

Comments on the Telstra Submission on Vertical Integration and Separation

A Report for Optus

by

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About the author



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1. Introduction

In this report I comment on the submission made by Telstra Corporation Limited (Telstra) on vertical integration and separation dated 25 June 2008.¹ Telstra has presented arguments against mandated separation; whether it be full legal, structural, functional or in any other form.

Telstra accuses the ‘separationists’, as it calls them, of being “backwards looking”. Telstra states that separationists take a rear view mirror by:

- Calling for overseas models of separation “designed around a legacy network architecture that the NBN will render redundant”;
- Promoting separation as a solution to “discriminatory problems that have long been resolved in Australia”; and
- Overlooking the “fact that the limited real world experience of separation is on already-built networks and even then that the disruptions, costs and delays have been large relative to any conceivable benefits”.

In this report I address each of these points. I dispute the claim that the architecture of the NBN will render redundant the issue of separation. The legitimate concerns about discrimination are such that it is right to consider separation an appropriate prescription. I show by appealing to evidence that the claimed discriminatory problems have long been resolved in Australia is wrong. I also suggest, by appealing to the recent case of separation in the UK, that the benefits of separation outweigh the costs.

I also present a response to the opinions and analysis of some of those writing in support of the Telstra position. In particular I respond to the submissions made by Kip Meek and Professor Martin Cave. While there is overlap in some of the positions we all hold, I identify and discuss areas where I believe there is a difference of opinion.

It may surprise some that economists writing independently about the regulatory treatment of the NBN arrive at different conclusions. This is probably a result of differences we hold with regard to our confidence in the effectiveness of current regulatory provisions in Australia to tackle anti-competitive discrimination in fast growing broadband markets.

¹ All the submissions on the regulatory treatment of the NBN can be obtained at http://www.dbcde.gov.au/communications_for_business/funding_programs_and_support/request_for_submissions_on_regulatory_issues/submissions

Concerns about discriminatory behaviour have been made explicit in the Government's NBN tender, which states that arrangements should be made for open access:²

“Proponents should submit arrangements for open access to their networks, including measures or models to ensure equivalence of access prices and non-price terms and conditions, and arrangements for allowing access seekers to differentiate their service offerings to customers.”

In my opinion, the current enforcement powers of the ACCC would not be sufficiently strong enough to cope with potential anti-competitive discriminatory conduct applied by the NBN operator. As I have previously argued in Doyle (2008), I believe that further strengthening of the current operational separation requirements is needed at a minimum to achieve the Government's objective of “equivalence of access prices and non-price terms and conditions”.

Further strengthening could be achieved by the ACCC declaring³ new higher-speed services supplied by the NBN or alternatively by the submission of access undertakings which perform a similar function. It could also constitute structural separation.

Declaration of new services or undertakings in relation to the NBN would need to be in such a form that provides the necessary assurances to third party downstream competitors that anti-competitive discrimination would be unlikely. This would be best achieved by ensuring that the regulatory treatment of the NBN operator is undertaken in a way that results in an *organisational form* making transparent internal transactions within the NBN to ensure equivalence is achieved.

To achieve equivalence, a number of routes are possible. These fall into three categories shown below:

1. Status Quo: Rely on existing legislation and regulatory provisions.
2. Functional Separation: Modify the operational separation provisions to focus specifically on the NBN and the operation of next generation network access services.
3. Structural Separation: Establish separate legal entities responsible for the wholesaling and retailing of relevant services supplied by the NBN.

² Section 1.1.10 in DCON08/18, Department of Broadband, Communications and the Digital Economy, 11 April 2008. .

³ Declaration of a service can be undertaken in accordance with Part XIC Division 2 of the Trade Practices Act (TPA) 1974. The process of declaration is similar to the designation of significant market power (SMP) applied in the regulatory framework applicable to electronic communications in the European Union. Declaration requires a public consultation period and appropriate market analysis. If a service is declared under the TPA, then this triggers an *ante* access obligation, much like SMP triggers at least one regulatory obligation in the EU.

The *status quo* involves the least up-front burden but carries greater risk *ex post* should the NBN operator subsequently engage in anti-competitive discrimination. The recent history of such behaviour (see section 4 for further details) indicates that fears about possible anti-competitive conduct in the NBN context are grounded. Relying on current provisions would appear not to have achieved equivalence.

Functional separation is the application of a *behavioural remedy* – it would require the conduct of the NBN operator to be monitored closely in certain areas on an ongoing basis, much like the current operational separation provisions. However, as I argued in my submission Doyle (2008) attached as a supporting paper to the Optus (2008) submission, the current operational separation arrangements would need to be strengthened appreciably to achieve the desired equivalence. This could be achieved in practice by drawing on the lessons from functional separation experiences in New Zealand and the United Kingdom (UK).

I would like to emphasize at this juncture that were the authorities in Australia to go down the road of strengthening the current separation regime in the context of the NBN, I am not advocating that were this to be the functional separation model that it should be a carbon copy of the regulatory regimes in either New Zealand or the UK. The market in Australia is at a different evolutionary point to that in New Zealand and the UK, and the geographical scope of the market is very different. Thus the application of a reformed and strengthened functional separation regime in Australia, aimed at achieving equivalence, would take account of market specifics in Australia.

The application of *structural separation* is argued by Optus to be the best way forward for the regulatory treatment of the NBN. Structural separation appears more feasible within a next generation network (NGN) setting, due to open standards and the detachment of services from the underlying transport layer (see in particular the discussion in Section 5 below). If a decision is taken to apply structural separation to the NBN, this would be best undertaken before the NBN is designed and built, otherwise breaking-up an established entity would entail substantially higher costs.

The response is structured as follows.

Section 2 counters the claim that the NBN renders separation redundant. Section 3 appeals to the evidence to show that discriminatory problems are alive and current in Australia and far from “long resolved”. Section 4 discusses whether limited real world experience with separation in telecommunications should be seen as an obstacle. Ironically this line of reasoning – the lack of precedence – was used by some to oppose liberalisation in the sector. Section 5 presents a brief discussion on next generation networks (NGN) and related access networks. Section 6 is my response to specific aspects of the submission made by Mr. Kip Meek on behalf of Telstra. Section 7 is my response to specific aspects of the submission made by Professor Martin Cave on behalf of Telstra. Section 8 concludes.

2. “NBN will render separation redundant”

Telstra seeks to portray the NBN as something that should be immune from enforced regulatory separation as the NGN architecture renders separation redundant. This position presumes that the standardisation underlying NGN lends itself naturally to non-discriminatory conduct. The view that standards would eliminate market power seems far too optimistic. While the NBN may entail the deployment of systems that embody considerable openness and standardization, there will remain in practice procedures and details that would enable the application of discrimination in the absence of adequate oversight and regulation.

It will still be the case, for example, that the NBN operator will have to manage relationships with third party access seekers involving order processes. It is within this context that the scope for non-price discrimination is greatest. The NBN operator could delay service installation, offer inferior quality of service, deny access to space, etc. To assert that incentives for discrimination and the feasibility for discrimination dissipate because of the open standards underlying NGN is misplaced optimism.

Leaving aside the technological issues, it would also appear to be the case that the NBN operator, particularly if it were Telstra, will be in a strong position in the market. The NBN will provide one operator a substantial advantage in the market – in the form of ubiquitous presence and renowned high-speed broadband. If Telstra is selected to be the NBN operator, its already existing market power would be amplified.

In my view the installation of a government subsidised fibre-to-the-node (FTTN) network is likely to tilt the market substantially in favour of the NBN operator (especially so in the case of Telstra) and possibly deter others from investing in competing high-speed networks.⁴ This investment threat was recognised by the ACCC in the preamble to its annual report 2005-06:

“Investment by competing carriers also remains at risk from prospective fibre-to-the-node network upgrades.”⁵

To counter legitimate concerns about equivalence, it seems reasonable to consider the appropriate degree of separation to apply to the NBN operator. In its submission Telstra comments that separation has been applied only in the context of legacy networks. This observation is hardly surprising, given the absence of a NGN

⁴ Duplication at a national level seems implausible in the near future, though it is likely that competition will emerge in markets designated as Bands 1 and 2 (central business districts and urban and suburban areas).

⁵ See <http://www.accc.gov.au/content/index.phtml/itemID/788067> published 23 May 2007.

national network in operation anywhere today.⁶ What really matters with regard to separation is not what it has been applied to, but rather what market conditions need to be satisfied in order to recommend applying the remedy in some format.

The application of regulation in the telecommunications sector is about establishing the right balance between *ex ante* rules (obligations) and *ex post* enforcement of conduct in competitive markets. This is achieved in practice by analysing market structures on a forward-looking basis. If a market is expected to feature a dominant or monopolistic firm and in the absence of regulation would not exhibit competitive entry, it is right to inquire whether regulatory intervention *ex ante* would be in the public interest. Separation, whether behavioural or structural, is a regulatory remedy that resides in the toolkit of regulators.

Separation is a remedy that seeks to redress a *significant* imbalance in markets between dominant firm(s) and usually smaller non-dominant firms. While it may be exceptional in practice, it is an instrument that should be made available to Australian regulators. It is worth noting that there has been much discussion in Europe about the desirability of separation as a remedy in the telecommunications sector recently. For example, ECTA (European Competitive Telecommunications Association) has been supporting the European Commission's moves to strengthen national regulatory authorities' powers in Europe by allowing for the application of functional separation:

“ECTA wants all telecoms regulators in Europe to have the power to make functional separation, an important additional measure in securing robust and effective implementation of the existing Framework and its associated proven benefits to the economy and to consumers, a reality. The pro competition body believes that it is only through having the right tools, including the ability to address incentives for anti-competitive behaviour at their heart, that the deadlock with incumbents can be broken once and for all.”⁷

In the case of the NBN two related key questions need to be addressed when analysing the market(s):

1. If regulation is maintained at the *status quo* will the market structure in electronic communications markets be such that the NBN will tilt the playing field in favour of the NBN operator to the extent that this operator will be able to exercise market power to the detriment of customers?
2. If the answer to 1 above is yes, then what additional access remedies would be required to counterbalance the threat posed by the NBN operator?

⁶ There are numerous NGN investments in place and being built around the world, but no exclusive NGN national network.

⁷ “ECTA calls for functional separation powers” press release 9 October 2006, Brussels available at <http://www.ectaportal.com/en/basic522.html>

Question 2 above may be refined by asking whether the NBN operator should be subject to legal, structural or functional separation. Telstra opposes all three separation models and by implication therefore believes that the answer to question 1 above is no.

Following discussions about the Australian electronic communications market with various interested parties held during a week long visit over 16-20 June 2008 and given the discussion in section 3 below, I believe it is reasonable to express concerns about the NBN operator having the potential to exercise market power – particularly via discriminatory conduct.

In Australia section 152AB of the TPA states the primary objective to be considered when assessing remedies is the:

“Promotion of the long-term interests of end-users”

It would also be helpful if those shaping the regulatory treatment of the NBN in Australia were also to take heed from the principle of proportionality enshrined in European law:⁸

“For this purpose, it may impose on them any behavioural or structural remedies which are proportionate to the infringement committed and necessary to bring the infringement effectively to an end.”

In the electronic communications sector the application of obligations on dominant operators in Europe also requires a proportionate approach:⁹

“Obligations imposed in accordance with this Article shall be based on the nature of the problem identified, proportionate and justified in the light of the objectives laid down in Article 8 of Directive 2002/21/EC (Framework Directive).”

I note that Professor Cave has concluded that behavioural remedies and integration would be effective for the enforcement of equivalence for the NBN:¹⁰

“I therefore, conclude that a model incorporating integration and effective behavioural enforcement of equivalence is likely to be the best means of achieving the Government’s objectives in relation to the NBN.”

⁸ Regulation 1/2003 Article 7(1).

⁹ Article 8(4) of the Access Directive, Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive).

¹⁰ Page 34 in Cave (2008).

Given the recent history of discrimination in Australia, I suggest that at a minimum for the behavioural enforcement to be effective the existing operational separation requirements would need to be revised to ensure equivalence. The view I have expressed that this requires a robust form of functional separation is intended to bring about the “effective behavioural enforcement of equivalence” sought by Professor Cave.

3. “Discriminatory problems ... long been resolved in Australia”

In the quarterly operational separation report (see ACCC (2008a)) it is remarked:¹¹

“The ACCC is satisfied that the March quarter 2008 report conforms to the requirements of the RKR¹².”

It might be concluded from this statement that discriminatory problems have been resolved in Australia.

If this were the case, the argument in favour of separating the NBN would be undermined. However, as I show or refer to below, the RKR are not all embracing and the operational separation requirements do not appear to deal adequately with discriminatory conduct.

Furthermore, although the ACCC is satisfied in relation to the requirements of the RKR in general, there are some particular exceptions. For example, in respect of residential services the ACCC remarks:

“The current report indicates that during the current quarter, and over the past four quarters, wholesale residential customers have received inferior levels of service for one category of basic access connections. As a consequence, the ACCC will be closely monitoring Telstra’s performance with respect to connecting these basic access services in ensuing quarters.”¹³

It is interesting to note that the ACCC quarterly report on operational separation also states:¹⁴

“The report is not intended to identify whether particular instances of discrimination may have occurred. The ACCC will, therefore, continue to monitor any trends in performance and respond to complaints of discrimination on their merits.”

Below I choose to focus in particular on problems of non-price discrimination. See CEG (2008) for a discussion on price discrimination problems.

¹¹ Page 38 ACCC (2008a). It should be noted that the data supplied to the ACCC had not been subject to audit at the time the ACCC expressed its opinion in May 2008.

¹² RKR are the Record-keeping rules issued by the ACCC under section 151BU of the TPA that require carriers or carriage service providers to keep and retain records and to give any or all of the reports to the ACCC as required.

¹³ It should also be remarked that the ACCC is referring to one category of basic access service. For other services supplied to residential services there is no reported problem.

¹⁴ Page 33 ACCC (2008a).

3.1. Case 1: ULLS in Multi-Dwelling Units

On 21 September 2006, the ACCC received a written notification from Optus of an access dispute in relation to the supply by Telstra of the Unconditioned Local Loop Service (the ULLS¹⁵) in Multi-Dwelling Units (MDUs) to Optus. Optus' notification was provided to the ACCC pursuant to subsection 152CM(1) of the TPA.

The notification stated that the dispute concerned the technical and operational quality of the ordering and provisioning provided by Telstra to Optus in respect of the ULLS that Optus claimed was not of a quality equivalent to that which Telstra provided itself.

Optus complained to the ACCC that Telstra was providing higher performance standards to its retail customers than wholesale customers – for example, by routinely offering better connection times to its retail customers than to wholesale customers. Optus sought an ACCC ruling to improve the process by which Telstra connected customers in apartments through its ULLS access service.

Whilst Telstra Retail is able to provide connection remotely at the flick of a switch – Telstra applied a cumbersome process for wholesale customers requiring two separate technicians to visit the customer's premises and taking several days to complete (and requiring customers to be present for both visits). Essentially, Telstra refused to connect the "in-use" line to the apartment requiring a new copper pair to be provisioned. To make matters worse it would only connect to the network side of a MDF block in an apartment – requiring Optus to complete the jumper across to the customer side.

The ACCC issued a ruling in Optus' favour in November 2007 – but Telstra continues to challenge the validity of this ruling.¹⁶ The ACCC noted in its supporting reasoning that Telstra's conduct was not consistent with the statutory principle of non-discrimination:

“In staff's opinion this situation does not seem to be within the spirit or intent of the legislation in its attempt to achieve non-discriminatory outcomes.”¹⁷

¹⁵ The ULLS is an access service involving the use of unconditioned cable, primarily copper pairs, between end-users and a telephone exchange, where the unconditioned cable terminates. The ULLS is used by access seekers to connect their own networks to existing infrastructure to deliver high-speed and data-based services to end-users.

¹⁶ *Access Dispute between Optus Networks Pty Limited (Access Seeker) and Telestra Corporation Limited (Access Provider) Provisioning of Unconditioned Local Loop Service to Multi-Dwelling Units*, Access dispute notified under Subsection 152CM(1) of the Trade Practices Act 1974 on 21 September 2006, Final Determination under Section 152CP of the Trade Practices Act 1974 (the TPA), 30 November 2007 available at: <http://www.accc.gov.au/content/item.phtml?itemId=806373&nodeId=0b8a3e614a1166263e0083eca6bd71a6&fn=Optus/Telstra%20ULLS%20MDU%20final%20determination%20%E2%80%93%2030%20November%202007.pdf>.

¹⁷ Page 52 in Attachment B – *Access Dispute between Optus Networks Pty Limited (Access Seeker) and Telestra Corporation Limited (Access Provider) Provisioning of Unconditioned Local Loop Service to Multi-Dwelling Units*, Access dispute notified under Subsection 152CM(1) of the Trade Practices Act 1974 on 21 September 2006, Final Determination under Section 152CP of the Trade Practices Act 1974 (the TPA), Reasons for Final Determination, 30

3.2. Case 2: Space constraints in Telstra exchanges

Optus has recently submitted a dispute in response to Telstra's policy of capping access to space in its exchanges. Optus allege that this conduct constitutes a further breach by Telstra of its requirements to provide access to ULLS on terms which are equivalent to those it provides to itself. The complaint was lodged in June 2008. The ACCC has reported that Optus was not alone in complaining about access to space:¹⁸

“A large number of access seekers have complained that Telstra is refusing to provide access to exchanges on the grounds that there is insufficient space.”

On 14 July the ACCC announced that to remedy this problem it:¹⁹

“has made a record keeping rule [RKR] which requires Telstra to keep and retain records and give reports to the ACCC relating to access to Telstra exchange facilities.”

The RKR requires Telstra to give monthly reports to the ACCC that contain information which includes details of Telstra decisions to cap and uncap exchanges and the amount of space in an exchange reserved by Telstra for its own anticipated future requirements. The RKR also requires Telstra to report on the details of queued access seekers, their position in the queue, and any progress in the queue.²⁰

3.3. Case 3: ADSL2+

According to Optus:²¹

“Telstra refused to provide access to its Business Grade DSL service to Optus and other competitors for well over a year, giving it the

November 2007 available at:

<http://www.accc.gov.au/content/item.phtml?itemId=806380&nodeId=113bbd47547007b14b98646b6014a8c6&fn=Optus/Telstra%20ULLS%20MDU%20final%20determination%20%E2%80%93%20Statement%20of%20Reasons%20%E2%80%93%2030%20November%202007.pdf>.

¹⁸ See “ACCC to oversee access to Telstra exchange facilities” available at:

<http://www.accc.gov.au/content/index.phtml/itemId/835726/fromItemId/621277>.

¹⁹ See “ACCC to oversee access to Telstra exchange facilities” available at:

<http://www.accc.gov.au/content/index.phtml/itemId/835726/fromItemId/621277>.

²⁰ *Access to Telstra Exchange Facilities Record Keeping and Reporting Rules*, Section 151BU Trade Practices Act 1974 issued by the Australian Competition and Consumer Commission available at:

<http://www.accc.gov.au/content/item.phtml?itemId=835607&nodeId=25816c06d931814ab48e6f8e21b52137&fn=Final%20RKR%20-%20Access%20to%20Telstra%20Exchange%20Facilities.pdf>

²¹ Exhibit 2 (page 14) in the Optus Submission Regulating the National Broadband Network, June 2008 Public, available at:

http://www.dbcde.gov.au/communications_for_business/funding_programs_and_support/request_for_submissions_on_regulatory_issues/submissions/Optus.pdf.

opportunity to lock-away the most valuable customers in the important early phase of this service. Telstra has refused to provide wholesale access to its competitors to its ADSL 2+ service meaning that in many areas customers have only one choice of supplier.”

Optus is not alone in complaining about the ADSL2+ service. Internode and nine other ISPs have rallied together to urge the ACCC to intervene and restrain Telstra from denying wholesale access to its ADSL2+ broadband infrastructure. In a nine page letter submitted to the ACCC the plaintiffs outline alleged impediments to competition that arise from Telstra’s control of the copper telephone line network including; untenably high wholesale transmission pricing; capped exchanges; and Telstra’s serial delays for approval to access exchanges to install DSLAMs.²²

3.4. Case 4: Fault restoration for ULLS

I have been informed that Optus communicated a formal complaint to the ACCC on 19 August 2008 under Telstra’s Operational Separation Plan. The complaint alleges that Telstra has breached its obligations regarding “fault restoration” for ULLS.

3.5. Case 5: Telecommunications access dispute LLS

NEC notified the ACCC of an access dispute on 8 July 2008 relating to Telstra’s supply of the LSS.²³ The ACCC has commenced an arbitration process for this access dispute.²⁴

3.6. Case 6: Migration issues from LLS to ULLS

Internode has expressed dissatisfaction with churn processes moving customers from LSS onto ULLS. iiNet has also expressed concerns, with its regulatory affairs GM Stephen Dalby speaking at a Communications Alliance roundtable on ULLS migration that apparently downplayed demand for a process. Internode agree with iiNet that there must be an easier process for operators to move users onto naked DSL. Internode’s position on this issue was reported in *Communications Day* recently:²⁵

““Telstra are saying there’s no demand,” he told CommsDay, calling the claim “ludicrous.” Internode software project manager Rod Westland had stood in for Hackett at most meetings, with Hackett

²² As reported at <http://www.internode.on.net/news/2008/02/75.php> on 25 February 2008.

²³ The LSS allows two carriers to provide separate services over a single metallic pair or line. The higher frequency part of the line is used by the access seeker to supply broadband (DSL) services, while the access provider simultaneously supplies a PSTN voice service over the same portion of the unconditioned local loop.

²⁴ See ACCC media release # MR 195/08, issued: 11 July 2008.

²⁵ *Communications Day* issue 3349, 27 August 2008, page 2.

claiming “his input was repeatedly ignored in the process and ignored in the written versions.” “There’s no doubt there’s demand for it.” He said that he felt “not so much anger as much as resignation” that the roundtable did not improve processes for ULLS migration. “The next rational step would be for the ACCC to force [Telstra] to [change its stance].”

3.7. Case 7: Supply of ULLS

Macquarie Telecom and Optus have each notified the ACCC about an access dispute concerning supply of the ULLS by Telstra.²⁶ With these notifications, the ACCC reported in July 2008 that it is arbitrating on a total of **35 access disputes. In addition, final determinations made in 18 concluded arbitrations are under judicial review.**²⁷

The access dispute notified by Macquarie relates to monthly rental and connection charges for the supply of the ULLS, while the dispute notified by Optus relates to the terms and conditions on which Telstra supplies interconnection to enable Optus to acquire the ULLS at exchanges that Telstra classifies as 'racks capped', 'rack and MDF capped' and 'potential'.²⁸

The ACCC has commenced the arbitration process for these access disputes.

3.8. Discrimination problems are not resolved in Australia

The above cases suggest that discriminatory problems are not long resolved in Australia. This is perhaps why Graeme Samuel, Chairman of the ACCC, wrote in a letter dated May 2008 to Minister for Broadband, Communications and the Digital Economy, Senator the Hon. Stephen Conroy:²⁹

“The emerging competitive environment is encouraging carriers to invest, innovate and compete for customers. Yet this emerging state of competition has not occurred without pressure on regulatory mechanisms. Industry has been progressively forced to rely more on ACCC processes to resolve impasses in commercial negotiations for access to regulated services. 2006–07 saw the highest number of access disputes notified in a single year, and continues the increasing trend for arbitration as a mechanism for resolving industry disputes.”

²⁶ ACCC Media release # MR 191/08, issued 3 July 2008 available at: <http://www.accc.gov.au/content/index.phtml/itemId/834346/fromItemId/621277>

²⁷ The number of arbitrated access disputes includes those dealing with pricing.

²⁸ The Optus dispute is actually the same one referenced in case 2 above – the ACCC has classified it as a ULLS dispute.

²⁹ See ACCC (2008b).

4. “Limited real world experience of separation”

Telstra is correct to observe that there has been little real world experience of separation in telecommunications. However, (vertical) separation is a regulatory instrument that has emerged on the policy agenda in recent years because of fears that fast changing broadband markets could lead to a reverse in the trend towards competition in liberalized markets as the position of incumbent operators is strengthened given their historical ubiquity.

For example, policy makers in the European Union have in recent years been debating the desirability of including functional separation as a remedy within the SMP obligations. It has been proposed by the European Commission to include functional separation as a tool available to European NRAs.³⁰ It is expected that functional separation will be available as a remedy to European NRAs in the near future.

Telstra also claims that the limited experience of separation to date has given rise to costs which are large relative to “any conceivable benefits”, though this is not supported by any substantive evidence. Telstra is particularly critical of the application of functional separation in the UK.

It seems premature to make claims that the costs of functional separation outweigh benefits in the UK. Functional separation undertakings were accepted by the regulator Ofcom in September 2005 and the process is not yet complete. It is perhaps worth speculating about the benefits of functional separation in the UK, given it has been in place since January 2006.

Telstra note in their submission³¹ that costs of functional separation in the UK borne by BT may have been £100m and “are rumoured to be higher”. I am aware of informal discussions in the UK about the costs arising out of functional separation and the numbers mentioned tend on the whole to gravitate towards those cited by BT in its annual reports. Mention is often made of the £100m. However, as Telstra also recognize in their citations from the BT reports, expenditure on implementing functional separation is not provided separately from expenditure on other investments associated with BT’s NGN core (known as 21CN) and LLU demands. For this reason I believe it reasonable to take the set-up costs functional separation to be £100m.

³⁰ Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and services, and 2002/20/EC on the authorisation of electronic communications networks and services, Brussels, 13 November 2007, COM(2007) 697 final; available at http://ec.europa.eu/information_society/policy/ecomm/library/proposals/index_en.htm.

³¹ Paragraph 38 page 15.

I concede that a rigorous assessment of the functional separation applied in the UK is difficult at this time, due to the fact its effects are only recent and data are not readily available.³² Obviously the initial costs seem large, but benefits would be expected to flow over many years.

In Tables 4.1 (Scenario 1 ‘Pessimistic’) and 4.2 (Scenario 2 ‘Optimistic’) I report on a speculative assessment of functional separation in the UK based on calculations assessing its net impact over the period 2006 through to 2020 (a fifteen year horizon).

I make a number of assumptions about the costs and ascribed benefits due to functional separation and apply a real discount factor of 3.5%.³³ Scenario 1 assumes that demand grows slowly and below consensus forecasts and in Scenario 2 I assume demand is broadly in line with consensus forecasts.

On the demand side of the market I assume that broadband growth stops at 25 million in 2017 in Scenario 1 and in 2012 in Scenario 2. These assumptions are typically below industry forecasts.³⁴

I assume during the market growth period (up to 2011 and 2016) the opex costs of functional separation are £5 million per annum. Upon achieving market maturity I assume these costs decline to £2 million – representing compliance and monitoring costs.

With regard to the benefits of functional separation, I take a deliberately conservative approach and assume that there are limited pro-competitive effects occurring only in the retail broadband market in the UK between 2006 and 2012.³⁵ Essentially I am assuming that functional separation has the effect of accelerating competition and that this occurs only during the years 2006-2012.

After 2012 I assume that the pro-competitive effect of functional separation expires, but recurring costs associated with functional separation continue through to 2020 (at this point it seems reasonable to speculate that functional separation may no longer be required if inter-platform competition is effective).

I assume that the benefit of functional separation takes the form of intensifying competition and this translates into the equivalent of a modest 2% reduction in the retail price of typical DSL products between 2006 and 2009 and a 1% reduction for

³² The same data challenges confronted Ofcom in their review of functional separation in the UK in 2007, see Ofcom (2007).

³³ The discount factor is the social time preference rate recommended by the UK Treasury for appraising projects, see <http://greenbook.treasury.gov.uk/annex06.htm>

³⁴ See for example the forecast in The UK Telecommunications Report 2008 by Business Monitor International which forecasts 31.5 million broadband lines by 2012.

³⁵ I assume that BT's functional separation has a market wide effect – so that consumers of cable TV broadband products also benefit due to the intensification of competition between the copper and cable platforms. There are around 3.5 million cable subscribers of broadband services at present.

the same products between 2010 and 2012. After 2012 I assume that the pro-competitive effect due to functional separation expires.

It is helpful to discuss the scale of the assumed pro-competitive effects to put them into context. Two percentage points of the typical broadband package retail price in 2008 amounts to around £0.24 per month per subscriber. Thus functional separation provides each consumer with a small absolute gain in welfare – but the substantial size of the market means that in aggregate the benefits are large.

With modest assumptions made about benefits and accepting Telstra’s claims regarding the set up costs of functional separation, I calculate the net impact in present discounted value terms to be a little under £50 million in Scenario 1 and almost £80 million in Scenario 2. These are not huge numbers, but they indicate that for even assumed small pro-competitive effects – functional separation delivers a positive outcome.

It should also be remarked that Ofcom has reviewed the BT undertakings (see Ofcom (2007)), and while identifying some problem areas, perhaps unsurprisingly given its novelty, it concluded:³⁶

“It is difficult to isolate the impact of the Telecoms Strategic Review from other factors, but the evidence shows that since the Undertakings were introduced, the experiences of both business and residential consumers have been positive. They are experiencing greater choice, lower prices, and more innovative products and services. The climate for industry has also improved. In particular, there has been rapid growth in the take-up of local loop unbundling.”

More recently the CEO of Ofcom, Ed Richards, stated at an industry conference:³⁷

“To see the merits of appropriate regulatory intervention, one only needs to consider the functional separation of BT and the consequential success of the UK broadband market”

4.1. Concluding remarks

I have presented speculative calculations in this section intended to demonstrate that despite the large up-front costs associated with functional separation in the UK, there need only be modest gains on the demand side for the impact to be net-positive overall. In time a full and proper assessment will be made of functional separation in the UK, but this will happen long after regulatory debate surrounding the inception of the NBN in Australia has ended. Nevertheless, it is also worth noting that the regulator in the UK views functional separation as successful.

³⁶ Page 4 in Ofcom (2007).

³⁷ *Serving customers: competition, innovation and investment through the next phase*, Intellect Conference, 3 July 2008 available at www.ofcom.org.uk.

Table 4.1 Scenario 1 – Pessimistic demand case

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Subscribers (millions)	11	14	16	17	18	19	20	21	22	23	24	25	25	25	25
ULL wholesale price £	80	80	80.70	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69
ULL Monthly price £	6.67	6.67	6.73	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81
Retail monthly price £	12.00	11.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Assumed benefits	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
End user monthly benefit £	0.24	0.22	0.20	0.20	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benefits £m	31.68	36.96	38.4	40.8	21.6	22.8	24	0	0	0	0	0	0	0	0
Cost of FS £m	100	5	5	5	5	5	5	5	5	5	5	2	2	2	2
Discount rate	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
PD Cost of FS £m	£141.83	Sources: Openreach website for pricing information on unbundled loops, site for retail broadband prices, Ofcom for subscribers													
PD Benefit of FS £m	£190.90	Broadband UK for retail broadband prices see www.broadband.co.uk													
Net impact £m	£49.07	Ofcom Market Updates for historical broadband subscriber numbers; forecasts based in part on The UK Telecommunications Report 2008 by Business Monitor International													

Table 4.2 Scenario 2 – Optimistic demand case

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Subscribers (millions)	11	14	17	19	21	23	25	25	25	25	25	25	25	25	25
ULL wholesale price £	80	80	80.70	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69	81.69
ULL Monthly price £	6.67	6.67	6.73	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81
Retail monthly price £	12.00	11.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Assumed benefits	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
End user monthly benefit £	0.24	0.22	0.20	0.20	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benefits £m	31.68	36.96	40.8	45.6	25.2	27.6	30	0	0	0	0	0	0	0	0
Cost of FS £m	100	5	5	5	5	5	2	2	2	2	2	2	2	2	2
Discount rate	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
PD Cost of FS £m	£130.81	Sources: Openreach website for pricing information on unbundled loops, site for retail broadband prices, Ofcom for subscribers													
PD Benefit of FS £m	£208.90	Broadband UK for retail broadband prices see www.broadband.co.uk													
Net impact £m	£78.09	Ofcom Market Updates for historical broadband subscriber numbers; forecasts based in part on The UK Telecommunications Report 2008 by Business Monitor International													

5. The NBN and Next Generation Networks

In this brief section I seek to identify the principal characteristics that distinguish a legacy network from an all IP-based NGN.³⁸ I note that NGNs are more amenable to separation than legacy networks.

The NBN will be an all-IP based network and make use of a NGN core network and extend next generation access to at least the cabinet and in many cases, over time, to the customer premises. Unlike legacy networks, NGNs are being designed to accommodate separation between the network or transport layer and the application or services layer.

Salina and Salina (2007) state in their reference work on NGNs:

“Today, most services are associated with the networks. The associated service lasts as long as the network exists. Value added services (VAS) are added in a proprietary way and in a silos manner. In NGN, service is no longer lifetime – a service comes and goes, but the carrier network remains.”³⁹

They also state:

“Today’s network was built originally for one dominant service for the lifetime of that network: therefore there is no real concept of architecture. The services or applications added later were implemented in a proprietary way in the silos manner, i.e. each service or application has its own billing, management, etc. Such an approach not only heavily multiplies the same functionality, but it has also brought the system to such a messy state ... NGN will come with a well-defined architecture. It is advanced in that it promises:

- The simplicity and flexibility to add/maintain/remove service, application, content and information;
- The easy creation of advanced service/application/content/information.”⁴⁰

These views are important, as they inform us that the future world of all IP-based networks in a NGN setting are designed to operate in ways which more readily separate services from transport/network functions.

³⁸ Salina and Salina (2007) is a useful introductory reference on NGNs.

³⁹ Salina and Salina (2007) page 39.

⁴⁰ Salina and Salina (2007) page 49.

Telstra's suggestion that separation is inappropriate because it has been applied only on legacy networks is itself a backward looking assessment. Looking forward to the NBN as a NGN all IP-based network means that from a regulatory perspective the architecture lends itself more readily to separation.

Salina and Salina (2007) remark that NGNs could be operated in either an integrated or separated way:

“In a NGN environment, the open interfaced-based service and network architecture will enable an enormously extended landscape for network operators, service providers, and customers. In principle,

- An NGN network operator is not necessarily an NGN service provider.
- An NGN network operator is not necessarily an end-to-end network operator; it can be an access network-only operator, or a transport network-only operator.”⁴¹

We have seen in the case of functional separation applied to BT, the retro-fitting of the separation to a legacy network involves considerable up-front costs. The opportunity in Australia is to look forward and it would appear that the NBN could be designed without difficulty to accommodate separation.

⁴¹ Salina and Salina (2007) page 65.

6. Kip Meek's comments

The main thrust of Kip Meek's submission on behalf of Telstra is the suggestion that competition in the fixed line sector in Australia in 2008 appears not to be as bad as that witnessed in the UK in 2004. In terms of fully unbundled local loops this is certainly the case. In the UK there were only a few thousand fully unbundled loops in 2004, whereas in Australia Telstra has reported that as of September 2007 there were over 300,000 (see Table 6.1).

Table 6.1 Unconditioned local loop service data⁴²

Snapshot of Telstra's customer access network as at 30 September 2007

	Total Voice only SIOs [1]	Total Voice and DSL SIOs [2]	Total DSL only SIOs [3]	ULLS Access Seeker [4]	LSS Access Seeker [5]
Band 1	217,606	39,042	4,254	20,911	17,133
Band 2	4,581,434	2,081,764	31,954	282,251	314,327
Band 3	1,237,340	780,551	9,708	3,013	6,099
Band 4	792,053	225,339	5,253	73	641

[1] Total Voice only SIOs, as described in Attachment A to the Telstra Customer Access Network Record Keeping and Reporting Rules 2007 (Telstra CAN RKR)

[2] Total Voice and DSL SIOs, described in Attachment A to the Telstra CAN RKR

[3] Total DSL only SIOs, as described in Attachment A to the Telstra CAN RKR

[4] ULLS Access Seeker, as described in Attachment A to the Telstra CAN RKR

[5] LSS Access Seeker, as described in Attachment A to the Telstra CAN RKR

In terms of market share, however, the situation is different. In 2004 and 2005 BT's share of the retail broadband market in the UK was 23.6% and 23.4% respectively. Telstra announced in its annual results (13 August 2008)⁴³ that at June 2008:

“Retail broadband market share has grown for seven consecutive halves to 49% at June 2008. Once again we defied the trends of our global peers by growing market share by 2 percentage points and increasing average revenue per user (ARPU) by 2.9%”

By contrast BT's market share of retail broadband in the UK was 26.5% in 2007, up from 23.6% in 2006.⁴⁴ Telstra, in terms of market share data, appears to occupy a stronger position in the market than BT does in the UK. For an incumbent operator to possess almost half a new market which is subject to apparent robust access regulations

⁴² Source: ACCC at <http://www.accc.gov.au/content/index.phtml/itemId/836506/fromItemId/621277> published 21 July 2008.

⁴³ Telstra *CEO Letter to Shareholders and 2008 Full Year Shareholder Update* 13 August 2008 available at: http://www.telstra.com.au/abouttelstra/investor/docs/tls620_shareholderletter.pdf.

⁴⁴ Source of data on BT's market share, Table 16 in *Telecommunications Market Data Tables Q4 2007*, Ofcom, published May 2008.

seems to provide *prima facie* evidence of a regulatory problem.⁴⁵ Given the discussion about discrimination above, and the many incidences of alleged anti-competitive price discrimination being investigated by the ACCC, these may well be factors influencing the extent to which Telstra has occupied such a large share of the retail broadband market.

Given his belief that Australia today is different to the UK in 2004/2005, Kip Meek concludes:

“I would not recommend that the UK form of separation be used as a starting point in the Australian context”.

I agree with Kip Meek that the UK model of functional separation applied from late 2005 was designed to remedy problems identified on a forward-looking basis at that time. It would be folly to suggest that an identical form of separation should apply in Australia without undertaking a detailed market review of the relevant Australian markets beforehand. Nevertheless, it is possible that the current review might conclude that a version of operational separation similar to that in the UK is needed to safeguard consumers from anti-competitive behaviour.

He also suggests that “a ‘wait and see’ approach to addressing competition issues in a ‘next generation network’ (NGN) has less of a downside” and as a result he appears to support a position of regulatory forbearance with respect to the NBN.

The claim that NGN networks have less of a downside risk from a wait and see strategy is curious. Given that the OSS (Operation Supporting Systems) and BSS (Business Supporting System) in NGN networks are likely to be designed for the market structure in place at the time of installation, it might prove very costly to re-write systems to deal with problems that might emerge subsequently. In the interest of regulatory certainty I believe it should be made clear to the operator of the NBN that separation could and may be applied if competition problems prove to be intractable – and therefore the OSS and BSS should be designed to enable operation within either a separated or non-separated context. This may raise installation costs slightly, but given some form of separation appears necessary it would be a prudent regulatory investment.

In the following I address some of Kip Meek’s specific comments.

6.1. Non-price discrimination

He states that the “debate about the form of separation should be primarily concerned with problems of non-price discrimination”. He appears to be dismissive of the many cases of anti-competitive price discrimination in Australia. It is well known in the

⁴⁵ It is interesting to note that France Telecom (FT), the incumbent operator in France, also occupies 49% of the retail broadband market in France - in the last quarter of 2007 FT’s market share in broadband services remained stable at 49.4% (FT Annual Report 2007 available at http://www.francetelecom.com/en_EN/finance/documentation/annual-reports/att00002654/RA_eng.pdf). Separation has not been applied by the regulator ARCEP in France.

economics literature that such problems can be remedied through structural separation – as argued in CEG (2008).

In section 3 of his report Kip Meek suggests that the regime in Australia appears to have been more effective than that in the UK in dealing with a number of sensitive issues in relation to interconnection and LLU. However, no evidence is supplied to substantiate these claims and he relies on hearsay supplied by Telstra executives:

“I am told that the resolution of the LLU issues took approximately 12 months, which compares very favourably to the slow, highly controversial process in the UK”.

This statement seems at odds with the cases I have discussed above in section 3.

6.2. UK separation

In section 4 Kip Meek provides an overview of the evolution of separation in the UK. This is a helpful synopsis and provides insights from one of those acting on behalf of Ofcom and who was very closely involved in the negotiation process with BT. Now as an ex-regulator and a consultant, Meek highlights three criticisms that are apparently made of the BT Undertakings:⁴⁶

1. He claims that the pace of deregulation is too slow – alluding to comments made by Ian Livingston, BT’s CEO, regarding universal service.
2. Undertakings involved substantial costs.
3. Undertakings have made it difficult for the UK to implement an NGA network.

I shall take each of these in turn. His first comment is odd. Ian Livingston, as far as I am aware, has not tied the universal service obligation to functional separation. Livingston’s comments have, to the best of my knowledge, been directed specifically at universal service obligations that pre-date functional separation.⁴⁷ The second comment only means something if the overall effect of functional separation has been counter-productive. As I have suggested above, under very modest projections about growth in broadband in the UK the net impact of functional separation is likely to be positive. Furthermore, Mr. Meek’s former colleagues have been championing the success of functional separation.

Kip Meek remarks that point 3 above is “the most fundamental”. However, while he acknowledges the views held by some economists and others that separation may amplify the risks of investment, he states that:

⁴⁶ Page 14 in Meek (2008)

⁴⁷ See for example *BT 'wants deregulation before fibre work'* available at: <http://www.digitalspy.co.uk/broadcasting/a93725/bt-wants-deregulation-before-fibre-work.html>.

“Openreach will be able to invest in a normal way, if anything with an investment case strengthen (sic) by having both BT and others as wholesale customers of its local access fibre”.⁴⁸

I agree with Kip Meek that Openreach will be able to invest in a normal way. This observation is very important. The fact BT had not made a commitment to a major investment in next generation access before June 2008 is not something which should necessarily be of great concern – even if a number of commentators have remarked that the UK is behind one or two other countries. Indeed, Kip Meek has been reported as stating that a massive investment in NGA infrastructure is not necessarily required now in the UK.⁴⁹

“Ofcom’s consultation document from last year [2007] is full of caution about demand for NGA – capacity is not yet running out and investors are not rushing to lay fibre. The scale of demand for much higher bandwidths – the eventual driver of NGA investment – is not yet known.”

Thus, the fact BT had not announced prior to Meek’s paper a commitment to invest in substantial investment in NGA infrastructure is taken as a sleight on functional separation, despite Meek stating publicly only three months previously that current capacity was adequate in the UK and demand uncertainty not sufficiently comfortable to attract investors.

6.3. Operational separation regime in Australia

Kip Meek refers to a number of regulatory interventions in the late 1990s in Australia and argues that these led to interfaces which allowed wholesale buyers greater discretion over non-price parameters (churn, fault handling, billing, etc.).

He goes on to state that representations made to him by Telstra executives led him to be

“reassured as I could be that non price discrimination is markedly less of an issue in Australia in 2008 than it was in the UK in 2004/5”.⁵⁰

He states:

“On the evidence communicated to me, equivalence of non-price issues seems to operate reasonably well in the Australian context and to be accepted by Wholesale customers”.⁵¹

⁴⁸ Page 15 in Meek (2008).

⁴⁹ Kip Meek reported on site <http://www.headstar.com/egblive/?p=101> in comments at the UK Parliamentary IT Committee (PITCOM) – on Next Generation Broadband Access, posted 7 April 2008.

⁵⁰ Page 17 Meek (2008).

⁵¹ Page 18 Meek (2008).

I find the claim that “non-price issues seem to operate reasonably” extraordinary. On the basis of information supplied largely by Telstra, Meek seems comfortable about concluding that non-price discrimination issues are presumably marginal. I would have expected further scrutiny of such claims before making such bold claims, particularly given his position as a former regulator.

He goes on to note that there has been an “absence of a material level of complaints” submitted to Telstra’s Director of Equivalence and the Board Audit Committee.

Meek does, however, state:

“such behaviour [absence of material complaints] could in theory be consistent with a complete lack of faith in the efficiency of separation and equivalence”.⁵²

Indeed, this would, in my view, be the main reason. The fact the vast majority of respondents to the NBN regulatory debate are calling for some form of separation, and many have cited anti-competitive threats and conduct associated with Telstra, reinforces the lack of faith wholesale buyers have in the current operational separation regime.

6.4. Observations

Kip Meek states that non-price discrimination appears not to be an issue in Australia in 2008. He states that “if this is the case” – raising doubts as to whether it really is – he questions whether a more radical form of separation would be proportionate.

I disagree with the premise of his argument – the absence of material non-price discrimination. As I have discussed above, there are numerous cases involving problems of discrimination.

6.5. Fibre and the rules of the game

Kip Meek raises the issue of ‘boundary’ in the context of the evolution to an all IP-based network ultimately leading to FTTP (starting as in the NBN with FTTN). He suggests that the current demarcation between Openreach and the rest of BT (in particular BT Wholesale) would change as fibre reaches deeper into the network into nodes and beyond. The fact separation in the UK was legacy network determined inevitably presents challenges in moving forward to an all IP network.

Australia, on the other hand, is better placed to look forward and anticipate the installation of a NGN with access to the node or deeper. As discussed above in Section 5, separation is something that is better handled in the NGN setting as the transport and service layers are designed to be distinct – unlike the position found in legacy networks where service and network tend to go hand-in-hand.

⁵² Page 20 Meek (2008).

6.6. Kip Meek's conclusion

Kip Meek concludes that conditions in Australia are very different to those that were evident in the UK in 2004/5. However, it is striking that little evidence is presented to substantiate this claim. I note that in some respects the position of the market in Australia today is different to that prevailing in the UK in 2004/5. There are many more unbundled loops in Australia today than existed in the UK a few years ago, for example.

I contend on the basis of evidence I have seen and discussed above that non-price discrimination is an issue in Australia today. On this basis I believe it is correct that those responsible for designing the regulatory regime that will govern the NBN should take due account of this.

7. Professor Martin Cave's comments

Professor Martin Cave is well known to me – he is a colleague in the same institution and we have co-written and published several articles. His views on separation articulated in the Telstra submission raise a number of interesting issues which I address below.

7.1. Next generation access networks

Professor Cave focuses his attention on the question: Is regulatory intervention needed with respect to integration or separation of next generation access networks in Australia?

Professor Cave expresses the view that there have been “disquieting aspects” associated with functional separation in the UK, and combined with other evidence he appraises he forms the view that there should be a presumption in favour of “permitting vertical integration in the present case”.⁵³

It is also claimed that the conclusion in favour of a permissive stance is bolstered by the:

“significant competitive opportunities provided by NGAs and the inherently equivalent, open access architecture of those networks”.

Professor Cave offers views on the theoretical literature regarding vertical integration. My comments on this literature were made clear in Doyle (2008) and I shall not repeat them here. Instead, I focus largely on the claim made by Professor Cave that:⁵⁴

“the difference between operational and structural separation diminishes on inspection”.

Before addressing this, however, I will examine whether the telecoms sector is special.

7.2. Next generation access networks – moving telecoms closer to the world of computing

Is the telecommunications sector special? Professor Cave asks this question in the context of the regulatory treatment in general and separation in particular in the case of the NBN.

Professor Cave suggests that innovation is likely to be harmed if separation were applied to the NBN. In this regard it is interesting to look at the computing sector, as the NGN

⁵³ Page 3 in Cave (2008).

⁵⁴ Page 19 in Cave (2008).

and NGA framework that will characterise the NBN will be closer in structure to modern computing networks.⁵⁵

In computing there is vertical separation between manufacturers and service providers. Network service provision is offered by ISPs and telecoms companies, and content, applications and information are enabled by software houses. Hardware equipment is manufactured by numerous upstream firms, which requires operating systems supplied largely by Microsoft, Sun Microsystems and Apple.

Despite there being a non-vertically integrated market structure, there is considerable innovative activity in the sector, for example see Bresnahan⁵⁶ (2004)⁵⁷ who remarks:

“The open and modular design of PCs and vertical disintegration of the PC industry were important to this innovation. ... Openness, modularity and vertical disintegration worked to facilitate a positive feedback system. [innovation in the PC market in the 1970s as a result of spreadsheets and word processing applications]”⁵⁸

“There are two directions of causation linking competition and openness in computing. ...there is a causal flow from openness and vertical disintegration to competition.”⁵⁹

Professor Cave suggests that regulating a bottleneck could undermine incentives for replication where this is feasible.⁶⁰ Presumably this is predicated on a view that regulators typically incorrectly price access to bottleneck facilities – in particular tend to set prices below economic cost. Such pricing may have occurred in the United States during the UNE-P policy in the late 1990s, and may have occurred in parts of Europe in recent times, but it does not follow that it would happen in Australia, or indeed has happened.

Professor Cave also suggests regulators are prone to error by stating that:

“Past experience shows that judgments about the location of bottlenecks within telecommunications networks and the existence of downstream market power will change, often in unanticipated ways, with successive technological developments.”⁶¹

⁵⁵ See for example Salina and Salina (2007).

⁵⁶ Timothy Bresnahan is Landau Professor of Technology and the Economy at Stanford University and Chair of the department of economics there. He is Director of the Center for Research in Employment and Economic Growth in the Stanford Institute for Economic Policy Research. Previously, he has served as Chief Economist of the Antitrust Division of the US Department of Justice and head of the Information Technology in Use research program and of the Stanford Computer Industry Project.

⁵⁷ See also the book by Nancy Dorfman (1987), which is now dated but provides interesting insights into market structures during the early phase of computer developments.

⁵⁸ Page 7 in Bresnahan (2004).

⁵⁹ Page 12 in Bresnahan (2004).

⁶⁰ Page 6 in Cave (2008).

⁶¹ Page 7 in Cave (2008).

Telecommunications has experienced much technological change over the last few decades, but despite this, market power has been acknowledged by many to reside within local access networks over this period.⁶²

The effect of technological change in telecommunications has been progressively to eliminate natural monopoly elements in higher capacity backbone markets, and in some cases to eliminate natural monopoly elements in some access networks. There has been no radical shock to the position of market power, though there have been surprises in terms of services (such as the unforeseen explosive growth in mobile telephony from the late 1990s onwards).

Professor Cave also suggests that functional separation in the UK is ill-equipped to deal with NGA because of an “inflexible structure [imposed] on a business which is not easily reversed”⁶³.

Functional separation in the UK was designed to deal with problems in the UK and was primarily concerned with the well-known parameters of a legacy network. It is not necessary to ‘reverse’ the rules, as flexibility was built into the Undertakings by allowing for industry consultation on how best to accommodate NGA and NGN products.

7.3. Consequences of separation

Professor Cave’s main thesis in relation to separation rests on the effects it would have on the incentives to invest in new fibre networks (page 9). Professor Cave inquires into coordination across a vertically separated chain in telecommunications. He suggests that problems of hold-up would likely beset the ownership separation model. The idea is that investment by a separated network company would have low salvage value and would feature asset specificity (Williamson (1985)).

In this setting it is speculated a service provider could order access capacity from the network company, and once such capacity is installed it would have a strong incentive to renegotiate terms in its favour. Anticipating this incentive, it is predicted the network company would either set very high prices for capacity installation or choose not to invest at all. Alternatively, both parties would likely recognise the changing incentives over time and would write contracts that are enforceable and which allow risks to be shared such that investment does occur.

Interestingly the issue of hold-up, often spoken about but rarely cited in practice, was raised in evidence before a FTC/DOJ Joint Hearing by Michael D. Hartogs of

⁶² This is the case in Europe where NRAs in the EU have found incumbent operators to possess market power in wholesale local access markets (these are markets 8 and 9 known as call origination and call termination), see http://ec.europa.eu/information_society/policy/ecomm/doc/implementation_enforcement/article_7/comp_reg_%20firs_t_%2006082008.pdf.

⁶³ Page 7 in Cave (2008).

Qualcomm, a chip and computing manufacturer separated from downstream operators (telecommunications networks and service providers). He stated that:

“there is little evidence that *ex post* opportunism is or would be a frequent occurrence...no essential IP [Intellectual Property] holder has an interest in killing the downstream market as its revenues are linked to the growth of this market”.⁶⁴

I suggest the same attitude would prevail in a separated telecommunications sector.

Professor Cave also asserts that “this accumulation of evidence suggests that coordination problems in separated structures are potentially severe”⁶⁵. The evidence appealed to is taken from Ofcom (2007). I cannot find a suggestion of potentially severe problems relating to coordination in this document. Furthermore, it is striking that since Professor Cave claimed these “severe” problems BT has announced that it intends to embark on a major investment in NGA infrastructure:⁶⁶

“As part of our wider strategy of delivering next generation broadband services nationwide, we recently announced plans to invest £1.5 billion to make fibre-based, super-fast broadband available to as many as 10 million homes in the UK by 2012.”

It would appear that BT’s recent announcement demonstrates the investment coordination issue is unfounded.

7.4. Other comments

Professor Cave suggests that separation of the NBN would sacrifice benefits of vertical integration including:⁶⁷

- Lower prices as double marginalisation is avoided
- Better and more innovation processes because network level decisions can be made with much better knowledge of retail products and retail demand conditions
- Network operator’s incentives to invest because it shares in the margins accruing downstream

⁶⁴ See presentation to FTC/DOJ Joint Hearings on Single Firm Conduct, 30 January 2007
http://www.usdoj.gov/atr/public/hearings/single_firm/docs/221412.htm

⁶⁵ Page 19 in Cave (2008).

⁶⁶ See BT ‘First quarter to June 30, 2008 - key points’ at
<http://www.btplc.com/News/Articles/Showarticle.cfm?ArticleID=f8d20ceb-9f66-480c-8393-28955000b4b>

⁶⁷ Page 19 in Cave (2008).

- More responsive as there is no need to bargain about risk sharing and capital contribution

Aside from the first point above, which I accept and in any case can be dealt with via other remedies (e.g. price regulation), the other three claims need closer scrutiny.

It is not clear why a vertically integrated company should necessarily have “much better knowledge of retail products and retail demand conditions”? I presume Professor Cave is inferring that in a separated context, information flows between disparate downstream service providers and an upstream network provider would be compromised. But why would this be the case? Do airlines fail to signal their intentions about customer requirements to manufacturers? Does Dell operate at a competitive disadvantage by not producing components?

In terms of sharing margins – I find this a strange comment. It suggests that firms operating in vertically separated industries would always be at a disadvantage, as margins could not be shared. But in reality upstream and downstream firms are capable of writing enforceable contracts that lead to risk sharing and, where desirable, margin sharing. This is evident in the vertically separated aerospace industry, where Boeing was barred from service provision after 1934. The same can be said for companies supplying equipment to operators in the telecommunications sector, such as Nokia, Siemens, Alcatel-Lucent, etc.

7.5. Concluding remarks

On close inspection of Professor Cave’s position it appears he is not that far from my own position. I have suggested that for the NBN there should at least be a strengthening of the operational separation. In my view this is compatible with a “model incorporating integration” and would deliver the “effective behavioural enforcement of equivalence”.

8. Conclusion

Telstra has presented a case against separation of the NBN, arguing that the proponents of separation are “backwards looking”. In particular Telstra states that separationists, as it calls them, take a rear view mirror by:

- Calling for overseas models of separation “designed around a legacy network architecture that the NBN will render redundant”;
- Promoting separation as a solution to “discriminatory problems that have long been resolved in Australia”; and
- Overlooking the “fact that the limited real world experience of separation is on already-built networks and even then that the disruptions, costs and delays have been large relative to any conceivable benefits”.

In this report I have rebutted each of these claims and shown that they lack validity.

The regulatory regime that should govern the NBN should be based on a proper forward looking assessment of the relevant markets. In my view there is every reason to be concerned that the NBN operator, particularly if it were Telstra, would not operate in a way that would meet the Government’s objective of “open access” and “equivalence of access prices and non-price terms and conditions”.

Separation of the NBN is a desirable prescription and would ensure that the Government’s objectives would be met and ultimately that end users would benefit.

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