

**CABLE AND WIRELESS (BVI) LTD.
COMMENTS ON**

**BROADBAND MARKET ANALYSIS CONSULTATION
(Reference Number: C/01/2015)**

5 March 2015



1. Introduction

1.1. This document presents Cable and Wireless (BVI) Ltd.'s ("LIME BVI") response to the **Broadband Market Analysis Consultation** ("the **Consultation Document**") issued by Telecommunications Regulatory Commission of the Virgin Islands ("TRC" or "Commission"), dated 29 January 2015, reference number: C/01/2015.

1.2. The remainder of this document is organized as follows:

- In this introductory section, we summarize our responses to the Consultation Document;
- In Section 2, we comment on the TRC's benchmark analyses of broadband performance in the BVI;
- In Section 3, we respond to the TRC's proposed retail market definition and their conclusion that wireless broadband services are not substitutes for LIME BVI's wireline broadband service;
- In Section 4, we respond to the TRC's analysis of entry barriers;
- In Section 5, we comment on the TRC's proposed wholesale market definition and the need to apply wholesale regulation; and

- In Section 6, we comment on the need for any regulation of broadband services in the BVI, and provide closing comments.
- 1.3. Based on its market analysis, the TRC proposes to declare LIME BVI dominant in the following markets in the British Virgin Islands (“**the BVI**”): the market for retail fixed wireline broadband connections; and the market for wholesale fixed wireline broadband connections.
 - 1.4. The general approach followed by the TRC—that is, to first define the relevant markets, and then assess competition within the markets and entry barriers to/from the markets—to procure evidence of market power, and thereafter prescribe or not prescribe a regulatory remedy based on the evidence, is acceptable to LIME BVI.
 - 1.5. LIME BVI’s concern arises from the manner in which the TRC has conducted its market analysis. As we document in this report, the TRC’s analysis is inadequate in both its scope and the treatment of a number of facts, developments and trends in the relevant markets. These errors lead to incorrect conclusions, which in turn could lead to inappropriate regulatory remedies and sub-optimal outcomes for all stakeholders in the Virgin Islands.
 - 1.6. Respectfully, the TRC’s approach appears to begin with the conclusion that LIME BVI is dominant in the market for fixed wireline broadband connections in the BVI. It then applies a set of analyses that conform with



and support this conclusion. This conclusion arises from the perception that fixed wireline broadband penetration and download speeds in the BVI are not acceptable in comparison to other countries and continents. Given its requirement for a determination of dominance in order to intervene, the TRC proceeds to mention and then disregard very credible evidence that contradict its conclusion. We believe this information clearly shows the relevant markets to be much wider than the TRC has defined, contestable, competitive, dynamic, and satisfying current and foreseeable demand, while also providing sufficient incentive for investment in new technologies and services.

- 1.7. Moreover, while the TRC has already drawn conclusions on wireline broadband vs wireless broadband, incorporated such conclusions in its proposals, and issued these proposals to the public, it is only now seeking to justify them by means of a survey. In our view, it would have been more appropriate for the TRC to have conducted an investigation, through *inter alia* consultation with the public, prior to issuance of the determination, (whether by means of conducting a survey or otherwise,) and then using the outputs of the same to inform its conclusions about the relevant markets. The approach currently adopted by the TRC is contrary to traditional survey methods and is less likely to procure the objective results which should inform the TRC's decision-making on the issue of dominance.



- 1.8. With respect to the management, availability and assignment of spectrum bands with superior wireless data carrying capacity, the Consultation Document conveniently ignores the TRC's own role, in failing to make available the spectrum necessary to introduce 4G LTE-based services. The Consultation Document, therefore, is slightly misleading, since persons without familiarity with the regulatory framework in the BVI would not be aware that the Commission's inaction in this regard is largely responsible for stymieing the further roll-out of faster mobile broadband connections in the BVI. In other words, any perceived barrier to providing even much faster broadband connections (via LTE) is an artificial one and can readily be removed by the TRC.
- 1.9. In seeking to analyze the demand for broadband in the BVI, the TRC has also not shared any evidence showing that any material segment(s) of the broadband market is underserved in relation to the download speeds required. The TRC has made the claim, but has not yet shared data on the percentage of and nature of complaints received, relative to the entire broadband market, so as to justify its desire to intervene.

2. Comments on the TRC's Benchmark Analyses

- 2.1. The Consultation Document begins with three benchmark performance analyses that purport to compare broadband provision in the BVI to that in

the rest of the world. From these analyses the TRC determines that the BVI “is below the Caribbean and global average in terms of speed and proportion of the population with a fixed broadband connection.” These analyses are the foundation to the TRC’s report and are used by the TRC to justify its investigation of broadband services in the BVI. According to the report:

The statistics suggest that the BVI is behind the rest of the world in broadband provision and therefore the TRC asks the question is this due to a problem of market power and can this be solved through regulatory action? Is fixed or mobile broadband the way to go for the BVI?

2.2. The benchmark analyses are presented in three separate figures in the report, Figures 1 through 3, which we describe below:

- Figure 1 evaluates broadband penetration and finds that, as of 2012, 21% of the population in the BVI had access to “a broadband connection.” In comparison to the world average of 30% and other broad geographic areas, such as North America (78%), Oceania (60%), Europe (58%), etc., the BVI ranks second to last, just above Africa (11%).
- Figures 2 and 3 indicate that as of 4Q 2012, the average download speed in the BVI of a “broadband connection” was 2.4 Mbps. In comparison to worldwide benchmark countries (Figure 2), the BVI ranks dead last; download speeds in the benchmark countries are found to be at least three times that in the BVI; and in comparison to Caribbean benchmark countries (Figure 3), the report concludes that the BVI “also ranks low in the Caribbean.”



- 2.3. It is difficult to respond to these analyses, for a number of reasons. First, the source of the data used in Figures 1 and 2 are not identified; second, it is unclear what is being measured (fixed wireline broadband, fixed wireless broadband, mobile wireless broadband, or some combination); and third, the analyses only consider activity up through 2012. One could reasonably have assumed the analyses consider all types of broadband connections, fixed wireline, fixed wireless, and mobile wireless. Absent any explanation in the Consultation Document or citation of source(s), it is not possible to know with certainty what is included. Based upon data collected by the Caribbean Community (“CARICOM”),¹ which we believe may have been the Commission’s source for broadband penetration, the figures appear to only consider fixed wireline broadband connections.
- 2.4. The apparent exclusion of wireless broadband connections and consideration of data only up through 2012 highlight another shortcoming of the TRC’s analysis, one that also happens to highlight the dynamic nature of this industry. The year 2012 is significant to the BVI and relevant to the TRC’s analysis as it coincides with the period when 4G mobile broadband services were introduced to the BVI. In July 2012, LIME BVI began offering 4G services in the BVI, followed shortly thereafter by the rollout of Digicel’s

¹ Caribbean Community (CARICOM) Secretariat, Statistics Sub-Program, *CARICOM ICT Statistics and Indicators, 2000-2012*, published April 2014. Downloaded 23 February 2015 from <http://www.caricomstats.org/Files/Publications/ICT/ICTpublication.pdf>. Hereafter “CARICOM Report.”

and CCT's 4G services. In this brief period of time—just over two and a half years—4G has become ubiquitous in the BVI, and is offered across the country by all three mobile operators. It is an understatement to say that in this brief period 4G and smartphone usage have changed how and when consumers in the BVI use wireless services. Therefore, had the TRC's penetration analysis considered *all* types of broadband connections, and had it also considered periods since 4G became widely available in the BVI, the results of its analysis would likely be quite different.

- 2.5. Another shortcoming to the TRC's analyses is that the benchmarks used for comparison against the BVI in Figures 1 and 2 are not appropriate, and arguably irrelevant. The benchmarks used in Figure 1 appear to be entire continents. Penetration in a large, contiguous geographic area, such as North America, with a population approaching half a billion people, is not an appropriate benchmark for penetration in a small island state, such as the BVI, with a population under 30,000. The economics of deployment and scale economies in these two disparate geographic areas are not comparable. Likewise, the benchmarks used in Figure 2 are the 10 countries with the *highest* average download speeds *in the world*. Comparing the BVI to the 10 top performing countries in the world is not appropriate—it does not provide any information on whether there is market failure, nor does it



support the Consultation Document's conclusion that broadband is underperforming in the BVI.²

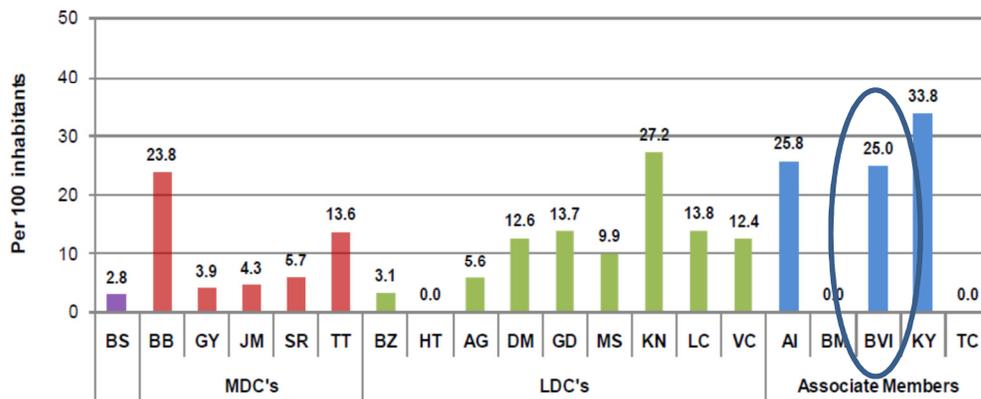
- 2.6. A much more appropriate benchmark analysis—one that is well sourced, well defined, and based upon appropriate benchmark countries—was conducted by CARICOM and published recently, in April 2014.³ CARICOM concluded that fixed broadband subscription (per 100 inhabitants) as of year-end 2012 was 25 in the BVI, making the BVI one of only five (5) Caribbean countries with a penetration exceeding 20. See Figure 1 below.



² The benchmarks used in Figure 3 include 27 Caribbean countries. While these benchmarks appear to be appropriate, we assume once again that the comparison only considers fixed wireline broadband connections. More importantly, the TRC's conclusion from this comparison—that "BVI also ranks low in the Caribbean as shown in figure 3"—is not supported by this analysis. Figure 3, in fact, shows that BVI ranks 14th out of the 28 Caribbean countries considered. It does not show that the BVI "ranks low in the Caribbean," but that its performance is just above the median performance in the Caribbean.

³ See, *CARICOM Report*.

Figure 1: Fixed broadband subscriptions (per 100 inhabitants) in Caribbean countries, as of year-end 2012

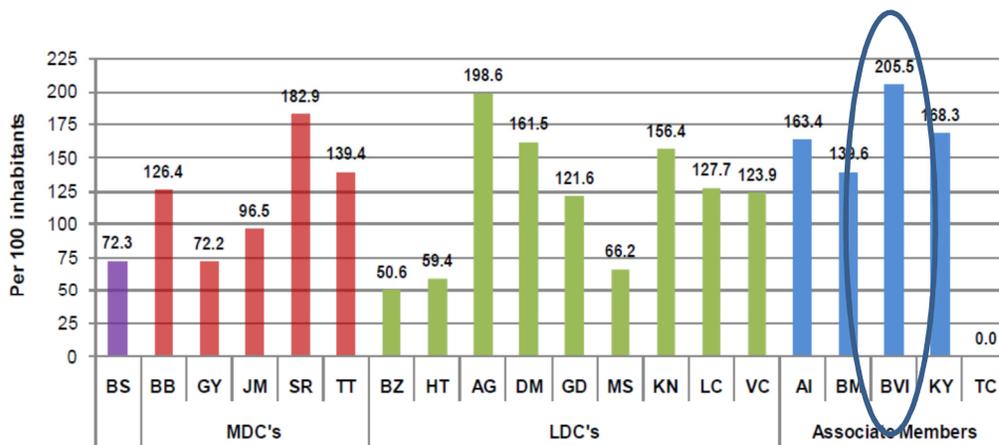


Source: : ITU World Telecommunication /ICT Indicators database

2.7. The CARICOM report does not include data on wireless broadband connections in the BVI, unfortunately. It does, however, show that the adoption of wireless technology in the BVI surpasses all other Caribbean countries. In particular, CARICOM reports that mobile subscriptions (per 100 inhabitants) as of year-end 2012 were 205.45 in the BVI, which far exceeds the average penetration in CARICOM member states (excluding Haiti) of just 110.65.⁴ See Figure 2 below.

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Figure 2: Mobile wireless subscriptions (per 100 inhabitants) in Caribbean countries, as of year-end 2012



Source: : ITU World Telecommunication / ICT Indicators database

2.8. This result should not be seen as surprising given that the BVI, as mentioned previously, with a population of under 30,000, is served by three separate mobile networks (LIME BVI, Digicel, and CCT), all of which are offering 4G broadband data services in the BVI. This result, however, is unique—the BVI is the only country in which a LIME Group company operates in the Caribbean with more than two active mobile operators⁵—and is a strong

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indication that the BVI is well situated to capitalize on and leverage wireless technology as a means of providing high-quality alternatives to traditional fixed wireline broadband connections to its population.

- 2.9. In sum, the benchmark analyses presented by the TRC paint an inaccurate, incomplete, and outdated picture of broadband performance in the BVI. When appropriate benchmarks are applied, as in the case of the CARICOM analyses, fixed wireline broadband penetration in the BVI is found to be performing well and is in fact among the top performers in the Caribbean. Furthermore, if wireless technologies are included in the analysis, then the BVI with three separate wireless 4G networks is at the forefront, and well situated to leverage wireless technology to further its lead in broadband performance in the Caribbean.

3. Comments on the TRC's Retail Market Definition and Analysis of Wireline/Wireless Substitution

- 3.1. In this section we respond to TRC questions 1-3, 5, 8 and 10 from Annex 1. LIME BVI's responses to these questions are set forth in detail throughout this section. At the outset, however, we identify each relevant question, and provide a summary of our response, as follows:



- Questions 1 and 2 ask if mobile broadband connections are substitutes for fixed broadband connections for residential and business customers, respectively.

LIME BVI response: We believe wireless broadband technologies offered in the BVI, including both fixed wireless broadband connections offered by CCT and Digicel and mobile wireless broadband connections offered by LIME BVI, CCT, and Digicel, are substitutes for fixed wireline broadband connections offered by LIME BVI to residential and business customers in the BVI.

- Question 3 asks if mobile broadband connections are a “pure demand substitute” for fixed broadband connections.

LIME BVI response: The term “pure demand substitute” used in this question is nowhere defined or described in the TRC’s report, nor is it a term commonly used in the economics literature. We explain below that two services need not be identical or even considered comparable by every consumer to be substitutes for one another.

- Question 5 asks for comment on the TRC’s market definition, retail fixed wireline broadband connections in the BVI.

LIME BVI response: We believe the TRC’s definition of the relevant retail market as including only fixed wireline broadband connections is too narrow, and likely a consequence of the TRC’s analysis that, as we document in this section, is flawed.

- Question 8 asks if we agree with the TRC’s conclusion that LIME BVI is dominant in the market for fixed wireline broadband connections in the BVI.

LIME BVI response: We do not believe that retail fixed wireline broadband connections in the BVI constitute an economic market. Therefore, we do not agree with the statement, nor do we believe that LIME BVI is dominant in the market for retail broadband connections in BVI.

- Question 10 asks if the fact that there is only one fixed broadband provider is a problem.

LIME BVI response: We find the statement to be inaccurate, that is, we disagree that there is “only one fixed broadband provider” in the BVI. We understand there are currently three separate fixed networks in BVI providing broadband connections: LIME BVI’s fixed wireline network; CCT’s fixed wireless network; and Digicel’s fixed wireless network. Furthermore, we do not agree that the relevant market for broadband connections in the BVI is limited to fixed connections. Therefore, if one includes mobile wireless broadband connections, which are a substitute for fixed connections, then there are an additional three separate mobile networks in the BVI providing broadband connections: LIME BVI’s mobile wireless network; CCT’s mobile wireless network; and Digicel’s mobile wireless network.



- 3.2. The TRC's substitution analysis begins by incorrectly categorizing fixed wireless (WiMAX) service in the BVI as a mobile broadband connection. The TRC states:

A broadband connection can also be set up as a fixed wireless connection using Wimax technology. This product offers a fixed service using a mobile technology. Wimax offers internet access in the same way that a non-phone mobile broadband connection offers internet access. Therefore we treat wimax as a product within mobile broadband.

- 3.3. The statement starts out on the right foot, describing WiMAX as “a fixed wireless” broadband connection, but then falls apart. In particular, fixed wireless being fixed is not a “mobile technology” and it does not “offer[] internet access in the same way that a non-phone mobile broadband connection offers internet access”. It offers service to a fixed location, just as fixed wireline service is offered to a fixed location. Therefore, the conclusion to “treat Wimax as a product within mobile broadband” is flawed and based on erroneous assumptions.
- 3.4. The report then lists the retail broadband products on offer in the BVI as including 1) LIME BVI fixed wireline; 2) CCT mobile wireless; 3) Digicel mobile wireless; and 4) LIME BVI mobile wireless. The TRC excludes CCT's fixed wireless broadband service, stating that the service is “no longer on sale,” and ignores Digicel's fixed wireless broadband service for reasons that are unclear.



- 3.5. It is our understanding CCT still operates its fixed wireless WiMAX network, and still provides WiMAX-based commercial broadband services in the BVI. Just because CCT no longer actively markets the service does not suggest that the service ought to be excluded from the product market. Furthermore, it is our understanding that Digicel operates a fixed wireless network in the BVI, provides broadband services to business customers in the BVI using this network, and is actively selling and marketing these services.⁶ Therefore, from the outset the TRC’s substitution analysis is relying on a mis-categorized and incomplete list of broadband services on offer in the BVI.
- 3.6. The report then goes on to immediately discount mobile broadband as a substitute for fixed wireline broadband because it conjectures many consumers “may subscribe to both fixed and mobile connections.” It concludes without any substantiation or clarification that “[a] product is only truly substitutable if the consumer will give up one product to switch to the other.”
- 3.7. In this instance, the TRC refers to “true” substitutes, and elsewhere in the report uses the language “pure” or “full” substitutes. It would appear that

⁶ For instance, the Digicel BVI website (<http://www.digicelbvi.com/>) includes a link in the header of the webpage to business services offered by Digicel BVI. The business services identified on this webpage (<http://www.digicelbusiness.com/>) include, among other things, broadband services.

these words are intended to delineate some threshold level of substitution that if met, the alternative broadband service is then considered a substitute for LIME BVI's fixed wireline broadband service and the services are deemed to be in the same product market. Nowhere are these words described or defined, however, so it is unclear if this interpretation corresponds to the TRC's intent.

- 3.8. To be clear, the definition of substitutability does not require services or products be identical, functionally equivalent, or even of equal quality, in order to be substitutes and assert competitive pressure on each other. For example, U.S. courts have found that display advertisement in daily newspapers is not a market unto itself, because "door-to-door delivery, direct mail, and the weekly papers [were] viable substitutes;"⁷ that "premium" ice cream is not a market in itself, because all grades of ice cream compete for customer preference and for retailers' freezer space (in other words, lower-quality ice cream is a relevant substitute for premium ice cream);⁸ and that glass jars and metal cans are sufficiently interchangeable in use to be in the same product market.⁹ Similarly, courts have found that "passive visual entertainment," including cable television, satellite

⁷ *Drinkwine v. Federated Publications*, 780 F.2d 735, (9th Cir. 1985), n.3.

⁸ *In re Super Premium Ice Cream Distrib. Antitrust Litig.*, 691 F. Supp. 1262 (N.D. Cal. 1988).

⁹ *United States v. Continental Can Co.*, 378 U.S. 441, 453-57 (1964).



television, videocassette recordings, and free over-the-air television are all substitutable enough to be in the same product market.¹⁰

- 3.9. Likewise the US telecommunications regulator, the Federal Communications Commission (“FCC”), has made similar findings. For instance, in the merger proceedings, *SBC-ATT* and *Verizon-MCI*, the FCC found that, whilst there are differences between the services (e.g. the average cost for mobile wireless service appeared to be higher than for wireline local service) and not all consumers relied solely on mobile voice services in lieu of fixed voice services, there was sufficient substitution for fixed and mobile services to be included within the same market. The FCC stated:

Even if most segments of the mass market are unlikely to rely upon mobile wireless services in lieu of wireline local services today, as discussed above, our product market analysis only requires that there be evidence of sufficient substitution for significant segments of the mass market to consider it in our analysis. Based on the factors discussed in this section, we conclude that mobile wireless services should be included within the product market for local services to the extent that customers rely on mobile wireless service as a complete substitute for, rather than complement to, wireline service.¹¹

¹⁰ *Cable Holdings v. Home Video, Inc.*, 825 F.2d 1559, 1563 (11th Cir. 1987).

¹¹ *Verizon-MCI*, paragraph 91.



3.10. There are numerous other examples of products that are not functionally identical or equivalent and yet have been found to be sufficiently substitutable to exert competitive pressure on one another. Per U.S. antitrust law, for instance, what is critical for economic substitutability is whether the products “have the ability—actual or *potential*—to take significant amounts of business away from each other.”¹² Thus, when determining whether a particular service competes with LIME BVI’s fixed wireline services, one needs to determine, from the consumer’s viewpoint, the extent to which one service may serve a comparable function as another and thereby serve as a constraint on pricing.

3.11. Factors that are relevant to determining whether services are relevant substitutes include whether: the services appear to serve the same or similar function from the customers’ standpoint; customers view them as reasonably equivalent; and/or they are objectively similar from a technical standpoint.¹³ In fact, the foregoing are all relevant questions which the TRC should have put to the public prior to arriving at a conclusion that LIME BVI is dominant. The failure to determine these answers beforehand further

¹² *SmithKline Corp. v. Eli Lilly & Co.*, 575 F.2d 1056, 1063 (3d Cir. 1978). (Emphasis is added.)

¹³ Technical similarity is not necessary for services to be substitutes, but is relevant because if services are technically similar they are likely to be substitutes.

underscores the point made earlier concerning the apparent rush to judgment by the Commission.

- 3.12. Other relevant evidence includes whether the services are sold in the same marketing channels, or whether competitors market their services as a substitute for one another. In this regard, it is informative to consider how Digicel and CCT market their 4G mobile broadband services in the BVI. As the following excerpt from Digicel's BVI website demonstrates, Digicel clearly considers its 4G mobile broadband service to be a substitute for LIME BVI's fixed line broadband:

[Digicel 4G] is faster, more reliable, more secure and will allow you to enjoy all the internet has to offer at better speeds and unbeatable value. What's more, with our network, you can now set your internet free! There's no longer any need to go home or into the office to connect, because with Digicel, all your favorite sites, updates, tweets and videos are right there in your pocket.

4G stands for the fourth generation in mobile telephony and Digicel's 4G network features elite HSPA+ technology which basically [] means faster download speeds for you wherever you are in the BVI.

Benefits:

** Mobile internet at Home and On the Go*

** Best Value Internet with connections from only \$19 a month*



- * Flexible payment options – available on pre and postpaid plans
- * Easy installation
- * Faster set-up time - simply purchase, install and start using
- * Does not require a fixed telephone service, line rental payments or technical installation
- * Can be used to provide data, voice and video services to laptop or PC¹⁴

3.13. And the following statement in *The BVI Beacon* suggests that, like Digicel, CCT believes its mobile wireless broadband product competes with LIME BVI's fixed wireline broadband product:

His counterpart at CCT, Averad Penn, spoke similarly. "We obviously have concerns to make sure that none of the players are dominant, because it affects us from a commercial perspective," Mr. Penn said. He added, though, that he believes the company's wireless Internet services, which some industry observers refer to as mobile broadband, can compete directly with fixed-line offerings.¹⁵

3.14. The definition of substitutability also does not require that a consumer need to "give up one product [and] to switch to the other" for the latter to be a substitute for the former. Because substitutability is based on how the demand for one product reacts to a price change in another product, the fact

¹⁴ See, Digicel BVI, 4G Internet Services (downloaded on 3 March 2015, from <http://www.digicelbvi.com/en/4g/digicel-4g-broadband-services>).

¹⁵ Jason Smith, "[SPECIAL REPORT — Slow broadband in regulator's spotlight](#)," *The BVI Beacon*, 17 February 2015.



that certain products are substitutes may not be evident at first glance. For example, courting couples may indulge in a dinner and a movie. The two products therefore may seem to be complementary goods, not substitutes. However, the test for substitutability is not whether the products are used in conjunction with one another; rather the test is how the demand for one product responds to a change in the price of the other. If an increase in the price of movie tickets results in more dinners (and correspondingly fewer dinner-and-movie combinations), then the products are substitutes, even if couples continue to sometimes (but less frequently) both dine and attend a movie.

- 3.15. As the examples mentioned earlier suggest, it is not even necessary for *all* customers to view two services as reasonably interchangeable for the services to be in the same relevant product market or to provide effective competition. All that is necessary is that a sufficient number of customers, over time, would be willing to switch between the services so that the producers potentially exert competitive pressure on one another. For example, it is not necessary for every consumer to have a wireless broadband connection, let alone to drop their wireline broadband connection for wireless to be an effective substitute for wireline service in the market. While some customers may not consider wireless to be a good substitute or may never consider using wireless service, all that is necessary is that enough customers view them as substitutes to exert pricing discipline



overall. One of the powerful virtues of competition is that when one service exerts competitive pressure on another, all consumers benefit, even those who would never consider switching. As explained by Bishop and Walker in one of the leading textbooks on competition economics:

[I]t is not necessary for all or even most customers to switch, or for those customers that do switch to switch all of their purchases to render the attempted price increase unprofitable. It is sufficient that enough switching takes place so that the attempted increase in price is not profitable ... what matters is not the behaviour of “average” customers, but the behaviour of “marginal” customers (i.e. those most likely to switch in response to relative price changes).¹⁶

3.16. The TRC’s report cites international precedent on market definition, and indicates that four European countries (Ireland, Poland, Slovenia, and UK) have found fixed and mobile broadband to be in separate product markets, while one European country (Austria) found fixed and mobile broadband to comprise a single product market. The explanation provided for the Austrian determination is that the Austrian regulator, the RTR, found “strong infrastructure based competition especially from mobile broadband created a trend towards effective competition in the retail residential market for broadband services in Austria.”

¹⁶ Simon Bishop and Mike Walker, *The Economics of EC Competition Law*, Third Edition, paragraph 4-011.

- 3.17. The discussion of Austrian regulator's determination is relevant and highlights how the market in the BVI shares an important characteristic with Austria. Like Austria, and as explained above, the BVI also has strong infrastructure-based competition from mobile broadband providers. This is a factor which the TRC should have considered and which suggests the example is indeed a relevant consideration here.
- 3.18. In its 2014 report analyzing market definition in the telecommunications sector, the Organization for Economic Co-operation and Development ("OECD") also looked at these determinations, including the Austrian example, and concluded that a holistic, forward-looking approach to market definition should be adopted in considering the conditions of competition in the market and relevant competitive constraints:

[The] cases clearly show that market boundaries are not fixed. Delineation of relevant markets is an economic process, and as such it should properly reflect conditions of competition in the market. This means that market boundaries should not be determined by the technologies and networks, but rather by their capacities, features and the services they support.¹⁷

¹⁷ OECD, *Defining the Relevant Market in Telecommunications (2014)*, page 65. The OECD also pointed to the example of Finland where the regulatory authority found that there was *asymmetric* one-way substitution from fixed to mobile implying that customers increasingly view mobile as an alternative to fixed and would switch in the event of an increase in prices, thereby acting as a competitive constraint: "the non symmetric substitution led to the definition of two separate markets: retail mobile access is a distinct product market which gives rise to competitive constraints being exercised on operators in the fixed access market" – see page 25.

3.19. The OECD report indicates that fixed-mobile convergence is likely to continue and deepen. As technology advances and customers demand ever-increasing levels of connectivity, the substitutability between fixed and mobile telecommunications services is likely to increase beyond current levels. These are important considerations to which we believe the TRC has not given proper consideration. In defining the relevant market, especially in a dynamic industry, one must take a forward-looking approach. Account should be taken of the market as it exists currently, but equal consideration should also be given to how the market will change over time. In this regard, it is clear that there is a convergence between fixed and mobile technologies that has intensified and will continue to intensify over the near term. This dynamism, in LIME BVI's view, provides a strong case that the best course of action is a hands-off approach; the TRC should not interfere, but allow the market to develop organically.

3.20. In assessing whether products or services fall within the same product market for competition assessment purposes, the standard approach used by regulators around the world is to apply the *Hypothetical Monopolist Test* or *SSNIP Test*. This test seeks to assess whether it would be profitable for a firm to raise prices by a small but significant non-transitory amount (5-10%). If the analysis shows that it would not be a profitable strategy (because a sufficient number of consumers would switch away to alternative products) the market definition should be widened to include these



products. The TRC has relied on this test in its analysis. It presents a table comparing LIME BVI's "Mega" branded, fixed wireline broadband service to the three mobile wireless providers' broadband services. Based on this comparison and a brief discussion in how the services are provided, the TRC concludes as follows:

Given the price of the proposed alternatives...and the key fact that the proposed alternatives do not offer a fixed, unlimited connection, the TRC does not see that enough customers would switch to the proposed alternatives as a result of the price increase so as to make the price increase unprofitable for LIME. Therefore, the proposed alternatives are not pure substitutes to fixed broadband.

- 3.21. The TRC's comparison of prices, however, does not support this conclusion. The table does not show significant differences in price, but in fact shows each to be priced quite comparably. According to the Table 1 in the Consultation Document, LIME BVI's wireline broadband "Mega" service costs \$84 per month, while LIME BVI's and Digicel's mobile broadband services each cost \$86 per month. This \$2 difference in price accounts for 2% of the monthly cost of LIME BVI's "Mega" service, hardly a material difference.
- 3.22. The TRC makes the assumption that in the face of a 10% price increase customers on a fixed broadband plan with unlimited connection would not give up the service for a mobile broadband plan with an 8GB Mifi or 7GB



Dongle data plan. This conclusion is unsubstantiated. It assumes that all customers with an unlimited data plan are consuming above these thresholds, which is not correct. It may also be the case that customers purchase a plan without usage caps, for certainty or budgeting reasons; that is, they place value on incurring a certain monthly charge that does not change from month-to-month. If this monthly charge were to increase by 10%, however, marginal customers may no longer find this “certainty premium” worthwhile, especially in light of the growing popularity, not to mention greater convenience, of a mobile broadband connection, and the fact that a mobile broadband connection, unlike a fixed broadband connection, does not also require the purchase of a fixed access line. In sum, the outcome of this test is fundamentally an empirical question. Hence, LIME BVI contends the qualitative explanations offered by the TRC are not persuasive, and more fundamentally, they do not answer this empirical question. Put in other terms, the TRC has advanced this conclusion, on which its entire determination is based, without actual data to support it.



4. Comments on the TRC’s Analysis of Entry Barriers and Supply Substitution

4.1. In this section we respond to TRC question 4 from Annex 1. LIME BVI’s response to this question is set forth in detail throughout this section. At the

outset, however, we identify the question, and provide a summary of our response to it, as follows:

- Question 4 asks if we agree that there are no supply-side substitutes to a fixed wireline broadband connection in the BVI.

LIME BVI response: We do not agree with the statement. We believe there exist several supply-side substitutes to a fixed wireline broadband connection in the BVI. In addition to the cable network owned by BVI Cable TV, noted by the TRC in its report, there exist five separate networks that already provide broadband connections in the BVI. These networks include CCT’s fixed wireless network, Digicel’s fixed wireless network, LIME BVI’s mobile wireless network, CCT’s mobile wireless network, and Digicel’s mobile wireless network.

- 4.2. In assessing the competitive discipline faced by a company in any market, and especially one with the dynamic characteristics we have discussed, it is relevant to determine the “ability” of competitors to bring services to the market, either by entering the market as a newcomer, by growth, or by expanding from the provision of related services in the same area. In economic terms, such an inquiry is termed an assessment of barriers to entry or expansion.
- 4.3. A barrier to entry can be defined as an attribute of a market “that make[s] entry unprofitable while permitting established firms to set prices above



marginal cost, and to persistently earn monopoly returns.”¹⁸ Barriers to entry make it more difficult for new firms to enter a market. The higher these barriers, the less likely it is that firms not currently producing the product in question will provide competitive discipline on the incumbent’s pricing. The lower the entry barriers, the more likely firms that are not active now in the market can provide competitive discipline on the market through the credible threat of entry in the future. An expansion barrier is similar, but it applies to firms that are already operating in the market. An expansion barrier exists if firms already operating in the market cannot readily expand production in a reasonable time frame--thereby allowing existing firms to increase prices substantially above cost for a significant period of time.

- 4.4. Barriers may be economic or technology-driven, or they may be legal or regulatory in nature. An example of an economic entry barrier is, under certain conditions, when a new firm must make a large investment that would be “sunk” (i.e., could not be recovered if the firm were to exit the market). The reason this could be an entry barrier is that investors might decline to fund a firm that had to make a substantial investment in an asset or technology to enter the market, when that asset or technology is virtually

¹⁸ James M. Ferguson, *Advertising and Competition; Theory, Measurement, Fact* (Cambridge: Ballinger Publishing Company, 1974), p. 10.



without value in the event that the new firm were to fail and had to exit the market.

- 4.5. Not all large up-front investments should be considered entry barriers, however. A large up-front investment that is not sunk – that is, an investment that could be sold off if the entrant decided to exit the market – is not an entry barrier. For example, someone getting into the airline business has a large up-front investment to make in the form of obtaining an airplane. Nevertheless, to the extent that the airplane can be resold in a reasonably efficient secondary market, its cost, though expensive to the entrant, would not normally be considered an entry barrier.
- 4.6. As we have mentioned, entry barriers need not be imposed by technology. Some may instead be imposed by regulation. Indeed, according to Dr. Alfred Kahn, “No barrier to entry is more absolute than one imposed or enforced by the sovereign power of the state. All others are potentially subject to hurdling, erosion, or circumvention.”¹⁹ We discuss below the fact that delays or constraints on spectrum availability imposed by regulators can defeat or make competition unprofitable in some areas. This can be considered a regulatory entry barrier. Removal of or improvement in the

¹⁹ Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions*, Vol. II (New York: John Wiley & Sons, Inc., 1971), p. 116.

regulatory constraint on spectrum, however, would lower that barrier so that prices could better adjust and entry could be invited.

- 4.7. It is important to consider entry and expansion barriers in evaluating competition because, as a general matter, when entry and expansion barriers are low, markets are often thought to be effectively competitive even if there is little observable competitive activity. Markets *can* be highly competitive even if entry barriers are substantial, which is why an examination of entry barriers alone is not generally dispositive of whether effective competition exists. When entry barriers are low, however, such measures are less important, and other information – particularly that which tests the lack of entry barriers – is much more relevant.
- 4.8. The exercise conducted by the TRC begins within their defined market for fixed wireline broadband connections in the BVI, and asks if there exist any other technologies that already exist in the BVI or could be deployed in a timely manner to compete in the TRC-defined market and provide a substitute for LIME BVI's fixed wireline broadband service. The TRC considers four alternatives: (1) fixed wireline coaxial cable technology; (2) mobile wireless HSPA+ 4G technology; (3) mobile wireless LTE 4G technology; and (4) fixed wireless WiMAX technology.



- 4.9. The TRC concedes that the fixed wireline cable network owned by BVI Cable TV “could potentially be a supply-side substitute,” but eliminates all three wireless technologies as supply-side substitutes. According to the TRC:

Mobile broadband [] requires significant investment in HSPA+ or LTE network equipment and compatible handsets and is also not deemed to be a supply side substitute. Similarly Wimax is not deemed to be a supply side substitute due to the costs in setting up the network and the need to obtain the relevant frequencies.

- 4.10. The TRC is correct in noting that significant investments are required to construct a wireless broadband network, be it a mobile wireless 4G network or fixed wireless WiMAX network. Likewise, it would appear that some portion of these network investments are sunk and, thus, cannot be easily recouped if the investment turns out to be unsuccessful. What the TRC fails to appreciate, however, is that the investments in HSPA+ and WiMAX networks, and any costs of acquiring the necessary spectrum, have already been incurred by operators in the BVI. Therefore, the TRC’s rationale for rejecting these technologies as supply substitutes because they require “significant investments” or setup costs does not appear to be accurate or applicable in this case.
- 4.11. Furthermore, while mobile wireless LTE 4G technology has not yet been introduced in the BVI and the investments necessary to construct such a network and acquire the spectrum necessary to provide LTE-based service



are indeed formidable, these are not barriers wireless operators in the BVI have found formidable or unable to overcome. Both Digicel and LIME BVI's sister companies have demonstrated success with 4G LTE investments in other Caribbean markets, and the three wireless operators in the BVI "all have confirmed their interest in deploying the LTE standard" in the BVI.²⁰ The barrier to deploying 4G LTE in the BVI appears to be a regulatory barrier. According to a recent article published in the *BVI Beacon*:

As demand to "surf" the Internet has expanded exponentially and technology has evolved to allow access on mobile devices, Virgin Islands telecom firms are scrambling to roll out faster offerings for customers.

But one method to do that — adapting their networks to use an international high-speed wireless standard known as LTE, which operates on the 700-megahertz band of the public airwaves — will need approval from the Telecommunications Regulatory Commission.

That approval is on hold as the regulator determines the best way to allocate the wireless spectrum to the telecom firms.

Sarah Hayes, the TRC's chief economist, said in an interview this month that the regulator is still determining how the

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Jason Smith, "Plan to roll out faster mobile Internet," *The BVI Beacon*, 19 February 2015.



spectrum will be allocated, but she declined to comment further.²¹

5. Comment on the TRC's Wholesale Market Definition

5.1. In this section we respond to TRC questions 6, 7, 9, 16 and 17 from Annex 1. LIME BVI's responses to these questions are set forth in detail throughout this section. At the outset, however, we identify each relevant question, and provide a summary of our response, as follows:

- Questions 6 and 7 ask if we agree with the TRC's defined market, wholesale fixed wireline broadband connections in the BVI.
LIME BVI response: We do not agree with the TRC's market definition. We believe the TRC's definition of the relevant market as including only fixed wireline broadband connections is too narrow, and likely a consequence of the TRC's analysis that, as we have already documented, is fundamentally flawed and inadequate.
- Question 9 asks if we agree with the TRC's conclusion that LIME BVI is dominant in the wholesale market for fixed wireline broadband connections in the BVI.

²¹ Ibid.



LIME BVI response: We do not believe that wholesale fixed wireline broadband connections in the BVI constitute an economic market. Therefore, we do not agree with the statement, nor do we believe that LIME BVI is dominant in the relevant market, wholesale broadband connections in the BVI.

- Questions 16 and 17 ask what types of broadband connections should the TRC require be made available by the dominant operator and on what basis—terms and conditions—should it be provided.

LIME BVI response: We do not believe regulating wholesale broadband connections of any type (wireline or wireless) is appropriate or necessary. The empirical literature demonstrates that such regulations, i.e., wholesale regulations that seek to promote intra-platform competition, tend to go against the very policy they are intended to promote, i.e., timely adoption and deployment, whereas policies that instead promote facilities-based competition, i.e., inter-platform competition, tend to be much more effective.

- 5.2. LIME BVI does not believe that regulating operators at the wholesale level is an appropriate or productive solution (even if one assumes, which LIME BVI does not, that there is a problem for which a “solution” needs to be found). Regardless of how one defines substitute broadband services or the relevant broadband market, prior experience with intrusive unbundling or partial unbundling regulations has proven such regulations to be counter-



productive and do not achieve greater or faster adoption of broadband services. There is a large body of empirical literature that has evaluated the impact on broadband adoption and availability of wholesale regulations, such as mandatory local loop unbundling (“LLU”). The impact of these regulations is that they tend to discourage investment and restrict competition to a single technology platform, which we refer to as intra-platform competition. Many (but not all) of these studies also evaluate how the alternative to wholesale regulations—namely, facilities-based competition between alternative broadband platforms, or inter-platform competition—impact broadband adoption and availability.

- 5.3. In Table 1 below we summarize the results of twelve of these empirical studies, and demonstrate that the bulk of the studies surveyed do not support the proposition that wholesale regulations, such as mandated unbundling, with its focus on intra-platform competition, increase broadband penetration or deployment. In particular, nine of the twelve studies find that mandatory LLU has either a negative or insignificant impact on broadband adoption. On the other hand, six of these twelve studies also examine the role of facilities-based (inter-platform) competition, and in five of these six studies it was determined that competition across platforms does lead to increased broadband penetration. Thus, the literature suggests that wholesale broadband regulations, such as mandatory unbundling, are either ineffective or counterproductive in

increasing broadband penetration, while policies that encourage inter-platform, facility-based competition are quite often effective at increasing broadband penetration.

Table 1: Summary of Empirical Studies

| Study | Data | Unbundling Increases Broadband Penetration/Availability? (Yes/No) | Facilities-based competition Increases Penetration? |
|--|----------------------------------|---|---|
| <i>Studies Showing Negative and/or Insignificant Effects of Unbundling on Penetration</i> | | | |
| Aron & Burnstein (2003) | Cross-Section, 46 US States | No | Yes |
| Bauer, Kim & Wildman (2003) | Cross-Section, 30 OECD Countries | No | N/A |
| Denni & Gruber (2005) | Panel, 50 US States | No | Yes |
| Distaso, Lupi & Mantenti (2005) | Panel, 14 European Countries | No | Yes |
| Cava-Ferreruela & Albau-Munoz (2006) | Panel, 30 OECD Countries | No | Yes |
| Wallsten (2006) | Panel, 30 OECD Countries | No | N/A |
| Waverman, Meschi, Reillier & Dasgupta (2007) | Panel, 12 European Countries | No | N/A |
| Boyle, Howell & Zhang (2008) | Panel, 30 OECD Countries | No | No |
| Wallsten & Haulsaden (2009) | Panel, 27 European Countries | No | N/A |
| <i>Studies Showing Positive Effects of Unbundling on Penetration</i> | | | |
| Garcia-Murillo (2005) | Cross-Section, 18 Countries | Yes | N/A |
| Grosso (2006) | Panel, 30 OECD Countries | Yes | Yes |
| deRidder (2007) | Panel, 30 OECD Countries | Yes | N/A |



5.4. With regard to the impact of competition on broadband investments, it is informative to consider how other countries have fared. In the US, for instance, analysts have attributed the massive investment in cable industry plant upgrades directly to intermodal competition.²² In a 2002 speech to the National Association of Broadcasters, Robert Sachs, the president at the time of the National Cable & Telecommunications Association stated the case succinctly:

Since the 1996 Telecommunications Act, cable operators have invested over \$55 billion to upgrade their plant to take advantage of the efficiencies of digital technologies. What prompted this massive upgrade program was competition from DBS.²³

5.5. There should be no doubt that the recent announcement by the top executive of LIME BVI's ultimate parent company (Cable & Wireless Communications plc) to invest US\$7 million to improve the speeds of

²² See, for example, Written Statement of Blair Levin, Managing Director and Telecommunications and Media Regulatory Analyst, Legg Mason Wood Walker Incorporated, "Encouraging Capital Formation in the Telecommunications Sector," Before the House Subcommittee on Domestic Monetary Policy, Technology and Economic Growth Subcommittee, Committee on Financial Services, United States House of Representatives, April 18, 2002.

²³ Robert Sachs, "Samuel Morse Did Not Invent the Telegraph," Remarks to NAB Futures Conference, Pebble Beach, California, March 19, 2002.



LIME BVI's fixed and mobile broadband services and introduce Television service is influenced by competition in the BVI.²⁴

6. Comments on the TRC's Other Issues and Closing Comments

6.1. In this section we respond to TRC questions 12, 13, 14, 15 and 18 from Annex 1. LIME BVI's responses to these questions are set forth in detail throughout this section. At the outset, however, we identify each relevant question, and provide a summary of our response, as follows:

- Questions 12 and 13 ask if the focus of retail regulations should be price or service quality, and if the focus is service quality what type of restrictions are preferred.

LIME BVI response: As articulated in this report, we disagree with the TRC's market definitions and take issue with many aspects of the TRC's market power analysis. Given the dynamic nature of the broadband market in the BVI and multitude of technologies offering broadband services in the BVI today, we believe regulations on price or quality are unnecessary and will produce unintended consequences. We are particularly concerned that if the TRC chooses to regulate a single

²⁴ Nedburn Thaffe, "Another cable service coming; LIME to invest \$7M locally," *BVI News.com*, 20 August 2014.



operator in this market that it will impede, not promote, competition and distort competitors' incentives to invest and compete in a manner harmful to consumer welfare.

- Question 14 asks if not applying price or quality retail regulations to the TRC's defined retail market is an option.

LIME BVI response: We believe that not imposing regulation in the retail or wholesale broadband markets in the BVI is an option, and indeed the preferred option. These markets have operated without such regulations up until now and the result is rapid innovation and robust competition among different technology platforms offering a variety of different types of broadband services (wireline, wireless, mobile and fixed) in this country. We also should note that we take issue with the inherent bias evident in this and many of the other questions posed by the TRC. While the TRC's report makes clear that it has already formulated its own answers to these questions, if it wished to receive informed and unbiased responses to them, greater care should have been made to present them without bias, in an objective manner.

- Question 15 asks if there is operator demand for a regulated wholesale fixed wireline broadband service.

LIME BVI response: We are fairly certain that there is a demand by other operators for the TRC to impose wholesale and retail regulations on LIME BVI's fixed wireline broadband service. Whether this implies a



desire to use the service or impose the burden of asymmetric regulation on a competitor, however, is unclear. Given that these operators have already invested in their own technological platforms, such demand, if any, is likely to be limited.

- Question 18 asks if the “concept” of an operator offering a 100 Mbps service relevant to the BVI.

LIME BVI response: It is unclear what the TRC means by “concept.” If the TRC is asking whether an operator will at some point in the future offer a 100 Mbps service in the BVI, then our answer is yes. If the trends in offering higher broadband speeds over time are any indication, both here and in other countries, then a 100 Mbps service at some point in the future is a near certainty.

- 6.2. The TRC has reached many significant conclusions with regard to the performance of LIME BVI’s fixed wireline broadband service in the BVI, the treatment of this service as a product market, and LIME BVI’s dominance in this market. These conclusions, if upheld and acted upon, could have very significant negative implications with regard to the continued development, investment and deployment of broadband services in the BVI. We are concerned that the analyses used by the TRC to arrive at these conclusions are flawed. The TRC’s strong conclusions, in turn, have resulted in a set of questions to the public and a consumer survey that are biased and, therefore, unlikely to produce objective information that will assist the TRC



in reaching a reasonable, pro-consumer and pro-competition final determination.

- 6.3. It is important to recognize that the decision to impose regulations does not come without costs. In this case, we believe the anticipated costs to competition and consumer welfare from regulating LIME BVI's fixed wireline broadband service in the BVI outweigh the anticipated benefits. As articulated and demonstrated in this report, we believe broadband competition in the BVI is already effective. In a relatively brief period of time, we have witnessed the entry of new competitors to LIME BVI's wireline service offering mobile wireless broadband services, as well as fixed wireless broadband services,²⁵ and an expectation by consumers and operators that even faster services will be deployed in the near future once LTE spectrum becomes available.
- 6.4. We believe that these developments evidence effective competition, and when competition is effective, the market is superior to regulators in producing pricing structures, pricing responses, and bundles of services that are responsive to consumers' needs and demands in light of the variety of technological choices available, and providing incentives to invest in technologies according to their relative merits. When competition is

²⁵ Based on developments in other countries, we believe Digicel will soon be rolling out fibre-based broadband services as well.



sufficient to provide discipline in the marketplace, it is inefficient and harmful to consumers to impose regulation that distorts investment decisions, distorts consumption decisions, and imposes very significant implementation and compliance costs on the regulated carriers.

- 6.5. The role of the regulator is to protect consumers and social welfare when the structure of a market is so defective that the powerful and powerfully beneficial incentives of the competitive system cannot function. In such a case, regulation is nonetheless a stilted, artificial second best to competition; it cannot truly replicate competition. As well-known economist Daniel Spulber and prominent policy expert Gregory Sidak correctly explained in the *Yale Journal of Regulation*:

[C]ould regulators “replicate” competitive outcomes in regulated markets even if they were inclined to do so? It is doubtful. Competitive markets require continual adjustment of prices and product offerings to changes in consumer tastes, incomes, and technological innovation. The informational requirements of such adjustments are not compatible with the costly, complex, and protracted administrative procedures that regulatory rulemaking requires. Regulators cannot be expected to react to, let alone anticipate, changes in customer preferences and supplier technology. To the contrary, excessive regulation can discourage innovation and capital investment, and thus lock in obsolete technologies. In short, transaction costs and information processing costs make it unworkable for regulators to attempt to supplant or recreate competitive outcomes...



Regulation is a proxy for competition, not a replica of it. Rather than attempting to replicate the market, regulators should recognize that achieving market outcomes requires removing regulatory restrictions as telecommunications markets become increasingly competitive. Expanding the scope of regulation will only make it less, not more, plausible that regulators will be able to achieve market outcomes.²⁶

6.6. Similarly, economists Paul Joskow and Nancy Rose explain:

Regulators are unlikely to be perfectly informed, and regulation is unlikely to be costlessly implemented and enforced. When we expand our normative framework to recognize inherent imperfections, the set of potential regulatory effects becomes quite rich. Analysis of practical, as opposed to ideal, regulation must include explicit consideration of the incentive properties of specific regulatory rules and procedures used to set prices, the dynamics of regulation, the control instruments and information available to regulators, and the responses of regulated firms to all of these.²⁷

6.7. Competition accounts for the success of our economy relative to planned or government controlled economies precisely because of the inherent limitations of regulation to effectively set prices that send the right signals to

²⁶ J. Gregory Sidak and Daniel F. Spulber, "Deregulation and Managed Competition in Network Industries," *Yale Journal on Regulation*, 15, 117 (Winter 1998), p. 140 (emphasis added, footnotes omitted).

²⁷ Paul L. Joskow and Nancy L. Rose, "The Effects of Economic Regulation," in *Handbook of Industrial Organization*, Vol. 2, (Amsterdam: Elsevier Science Publishers B.V., 1989), p. 1454.

suppliers, investors, and consumers. As influential Harvard economist N. Gregory Mankiw explains,

When the government prevents prices from adjusting naturally to supply and demand, it impedes the invisible hand's ability to coordinate the millions of households and firms that make up the economy. This corollary explains why taxes adversely affect the allocation of resources: Taxes distort prices and thus the decisions of households and firms. It also explains the even greater harm caused by policies that directly control prices, such as rent control. And it explains the failure of communism. In communist countries, prices were not determined in the marketplace but were dictated by central planners. These planners lacked the information that gets reflected in prices when prices are free to respond to market forces. Central planners failed because they tried to run the economy with one hand tied behind their backs—the invisible hand of the marketplace.²⁸

- 6.8. Even the most diligent, thoughtful, qualified, and educated of regulators cannot overcome the fact that no agency can marshal the necessary information, nor anticipate all possible market changes and the incentives they create, that they could effectively replicate the workings of the market.
- 6.9. Imposing regulatory oversight of a market when it is unwarranted is not a cost-free decision, and in the end, it is the consumer that bears the cost of

²⁸ N. Gregory Mankiw, *Principles of Economics*, Volume II, eds. Richard Schmalensee and Robert D. Willig, (Fort Worth, Texas: Harcourt College Publishers, 2001), p. 10-11.



being denied the benefits of competition. Policies that unnecessarily interfere with, delay, or prevent competitive forces to function, or that seek to impose regulation on a competitive market, serve only harm to consumers and social welfare.

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