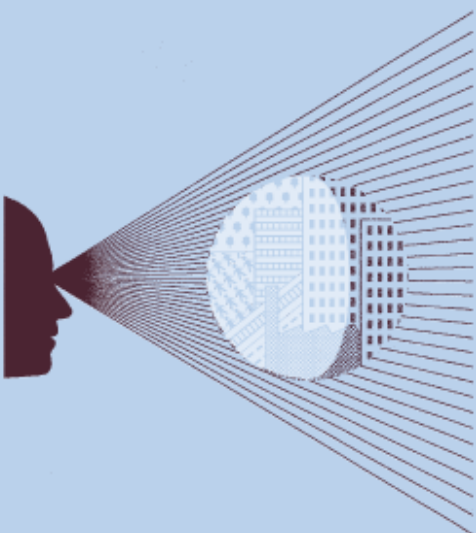


Price control principles for current generation wholesale broadband products

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1 Introduction

In the context of its wholesale broadband access (WBA) consultation and draft decision to impose price control remedies in market 5, the Commission for Communications Regulation (ComReg) has asked Oxera to assess the appropriate methodology for setting current generation bitstream rental prices.

In 2011 ComReg concluded that eircom possesses significant market power (SMP)¹ in the provision of WBA, and imposed remedies in the WBA market. These included obligations on access, non-discrimination and transparency, and an obligation to retain the retail-minus price, as established in 2006 in ComReg Decision D01/06.² A subsequent decision modified the WBA price control to its current form, such that it includes a minimum price floor.³ ComReg is now considering complementing the price control regime with an appropriate form of price control for the current generation WBA products.

ComReg has also concluded that the geographic scope of the relevant market is national; however, it has acknowledged the presence of an alternative broadband platform in distinct geographic areas, as well as a degree of functional product differentiation across areas. To the extent that competitive conditions may vary geographically, such that eircom's retail broadband prices are constrained in discrete areas, ComReg has proposed to factor these into remedies. The geographic differences have previously been established in ComReg's decisions on bundles⁴ and next generation access⁵ (NGA) products.

The objective of this report is to define the pricing principles and methodologies applicable to eircom's WBA products, with a focus on the design of pricing remedies across different geographic areas.

1.1 Framework to design pricing remedies for WBA

The analytical stages of defining pricing principles for WBA are as follows.

- **Stage 1: analysis of structural differences across geographic areas.** Are there differences in competitive conditions in different geographic areas, to such an extent that sub-national price controls could be warranted? If not, a national-level remedy should be imposed on eircom. If there is evidence of substantial structural differences then a less stringent form of regulation could be considered for the more competitive area, and vice versa. The remedy design should be carried out for each area separately, although any overlaps between the costs of different areas should be incorporated where cost-based price controls are applied.
- **Stage 2: choice of the form of price control.** If, and only if, there is evidence of retail pricing constraints, the appropriate remedy would be a form of retail-minus regulation or an ex ante margin squeeze test. Where constraints exist, the margin squeeze test can

¹ ComReg (2011), 'Market Review: Wholesale Broadband Access (Market 5)', Decision D06/11, ComReg Document 11/49, July 8th.

² ComReg (2006), 'Retail minus wholesale price control for Wholesale Broadband Access Market', Decision D01/06, ComReg Document 06/01, January.

³ ComReg (2012), 'Wholesale Broadband Access: Further specification to the price control obligation and an amendment to the transparency obligation', ComReg Document 12/32, April 5th.

⁴ ComReg (2013), 'Price Regulation of Bundled Offers: Further specification of certain price control obligations in Market 1 and Market 4', ComReg Document D04/13, no. 13/14, February 2nd.

⁵ ComReg (2013), 'Next Generation Access ('NGA'): Remedies for Next Generation Access Markets', ComReg Document D03/13, January 31st.

prevent foreclosure in the retail market, specifically for entrants reliant on eircom's wholesale input. This may be particularly relevant if there is an incentive to set prices aggressively where constraints exist and to offset this with over-recovery elsewhere. In addition, the margin squeeze test needs to ensure that there is a sufficient economic space between the WBA price and the underlying local-loop unbundling (LLU) price (reflecting the cost of the copper connection between the end-user and the local exchange). Where retail pricing constraints do not exist or are not sufficiently effective, it is reasonable to regulate wholesale prices through a cost-based approach—ie, either through an explicit ex ante price ceiling or through a cost orientation obligation.

- **Stage 3: choice of the appropriate assumptions.** Both cost-based and retail-minus regulation can be designed in different ways to reflect the degree of competition and the nature of assets.
 - Where there are concerns that eircom's pricing of retail broadband and WBA could be too high, the WBA prices should be set in accordance with the underlying costs ('cost orientation obligation'). Under such circumstances, the appropriate level of prices would therefore ensure cost recovery, including eircom's cost of capital. The precise way in which cost-oriented prices are derived draws on a number of assumptions. The core principles are the allocation of common costs (ie, to what extent fixed and common costs are recovered through regulated charges) and asset appraisal. There are further assumptions specific to this context relating to the allocation of costs per unit of bandwidth, and the allocation of costs that can be considered common between different areas.
 - If retail-minus regulation or a margin squeeze test is considered appropriate, assumptions need to be made about how the 'economic space' between retail and wholesale prices, and between bitstream and LLU prices, is derived.
- In some circumstances, a combination of retail-minus and cost-based approaches may be appropriate. More specifically, certain circumstances may make it difficult to impose independent remedies across geographical areas, and thus links between the forms of price control in different areas may be required.

This report is structured as follows.

- Section 2 assesses competitive conditions in market 5 across two distinct zones (as defined by ComReg) based on up-to-date market data.
- Section 3 looks at access price control methodologies in the context of possible geographic variation in competitive conditions.
- Section 4 considers the most appropriate approach to implementing the preferred price control method.
- Section 5 discusses the impact of the recommended price control on broadband competition and investment.
- Section 6 summarises Oxera's conclusions.

2 Assessment of the competitive conditions in the WBA market in Ireland

An understanding of competitive conditions across different areas is essential for the design of pricing principles. This section presents a high-level assessment of these conditions.

2.1 Defining geographic areas based on structural and technical differences

ComReg has recently investigated geographic areas that differ by underlying structural competitive and investment conditions.⁶ These geographic areas are shaped by technical considerations: they reflect eircom's decision to connect the exchange to its next generation core network in the case of next generation broadband (NGB)-enabled exchanges. They also differ in terms of entrants' investments and the use of the wholesale network inputs that are available across the areas.⁷

Currently, there are approximately 126 exchanges in the Large Exchange Area (LEA), which are contingent on the criteria set out by ComReg in the Bundles Decision, as follows:

- the area being served by at least one alternative infrastructure provider (AIP) at the retail level, and by at least one other authorised operator (OAO) that uses VUA or LLU inputs to serve end-customers;
- the area not being served by an AIP, but at least two operators in the area providing retail services via VUA/LLU inputs;
- the area being served by at least one AIP providing services at the retail level to end-users and eircom and OAOs (ie, not the AIP) are providing fixed retail broadband to less than 20% of the premises in the exchange area;⁸
- eircom giving prior notification that it intends to deploy NGA-based services in the exchange area to a reasonable number of lines in that area;
- the area being surrounded by exchange areas that meet the above criterion, or having economic affinity with adjacent qualifying areas.⁹

Oxera has not carried out a full assessment of the competitive conditions in these two areas (within the LEA and outside the LEA) involving a market definition exercise assessing relevant supply and demand substitutes, barriers to entry, and direct and indirect constraints on prices. Rather, this assessment focuses on a qualitative assessment of the two areas, supplemented with evidence on pricing, product offering and investment activity in the respective zones.

2.2 Assessment of competitive conditions within and outside the LEAs

2.2.1 Large exchange areas

As explained above, an LEA is typified by being served with eircom's legacy retail products as well as services from an alternative infrastructure-based provider (ie, cable) or LLU-based services.

⁶ ComReg (2013), 'Price Regulation of Bundled Offers: Further specification of certain price control obligations in Market 1 and Market 4', ComReg Document 13/14, February 8th.

⁷ These include wholesale line rental (WLR), virtual unbundled access (VUA), and radio spectrum (as an input to fixed wireless access).

⁸ Subject to the AIP(s) collectively having a reasonable market share and coverage.

⁹ This criterion is determined exceptionally, and is subject to case-by-case assessment by ComReg.

eircom’s NGA exchanges are included in the LEA. As was established by Oxera in the context of the NGA pricing decision, there is evidence to suggest that eircom’s NGA wholesale and retail pricing is likely to be constrained by UPC in these areas.¹⁰ A recent upgrade to the DOCSIS 3.0 standard has also given UPC’s cable network an advantage in terms of the bandwidth available to end-users. Furthermore, the cable provider is well placed to offer attractive bundled services such as pay-TV, which is technically (and perhaps commercially) more difficult to provide on eircom’s legacy broadband infrastructure.¹¹ These costs, product differentiation and bundling factors mean that the presence of UPC could be a competitive restraint on eircom’s pricing of current generation broadband.

Alternative providers that rely on LLU-based inputs may also be able to compete with eircom’s retail broadband offerings. Where an operator has control over the technical specifications of the infrastructure (ie, bandwidth, contention and latency), it has scope to offer a service that is differentiated from that of the incumbent. Access to the physical wholesale inputs also gives the alternative operators greater control over the value chain, allowing them more flexibility in retail pricing. The definition of the geographic zone is by exchange area, and a significant difference between bitstream reselling and LLU-based services is the upfront and sunk investment of unbundling an exchange. For an LLU unbundler within an LEA, the marginal cost of connecting an additional customer is low, since all the necessary investment has been made.

Evidence of customer switching activity may also indicate competitive restraint. Nationally, there has been a decline in DSL (retail and wholesale) connections, while UPC’s cable subscriptions have grown.¹²

Summary data in Tables 2.1 and 2.2 below shows that unbundling (line share) is a far more prevalent form of connection in LEAs. DSL has a lower share of connections (consistent with the decline already highlighted), but UPC has just over half of broadband connections in these areas. Assuming that eircom supplies the other half of fixed-line wholesale connections in these areas, this would imply that WBA-based providers and eircom retail share of around ⅓ of the fixed market combined.

Table 2.1 Exchanges, premises and connections within and outside the LEAs, 2012

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¹⁰ Oxera (2013), ‘Assessment of retail pricing constraints—Response to submissions on consultation 12/27: Next Generation Access (“NGA”): Proposed Remedies for NGA Markets’, January.

¹¹ The provision of IPTV and bundles services will be feasible on eircom’s NGA network, as this has higher bandwidth and the ability to prioritise certain types of traffic.

¹² Oxera (2013), ‘Assessment of retail pricing constraints—Response to submissions on consultation 12/27: Next Generation Access (“NGA”): Proposed Remedies for NGA Markets’, January.

Table 2.2 Summary of LEAs and outside the LEAs

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Source: Data supplied by ComReg.

Within the UPC footprint, and thus within the LEAs, recent Oxera analysis suggests that the decline in DSL connections is more rapid than the national trend would suggest, and that cable subscriptions are absorbing a significant proportion of these customers.¹³

Product pricing by the incumbent may also indicate evidence of competitive pressure from alternatives. In its most recent WBA market review, ComReg finds that the retail pricing of broadband in Ireland is predominately national in scope.¹⁴ Oxera is not aware of any significant localised pricing strategies for legacy-based broadband that may have emerged since. There are no regulatory constraints prohibiting eircom from de-averaging its pricing provided that the price controls are complied with.

In a separate report for ComReg, Oxera has highlighted that eircom's retail broadband pricing strategy in response to UPC competition has been to focus on increasing product value at the same retail price by providing free upgrades in certain areas.¹⁵ Oxera understands that, as of 2010, certain 1Mb, 3Mb and 7Mb retail packages were upgraded free of charge to 8Mb plans, with varying levels of usage included. More recently, Oxera understands that eircom has proposed a free upgrade to 24Mb for wholesale connections within the LEA.¹⁶ While the decision to upgrade customers may be technical (ie, based on availability), the decision to upgrade urban exchanges itself may arise from competitive pressures.

As established by Oxera in the context of the recent NGA decision, to date there is no evidence of eircom reducing its legacy stand-alone bitstream prices to the level of the price floors in order to meet competition from UPC. The report on retail pricing constraints highlights several reasons why eircom may not have lowered its legacy prices, despite the existence of competitive pressure.¹⁷ Vodafone highlighted this issue in the context of the NGA decision, as it argued that competition from UPC had not influenced eircom's pricing decisions, and specifically stated that if it were a constraint:

we would expect to see [...] at the very least, eircom reducing its wholesale products to their floor prices to give it the maximum headroom to compete with UPC at the retail level; [...] eircom reviewing its LLU prices (which are amongst the highest in Europe) to

¹³ Oxera (2013), 'Assessment of retail pricing constraints—Response to submissions on consultation 12/27: Next Generation Access ("NGA"): Proposed Remedies for NGA Markets', January.

¹⁴ ComReg (2010), 'Market Review: Wholesale Broadband Access (Market 5)', ComReg Document 10/81, October 1st.

¹⁵ Oxera (2013), 'Assessment of retail pricing constraints—Response to submissions on consultation 12/27: Next Generation Access ("NGA"): Proposed Remedies for NGA Markets', January.

¹⁶ eircom (2013), 'Bitstream Service Price List, Version TBC', proposed price list, May 2nd. Available at: <http://www.eircomwholesale.ie/Reference-Offers/Proposals/>; accessed June 25th 2013.

¹⁷ Quality differences (eg, speed) between legacy DSL products and DOCSIS 3.0 cable may be uneconomic to overcome through price cuts. Bundling, and the implications of price cuts for customers outside the UPC footprint, may be further considerations.

seek to identify efficiencies and savings, so that it has scope to further lower its retail prices to meet UPC's offering.¹⁸

It is possible that competitive pressure could constrain eircom's prices without reducing them to the localised cost of provision. While eircom has not lowered its wholesale prices to such an extent that they would reach the price floors, there is evidence to suggest that the structural competitive circumstances vary across the two exchange areas. As noted above, the competitive pressure within LEAs is recognised and reflected in the regulation of bundled offers, and there are good reasons to apply remedies in a consistent fashion. Specifically, if and when the structural differences are reflected in the regulation of bundled offers, it makes sense to ensure consistency in the regulatory design of stand-alone products as well.

Furthermore, it would seem advisable to ensure consistency between the regulation of NGA and legacy products. The former is regulated on the basis of a margin squeeze test, premised on the finding of retail pricing constraints. As established in the retail pricing constraints report, the evidence is indicative of NGA-based broadband prices being constrained by UPC. This implies that the wholesale inputs underlying current generation broadband should be priced in a consistent manner—it would not make sense to price legacy access products at higher prices than NGA products. Furthermore, if eircom has to reduce its copper prices (sub-loop unbundling, SLU) due to the pricing constraints in, say, NGA-based competition, the reduced copper prices should also apply to current generation wholesale products. eircom has recently introduced a discount of €3 on SB-WLR prices in LEA exchanges for bundled products, and Oxera understands that this applies to legacy broadband services as well.¹⁹ This further indicates that the pricing constraints that eircom faces in this area are likely to become increasingly effective. (Note that products are sold increasingly as bundles including line rental and broadband.)

2.2.2 Areas outside the LEAs

Areas outside the LEAs correspond to more suburban, rural and remote areas of Ireland. These areas typically have higher costs (per unit of bandwidth) for potential entrants due to longer local-loop lengths,²⁰ greater distance to backhaul, and fewer economies of scale.

If a cable network connection is available, it is within a smaller exchange area (with fewer lines) and does not have an LLU/VUA-based unbundler present. It is also unlikely to be surrounded by LEA-type areas. This implies that, at most, there is only one other competing platform (cable or LLU), and that the prospects for entry by a further LLU unbundler could be limited.²¹ As the areas are defined, less than 5% of customers in these areas are supplied by UPC.

The higher proportion of premises connected by DSL outside the LEAs suggests that it is still an important access medium. However, alternative DSL-based operators are almost entirely reliant on WBA inputs in order to provide their retail offering, with only 0.2% of DSL-based subscribers availing themselves of line share. This highlights a key structural difference with the LEAs, as there are fewer access alternatives available. The operators that do offer services outside the LEA have less scope for product and cost differentiation with other suppliers, and hence provide only a limited competitive restraint on eircom.

The incumbent's pricing of retail broadband has not changed over time across a majority of subscriptions. Oxera understands that, in contrast to the free upgrades that occurred in NGB-enabled exchanges (ie, largely coincident with the definition of LEA), free upgrades have not

¹⁸ Vodafone (2012), 'Vodafone Response to ComReg Document 12/27', consultation response, July 13th.

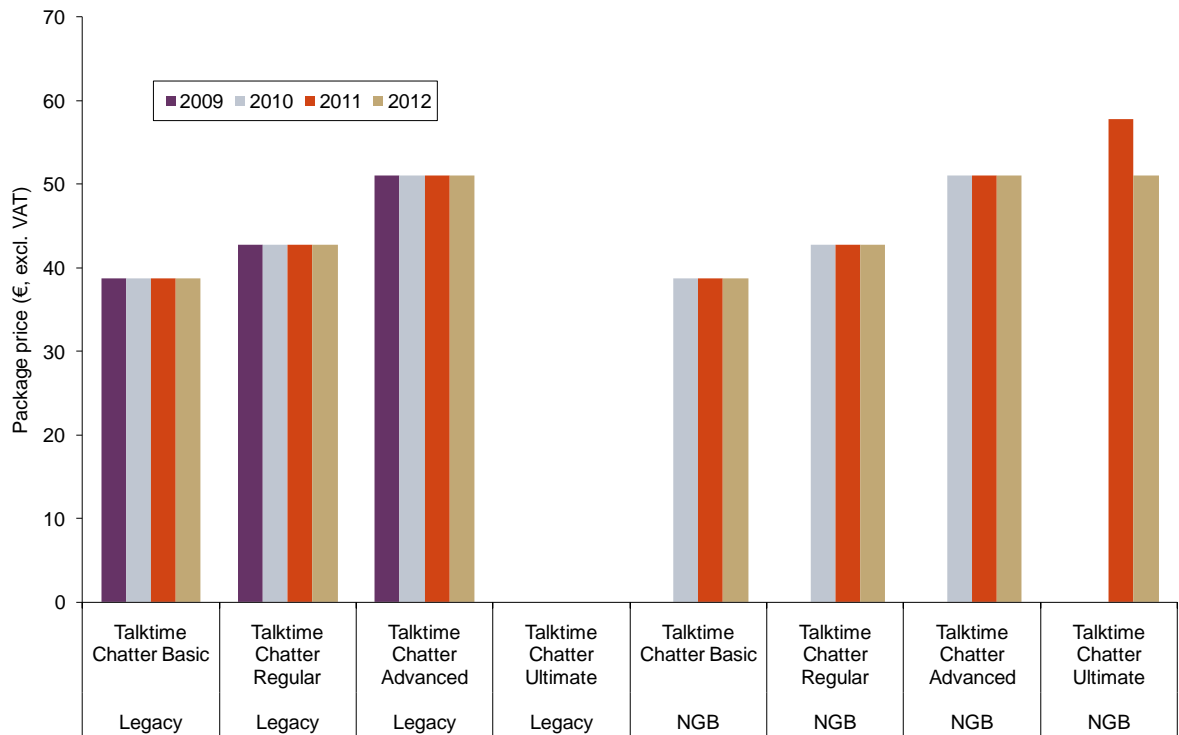
¹⁹ eircom (2013), 'Reference Interconnect Offer Price List', price list, June 1st. Available at: <http://www.eircomwholesale.ie/Reference-Offers/RIO/>; accessed June 25th 2013.

²⁰ DSL bandwidth is limited by the length of the local loop from the exchange to the customer premises. In rural areas, line lengths are often longer, as the PSTN network deployment was typically optimised with a small number of exchanges covering a wide geographic footprint.

²¹ LLU take-up in Ireland has been relatively limited. Any further take-up is likely to be focused in the LEAs first.

been made available to subscribers outside the LEAs. Figure 2.1 shows the pricing differences and evolution of comparable plans across the two areas.

Figure 2.1 Prices of selected broadband packages available across different areas



Source: Oxera analysis of data supplied by ComReg.

The retail prices of the plans in both areas are identical; however, all of the NGB plans (other than 'Ultimate') are 8Mb bandwidth services, an improvement on all legacy-based services. In addition, it seems that a further plan in the Talktime Chatter group (24Mb 'Ultimate')—the only available NGB-enabled exchanges—had a price reduction in 2012. This activity suggests that neither price reductions nor quality adjustments are necessary competitive responses outside the LEAs.

In terms of entry prospects outside the LEAs, Oxera notes that they are limited, largely owing to the less favourable cost and scale characteristics listed above. Oxera understands that UPC's current investment plans focus on upgrading its existing network rather than expanding the footprint.²² Further plans by eircom to roll out NGA networks that could enable VUA-based entry are mostly limited to LEAs as well. In this respect, the boundaries around the LEAs could change in response to an NGA expansion (or an extended footprint of UPC and/or LLU). The prospect of future LLU unbundling in these areas is limited given that, to date, the take-up of this form of access outside the LEAs has been limited.

In light of these structural characteristics, the main competition concern in areas outside the LEAs is excessive pricing, given the limited competitive pressure exerted on eircom by alternative operators.

Furthermore, the Irish government is aware of a rural–urban divide in broadband access and has launched a National Broadband Plan. This proposes a high-speed solution offering

²² ComReg (2010), 'Market Review: Wholesale Broadband Access (Market 5)', ComReg Document 10/81, October 1st.

access speeds of up to 30Mbps.²³ The participation of the state in funding network investments means that the plan must be compliant with EU state aid rules. Securing approval on state aid, procuring a commercial partner and obtaining sufficient radio spectrum, are likely to mean that any investment and subsequent deployment in these areas are still several years away.²⁴ DSL remains the dominant form of broadband access, and wireless solutions that rely on shared and limited spectrum resources may struggle to meet demand at peak times or deal with increased usage.

2.3 Summary

In summary, Oxera's assessment finds that there are structural and competitive differences between the LEAs and areas outside the LEAs. There is evidence of customer switching, (quality-adjusted) price constraints on the incumbent and some prospect of entry in LEAs that do not occur outside the LEAs. That said, eircom has not, as far as Oxera is aware, reduced its wholesale prices to the cost floors, which suggests that the retail pricing constraints may not yet be fully effective in constraining eircom's wholesale pricing.

However, as was established in the context of the recent NGA decision, there is evidence to suggest that the retail pricing constraints are becoming increasingly effective in the context of the NGA environment. On this basis, the remedy applied in the NGA decision was an ex ante margin squeeze test. Where the assessment of competitive conditions in current generation broadband access has a similar outcome, it is logical to approach regulation in a manner consistent with that of NGA. Conceptually, the approach to regulation in LEAs may not be different from the current form of regulation applied nationally—ie, compliance with the margin squeeze test as well as a price floor. Oxera's conclusion is therefore that, within the LEA, an ex ante margin squeeze test is an appropriate remedy (with price floors); outside the LEA, the margin squeeze test may be a necessary but not a sufficient remedy, given the limited retail price competition, and hence cost-based regulation seems recommendable.

The following section discusses in further detail the choice and implementation of price control for the two areas.

²³ Department of Communications, Energy and Natural Resources (2012), 'Delivering a Connected Society - A National Broadband Plan for Ireland', policy paper, August 30th.

²⁴ Alternative forms of broadband access (fixed wireless access, satellite) may be better suited to more sparsely populated areas. These products may not be perfect substitutes for DSL-based network inputs in terms of bandwidth, latency and service availability. Furthermore, there may be other barriers to entry for these access technologies if they rely on other bottleneck resources, such as spectrum or satellite capacity.

3 Assessment of access price regulation options

3.1 Cost-based or retail-minus?

Cost-based price controls—implemented as either an ex ante price ceiling or a cost orientation obligation—consider the actual (or hypothetical) cost of providing access. With a cost-oriented control, it may be possible to achieve static efficiency (ie, the incumbent no longer receives a monopoly rent from the infrastructure) while balancing dynamic efficiency (ie, benefits from future investments). This latter aspect can be achieved by ensuring an appropriate return on capital (equal to the cost of capital) and a return of capital (through assumptions about the depreciation profile).

A retail-minus price control establishes the wholesale access price by considering what proportion of avoidable retail and other downstream costs and margins would need to be removed from the retail price in order to be left with just the wholesale components. This mimics competitive outcomes, but only if the retail prices are constrained by either competition or regulation. In these conditions, a retail-minus price control can also promote static and dynamic efficiency.

The role of competitive constraints in the retail market points to a key difference in the application of these two models. Where there is limited retail competition, a retail-minus price control is unable to prevent a vertically integrated incumbent from extracting monopoly rents. Similarly, the presence of competitive constraints may have implications for cost recovery. If competition from a cheaper platform lowers the retail price, this may imply that the value of wholesale access should also decline. It may be inappropriate (and implausible) to recover in full the value of a past investment via a cost orientation control if competition has subsequently altered the economic value of that investment.

There are also differences in the practicality and ease of implementation between the two approaches, as summarised in Table 3.1.

Table 3.1 Comparison of cost-plus and retail-minus with margin squeeze test

	Cost-plus	Retail-minus with margin squeeze test
Competition	Conceptually, if the right cost standard is used, this approach mimics the competitive outcome	A high upstream margin can prevail if downstream competition is weak. In the face of strong retail competition and price constraints from alternative platforms, this approach can avoid the need to specify the 'right' cost standard for the wholesale service
Cost recovery	If the right appraisal approach is used, cost recovery can be ensured	Not guaranteed
Incentives to invest	Possible to balance	Possible to balance
Responsiveness to market changes	Can be an issue for wholesale cost changes	Unlikely to be a major issue with respect to costs
Consistency with other wholesale inputs	Consistent principles should be applied in cost allocation methodologies to avoid over- or under-recovery of common costs Asset valuation approaches may differ depending on the replicability of the asset in question	Can be ensured as long as consistent principles applied for different wholesale inputs
Predictability	Can be ensured	Can be ensured

	Cost-plus	Retail-minus with margin squeeze test
Practicality	Allocation of common costs across the business can be problematic Forecasting costs and demand can be problematic	Treatment of bundles can be problematic

Source: Oxera.

The European Commission recommends the use of cost orientation for access pricing of wholesale broadband inputs, where possible.²⁵ It also advises that retail-minus should be used only where there are sufficient retail pricing constraints.

The two approaches to access price regulation are not necessarily inconsistent with each other. They both aim to determine the wholesale price, but from different starting assumptions. It is possible to combine the methodologies, for example by using a cost-plus calculation to verify a retail-minus price control. It may be useful to verify that a retail-minus control is appropriately specified by ensuring that the access price is no higher than one specified with a cost-plus approach, assuming that there are pricing constraints.

3.2 Current approach to modelling

Oxera has reviewed material provided by ComReg which details the preliminary approach to modelling the WBA access price nationally. Oxera notes that the European Commission's Framework Directive Article 8 requires national regulators to remove obstacles to the provision of networks, promote efficient investment and support innovation in services, among other stipulations.²⁶ As such, the modelling methodology should be fully justified and compliant with the principles set out by the Framework Directive.

In contrast to price control modelling in other contexts (eg, LLU price control), the objective here is to ensure cost orientation when other price constraints (ie, retail-minus margin squeeze obligations) do not bind. The approach is a cost-plus price control that aims to allow eircom to recover the sunk investment already made in these areas.

The modelling approach also assesses the cost orientation of prices under the assumption that eircom makes additional investment in the network outside the LEAs to meet future demand. To allow this, the methodology applies the existing network's cost structure to any incremental investment that may be required in the legacy network. The appraisal of costs for any future investment assumes historical costs as the basis, with expansion investment based on bottom-up projections and exchange capacity rules. Oxera understands that while national regulators have discretion in choosing costing methodologies, recent European Commission recommendations (eg, on NGA networks) indicate a preference for current-cost accounting (CCA).²⁷ As highlighted above, the specific context of this application of cost modelling is important, as is the need to balance the promotion of competition and efficient investment. Further discussion of specific methodologies and their economic implications is presented in section 4. Table 3.2 below presents a high-level summary of ComReg's modelling approach.

²⁵ European Commission (2012), 'Draft Commission Recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment', draft report, December 7th.

²⁶ Articles 8(2)(d) and 8(3)(a) of the Framework Directive.

²⁷ European Commission (2012), 'Commission Recommendation of XXX on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment', draft recommendation, December 7th.

Table 3.2 Summary of ComReg’s modelling assumptions for a cost orientation obligation

	ComReg approach	Underlying assumptions
Cost orientation	Cost-plus	Cost orientation required to prevent excessive pricing
Top-down/bottom-up	Hybrid	Top-down costs, but dimensioned with engineering and capacity rules based on actual network Alignment with HCA choice and/or data availability
Cost methodology	Fully allocated costs	Historical allocation of common costs may be stable or known. LLU/WLR prices taken as inputs, based on a bottom-up LRAIC+ methodology
Cost appraisal—backhaul and core elements	HCA	Replication of a regional wholesale access network of DSLAMs and backhaul unlikely. Emphasis on ensuring recovery
Cost appraisal—access inputs	LLU/WLR prices used as inputs; as per ComReg D08/01	Wholesale broadband cost stack includes LLU/WLR elements
Efficiency assumption (wholesale)	Similarly efficient operator	Entry unlikely, so emphasis is on ensuring cost recovery
Geographic differentiation	Urban and rural costs derived	Average bandwidth (ie, backhaul) and demand assumptions are drivers. (LLU/WLR prices are inputs and do not drive difference)
Network expansion	Possible via capacity/dimensioning rules	The model will need to take account of potential investments such as expansions and upgrades undertaken by eircom. HCA is a reasonable benchmark of the actual cost of such expansion

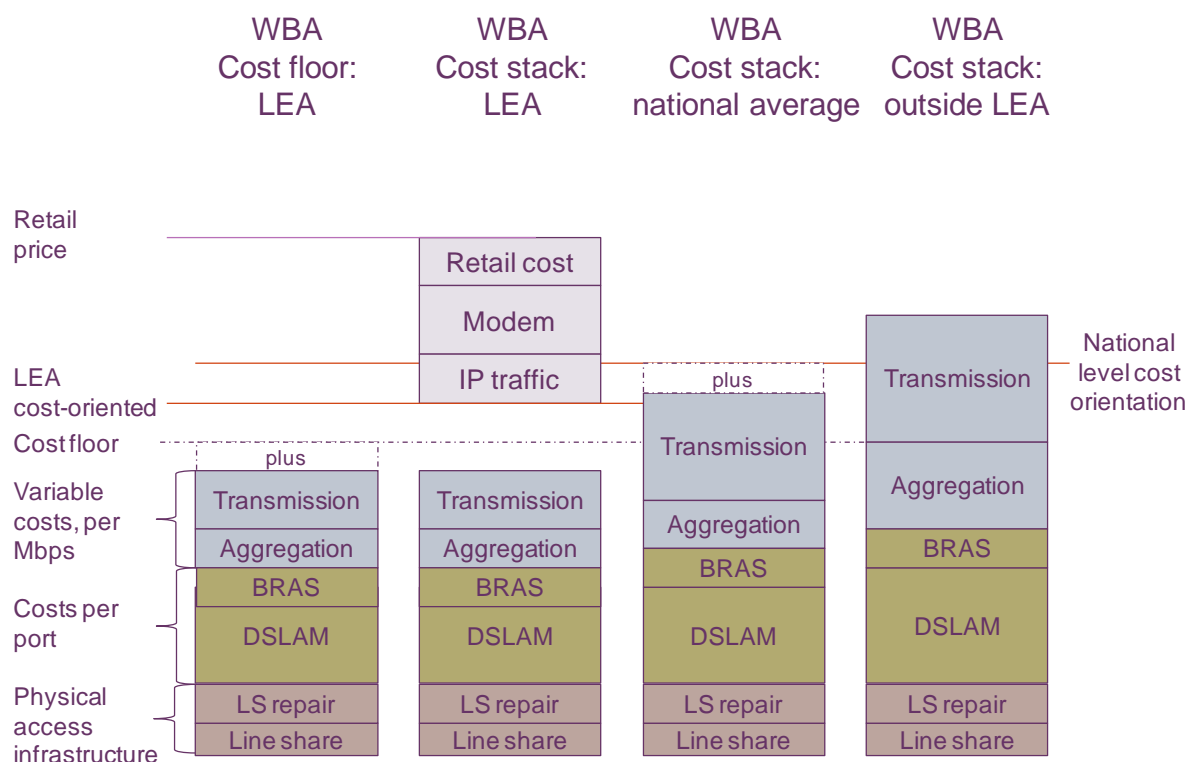
Note: LRAIC+, long-run average incremental cost plus. HCA, historical cost accounting.
Source: Oxera analysis of modelling information supplied by ComReg.

The specific modelling choices are discussed further in section 4.

3.3 Oxera assessment

ComReg has imposed price floors in urban LEAs to ensure that OAOs investing in LLU are not squeezed by eircom’s bitstream prices. For this purpose, a bottom-up model reflecting the cost of an efficient LLU operator was developed. Figure 3.1 below illustrates the cost stack of broadband access.

Figure 3.1 Illustrative cost stacks and cost-oriented prices for stand-alone WBA



Source: Oxera.

The following observations are important for determining the form of price control in different areas.

- The elements of the cost stack are the same in different areas, but the level of unit costs is naturally higher in the rural areas (outside the LEAs). If asymmetric remedies are imposed in different geographic areas, it is reasonable to take these cost differences into account when price controls are constructed. Specifically, retail competition in the LEA may press the WBA prices to a level that is reflective of costs inside the LEA. Correspondingly, eircom's prices outside the LEA should be reflective of the costs outside the LEA. The implication is that full cost recovery may require the de-averaging of prices.
- Where there is evidence of retail pricing constraints, the design of cost floors should take into account the possibility that if (and where) eircom is genuinely meeting competition, the value of the underlying assets may not be reflective of the price derived through regulatory price determinations. In other words, as was established in the Oxera report on NGA,²⁸ where prices are effectively constrained by competition, regulatory costing techniques may not be meaningful. This has implications for other regulated wholesale inputs used for broadband provision, especially if they, too, are cost-oriented. If it is the LLU component (line share) of the WBA product that is making it 'too expensive', the line share price could be reduced accordingly (although there is little scope for such reductions in the line share price, which is very low, but more in the full LLU price).
- A further complication arises if competitive constraints within the LEA reduce retail prices but to a level that is still above the cost of serving that particular area. If such a

²⁸ Oxera (2012), 'eircom's next-generation access products: Pricing principles and methodologies', report for ComReg, April 4th.

scenario were combined with a cost-oriented price control outside the LEAs, it could result in over-recovery of the total costs to provide wholesale bitstream across Ireland. eircom's current retail broadband pricing (ie, quality adjustments, some discounts) within LEAs could correspond to this situation.

Where competitive and structural conditions differ, a single price control approach applied across both area types may be ineffective, in either ensuring cost recovery or protecting consumers from excessive prices. This suggests that the approach in each type of area may need to be tailored to the specific market conditions encountered. However, treating the two area types completely independently may also not be appropriate, especially where, in one of the area types (ie, LEAs), competition constrains price to below nationally geographically averaged prices, but still leaves them significantly above the localised costs for that area type.

Oxera understands that, as currently set up, the de-averaging of the cost model between LEAs and areas outside the LEA produces costs that are significantly lower in LEAs than would be implied by the current retail price constraint in conjunction with the margin squeeze constraints. Outside the LEAs, the application of localised cost to the model is understood to result in wholesale charges that are significantly higher than current prices.

Oxera considers that if meeting competition with UPC does indeed force eircom to reduce its wholesale prices—LLU and/or WBA—regulation should not impede eircom from doing so (subject to any other restriction on prices that are relevant, such as predatory pricing). That said, ComReg's objective is to promote LLU-based competition, which requires sufficient headroom between WBA and LLU prices. The price for these inputs may need to change to accommodate this headroom.

Where the incumbent does not face competition and would otherwise charge too-high WBA prices, there are reasons to base the maximum WBA price on the relevant costs. In principle, these costs should reflect the underlying costs in the area where this form of price control applies. From an economics perspective, if the costs of providing WBA outside the LEAs are higher than the national average, eircom should be allowed to charge higher prices in that area, as long as this does not result in over-recovery of total costs. In a similar context for leased lines in the UK, Ofcom allowed the incumbent to raise its prices between 10% and 20% in areas outside a zone that was determined to have structurally different economic conditions.²⁹

There may, however, be political reasons to ensure 'fair' prices in rural areas, in which case some form of public compensation could be considered. This is a separate question and would require consideration in the context of the universal service regulations (and hence is not examined here).

3.4 Oxera's recommendation for a price control framework

The application of two independent price control methodologies to the different geographic regions is complicated by the problem of preventing over-recovery of total costs under a range of competitive constraint scenarios. Despite eircom having the flexibility to lower prices in the LEA, competitive constraints have not yet pushed WBA prices to the cost floors. There are no easy solutions to this problem. ComReg will need to exercise judgement to strike the right balance between granularity and practicality.

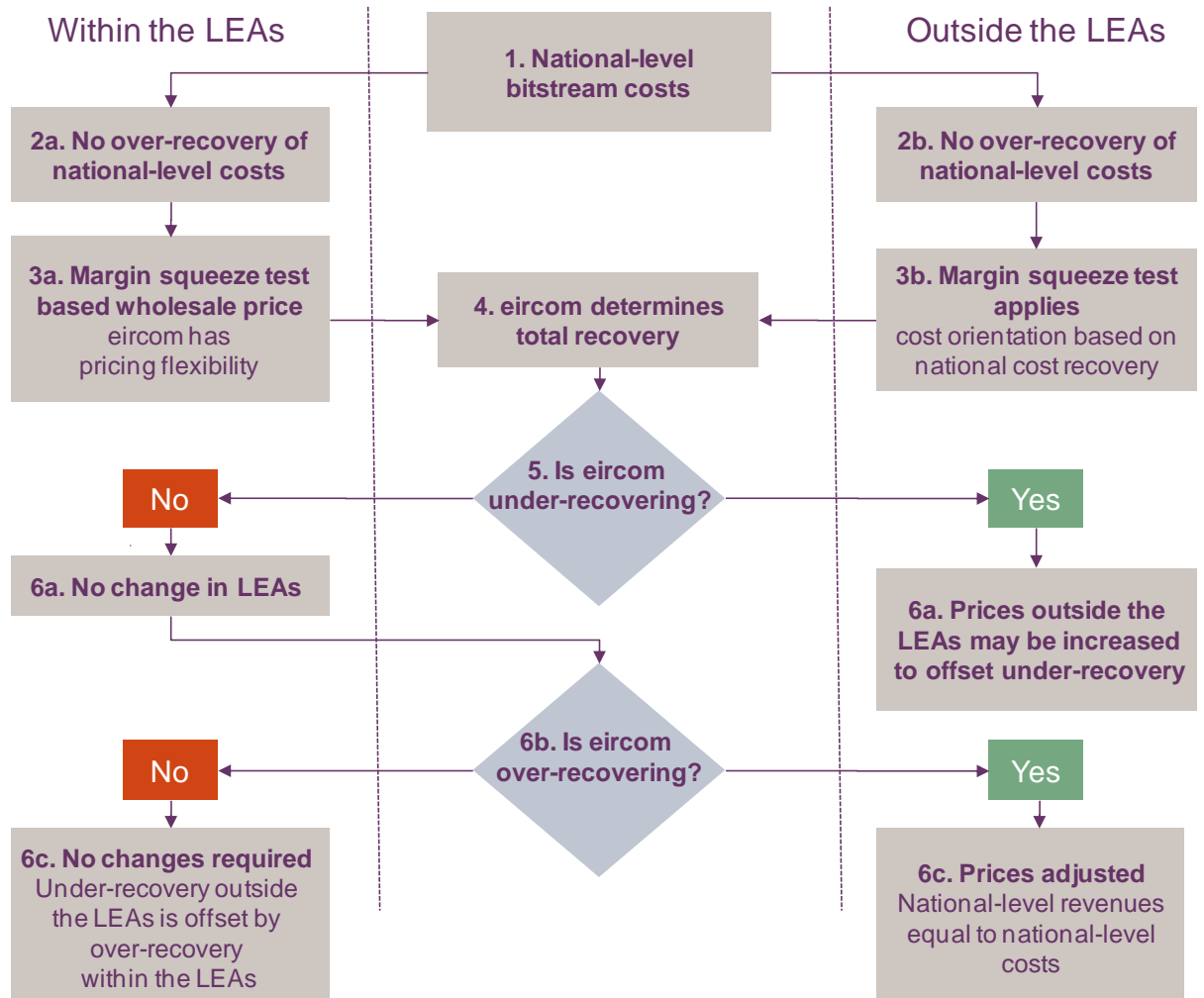
Conceptually, conditional on the price in the LEAs not being fully constrained to efficient costs in those areas, any additional recovery enabled by raising the WBA prices for areas outside the LEA above the nationally averaged costs should be fully offset by the price reduction in the LEAs. De-averaged prices should permit the incumbent to meet competition.

²⁹ Ofcom (2012), 'Leased Lines Charge Control: Annexes', Consultation document, July 5th.

However, as this does not mean that prices in the LEAs immediately fall to the level of the local costs implied by a fully competitive outcome (ie, the local costs of the incumbent), some link is still required between the prices actually charged in the LEAs and the price outside the LEAs.

In practice, this could be implemented by various methods. Figure 3.2 presents a relatively simple overall framework, the details of which can be designed to meet the particular features of the regulatory regime in Ireland.

Figure 3.2 A framework linking LEA and outside the LEA price controls



Source: Oxera.

The approach works as follows.

- 1) ComReg would model national-level wholesale bitstream costs.
- 2) eircom's total national-level bitstream revenues would not be allowed to exceed the modelled total national-level costs (taking into account the costs and revenues inside and outside the LEA).
- 3) Within the LEAs, maximum (wholesale) prices are to be determined using ex ante margin squeeze controls and with cost floors based on the costs of the LEA increment. The margin squeeze test applies also outside the LEAs (monitored separately). The prices outside the LEA should be such that eircom does not under- or over-recover its costs on a national level.

- 4) eircom's overall cost recovery would therefore depend on the extent to which it:
 - a) over-recovers its costs in the LEAs (ie, the extent to which the retail-minus does not result in local 'cost-based' prices); and
 - b) under-recovers outside the LEAs (ie, its costs outside the LEA increment are higher than the revenues generated in that increment).
- 5) The onus would be on eircom to demonstrate periodically whether it would significantly under-recover its total costs. If there were evidence of such an under-recovery (which would depend on how effective the price constraints are within the LEAs), eircom would be allowed to charge correspondingly higher prices outside the LEAs.
- 6) The appropriate basis for any increase in WBA prices outside the LEAs could be determined at the time of application. The principle that should guide ComReg's assessment is that eircom should not over-recover the total costs of the WBA network at a national level. Furthermore, it follows that eircom's prices outside the LEA would not be allowed to exceed the relevant costs in that area.

Oxera understands that, on the whole, eircom does not at present under- or over-recover its national-level bitstream costs. As noted above, eircom's prices inside the LEAs are above the incremental costs of providing bitstream inside the LEAs, and this mark-up is sufficient to offset the under-recovery of costs outside the LEAs. Therefore, the current prices are in line with the above framework, and eircom's current prices outside the LEA are consistent with national-level cost orientation. The costs and revenues may change over time (eg, the pricing constraint inside the LEAs may become more effective), in which case eircom's overall cost recovery would be secured, as described in the approach presented above.

A more complex approach would be to regulate the prices outside the LEAs formally by specific reference to the 'over-recovery' in the LEAs relative to the local cost base. This would avoid putting the onus on eircom to demonstrate that, by responding to local competition in relatively low-cost areas, it is significantly undermining its overall cost recovery. A more deterministic approach such as this would require more regulatory input. It could also create a perverse incentive to behave aggressively within the LEAs, as any price reduction in these areas would be automatically compensated by increases in prices outside the LEAs. Further complication could be added to avoid this incentive, but this would further increase the regulatory control as a result of competition in the LEAs, which might not be a good use of scarce regulatory capacity.

The next section sets out the economic principles for determining how the price controls should be derived.

4 Assessment of approaches to cost-oriented price control

The various approaches to specifying a cost-oriented price control are fundamentally asking the same three questions:

- 1) what cost items are included?
- 2) how are costs appraised?
- 3) what model is used to arrive at the unit cost?

This section of the report considers the economic reasoning applicable to the options available for each of these three components, evaluated in the context of national WBA pricing in Ireland and in light of the approach proposed by ComReg's preliminary model.

4.1 Cost methodology

In the context of a price control, the cost methodology determines which costs are included and how this is transformed into a unit price. Under competitive outcomes, prices should approach their marginal costs.³⁰ However, marginal costs do not consider the upfront, sunk costs (such as ducts, exchanges, backhaul networks) that are required to deliver WBA services. The options for cost methodologies for the purposes of a price control typically involve the concept of a long-run increment (LRIC): 'long-run' means a long enough time period over which all costs are variable—ie, that the costs include upfront investments and the increment refers to all the costs incurred by the incumbent to provide WBA, as distinct from the other products and services that use the same inputs.

LRIC includes the direct fixed, sunk CAPEX and OPEX costs relevant to the increment of providing WBA (backhaul, duct usage) over the lifetime of the asset. This does not include recovery for common or shared costs (such as overheads, billing systems) for facilities that are also used by other divisions of the incumbent. Note that a LRIC method then directly derives a marginal cost of the service increment. This cost is typically very small if the increment is small: once the network is dimensioned, the marginal cost of an extra 1Mbps of traffic passed is small. The economic rationale for applying this to a telecoms setting depends on whether there are reasons to suggest that a particular service should be the one that does not need to recover any common costs, or should be the one that recovers only the marginal costs of an increase in capacity of a network. This depends on the nature of the product in question and factors such as demand elasticities across services ('Ramsey principles' implying an inverse relationship between common cost recovery and price elasticity), or the specific economic characteristics and regulatory objectives surrounding, for example, interconnection markets.³¹

Long-run average incremental cost (LRAIC) is the same as LRIC, but derives an average incremental cost per unit of traffic (ie, a cost per megabit of bandwidth delivered) over the totality of the output of the relevant service. However, it still includes only those costs that are directly associated with the WBA increment. The economic argument for applying this method would be that the WBA network and business do not rely on other common facilities (ie, overheads) within the incumbent's corporate structure. This might be appropriate if the

³⁰ In this context, marginal cost refers to the cost required to deliver one additional unit of output.

³¹ For example, the European Commission and the UK regulator, Ofcom, have considered LRIC as the appropriate cost standard for mobile termination. Ofcom (2011), 'Wholesale mobile voice call termination – Statement', March 15th.

cost control is applied to an operator that *only* delivers WBA network inputs, but it does not apply to eircom, which delivers other services such as voice and leased lines.

Long-run average incremental 'plus' (LRAIC+) includes all costs of LRAIC plus a mark-up to allow for the recovery of (some proportion of) common costs that are not directly attributable to any particular service. The regulatory rationale for this method is that WBA does incur costs that are common to the business and that a proportion of these costs should be attributed to, and recovered from, the provision of the WBA service in order for the regulated company to recover (but not over-recover) its costs overall. From a theoretical economic perspective, LRAIC+ can lead to allocative efficiency, insofar as the mark-up for common costs is consistent with Ramsey pricing principles (ie, reflective of the price elasticity of demand for the regulated service in question).

Fully allocated cost (FAC) modelling is the same as LRAIC+ but divides *all* the common costs between business units, such that they sum to the total of existing costs. The economic reasoning for using this approach would be that the contribution of common costs between business units within the incumbent is known or expected to be stable over the lifetime of the price control period. This may not be appropriate for eircom, since common costs from other units may change (a product launch such as NGA may increase the contribution to common costs from elsewhere over time).

Oxera's understanding of ComReg's preliminary model is that the cost methodology uses a similarly efficient national broadband network as the increment. The cost stack item that covers the duct and copper access network assets is a fixed input based on the current wholesale line share cost, and this is modelled separately using a bottom-up LRAIC approach. The common costs are derived from historical (actual) costs, and Oxera understands that these are apportioned using a FAC approach. This may capture some notion of the WBA unit's 'actual' common cost allocation at the time, since the measure uses a historical approach. However, should common cost allocation change such that WBA's share of common costs also changes, this could result in over- or under-recovery. Over-recovery of common costs may be more likely if there is a significant shift away from legacy services. Furthermore, there may be inconsistencies with this choice if other inputs to the price control are derived from a different cost standard. In this case, the LLU prices used as inputs to the model are derived from a bottom-up LRAIC+ model. It would seem advisable to ensure a consistent treatment of common costs across all elements used in the WBA cost stack in order to prevent over- or under-recovery of shared costs.³²

4.2 Cost appraisal

4.2.1 Methodological choices

In the context of a cost-oriented price control, cost appraisal considers the timeliness of the valuation of any assets required as inputs to the wholesale product, and how (if) this valuation is updated over time. There are two broad choices: HCA and CCA.

HCA uses the book value of the incumbent's network investment. This choice makes a direct link to the costs actually incurred in delivering the regulated asset. Economically, this method reduces the chance of over- or under-recovery, as the value in the asset base is linked to what the incumbent has actually spent, and is not updated over time. In the context of a WBA pricing control, this may be desirable since it provides an incentive to invest when the prospects of competing investments from entrants are limited.

CCA values the asset at the current market value, by reflecting what a hypothetical entrant would incur when investing in a modern equivalent asset. The economic rationale for this approach is that, by linking the value of the assets to the cost of a newly deployed network, it promotes efficient investment incentives. A potential entrant is charged an access price that

³² Oxera has not reviewed the LLU cost model to assess the treatment of common costs.

is, in principle, similar to what it might pay to build its own network using 'new' inputs, and thus has a finely balanced 'build-or-buy' decision based on economic efficiency criteria. In the context of legacy WBA services, this construct may not be particularly relevant if there is limited prospect of actual new investment by entrants. In this model, the price being set is a national average price, while build-or-buy signals depend on the actual prices that are paid. Where other mechanisms (such as a retail-minus margin squeeze test) restrain prices, it is this price that underpins investment decisions. The WBA price control will influence investment incentives outside the LEA only when it is binding.

In addition, under CCA, the incumbent may face a capital loss or may over-recover its costs.³³ If the market value or replacement cost of a network falls over time due to technology changes, its asset is revalued downwards. If this future revaluation has not been anticipated in the depreciation schedule, total costs may not be recovered over the lifetime of the asset. On the other hand, if the asset life is longer than anticipated, adjusting the price now to the CCA value may result in over-recovery of costs over the asset's actual lifetime.

4.2.2 Asset replicability

The key criterion to value regulated assets builds on the principles of **asset replicability**. In other words, if (and only if) there is no prospect of a competitor replicating the service in question (or bypassing the bottleneck with an alternative platform), it is reasonable to base the regulatory pricing on historical costs.³⁴ Put another way, there may be limited rationale to allow the incumbent to base its prices of non-replicable infrastructure on current replacement costs.

In the context of areas outside the LEAs, the nascent National Broadband Plan might be considered an alternative wholesale access platform, should it allow entrants to bypass eircom's legacy network.³⁵ Such a possibility may support the choice of CCA on the basis that replication is possible. Absent the substitutability issues noted in section 2, there are still barriers to entry due to the lack of availability of appropriate spectrum. That significant entry has not yet occurred, and prospective investment may be feasible only with state funding, suggests that replication is not currently possible on purely commercial terms.

The WBA cost stack may include assets with long economic lives (eg, ducts) as well as assets with a relatively short economic life (eg, electronic equipment such as DSLAMs). Where the asset lives are short (for instance, if equipment needs regular upgrades), the difference between an HCA and CCA appraisal of costs at any point in time is likely to be relatively small. Moreover, if the assets relevant to the cost appraisal (eg, DSLAM equipment) have short economic lives and the costs of new equipment are falling, HCA appraisal towards the end of the asset life might result in higher valuations (and hence charges) than CCA.

More generally, whether HCA would result in higher or lower prices than CCA depends on two factors. First, if asset prices have increased (or fallen) then CCA will result in higher (or lower) prices than HCA, all else being equal. The second factor is whether the cost methodology (eg, bottom-up LRIC+) makes adjustments for fully depreciated assets. Where it is assumed that a fully depreciated asset continues to be used, a bottom-up LRIC+ approach with CCA would result in higher prices than HCA, all else being equal.

³³ Some regulators apply a version of CCA that captures the change in asset value that occurs at revaluations and adds the gain (or loss) to the depreciation charge. This is known as the financial capital maintenance (FCA) approach and, in net present value (NPV) terms, it does not result in under- or over-recovery, so long as the approach is applied consistently over an asset's lifetime.

³⁴ See Charles River Associates (2012), 'Costing methodologies and incentives to invest in fibre', report for DG Information Society and Media, July.

³⁵ For this to occur, entrants would need to be able to obtain wholesale access inputs from the National Broadband Plan and combine this with aggregation and backhaul links to form a regional broadband network.

Hence, it is not immediately obvious that HCA valuation would necessarily produce lower values than a CCA valuation. Furthermore, it is possible that asset prices of electronic equipment may actually be decreasing. To assess, definitively, which appraisal method results in higher prices in the context of a WBA price control would require more detailed analysis considering the evolution of asset prices, the average age and lifespan of assets, as well as the treatment of fully depreciated assets in the case of CCA valuations.

The method proposed in ComReg's preliminary model starts with HCA and applies this base valuation for any proposed upgrades with unit cost forecasts. Oxera understands that depreciation costs in ComReg's model are largely driven by the asset lives of the BRAS and DSLAM electronic equipment. The approach does not explicitly model the least replicable parts of the network (ie, ducts), so this is essentially imported from the bottom-up LRIC+ model that is used to derive LLU prices. The bitstream assets that are appraised with HCA form a relatively small proportion of the overall broadband value chain, so it is not clear that this choice would dampen investment incentives.³⁶ However, the choice would allow eircom a fair return on its incurred investment, without risk of over- or under-recovery. On this basis, the choice of appraisal seems justified in respect of ComReg's regulatory objectives and proportionate in its application to the relevant assets.

4.3 Appropriate cost model basis

The cost model basis considers what level of aggregation in cost data to use in order to develop the model. A top-down cost model uses the high-level accounting information of the incumbent to separate out the relevant costs down to a unit cost. As this typically requires less data, it may make it easier for the regulator to develop a price control independently of the incumbent. Nevertheless, there may be economic arguments against this, since the high-level accounting information may include inefficient costs incurred by the incumbent.

A bottom-up model uses an engineering model of the network elements required in order to build up the total costs of providing the access. This is a data-intensive process of dimensioning the network assets as though the network was being built (either as it stands, or with improvements to the topology). This approach is associated with models aimed at promoting efficient entry, since the cost model can consider how a network would be built today, rather than modelling the actual network built.

In the context of the WBA price control, there is no clear economic argument in favour of one model over the other. While a bottom-up approach may be used for forward-looking (ie, CCA) approaches, it could still be applied to a legacy network as it stands. Rather, it may be that data availability determines the approach chosen. Oxera understands that ComReg's preliminary approach is a hybrid one that uses top-down costs based on eircom's actual investment (ie, HCA) to allocate costs at the exchange level, and for forecasting future costs that may arise from upgrades or changes in subscriber numbers.

The motivation for this approach is to ensure recovery of the residual value of the legacy assets in situations where WBA and LLU remain important forms of wholesale access, such as outside the LEA areas. It assumes that both the prospect of entry and complete migration to other forms of access (eg, NGA) are limited. This approach seems appropriate if there is a requirement to model some level of network upgrade or reconfiguration in the WBA network, without switching to a model that hypothetically starts from scratch in these areas.

³⁶ For example, the current wholesale price of the cheapest Ethernet based 1024kB service is €19, less than €1 increment over the SB-WLR rental. See eircom (2013), 'Bitstream Service Price List Version 7.18a', wholesale bitstream reference offer, May 17th.

4.4 Margin squeeze test design (inside the LEAs)

The application of principles and methodologies for the purposes of price regulation should be consistent with respect to the approaches made for other broadband products. This is not to presuppose the outcome of a particular assessment, but rather to apply a coherent framework towards regulation across the sector. This is important in that it provides a measure of regulatory certainty and consistency, and thus assists the long-term incentives to invest.

Oxera's recommendation is therefore to apply a margin squeeze test in a consistent way for both current and next generation wholesale products. Table 4.1 summarises the assumptions and recommended approach.

Table 4.1 Retail to wholesale margin squeeze test assumptions

Assumption	Recommended approach
Assumption on efficiency	Similarly or reasonably efficient operator, but equally efficient operator as soon as entrants have gained scale, or potentially a glidepath
Level of aggregation	Portfolio
Costs	Forward-looking LRAIC+; LRAIC appropriate when entrants can provide a similar range of services as eircom (economies of scope)
Period-by-period or forward-looking	Forward-looking

Source: Oxera.

5 Impact of the proposed price control on competition and investment

Price controls as a form of regulation often seek to balance static efficiency, such as the delivery of competitive outcomes, and dynamic efficiency, such as ensuring that there are sufficient incentives to invest in the future. This section reviews the high-level principles that influence the balance of this trade-off implicit in the proposed form of regulation.

5.1 Impact of the proposed price control on national competition

5.1.1 Within the LEAs, ex ante margin squeeze test / cost floors

eircom has not been, and, under the proposed approach, would not be forced to reduce its WBA prices inside the LEAs to the costs of providing WBA in each area. Insofar as the wholesale prices are too high (relative to the relevant costs), OAOs' ability to compete is constrained to some extent where UPC is present. The proposed price control will allow eircom to meet competition at the retail level within the LEAs. In the current situation, where eircom has the flexibility to reduce retail prices but has not done so to the extent that it could have, the regulatory clarity surrounding the de-averaging of wholesale prices may remove an incremental barrier to competition. There is evidence to suggest that eircom faces competition inside the LEAs and might reflect this increasingly in its wholesale prices going forward. Therefore, the risk of too-high wholesale prices inside the LEAs may be reduced, and, for operators reliant on WBA as an input, the proposed price control enables lower wholesale charges, which can therefore improve their ability to compete in the retail market.

Compliance with a margin squeeze test (or retail minus) should protect operators that rely on LLU and line share wholesale inputs. This is particularly important in the LEAs, where most unbundling activity takes place. Insofar as ComReg aims to promote LLU-based broadband competition, it is necessary to ensure sufficient economic headroom between WBA and LLU, which can be achieved through cost floors that reflect the LEA-specific costs. The principles applied here are compatible with the recent decision in NGA markets, where competitive conditions also differed between the LEAs and areas outside the LEAs.³⁷ In that context, competition is protected by ensuring sufficient economic headroom between VUA and Bitstream plus, the NGA equivalents of LLU and WBA respectively.

5.1.2 Outside the LEAs

Under the proposed price control framework, the maximum price that eircom can charge for WBA services outside the LEAs should be such that eircom does not over- or under-recover its overall costs (national-level revenues should not exceed the corresponding costs, and the revenues outside the LEA should not exceed the costs in that area). This would be a departure from the retail-minus regulation currently applied. The precise change in price depends on the specific modelling choices.

To the extent that retail price constraints are not binding in these areas, a form of cost orientation will support efficient entry by operators reliant on WBA inputs. Without regulation, the prospects for increased competition in legacy services outside the LEAs are limited, and therefore the impact on competition may be minimal. Note that, under the current form of regulation, eircom has the flexibility to increase prices outside the LEAs, but has not chosen to do so. In addition, consumers' willingness to pay for broadband may limit the extent to which eircom can raise prices. The proposed regulation will protect consumers from

³⁷ ComReg (2013), 'Next Generation Access ('NGA'): Remedies for Next Generation Access Markets', ComReg Decision D03/13, January 31st.

excessive pricing and preserve WBA as a form of broadband competition in these areas. The form of price control should permit eircom to recover its investment where this is economically rational, and hence provide regulatory certainty to current and potential entrants, as well as to the incumbent.

The proposed form of regulation allows ComReg to adjust the wholesale WBA price outside the LEAs in response to competitive conditions within the LEAs. This linking could imply a negative impact on competition outside the LEAs if wholesale prices increase. Note that the starting point for the proposed cost orientation is a national-level cost model, and the prices in certain rural areas may be below the corresponding localised costs. Therefore, so long as wholesale prices do not exceed localised costs, competition outside the LEAs does not appear to be immediately threatened. Any increases to prices outside the LEAs should reflect this caveat.

5.2 Impact of the proposed price control on investment

5.2.1 Within the LEAs, retail-minus price control

New investment in legacy networks within the LEAs is likely to be limited, given the nature of competition from competing platforms and eircom's focus on NGA products in this area. The proposed margin squeeze test price control implies that the incumbent may not recover all of its investment if competition pushes prices below the (historical) costs actually incurred. This may not have an impact on additional investment, as cost recovery does not need to be guaranteed where competitive pressures exist.³⁸

Consistency of regulation across wholesale products may also be important to investment decisions. Where the approach is inconsistent and results in legacy prices that are higher (quality-adjusted) than those of NGA products, distortions in investments could arise. As the principles of the proposed price control are consistent with the recent NGA decision, this should provide signals for efficient investment in both types of infrastructure.

5.2.2 Outside the LEAs

The impact on investment outside the LEAs will depend on the specific modelling choices and outcome of the cost-oriented price control. The starting price outside the LEA—ie, the current price level—will recover the historical costs of operating inside and outside the LEAs. The proposed approach is flexible to accommodate changes in price and cost across the two areas, and allows for *total* network costs to be recovered. Therefore, eircom's investments incentives are unlikely to be affected.

A potential consideration for ComReg is how to incorporate into this framework any network expansions outside the LEAs (such as upgrades). It could consider such investment plans from eircom in a similar way to proposed price control rises outside the LEAs; again, the proposed approach does allow for full cost recovery over time, and hence the recoupment of new investments.

³⁸ If the price falls below cost (eg, LRAIC+) due to competitive pressures, this implies that the market value of the underlying assets is below that measure. From a purely economic viewpoint, there is no reason to ensure that incurred or LRAIC+ costs are recovered. Where there are shared assets that face different competitive constraints, there may be pragmatic reasons to ensure total recovery.

6 Conclusions

This report has presented Oxera's assessment on the appropriate methodology for setting current generation bitstream wholesale prices. The assessment has built on economic principles with the aim of considering what specific form of price control would be appropriate, given the economic circumstances across different parts of Ireland. The geographical differences in the degree of competition are noticeable between the LEAs and outside the LEAs, as defined in the context of ComReg's bundles regulation.

In summary, Oxera has recommended the following principles.

- As there is evidence that retail pricing constraints are increasingly prevalent in the LEAs, it appears reasonable to regulate wholesale access prices on the basis of an ex ante margin squeeze test, which is ComReg's current practice throughout the country. To ensure that there is a sufficient economic headroom between the WBA and LLU prices, ComReg has already put in place cost floors. In principle, these should be reflective of the costs within the LEA. Further, ComReg has recently decided that NGA broadband products should be regulated on the basis of a margin squeeze test; the regulatory principles applied in the context of current and next generation broadband should be consistent.
- Outside the LEAs, there are no reasons to suggest that eircom's wholesale prices would be at a competitive level in the absence of regulation and, therefore, the imposition of a cost orientation obligation seems appropriate. As discussed in this report, ComReg's design of the specific cost basis according to which prices are regulated depends on the nature of the relevant WBA assets, as well as the weight given to the objectives of cost recovery and efficient price signals.

Further to discussing and recommending pricing principles, Oxera has presented a proposition for a practical approach to regulate WBA going forward. Importantly, eircom has not thus far reduced its wholesale prices to the level of the cost floors. In other words, while there is evidence that suggests that pricing constraints may become more effective in the future, eircom is likely to be currently over-recovering its costs inside the (more competitive) LEAs. Given this, Oxera has recommended an approach whereby eircom's WBA pricing would be constrained in all areas by its national costs. Insofar as eircom is under-recovering its costs overall due to the WBA prices being low relative to the costs in rural areas (ie, outside the LEAs), eircom would be allowed to increase its prices in rural areas to break even overall. The onus would be on eircom to demonstrate that such a cost under-recovery is taking place, given the returns that it is possibly generating inside the LEAs. However, eircom's prices outside the LEA should not exceed the relevant costs in that area.

It is considered that this approach strikes the right balance between practicality and granularity, and is applicable, given the regulations imposed on adjacent market segments (in particular, NGA and bundles). The proposed approach would not jeopardise eircom's cost recovery (and therefore investments) nor its ability to meet competition inside the LEAs.

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