

# ARON & CRANDALL - A REVIEW

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## 1. Executive summary

- The arguments and examples in the Aron & Crandall paper do not appear to support the Bell and TELUS position. All the evidence shows that appropriate regulation encourages efficient investment.
- The Aron and Crandall paper relies on information which is out of date and in some respects inaccurate. More up to date information contradicts the picture Aron & Crandall present.
- The Aron & Crandall paper focuses on residential markets and fails to take proper account of business markets
- Nine EU countries rank ahead of the USA in terms of broadband penetration - significantly undermining the Aron & Crandall claim that the US is a 'gold standard'.
- Broadband markets in Europe are healthy and deliver good outcomes for end-users, contrary to the claims of Aron & Crandall.
- "Regulatory holidays" (legal mechanisms which effectively exempt the incumbents from competition on their fast internet access networks) have been shown to depress investment in Europe when they have been introduced. Although the German government has maintained its defence of its protectionist measures, Deutsche Telekom has voluntarily given up its "regulatory holiday" recognising the wholesale access benefits both the ILEC and those seeking wholesale access.

## 2. Introductory comments and accuracy review

As a general comment, we note that the Aron & Crandall document uses a number of sources which are out of date and also makes a number of assertions which are simply inaccurate. We comment on some of the broader ideas put forward by Aron & Crandall later in this report. In this section, however, we are concerned specifically with the accuracy of the supporting information put forward by Aron & Crandall. Unfortunately much of that information is hearsay, out of date and/or inaccurate. In some cases it is even internally contradictory. For example:

- Aron & Crandall refer to Waverman's *Connectivity Scorecard*, but not to the latest version of that report (the 2009 version), preferring to cite the 2008 report. The next generation landscape, particularly in Europe, changed significantly in this period. The conclusions drawn by Aron & Crandall are not supported by the most up to date evidence found in Waverman's 2009 scorecard, and indeed, the 2009 scorecard supports conclusions which are diametrically opposed to those drawn by Aron & Crandall.
- In figure 1 of their report, Aron & Crandall publish graphs purporting to show the fastest broadband speeds available in particular countries. The OECD is given as the source of this data which seems to be a simple cut-and-paste from an OECD report published in June 2008. It is made clear in the OECD report, however, that the data is correct as at October 2007. In other words, it is now more than 18 months out of date. While this is the most up to date OECD report available, events have moved on rapidly (in the UK at least) as competition has spurred investment and speeds have continued to increase. According to Aron & Crandall, the fastest cable modem speed in the UK is 20Mb/s. In fact Virgin Media now sells a DOCSIS3 service which provides 50Mb/s downloads. Similarly, Aron & Crandall claim BT's fastest download speed is 8Mb/s. In fact BT is now launching services based on fibre-to-the-cabinet (remote) which will enable speeds of up to 40Mb/s.

In any event the focus on speeds provided by incumbents does not give the full picture. ADSL2+ technology is widely available from other service providers in the UK (for example TalkTalk<sup>1</sup>, O2/Be<sup>2</sup> and others). These competitive operators had already started providing 24Mb/s download speeds using unbundled network

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<sup>1</sup> TalkTalk Speed Boost: <http://www.talktalk.co.uk/products/broadband/speed>

<sup>2</sup> BeUnlimited: <https://www.bethere.co.uk/homebroadband.do> and O2 Premium (up to 20Mb/s <http://broadband.o2.co.uk/home/packages.jsp> )

elements on ADSL2+ while BT was stuck at 8Mb/s. This is clearly an argument in favour of unbundling.

- Aron & Crandall say that

*“Incentives for cable companies to invest and compete would be depressed by unbundling rules on ILECs”*

This is certainly not an accurate account of what has happened in the UK, where Virgin Media has rolled out DOCSIS3 technology to deliver download speeds of up to 50Mb/s.

- Aron & Crandall say that

*“Few ILECs have committed to building the most expensive of these networks with fiber to the premises (FTTP) because of the market risks involved and the attendant regulatory risk of future wholesale obligations. **Indeed, none of the European Union carriers has begun building such a network [emphasis added].**”*

This is incorrect (and is indeed contradicted by Aron & Crandall themselves later in their submission<sup>3</sup>); a number of ILECs in EU member states have begun FTTP network deployment. France Telecom/Orange SA is in the testing stage from the launch of “Lafibre” – the deployment of FTTP throughout France. Investment has already begun and an agreement has been signed with other French operators Numericable and SFR setting out the conditions for sharing fibre optical cables.<sup>4</sup> KPN has fibre to the home pilots in five cities across the Netherlands with the prospect of a widespread roll-out to follow.<sup>5</sup> In the UK, BT has deployed FTTP technology to connect up to 10,000 properties in the new-build development in Ebbsfleet Valley, England.<sup>6</sup> Once again, Aron & Crandall focus on the behaviour of ILECs (“few ILECs have committed”) and fail to consider other forms of investment in the apparent belief that ILEC networks somehow more valid than others. In addition to commitment to FTTP networks by traditional operators, alternative investment models have supported FTTP deployment across Europe so far, with many being community-owned. In Sweden, the EU member state with the most extensive FTTP network, investment has come in part from the city of Stockholm

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<sup>3</sup> On page 36 of their report

<sup>4</sup> [http://www.francetelecom.com/en\\_EN/press/press\\_releases/cp081216-1uk.html](http://www.francetelecom.com/en_EN/press/press_releases/cp081216-1uk.html)

<sup>5</sup> <http://www.kpn.com/corporate/nl/pers//persber/further-clarity-on-fibertothehome-ftth-regulation-no-mass-rollout-yet.htm>

<sup>6</sup> <http://www.btplc.com/News/Articles/Showarticle.cfm?ArticleID=a37b77c1-fde7-4698-8fa8-a58ddd9e8242>

itself and the resulting fibre network now connects businesses and consumers in the capital and beyond.<sup>7</sup>

- Aron & Crandall say that

*Telecom New Zealand “has not begun to deploy fiber or other advanced network facilities... Its 2007 Annual Report can only say that “The replacement of our copper network infrastructure is a very live debate in New Zealand...” Telecom New Zealand Annual Report, 2007... It does not suggest that it has resolved the debate in favor of proceeding with a plan to deploy fiber, and it is surely not close to devoting the capital resources to do so.” [latter part from footnote]*

Aron & Crandall’s confident prediction is not supported by the facts. In 2008 Telecom New Zealand launched ADSL2 services and announced detailed network roll-out plans.

*“We are busy deploying 3,600 roadside cabinets and 2,500 kilometres of new fibre optic cable as part of our commitment to enable the delivery of broadband connections between 10Mbps and 20Mbps to 80% of New Zealanders by the end of 2011”<sup>8</sup>.*

In January 2009 Telecom New Zealand went on to announce that it would be deploying VDSL cards which would allow customers within 1km of the remote or central office to access services of up to 50Mb/s download speeds. Beyond the 1km limit the cards operate in ADSL2 mode providing speeds of up to 20Mb/s:

*“Already 57 per cent of New Zealand lines can take advantage of Telecom’s next generation access network and this grows to 84 per cent on completion of the fibre-to-the-node roll out in 2011.”<sup>9</sup>*

It is important to remember that this NGA investment is being made in a country which has implemented functional separation which contradicts the Aron & Crandall world view.

- Aron & Crandall point out that:

*“the United Kingdom incumbent, BT, [has] announced its intention to roll out a new fiber network to about 10 million homes by 2012. This announcement is a particular surprise because BT is arguably the most aggressively regulated ILEC in Europe, having*

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<sup>7</sup> <http://www.stokab.se/templates/StandardPage.aspx?id=306>

<sup>8</sup> <http://www.chorus.co.nz/enhancing-the-broadband-network> This document bears to have published one week prior to Aron & Crandall’s report. The plans must therefore have been in preparation for some time and in discussions with Telecom New Zealand have confirmed that this was in fact the case.

<sup>9</sup> Telecom NZ press release:  
[http://www.telecomwholesale.co.nz/f554,333421/333421\\_VDSL2\\_media\\_release\\_FINAL.pdf](http://www.telecomwholesale.co.nz/f554,333421/333421_VDSL2_media_release_FINAL.pdf)

*submitted to the regulator's demand for full functional separation several years ago. BT apparently will have to provide all of its facilities, including its new FTTH facilities if it builds them, on a regulated wholesale basis to its competitors. Notably, however, BT has suggested recently that it may seek relief from this requirement in order to facilitate investment: "Discussions have started with Ofcom, the UK regulator, to remove the current barrier to investment and making sure that anyone who chooses to invest in fiber can earn a fair rate of return for their shareholders."*

*BT's press release announcing its intention to deploy FTTH was formally released on July 15 of this year, but the equity markets apparently had a forewarning...*

*... It remains to be seen if BT, in light of the market's apparent negative reaction, will actually deploy the fiber plant as announced"*

It is unclear how Aron & Crandall believe the equity markets had a "forewarning" or whether any kind of impropriety is suggested. As highlighted above, however, BT is in fact proceeding apace with its NGA roll-out. This undermines Aron & Crandall's theory that regulatory intervention undermines investment incentives.

The inaccuracies in the Aron & Crandall report substantially eliminate the value of its conclusions to policy-making.

### 3. Key themes

#### 3.1 Aron & Crandall focus only on mass market broadband and do not consider the needs of businesses

The most striking feature of the paper submitted by Aron and Crandall is that while they stress at some length the importance of broadband for the economy, they make no attempt to analyse the distinct needs of business customers and characteristics of the business communications market. We have also seen such flawed reasoning employed during the debate on next generation access in Europe. While the importance of broadband to society and the economy is beyond doubt, the assertions of economic value and benefit without any attempt to consider the business community independently cast doubt on the value of the Aron & Crandall report as a tool for assessing the correct approach for society as a whole. It also fails to consider whether a separate approach may be necessary to address the particular characteristics of business markets. This mismatch is all the more surprising since it is in large part businesses which are in the best position to deliver the potential benefits accruing from broadband.

Consumer markets are clearly important but telecoms infrastructure and services must support the business market in order to realise in full the promise of high-speed broadband to the whole of society. The nature of the business market is fundamentally different from the residential market. Demand tends to be more dispersed as business customers typically seek to connect different offices and business providers typically have lower local market shares. In this sense the business market is not the same as the urban residential market despite their geographic proximity. Wholesale access is therefore more important in the business market than in the mass market, or as the report by the well-known telecoms institute, WIK puts it<sup>10</sup>

*“25. Our model results show that the market shares required for SLU solutions are compatible with competitors having significant scale in the mass market and focusing on covering in more densely populated regions. However, these market shares are unlikely to be achievable for business service providers whose coverage is more dispersed and whose local market shares are typically lower.”*

and

*“36.4 Bitstream access remains important to maintain existing levels of competition where full LLU is not technically feasible, to support the ladder of investment concept, for less urban*

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<sup>10</sup> The Economics of Next Generation Access - Final Report. WIK Consulting 10 September 2008  
[www.wik.org/content\\_e/ecta/ECTA%20NGA\\_masterfile\\_2008\\_09\\_15\\_V1.pdf](http://www.wik.org/content_e/ecta/ECTA%20NGA_masterfile_2008_09_15_V1.pdf)



*areas where unbundling is not economically viable and for business service providers whose market shares are unlikely to reach critical levels.”*

Interestingly, one of the sources cited by Aron & Crandall (Waverman’s connectivity scorecard) *does* seek to take account of the importance of the business market, but Aron & Crandall refer to the 2008 report, which has been superseded by a more detailed 2009 report, and in our submission draw inferences from the scorecard which are unsustainable. As highlighted below under the heading “International Comparisons”, the 2009 report shows that the EU model of regulation has produced an equivalent ranking to the USA for two EU member states, with a number of other EU states following close behind. The most up to date version of one of Aron & Crandall’s primary sources shows Aron & Crandall’s conclusion that European regulation obstructs next generation rollout to be wrong.

### **3.2 Intra-platform competition is essential for optimal outcomes**

Bell, TELUS and their experts all appear to agree with us that competition is of enormous importance in delivering benefits to end users in both the residential and business markets. However the Aron & Crandall paper emphasises the importance of inter-modal competition while dismissing out of hand the benefits of intra-modal competition of the type which the European regulatory regime seeks to foster.

Aron & Crandall cite a 2006 paper by Distaso *et al.*<sup>11</sup> which examines the causes of broadband adoption in the EU. They assert that the paper backs up their claim that intramodal competition contributes little if anything to the adoption of broadband, but Aron & Crandall are selective in what they quote from this report. Far from coming down wholly in favour of intermodal competition as the only way ahead, the report actually says that there is merit in pursuing both inter-platform *and* service level competition by means of unbundling

*“... there are positive synergies to be exploited between policies directed to induce more inter-platform competition and those directed towards local loop unbundling.”*

Nor is this a minor aside in the findings of the report, in the headline abstract the authors stress that

*“The results also confirm that lower unbundling prices stimulate broadband uptake.”*

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<sup>11</sup> Walter Distaso, Paolo Lupi, and Fabio Manenti, “Platform competition and broadband uptake: theory and empirical evidence from the European Union,” *Information Economics and Policy*, Vol. 18 No. 1, 2006

### 3.3 The ILECs' incentive is to seek protected status

A clear underlying message from the Aron & Crandall report is that the Government ought to grant the ILECs a *de facto* protected status in the next generation fibre network market. There is an implied threat that the ILECs cannot justify NGA investment without such a monopoly. Of course this is not described in the report as a monopoly and indeed Aron & Crandall are at pains to point out how much competition the ILECs face. Anything other than infrastructure based competition is not in fact accepted by them as competition. This is in marked contrast to the European position where both inter and intra platform competition are seen as having a part to play and are therefore encouraged.

Both the Aron & Crandall paper, and the TELUS petition which it supports, seek to portray any service based competition as a sort of freeloading which brings no benefits to either consumers or the ILECs. For example the opening paragraph of the TELUS petition describes those who seek wholesale access to ILEC networks as “arbitragers”. Aron & Crandall for their part imply that intra platform competition equates to a lack of investment by operators who use unbundling. They refer to “intermodal (investment-based) competition” and compare it with “intramodal (unbundling-based) competition”<sup>12</sup>. This is of course, simply incorrect. The costs of unbundling are in fact significant and require investment on the part of the unbundler in renting the space in the central office from the ILEC, in buying and installing equipment and then in backhaul capacity. So while unbundling based competition might not require investment by ILECs, it is erroneous to suggest that unbundling equates to no investment at all.

Although the investment required to roll out fibre is portrayed as risky and difficult to justify for ILECs such as Bell and TELUS, Aron & Crandall claim that a decision against unbundling and wholesale access would encourage those who seek wholesale access to build rival infrastructure instead. This is not realistic. Even in densely populated Europe the economics of multiple competing mass market access infrastructures do not add up. In Europe the focus has now shifted to facilitating competition by means of risk sharing and wholesale access as outlined succinctly in a report by the telecoms institute, WIK:

*“19. The economics of FTTx do not support multiple replication of the access network sufficient to achieve effective competition. In case of (theoretical) replicability usually only one or in rare cases two operators (in addition to the first mover) can profitably invest in NGA infrastructure. In any case, replicability is limited to denser populated areas.*”

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<sup>12</sup> White paper on Investment in Next Generation Networks and Wholesale Telecommunications Regulation by Aron & Crandall at page 4

*20. Introducing access remedies and/or wholesale products in addition to duct access lowers the critical market shares required for profitability and increases the degree and potential for competition. Access opportunities enable competition wherever a first mover (e.g. the incumbent) rolls out a FTTH NGA infrastructure and require lower market shares for profitability commensurate with market shares that might be realistically achievable in a competitive environment. Fibre LLU and SLU are also the prerequisite for getting (at least) the same degree of competition as under the current unbundling model in the PSTN.”<sup>13</sup>*

By analyzing only the provision of mass market consumer broadband in the EU, Aron & Crandall wrongly conclude that the EU regulatory approach is responsible for a perceived lack of widespread fibre access. In fact the business and consumer segments present quite separate challenges. In the UK, the picture in business markets is of intensive network competition where it is economically viable, backed up by regulated access where it is not. This approach has led Lord Carter, in giving evidence to a House of Commons Select Committee on his Digital Britain report, to say the following:

*“Any medium-sized and large business does not have a next generation fibre problem because they can contract, they can get it built on a bespoke basis. If you are running a medium- to large-sized business, the chances are you already have a standalone contract with a network provider. Next generation capability at an access point is much more meaningful to small- to medium-sized businesses because there is a gap in the market.”<sup>14</sup>*

This comment is borne out by the findings of Ofcom’s Business Connectivity Services Market Review of 2008 which concluded that BT, while still the dominant operator, faced intense competition from a range of alternative network operators, each with their own network infrastructure within specific, narrow, geographic markets.

Despite portraying the European approach as harmful, some of the countries cited as delivering the sort of services which Bell and TELUS want to provide in Canada, are EU member states! The implication in the Aron & Crandall report that the EU has no NGN investment is simply unfounded.

Aron & Crandall also claim that existing competition from mobile broadband and from cable makes the NGN investments very risky.

*“...the problem is not the lack of past investment, per se, but the large capital requirements and the increasing risk of investing in higher speed facilities in a country with low population density and aggressive cable competition.”<sup>15</sup>*

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<sup>13</sup> The Economics of Next Generation Access - Final Report. WIK Consulting 10 September 2008 [www.wik.org/content\\_e/ecta/ECTA%20NGA\\_masterfile\\_2008\\_09\\_15\\_V1.pdf](http://www.wik.org/content_e/ecta/ECTA%20NGA_masterfile_2008_09_15_V1.pdf)

<sup>14</sup> <http://www.publications.parliament.uk/pa/cm200809/cmselect/cmberr/uc331-i/uc33102.htm>

<sup>15</sup> White paper on Investment in Next Generation Networks and Wholesale Telecommunications Regulation by Aron & Crandall at page 21

The argument runs that there is already more than enough competition, or at least that no more is needed and in fact that more competition would harm everyone. We doubt whether this is entirely true in the mass market (for example mobile broadband does not offer speeds in excess of those available from existing DSL based services) but the absence of any evidence or analysis by the authors in relation to the business market renders meaningless the claim that there is enough existing competition.

What Aron & Crandall are in effect arguing for is protected status to shield incumbents from competition and deny its benefits to end users. Since it is accepted that the economics cannot support duplicate access infrastructure in densely populated countries in Europe it is safe to assume that there is no way they can be justified in more sparsely populated Canada<sup>16</sup>. The argument advanced by Aron & Crandall that the absence of wholesale access products would encourage CLECs to build their own access networks is therefore spurious.

Rather than a monopoly for ILECs, the research by WIK in fact reaches completely the opposite conclusion<sup>17</sup>

*32. Policy makers should promote service competition and infrastructure-based competition at the same time. Provided the wholesale price is correctly established and allows a fair return, regulated access to fibre does not preclude and can provide a platform for further infrastructure duplication where this is efficient. Our model shows that reasonably priced access is also compatible with and enables fibre investment with lower retail market shares and less risk than would otherwise apply.*

The argument that any extra competition from wholesale access would be the nail in the coffin for the ILECs' NGN investments is easily answered: if there is already so much competition from the "lightning fast" cable networks, then the ILECs cannot afford not to invest since the consequences of not investing in next generation networks will be stranded assets and fewer customers. The economy will not suffer because users will still have access to all the benefits of broadband cited in the Bell and TELUS petitions.

#### **3.4 It is incorrect that only ILECs will / can invest and require protected status**

This argument is actually contradicted by Aron and Crandall themselves. As already noted, they state that the degree of existing competition in higher speed services makes any investment in next generation network highly risky for ILECs. The clear underlying message is that the Government must choose who it wants to provide next generation access. Although only described in relation to the consumer market, Bell and TELUS'

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<sup>16</sup> UN Demographic yearbook shows that IN Western Europe the mid year population estimate of 187 million in an area of 1,108,000 km<sup>2</sup> results in a population density of 169 while in North America, 336 million people in 21,176,000 km<sup>2</sup> produces a density of 15

<sup>17</sup> The Economics of Next Generation Access - Final Report. WIK Consulting 10 September 2008  
[www.wik.org/content\\_e/ecta/ECTA%20NGA\\_masterfile\\_2008\\_09\\_15\\_V1.pdf](http://www.wik.org/content_e/ecta/ECTA%20NGA_masterfile_2008_09_15_V1.pdf)

assertion is that the Government ought to grant the ILECs a *de facto* protected status in the next generation fibre network market.

Both assertions cannot be true - either there is no current provision or the ILECs do already face fierce competition from cable networks.

If the former is true then the effect of granting the ILEC's petition would be to create a monopoly. If the latter is true then the threats to withdraw investment and of Canada being left behind look rather empty. In any event, there is no attempt to undertake any dedicated analysis of the provision of services in the business market so it is wrong to try to draw conclusions about future investment in next generation networks supporting the business sector from this analysis.

The investments are portrayed as so risky that they threaten the survival of the ILECs themselves if wholesale access is granted. This is justified on the basis that a regulated return would not generate a sufficient return on the investment. This suggests that the real issue of concern to ILECs is the level of the access price rather than the principle of access itself. The authors do not substantiate the claim that the regulated price can never generate an adequate return. Further, no consideration is given to the fact that the presence of retail operators using the wholesale products can grow the overall market and drive up the return for ILECs. Evidence of this has been seen in Europe, with the CEO of KPN (the incumbent in the Netherlands) saying as follows:

*"If you allow all your competitors on your network, all services will run on your network, and that results in the lowest cost possible per service. Which in turn attracts more customers for those services, so your network grows much faster. An open network is not charity from us, in the long run it simply works best for everybody."<sup>18</sup>*

The Aron & Crandall report makes the unsubstantiated claim that retail competition based on wholesale access reduces broadband penetration. (There is also conflicting evidence from New Zealand which shows that in that country when TNZ was not subject to wholesale access obligations, investment and broadband penetration both lagged.) In fact the most recent report published by the European Commission on the implementation of a single European telecommunications market shows that, contrary to what Aron & Crandall maintain, the EU average broadband penetration continues to grow and is currently at 22.9%, with the highest penetration of 37.3% in Denmark. The top five countries in terms of broadband penetration rates are Denmark, the Netherlands, Sweden, Finland and

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<sup>18</sup> Translation from Fibre Evolution (<http://www.fiberevolution.com/2009/02/quote-of-the-day.html>) of an original article in Dutch from the Netherlands newspaper Trouw ([http://www.trouw.nl/nieuws/economie/article2023373.ece/KPN\\_\\_Glasvezel\\_delen\\_is\\_slimmer\\_.html](http://www.trouw.nl/nieuws/economie/article2023373.ece/KPN__Glasvezel_delen_is_slimmer_.html))

Luxembourg. Nine EU countries are ahead of the USA.<sup>19</sup> This significantly undermines the Aron & Crandall claim that the US is a 'gold standard'.

In addition, it is worth noting that Sweden is now considering a functional separation model, as is already in place in the UK.

### 3.5 International comparisons

The comparisons advanced by Aron and Crandall appear to be very subjective and in some places contradict arguments made elsewhere in their paper. For example they clearly express their view that the type of regulation employed in Europe is harmful and prevents infrastructure based competition. Yet in seeking to show that Canada is being left behind by its international rivals they cite examples of European member states (such as France and the Netherlands<sup>20</sup>.) If the European model of regulation and its mix of inter and intra platform competition does indeed hinder the deployment of broadband then why according to these figures do several European states perform so well in the surveys and statistics cited by Aron & Crandall? According to Aron & Crandall, the OECD figures cited (page 6) show that

*"Canada's incumbent telecommunications carriers' services lag behind those of Korea, Japan, the US and most EU-15 countries"*

Again, this begs the question, if Europe has got the regulatory approach so wrong, then why do European countries score so well in the statistics which Aron & Crandall seek to use to back up their claims?

Aron & Crandall make highly selective references to Waverman's Connectivity Scorecard, referring only to the 2008 report in order to illustrate Canada's historical position as an early leader in the rollout of ADSL. The Connectivity Scorecard is a very useful survey, particularly since it seeks to give due weight to the needs of business customers and acknowledges their importance in delivering the economic benefits of broadband connectivity. Indeed this acknowledgement of the importance of business makes the Scorecard unique among the authorities quoted by Aron & Crandall.

But Aron & Crandall opt not to make any reference at all to the 2009 Scorecard. This is unfortunate because it highlights the success of several European countries, undermining the assertion that the US model is the only one which can deliver successful outcomes.

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[http://ec.europa.eu/information\\_society/policy/ecommlibrary/communications\\_reports/annualreports/14th/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecommlibrary/communications_reports/annualreports/14th/index_en.htm)

<sup>20</sup> Referred to in the report as 'Holland'; in fact North and South Holland are two provinces of the Netherlands

Whilst it is true that Canada was placed fourth in the 2008 connectivity scorecard, in the improved and expanded 2009 survey Canada lies in seventh place. This alone does not mean that Canada's performance has slipped - Waverman cautions that

*"Both the inclusion of additional countries and the use of revised metrics mean that it is not possible to interpret changes in country's scores from last year to the current year as being "improvements" or "deteriorations" in connectivity."*

Perhaps the most interesting aspect of the 2009 report is the use of "cluster analysis". As Waverman points out, rather than looking at countries' performance in a league table, it is more useful when analyzing connectivity to employ cluster analysis as he has done on page 35 of the 2009 scorecard. Where there are very small differences between some countries' scores, such countries can usefully be grouped together into clusters.

*"We used cluster analysis to divide our countries into seven distinctive clusters based on their ranking on the Connectivity Scorecard. Roughly speaking, countries that belong to the same cluster are more similar to each other in terms of their performance on the Connectivity Scorecard than they are to members of any other cluster. Thus the US, Sweden and Denmark have connectivity performance that might be depicted as being in a class of its own. There is then a considerable difference between this cluster and the next cluster, whose members include the Netherlands, Norway and the UK."*

Aron & Crandall would have us believe that the Connectivity scorecard proves their assertion that the US model of regulation delivers superior connectivity and competition to the European model. With respect it does not. The fact that the highest ranked cluster consists of the USA, Denmark and Sweden<sup>21</sup> (the latter two are both EU member states) hardly proves that the European model is inferior. It is worth noting that Sweden is itself proposing a functional separation model, like the United Kingdom<sup>22</sup>.

Taking the next cluster down, two of the countries (UK and Netherlands) are EU member states while the third (Norway) pursues a similar model of regulation<sup>23</sup>.

Furthermore, Aron & Crandall state that the way is being led in high-speed connectivity by countries such as Japan, Singapore, Taiwan, South Korea, France, and the Netherlands, and yet Waverman's Scorecard simply does not back that up. Japan and Singapore lie in cluster three (alongside Canada), while France is placed in cluster four and Korea in cluster five. As already noted, we believe that Waverman's effort to take account of the importance of the business market is useful and gives a more accurate portrayal of the situation than a narrow focus on mass market broadband. What it does not do, contrary to

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<sup>21</sup> Leonard Waverman, Kalyan Dasgupta, and Justin Tonkin, "The Connectivity Scorecard," LECG and Nokia Siemens Networks, 2009 p35.

<sup>22</sup> Swedish Government Press Release, 18 March 2008 - Ministry of Enterprise, Energy and Communication: "Functional Separation for Better Broadband"

<sup>23</sup> Norway's regulator, the Norwegian Post and Telecommunications Authority, states that "NPT's market regulation is based on six directives passed by the EU, and incorporated in the EEA Agreement."



Aron & Crandall's assertions, is prove that the EU approach of encouraging both inter- and intra-platform competition is a barrier to greater broadband connectivity.

But given that these countries are very different both in terms of geography and political climate it is doubtful what direct comparisons can be drawn from their approach. All of these are much more densely populated and many have had significant government led intervention to deliver the current state of network rollout.

Aron & Crandall do not consider whether any factors other than those which support their own position have had any influence on the level of competition. For example, given that the only two G8 countries in clusters 1 and 2 of the Connectivity Scorecard are the USA and the UK, and that these were among the very first countries to liberalise - and regulate - their telecoms markets, it is entirely possible that this is at least as significant a factor as those proposed by Aron & Crandall. In addition, both the UK and the US have significant financial services industries which again could affect the availability of broadband services. But Aron & Crandall do not consider any such factors.

Aron & Crandall invite us to draw varying (and conflicting) conclusions from the sources they cite. On the one hand all EU countries suffer from "aggressive regulation" and have little or no NGN deployment. On the other hand consumers in countries such as France and the Netherlands are enjoying "first rate internet access...services which connect customers at speeds of 100 megabytes a second"<sup>24</sup>. They assert that the form of regulation adopted in the EU at best contributes nothing to broadband penetration and at worst inhibits investment. Yet in the Connectivity Scorecard cited by Aron & Crandall, most of the top performing countries are EU member states. Indeed according to the most recent findings, nine EU member states outperform the USA in terms of broadband penetration.<sup>25</sup>

Investment in next generation fibre networks should be part of the normal upgrade strategy of such companies to replace decades-old copper networks, which have been fully paid for by taxpayers rather than a licence for stifling competition.

On 4<sup>th</sup> March 2009, the pro-competition body ECTA released the latest version of its respected twice-yearly EU Broadband Scorecard.<sup>26</sup> While broadband connections across the EU rose by 20% over the year, to a total of 110.5m connections, in countries where the incumbents have been granted regulatory holidays, the market has stagnated. In Spain the incumbent operator, Telefonica, continues to increase its control of the market with more than 57% of all retail broadband connections, but the country is now languishing

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<sup>24</sup> Simon Avery, "Cope lands BCE balancing act; CEO must improve network while pleasing new owners," *The Globe and Mail*, July 7, 2008 quoted at page 7 of Aron and Crandall's paper.

<sup>25</sup>[http://ec.europa.eu/information\\_society/policy/ecommm/library/communications\\_reports/annualreports/14th/ind\\_ex\\_en.htm](http://ec.europa.eu/information_society/policy/ecommm/library/communications_reports/annualreports/14th/ind_ex_en.htm) p.9

<sup>26</sup> <http://www.ectportal.com/en/basic650.html>



below the OECD and EU average with a broadband penetration rate of only 20% and low growth rates. The experience in Spain shows why appropriate regulation is needed to ensure investment and take-up in next generation networks, as well as to guarantee competition and consumer choice.

When regulatory holidays are granted (as they have been in Germany and Spain), the financial results from incumbents show that they primarily focus on increasing profitability at the expense of vital infrastructure investment. Far from promoting investment, regulatory holidays shelter incumbents from competition and allow them to concentrate on preserving the existing cash flow generation in order to maximise returns for shareholders.

*“Telefonica Spain posted an 8.9% increase in profit (EBITDA) and cashflows up 14% to €8bln, but a reduction of 7.2% in investment (Capex) in 2008.*

*The results from Deutsche Telekom show that it outperformed financial expectations and ‘expanded its leading position in the German DSL market’. DT’s annual report also confirmed the regulatory holiday it has enjoyed in access to its ‘fibre to the node’ network, a situation that has in all likelihood helped reverse competitive progress in Germany.”<sup>27</sup>*

Since the regulator granted DT protection from competition on its VDSL network on 23rd February 2007<sup>28</sup> Capital Expenditure has not increased but has in fact fallen below the 2006 level.<sup>29</sup>

Year	CAPEX
2006	€3,250
2007	€2,805
2008	€3,134

In Spain, the regulatory authority CMT announced<sup>30</sup> an end to Telefonica’s regulatory holiday with effect from September 2008 when it required Telefónica to provide its rivals with:-

<sup>27</sup>

[http://www.ectaportal.com/en/upload/File/Broadband\\_Scorecards/Q3\\_2008/Telefonica\\_bb\\_scared\\_release\\_020309\\_final.pdf](http://www.ectaportal.com/en/upload/File/Broadband_Scorecards/Q3_2008/Telefonica_bb_scared_release_020309_final.pdf)

<sup>28</sup> <http://www.t-regs.com/content/view/376/1/>

<sup>29</sup> Deutsche Telekom annual reports 2006, 2007, 2008

- duct access, under non-discriminatory and cost-oriented conditions;
- a map of its NGA nodes as planned until 2010, and various related information (including civil works plans, planned fibre coverage, etc.) one year in advance of executing NGA plans; and
- a 'provisional virtual FTTH wholesale service' to unbundling operators committed to investment in NGA, subject to the principle of equivalence.

Deutsche Telekom announced at the CeBit trade show in Hannover in March 2009<sup>31</sup> that it was reversing its previous strategy and would be allowing rivals wholesale access to DT's VDSL network. The main reason cited for this major reversal included a desire to share the cost of investment in next generation access networks with other operators. Deutsche Telekom insists the move is not as a result of regulatory pressure; a claim we are inclined to believe given the German Government's continued defence of the concept of regulatory holidays. The move is not something which will be motivated by charitable intentions towards DT's competitors, leaving only the conclusion that the German incumbent now accepts the view postulated by KPN's CEO that opening up network access is good for all concerned. The figures from BT's accounts in the UK bear this out since BT's Openreach division has been the most profitable division for the last three financial years,<sup>32</sup>

In marked contrast, those countries which have stood firm against regulatory holidays show much more encouraging results. Denmark, Finland, Sweden and the Netherlands - all have penetration rates exceeding 30%, with the UK not far behind. Common to all these top ranked countries is strong competition from both cable and regulated unbundling of the local loop. In some of these countries, incumbents have also publicly committed to open access policies rather than seeking to establish new monopoly positions.

### 3.6 Levels of risk are not greater in regulated entities

Aron & Crandall's paper suggests that unbundling obligations create increased risk. As a proposition in itself this is untrue and is completely contrary to the UK experience. In the UK, Ofcom investigated in 2005 whether it was appropriate to apply a disaggregated cost of capital to some of BT's activities - on the grounds that different activities carried different levels of risk. Ofcom's conclusion was that this was appropriate:

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<sup>30</sup> [http://www.cmt.es/es/la\\_cmt/sala\\_de\\_prensa/comunicados\\_de\\_prensa/anexos/080508\\_Cautelares\\_Fibra.pdf](http://www.cmt.es/es/la_cmt/sala_de_prensa/comunicados_de_prensa/anexos/080508_Cautelares_Fibra.pdf)

<sup>31</sup> [http://www.telegeography.com/cu/article.php?article\\_id=27516&email=html](http://www.telegeography.com/cu/article.php?article_id=27516&email=html)

<sup>32</sup> <http://www.btplc.com/Report/Report08/pdf/AnnualReport2008.pdf> at page 41

*“Ofcom proposed disaggregating its estimate of BT’s equity beta in order to reflect Ofcom’s view of the differing levels of systematic risk faced by different parts of BT’s business....*

*...having assessed stakeholder responses to both the first and second consultations, Ofcom remains of the view that it is appropriate to apply a disaggregated approach to beta estimation in relation to BT’s copper access business.”<sup>33</sup>*

Ofcom’s conclusion was that BT’s regulated copper access business - run by Openreach - should bear an assumed cost of capital lower than the rest of the BT group. Openreach, of course, is the division subject to unbundling obligations. In other words, this business was less risky rather than more.

Ofcom has consistently applied this approach since the 2005 cost of capital review, most recently in its Openreach Financial Framework Review, with the same result<sup>34</sup>:

	<b>Openreach</b>	<b>Rest of BT</b>
<b>Equity risk premium</b>	4.5 - 5%	4.5 - 5%
<b>Equity Beta</b>	<b>0.75 - 0.85</b>	<b>0.95 - 1.05</b>
<b>Risk-free rate</b>	4.1 - 4.8%	4.1 - 4.8%
<b>Debt Premium</b>	2 - 3%	2 - 3%
<b>Optimal Gearing</b>	35%	35%
<b>Pre-tax nominal WACC</b>	<b>9.25 - 10.75%</b>	<b>10.25 - 11.75%</b>

The Ofcom view - not thus far challenged by BT - is that the unbundling activities specifically carry **lower** risk than the rest of BT.

In order to gain a full picture is it important also to note that these services are required to be provided on an equivalent basis to other communications providers as to BT’s own downstream businesses. This is a requirement that extends to price<sup>35</sup>.

BT’s ethernet-based business services are also provided by Openreach. Regulated prices for these are likely to be based on a slightly higher cost of capital than for the copper-

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<sup>33</sup> Ofcom’s approach to risk in the assessment of the cost of capital, Final Statement, 28 August 2005

<sup>34</sup> A New Pricing Framework for Openreach - Second Consultation. 5 December 2008. Table extracted directly from Consultation. Note that a final statement on this proceeding is expected very shortly.

<sup>35</sup> Equivalence of inputs is defined thus (BT Enterprise Act undertakings, 25 September 2005): “Equivalence of Inputs” or “EOI” means that BT provides, in respect of a particular product or service, the same product or service to all Communications Providers (including BT) on the same timescales, terms and conditions (including price and service levels) by means of the same systems and processes, and includes the provision to all Communications Providers (including BT) of the same Commercial Information about such products, services, systems and processes. In particular, it includes the use by BT of such systems and processes in the same way as other Communications Providers and with the same degree of reliability and performance as experienced by other Communications Providers.

based services referred to above<sup>36</sup>. However, once again they are required to be provided on an “equivalence of inputs” basis which means that BT’s own downstream businesses pay the same as competitors.

A further piece in the jigsaw is BT’s residential NGA-based bitstream services. These too will be provided by Openreach and, for the moment, Ofcom proposes that BT should be allowed pricing freedom. This means that there will be no exercise to set costs of capital for these services. The crucial point to note is that, once again, these services are expected to be provided on an Equivalents of Inputs basis<sup>37</sup>

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<sup>36</sup> See the Ofcom Consultation - Leased Lines Charge Control - A new charge control framework for wholesale traditional interface and alternative interface products and services (8 December 2008). It is worth noting that while Ofcom has provisionally taken a decision to apply a CCA FAC methodology for these services, like LRIC, this assesses costs for these services on a forward-looking basis - see paragraph 3.92 of the same consultation.

<sup>37</sup> Ofcom consultation and statement, 3 March 2009.

#### 4. CONCLUSIONS

In conclusion we do not believe the Aron & Crandall report can be relied upon to present a current and accurate view of the state of next generation access network rollout particularly in relation to Europe or New Zealand.

In relation to a number of their sources, Aron & Crandall have not referred to the most recent versions, leading them to draw conclusions which are wrong and cannot be supported by the most recent evidence. In addition those references are in places highly selective. For example the 2006 report by Distaso *et al* which concludes that inter and intra platform competition are required is cited as justification for the theory that only inter platform competition is valid.

The situation in a number of countries is quite simply not as Aron & Crandall would have us believe. When referring to the UK, Aron & Crandall not only cite out of date information in relation to BT and Virgin Media products but they completely ignore the widespread availability of services of up to 24 Mb/s provided by operators using local loop unbundling. The picture of UK competition presented by Aron & Crandall is not only out of date but also incomplete.

Aron & Crandall's assertion that no European ILECs have begun fibre network rollout is also erroneous. FTTP deployments have commenced in France, the Netherlands and the UK. Aron & Crandall also ignore non ILEC investment such as that found in Sweden, a country with extensive fibre network coverage. In New Zealand, where Aron & Crandall also insist deployment has yet to begin, by January 2009 Telecom New Zealand had achieved 57% coverage using VDSL to deliver 50 Mb/s services with ongoing investment in environment where the incumbent was subject to functional separation.

While Aron & Crandall make much of the benefits of broadband for the economy, they fail to take any separate account of the needs of the business community and do not mention the absence of any significant competition in the business market. As such the basis of their reasoning is fundamentally flawed. The one source cited which does factor in the importance of the business sector, Waverman's Scorecard, contradicts (in its 2009 version) Aron & Crandall's claim that the model of regulation found in Europe hinders investment in next generation networks. In Waverman's study, European countries score consistently well, with two being ranked alongside the USA in the top cluster.

The implicit message in Aron & Crandall's paper is that ILECs should not be required to share access to their networks. This is not so much a regulatory holiday of the sort introduced in Germany and Spain, but a permanent exclusion of competition. And yet the European experience has shown that where regulatory holidays are granted, investment does not increase and Aron & Crandall would have us believe, but is in fact reduced and markets stagnate.

A main theme of the Aron & Crandall paper is that unbundling obligations create increased risk. This is simply untrue and is completely contrary to the UK experience. Detailed investigations here have shown that if anything unbundling activities carry lower not higher risk.

This approach has been applied by Ofcom since 2005 and has not been contradicted or challenged by BT. Indeed it is interesting to note that since 2006, Openreach has consistently been the most profitable division of BT.

Once again we find the experience of KPN in this regard compelling, as its CEO put it:-

*“If you allow all your competitors on your network, all services will run on your network, and that results in the lowest cost possible per service”<sup>38</sup>*

At the risk of stating the obvious, the greater proportion of traffic carried by one network, the lower the risk involved.

It is important to note that we do not suggest that there is no risk in next generation network investments. It is well recognized in Europe that the regulatory regime needs to address this issue and these questions are currently being discussed as part of the reform of EU telecoms law. There is however, no consideration being given to the withdrawal of wholesale access obligations. It is now accepted that there is limited scope for access network duplication and therefore wholesale access will be required. Instead regulators now recognise that shared investments are likely to be the solution.

The current thinking of the European Regulators' Group (ERG) is that commercially open access may actually help to fill the new networks in a similar way to which the mobile market saw MVNOs help drive up the overall volume of traffic. It is recognized however that there is a need to maintain the 'ladder of investment' concept and incentivise competitors, not just incumbents, to invest.

**Towerhouse Consulting LLP**

**24 April 2009**

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<sup>38</sup> Translation from Fibre Evolution (<http://www.fiberevolution.com/2009/02/quote-of-the-day.html>) of an original article in Dutch from the Netherlands newspaper Trouw ([http://www.trouw.nl/nieuws/economie/article2023373.ece/KPN\\_\\_Glasvezel\\_delen\\_is\\_slimmer\\_.html](http://www.trouw.nl/nieuws/economie/article2023373.ece/KPN__Glasvezel_delen_is_slimmer_.html))