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UFBI 2.0:
Revised separation boundaries may partially address pricing and uptake limitations in New Zealand fibre broadband model, but significant competition policy problems remain

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Introduction

On July 1 2010, the Minister of Communications Steven Joyce announced fundamental changes to the structure and regulation of the New Zealand Government's Ultra-Fast Broadband Initiative. The changes were deemed necessary in order to achieve uptake targets sufficient to underpin the business case for both government and private sector investment.

Previous ISCR research has identified critical weaknesses in the original proposal arising from two factors:

- the mandatory separation boundaries between firms providing retail, dark-fibre and other services posed impediments to the ability of the fibre infrastructure firms to access economies of scale in production essential to ensuring that the services could be produced as cheaply as possible (and thereby facilitate the rapid substitution by existing broadband consumers away from their existing providers' technologies that was essential to the financial success of the project); and
- the lack of clarity regarding the anticipated role of incumbent copper provider Telecom New Zealand led to substantial uncertainty as to the shape of future competitive interaction, threatening the returns and hence the willingness to invest for Telecom, the new fibre firms and other infrastructure operators offering broadband services on alternative technologies.

This *Comment* assesses the extent to which the July 1 changes address these fundamental concerns. In summary, it is found that whilst the changes would appear to enable progress towards the ability to access productive scale efficiencies and competitive pricing structures that will induce some degree of substitution, lack of clarity about the future competitive environment still exposes investors in the sector to significant uncertainties and potential perverse outcomes. Consequently, overall sector investment will likely be inhibited, and the evolution of broadband sector institutions substantially constrained. This situation is likely to prevail as long as it remains unclear whether the Government's overarching policy for ongoing evolution of broadband markets in New Zealand is predicated upon the pursuit of open competition between a variety of (publicly and/or privately-owned) broadband networks of various technological forms, or the re-establishment of a single technology, government-mandated, nationwide monopoly network infrastructure providing homogeneous inputs to a range of retailers competing only in respect to the services offered on the top of those inputs.

1. The Proposal and Subsequent Changes

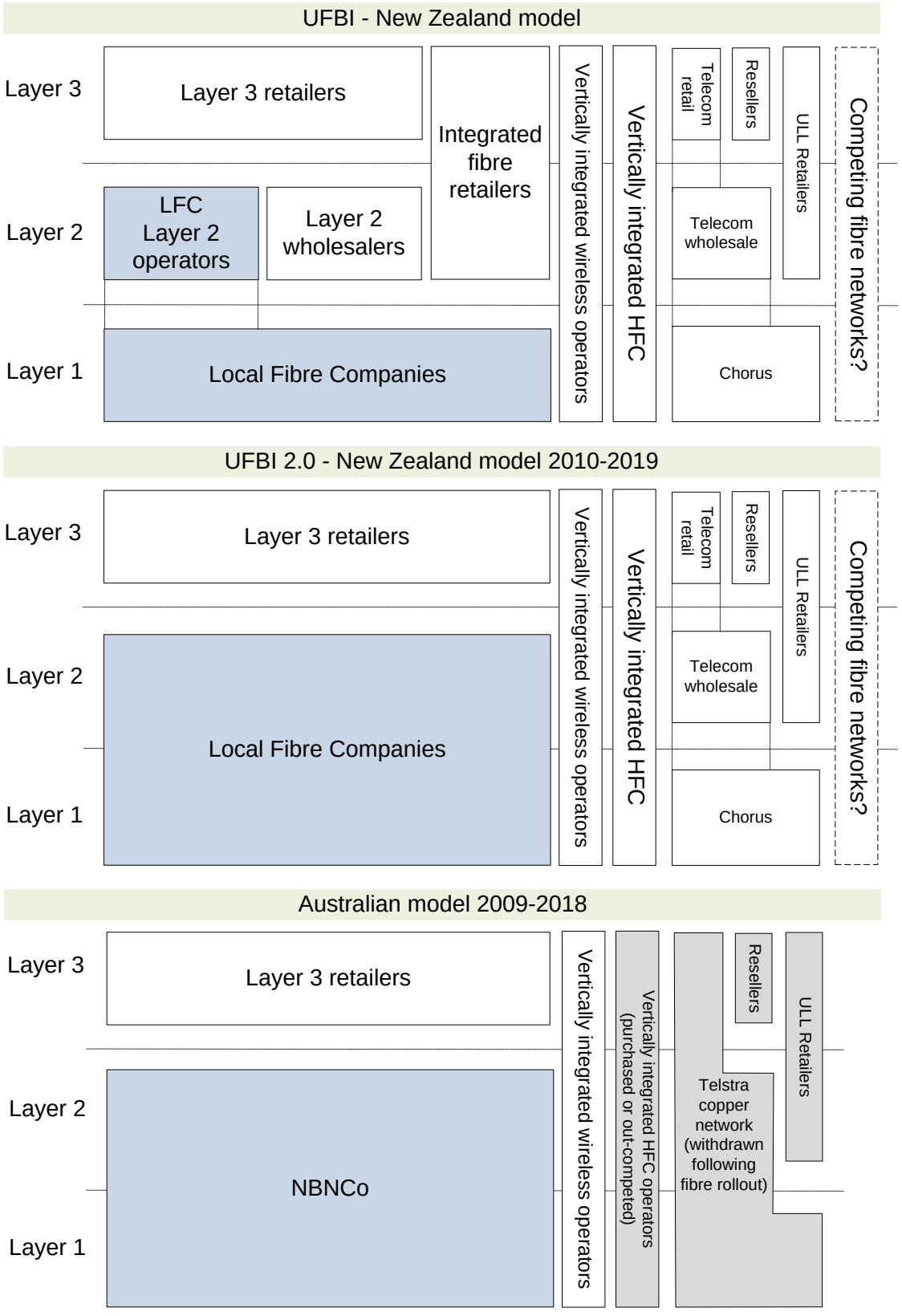
The New Zealand Government's Ultra-Fast Broadband Initiative (UFBI) commits up to $1.35 billion to accelerate the construction of an open-access fibre-to-the-home (FTTH) infrastructure that will reach 75 percent of New Zealanders over ten years[1]. It is the Government's expectation that its investment will be at least matched by private sector funding, deployed by way of a co-investment model overseen by the crown-owned company Crown Fibre Holdings Limited (CFH). In September 2009 the Government issued its 'final' proposal for the UFBI, and invited proposals for participation (via the 'Invitation To Participate', or ITP) from prospective private sector partners in the formation of Local Fibre Companies (LFCs) which would construct and operate dark-fibre infrastructure.

A key component of the initial model was structural separation between various components of the FTTH production chain. Government funding would be applied only to LFCs, and specifically for the construction of Layer 1 dark-fibre infrastructure. LFCs could optionally operate structurally-separated Layer 2 wholesale operations. Layer 3 firms engaged in retailing could integrate upstream into Layer 2 wholesale operations where dark-fibre connections are converted into a range of speed-differentiated data transmission (bitstream) services. However firms operating at Layers 2 and/or 3 would be unable to have a controlling interest in LFCs (see Figure 1, UFBI New Zealand model). By January 29 2010, Crown Fibre Holdings had received 33 separate proposals from 18 individual respondents[2].

On 1 July 2010, in response to feedback from the industry and firms responding to the invitation to participate, the Minister of Communications announced changes to the proposed model and the obligations of the proposed LFCs[3]. A revised invitation to participate was released on July 5[4], with an overview of the amendments being provided on July 8[5]. Only respondents to the initial ITP have been invited to submit revised proposals. It is anticipated that CFH will be making recommendations on preferred partners to Cabinet by October 2010.

[1] The initiative also allocates $150m for making schools broadband ready, making a headline total of $1.5bn. See: http://www.med.govt.nz/upload/72814/SOI-2009-2013-Crown-Fibre-Holdings.pdf.
[2] http://www.med.govt.nz/templates/ContentTopicSummary____41902.aspx
[3] http://www.beehive.govt.nz/release/ufb+model+amendments+announced
[4] http://www.med.govt.nz/upload/73847/Participant-Notice-amending-ITP.pdf
[5] http://www.med.govt.nz/upload/73850/Ultra-fast%20Broadband%20Initiative%20overview%20of%20amendments.pdf

Figure 1. Comparison of New Zealand and Australian Fibre Broadband Proposals



The July UFBI changes are not minor. They constitute a substantial change to all of the nature of the products to be offered by the local fibre partnership firms, the firm and industry structure under which they will be delivered, and the governance arrangements overseeing their provision[6] (see Figure 1, UFBI 2.0 New Zealand Model 2010-2019).

LFCs must now provide Layer 2 services across all parts of the network – that is, speed-differentiated bitstream access rather than homogeneous dark-fibre connections – with a more restricted dark-fibre offering ('point-to-point') required to be provided only to business customers. Layer 1 services will now be required to be supplied on a 'non-discrimination' open access standard (identical services must be supplied to all customers seeking them at identical terms) rather than the more rigorous 'equivalence of inputs' standards (where the firm must supply third-party access seekers products and services on exactly the same terms and conditions as it supplies to its own downstream operations). Whilst the firm may choose to offer 'unbundled' access to 'point-to-multipoint' Layer 1 services at any time, it will not become mandatory for LFCs to supply such services until 31 December 2019[7].

The changes mean that the effective structural separation boundary for the fibre network now sits between Layers 2 and 3 rather than between Layers 1 and 2 (Figure 1). In the absence of regulated unbundled point-to-multipoint Layer 1 access, the potential no longer exists for investment in stand-alone Layer 2 infrastructure. Whereas under the original proposals Layer 2 and 3 operators could fully vertically integrate, Layer 3 operators will now be restricted to holding only a non-controlling interest in any part of the underlying infrastructure, with the prospect of participating in UFBI infrastructure ownership available to them only if they have already responded as a party to the invitation to participate.

Moreover, the regulatory arrangements have changed, with LFCs being granted a period of regulatory forbearance from Telecommunications Commission intervention on price and non-price terms until 31 December 2019. Instead, fibre service prices will be determined by commercial negotiations following the tender process overseen by CFH. The changes do not alter the proposed competitive positioning of the new fibre networks vis-à-vis the broadband networks of Telecom New Zealand or other fixed-line broadband infrastructure operators such as TelstraClear and CityLink, or the 'unbundling' firms who have invested in equipment to provide

[6] To the extent that the new proposal represents a 'step-change' warranting our describing it 'UFBI 2.0'.
[7] The requirement that LFCs provide an unbundled Layer 1 product on an equivalence of inputs basis from 31 December 2019 means that the UFBI 2.0 structure will then revert to the original UFBI structure.

services using Telecom's infrastructure following the implementation of local loop unbundling. The position of Telecom is still left open, albeit with the acknowledgement that if Telecom became a partner in an LFC, this could weaken infrastructure competition from the copper network, which will continue to be subject to regulations and price control from the Telecommunications Commission.

The primary reasons cited for the changes are the need for LFCs to be able to offer a range of differentiated products at both Layers 1 and 2, to be able to price these products differently in order to be able to attract customers from the copper network to fibre products, and not to be burdened with "unnecessary regulation" whilst they are in their infancy. It is also claimed that the changes address the risk that vertical integration between Layer 2 and 3 operators could create a retail player able to capture market power through a bottleneck at Layer 2.

2. Evaluating the Changes using ISCR Research

ISCR research published in March[8], May[9] and June[10] 2010 has posed some important competition and governance questions for policymakers, as well as highlighting institutional design issues in the original UFBI that pose considerable challenges to the government's ability to achieve its fibre infrastructure implementation and uptake objectives in a timely and cost-effective manner.

The first research presentation identified the lack of clarity in the original UFBI proposal regarding the type of competitive environment into which the government wishes the new fibre network to be deployed:

- one predicated upon 'infrastructure competition' where different network technologies (copper, fibre, cable[11], fixed wireless, cellular etc.) compete at the network level for broadband customers using differentiated network products and services; or
- one where it is presumed a single specific network (fibre or copper) will dominate all others, to the extent that competition in the broadband market is limited predominantly to

[8] Howell, B. (2010). *Governments in the Telco Business: Prudential Investment or Pursuing Non-economic Purposes?* Presentation at ISCR, Wellington, New Zealand. March 31, 2010. Available at http://www.iscr.org.nz/f550,15838/15838_Feb_25_2010_CIS.pdf.

[9] Howell, B. & Heatley, D. (2010). Presentation to Internet New Zealand Ultrafast Broadband Workshop. May 19. New Zealand Institute for the Study of Competition and Regulation. Available at: http://www.iscr.org.nz/n568.html.

[10] Heatley, D. & Howell, B. (2010). *Structural Separation and Prospects for Welfare-Enhancing Price Discrimination in a New 'Natural Monopoly' Network: comparing fibre broadband proposals in Australia and New Zealand.* Wellington, New Zealand: New Zealand Institute for the Study of Competition and Regulation. 26 June. Available from http://www.iscr.org.nz/n580.html.

[11] Using hybrid fibre-coaxial (HFC) technology.

> 'services-based competition' where downstream providers compete to provide differentiated services based upon the (regulated) supply of identical (homogeneous) upstream network infrastructure products supplied by a single network operator[12].

The optimal industry structure and regulatory provisions necessary to encourage the development of these very different patterns of competitive interaction are fundamentally different. In the absence of a clear indication of the government's intentions on the development of sector competition policy, the institutions (firm, industry, government, regulatory, contractual, etc.) necessary to enable effective interactions to occur within the sector can neither be designed nor evolve in a manner supportive of the delivery of a coherent set of sector outcomes.

The latter research pieces note the significant limitations that structural separation and the requirement to provide undifferentiated dark-fibre at a single price place upon the ability of the government-funded fibre-providing LFCs to engage in welfare-enhancing price discrimination that enables access to scale economies in production that will lead to lower production costs overall and faster uptake of fibre connections. This compares unfavourably with the Australian NBNCo proposal, where the (vertically integrated Layer 1/2) fibre operator is specifically mandated to provide a range of speed-differentiated products at a variety of prices[13].

All three research pieces also identify the competitive disadvantages that will be faced by a fibre operator required to compete for existing broadband customers against the customers' existing (lower-cost) broadband infrastructure providers, given the lack of compelling highly-valued applications currently requiring the high-speed capacities of the new networks. The third paper notes that the cost of providing equivalent services will be higher per connection, and the likelihood of achieving financial self-sustainability much lower for New Zealand's UFBI than for Australia's NBNCo proposal, where infrastructure competition from existing fixed-line network operators is effectively eliminated by the agreement between the Government and Telstra to co-operate on the migration of customers between networks[14]. In particular, it notes the degree of rigidity of the original New Zealand model, which imposes three-layer structural separation from the very outset, thereby denying benefits of integration between Layers 1 and 2 during the initial

[12] For a discussion of these different types of competition, see Grajek, M., & Roller, L-H., (2009). *Regulation and investment in network industries: evidence from European telecoms*. ESMT Working Paper 09-004. Available from http://ssrn.com/abstract=1448666.
[13] http://www.dbcde.gov.au/broadband/national_broadband_network
[14] Ibid.

stages of network deployment, compared to the Australian model, which allowed for an evolution from a model whereby separation is required between Layers 2 and 3 during the initial stages, but where it was envisaged that the industry would evolve over time towards the three-layer separation model as originally prescribed for New Zealand.

2.1 UFBI 2.0: 'Australian' Separation Boundaries and Industry Evolution

The July changes to the UFBI have adjusted the mandatory structural separation boundaries so that they now sit between Layers 2 and 3, the same point as those proposed for Australia's NBNCo. Figure 1 illustrates the comparison between the original and revised New Zealand UFBI arrangements and those proposed for Australia's NBN. The similarities between the revised New Zealand proposals (UFBI 2.0) and the Australian NBN model are striking, even to the extent of the period of regulatory forbearance granted (2018 in Australia, 2019 in New Zealand). Consequently, the substantial relative structural disadvantages of the original New Zealand proposal identified in the third ISCR paper have been largely eliminated. Average costs per connection should be lower – and uptake targets more likely to be achieved – as a consequence of the changes.

LFCs will now have the ability to offer a range of differentiated products, sold at different prices set by commercial negotiation rather than regulation, and set in such a manner that to a considerable degree, strategic pricing can be used to enable the fibre operators to access cost-reducing scale economies[15]. LFCs will now have the potential to discount the prices of their low-speed, low quality product offerings below cost – and importantly, below the regulated prices set by the Telecommunications Commission for equivalent quality services offered by Telecom – in order to accelerate customer substitution from copper to the fibre network. However, the extent to which such discounting will be possible will be constrained by the extent to which prices substantially above cost can be charged for high-speed, higher-quality services – a question that still remains moot given the lack of compelling evidence that consumers are prepared to pay substantial premium for faster services in the absence of new, highly-valued applications that can only operate satisfactorily on the faster services[16], and other factors discussed below in subsection 2.4.

[15] Albeit that as separation precludes the network operator from having a commercial relationship with the end consumer, these product variants and prices will not be able to be set optimally to match end consumer preferences, but will have to be set relying upon supposition and Layer 3 retailers' willingness to pay as a proxy for underlying consumer preferences – a restriction that also attends the Australian NBN model.

[16] Howell, B. & Grimes, A. (2010). Productivity Questions for Public Sector Fast Fibre Network Financiers. *Communications and Strategies.* 78: 127-45.

The change in separation boundaries is accompanied by a change in the approach towards sector governance and likely institutional evolution. Rather than imposing a rigid three-layer separation model better suited to the regulation of a mature network technology that is already widely diffused, the amended proposal allows for an evolution in industry structure from fully integrated Layer 1 and 2 firms at the outset to functionally separate firms offering discrete Layer 1 and Layer 2 services by 31 December 2019. Changes in industry conditions as fibre technology diffuses will now determine the optimal timing for firms to alter pricing and product variants, and to begin to offer point-to-multipoint dark-fibre services. Regulatory forbearance reinforces the autonomy of the firms in making these decisions based upon commercial and not regulatory imperatives.

These changes appear to provide greater certainty for investors than under the original proposal, so might be expected to increase the willingness of private sector partners to invest. Furthermore, individual investment decisions will be able to be implemented in a more-timely manner, without having to undergo the delays and uncertainties associated with regulatory processes. However, it is noted that the mandatory separation of Layer 3 providers in both the Australian NBN and New Zealand UFBI 2.0 proposals still impedes the passing through of the proceeds of retail-level price discrimination to infrastructure operators, so the average costs of connection under both proposals will be higher (and diffusion lower) than for the case of a fully integrated operator. It will still be possible for Layer 3 operators to use bundles of applications and network services to finely segment and selectively target customers on their willingness to pay, and extract as profits at least some of the premium that could otherwise be used to offset infrastructure costs, as indicated in the third ISCR paper.

2.2 Inducing Participation: Will UFBI 2.0 Processes Guarantee the Best Partners?

The UFBI 2.0 proposals ameliorate some of the risks required to be borne by private sector investors under the original UFBI terms. However, only original respondents to the invitation to participate have been invited to submit revised proposals[17]. Whilst this restriction may speed up the process of assessing proposals and facilitate meeting the October 2010 timeline for submitting recommendations to Cabinet of the preferred investment partners, it is highly discriminatory given the very substantial alterations to both the industry structure and business case viability that UFBI 2.0 embodies. To exclude new responses risks foreclosing a potential investor with a

[17] http://www.med.govt.nz/templates/Page____44048.aspx

superior offer under the new arrangements who (rationally) refrained from participating in the original invitation due to its restrictive and potentially financially unviable business case for stand-alone Layer 1 services.

For example, as illustrated in the third ISCR paper, while the UFBI allowed an LFC to optionally operate a (structurally separate) Layer 2 wholesaler, such a provider would have been at a significant competitive disadvantage relative to Layer 2 operators subject to less regulation and lower capital risk, and particularly vulnerable to integrated Layer 2/3 operators. Potential investors may have preferred to eschew Layer 1 involvement under the previous arrangements, instead waiting until they could enter the market as separate Layer 2 or Layer 2/3 operators. However, by removing regulated access to point-to-multipoint dark-fibre connections, UFBI 2.0 effectively eliminates stand-alone Layer 2 and integrated Layer 2/3 operators[18]. Whilst it is still possible for these firms to become stand-alone Layer 3 operators, such operations require substantially less investment and a different skill set than required of Layer 2 operators. Any such potential investment or proprietary skills that could have been applied to Layer 2 investment under the UFBI now cannot be deployed independently under UFBI 2.0. They can only be applied in (subsequent) partnership with existing responders to the UFBI invitation to participate, to the ultimate detriment of the UFBI 2.0 competitive tendering process and the potential effectiveness of the government's financial contribution.

It is not clear, therefore, that the UFBI 2.0 resubmission process will enable selection of the best potential partners to build and operate the combined Layer 1 and 2 networks.

2.3 'Australian Structure' in a 'New Zealand Competitive Environment'

Figure 1 shows that whilst the UFBI 2.0 structural arrangements closely parallel those of the Australian NBN, the competitive position will be very different. As the third ISCR paper identifies, the Australian NBN model effectively insulates the fibre operator from competing fixed-line providers via the deal with Telstra to lease and/or purchase the legacy copper network, provisions to overbuild and undercut competing cable networks and the effective prohibition of competing fibre networks. However, the New Zealand UFBI 2.0 proposals still fail to make clear the anticipated competitive position of Telecom New Zealand, its local loop unbundling 'partners' (e.g. Orcon and Vodafone) who have invested in copper network assets, and other fixed-line infrastructure owners such as TelstraClear and CityLink.

[18] Stand-alone Layer 2 and integrated Layer 2/3 operators will gain access to the Layer 1 network on an 'equivalence of inputs' basis after 31 December 2019.

At the nub of the issue is the failure to articulate the type of competition it is anticipated will develop (and will be fostered by competition and regulatory policy) in New Zealand following the deployment of fibre networks. Will it be infrastructure competition, between a range of networks technologies, advocated by the OECD as the desirable state of competitive affairs in liberalised, privatised broadband markets[19], and observed in countries such as the United States, the Netherlands and Denmark, or services-based competition, with a single dominant network such has already been declared to be the policy objective in Australia? The direction is crucially important for providing some certainty to current and potential infrastructure investors as to the way competition in the broadband market will develop over the short and medium term.

Whilst Australian market participants have certainty that migration from copper to the fibre network will be a centrally managed, government-mandated process, with the copper network shut down as soon as feasible in order to minimise duplication of fixed-line broadband infrastructures (i.e. there will be only services-based competition in the fixed-line broadband market), it is still not clear whether New Zealand LFCs will be competing with the copper network investors or collaborating with them. This materially influences the likely achievable market share and returns available to fibre investors. It also affects the investment scenarios facing all existing infrastructure operators. Whilst ongoing uncertainty for Telecom shareholders is reflected in a very low share price, the uncertainty extends also to other investors, for example unbundling entrants such as Orcon and Vodafone. Should they invest more in exchange and sub-loop unbundling, and if so, where should they invest? What will occur if Telecom is successful in becoming an LFC partner in some locations and not others? Will their existing investments become stranded if Telecom does a deal with the government as has been done with Telstra in Australia? Likewise, fixed infrastructure owners such as TelstraClear and even mobile and wireless operators such as Vodafone and Woosh face different competitive scenarios depending upon whether they will face one (fibre) or two (fibre and copper) fixed-line network rivals. Such uncertainty inevitably increases the risks associated with investment and strategic decision-making for all such operators, and consequently constrains both investment and sector evolution.

Although the New Zealand structures replicate the Australian ones, as UFBI 2.0 provides no further clarification as to the form of competition that is being pursued, the New Zealand

[19] OECD Directorate for Science, Technology and Industry Working party on Telecommunications and Information Services Policy (2001). *The Development of Broadband Access in OECD Countries*. DSTI/ICCP/TISP(2001)2/Final.

competitive environment remains very different from its trans-Tasman counterpart. The greater uncertainties in the New Zealand case are costly (both relatively and absolutely), and will be resolved only when there is clarification of the type of competition policy envisaged – infrastructure or services.

2.4 Ongoing Copper Regulation Undoes Benefits of UFBI 2.0 Structural Changes

It is noted that under the original UFBI arrangements (Figure 1), the separation boundaries imposed on fibre firms paralleled those imposed upon Telecom. It was also proposed that regulatory responsibility for both Telecom and the LFCs would lie with the Telecommunications Commission. However, the UFBI 2.0 arrangements see Telecom continuing to be subject to three-way separation and ongoing regulated access provisions overseen by the Commission, which is unable to intervene in the fibre market until 2020 regardless of the ways in which competitive interaction develops across a broadband market served by both technologies. Meanwhile, unregulated fibre providers and their downstream partners face less rigid separation mandates and no fear of price controls being imposed. The disjunction of both separation boundaries and regulatory oversight leads to the potential for fragmentation of industry governance, to the detriment of both consumers and the firms concerned.

Fragmentation of sector governance oversight is potentially very costly and likely to distort the pattern of competitive interaction that ensues. For example, Telecom's network arm Chorus is required to provide services at cost-based regulated prices to its downstream partners (both proprietary and access-seekers). Under its separation undertakings, Telecom is unable to engage in price discrimination, either between itself and its downstream firm, or between or against its wholesale customers[20]. This restriction substantially limits the ability of Chorus and its unbundling partners (including Telecom Retail and Telecom Wholesale) to engage in the same price discrimination possible for the vertically integrated Layer 1/2 LFCs. Whilst the fibre company can compete aggressively by cutting prices for low-end services cross-subsidised by prices charged above cost for high-end services, the copper operators do not have such flexibility as they are unable to make individual or collective contractual agreements with Chorus to set charges on its platform in this manner in order enable the copper network to compete 'on a level playing field' with the fibre network (indeed, the entire purpose of functional and structural separation is to defeat the ability of a network operator to engage in such cross-subsidisation). The copper network and all its investors thus appear to be at a substantial competitive

[20] http://www.comcom.govt.nz/regulated-industries-media-releases/detail/2010/telecom-settles-over-wholesale-loyalty-offer-1-6-million-to-be-paid-in-compensation

disadvantage relative to the LFCs unless the regulatory provisions and separation undertakings imposed on Telecom are also relaxed.

Furthermore, price regulation and separation undertakings on the copper network ultimately effectively constrain the ability for fibre operators to engage in aggressive price discrimination to accelerate substitution of customers from copper to fibre networks in the first place. Whilst Chorus and its partners may be unable to match low-end discounts under the current separation undertakings and price regulations, they will be able to (and indeed under cost-based price regulation obligated to) undercut the above-cost prices that it will be necessary for the fibre operators to charge in order to be able to engage in price discrimination in the first place. Consequently, with lower high-end prices, the copper operators will likely end up with a disproportionately large share of the high-valuing customers prepared to pay a premium for high quality services[21], leaving the fibre operators with a disproportionately large share of low-spending (discounted) customers, and therefore unable to extract sufficient price premia from high-valuing customers to balance the costs of discounting. Ongoing regulation of the (legacy) copper network means prices for low-end products on fibre cannot be discounted to the extent that would be desirable to maximise scale economies, effectively undoing much of the benefit of price discrimination enabled by the change in the separation boundaries that comprise the substance of the UFBI 2.0 changes.

The perverse outcome highlights the 'problem' of imposing structural separation, and indeed many other regulatory provisions of any kind on networks that are not truly natural monopolies[22]. Separation artificially 'tilts the competitive playing field' against the separated operator wherever there is any form of infrastructure competition available[23]. Where two structurally-separated networks with boundaries drawn at different layers compete with each other, then the outcome will inevitably be contrary to the pursuit of efficiency – whether in its static or dynamic components – as well as leading to severely distorted patterns of competitive interaction as each party seeks to gain an advantage by exploiting loopholes created by the regulations[24].

[21] At least those customers who can be served by VDSL, which is expected to be offering 40Mbps to 60% of the population before the UFBI rollout begins. See: *Communications Day* June 17, 2010, p.1.
[22] de Bijl, P. (2005). Structural Separation and Access in Telecommunications Markets. *CESifo Working Paper No. 1554, Category 9: Industrial Organisation.* www.CESifo-group.de.
[23] Howell, B., Meade, R. & O'Connor, S. (2010). Structural Separation versus Vertical Integration: Lessons for Telecommunications from Electricity Reforms. *Telecommunications Policy.* In press.
[24] Howell, B. (2008). Strategic Interaction Under Asymmetric Regulation. Paper presented at the International Telecommunications Society European Regional Conference Rome Italy September 17-20 2008. Available from:

Furthermore, subjecting an existing (legacy) network facing competition from a superseding network technology to regulation appears somewhat perverse when it is believed that the superseding technology will be unconditionally dominant in the market due to its superior characteristics. If the new network is in fact unconditionally dominant, then it will quickly erode any market power held by the legacy network, making ongoing regulation of the legacy network redundant. If the new network is not unconditionally dominant (or not yet unconditionally dominant though it might be at some stage in the future), then why is the government subsidising its entry into an already heavily regulated market at the current point in time in the first place? Such a policy risks introducing the technology 'too early', and therefore imposing costs that would not be incurred if the option was instead exercised to defer investment until further evidence emerges of the likely timing at which the network will become dominant.

Even aside from the question of technological dominance, it begs the question of what policy objective the government is intending to address with its investment. If the intention is to it is to provide infrastructure competition for the incumbent that would not occur naturally (as evidenced by the government's action as proposed investor), then why continue to regulate the incumbent as if it is facing no infrastructure competition (i.e. persevering with a regulatory regime predicated on the pursuit of a services-based competition policy)?[25] If the intention is to accelerate the rate at which the (government-selected) subsidised technology supersedes the legacy technology, then why persist with a regulatory policy that increases competition on the legacy network, and by extension, increases the extent of competition posed for the superseding network by the legacy network? Such increased competition will inevitably delay the diffusion of the new network by reducing its market share, thereby defeating the original purpose fur the investment of pursuing an earlier roll-out. It would be simpler, cheaper and provide more certainty that the government's objective would be delivered to instead pursue the Australian Government's strategy of

http://www.iscr.org.nz/f467,13555/13555_ITS_Strategic_Interaction_Under_Asymmetric_Tariff_Regulation.pdf.

[25] As an aside, it is noted that the New Zealand government has in the past used investment in a competing firm as a means of imposing competitive discipline on firms where there may have been an exertion of market power, even though it also had the option of addressing any potential competition problem via its regulatory powers. The most notable recent example is the financial underwriting of KiwiBank to compete with (foreign-owned) retail trading banks.

abandoning all pretence of industry engagement in competition on the legacy network by acquiring it and managing its closure, in the manner of a centrally-planned project[26].

The scenario highlighted in this subsection serves to underscore the importance of being clear about exactly which type of competition the government wishes to foster. The institutional requirements for the development of infrastructure competition are radically different from those required for services-based competition.

The apparent inconsistencies between the proposed New Zealand institutions and the purported project objectives suggest that there is still a considerable lack of clarity about exactly what the government is endeavouring to achieve in regard to both its investment and competition policy. This is reflected in the bifurcation of oversight responsibilities. Whilst the Telecommunications Commission is charged with the continuing regulation of the legacy infrastructure, if there is to be any regulatory restraint imposed upon the fibre infrastructure before 2020, it would appear to be under the purview of Crown Fibre Holdings and its contractual arrangements with the LFCs and LFC partner firms[27]. There will likely be further pressures placed on these arrangements as wireless broadband technologies increase in capability and become credible substitutes to fixed-line services. The potential exists for a severe disjunction in industry governance to emerge, creating further confusion in the absence of a clear statement of the overarching competition policy for the broadband sector as a whole (as opposed to individual objectives in relation to specific infrastructures). It would be remarkable indeed if the arrangements as proposed did not further exacerbate uncertainty and thereby compromise the potential of the New Zealand broadband market to evolve in a manner that maximises its potential to contribute to the overall welfare of the New Zealand economy.

3. Conclusion

On first examination, UFBI 2.0 appears to be an improvement over its predecessor from the perspective of prospective partners seeking to invest, as the potential for the practice of price discrimination suggests that the likelihood that customers will migrate to it from the legacy copper network is increased. However, it is still far from clear that the changes will be conducive

[26] Although simpler, cheaper and more certain to be delivered relative to the alternatives, there is no guarantee that this strategy will deliver the greatest benefit to end users in the long run, as it is noted that the government may have invested either too early or in the wrong technology.
[27] LFC prices will be capped to those listed in the pricing schedules submitted in response to the ITP, unless otherwise agreed with Crown Fibre Holdings. This makes CFH, in effect, the price regulator.

to the development over time of either a robust and economically sustainable fibre network, or a wider broadband market that will support ongoing dynamic investment over a range of competing infrastructure platforms (both fixed and mobile) for the benefit of the New Zealand economy. Although LFCs now have access to the benefits of product and price discrimination, failure to allow new parties to register responses to the ITP potentially shuts out investors now better placed to participate. Thus, greater certainty for existing prospective investors comes at the expense of the participation of others.

As there is still no clarity with respect to overarching sector competition policy objectives (infrastructure competition or services-based competition) there is still considerable confusion about the role to be played by investors in copper and other broadband networks. The continued regulation of legacy copper networks as if they face no infrastructure competition at the same time as competing fibre operators are relieved of some of the burdens of regulatory oversight and structural separation in order to enable them to compete aggressively with copper providers threatens to facilitate fragmentation of industry-wide broadband sector competition policy. Without any overt statements of policy to govern the transition between network types, strict adherence to legacy regulatory policies risks invoking a series of strategic competitive responses from copper and fibre operators that have the potential to undermine the ability for fibre operators to capitalise upon the product and price discrimination benefits enabled by the UFBI amendments. At worst, if fibre operators attempt to engage in aggressive price-based competition to capture a high volume of low-value broadband customers, the result could be a perverse case of adverse selection where the fibre network is exposed to financial failure, whilst the copper network retains high-value customers and becomes more profitable. At best, if fibre operators perceive the bifurcation to be a real risk, then they will refrain from aggressive competition based upon price discrimination, and the market equilibrium will revert to a smaller number of fibre connections being sold, higher average costs, and a reversion to the very problems that the recent changes sought to address.

The ultimate viability of the Government's fibre investment project will turn on some binding decisions being made about the shape of future competition, and developing a policy and regulatory regime that enables the future networks to be delivered as efficiently as possible. In the case of Australia, the government has seized the initiative and determined that there will be only one fixed network in the medium term, and that will be fibre. All pretence of maintaining competitive access to the copper network, or competitive pressure from the copper network on the

fibre network has been dismissed. This stance enables the fibre investment to proceed with reasonable certainty that the roll-out objectives will be achieved, albeit by replacing thirty years of policy seeking to break the power of a regulated monopoly provider with the installation of yet another regulated monopoly provider. Whilst clarity and policy consistency has been achieved in the Australian case (access regulation policy instruments are consistent with the pursuit of services competition), there is no assurance that the fibre network will be deployed at the least cost overall to Australian consumers – there may still be some value in the option of waiting for further information before deploying the network.

New Zealand policy makers can choose to implement the same competition policy as Australia, just as they have chosen to adopt the same separation structures. Alternatively they can adopt an infrastructure-neutral competition policy based upon truly competing network infrastructures. However, the second policy is incompatible with the imposition of separation mandates on either or both of the networks. An infrastructure-neutral policy would require a relaxation of existing regulatory and separation mandates on the copper network in order for infrastructure-based competition to be effective, regardless of who funds the new fibre infrastructure.

Ultimately, if the new fibre infrastructure cannot be provided in a cost-effective manner (even with the advantages of government subsidies unavailable to competing networks) without compromising the pursuit of the competitive principles governing private sector investors in other networks, then it begs the question of whether it is a prudent for the government to engage in investing in the sector at all. If the risks arising from uncertain demand are indeed so large that the private sector is refraining from investing, then perhaps the government should also take heed of the costly consequences of the 'bad news principle' as it pertains to sunk investments in costly infrastructure: investing and then learning, once it is too late or too costly to withdraw, that it would have been better to have waited.