



COMPETITION
ECONOMISTS
GROUP

Promoting competition: review of Vogelsang

Jason Ockerby
Hayden Green

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1 Introduction

1. Professor Vogelsang was asked by the Commerce Commission (the Commission) to consider whether an increase in the unbundled copper local loop service (UCLL) price would promote competition for the long-term benefit of end-users (LTBEU). Understanding the answer to this question may be helpful to the Commission in exercising its discretion on TSLRIC modelling choices.¹ We have been asked by Chorus to review the report² prepared by Professor Vogelsang on this matter. Specifically, we have been asked to examine and comment from an economic perspective on the analysis undertaken by Professor Vogelsang, and the conclusions drawn in light of that analysis.

1.1 Professor Vogelsang's conclusions

2. Professor Vogelsang arrives at two principal conclusions in his report. In reaching his first conclusion, Professor Vogelsang restricts his assessment to the static effects on consumer welfare for end-users. Professor Vogelsang looks at the welfare effects on those who continue to purchase copper services (and therefore pay a higher price) and those who switch to substitute services such as wireless (and who also pay a higher price)³. Following a detailed exposition of these price effects, Professor Vogelsang concludes that:⁴

... overall the price increase of the UCLL proportion of the UBA aggregate does not lead to an increase in competition for the LTBEU.

3. This conclusion appears to be based predominantly – if not exclusively – on the fact that consumer welfare will be lower following these price increases, relative to what it would otherwise have been had the prices not changed. As we explain below, we do not consider this type of price-effects analysis to be a sufficient basis to reach any robust findings about whether a price increase promotes competition for the LTBEU, yet it forms the basis of Professor Vogelsang's first conclusion.
4. Professor Vogelsang then explains that, in addition to these direct price effects, a price increase for the UCLL will also indirectly affect consumer welfare by giving

¹ The Commission is required to set UCLL prices in this process based on the TSLRIC costs. However, to the extent that it has discretion in choosing the parameters of a TSLRIC model, section 18 provides that the objective of regulation is to "... promote competition for the long-term benefit of end-users within New Zealand".

² Professor Vogelsang (2014) *The effects of the UCLL contribution to the UBA aggregate on competition for the long-term benefit of end-users in New Zealand telecommunications markets*, July 2, 2014 version (hereafter: "Vogelsang report").

³ But may or may not experience higher quality of service relative to copper.

⁴ Vogelsang report, paragraph 4.

rise to externalities. In particular, Professor Vogelsang considers that the expansion of market share on the UFB and other high-speed capable networks resulting from a higher UCLL price will lead to “innovation effects” that will be of benefit to end-users. On this basis, Professor Vogelsang reaches his second conclusion, i.e., that there may be some welfare gains from (modestly) higher UCLL price:⁵

Overall, in my view, the positive network externality effects of a UCLL price increase for UFB subscribers are likely to exceed the negative externalities imposed on remaining subscribers of the copper-based services.

5. In other words, Professor Vogelsang identifies some static “price effects” that he concludes *do not* promote competition for the LTBEU and other “broader indirect effects” that he concludes *do* promote that objective. Professor Vogelsang does not attempt to reconcile these findings and provide an *overall* conclusion as to whether a price increase for UCLL would promote competition for the LTBEU. However, the absence of any clear recommendation is ultimately only of secondary importance.
6. As we summarise below, the more immediate problem is the analytical framework that Professor Vogelsang employs to arrive at his first conclusion (we broadly concur with the analysis of externalities that underpins his second conclusion). In our opinion, a framework that focuses only on the near-term effects of a price increase on consumer welfare does not properly address the question of what it means to “promote competition for the LTBEU”. Its application therefore is not capable of providing a robust answer to the Commission’s question.

1.2 Summary of review of Professor Vogelsang’s analysis

7. To arrive at his first conclusion, Professor Vogelsang states that, because the UCLL price increase will largely flow through to the UBA aggregate, the price increase for end-users itself represents a *competitive detriment* that is not for the LTBEU. He also states that, because the increase in the UBA aggregate may allow (smaller) consequential price rises for other substitutable services, end-users are harmed and this also is inconsistent with promoting competition. We disagree.

1.2.1 Professor Vogelsang’s interpretation of the statutory objective

8. Much of Professor Vogelsang’s report comprises a detailed description of what *might happen* if the UCLL price increased. At the end of that exposition, Professor Vogelsang concludes that, because end-users of copper and substitute services are likely to face higher prices (which may not be off-set by higher quality), that is not in their long-term interest. However, Professor Vogelsang does not link these price

⁵ Vogelsang report, paragraph 5.

effects to any other competitive impacts that, in our view, are required in assessing whether the UCLL price increase would “promote competition”.

9. Instead, Professor Vogelsang assumes that anything that leads to higher prices for consumers will, all other things being equal, not “promote competition for the LTBEU”. In our opinion, that does not represent an economically robust interpretation of the relevant objective. To see why, one need only recognise that Professor Vogelsang’s framework would *never* conclude that a higher access price would promote competition for the LTBEU.
10. This is because just about any allowed price rise for a regulated service will result in higher prices for end-users.⁶ This is after all, the reason that these services are regulated. For example, even if the current price of the UCLL was \$0, Professor Vogelsang’s analysis would conclude that an increase in that price above zero was not in the LTBEU. It would do so despite the fact that a zero price would clearly undermine the provision of the service and would jeopardise the entire surplus end-users enjoy from consuming the final products.
11. To determine whether a price increase will promote competition for the LTBEU it is therefore necessary to look beyond a narrow assessment of consumer welfare before and after the price increase. For example, a price increase might spark additional rivalry amongst firms that was considered to be highly desirable – e.g., entry or expansion by firms with differentiated offerings – and therefore fit perfectly with the statutory objective of promoting competition. However, such entry may introduce inefficiencies associated with the duplication of fixed costs of providing services and may therefore be socially undesirable. Professor Vogelsang’s framework does not consider or balance these factors.
12. Within the framework set out in Professor Vogelsang’s report, it seems that the only circumstances in which he would conclude that a UCLL price increase *could* promotion of competition for the LTBEU would be the following:
 - if the price rise for the UCLL is not reflected in the UBA aggregate (it is absorbed by RSPs), which is not possible if the retail market is competitive, i.e., there would be at least some pass-through; or
 - if the element of the UCLL price rise that is reflected for the UBA aggregate is defeated by substitution other networks (wireless, etc.), which is implausible considering that UCLL is a regulated service; or
 - if the final prices rises for end-users (either using the UCLL as an input or in competition with services using the UCLL) are offset by quality of service gains that are driven by the UCLL price increase.

⁶ Whilst this higher price may lead them to substitute to services that are of higher quality, as noted by Professor Vogelsang, this would not be a net benefit to them because, if it was, they would have already switched (by revealed preference).

13. It is only in these circumstances that an increase in the UCLL price would not reduce consumer welfare in the near-term - and they are, for all intents and purposes, inconceivable. As Professor Vogelsang's 'reveal preference' argument shows, if the end-users valued the higher quality of service they would already be taking the service. In other words, Professor Vogelsang has interpreted the statutory objective in such a way that a price increase can *never* be consistent with it (subject to the offsetting effects of externalities). The Commission would therefore *always* need to apply its discretion to reduce prices.
14. This conclusion is plainly counterintuitive. In our opinion, Professor Vogelsang's interpretation of the statutory objective – and his attendant analytical framework – is unduly narrow, unorthodox and cannot be used to produce a reliable answer to the Commission's question. In the following section we summarise a more conventional interpretation of what it means to "promote competition" and provide an overview of why a higher UCLL price may well advance that objective.

1.2.2 The appropriate interpretation of the objective

15. In our view, the question of whether a price increase, or any action for that matter, would promote competition for the LTBEU is one answered by understanding the effect of the price rise *on the conditions and environment of rivalry amongst firms*, relative to the situation where the price was not increased. Importantly, this assessment must necessarily:
 - include a consideration of the effect the price rise will have on firms' abilities and incentives to engage in desirable competitive conduct, e.g., minimise costs, invest in new products; and
 - be cognisant of the fact that not all forms of incremental competitive activity are necessarily for the LTBEU, e.g., if they stem from the needless and wasteful duplication of fixed costs without offsetting spill-over benefits.
16. In terms of the latter, in the presence of fixed entry costs, competition will be in the LTBEU when the benefits of additional rivalry that spill-over to end-users (e.g., the innovation, cost reductions reflected in prices and product differentiation) exceed the socially wasteful inefficiencies associated with duplicating fixed costs.⁷
17. As we noted above, Professor Vogelsang provides an expansive and, in our view, relatively uncontroversial description of what is likely to happen if the UCLL price increased. Namely, a price rise for the UCLL⁸ will be likely to:

⁷ See: Mankiw and Whinston (1986), "Free Entry and Social Inefficiency", *The RAND Journal of Economics*, Vol. 17, No. 1 (Spring).

⁸ Assuming no change in the UBA increment.

- lead to a higher price for the UBA aggregate – the extent of pass-through will depend on the extent of competition between retail service providers (RSPs) on the copper network, but is likely to be significant;⁹ and
 - the increase in the price of the UBA aggregate will, in turn, be likely to result in higher prices for substitutable services (such as cable) and a shift in market share away from copper.¹⁰
18. However, the relevant question is *not* what effect these price changes will have on near-term consumer welfare (as Professor Vogelsang assumes) but, rather, the effect they will have *on competition*. As noted above, this necessitates an assessment of the extent to which the price increase will affect firms’ abilities and incentives to engage in desirable competitive conduct or rivalry relative to the state of the world in which the price remains unchanged.
19. In our opinion, an increase in the UCLL price could potentially have some negative effects for competition between the RSPs on the copper network and other networks. However, any such effects are likely to be more than offset by two key factors that suggest that a higher UCLL price would indeed promote the relevant statutory objective; namely:
- a higher UCLL price would be likely to make Telecom less inclined to widely unbundle which, if it was to occur, would be likely to result in the inefficient duplication of infrastructure without sufficient offsetting benefits in terms of improved product differentiation or market growth; and
 - the fact that higher UCLL prices can be expected to hasten migration to UFB – a platform upon which scale advantages are less important to RSPs relative to the copper network, and on which competition may therefore be less susceptible to distortions through differences in the size of operators.
20. In addition, in order to understand whether an increase in the price of the UCLL would promote competition for the LTBEU, some assessment would need to be made of whether the current price of the UCLL reflects the long-run costs of providing the service.
21. Finally, as noted above, Professor Vogelsang identifies a number of externalities that appear potentially relevant to the Commission’s considerations. These include positive externalities from new applications that directly benefit UFB subscribers. A higher price for the UCLL will stimulate such developments. Professor Vogelsang highlights the example where improved network capability allows increased interactions between network users that would not have been possible without that capability. The existence of these network externalities bolsters the case for a higher UCLL price, other things being equal.

⁹ Vogelsang report, paragraph 17.

¹⁰ Vogelsang report, paragraphs 20-22.



1.3 Structure of this report

22. The remainder of this report is structured as follows:

- **section two** considers what it means to promote competition for the long term benefit of end-users; and
- **section three** assesses the likely effects on competition – and the LTBEU – from a higher UCLL price.

2 What it means to promote competition

23. Professor Vogelsang has been asked by the Commission:

“... would an increase in the UCLL regulated price promote competition between networks for the long-term benefit of end-users (LTBEU)?”

24. The apparent context of this question is that, to the extent that the Commission might have discretion in setting the UCLL price, the Commission may have regard to the legislated purpose of regulation (described in Section 18), which is to promote competition for the LTBEU. This section discusses what it means to “promote competition for the long term benefit of end-users” in the context of a price increase for a regulated service such as the UCLL.

2.1 Interpreting section 18

25. Section 18 of the *Telecommunications Act 2001* (the Act) provides that the legislative purpose of regulating telecommunications services in New Zealand is to promote competition. However, the objective is not simply to promote any form of competition. The objective is to promote competition that is for the long-term benefit of end-users. In deciding whether promoting competition is for the long-term benefit of end-users, the legislation requires that regard be had to efficiencies (section 18(2)).

26. In our view, the legislation contains a relatively generic statement of economic orthodoxy. That is, section 18 implies that, when setting access prices, the Commission must promote competition where it is for the LTBEU, recognising that efficiency consideration are relevant to determining whether competition is for LTBEU. The primary benefits of competition are that it can:

- enhance productive efficiency, since firms that face competitive pressure from rivals have a strong incentive to reduce their costs of production in order to protect or improve their market share;
- enhance allocative efficiency, since:
 - firms facing competition may reduce their prices (possibly as a result of reduced production costs), such that previously unmet demand is served at prices that generate positive economic profits; and
 - firms that are unable to compete effectively will divert their resources to more productive endeavours; and

- enhance dynamic efficiency, by providing suppliers with a strong incentive to develop new and innovative products or more cost efficient production processes in an effort to protect market share in a changing environment.

27. However, as Professor Vogelsang rightly observes, not all competition will enhance efficiency and deliver long-term benefits to end users. It has long been recognised that social inefficiency can sometimes arise from excessive entry into markets causing the significant duplication of fixed costs without any significant benefits in terms of incremental product differentiation or expansion. In a famous paper, Mankiw and Whinston (1986) develop a generalised model that shows:¹¹

In homogeneous product markets the existence of imperfect competition and a business stealing effect always creates a bias toward excessive entry ... in a homogenous market entry restrictions are often socially desirable.

The introduction of product diversity, however, can reverse this bias toward excessive entry. Intuitively, a marginal entrant adds to variety, but does not capture the resulting gain in social surplus as profits. Hence, in heterogeneous product markets the direction of any entry bias is generally unclear, although efficient levels of entry remain an unlikely occurrence.

28. In other words, in the presence of fixed entry costs, competition will only be in the LTBEU when the benefits of additional rivalry that spill-over to end-users exceed the otherwise socially wasteful duplication of fixed costs. Any such spill-over benefits typically come from innovation and product differentiation that are driven from competition, but are unable to be captured by the investors in the competing infrastructure and are therefore passed-on to end users.¹²

2.2 Regulating to ‘promote competition’

29. A key reason for regulating access to bottleneck infrastructure is to promote competition. In particular, providing access to essential facilities owned by operators that are vertically integrated has the potential to promote competition in the provision of downstream services. In this context, the Australian Competition Tribunal (the Tribunal) has described the notion of promoting competition in the following terms:¹³

¹¹ Mankiw and Whinston (1986), *Free Entry and Social Inefficiency*, The RAND Journal of Economics, Vol. 17, No. 1 (Spring) 48-58.

¹² The existence of these benefits means that the price for using existing infrastructure should be set higher than the long-run costs of using that infrastructure in order to encourage efficient entry. This means that in so far as the objective of promoting efficient competition is concerned, pricing based on the current cost of replacing existing assets represents a floor below which the access price should not be set.

¹³ *Re Sydney International Airport* [2000] ACompT 1 (1 March 2000), paragraph 106.

The Tribunal does not consider that the notion of "promoting" competition in s 44H(4)(a) requires it to be satisfied that there would be an advance in competition in the sense that competition would be increased. Rather, the Tribunal considers that the notion of "promoting" competition in s44H(4)(a) involves the idea of creating the conditions or environment for improving competition from what it would be otherwise. That is to say, the opportunities and environment for competition given declaration, will be better than they would be without declaration

30. The promotion of competition should not be confused with the promotion of particular types or the number of competitors.¹⁴ Rather, consistent with the observations of the Tribunal, promoting competition should be about creating the *conditions* that will enable parties to compete and win business based on the merits of their business offering.
31. The question of whether an increase in the price of UCLL would promote competition for the LTBEU must therefore be answered by understanding the effect of the price rise on the conditions and environment of rivalry amongst firms, relative to the situation where the price was not increased. Importantly, this assessment must necessarily:
 - include a consideration of the effect the price rise will have on firms' abilities and incentives to engage in desirable competitive conduct, e.g., minimise costs, invest in new products; and
 - be cognisant of the fact that not all forms of incremental competitive activity are necessarily in the LTBEU, e.g., if they stem from the needless and wasteful duplication of fixed costs without offsetting spill-over benefits.
32. The UCLL is a regulated service. Access to the UCLL allows competitors (RSPs) to unbundle the local loop and install their own xDSL electronic equipment in competition with Chorus' in the supply of wholesale broadband services. RSPs taking the UCLL also can compete in the retail supply of broadband services with RSPs taking the regulated wholesale broadband services from Chorus¹⁵ and with operators using their own networks (e.g., wireless, fibre and cable networks).
33. The pricing of the UCLL therefore has the potential to influence the conditions and environment for the following spheres of rivalry:
 - competition in the supply of wholesale broadband services between Chorus and RSPs buying UCLL;
 - competition in the supply of retail broadband services between RSPs using the UCLL and those acquiring the UBA; and

¹⁴ *Ibid.*, paragraph 108.

¹⁵ The unbundled bitstream access service or UBA.

- RSPs choices as to whether to use the UCLL or other network platforms to compete with each other in the provision of retail broadband services.

34. A particularly important consideration is whether the pricing of the UCLL tips the balance in favour of unbundling or not unbundling, since this will affect the “environment of competition” for those services. Intrinsic to that assessment would be considering whether any such unbundling would promote competition in a way that is to the benefit of end-users, accounting for the inevitable duplication of fixed costs that would be involved.

2.3 Professor Vogelsang’s interpretation of promoting competition

35. Professor Vogelsang has approached the question of what it means to “promote competition for the LTBEU” in an altogether different way. Much of Professor Vogelsang’s report is devoted to a detailed description of what *might happen* if the UCLL price cap was increased. At the end of that exposition, Professor Vogelsang concludes that, because end-users of copper and substitute services are likely to face higher prices (which may not be off-set by higher quality), that is not in their long-term interest.

36. In other words, Professor Vogelsang approaches the question of whether a UCLL price increase would promote competition for the LTBEU by focusing solely upon the near-term effects on consumer surplus. He simply considers whether consumers will be better or worse off in the near term after the price increase, having regard to their loss in consumer surplus from the price rise itself and any compensating effects on quality of service.

37. In our opinion, that does not represent an economically robust interpretation of the relevant statutory objective. In our opinion, a broader enquiry is needed that looks beyond the immediate price effects on consumer welfare. To see why, one need only postulate what would happen if Professor Vogelsang’s framework was applied in the context of a vigorously (but less than perfectly) competitive market.

38. For example, imagine that the supplier of Product A in such a market experienced an increase in the cost of a key input. Because competition is intense, the input cost increase means that the supplier is no longer covering its long-run costs of supply (including a normal risk-adjusted return on capital). It must therefore reflect those higher input costs in the price of Product A. Following that price increase:

- some customers will continue to prefer to buy Product A, even at the higher price – their consumer surplus will be lower (at least in the near term) as a result of that increase; and

- other customers will prefer to buy Product B, which will lead to an increase in demand for that substitute product, causing its price to increase as well – their consumer surplus will also be lower (at least in the near term).
39. At the new price for Product A that reflects the higher costs of supply, there is therefore less demand for it. This reflects the fact that some customers are unwilling to pay a price that will enable the supplier to cover its long-run costs, when they have the option of buying Product B. This is perfectly consistent with vigorous competition and represents a more efficient allocation of resources. It signals to the market the products that consumers wish to buy at the new price points (which reflect input costs) and where firms should be investing.
40. As a matter of economics, the price increase consequently unambiguously promotes competition for the LTBEU. It does so irrespective of the fact that consumer surplus has decreased relative to the level that existed prior to the price increase. Indeed, this is an irrelevant comparison in this instance because it overlooks the fact that, if the price of Product A had not increased, the supplier would have exited the market in the long-run,¹⁶ causing end-users to lose the entire surplus they would otherwise have derived from consuming the product.
41. However, if one applied Professor Vogelsang’s framework to this simple example, an altogether different conclusion would be reached. It would determine that:
- because the customers of Product A are now paying a higher price, this “does not lead to an increase in competition for the LTBEU”;
 - the customers who switched to Product B are worse off because, otherwise, they would have already been buying it (the “revealed preference argument”);
 - the customers who were already buying Product B are also paying a higher price, which “does not lead to an increase in competition for the LTBEU”; and
 - as a result, the increase in the price of Product A “does not lead to an increase in competition for the LTBEU”.
42. For the reasons set out above, this conclusion is clearly incorrect and highlights why no final conclusions can be drawn about whether a price increase promotes competition by looking only at the near-term effects on consumer welfare. Moreover, if the promotion of competition for the LTBEU truly required there to be no reduction whatsoever in near term consumer welfare, this begs the question: in what circumstances would that threshold actually be met? The answer appears to be: “almost never”.
43. Indeed, based on the framework set out in Professor Vogelsang’s report, the only circumstances in which it would be concluded that a UCLL price increase *could* promotion of competition for the LTBEU would be the following:

¹⁶ This is because the supplier would not have been covering its long-run costs.

- if the price rise for the UCLL is not reflected in the UBA aggregate (it is absorbed by RSPs), which is not possible if the retail market is competitive, i.e., there would be at least some pass-through; or
 - if the element of the UCLL price rise that is reflected for the UBA aggregate is defeated by substitution other networks (wireless, etc.), which is implausible considering that UCLL is a regulated service;¹⁷ or
 - if the final prices rises for end-users (either using the UCLL as an input or in competition with services using the UCLL) are offset by quality of service gains that are driven by the UCLL price increase.
44. An increase in the price of the UCLL is clearly not going to pass that test (particularly as Professor Vogelsang deploys a revealed preference argument to deny any quality of service gains being realised). That is not because competition for the LTBEU will not be promoted but, rather, because Professor Vogelsang has interpreted the legislative requirement in a way that means no increase in the price of the UCLL service will ever meet it. If Professor Vogelsang’s narrow framework was accepted by the Commission, it would therefore *always* need to apply its discretion to reduce prices. Such an outcome would plainly be counterintuitive.
45. Put simply, there is a critical element missing from Professor Vogelsang’s analytical framework. As noted above, we largely concur with his detailed description of what would be likely to follow a UCLL price rise.¹⁸ Professor Vogelsang’s discussion of the competitive interactions at play and how prices might be constrained also represents a broadly reasonable summation of the dynamics at play.¹⁹ The conclusion that there would be higher prices for retail copper services and cable and UFB services is also quite plausible.
46. What is absent from Professor Vogelsang’s report is any attempt to relate this analysis (which, for the most part is reasonable) to the relevant statutory objective, i.e., the “promotion of competition” for the LTBEU. Once Professor Vogelsang determines that prices will be higher the enquiry ends. However, for the reasons set out above, that approach is incomplete, unorthodox and will yield incorrect conclusions as a matter of economics.

¹⁷ It is self-evident that a price increase for the UCLL would result in higher prices for end-users. It is precisely for this reason that the UCLL is a regulated service. That regulation is intended to constrain Chorus from increasing the price of the service significantly above the cost of supplying it to the detriment of overall welfare.

¹⁸ Particularly the summation set out at paragraph 29 of his report.

¹⁹ We note at paragraph 2, Professor Vogelsang states that “the RSP market is not perfectly competitive and therefore there will be at least some cost pass-through”. In our view, if the RSP were closer to perfectly competitive we would expect closer to 100% cost pass-through. It is unclear whether Professor Vogelsang is suggesting the opposite.

47. As we explained in the previous section, the appropriate test should be whether the *conditions and environment* for competition are improved relative to the case where there is no price rise. When this more conventional interpretation is applied, it is apparent that the analysis in Professor Vogelsang's report does not establish that a UCLL price increase would not promote competition for the LTBEU. If anything, the material in Professor Vogelsang report suggests the opposite conclusion.
48. For example, a price rise for the UCLL is likely to do very little to change the competitive constraints that fibre, cable and wireless networks impose on the pricing of copper-based services. An increase in the regulated price of the copper service does not change the cost structure of these alternative networks or the incentives that Chorus has to respond to competition from these networks.
49. Therefore, whilst a hypothetical increase in the UCLL price may play out in the manner described by Professor Vogelsang (i.e., smaller price rises for other networks and migration away from copper), the competitive landscape between these platforms is not directly affected by that price rise. Put another way, although prices might increase, the *conditions and environment for competition* are not materially affected – and that is what matters under the legislation.
50. However, a hypothetical price rise for the UCLL *does* has the potential to influence the conditions and environment for competition between:
 - RSPs that are using the copper network;
 - RSPs using the copper networks and RSPs using fibre networks; and
 - Chorus and local fibre companies (LFCs).
51. We discuss these effects in the following section.

3 Our assessment of competitive effects

52. In this section we consider whether an increase in the price of UCLL is likely to promote competition for the LTBEU. Consistent with our analysis set out in the previous section, we do so by considering the impact of such an increase on the conditions and environment for competition.²⁰ We begin by assessing the effect on competition between RSPs on the copper network before considering the effect on competition between RSPs using different networks, e.g., copper versus fibre.

3.1 Effect on competition on the copper network

53. The key driver of a decision to unbundle is the UBA increment. Nevertheless, a higher UCLL price will negatively affect an RSP's business case for unbundling and make it less inclined to do so. In our opinion, the adverse effect that a higher UCLL price will have on the economics of unbundling in the copper network has important implications for whether it will promote competition for the LTBEU.
54. Professor Vogelsang appears not to agree. He dismisses the effect of a higher UCLL price on the incentive to unbundle as a "second-order" consideration. Specifically, he contends that:²¹

Since we are only considering the competitive effects of an increase in the UCLL portion of the UBA price, we will for most of the discussion keep the extent of unbundling investments by potential wholesale UBA buyers constant. This is reasonable in spite of the effect mentioned in paragraph 5 above, given that the effect on the UCLL portion of the UBA price on unbundling investments should be of second-order magnitude.

55. Professor Vogelsang's consideration of the potential effects upon the incentives to unbundle is largely limited to an assertion that:²²

... only a large price increase in the end-user market will trigger downstream firm's entry..

56. Professor Vogelsang's contentions that unbundling is a "second-order" consideration and would be contingent upon a "large price increase in the end-user market" are without any obvious foundation. A more fulsome examination of the relevant market facts suggests that unbundling is a consideration that is highly relevant to the question at hand and that a modest increase may trigger more entry. The key facts to consider are as follows:

²⁰ We explicitly assume in our analysis that the current price for the UCLL is sufficient to ensure the price

²¹ Vogelsang report, paragraph 14.

²² Vogelsang report, paragraph 18.

- a. The UCLL price is an essential input into RSPs' copper-based retail broadband services – a higher price for the UCLL will result in higher copper-based broadband services to end-users;
 - b. A higher price for the UCLL means that RSPs' retail prices for copper-based broadband services will be higher relative to those for fibre-based services. The superior quality of fibre services means that at a similar price, end-users would migrate to fibre, harming the business case for unbundling;
 - c. UFB prices are contractually fixed until 2019 and the deployment of the local fibre companies' (LFC's) networks is subject to enforceable milestones – therefore, a higher price for the UCLL will make the current case for unbundling the copper network less economically attractive;
 - d. Telecom is currently subject to an unbundling restriction that prevents it from unbundling the copper network – this restriction ends in December 2014;
 - e. Telecom has significantly greater scale than other RSPs who presently find it profitable to unbundle the copper network; and
 - f. Telecom has such scale that it *may* find it privately profitable to unbundle cabinets.
57. Taken together, these facts indicate that, at current prices, Telecom may have a business case for unbundling the UCLL. A higher price for the UCLL may therefore make it *less likely* to decide to unbundle the copper network. This is because:
- a higher price for the UCLL flows through to a higher UBA aggregate, reducing the medium-term attractiveness of Telecom's retail prices for copper services relative to fibre services;²³ and
 - in turn, the less sustainable is Telecom's resale-based customer base for copper services, the less likely it is that it will shift that customer base from a UBA input to the UCLL (and SLU) input.
58. Put simply, the more attractive copper services remain as a whole relative to fibre services, the more likely it is that Telecom will choose to unbundle the copper network. If the UCLL price increases, that equation changes in a way that makes unbundling less likely. It follows that in order to answer the original question posed by the Commission, it is necessary to ask whether unbundling by Telecom would promote competition in the LTBEU. The limited time available for this consultation has meant that this has required some speculation on our part.
59. With that qualification, it seems reasonably safe to say that if Telecom did unbundle it would lead to some positive effects from the perspective of improving the

²³ This will decrease as end-users' willingness to pay for the higher quality experience on fibre services increases

environment for competitive rivalry with other RSPs that unbundle on the copper network. For example, the decision to unbundle would:

- provide Telecom with a lower incremental input cost and the flexibility to develop its own broadband offerings that may be different from other RSPs and the UBA service offered by Chorus; and
- it may also create incentives for greater innovation and investment in new xDSL technology.

60. Holding all other things constant, these developments would promote competition for the LTBEU if they spill-over into lower prices (i.e., from reductions in cost) and/or product differentiation on the broadband offerings.²⁴ However, all other things are *not* constant. Weighing heavily against any such benefits would be the considerable potential inefficiencies associated with:

- the duplication of substantial infrastructure both in exchanges and in cabinets (the latter of which may be open to Telecom, given its scale) – this duplication would be particularly harmful given:
 - the spare capacity that would be left in the existing (sunk) copper infrastructure owned by Chorus; and
 - the significant idle capacity that may be created on the fibre networks owned by both Chorus and LFCs;
- the potential distortion to competition between RSPs on the copper network that do not have equivalent scale advantages to Telecom, e.g., Telecom’s potential ability to unbundle cabinets may give it a marginal cost advantage relative to RSPs acquiring the UBA service on cabinetised lines; and
- a delay in the obtainment of costs efficiencies that would result from the migration of customers from the copper network to the UFB – this could, for example, include a significant delay in the shutdown of the copper network (it may even mean that it is never shut down).

61. Unless there are substantial expected improvements in product differentiation following entry (which is questionable) a primary outcome of Telecom unbundling would be the “business stealing” effect cautioned against by Mankiw and Whinston (1986), i.e., a reduction in output per firm. In addition, there would be the considerable inefficiencies associated with the duplication of infrastructure and the potential distortions to competition between RSPs on the copper network.

62. It should be noted that the general conclusion of Mankiw and Whinston (1986) is that the private motivation of a firm to enter (due to business stealing) will lead to too much entry from a social efficiency perspective. Therefore, our analysis of the

²⁴ If these effects were fully captured by Telecom, such competition may not be for the LTBEU. The ability of Telecom to capture these effects would depend on the nature of post-entry competition.

specifics of Telecom’s decision is consistent with the general proposition that there will be too much unbundling, and, in general, the Commission should favour a higher price for the UCLL.

63. Therefore, on the weight of the analysis that we have undertaken in the time available, it seems likely that unbundling on the copper network would *not* promote competition for the LTBEU. That being the case, it follows that a higher price for the UCLL – which would reduce the likelihood of unbundling taking place – *would* promote competition for the LTBEU, all other things being equal.

3.2 Effect on competition between RSPs on different networks

64. The previous section explained why a higher price for the UCLL would make unbundling less attractive – particularly for Telecom – by reducing the appeal of copper services relative to fibre. A corollary of that analysis is that a higher UCLL price will accelerate migration of end-users to fibre. This will occur because a higher UCLL will flow through to a higher retail price for copper services,²⁵ whereas the price for wholesale fibre services will remain unchanged.
65. An increase in the incentive for RSPs to migrate their customer bases from the copper to the fibre network may have implications for competition between RSPs operating across each network.
66. Firstly, RSPs migrating to fibre services cannot presently unbundle the fibre network.²⁶ They therefore take a wholesale broadband service that is broadly equivalent to the regulated UBA (i.e., it is a layer 2 services as opposed to a layer 1 service such as UCLL). This means that the incremental input cost for RSPs on the fibre network is relatively higher than what they pay if they are unbundling the copper network. This higher unit cost softens the incentive to compete for end-users for RSPs using the fibre network.
67. Second, whilst this higher unit cost may soften competition, as noted by Professor Vogelsang, differences in scale across RSPs may be less important on the fibre network (relative to the copper network). It follows that competition on the fibre network may not be distorted to the same extent by differences in the size of operators. As we noted earlier, this issue would assume particular prominence in the event that Telecom unbundled the copper network, i.e., this is likely to provide it with a significant advantage in the copper network by virtue of its size.

²⁵ The higher UCLL price is a marginal cost increase for RSPs taking either the UCLL or UBA and therefore would be expected to flow through, in some material measure, to retail prices for copper services.

²⁶ Chorus will be required to unbundle fibre in 2020.

68. Third, the fact that fibre services are layer 2 services means that there may be less scope to differentiate services relative to what can be achieved with the UCLL (a layer 1 service). Having said that, it is not altogether clear that unbundling has led to RSPs substantially differentiating their retail broadband services, given the common network elements. It may be that unbundling has allowed RSPs to control their investment in backhaul to offer less (or more) congested services to end-users.
69. However, offsetting any such effects is the ability that RSPs would have to offer a greater mix of services on the UFB, including the likes of multiple IPTV channels, high-definition video conferencing, smart home services, cloud services and online games. In contrast, an RSP taking the UCLL may only be able to offer a mix of one or two of these services.
70. Finally, as with our previous analysis, assessing whether these effects promote competition for the LTBEU requires consideration of the inefficiencies associated with duplicating fixed costs. As discussed above, the greatest potential savings from avoiding duplication of assets arises if the migration to fibre discourages Telecom from unbundling the copper network.²⁷
71. In summary, an increase in the UCLL price may have some negative effects for competition between the RSPs on the copper network and other networks. The size of these effects is uncertain and may be largely mitigated by the ability of RSPs to offer a greater mix of services and the potential savings from Telecom not unbundling the copper network.

3.3 Effect on competition between Chorus and other networks (LFCs)

72. One might also consider whether an increase in the UCLL price would promote competition between Chorus and other networks, including the LFC networks. Applying similar logic to that employed by Professor Vogelsang throughout the rest of his report might lead one to conclude that an increase in the UCLL price would “reduce competition” between Chorus’ copper network and other networks, because prices for end-users, who might regard these networks as substitutes, may be higher.²⁸ In our view, any such inference would be mistaken for precisely the same reasons that we have explained above.
73. Specifically, the *conditions and environment* for competition between the two networks are not materially affected by the regulator increasing the price cap that Chorus can charge RSPs. To the extent that Chorus charges the same UCLL in all areas, the increase in the cap might actually be perceived to create opportunities for

²⁷ Conceivably, there could also be a saving from RSPs that have already unbundled the copper network, not replacing their assets at the end of their useful life (and or delaying the need to replace those assets).

²⁸ In its essence, this is the argument made by Professor Vogelsang.

other networks to cherry-pick Chorus in low cost areas. In any case, an increase in the cap does not directly affect Chorus' ability and incentive to respond to competitive threats by lowering its price. As Professor Vogelsang observes:²⁹

...the LFCs face Chorus as a formidable copper competitor who may undercut the regulated UBA price cap.

74. In other words, Chorus' response to competition from LFCs will be determined by its underlying cost structure, not the prices set by the regulator. Similarly, other networks' ability and willingness to compete with Chorus in the provision of UCLL will be determined by *their* underlying cost structure rather than the price set by the regulator for Chorus' services. Therefore, where Chorus is not the LFC, any increase in the UCLL price is likely to make little or no difference to the conditions and environment for competition.
75. Where Chorus is both the UBA provider and the LFC, the increase in the UCLL price will likely be passed on in large part (if not fully) to the UBA aggregate price.³⁰ This price increase will improve the profitability of Chorus' copper services relative to its fibre services, creating less incentive at the margin to migrate RSPs away from the existing network. It is hard to say whether this might be regarded as a relevant competitive effect in the context of Section 18, since it is ultimately an internal matter for Chorus. In any event, it may well be moot, since the fixed nature of the UFB prices and Chorus' contractual build and uptake commitments mean that the migration of customers may be largely beyond its control.

3.4 Overall effects

76. Assessing whether an increase in the UCLL prices will promote competition for the LTBEU necessarily involves a degree of conjecture. It also depends on important practical considerations such as the size of the increase in question and whether it can confidently be said to reflect the underlying costs.³¹ The analysis that we have undertaken hitherto assumes that the price increase in question is neither trivial nor excessive and that there is uncertainty about the underlying costs.
77. That analysis suggests that, under these assumptions, an increase in the UCLL price is likely to have very little direct effect on the conditions and environment for competition, or may modestly improve them. In other words, a higher UCLL price would have little effect upon, or modestly promote competition for the LTBEU. The

²⁹ Vogelsang report, paragraph 35.

³⁰ A potential exception to this is if it is constrained by RSPs unbundling, which may be the case in low-cost areas.

³¹ If a higher price better reflects the underlying costs of providing a service, then an increase clearly promotes competition for the LTBEU. Indeed, cost-reflective prices are one of the defining characteristics of workably competitive markets.

promotional effect would be stronger still if there is a material probability of Telecom unbundling and a higher UCLL price would discourage that outcome.

78. Finally, in addition to these “direct” effects, there are a number of indirect externalities that appear potentially relevant to the Commission’s considerations. For example, Professor Vogelsang identifies a number of potential positive externalities associated from new applications that would directly benefit UFB subscribers. A higher price for the UCLL will stimulate such developments.
79. Network externalities arise when the marginal benefits that subscribers gain from joining a network increase with the number of others that subscribe to that network. The existence of network externalities support a case for intervening to encourage users to join the network. In the current circumstances, this might be achieved through a higher price for the UCLL relative to the fixed prices for the UFB. In some cases, network externalities can be internalised through discriminatory pricing, but these instances are rare and unlikely to apply here.
80. Professor Vogelsang provides an example where improved network capability allows increased interactions between network users that would not have been possible without that capability. That is, whilst users may already have been able to interact to some extent on the copper network, other forms of interaction may not be possible but for the improved capability of the UFB network. This could be in the form of communications that requires higher upload and download bandwidth. Professor Vogelsang gives the example of a sophisticated version of Skype, but there may be many other developments including cloud based applications.³² These applications and the attendant benefits would not accrue to subscribers without the uptake of the UFB, which a higher UCLL price may help facilitate.³³
81. The existence of these network externalities therefore supports the case for a higher UCLL price, other things being equal.

³² http://www.ftthcouncil.eu/documents/Publications/CandA_White_Paper_2012_Final.pdf

³³ We distinguish here between the direct benefits to end users from these interactions and any benefits that might accrue from improved economies of producing these applications.