

COMMENTS ON DIGICEL'S RESPONSE TO
PUBLIC CONSULTATION ON
UNBUNDLING THE LOCAL LOOP
(Ref: CD 2013-1)

LIME

Landline | Internet | Mobile | Entertainment

By E-mail to: consultations@icta.ky
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REDACTED

I Introduction

1. Cable and Wireless (Cayman Islands) Limited, trading as LIME (“**LIME**”) is pleased to provide comments on the Digicel Cayman Limited (“**Digicel**”) response to the Information and Communications Technology Authority (“**ICTA**” or the “**Authority**”) consultation document titled ‘*Unbundling the Local Loop*’ (the “**Consultation Document**”) and dated 27 May 2013. LIME’s comments on Digicel’s response and LIME’s own response to the consultation document, together constitute LIME’s response to the Consultation Document.

2. LIME expressly states that failure to address any issue raised in this consultation document does not necessarily signify its agreement in whole or in part with any position taken on the matter by the ICTA or respondents. LIME reserves the right to comment on any issue raised in the Consultation Document at a later date.

II. Executive Summary

3. Digicel is promoting Local Loop Unbundling as in the public interest. LIME’s initial response to the Consultation Document noted that Local Loop Unbundling is relevant only where there is a monopoly provider and there is a lack of infrastructure investment. However, the ICTA found that there are several networks – fixed wired, fixed wireless, mobile and fibre – all of which are capable of providing voice and broadband services.

4. The empirical evidence, relied on by LIME, demonstrates that mandated Local Loop Unbundling results in a flight of capital from network investment which would undermine the existing healthy investment and healthy competition that exists in the Cayman Islands. This is contrary to the public interest.

5. No operator would be willing to make the huge investment to upgrade its network, only to be mandated to offer the network to competitors at prices that may not

permit a reasonable return on investment. If operators choose not to invest in their networks, technological stagnation results.

6. The summary of LIME's response to Digicel's comments, which will be discussed in greater detail in the rest of the submission, is as follows:

- i. Local Loop Unbundling is harmful to investment. This is contrary to the public interest.
- ii. The market for the provision of voice and broadband services in the Cayman Islands is competitive. Digicel does not have to use LIME's facilities in order to compete. Where competition exists, regulation is contrary to the public interest.
- iii. Lower retail prices does not result from Local Loop Unbundling *per se*, but from artificial wholesale prices imposed by regulators. This price "reduction" is at the expense of investment, competition, product differentiation and innovation. The costs of the price "reduction" far outweigh its benefits and is very much in the sense of a pyrrhic victory. For the public interest to be served, on the whole the benefits must outweigh the costs. Since the costs outweigh the benefits, Local Loop Unbundling still remains contrary to the public interest.
- iv. Under the theory of the "ladder of investment", one of the original intents of Local Loop Unbundling is for operators to invest in their own infrastructure. It is not at all clear that Digicel intends to do this. However other competitors in the Cayman Islands are investing in fibre networks contrary to Digicel's self-serving projections that the industry will collapse or consolidate. Rather Digicel's arguments reflect either unwillingness or inability to further invest in their network. This is a specific, company matter that most certainly cannot be addressed by stymying the advancement of the industry through Local Loop Unbundling.

7. As in its initial response and relying on experience documented in studies, LIME shows that Local Loop Unbundling causes the flight of capital from network investment which would undermine the current healthy investment and vibrant competitive environment that exist in the Cayman Islands. This is not in the public interest and LIME maintains that the Local Loop Unbundling is *contrary to the public interest*.

III. Key Points of Digicel's Response to the Consultative Document

8. Digicel stated in its response that it cannot replicate LIME's local loop because it would be prohibitively expensive to do so and that utilizing LIME's existing infrastructure is more cost effective. Digicel asserts that it is unable to compete across all the telecommunication markets without LIME's infrastructure and that Local Loop Unbundling would provide consumers with multiple broadband service providers, greater innovation and significantly lower prices. Digicel states that rolling out a fibre network is too expensive and predicts consolidation or failure in the Cayman market.

9. Digicel estimates that the cost for each operator to roll out an overhead fibre network would be about US\$40M plus an estimated US\$5M per annum for operational costs, assuming that the operators are able to access the infrastructure for overhead deployment. This Digicel juxtaposes against its estimated cost for maintenance of LIME's depreciated copper investment and deployment of fibre of US\$3M per annum. Digicel estimates that an underground FTTH network would cost about US\$150M. Digicel concludes that the alternative to unbundling is a huge amount of debt.

10. In Digicel's view there are an excessive number of fibre licences chasing a too small market and the likely results are:

1. Fibre construction in a few 'hot spots' to win traffic from large businesses and densely populated areas.

2. Little alternative fibre outside ‘hot spots’ for a long time to come..

11. Digicel promotes that Local Loop Unbundling would result in a price reduction of 15% for broadband and TV services and that increased broadband penetration will increase the GDP of the Cayman Islands. Digicel compares its price for 2, 4, 8 Mbps DSL broadband service in Bermuda with the prices for those said speeds offered by LIME. Digicel concludes that Digicel Bermuda prices are on average less than a quarter of the prices for LIME Cayman and claims that this demonstrates that there is room for immediate improvement with the right access product.

12. With respect to alternatives to Local Loop Unbundling, Digicel argues that it is not in LIME’s interest to share ducts and therefore anticipates (without proof) that LIME would dispute any requests to share ducts. Digicel then dismisses duct sharing as an immediate solution in favour of regulated Local Loop Unbundling. Digicel has taken this position despite evidence to the contrary on the Authority’ website. Digicel also posits that business customers consider fixed line connections more robust and secure for their purposes.

13. Digicel sets out that the adverse effects on investment can be managed by the conditions of access and claims that LIME has dominance in the retail broadband markets and that LIME has control of facilities that are not replicable. Digicel suggests that the cost of unbundled local loop would be about CI\$10 – CI\$11.

14. Digicel concludes that it is in the public interest to mandate Local Loop Unbundling in Grand Cayman and the Sister Islands. Digicel asserts:

- Investment in the provision of broadband services will not be efficient or effective without Local Loop Unbundling.
- Local Loop Unbundling would speed up competition.

- Investment could be wasted in multiple fibre investments with limited or no investment in outlying areas.
- The market is likely to consolidate or experience business failure because the market cannot support all the players.
- There will be no effective competition for customers who demand underground networks for service provision.

IV. Impact of Local Loop Unbundling on Investment

15. While Digicel is promoting Local Loop Unbundling as the only way to efficient investment and effective competition, the evidence does not support that view. Several studies have concluded that Local Loop Unbundling deters investment by both the operator mandated to unbundle its local loop and the operators renting or leasing those loops (a selection of these studies is included in the bibliography appended to these reply comments). This flight of capital from network investment causes technological stagnation as no operator is willing to make the magnitude of investment in its network only to have the benefits confiscated by Local Loop Unbundling.

16. Further, while Digicel states that Local Loop Unbundling is a popular form of access in Europe, they fail to advise the Authority that the prominence of Local Loop Unbundling in Europe has resulted in a dearth of investment in next generation fibre networks. This is something they did not fail to point out to the Office of Utilities Regulation (“OUR”) in Jamaica, in Digicel Jamaica’s response in the Jamaica LRIC proceeding in 2012: [Quotations follow]

14. The approach in Europe has also resulted in substantial under investment in 4G and NGA roll-out requirements (underinvestment in EU telcos is something openly and regularly acknowledged by Neelie Kroes – EU Commissioner for the Digital Agenda) so much so that the EU itself has had to commit to 9.2 billion of investment in an effort to meet current

targets i.e. because of aggressive regulation, public investment is now required to pick up the slack of private investors whose incentives to invest have been eroded by over regulation....

38. Jamaican operators have already sunk costs into their networks and made the “make” decision – which in Digicel’s case is also a license condition. As such what is important from the OUR’s perspective now is to ensure dynamic efficiency of telecommunications development in Jamaica rather than static efficiency whereby the industry rather than the regulator is the driver of developments in the market. As noted by Weisman (2008) in relation to the 1996 Telecommunications Act in the US:

“..the reason the FCC had to travel such a torturous road in implementing the 1996 Act was its failure to distinguish clearly and consistently between “regulatory-rate making” and “competition enabling” policy objectives. To quote Justice Breyer [US Supreme Court]: “The Telecommunications Act is not a rate making statute seeking better regulation. It is a deregulatory statute seeking competition”. The FCC’s confusion over this important distinction led it to adopt overly broad network sharing rules that encouraged imitation at the cost of innovation and, as a result, brought investment in the telecom sector to a virtual halt”

He further notes:

“The dynamic regulator, one willing to take the long view, is more likely to see that the real problem lies...with the fact that incumbent providers may be reluctant to make costly investments in infrastructure improvements....when there is a risk that they will be forced to share these innovations with rivals at prices that are not fully compensatory”¹

17. In other words, Digicel does recognize that the outcome of Local Loop Unbundling is a flight of capital from network investment. If this would be contrary to the public interest in Jamaica, it would also be contrary to the public interest in the Cayman Islands. In contrast to Europe, the United States does not rely on Local Loop Unbundling for its fibre networks and does not have the same issues upgrading and expanding its networks that Europe is grappling with.

¹ Digicel, Submission (Redacted Public Version) in Response to OUR Consultation “Cost Model for Mobile Termination Rates”, March 27, 2012 ,Pgs. 9, 18 -19.

18. Investing in, upgrading and expanding networks have real impact on economies and fundamentally affect the competitiveness of the economy as can be seen from the following quote:

1.12 Our econometric analysis shows that, all else equal, a reduction of 10 percent in LLU price causes an 18 percent fall in the subscriber share of alternative infrastructure. This 18 percent fall in subscriber share results in hundreds of thousands less broadband subscriber lines that utilise alternative access technologies. Thus intense access regulation (as measured through the LLU price) weakens facilities-based competition and the benefits that such competition delivers.

1.13 This fall in subscriber levels has the impact of reducing investment in alternative access platforms in both the short-term and the long-term. In the short-term, investment associated with connecting customers and upgrading networks is foregone, while in the longer term, the very substantial investment associated with expanding network footprints is also jeopardized. .

1.14 Based on a set of reasonable assumptions, we calculate that for a hypothetical “Europe” (defined in Section 5), the lost long-term investment in alternative access platforms exceeds 10 billion Euros as a result of just a 10 percent LLU price reduction.²

19. Among the various studies identified in the bibliography, LIME has already extensively referenced the study of Crandall *et al.* in its 15 July 2013 submission. Those authors concluded:

*Overall, we conclude that the likely benefits of fiber unbundling are small, and that the costs are potentially quite large – including the potential for delaying the deployment of all types of NGAs for an extended period of time, as regulators wrestle with intractable issues **and investors sit on the sidelines awaiting the regulatory certainty required to justify the large sunk cost investments necessary to deploy advanced broadband infrastructures.**’(emphasis added)³*

² Leonard Waverman, Meloria Meschi, Benoit Reillier and Kalyan Dasgupta, “Access Regulation and Infrastructure Investment in the Telecommunications Sector: An Empirical Investigation”, September 2007, pgs. 3-4.

³ Robert W. Crandall, Jeffrey A. Eisenach, Allan T. Ingraham, “The Long-Run Effects of Copper Unbundling and the Implications for Fiber”, April 2012, pg. 55 (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2018929) [footnotes deleted]

V. Digicel Claims to Need LIME's Infrastructure to Compete

20. Digicel asserts that it needs mandated access to LIME's access infrastructure in order to compete in the market in the Cayman Islands. The evidence suggests that this is in fact not the case.

21. At paragraphs 23 through 26 of the Consultation Document, the Authority described a vibrant competitive environment with multiple service providers using multiple technologies. The Authority also noted that several operators, including Digicel, were either rolling out fibre networks, or had an obligation to roll out fibre networks, across the Cayman Islands and states:

32. As previously mentioned, Digicel, Infinity, LIME, Logic and WestStar are all licensed to roll out and operate fibre networks across Grand Cayman. In addition, DataLink is building a fibre network on which other Licensees can potentially rent capacity.

33. Apart from LIME who of its own undertaking is adding to its current fibre network to support or replace parts of its fixed wire network, the Licensees referred to above have committed to set timescales for the roll out of their fibre networks which have been reflected in their Licences. While each of the referenced Licensees have an obligation to roll out their network throughout Grand Cayman (albeit with differing timescales), only Digicel (by 31 December 2016) and Infinity (by 31 July 2017) have a Licence requirement to roll out their fibre network in the Sister Islands, which is within four to five years' time.

22. It is indisputable that WestStar, Logic and LIME (and possibly Infinity) are actively rolling out fibre networks on Grand Cayman. If several licensees have determined that they can in fact compete by investing in their own facilities, there is no reason Digicel cannot (other than their own unwillingness to invest in infrastructure in the Cayman Islands). The healthy competitive market that exists in the Cayman Islands⁴

⁴ Even before WestStar and Logic began building out fibre networks of their own, competition for the provision of broadband services was so strong that the Authority determined several years ago that there was sufficient competition to justify deregulating LIME's residential broadband services. That competition has only become stronger over the intervening period, and is only going to intensify in the future as fibre spreads through the Islands. There is no basis in fact for Digicel's assertion that LIME is dominant in the market for broadband services.

precludes any competitor from claiming that it must have the facilities of any other competitor in order to compete.

23. Indeed Digicel's seeming unwillingness to invest in fibre, despite its apparent fixation on fibre as the technology of choice that it must have, is contrary to the public interest. According to Waverman et al, '*..inter-platform competition offers the best prospects for maximizing product differentiation and service innovation..*'⁵. Contrary to Digicel's claim, it is not Local Loop Unbundling but rather investing in one's own facilities that maximizes service innovation. This also refutes Digicel's claim that investment in multiple fibre networks is wasted and that there will be no competition for customers who Digicel claims require underground networks.

VI. Competition, not Local Loop Unbundling, Will Result in Lower Prices

24. Digicel suggests that, based on its prices of 2, 4, 8 Mbps DSL broadband service in Bermuda and as compared to LIME's price for similar speeds in Cayman, there could be delivered to customers a 15% reduction in both broadband and TV rates, should Local Loop Unbundling be mandated. The implication is that consumers will not benefit from lower prices if Local Loop Unbundling is not mandated.

25. As a preliminary matter, the validity of Digicel's comparison of the Cayman Islands to Bermuda is questionable. For example, LIME is unsure whether Digicel is comparing DSL prices to fibre prices for broadband speeds. Digicel does not attempt to identify the price for the other speeds that it offers or the prices offered by other operators in Bermuda for similar broadband speeds nor does it compare its own prices for broadband services across the Caribbean to create a complete picture rather than offering a few misleading pieces of the puzzle. Notwithstanding these queries, it is the market in

⁵ Waverman, et al., paragraph 7.2. pg. 42.

the Cayman Islands that will determine the price of broadband services in the Cayman Islands.

26. In this regard and contrary to the appealing picture painted by Digicel, LIME submits that Local Loop Unbundling *per se* does not in fact deliver lower prices. If Local Loop Unbundling does appear to result in lower prices, they tend to be delivered through regulators anxious to validate Local Loop Unbundling as sound regulatory policy so a fall in prices on the face of it appears to be in the public interest. In other words, the retail price decreases are the result of artificially low wholesale loop prices. Empirical evidence demonstrates that:

1.14 Based on a set of reasonable assumptions, we calculate that for a hypothetical “Europe” (defined in Section 5), the lost long-term investment in alternative access platforms exceeds 10 billion Euros as a result of just a 10 percent LLU price reduction.....

4.35 a 10 percent fall in LLU prices results in an increase of penetration to a little over 11 per 100 population. The total number of subscribers increases from 100,000 to just over 110,000. Meanwhile the share of subscribers using alternative access platforms falls to 16.4 percent, or 18,000. Prior to the LLU price reduction there were 20,000 subscribers using alternative access platforms for their broadband access.

4.36 The regression analysis thus suggests that the market-stimulating effect of an LLU price reduction is not sufficient to prevent a decline in the overall number of subscriber lines served over alternative access platforms.⁶

27. Basically, price decreases sanctioned by artificial wholesale LLU prices result in low retail prices, but providers of broadband services by other modes of delivery are unable to compete with the artificial LLU prices and begin to lose customers. Those networks then retrench investment. The virtuous cycle of product development and innovation through intermodal competition is lost as the focus shifts more and more to the unbundled network to the detriment of the competitiveness of all other providers.

⁶ Waverman *et al.* pgs. 4, 23.

Price decreases therefore come at an enormous cost to the economy, and in LIME's view the costs outweigh the benefits.

28. Digicel suggests in its comments that the price of an unbundled local loop should be approximately \$10 to \$11 per month, based on "benchmarks". However, the source of this figure or the underlying "benchmarks" is not provided, and there is no way of testing its validity.

29. LIME submits that these prices would be artificially low in the Cayman Islands' context. Almost ##### of LIME's copper plant was replaced following Hurricane Ivan at a cost of approximately ####\$. None of this plant would have been depreciated in any significant way. Further, even without the rebuilding of the network following Ivan, LIME invests on the order of ##### per year in service delivery, which includes the laying of new copper plant as required, which plant would clearly not be significantly or fully depreciated.

30. Digicel's argument that Local Loop Unbundling speeds up competition is not supported by empirical evidence. Rather the evidence demonstrates that Local Loop unbundling has a deleterious effect on competition, and is therefore contrary to the public interest.

VII. Fibre Investment is Happening in the Cayman Islands.

31. Digicel presents purported "evidence" that the cost of rolling out fibre networks across the Cayman Islands is prohibitively expensive and will result in commercial failures and, ultimately, a lack of competitive Next Generation Access in this country. Digicel states that it is interested in both copper and fibre loop unbundling, while at the same time arguing that the Cayman Islands will not have much fibre investment because it is too expensive, notwithstanding at least four (4) licensees, including Digicel, have

obligations to roll out a fibre network in the Cayman Islands within the next three (3) to five (5) years.

32. Martin Cave's theory called 'the Ladder of Investment' was very influential in the introduction of Local Loop Unbundling in Europe. The theory basically said that Local Loop Unbundling would be a form of entry assistance to new entrants into markets that are not competitive. Local Loop Unbundling would only be a rung on the "investment ladder" because the new entrants would eventually invest in their own facilities after gaining customers and brand recognition. Studies have shown however, that entrants do not progress to investing in their own infrastructure as was the intent of the approach but rather became dependent on unbundled local loops and Dr. Cave has commented that the 'Ladder of Investment' remains a hypothesis. Crandall *et al.* states:

A 2010 study by Bacache, Bourreau and Gaudin finds that European entrants that use unbundled local loops do not ascend the ladder of investment and build their own infrastructure. Such findings confirm the conclusion reached by the primary author of the ladder of investment thesis, Dr. Martin Cave, that it "remains no more than a hypothesis, as scientific testing of an imprecise proposition of this kind remains problematic." As we explain below, the disincentive effects of unbundling are now being reflected in the paucity of fiber deployment in the European Union.⁷

33. Indeed Digicel's behavior would suggest that it would rather LIME make the investment and then use LIME's network (at subsidized prices). There does not appear to be any intent on Digicel's part to build its own network as was envisaged by the now-discredited hypothesis of the "ladder of investment" and the original intent of Local Loop Unbundling.

34. Accordingly the 'Ladder of Investment' theory with regards to Local Loop Unbundling has failed. Indeed if Local Loop Unbundling is mandated in the Cayman Islands, there will be little fibre investment because Local Loop Unbundling causes the flight of capital from network investment.

⁷ Crandall *et al.*, Pg. 29,

35. Digicel's assertion regarding lack of investment without Local Loop Unbundling is, however, not supported by the market developments in the Cayman Islands. It is instructive that none of the other providers licensed to rollout a fibre network have participated in this consultation. That is because their business plans do not appear to be predicated on Local Loop Unbundling and they have intentions of honouring their licence obligations. Both Logic and WestStar have, through their actions, demonstrated that they are prepared to satisfy their licence obligations and LIME, although it has no roll out obligations in its licence, is also rolling out a fibre network.

36. This in itself should be enough to refute Digicel's arguments that the cost of investing in fibre is too high and financially infeasible. However should Local Loop Unbundling be introduced, LIME submits that then Digicel's predictions will come through – there will be little fibre investment in the Cayman Islands. As noted earlier, Digicel itself acknowledges this is the outcome of Local Loop Unbundling, as set out in its response to the OUR on the LRIC proceeding in Jamaica in 2012.

37. In addition to the general argument that investment in fibre is prohibitively expensive, Digicel also quotes specific estimates for the costs of rolling out nationwide fibre networks. Digicel has estimated the costs to roll out an overhead fibre network across the Cayman Islands to be \$40 million over 5 years, with annual opex/maintenance being another \$4 million, and they have estimated the costs of an underground fibre network across all of Cayman to be \$150 million.

38. These figures, however, are grossly overstated. The cost to build an all-island overhead network, for example, is likely to be no more than \$10 to \$15 million at today's prices and technology. For example, LIME ran about ##### of overhead fibre for about ##### a few years ago. This comes out to less than ##### per km. Even if one were to assume the cost is #####, to approximately ##### per km, and we assume the Cayman Islands have approximately 2,000 km of roadways, the cost of a nationwide overhead fibre network would still only be \$16 million. In addition, the annual maintenance on a

fiber network would be quite low, and LIME estimates that it would be less than ##### per year, including staff costs.

39. In terms of an underground fibre system, LIME estimates the costs to be no more #####, and the maintenance costs would be even lower than for an overhead system. As the Authority would be aware from the recent activities of operators in the Cayman Islands, a new operator laying a fibre network would most likely use micro-trenching technology and direct-buried fibre (2-4" wide, fast cutting, mere inches below the road surface, negligible reinstatement costs). This is significantly less expensive than the multiple 4" duct systems that LIME laid out in the past following decades-old practices, where LIME would dig down several feet below the ground, put in stacks of ducts and then repave a 3' to 4' wide area as well after compacting the area with suitable aggregate to ensure no movement or possible damage would be inflicted on the duct system.

40. Digicel has painted a dismal, self-serving picture of lack of investment in fibre in the Cayman Islands but there are licensees who are rolling out and none of the other licensee have indicated that they will not invest under the current regulatory environment. It is only Digicel which is projecting this future for its own purposes because it is either unwilling or unable to satisfy its licence obligations.

VII. Local Loop Unbundling is not a Long-Term Requirement

41. Digicel proposes to reinforce the failure of the "Ladder of Investment" theory because at no time in its submission does Digicel suggest that it would eventually not need Local Loop Unbundling. In fact, based on the requirements of Digicel's fibre licence, which sets out a network rollout plan proposed by Digicel itself only last year, Digicel should have its own nationwide fibre network in three (3) years and should not require Local Loop Unbundling anymore. Therefore Digicel's table that shows demand for Local Loop Unbundling for years 4 and 5 should actually be zero.

42. This means that, if Local Loop Unbundling were to be mandated, the Authority would be forcing one or more competitor(s) to offer Local Loop Unbundling to a handful of customers (in all likelihood, only one customer - Digicel) for a limited number of years. This kind of regulatory mandate would not be proportionate. Even if Digicel chooses not have its own network (in breach of its licence obligations), Datalink is likely to have its own network available for use by Digicel, so it would not be reasonable or rational to require LIME or any other operator to create a disruptive service that will last for three (3) years maximum. In fact, in Grand Cayman itself where more the vast majority of the people live, Digicel's fibre network should be fully rolled out by December 2015, i.e. much earlier than 3 years.

43. Indeed having awarded licences for fibre rollout, it would be a form of expropriation if the ICTA were to now advise the licensees that their network that is being rolled out will be subject to Local Loop Unbundling. This would be bad public policy. None of the licensees could have reasonably contemplated Local Loop Unbundling when they decided to invest in a fibre license. For any licensee, including LIME, fibre deployment is a material investment and no provider is going to take the normal commercial risk of that investment compounded with a Local Loop Unbundling obligation. This would also directly affect Datalink whose business case is predicated on commercial Local Loop Unbundling.

44. Would it then be proportionate or in the public interest to deny the benefits of WestStar's, Logic's and Datalink's infrastructure investment that should be completed in the next few years to facilitate an operator who does not want to discharge its obligations? No. It would not. The obligation of the Authority is to facilitate the market as a whole, not any one competitor. Digicel is asking that the Authority facilitate Digicel only, to the injury of all other competitors and competition. This is unacceptable and clearly contrary to the public interest.

VIII. Regulators Have Not Found a Solution

45. Digicel says that Local Loop Unbundling deterring investment ‘... can be addressed by the terms on which access is granted and in particular the price...’ The empirical evidence, however, concludes that Local Loop Unbundling in itself, the very existence of such a mandate, causes a flight of capital from investing in networks.

46. Nor, as quoted earlier on in this response, have regulators been able to mimic the market. Regulators have not been able to establish a price point that does not deter investment in network investment, nor have they been able to design and manage Local Loop Unbundling to send the correct signals for investment. So Digicel’s simplistic proposal denies the empirical evidence that regulators have just not been able to do what Digicel says can be done. Crandall *et al.* states:

*‘Our findings also suggest that regulators have not succeeded in overcoming the challenges to designing and implementing unbundling regimes we identified in Section II above – that is, the challenges of design, pricing, enforcement and adaptation. For example, the apparent failure of unbundling to enable entrants to climb the “ladder of investment” suggests that regulators have been unable systematically to correctly identify and price the network elements necessary for entry and then adjust prices over time to reflect the (presumably) diminishing need for unbundling as entrants become increasingly capable of building their own infrastructures. Similarly, the perceived need in some countries to adopt vertical separation regimes – despite the widely-agreed-upon costs of such policies in terms of economic efficiency – suggests that the challenge of enforcement has been more daunting than regulators initially anticipated. Indeed, in some countries it appears that aggressive unbundling and separations policies have blunted private investment incentives to the point where governments have been forced to subsidize or, in the extreme case of Australia, to take over entirely the financing of new infrastructures’.*⁸

⁸ Crandall *et al.*, Pg. 37

IX. Conclusion

47. Local Loop Unbundling would undo the favourable environment that now exists in the Cayman Islands and is contrary to the public interest.

X. Closing Remarks

48. Kindly send any communication in relation to this consultation to:

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END RESPONSE

Bibliography

A recent comprehensive surveys of the empirical literature on the economic impact of LLU was published in 2009 by Cambini and Jiang, and found "[t]he majority [of empirical studies] conclude that local loop unbundling based on forward-looking cost methodology discourages both ILECs and CLECs from investing in networks, so that the stepping-stone theory is possibly not supported by the data." Since this survey was published a large number of additional empirical studies have been conducted that reinforce the conclusion that LLU is harmful to investment and does not improve competition or broadband penetration. A sample of these studies, and their key findings, are presented below.

- Carlo Cambini, Yanyan Jiang, "Broadband investment and regulation: A literature review", 2009.
- Jan Bouckaert, Theon van Dijk, Frank Verboven "Access regulation, competition, and broadband penetration: An international study", 2010: "Based on a sample of OECD countries, the analysis finds that inter-platform [facility-based] competition has been a main driver of broadband penetration. The two types of intra-platform competition have a considerably smaller effect on the broadband penetration. Linking these findings back to access regulation suggests that the 'stepping stone' or 'ladder of investment' theories might not provide the justification to impose extensive mandatory access obligations on DSL incumbents.
- Wolfgang Briglauer, Georg Ecker, Klaus Kugler, "Regulation and Investment in Next Generation Access Networks: Recent Evidence from the European Member States" 2011: "[I]n line with related literature...our results indicate that the stricter broadband access regulation is, the lower is NGA infrastructure roll-out." Available at <http://epub.wu.ac.at/3291/>
- Mikal Grajek, Lars-Hendrik Roller, "Regulation and Investment in Network Industries: Evidence from European Telecoms", 2012: "We find access regulation to negatively affect both total industry and individual carrier investment. Thus promoting market entry by means of regulated access undermines incentives to invest in facilities-based competition. Moreover, we find evidence of a regulatory commitment problem: higher incumbents' investments encourage provision of regulated access."
- Michele Cincera, Laurianne Dewulf, Antonio Estache, "On the (In) Effectiveness of Policies to Promote Broadband Diffusion in Europe (2003 – 2010) : An Econometric Assessment, September 2012: "Our results update and validate earlier studies. We show that service-based intra-platform competition brought by access regulation is still not an accelerating factor of broadband diffusion (or investment) in Europe. In

contrast, we find that both facility-based intra-platform competition brought by access regulation and inter-platform competition brought by the deployment of non-DSL technologies effectively fuels broadband diffusion. In sum, many EU countries may have underestimated the potential payoff of stimulating product differentiation through inter-platform and service-based intra-platform competition for the diffusion of broadband in Europe.”

- Paola Garrone, Michele Zaccagnino, Politecnico di Milano, “A too short ladder: Broadband investments and local loop unbundling in EU countries”, 2012: “Our results suggest that service-based entry does not lead entrants to a subsequent facility-based entry, casting some doubts on the ladder of investment theory.” Electronic copy available at: <http://ssrn.com/abstract=2109423>
- Naoaki Minamihashi, “Natural Monopoly and Distorted Competition: Evidence From Unbundling Fibre-Optic Networks”, August 2012: “[Our study] shows that forced unbundling regulation leads to a 24% decrease in the incidence of new infrastructure builders. This suggests, therefore, that when a new technology is being diffused, regulation to remove a natural monopoly conversely involves risks that incumbent monopolists’ shares will increase.”
- Mattia Nardotto, Tomasso Valletti, Frank Verboven, “Unbundling the incumbent: Evidence from UK broadband”, May 2012: “Employing a very detailed dataset covering the whole of the UK, we find that over the course of time, many entrants have begun to take advantage of LLU. However, unbundling has little or no effect on broadband penetration, compared to those areas where the loops are not unbundled. LLU entry instead has a strongly positive impact on the quality of the service provided. We also assess the impact of competition from an alternative form of technology (cable) which is not subject to regulation, and what we discover is that inter-platform competition has a positive impact on both penetration and quality.”
- Robert W. Crandall, Jeffrey A. Eisenach, Allan T. Ingraham, “The Long-Run Effects of Copper Unbundling and the Implications for Fiber”, April 2012. (2013): “Policies mandating unbundling of copper telecommunications networks have now been in place for more than 15 years, and it is thus becoming possible to study their long-run effects. This paper reviews the existing evidence on the effects of copper unbundling, and presents new empirical results based on regression analyses of broadband penetration in OECD countries from 2001 to 2010. The results show that the long-run effect of copper unbundling on household broadband penetration rates is negative, a finding which is consistent with previous research, including with research suggesting that copper unbundling has slowed the deployment of FTTP infrastructures, especially in Europe. Based on an analysis of the similarities and differences between the unbundling of copper networks and fiber networks, the paper concludes that

mandated unbundling of fiber networks would likely deter deployment of Next Generation Access networks (NGAs).”

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