

**RESPONSE TO PRE-CONSULTATION DOCUMENT PC12/03:
COMMENTS ON MARKET REVIEW PROCESS (PART B)**

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Public Version

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I. INTRODUCTION

1. I have been asked by Bermuda Digital Communications Ltd. (BDC) to provide my expert opinion on the preliminary assessment of Significant Market Power (SMP) in the Bermudian market for mobile wireless services provided by the Government’s legal, regulatory, and economic advisors (Advisors). The Bermudian Electronic Communications Act (ECA) of 2011 defines SMP as

[A] position of economic strength in the relevant market or markets that affords an undertaking, either individually or jointly with others, the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers, which may provide the basis for the imposition of *ex ante* remedies.¹

The Advisors’ preliminary assessment has found that BDC and Digicel Group Limited (Digicel) “jointly hold SMP in the [retail] mobile voice and data markets,”² and in related wholesale markets.³ As a result, both firms are subject to imposition of *ex ante* regulatory remedies, including wholesale access requirements.⁴ In addition, although Bermuda is in the process of transitioning to a new regulatory regime, under which all communications firms generally will be permitted to offer the full array of communications services,⁵ a finding of SMP may result in restrictions on the prices or other terms on which the carrier may provide communications services, or even a prohibition on its ability to enter new markets.⁶

¹ Bermuda Electronic Communications Act of 2011, Part I, §2.

² Pre-Consultation Market Review (Part B) at 252.

³ Pre-Consultation Market Review (Part B) at 252-253.

⁴ Pre-Consultation Market Review (Part B) at Appendix A.

⁵ Pre-Consultation Market Review (Part A) at 10.

⁶ Bermuda Electronic Communications Act of 2011, §20(1) (“The Authority may make administrative determinations that impose *ex ante* remedies on a communications provider in respect of its provision of electronic communications or the provision of subscription audiovisual programming content in a relevant market or markets if, individually or together with others, the communications provider has significant market power in that market..”) See also §24(1) (describing various restrictions to be imposed on firms with SMP); and §73(5)(a) (specifying that the provision of an ICOL authorizing a license holder to construct new facilities or offer new services are suspended if the Authority determines, in accordance with section 74(b), that a licence holder, individually or together with others, has significant market power in one or more relevant markets, in which case suspension of the relevant provisions shall continue in effect as applied to that licence holder until the Authority issues a written notice, and publishes such notice on its official website, confirming that such licence holder has satisfactorily complied with any *ex ante* obligations imposed by the Authority in accordance with section 24....”).

2. Market power is defined as the ability profitably to maintain prices above competitive levels for a significant period of time. A firm possessing SMP (or “dominance”) can raise prices above competitive levels (and/or degrade the quality of services offered, thereby raising quality-adjusted prices), without losing a sufficient number of customers to make the price increase unprofitable. Such conduct is possible only in the event rivals are unable or unwilling to expand output, or if barriers to entry make it impossible for potential competitors to enter the market.

3. Modern communications markets, including Bermuda’s, are characterized by rapid technological change. Carriers’ competitive success (or failure) hinges on their ability to continually invest in and upgrade their networks, devices, and service offerings, and competing carriers regularly engage in rivalrous conduct along each of these dimensions, with expanded or enhanced offerings by one carrier frequently following on the heels of another. In Bermuda, wireless carriers that might have once appeared “dominant” have lost ground to and eventually been overtaken by rivals that might have once appeared to occupy the “fringe” of the market.

4. Economists typically label such markets “dynamic.” In Bermuda’s dynamically competitive communications market, a seemingly “dominant” market position today is no guarantee of future success. For instance, strategic investments in new network technologies, such as Long Term Evolution (LTE) mobile wireless infrastructure, are likely to play a decisive role in determining future competitive outcomes. Firms operating under these types of competitive conditions are unable to “behave to an appreciable extent independently of competitors,”⁷ because any competitive advantages they may possess are constantly under threat as a result of changing market conditions.

⁷ Bermuda Electronic Communications Act of 2011, §2.

5. Communications markets are also characterized by platform competition, in which firms compete by offering combinations of complementary services. Even in the presence of high levels of concentration, SMP is less likely to be present in such markets than in single-product markets. Moreover, platform competition raises the threat of competitive entry, as producers of complements often have both the ability and the incentive to enter. The transition to the single-license Integrated Communications Operating License (ICOL) regime is likely to accelerate the development of platform competition in Bermuda.

6. The identification of SMP is often complicated by the lack of empirical evidence about market performance under varying circumstances.⁸ In the present matter, however, we have direct evidence, in the form of measures of market performance before and after the recent merger between BDC and M3. That evidence cannot be reconciled with the possession of SMP by the remaining wireless carriers. In a market prone to the acquisition and exercise of SMP, a reduction in the number of competitors from three to two would enhance the SMP of the remaining firms; and, since market power is, by definition, the ability to raise prices above the competitive level, the result should be an increase in prices. Yet since the merger, wireless carriers have *lowered* effective prices to their customers, offering higher usage volumes and/or increased flexibility of usage, without offsetting price increases. As a result, customers are now able to purchase more usage (whether measured in voice minutes, text messages, or data volumes) for each dollar spent on wireless service than was possible before the merger. Moreover, BDC's Average Revenue Per Unit (ARPU) has remained essentially flat for post-paid

⁸ See Official Journal of the European Communities, *Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services* (November 2002) (available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2002:165:0006:0031:EN:PDF>) (hereafter *EC Guidelines*) at ¶70 (“Often, the lack of evidence or of records of past behaviour or conduct will mean that the market analysis will have to be based mainly on a prospective assessment.”).

wireless customers in the wake of the merger. I am aware of no theory of market dominance under which these facts are consistent with a finding of SMP.⁹

7. An erroneous finding of SMP could easily lead to imposition of a costly and counterproductive regulatory regime. In particular, mandatory access requirements have proven difficult to devise, cumbersome and expensive to administer, and prone to regulatory error. Of even greater concern, such regulations have been shown to degrade investment incentives for both existing carriers and potential new entrants, thereby slowing innovation and harming consumers. Further, to the extent an SMP designation restricted or eliminated the ability of designated carriers to enter new markets, competition would be further impaired, and the benefits of Bermuda's far-sighted approach to regulatory liberalisation would be substantially reduced.

8. Based on the facts and analysis presented herein, and on my knowledge, economic expertise, and experience assessing competition in communications markets, I conclude that BDC and Digicel do not hold SMP (jointly or individually) in any relevant market in Bermuda. Furthermore, I conclude that the regulatory consequences associated with a finding of SMP would significantly impede competition in Bermudian communications markets, reduce investment, slow innovation, and harm Bermudian consumers. Rather than imposing new regulations and erecting new barriers to full-fledged competition, the Regulatory Authority (RA)

⁹ The U.S. *Horizontal Merger Guidelines* state that "A merger enhances market power if it is likely to encourage one or more firms to raise price, reduce output, diminish innovation, or otherwise harm customers as a result of diminished competitive constraints or incentives." See U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines* § 1 (2010). Similarly, the European Commission's *Guidelines on the Assessment of Horizontal Mergers* state that "[t]he creation or strengthening of a dominant position held by a single firm as a result of a merger has been the most common basis for finding that a concentration would result in a significant impediment to effective competition. Furthermore, the concept of dominance has also been applied in an oligopolistic setting to cases of collective dominance," and that "the Commission prevents mergers that would be likely to deprive customers of these benefits by significantly increasing the market power of firms. By 'increased market power' is meant the ability of one or more firms to profitably increase prices, reduce output, choice or quality of goods and services, diminish innovation, or otherwise influence parameters of competition." See European Commission, *Guidelines on the Assessment of Horizontal Mergers Under the Council Regulation on the Control of Concentrations between Undertakings* (Official Journal C 031, 05/02/2004 p. 0005 - 0018) (available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52004XC0205%2802%29:EN:HTML>)

should remove existing governmental barriers to competition, and allow Bermudian communications markets to evolve dynamically over time.

9. The remainder of this report is organized as follows: Section II presents my professional qualifications. Section III explains the basis for my conclusion that BDC and Digicel do not possess SMP in any relevant market, including an analysis of the state of competition in the Bermudian communications market, and an analysis of the ways in which the recent BDC/M3 merger illustrates the competitive forces at play. Section IV explains the basis for my conclusion that the RA should not impose access requirements or erect barriers to new service offerings, and instead should remove existing regulatory impediments to competition. Section V concludes.

II. QUALIFICATIONS

10. My name is Jeffrey A. Eisenach. I am a Managing Director and Principal in the Washington, DC office of Navigant Economics, LLC, a Visiting Scholar at the American Enterprise Institute, and an Adjunct Professor at George Mason University Law School, where I teach the course on Regulated Industries. My business address is 1900 M Street NW, Washington, DC 20036. Navigant Economics is a wholly-owned subsidiary of Navigant Consulting Inc. (NYSE: NCI), a Chicago, Illinois-based consulting firm with offices throughout North America. I hold a Ph.D. in Economics from the University of Virginia and a B.A. in Economics from Claremont McKenna College. I have previously served in senior policy positions at the U.S. Federal Trade Commission and the White House Office of Management and Budget, and on the faculties of Harvard University's Kennedy School of Government and Virginia Polytechnic Institute and State University. I have been studying, writing about and teaching telecommunications regulation for nearly 20 years, and have published articles on

telecommunications regulation in journals such as the *Review of Network Economics* and the *Federal Communications Law Journal*. I have also testified and/or submitted expert reports on communications matters before the U.S. Congress and the Federal Communications Commission (FCC), before regulatory agencies in numerous U.S. states and territories, and before regulatory bodies in four foreign countries. My current affiliations include serving as a member of the Advisory Board for the Pew Project on the Internet and American Life, and on the Board of Directors of the Information Technology and Innovation Foundation. A copy of my curriculum vita is at Exhibit A.

III. BDC AND DIGICEL DO NOT POSSESS SMP

11. As the ECA's definition suggests, a finding of SMP implies that one or more firms is able to exercise market power in a manner that increases profits, yet reduces overall economic welfare. Dominant firms wield their market power by raising prices above competitive levels (and/or degrading the quality of services offered, thereby raising quality-adjusted prices), without suffering large customer defections to rivals that would make such actions unprofitable.¹⁰ Thus, dominance requires that rivals be unable to exert competitive discipline in response to anticompetitive conduct, allowing the dominant firm(s) to "behave to an appreciable extent independently of competitors."¹¹

¹⁰ See European Commission, *Commission Guidelines on Market Analysis and the Assessment of Significant Market Power Under the Community Regulatory Framework for Electronic Communications Networks and Services* (2002/C 165/03) (November 7, 2002) at ¶73-74 ("[M]arket power is essentially measured by reference of the power of the undertaking concerned to raise prices by restricting output without incurring a significant loss of sales or revenues. The market power of an undertaking can be constrained by the existence of potential competitors.") (hereafter *EC Guidelines*).; See also Philip E. Areeda and Herbert Hovenkamp, *Fundamentals of Antitrust Law* (3rd ed, New York: Aspen Publishers, 2005), at 5-6 ("[T]he substantial market power that concerns antitrust law arises when the defendant (1) can profitably set prices well above its costs and (2) enjoys some protection against a rival's entry or expansion that would erode such supracompetitive prices and profits."); Massimo Motta, *Competition Policy: Theory and Practice* (Cambridge: Cambridge University Press 2004 at 40-41; and, U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines* § 1 (2010).

¹¹ Bermuda Electronic Communications Act of 2011, §2.

12. As explained below, modern communications markets are characterized by rapid technological change, volatile market structures, and intense competition along multiple dimensions, and the evidence shows that the Bermudian communications market is no exception. In the Bermudian wireless market, firms' market shares have fluctuated markedly over time. Moreover, carriers have continually undertaken major investments, upgraded their service offerings and competed with one another on both price and quality dimensions. As a result of this market dynamism, Bermudian carriers with large market shares today can have no confidence in their ability to retain their market positions in the future. In such markets, competition occurs not only on price, but also on the ability to offer the new products and services consumers demand – that is, to innovate.

13. Looking ahead, strategic investments necessitated by the transition to a next generation LTE infrastructure are likely to play a critical role in determining competitive outcomes. While it is true that BDC's and Digicel's existing wireless networks encompass some of the necessary infrastructure (e.g., wireless towers), the fact that any carrier seeking to deploy LTE would face large capital costs blurs the distinction between "incumbents" and "new entrants."¹²

14. Looking forward, it is also significant that wireless carriers in Bermuda will to an increasing extent be operating in a market characterized by platform competition – that is, a market in which firms of all types are capable of entering one another's markets in order to provide combinations or packages of complementary goods. Firms with high fixed or sunk costs and low marginal costs which compete by offering complementary services may have little or no market power despite high levels of concentration. Firms engaged in platform competition also

¹² See George J. Stigler, *The Organization of Industry* (University of Chicago Press, 1968) at 67-70. See also David B. Audretsch, William J. Baumol and Andrew E. Burke, "Competition Policy in Dynamic Markets," *International Journal of Industrial Organization* 19 (2001) 613-634.

face enhanced threats of entry, as producers of complementary products are well positioned to enter their “home” markets.

15. The fact that BDC and Digicel lack SMP is confirmed by market conduct and performance since the merger between BDC and M3, which has been precisely the opposite of what economic theory would predict if SMP existed: Instead of *raising* prices, as theory would predict under SMP, wireless carriers have *lowered* effective prices by significantly increasing usage volumes and flexibility of usage, without increasing monthly rates. Thus, wireless customers are now able to purchase more usage (whether measured in voice minutes, text messages, or data volumes) for each dollar spent on wireless service than they could before the merger. These trends are corroborated by BDC’s ARPU before and after the merger, which has remained essentially flat for post-paid customers.¹³

A. BDC and Digicel Operate in a Dynamically Competitive Communications Market

16. Modern communications markets are characterized by rapid technological change and innovation; economists commonly label such markets “dynamic.” In dynamic industries, market structures change rapidly, and firms must continuously innovate, adapt, and make large, risky investments just to keep pace with their competitors. The convergence of telecommunications with digital computing has accelerated the pace of change in modern communications markets.¹⁴ In mobile wireless markets, new generations of technology are now

¹³ By definition, ARPU is equal to the product of price and the quantity of wireless services purchased per customer. Accordingly, an increase in ARPU does not necessarily imply an increase in prices, since it may simply reflect a tendency for customers to purchase more wireless services. However, the fact that BDC’s ARPU has remained flat (and in fact decreased on an inflation adjusted basis) is consistent with the fact that prices have not increased since the merger.

¹⁴ See e.g., Richard A. Posner, “Antitrust in the New Economy,” *Antitrust Law Journal* 68 (2001) 925-943 at 925 (“I shall use the term the ‘new economy’ to denote three distinct though related industries. The first is the manufacture of computer software. The second consists of the Internet-based businesses (Internet access providers, Internet service providers, Internet content providers), such as AOL and Amazon. And the third consists of communications services and equipment designed to support the first two markets.”).

being introduced roughly every five years.¹⁵ The speed of innovation in dynamic markets may make it difficult or impossible for “incumbent” firms to maintain any meaningful degree of market dominance.¹⁶ Accordingly, in dynamic markets, competition is properly assessed on a forward-looking basis, as “static” indicators, such as the market shares observed at any given point in time, may be extremely poor predictors of future market performance. As the U.S. Department of Justice has explained:

In any industry subject to significant technological change, it is important that the evaluation of competition be forward-looking rather than based on static definitions of products and services. Insight can best be gained by looking at product life cycles, the replacement of older technologies by newer ones, and the barriers facing suppliers that offer those newer technologies.¹⁷

17. The wireless communications market is widely understood to be subject to dynamic competition. As Professor Robert Willig (former deputy assistant attorney general of the United States Department of Justice antitrust division) has noted, any “reliance on [concentration] metrics in the wireless industry, given its dynamic nature and complexity, likely will lead to misguided, and perhaps counterproductive, regulatory decisions.”¹⁸

18. The evidence demonstrates that wireless carriers in Bermuda operate in a dynamically competitive communications marketplace. One indicator of the extent of dynamism

¹⁵ See Federal Communications Commission, Omnibus Broadband Initiative, *Technical Paper No. 6: Mobile Broadband* (October 2010) at 15. See also Robert Hahn and Hal J. Singer, “Why the iPhone Won’t Last Forever and What the Government Should do to Promote Its Successor,” *Journal on Telecommunications and High Technology Law* 8 (2010) 313-350, esp. at 317-330.

¹⁶ See, e.g., Posner (2001) at 930 (“Because of the extraordinary pace of innovation, not only in computer software but also in communications technology, the extraordinary amount of capital that is available worldwide for investment in new enterprises, and the rapidity with which new networks that are primarily electronic can be put into service, the networks that have emerged in the new economy do not seem particularly secure against competition.”)

¹⁷ *Ex Parte Submission of the United States Department of Justice, In the Matter of Economic Issues in Broadband Competition, A National Broadband Plan for Our Future*, GN Docket No. 09.51 (January 4, 2010) at 4. See also Michael L. Katz and Howard A. Shelanski, “‘Schumpeterian’ Competition and Antitrust Policy in High-Tech Markets,” *Competition* 14 (2005) at 10 (“Under the Schumpeterian view that competition consists of repeated waves of innovation that sweep aside ‘dominant’ incumbents, current product-market shares may indicate very little about the future of the industry or about whether any given firm will possess significant market power.”) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=925707).

¹⁸ Declaration of Robert Willig, WT Docket No. 09-66, Sept. 30, 2009.

is the fact that market shares have fluctuated dramatically over time; firms that might have once appeared “dominant” have lost ground to and eventually been overtaken by rivals that might have once appeared to occupy the “fringe” of the market. As the European Commission has concluded, “fluctuating market shares over time may be indicative of a lack of market power in the relevant market.”¹⁹

19. Figure 1 below presents market share data from the *Bermuda Omnibus Survey*. The data show that as recently as 2001, M3 Wireless would (on the basis of a market share analysis) have appeared to be the “dominant” carrier in Bermuda, while Digicel occupied only a small “fringe” of the market, accounting for less than ten percent of subscribers. In the intervening period, M3 (and, to some extent, BDC) steadily lost ground to Digicel. By the mid-2000s, M3 was the smallest carrier in terms of market share; and, by the late 2000s, Digicel (temporarily) enjoyed the highest share of the market, and could have been perceived as “dominant” at this time, although its rise appears to have been constrained, at least for the moment, by the BDC/M3 merger in 2011.

¹⁹ See *EC Guidelines* at ¶75.

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20. Just as in wireless markets worldwide, carriers' competitive success (or failure) in the Bermudian market depends on their ability to continually invest in and upgrade their networks, devices, and service offerings. Competing carriers regularly engage in rivalrous conduct along each of these dimensions, with expanded or enhanced offerings by one carrier often following on the heels of another. Section III.C describes recent developments in pricing and service offerings, and gives several examples of the ways in which wireless carriers have competed with each other by allowing customers to purchase more usage (whether measured in voice minutes, text messages, or data volumes) for each dollar spent on wireless service.

21. Firms in dynamic communications markets such as Bermuda compete not only by seeking to offer the best products at the lowest prices, but also by making investments intended

to create entire new categories of products.²⁰ Both BDC and Digicel have deployed enhanced 3G platforms, enabling mobile broadband connections throughout Bermuda.²¹ BDC launched its 3G/UMTS network in late 2009, which allowed it to deploy a new generation of handsets and improved roaming capability, leading directly to an increase in its market share in 2010.²² In mid-2010, Digicel launched its HSPA+ wireless network.²³ In January 2011, BDC deployed its own HSPA+ network, with maximum theoretical download speeds of 21 Mbps.²⁴

22. The coming transition to LTE technology ensures that the pace of investment and innovation will not only continue, but accelerate over the next several years. Thus, in order to be competitive in the mobile communications market, *any* firm will need to invest millions of dollars in the new hardware, software, employee training and so forth required to implement a new generation of technology. While it is true that BDC and Digicel possess some of the necessary infrastructure (e.g., wireless towers), the fact that all carriers face large capital costs with respect to the next generation of network technology blurs the distinction between “incumbents” and “new entrants.”²⁵

²⁰ William J. Baumol, *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism* (Princeton University Press, 2002) at 4. (“Innovation has replaced price as the name of the game in a number of important industries. The computer industry is only the most obvious example, whose new and improved models appear constantly, each manufacturer battling to stay ahead of its rivals.”)

²¹ See Paul Budde Communication Pty Ltd, “Caribbean Telecom Markets - Anguilla to Bermuda,” (2012), at 9 (hereafter *Budde Report*). See also 4G Americas, “Global 3G and 4G Deployment Status” (November 13, 2012) (available at http://www.4gamericas.org/UserFiles/file/Global%20Status%20Updates/Global%20Deployments%20Status%20Update%2011_13_12.pdf).

²² See “CellularOne Marks 3G Network Launch With Unique Hamilton Event,” CellOne Press Release (September 30, 2009) (available at http://www.cellone.bm/pdfs/pressreleases/C1_PressRelease_Sept30_2009.pdf).

²³ See “Digicel Launches Bigger, Better, Faster 3G+ Network,” Digicel Press Release (July 22, 2010) (available at <http://www.digicelbermuda.com/en/about/news/digicel-launches-bigger-better-faster-3g-network>).

²⁴ See “CellularOne announces Bermuda’s first 4G network with data speeds up to six times faster,” CellOne Press Release (January 25, 2011), available at http://www.cellone.bm/pdfs/pressreleases/C1_PressRelease_Jan25_2011.pdf.

²⁵ For a discussion of barriers to entry in dynamic markets, Audretsch, Baumol and Burke (2001) and Stigler (1968) at 67-70.

B. BDC and Digicel Compete in a Market for Integrated Communications Services

23. In modern communications markets such as Bermuda, rivals compete using a variety of intermodal conduits, including traditional wireline networks, cable networks, mobile wireless networks, and the Internet. Communications services are provided by a diverse set of intermodal competitors, including cable companies, wireless operators, over-the-top VoIP operators, fixed wireless operators, and broadband ISPs. In this environment, firms compete among themselves to offer the most desirable set of complementary products possible. By moving to a single standard integrated communications operating license (ICOL), Bermuda's new regulatory framework recognizes this emerging competitive reality by enabling firms to enter and compete in adjacent markets.

24. The transition to the ICOL regime represents the culmination of a market evolution that has been occurring for some time. Since the Bermudian telecommunications market underwent substantial deregulation in 1996,²⁶ competitors have emerged in both the local and long-distance fixed-line segments, as well as in other areas, such as fixed Internet access, mobile voice, fixed wireless, and wireless broadband. Bermuda's per-capita income is among the highest in the world.²⁷ As a consequence, large numbers of Bermudian consumers purchase multiple types of communications services: Well over 90 percent of Bermudians have wireline service;²⁸ nearly [BEGIN CONFIDENTIAL] [END CONFIDENTIAL] Bermudians purchase mobile wireless service;²⁹ nearly [BEGIN CONFIDENTIAL] [END

²⁶ See *Budde Report* at 9.

²⁷ The CIA *World Factbook* notes that "Bermuda enjoys the fourth highest per capita income in the world, more than 50% higher than that of the US." See <https://www.cia.gov/library/publications/the-world-factbook/geos/bd.html>. According to the Government of Bermuda's Department of Statistics, Bermuda's GDP per capita was \$85,996 in 2011. See <http://www.statistics.gov.bm/portal/server.pt>.

²⁸ See Pre-Consultation Market Review (Part B) at 209.

²⁹ See *Bermuda Omnibus Survey* (3rd Quarter 2012), at 12.

CONFIDENTIAL] households purchase home Internet service,³⁰ and, of those with Internet access, approximately **[BEGIN CONFIDENTIAL]** **[END CONFIDENTIAL]** purchase high-speed broadband.³¹

25. In general, packages of communications services may be purchased from a single provider or constructed synthetically, by assembling offerings from different providers. By definition, a change in the price (or the service quality) of one or more services translates into a change in the price (or the service quality) of all packages (whether actual or synthetic) that include it. As firms increasingly move to compete by offering packages of integrated services, the offerings of each type of firm increasingly will come to exercise market discipline on the offerings of others. In this regard, it is significant that there are a number of robust communications providers already operating in the Bermudian market, including providers of fixed voice, wireline cable, fixed broadband and wireless cable services.

26. There are currently four firms in Bermuda supplying fixed telephony utilizing four distinct network technologies. The incumbent local exchange carrier is the Bermuda Telephone Company (BTC), which has had a presence in Bermuda for over 100 years, and provides fixed line service via a traditional copper network to both business and residential customers.³² North Rock Communications (NRC), which entered the Bermudian market in 1997, provides VoIP telephony to both residential and business customers and operates a WiMax network³³ which covers approximately 80 percent of Bermuda.³⁴ Quantum Communications Limited (QCL) provides fixed voice service using its fiber network, primarily in the Hamilton

³⁰ See *Bermuda Omnibus Survey* (3rd Quarter 2012), at 17.

³¹ See *Bermuda Omnibus Survey* (3rd Quarter 2012), at 17.

³² BTC is part of the Keytech Group. See <http://www.btc.bm/About/Default.aspx>.

³³ See Pre-Consultation Market Review (Part B) at 208.

³⁴ See <http://www.northrock.bm/company/about>; see also Pre-Consultation Market Review (Part B) at 225.

and Southside areas.³⁵ QCL serves primarily business customers,³⁶ but has also recently introduced a VoIP offering available to both residences and businesses, which allows customers to place unlimited calls within Bermuda from mobile devices through either a home WiFi connection or a WiFi hotspot.³⁷ In addition, QCL's parent company (LinkBermuda), recently announced investments of "several tens of millions of dollars" to expand QCL's fiber network to businesses and residences throughout the country within 18 to 24 months.³⁸ Finally, BDC has introduced a telephony offering (the Yak service), which provides voice service on a wireless desktop phone unit via BDC's mobile network to businesses and individuals.³⁹

27. In addition, as the Advisors acknowledge, Bermuda Cable Vision (BCV), the island's primary digital cable TV provider, could, with the introduction of ICOL, upgrade its existing network to provide cable voice service throughout the island.⁴⁰ Similarly, as noted above, QCL is poised to expand its fiber network, which would enable it to extend voice service to residences and businesses throughout the island.

28. Four competitors in Bermuda, utilizing four distinct network technologies, supply fixed broadband service. BTC provides ADSL over its copper network to residential and business customers throughout the island.⁴¹ BTC has also deployed a "Metro-Ethernet" fiber network in the city of Hamilton to business customers. BTC is in the process of expanding its

³⁵ See <http://www.quantum.bm/index.php/page/about-quantum>.

³⁶ See <http://www.quantum.bm/index.php/page/overview>; See also <http://www.quantum.bm/index.php/page/voice-services>.

³⁷ Because it can be used outside the home, although not throughout the island, QCL's voice offering, "Qvip," might be best described as 'quasi-mobile.' See <http://www.quantum.bm/index.php/page/qvip>.

See also <http://www.quantum.bm/index.php/page/voice-services>.

³⁸ See, Marina Mello, "LinkBermuda aims to take Bermuda's internet service to a higher level," *The Royal Gazette* (September 26 2012) (available at <http://www.royalgazette.com/article/20120927/BUSINESS/709269905>); see also Pre-Consultation Market Review (Part B) at 220.

³⁹ See http://www.cellone.bm/plans/plans_yak.html.

⁴⁰ See Pre-Consultation Market Review (Part B) at 212 ("BCV has deployed a network that could, with the introduction of the ICOL and investment on the part of BCV, be used to supply voice connections.")

⁴¹ See <http://www.btc.bm/>. See also Pre-Consultation Market Review (Part B) at 225.

fiber network, and has announced intentions to extend the network to residences.⁴² BCV offers residential broadband service throughout the island (with the exception of a portion of Hamilton)⁴³ through its digital cable network.⁴⁴ NRC offers broadband Internet services to both residential and business customers through its fixed wireless network, which, as noted above, covers approximately 80 percent of Bermuda.⁴⁵ Within the Central Hamilton and Southside areas, QCL offers broadband access to business customers via its fiber network.⁴⁶ As noted above, QCL is poised to expand its fiber network, which would enable it to extend broadband service to residences and businesses. In addition, World On Wireless (WOW) provides retail digital subscription television service via its wireless network.⁴⁷

29. The transition from service-specific competition to integrated platform competition has two primary implications with respect to the SMP issue: It increases the threat of entry by potential competitors, and it alters the competitive dynamics of communications markets overall.

30. First, with respect to entry, the Advisors acknowledge that two existing firms – WOW and NRC – possess both the spectrum and the access to towers and polls required to achieve rapid entry (i.e., within two years) into the market for retail mobile service.⁴⁸ Moreover, as noted above, no Bermudian firm has yet made the full sunk investments necessary to deploy LTE technology. As a result, both “incumbents” (BDC and Digicel) and “potential entrants” (such as NRC and WOW) would need to make large capital investments to deploy the next

⁴² See Pre-Consultation Market Review (Part B) at 225; see also Lindsay Kelley, “BTC Launches Metro Ethernet Network in City of Hamilton,” *The Royal Gazette* (January 31, 2012) (available at <http://www.royalgazette.com/article/20120131/BUSINESS03/701319930>).

⁴³ Pre-Consultation Market Review (Part B) at 227.

⁴⁴ See <http://www.cablevision.bm/>.

⁴⁵ See <http://www.northrock.bm/>; see also Pre-Consultation Market Review (Part B) at 225.

⁴⁶ See <http://www.quantum.bm/index.php/page/isp-connections>. See also Pre-Consultation Market Review (Part B) at 225.

⁴⁷ Pre-Consultation Market Review (Part B) at 262 ff.

⁴⁸ Pre-Consultation Market Review (Part B) at 243.

generation of network technology.⁴⁹ These facts alone – about which there appears to be no disagreement – are sufficient to call into question, if not refute altogether, a finding of SMP in the retail mobile services market.

31. More broadly, the transition to a platform competition model – one in which firms compete to offer the most compelling combinations of complementary inputs – will provide both the incentive and the ability for firms to enter adjacent markets. In the U.S., for example, cable television firms have entered the market for voice telephony, telephone companies have entered the market for video, and mobile companies have entered the market for both.

32. Second, convergence alters the competitive dynamics of communications markets by replacing single-product competition with competition among firms offering groups of complementary products. Consumers in Bermuda already have access to several offerings which allow them to obtain combinations of services at lower prices when purchased together. For example, BTC offers packages that combine fixed line access with various calling volumes, various combinations of calling features, and Internet access. NRC has several similar offers, as summarized in Tables 1 and 2 below. For example, one of BTC's offers includes fixed line telephony with unlimited local calling, Internet access via DSL, and a package of calling features for \$99 per month; NRC offers a comparable set of services priced at \$89.95 per month.⁵⁰ In contrast, if these features were purchased separately, at their stand-alone prices, the BTC price would increase to \$118 per month, while the NRC price would increase to \$94.90 per month.⁵¹

⁴⁹ As noted above, BDC and Digicel possess some, but not all, of the infrastructure necessary to deploy LTE.

⁵⁰ Calling features include call waiting with caller ID, caller ID deluxe, call forwarding, three-way calling, and voice mail. See Pre-Consultation Market Review (Part B) at 216.

⁵¹ See Pre-Consultation Market Review (Part B) at 216.

**Table 1:
Comparison of BTC and NRC Charges for Customers Purchasing an Access Line
But No Broadband**

Residential Package	BTC monthly fee	NRC Monthly Fee
Residential Basic (Access line + 50 calls)	\$26.00	
Residential 100 (Access line + 100 calls)	\$35.00	
Residential 150 (Access line + 150 calls)	\$45.00	
Residential (Access line + 200 calls)	\$55.00	
Unlimited (Access line + unlimited calls)	\$59.00	\$49.95

Notes: (1) BTC charges 20c per call for all local calls that are in excess of the free call allowance.
Source: Pre-Consultation Market Review (Part B) at 221, Table 3.

**Table 2:
Comparison of BTC and NRC Charges for Customers Purchasing an Access Line,
Unlimited Local Calling and Broadband**

BTC Bandwidth (Downstream/Upstream)	BTC monthly fee	BTC Vertical services included	NRC monthly fee	NRC bandwidth	NRC vertical services	Price differential =(BTC-NRC)/BTC
1 Mbps/1 Mbps	\$78.00	None	\$49.99	1 Mbps	None	36.0%
4 Mbps/1 Mbps	\$89.00	None	\$79.99	4 Mbps	None	10.2%
4 Mbps/1 Mbps	\$99.00	Call Waiting with Caller ID, Caller ID Deluxe, 3-Way Calling, Call Forwarding, Voice Mail	\$89.99	4 Mbps	Deluxe line caller display, voicemail, 3-way calling, call waiting, call forward	9.1%
6 Mbps/1 Mbps	\$109.00					
6 Mbps/1 Mbps	\$119.00	Call Waiting with Caller ID, Caller ID Deluxe, 3-Way Calling, Call Forwarding, Voice Mail		No Comparable Plan		

Source: Pre-Consultation Market Review (Part B) at 221, Table 4.

33. As seen in Tables 1 and 2, NRC’s package prices are consistently below BTC’s prices.⁵² The Advisors cite these apparent discrepancies as evidence that “NRC’s pricing is not having a significant constraining effect on BTC’s prices....”⁵³ However, as the Advisors acknowledge elsewhere, fixed line telephony delivered over BTC’s copper network is qualitatively differentiated from VoIP telephony delivered over NRC’s fixed wireless network,

⁵² See Pre-Consultation Market Review (Part B) at 221, Table 4.

⁵³ See Pre-Consultation Market Review (Part B) at 216.

which is “susceptible to attenuation from physical obstacles as well as interference from other wireless devices, which affects availability, reliability and consistency of service....”⁵⁴ By simply comparing price levels across the two carriers, the Advisors proceed as if each carrier provided services of identical quality, despite evidence that the relative price of BTC’s service is likely lower, on a quality-adjusted basis, than such a comparison would suggest.

34. The third Bermudian competitor offering packages that incorporate voice telephony is BDC, which, as noted above, provides fixed telephony (the Yak service) through its mobile network utilizing a wireless desk phone.⁵⁵ The Advisors appear to discount the competitive significance of the Yak service, noting that:

In the past, BTC did not provide new telephone service in a timely fashion, making the Yak more attractive than BTC’s service to those with time-sensitive demands (notably expatriates). However, as BTC’s service delivery problems were resolved, subscribership to the Yak service decreased by [CIC---%] and currently amounts to approximately [CIC--%] of BTC’s residential fixed line demand. The severity of this decline, coupled with the fact that it coincides with the ironing out of BTC’s service delivery problems, suggests that Bermudian consumers do not perceive the Yak, at its price, to be an adequate substitute for BTC’s standard telephony service.⁵⁶

35. In other words, when BTC failed to provide adequate service quality, fixed-line telephony customers defected to the Yak service; these defections were reversed when BTC’s service quality improved. The Advisors do not appear to recognize this for what it is – namely, compelling evidence of competition and rivalry between BDC and BTC, even in the pre-ICOL regime in which such competition has been severely hampered by Bermuda’s service-specific licensing regime.

36. There are also at least three firms that offer packages incorporating fixed broadband Internet service. As noted previously, BTC and NRC both offer packages combining

⁵⁴ See Pre-Consultation Market Review (Part B) at 213.

⁵⁵ http://www.cellone.bm/plans/plans_yak.html.

⁵⁶ See Pre-Consultation Market Review (Part B) at 33.

fixed voice service with broadband service. In addition, BCV packages its video service with high-speed broadband data offerings.⁵⁷

37. Firm conduct with respect to data packages, like firm conduct with respect to voice packages, is indicative of rivalry and competition among firms to offer the most attractive combinations of services to their customers. LinkBermuda's recent announcement that it intends to invest tens of millions of dollars to expand QCL's fiber network throughout the island would allow for significantly faster broadband speeds than are currently available (100 MB per second), and followed "on the heels of BTC's announcement it will invest in an infrastructure upgrade that will allow 40 percent of homes on the Island to have 25Mbps internet access by next spring [2013]."⁵⁸ QCL's network expansion, combined with its recently deployed "Qvip" VoIP offering (which, as noted above, provides a quasi-mobile substitute to fixed voice access), would position QCL in head-to-head competition for voice/data packages with BTC, NRC, and BCV (assuming that BCV deploys voice service). Additional rivalry is evident in BCV's recently introduced "Broadband Link" residential Internet offering, with speeds significantly greater than what was previously available;⁵⁹ such offerings place additional competitive pressure on all rivals offering broadband packages, which will be magnified in the (apparently likely) event that BCV upgrades its digital network to enable voice offerings.

38. The common theme running through these examples of rivalrous conduct is that they all represent competition across an array of services, rather than within the market for any single service. In such markets, a firm's apparent dominance (as evidenced by a large market

⁵⁷ Current BCV customers pay lower installation fees service than new customers for BCV's "Broadband Link" Internet. See <http://www.cablevision.bm/index.php/about-broadband-link>.

⁵⁸ See, Marina Mello, "LinkBermuda aims to take Bermuda's internet service to a higher level," *The Royal Gazette* (September 26 2012),

⁵⁹ Marcia Breen, "CableVision's high speed internet service launches," *The Royal Gazette* (November 1, 2012) (available at <http://www.royalgazette.com/article/20121101/BUSINESS07/711019974>); see also *CV Launches 15Mb and 25Mb Internet Service* (available at <http://www.cablevision.bm/index.php/latest-news/57-cv-launches-15mb-and-25mb-internet-service>).

share, for example) in one market may not translate into dominance in the overall market for converged services. These effects are exacerbated in markets – as is the case here – where firms have high fixed or sunk costs, and low marginal costs, meaning that any loss of market share can translate rapidly into the loss of economies of scale.

39. In a recent article, economists Timothy Tardiff and Dennis Weisman demonstrate that “when (i) firms compete by offering a portfolio of complementary services and (ii) they have relatively high fixed or sunk costs and low marginal costs, then the residual market power of the incumbents may be small, even when market shares are at levels that, by traditional standards, may be suggestive of dominance.”⁶⁰ This finding, they note, has important implications for telecommunications:

In telecommunications markets, in particular, where demand complementarities, multi-market participation, and high price/cost margins are the norm, traditional, single-market measures of market power are likely to seriously overstate extant market power. These single-market measures lead to a paradox in which a multi-market provider that is seemingly dominant in each market if considered in isolation may not be able to leverage that “dominance” to exercise significant market power in any market. Under these conditions, the erosion of market power can occur long before incumbents have lost significant amounts of market share. Consequently, any credible assessment of market power must recognize that a little competition can go a long way.⁶¹

40. In the following section, I present empirical evidence demonstrating that the performance of the Bermudian market for retail mobile services is not consistent with the existence of SMP.

C. Conduct and Performance Before and After the BDC/M3 Merger are Consistent with Competition and Inconsistent with SMP

41. As noted above, the inquiry into the existence of SMP in the market for retail mobile services is aided by the existence of a natural experiment. Specifically, if SMP were

⁶⁰ Timothy J. Tardiff and Dennis L. Weisman, “The Dominant Firm Revisited,” *Journal of Competition Law and Economics* 5(3) (2009) 517-536 at 530.

⁶¹ Tardiff and Weisman at 535.

present in the market for retail mobile services, then economic theory predicts that the May 2011 merger between BDC and M3, which reduced the number of Bermudian mobile wireless providers from three to two, substantially increasing the degree of concentration in the mobile wireless market, should have increased the market power of the surviving firms and resulted in higher quality-adjusted prices for consumers.⁶²

42. In fact, the opposite is true: In the 18 months since the amalgamation, wireless carriers have consistently lowered the effective prices available to consumers, by expanding mobile service offerings to include higher usage volumes and increased flexibility of usage. Thus, rather than engaging in anticompetitive conduct, BDC and Digicel have continued to compete with each other by offering more usage (whether measured in voice minutes, text messages, or data volumes) for each dollar spent on wireless service. These trends are corroborated by the fact that, in the wake of the merger, BDC's Average Revenue Per Unit (ARPU) has remained essentially flat for post-paid wireless customers.

1. Changes to Wireless Plans Have Lowered Prices and Expanded the Scope of Wireless Services Available

43. Both BDC and Digicel have recently introduced new and/or revised wireless plans that have decreased effective prices and/or expanded the scope of services available to consumers. The pattern and timing of these new offerings is indicative of competitive rivalry: In some cases, BDC has taken the lead in introducing new offerings and/or reducing effective prices; in other cases, Digicel has been the "first mover."

⁶² See U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines* (2010) § 2 ("Mergers that cause a significant increase in concentration and result in highly concentrated markets are presumed to be likely to enhance market power, but this presumption can be rebutted by persuasive evidence showing that the merger is unlikely to enhance market power.").

44. For instance, in June 2011, BDC significantly reduced overage charges to smartphone customers who exceed their usage caps.⁶³ Digicel followed suit, reducing its own overage charges equivalently.⁶⁴ In January 2012, BDC introduced a discounted “Easytalk” plan for senior citizens; Digicel subsequently introduced an equivalent offering.⁶⁵ In June 2011 and again in June 2012, BDC introduced various voice and data “Shareplans,” which allow customers to share buckets of usage, add additional lines for \$9 per month, and to place unlimited calls within the BDC network.⁶⁶ Earlier, in December 2010, BDC introduced Bermuda’s first prepaid plan with unlimited usage, priced at \$2.50 per day.⁶⁷ In June 2012, Digicel launched the first prepaid data plans in Bermuda.⁶⁸ Digicel also introduced data plans with lower prices per MB than existing plans,⁶⁹ new plans for data-intensive customers,⁷⁰ and a new suite of smartphone plans ,with different options tailored to customers preferences for data versus voice usage.⁷¹ Finally, in July 2011, BDC amended its individual voice plans to match

⁶³ See BDC Market Analysis Data Request Response (July 13, 2012). See also http://www.cellone.bm/plans/plans_data.html. The overage charge for BDC’s 1GB data plan fell from \$2 per MB to just \$0.05 per MB in excess of the usage cap. Similarly, the overage charge for BDC’s 3GB data plan was reduced from \$2 per MB to \$0.04 per MB, while the overage charge for BDC’s 7GB data plan were reduced from \$2 per MB to \$0.03 per MB.

⁶⁴ See BDC Market Analysis Data Request Response (July 13, 2012).

⁶⁵ See BDC Market Analysis Data Request Response (July 13, 2012).

⁶⁶ See BDC Market Analysis Data Request Response (July 13, 2012). See also http://www.cellone.bm/plans/plans_share.html. See also http://www.cellone.bm/plans/plans_data.html.

⁶⁷ See BDC Market Analysis Data Request Response (July 13, 2012).

⁶⁸ See Marcia Breen, “Digicel unveils new data plans,” *The Royal Gazette* (May 31, 2012). See also BDC Market Analysis Data Request Response (July 13, 2012). See also <http://www.digicelbermuda.com/en/prepaid/data-plans>.

⁶⁹ See Marcia Breen, “Digicel unveils new data plans,” *The Royal Gazette* (May 31, 2012), noting that “Customers who were previously paying \$35 for 20MB will now pay the same amount for 80MB of data,” and that “The \$45 Premium data plan is being replaced with a 1GB plan for the same price.” See also BDC Market Analysis Data Request Response (July 13, 2012).

⁷⁰ See Marcia Breen, “Digicel unveils new data plans,” *The Royal Gazette* (May 31, 2012), noting that “Heavier data users now have more option they didn’t have before. The company has introduced higher dataplans of 3GB for \$70 a month and 7GB for \$90 a month.”

⁷¹ See Marcia Breen, “Digicel unveils new data plans,” *The Royal Gazette* (May 31, 2012), noting that “Digicel has also introduced special smartphone plans which allow customers to choose voice and data combinations according to their usage. Each of the plans costs \$100 a month and have the added benefit of unlimited Digicel to Digicel calls.” See also BDC Market Analysis Data Request Response (July 13, 2012). See also <http://www.digicelbermuda.com/en/postpaid/smartphone-plans>.

existing Digicel offerings, including free “buckets” of SMS text messages, and doubling customers’ in-network calling minutes.⁷²

45. Table 3 provides a summary of the changes that have been implemented for BDC’s individual voice plans since the merger, as well as the resulting decrease in the effective prices offered to consumers. For example, before the merger, BDC offered a rate plan for \$37 per month that included 100 “Anytime” minutes, 100 “In-Network” minutes, and zero SMS text messages, implying a per-minute price of $\$0.19 = \$37/(100 + 100)$. Two months after the merger, in July 2011, the plan was revised to double the In-Network minutes – matching the number of in-network minutes already offered on comparable individual voice plans offered by Digicel – and to include 100 SMS text messages, while keeping the monthly rate fixed at \$37. Accordingly, the price per SMS-minute fell by 50 percent, from $\$0.19$ to $\$0.09 = \$37/(100 + 200 + 100)$. As seen in Table 3, each of BDC’s individual voice plans was revised in a similar manner, doubling the SMS-minutes included in each plan and halving the price per SMS-minute.

⁷² See BDC Market Analysis Data Request Response (July 13, 2012). See also http://www.cellone.bm/plans/plans_voice.html.

**Table 3:
BDC's Individual Voice Plans, Pre- and Post-Merger**

<i>Before July 2011</i>							
Rate Plan	Price/Month	Included Anytime Minutes	Included In-Network Minutes	Included SMS Text Messages	Total SMS-Minutes	Price Per SMS-Minute	% Change In Price per SMS-Minute
100	\$37.00	100	100	0	200	\$0.19	n/a
300	\$57.00	300	300	0	600	\$0.10	n/a
500	\$77.00	500	500	0	1000	\$0.08	n/a
<i>July 2011 Forward</i>							
Rate Plan	Price/Month	Included Anytime Minutes	Included In-Network Minutes	Included SMS Text Messages	Total SMS-Minutes	Price Per SMS-Minute	% Change In Price per SMS-Minute
100	\$37.00	100	200	100	400	\$0.09	-50%
300	\$57.00	300	600	300	1200	\$0.05	-50%
500	\$77.00	500	1000	500	2000	\$0.04	-50%

Source: BDC. See also http://www.cellone.bm/plans/plans_voice.html.

46. Table 4 provides a summary of new “Share Plans” that BDC introduced one month after the merger, in June 2011, as well as a comparison of the price per SMS-minute between the new Share Plans and the (new) individual voice plans, which were summarized in Table 3. BDC’s new Share Plans imply substantially lower prices per SMS-minute relative to BDC’s pre-merger individual voice plans.

47. To illustrate, as seen in Table 4, BDC now offers a Share Plan that can be shared among two subscribers,⁷³ and includes 250 Anytime minutes, 250 SMS text messages, and *unlimited* In-Network minutes, for a monthly rate of \$69. Ignoring In-Network minutes for the moment, the price per SMS-minute for this plan is $\$0.14 = \$69 / (250 + 250)$. To replicate this offering using BDC’s pre-merger individual voice plans, the customer would have had to purchase two individual plans at \$37 apiece (which would provide 200 Anytime minutes and zero SMS text messages), in addition to 50 incremental voice minutes (priced at \$0.25 each), and

⁷³ Share Plans also allow additional lines to be added for \$9 per month. See http://www.cellone.bm/plans/plans_share.html.

250 incremental SMS text messages (priced at \$0.05 each), for a total cost of $\$99 = \$37 \times 2 + \$0.25 \times 50 + \0.05×250 . The implied cost per SMS-minute would then be $\$0.20 = \$99 / (250 + 250)$. Thus, pre-merger individual voice customers would have been required to spend \$99 to replicate the \$69 Shared Plan offering, implying a 30 percent decrease in the price per SMS-minute post-merger.⁷⁴

**Table 4:
BDC's Post-Merger Shared Voice Plans vs. BDC's Pre-Merger Individual Plans**

<i>BDC Pre-Merger Individual Plans (Two Subscribers)</i>							
Equivalent Individual Plan	Price/Month	Included Anytime Min	Included In-Network Min	Included SMS	Overage Rates	Overage Charges	Price Per SMS-Min
2 x 100	2 x \$37.00	2 x 100	2 x 100	0	\$0.25 (Voice) \$0.05 (SMS)	\$25 = $(\$0.25 \times 50) + (\$0.05 \times 250)$	\$0.20 = $(\$37 \times 2 + \$25) / 500$
2 x 300	2 x \$57.00	2 x 300	2 x 300	0	\$0.20 (Voice) \$0.05 (SMS)	\$67.50 = $(\$0.20 \times 150) + (\$0.05 \times 750)$	\$0.12 = $(\$57 \times 2 + \$67.50) / 1500$
2 x 500	2 x \$77.00	2 x 500	2 x 500	0	\$0.15 (Voice) \$0.05 (SMS)	\$100 = $(\$0.15 \times 250) + (\$0.05 \times 1250)$	\$0.10 = $(\$77 \times 2 + \$100) / 2500$
<i>BDC's Post-Merger Shared Plans (Two Subscribers)</i>							
Shared Plan	Price/Month	Included Anytime Min	Included In-Network Min	Included SMS	Total SMS-Min	Price Per SMS-Min	% Change In Price per SMS-Min
250	\$69.00	250	Unlimited	250	500	\$0.14	-30%
750	\$109.00	750	Unlimited	750	1500	\$0.07	-40%
1250	\$149.00	1250	Unlimited	1250	2500	\$0.06	-41%

Source: BDC. See also http://www.cellone.bm/plans/plans_share.html.

48. In addition, pre-merger individual voice plan customers would have had to spend an additional \$0.25 per minute for each In-Network minute in excess of the 200 In-Network minutes allowed for under the individual plan (whereas post-merger customers purchasing the Shared Plan would not incur any overage charges, because In-Network minutes are unlimited). Moreover, pre-merger customers would have been prohibited from sharing minutes across the

⁷⁴ BDC also offers a Shared Plans priced at \$249.00, which includes 2,500 Anytime minutes and 2,500 SMS text messages, as well as \$349.00 Shared Plan with unlimited usage. See http://www.cellone.bm/plans/plans_share.html.

two individual plans, which further increases the likelihood of incurring additional overage charges.⁷⁵

49. Table 5 compares BDC's post-merger Shared Plans with similar "Family Plans" that were available from M3 prior to the merger. As illustrated in Table 5, M3's Family Plans charged customers a significantly higher price per SMS-minute than BDC's Shared Plans for comparable levels of usage. For example, prior to the merger, consumers could purchase a Family Plan from M3 for two individuals that included 300 Anytime Minutes and zero SMS text messages, whereas BDC currently offers a Shared Plan that includes 250 Anytime Minutes and 250 SMS text messages. To achieve comparable usage, an M3 customer would have had to purchase 250 SMS text messages at \$0.05 each, for a total overage charge of $\$12.50 = (\$0.05 \times 250)$. A BDC customer would purchase 50 additional voice minutes at \$0.25 each, for a total overage charge of $\$12.50 = (\$0.25 \times 50)$. The implied price per SMS-minute for the M3 customer is $\$0.17 = (\$83 + \$12.50)/(300 + 250)$, while the implied price per SMS-minute for the BDC customer is $\$0.15 = (\$69 + \$12.50)/(250 + 250 + 50)$. Thus, the post-merger price is approximately 15 percent lower than the pre-merger price. As seen in Table 5, similar calculations reveal that the post-merger price reduction is substantially steeper for plans with higher levels of usage.

⁷⁵ Prior to the merger, BDC offered "Family Plans," which allowed for unlimited "In-Family" calling. The Family Plans were not comparable to BDC's existing Shared Plans. For example, the Family Plans did not allow sharing of minutes or SMS text messages across users. In addition, the cost of adding additional lines was much higher (\$23.50 for children and \$47 for adults, versus \$9 for BDC's current Shared Plans). Finally, the Family Plans did not include unlimited In-Network calling.

**Table 5:
BDC’s Post-Merger Shared Voice Plans vs. M3’s Pre-Merger Family Plans**

<i>M3 Pre-Merger Family Plans (Two Subscribers)</i>								
M3 Family Plan	Price/Month	Included Anytime Min	Included In-Family Min	Included In-Network Min	Included SMS	Overage Rates	Overage Charges	Price Per SMS-Min
300	\$83.00	300	Unlimited	0	0	n/a (Voice) \$0.05 (SMS)	\$12.50 = (\$0.05 x 250)	\$0.17 = (\$83 + \$12.50)/(300 + 250)
500	\$103.00	500	Unlimited	0	0	\$0.13 (Voice) \$0.05 (SMS)	\$70 = (\$0.13 x 250) + (\$0.05 x 750)	\$0.12 = (\$103 + \$70)/(750 + 750)
1000	\$133.00	1000	Unlimited	0	0	\$0.11 (Voice) \$0.05 (SMS)	\$90 = (\$0.11 x 250) + (\$0.05 x 1250)	\$0.09 = (\$133 + \$90)/(1250 + 1250)
<i>BDC Post-Merger Shared Plans (Two Subscribers)</i>								
Shared Plan	Price/Month	Included Anytime Min	Included In-Network Min	Included SMS	Overage Rates	Overage Charges	Price Per SMS-Min	% Change In Price per SMS-Min
250	\$69.00	250	Unlimited	250	\$0.25 (Voice) n/a (SMS)	\$12.50 = (\$0.25 x 50)	\$0.15 = (\$69 + \$12.50)/(250 + 250 + 50)	-15%
750	\$109.00	750	Unlimited	750	n/a	n/a	\$0.07 = \$109/(750 + 750)	-37%
1250	\$149.00	1250	Unlimited	1250	n/a	n/a	\$0.06 = \$149/(1250 + 1250)	-33%

Source: BDC. See also http://www.cellone.bm/plans/plans_share.html.

50. In addition, although M3’s pre-merger Family Plans (like BDC’s post-merger Shared Plans) allowed family members to share usage, the Family Plans allowed customers to place unlimited calls to family members only, and did not include unlimited In-Network calling. Pre-merger M3 Family Plan customers would have had to spend an additional \$0.11 to \$0.19 per minute for each In-Network minute in excess of the minutes allowed for under the Family Plan.⁷⁶ Moreover, additional lines were priced at \$10 per month under M3’s Family Plans, compared with \$9 per month under BDC’s post-merger Shared Plans.

51. Finally, Table 6 below illustrates the effect of “Shared Data” plans, introduced by BDC in June 2012, on the price per megabyte (MB), relative to BDC’s pre-merger pricing. Before the Shared Data plans were introduced, customers with two mobile broadband-enabled

⁷⁶ The voice overage rates on M3’s Family Plans were \$0.19 per minute under the 300 minute plan, \$0.13 per minute under the 500 minute plan, and \$0.11 per minute otherwise.

devices (e.g., one smartphone and one tablet), would have had to purchase two individual plans, which, for one gigabyte (GB) of monthly usage, were priced at \$45 each, for a per-megabyte price of $\$0.05 = \$90/2000$. The post-merger Shared Data plans provide 3GB of usage for a monthly price of \$75, and allows customers to add an additional device to the plan for \$9 per month. A plan encompassing two devices therefore yields a per-megabyte price of $\$0.03 = (\$79 + \$9)/3000$, implying a 38 percent reduction relative to pre-merger data prices. Pre-merger customers desiring a higher level of usage would have had to purchase two individual 3GB plans at \$75 each, at a price per megabyte of $\$0.03 = \$150/6000$. The post-merger Shared Data plans provide 7GB of usage for a monthly price of \$95, and allow customers to add an additional device to the plan for \$9 per month. A plan encompassing two devices therefore yields a per-megabyte price of $\$0.01 = (\$95 + \$9)/7000$, implying a 41 percent reduction relative to pre-merger data prices.

**Table 6:
BDC's Data Plans, Pre- and Post-Merger**

<i>Individual Data Plans (Avail. Pre- and Post-Merger)</i>				<i>Shared Data Plans (Avail. After June 2012)</i>			
Number of Devices	Included Data Usage	Price per Month	Price per MB	Included Data Usage	Price per Month	Price per MB	% Change In Price per MB
2	2 x 1GB	2 x \$45	\$0.05	3GB	\$75 + \$9	\$0.03	-38%
2	2 x 3GB	2 x \$75	\$0.03	7GB	\$95 + \$9	\$0.01	-41%

Source: BDC. See also http://www.cellone.bm/plans/plans_data.html.

52. In addition, pre-merger individual data customers would have had to pay overage charges of \$2 per MB in excess of the amount allowed under an individual data plan. In contrast, post-merger customers would pay overage charges of only \$0.04 per MB (for the 3GB plan), and

only \$0.03 per MB (for the 7GB data plan).⁷⁷ Finally, pre-merger customers would obviously have been prohibited from sharing data usage across two individual plans, which would increase the likelihood of incurring overage charges on data usage.

2. BDC's Post-Paid ARPU Has Remained Flat in Nominal Terms and Fallen in Real Terms Since the BDC/M3 Merger

53. BDC has calculated its monthly post-paid ARPU from July 1999 through March of 2011. As seen in Figure 2, in nominal dollars, post-paid ARPU has hovered at just over [BEGIN CONFIDENTIAL] [END CONFIDENTIAL] for over ten years, averaging approximately [BEGIN CONFIDENTIAL] [END CONFIDENTIAL] per month. However, Bermuda's consumer price index (CPI) has increased by approximately three percent annually over this timeframe,⁷⁸ meaning that post-paid ARPU has fallen [BEGIN CONFIDENTIAL] [END CONFIDENTIAL] in real terms. For instance, BDC's ARPU in July 1999 was [BEGIN CONFIDENTIAL] [END CONFIDENTIAL]. However, BDC's ARPU in March 2011, measured in 1999 dollars, was [BEGIN CONFIDENTIAL] [END CONFIDENTIAL] – a decrease of approximately [BEGIN CONFIDENTIAL] [END CONFIDENTIAL] in real terms.

⁷⁷ See http://www.cellone.bm/plans/plans_data.html.

⁷⁸ See Government of Bermuda Department of Statistics, *Bermuda Digest of Statistics* (2011); see also Government of Bermuda Department of Statistics, *Facts & Figures 2011* at 5; see also Government of Bermuda Department of Statistics, *Consumer Price Index* (January 2011) at 1.

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[END CONFIDENTIAL]

54. BDC has also conducted financial analyses for the period from January 2010 through September of 2012, allowing for a comparison of ARPU before and after the BDC/M3 merger. As seen in Figure 3, in nominal terms BDC's average monthly pre-merger post-paid ARPU is **[BEGIN CONFIDENTIAL]** **[END CONFIDENTIAL]** to its average monthly post-merger post-paid ARPU (reflecting **[BEGIN CONFIDENTIAL]** **[END CONFIDENTIAL]**), but has declined by **[BEGIN CONFIDENTIAL]** **[END CONFIDENTIAL]** in real terms.

[BEGIN CONFIDENTIAL]

[END CONFIDENTIAL]

55. Finally, it bears emphasis that trends in ARPU are not necessarily representative of trends in prices: ARPU is, by definition, equal to the product of the prices and quantities of all wireless services purchased, divided by the number of revenue generating units (which is roughly equivalent to the number of subscribers). Accordingly, a change in ARPU may reflect a change in the average price paid by subscribers, a change in the average quantity of wireless services purchased by subscribers, or some combination of the two. (For example, if the average price declines by five percent, and if the average quantity of services purchased increases by ten percent, ARPU will increase, despite the fact that prices have fallen). Nevertheless, the fact that BDC's ARPU has remained flat is consistent with the fact that prices have not increased since the merger.

IV. THE RA SHOULD NOT IMPOSE ACCESS REQUIREMENTS OR ERECT OTHER NEW BARRIERS TO COMPETITION

56. Given the competitive nature of the Bermudian communications market, regulatory efforts to curtail perceived “dominance” would be both unnecessary and counterproductive. The imposition of access requirements has been shown to degrade investment incentives for both existing carriers and potential new entrants in communications markets worldwide, enmeshing regulators in costly and time consuming regulatory proceedings, and raising the potential, if not the likelihood, of significant regulatory error. In addition, restrictions on the scope of communications services that a firm is permitted to offer, or on the terms on which new services can be provided, would erect new barriers to competition by impeding regulated firms from responding effectively to rivals’ offerings and consumer demand. Instead of introducing new regulations that would serve to dampen full-fledged competition, the RA should remove both existing governmental barriers to competition, including regulatory constraints on wireless tower construction and new spectrum deployment, as well as the potential barriers posed by an SMP designation.

A. Access Requirements Will Not Promote Robust Competition

57. Access requirements, sometimes referred to as “mandatory unbundling,” force incumbent network operators to grant competitors access to certain “network elements” at regulated wholesale prices. Mandatory unbundling can take a variety of forms, ranging from forced sharing of particular network elements (e.g., the “last mile loop” of the traditional copper telephone infrastructure) to “bitstream” access or mandatory resale requirements (e.g., forcing wireless carriers to resell their services through mobile virtual network operators (MVNOs)).

58. Proponents of mandatory unbundling operate under the assumption that some aspects of the market for communications services – e.g., retail mobile wireless services – are

potentially competitive, while other network elements – e.g., wireless spectrum and towers – are difficult to replicate economically, giving rise to incumbent dominance.⁷⁹ For instance, mass-market voice communications services were historically provided by a single carrier, and the cost of duplicating the incumbent’s copper network arguably served as a barrier to the entry. Beginning in the mid-1990s, network unbundling mandates were adopted in most industrialized countries as a means of facilitating entry into local telecommunications markets for both voice and data services.⁸⁰ A central premise of these policies was that entrants would make facilities-based investments to replicate an increasing share of network elements over time, thus climbing what has become known as the “ladder of investment” and ultimately duplicating most or all of the incumbents’ network facilities.⁸¹

59. Regulators attempting to engineer such an outcome have faced daunting theoretical and practical challenges. First, the regulator must correctly identify which network elements should be unbundled. Next, the regulator must set wholesale prices for all unbundled network elements at efficient levels. If the regulator selects prices that exceed efficient levels, the result will be to discourage network sharing by entrants. If prices are set “too low,” then investment incentives are degraded for both incumbents and entrants. Workable frameworks for

⁷⁹ See, e.g., Organization for Economic Co-operation and Development, Working Party on Telecommunications and Information Services Policies, *Developments in Local Loop Unbundling* (September 10, 2003). see also Robert W. Crandall, Jeffrey A. Eisenach, and Allan Ingraham, “The Long-Run Effects of Copper-Loop Unbundling and the Implications for Fiber,” *Telecommunications Policy* (forthcoming, January 2013).

⁸⁰ See European Commission, *Recommendation on Interconnection in a Liberalised Telecommunications Market* (98/195/EC; January 8, 1998) (available at http://www.etsi.org/WebSite/document/aboutETSI/EC_OJ_Council/1998-195.pdf) (hereafter European Commission (1998)). See also European Commission, *Proposal for a Regulation of the European Parliament and of the Council on Unbundled Access to the Local Loop* (December 7, 2000) (available at <http://ec.europa.eu/archives/ISPO/infosoc/telecompolicy/review99/com2000-394en.pdf>) (hereafter European Commission (2000)).

⁸¹ See Martin Cave and Ingo Vogelsang, “How Access Pricing and Entry Interact,” *Telecommunications Policy* 27;10–11 (2003) 717–727; see also Martin Cave, “Making the Ladder of Investment Operational” (Unpublished manuscript, November 2004); and, Martin Cave, “Encouraging Infrastructure via the Ladder of Investment,” *Telecommunications Policy* 30 (2006) 223-237.

avoiding these pitfalls have been elusive, and the price-setting process has proven contentious in both economic theory and regulatory practice.

60. With respect to theory, although economists tend to agree that wholesale prices should be based on the incremental (forward-looking) costs of constructing new network elements, there is disagreement on a wide range of seemingly intractable issues. These include the proper allocation of joint and common costs, the proper period of time over which costs should be deemed “sunk” (which defines the basis on which “incremental” costs are calculated), and the appropriate options value of the risks borne by incumbents undertaking network investments.⁸² Practical challenges faced by regulators include the need to design an accurate model of the costs of building out different network elements under potentially heterogeneous market and geographical structures, the need to accurately anticipate technological developments and fluctuating market conditions, and the inherent difficulty of assessing the competing claims of incumbents and entrants.

61. A large body of empirical work has studied the relationship between mandatory unbundling and investment incentives. A recent review of the literature on unbundling and investment examines more than 20 empirical studies of access regulation and investment incentives, and concludes that “most of the evidence shows that local loop unbundling...discourages both ILECs and CLECs from investing in networks.”⁸³ More recent

⁸² Dixit and Pindyck’s seminal work on investment irreversibility concludes that investment in an uncertain environment carries an additional cost equal to the loss of the option to wait for better information about technology, consumer demand, or substitute products. See Avinash Dixit and Robert Pindyck, *Investment and Uncertainty* (Princeton University Press, 1994). In a later application of this work to telecommunications, Pindyck concludes that the regulated network access price must include a charge for the “real option” of avoiding the investment in sunk (irreversible) network facilities that are subject to early obsolescence. See Robert Pindyck, “Mandatory Unbundling and Irreversible Investment in Telecom Networks,” *Review of Network Economics* 6;3 (2007) 274–298.

⁸³ See Carlo Cambini and Yanyan Jiang, “Broadband Regulation and Investment: A Literature Review,” *Telecommunications Policy* 33 (2009) 559-574. (Although the article’s title might suggest an exclusive focus on broadband, in reality the authors provide an extensive survey of the literature examining the relationship between regulation and investment in telecommunications infrastructure generally). See also Robert W. Crandall, Allan T.

studies confirm these findings. For example, 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.⁸⁴ Research also demonstrates that unbundling reduces the incentive to deploy next generation networks. For example, Briglauer, Ecker, and Kugler study the relationship between copper unbundling and FTTP deployment in the EU-27 and find that “regulation has negatively affected NGA deployment.”⁸⁵ Even the primary author of the ladder of investment thesis, Dr. Martin Cave, has acknowledged that it “remains no more than a hypothesis, as scientific testing of an imprecise proposition of this kind remains problematic.”⁸⁶

62. In the context of the Bermudian market for wireless communications services, a forced access mandate would come at a particularly inopportune moment, just as firms are considering whether to make the large-scale capital investments needed to put in place next generation LTE infrastructures. By effectively depriving a first-moving firm of the ability to earn an economic return on its investment, while continuing to saddle it with the risk of losses should the investment prove unprofitable, unbundling mandates deter firms from taking large-scale investments. For example, it was no coincidence that, in the United States, Verizon

Ingraham and Hal J. Singer, “Do Unbundling Policies Discourage CLEC Facilities-Based Investment?” *Topics in Economic Analysis and Policy* 4 (2004).

⁸⁴ Maya Bacache, Marc Bourreau and Germain Gaudin, “Dynamic Entry and Investment in New Infrastructures: Empirical Evidence from the Telecoms Industry,” Telecom ParisTech Working Paper ESS-11-01 (January 2011) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1750217).

⁸⁵ Wolfgang Briglauer, Georg Ecker and Klaus Kugler, “Regulation and Investment in Next Generation Access Networks: Recent Evidence from the European Member States,” Working Papers/Research Institute for Regulatory Economics, 2011,4. Forschungsinstitut für Regulierungsökonomie, WU Vienna University of Economics and Business, Vienna (November 2011).

⁸⁶ Martin Cave, “Applying the Ladder of Investment in Australia,” (December 17, 2007), at 1.

Communications held off on its decision to invest in FiOS until the Federal Communications Commission formally decided not to impose an unbundling mandate on fiber networks.⁸⁷

B. *Ex Ante* Regulation of Pricing and Other Firm Conduct is Unnecessary and Undesireable in Competitive Communications Markets

63. A finding of SMP may also lead the RA to impose restrictions on the prices or other terms on which the carrier may provide communications services. Among other things, these may include restrictions related to the “cost orientation” and “transparency,” of prices;⁸⁸ the obligation to “establish and maintain a cost accounting system” to “facilitate the detection of anti-competitive cross-subsidies;”⁸⁹ the obligation “not to unreasonably bundle other services with a service that is subject to *ex ante* regulation,” including a prohibition against “offering bundles at retail prices that are predatory or cannot be replicated by an efficient competitor;”⁹⁰ and, “such other obligations as the Authority may...deem necessary to promote or preserve effective competition...”⁹¹

64. In short, a finding of SMP exposes a “dominant” carrier to a range of potential *ex ante* regulations designed to constrain its conduct along several dimensions. Given the competitiveness of the Bermudian communications market, the imposition of these types of regulations on Bermudian wireless carriers, rather than promoting competition, would erect new barriers to full-fledged competition, ultimately harming Bermudian consumers.

⁸⁷ The FCC determined not to impose unbundling on last-mile fiber infrastructures in August 2003. See *In the Matter of Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking* (August 21, 2003) at para 4 (“The effect of unbundling on investment incentives is particularly critical in the area of broadband deployment, since incumbent LECs are unlikely to make the enormous investment required if their competitors can share in the benefits of these facilities without participating in the risk inherent in such large scale capital investment.”) Three months later, in November 2003, Verizon announced that it was moving ahead with deployment of a fiber-to-the-home network. Now known as FiOS, that network represents an investment of \$23 billion.

⁸⁸ Bermuda Electronic Communications Act of 2011, §24(1)(g).

⁸⁹ Bermuda Electronic Communications Act of 2011, §24(1)(i).

⁹⁰ Bermuda Electronic Communications Act of 2011, §24(1)(k).

⁹¹ Bermuda Electronic Communications Act of 2011, §24(1)(o).

65. The extensive set of potential regulations that would accompany a finding of SMP is reminiscent of the type of classic “public utility-style” *ex ante* regulation that prevailed in the United States, and throughout the world, for most of the 20th century. In general, economists agree that this type of regulation is not only unnecessary but undesirable in competitive markets, where it inevitably distorts prices, slows innovation, discourages entry, and reduces consumer welfare.⁹² There is also broad consensus among economists and regulators that technological change has transformed telecommunications into a competitive market, in which intrusive regulation is no longer appropriate. As the prominent regulatory economist Alfred Kahn explained in testimony before the U.S. Federal Trade Commission in 2007:

The [telecommunications] industry is obviously no longer a natural monopoly, and wherever there is effective competition – typically and most powerfully, between competing platforms – land-line telephony, cable and wireless – regulation of the historical variety is both unnecessary and likely to be anticompetitive⁹³

66. In the case of the Bermudian market, the imposition of restrictions on the ability of firms to enter new markets would be especially perverse, in that such restrictions conflict direct with the policy decision in the Electronic Communications Act to replace service-specific licenses with the ICOL, thereby allowing competition to flourish throughout the communications sector.

C. Instead of Imposing New Regulations, the RA Should Remove Governmental Barriers to Competition and Entry

67. As noted above, a finding of SMP would trigger the potential for both mandatory unbundling regulations as well as a range of additional *ex ante* regulations designed to constrain firm conduct along several dimensions, all of which are both unnecessary and undesirable in a

⁹² See, e.g., Richard A. Posner, “Monopoly and Its Regulation,” *Stanford Law Review* 21;3 (February 1969) 548-643.

⁹³ Alfred E. Kahn, Remarks at Federal Trade Commission Workshop on Broadband Connectivity Competition Policy (February 13, 2007) (available at www.ftc.gov/opp/workshops/broadband/presentations/kahn.pdf).

competitive communications market such as Bermuda's. In addition to these *potential* governmental barriers to entry, expansion, and competition, there are also *existing* governmental barriers, which constrain both the deployment of physical infrastructure (through a moratorium on tower construction)⁹⁴ as well as the availability of new spectrum (through the government's spectrum audit process).⁹⁵ To promote continued robust competition, the RA should work to remove both the existing and potential barriers to full-fledged competition.

V. CONCLUSIONS

68. The tentative finding of SMP in the market for retail mobile services put forward in the pre-consultation document is without foundation. The existence of high market shares is not a basis for a finding of SMP; it is acknowledged that at least two firms already possess the assets necessary to enter the market; and, it is further acknowledged that whatever barriers to entry preclude other firms from entering, including the need for access to spectrum, are within the power of government to remove. The evidence presented herein, including specifically the fact that effective prices have fallen in the wake of the BDC/M3 merger, belies the contention that "firms are exercising market power."

69. Imposition of the remedies provided for in §24 of the ECA would result in substantial costs. As regulatory authorities all over the world have learned, the design and implementation of such remedies is a time-consuming and difficult task, and one that is prone to regulatory error. A substantial body of empirical evidence demonstrates that such regulation reduces incentives for investment and innovation, while shifting the locus of competition from

⁹⁴ As the Advisors observe, "the lack of space available for wireless equipment on support structures [is] a major impediment to the roll out of new services by existing carriers and a likely insurmountable entry barrier for additional carriers wishing to enter the wireless marketplace," and the supply of wireless infrastructure is currently limited by the government's moratorium on the construction of new towers. Pre-Consultation Market Review (Part B) at 242.

⁹⁵ Because of the need to conduct a spectrum audit, the Advisors do "not foresee an assignment of new spectrum for a period of two years or more following the issuance of the ICOLs." Pre-Consultation Market Review (Part B) at 243.

the marketplace to the hearing room, as firms compete for the favor of regulators rather than consumers. Against these certain costs, the benefits of imposing open access mandates and other remedies are *at best* speculative.

70. Finally, it should be noted that the decision to embark on the path of regulation is difficult, perhaps impossible, to reverse. Open access and similar mandates, once in place, develop natural economic constituencies which become strong advocates for the status quo – or, for still more intrusive regulation. A decision to forebear from regulation, on the other hand, can be reversed at any time. As Bermuda embarks upon a new era in communications policy, it should begin by allowing the market forces certain to be unleashed by the ECA to operate for the benefit of Bermuda consumers, secure in the knowledge that the government has and will retain the ability to address any issues of market power if and when they become apparent.

Attachment A

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Education

Ph.D. in Economics, University of Virginia, 1985
B.A. in Economics, Claremont McKenna College, 1979

Professional Experience

Managing Director and Principal, Navigant Economics LLC, January 2010-present
Chairman and Managing Partner, Empiris LLC, September 2008-January 2010
Chairman, Criterion Economics, LLC, June 2006-September 2008
Chairman, The CapAnalysis Group, LLC, July 2005-May 2006
Executive Vice Chairman, The CapAnalysis Group, LLC, February 2003-July 2005
President, The Progress & Freedom Foundation, June 1993-January 2003
Executive Director, GOPAC, July 1991-May 1993
President, Washington Policy Group, Inc., March 1988-June 1991
Director of Research, Pete du Pont for President, Inc., September 1986-February 1988
Executive Assistant to the Director, Office of Management and Budget, 1985-1986
Special Advisor for Economic Policy and Operations, Office of the Chairman, Federal Trade Commission, 1984-1985
Economist, Bureau of Economics, Federal Trade Commission, 1983-1984
Special Assistant to James C. Miller III, Office of Management and Budget/Presidential Task Force on Regulatory Relief, 1981
Research Associate, American Enterprise Institute, 1979-1981
Consultant, Economic Impact Analysts, Inc., 1980
Research Assistant, Potomac International Corporation, 1978

Teaching Experience

Adjunct Professor, George Mason University School of Law, 2000-present (Courses Taught: Regulated Industries; Perspectives on Government Regulation; The Law and Economics of the Digital Revolution)
Adjunct Lecturer, Harvard University, John F. Kennedy School of Government, 1995-1999 (Course Taught: The Role of Government in the 21st Century)
Adjunct Professor, George Mason University, 1989 (Course Taught: Principles of Economics)
Adjunct Professor, Virginia Polytechnic Institute and State University, 1985, 1988 (Courses Taught: Graduate Industrial Organization, Principles of Economics)
Instructor, University of Virginia, 1983-1984 (Courses Taught: Value Theory, Antitrust Policy)
Teaching Assistant, University of Virginia, 1982-1983 (Courses Taught: Graduate Microeconomics, Undergraduate Macroeconomics)

Awards, Activities and Concurrent Positions

Visiting Scholar, American Enterprise Institute, 2012-
Member, Board of Directors, Information Technology & Innovation Foundation, 2011-
Vice President (Education) and Member of Audit Committee, Economic Club of Washington, 2011-
Member, World Bank ICT Broadband Strategies Toolkit Advisory Group, 2010-2011
Member, Economic Club of Washington, 2009-
Member, Board of Directors, PowerGrid Communications, 2008-2009
Member, Board of Advisors, Washington Mutual Investors Fund, 2008-
Member, Board of Advisors, Pew Project on the Internet and American Life, 2002-
Member, Board of Directors, The Progress & Freedom Foundation, 1993-2009
Member, Attorney General's Identity Theft Task Force, Virginia, 2002
Member of the Board of Directors, Privacilla.com, 2002-2003

Member, Executive Board of Advisors, George Mason University Tech Center, 2001-2004
Contributing Editor, *American Spectator*, 2001-2002
Member, Bush-Cheney Transition Advisory Committee on the FCC, 2001
Member, Governor's Task Force on E-Communities, State of Virginia, 2000-2001
Member, 2000-2001 Networked Economy Summit Advisory Committee, 1999-2001
Member, Board of Directors, Internet Education Foundation, 1998-2003
Member, Internet Caucus Advisory Committee, 1998-2003
Member, American Assembly Leadership Advisory Committee, 1996 -2002
Member, Commission on America's National Interests, 1995-2000
Adjunct Scholar, Hudson Institute, 1988-1991
Visiting Fellow, Heritage Foundation, 1988-1991
President's Fellowship, University of Virginia, 1981-1984
Earhart Foundation Fellowship, University of Virginia, 1981-1983
Member, Reagan-Bush Transition Team on the Federal Trade Commission, 1981
Henry Salvatori Award, Claremont Men's College, 1979
Frank W. Taussig Award, Omicron Delta Epsilon, 1978

White Papers and Academic Publications

“The Long-Run Effects of Copper-Loop Unbundling and the Implications for Fiber,” (with R. Crandall and A. Ingraham) *Telecommunications Policy*, forthcoming 2013
“What Happens When Local Phone Service is Deregulated?” (with K. Caves), *Regulation*, September 2012
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“The Effects of Regulation on Economies of Scale and Scope in TV Broadcasting,” Navigant Economics LLC, June 2011
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- “Broadband Policy: Does the U.S. Have It Right After All?” in *Telecommunications Policy & Regulation*, Practising Law Institute, December 2008
- “Broadband in the U.S. – Myths and Facts,” in *Australia’s Broadband Future: Four Doors to Greater Competition*, Committee for Economic Development of Australia, 2008
- “The Benefits and Costs of I-File,” (with R. Litan and K. Caves), Criterion Economics, LLC, April 14, 2008
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