between service-based and infrastructure-based competition as we referred to on a more theoretical level in section 2.2.

What may be an overall conclusion on having a WLR remedy in the high capacity access market? In harsh words one could conclude that the remedy would not contribute much to improve the competitive situation but it would on the other hand also not generate relevant or perhaps even any negative effects. Therefore, the economic conclusion tends to recommend a WLR remedy for the high capacity access market. It remains, however, finally a legal question and issue whether a remedy which is not too effective and which leaves (relevant) doubts whether it is proportionate should be introduced.

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