



**GOVERNMENT OF BERMUDA**

Ministry of Energy, Telecommunications and E-Commerce

Department of Telecommunications

**RETAIL PRICE CONTROL**

**CONSULTATION**

**Ministry of Energy, Telecommunications & E-Commerce**

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**TABLE OF CONTENTS**

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**I.** Introduction ..... 2

**II.** Why Regulate Retail Prices ..... 4

**III.** Methods of Regulatory Intervention on Retail Prices..... 7

    (1) Rate-of-Return Regulation (ROR) ..... 7

    (2) Price Cap Regulation..... 11

    (3) International Benchmarking of Prices ..... 20

    (4) Concluding Comments on the Types of Retail Price Interventions . 22

**IV.** Customer Demand Side Interventions..... 28

**V.** The Impact of Price Cap Regulation on Price, Productivity, Network Modernization, Financial Performance, and Service Quality ..... 31

**VI.** Concluding Comments Concerning Retail Price Regulation ..... 35

**VII.** Imputation ..... 36

**VIII.** Responding to this Consultation..... 39

    (1) Consultation Questions..... 39

Appendix I ..... 43

Appendix II..... 52



## I. Introduction

1. On June 24, 2008 the Bermuda Cabinet approved the telecommunications policy reform proposals presented in the Ministry of the Environment, Telecommunications & E-Commerce's (METEC) *Telecommunications Regulatory Reform Policy (TRRP)* document<sup>1</sup> of November 2008. As noted in the *TRRP* the proposed regulatory framework takes a dominant operator approach to regulatory intervention. This approach is based on a market analysis process in which operators found dominant in a defined market will be subject to one or more regulatory controls, which controls will be defined by the Regulatory Authority (RA) that is to be established as part of the proposed reform.<sup>2</sup> These controls will be devised so as to protect consumer interests and to prevent anticompetitive behaviour on the part of the dominant firm, or firms. In order to devise the proper<sup>3</sup> controls to achieve these goals the Department has proposed a series of investigations and consultations, of which the following are the most pertinent to the present purpose:

1. Conduct a competition analysis of the current telecommunications ecology of Bermuda so as to :
  - Define those markets deemed most likely to require regulatory intervention due to lack of competition and the presence of one or more dominant providers<sup>4</sup>, in the “relevant markets”; and,
  - Determine which firm, or firms, may be considered dominant in the “relevant markets”, the dominance analysis. The dominance analysis will be

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<sup>1</sup> *Telecommunications Regulatory Reform Policy (Regulatory Reform)*, The Hon. Terry E. Lister, JP, MP, Minister, **Ministry of Energy, Telecommunications, and E-Commerce**, 18 November 2008, at page 4.

<sup>2</sup> *Id.*

<sup>3</sup> Proper controls, as used here, are controls that have been established through a transparent collaborative consultation process open to all stakeholders that is as cost effective as possible for all concerned and is evidenced based. (See *TRRP* at page 4)

Bearing the above in mind, we propose the dominance framework should allow the RA to identify a dominant firm, or firms, in a relevant market in a manner which is: cost effective for both the RA and stakeholders; has a predictable and transparent process; and is evidence based.

<sup>4</sup> Joint dominance is a possibility that should not be ruled out.



guided by criteria established as a result of the *Dominance Framework Consultation*.

2. A consultation concerning the appropriate regulations, if any be required, for governing access and interconnection between a dominant firm(s) and another standard license (CL)<sup>5</sup> holder, the *Wholesale Consultation*;
  3. A consultation concerning the appropriate types of retail price regulation to impose, if any be required, on those products and/or services offered by a firm, or firms, in those markets in which it, or they, have been found to be dominant, either singly or jointly; the *Retail Price Control Consultation*.<sup>6</sup>
2. The topic of this document is item No. 3, the *Retail Price Control Consultation*. This consultation will be conducted concurrently with the competition analysis and the *Wholesale Consultation*, the outcomes of which will necessarily guide the development and imposition of any retail price control regulation determined to be required. For this reason this *Retail Price Control Consultation* document will present various combinations of possible outcomes that may result from the competition analysis and the *Wholesale Consultation* along with those retail price control interventions the Department tentatively believes would be the most efficient given those hypothetical outcomes. These are presented in Table 4 at page 25.
3. The purpose of this consultative document is to stimulate a discussion concerning retail price regulation that will provide guidance to the RA in the event such action is deemed necessary. With that end in mind this paper will start off by providing a general discussion as to the reasons regulatory authorities might choose to regulate retail prices in the first place. Following this there will be a presentation of the different types of retail price regulatory interventions that have been, and are being, used in other jurisdictions. From here the discussion will proceed to a review of the literature and analyses concerning the impact retail price regulation have had on price, productivity, network modernization, financial performance, and service quality in the telecommunications industry.

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<sup>5</sup> Per the TRRP at page 4 CL designates the proposed new standard license (Communications License (CL)).

<sup>6</sup> TRRP at page 27.



## II. Why Regulate Retail Prices

4. In competitive markets consumers can choose between goods and services not only on price but also on quality of service. Under competitive conditions, according to economic theory, markets deliver an optimum quantity of goods and services of optimum quality at optimum prices. Markets, however, are subject to failure—especially in those instance where a firm has monopoly power, or dominance, in a particular market and so is able to impose high prices and limit supply. When the firm in question is viewed as providing an essential service, such as telecommunications, power, or water, high prices and denial of service can have negative social and equity effects. Price regulation is one way of addressing these problems. When done correctly it can result in socially and economically efficient outcomes while also meeting a diverse range of other objectives, such as encouraging the development of competitive entry into a market so as to diminish the market power of the dominant firm.
5. Put succinctly retail price regulation of telecommunications services ought to be considered only in situations where:
  - 1 It is believed that, without it, a dominant firm(s) could utilize its market power to increase prices above what is normally seen in more competitive markets, thereby suppressing demand for a service, leading to a loss of social welfare.
  - 2 It is believed that, without it, a dominant firm(s) could utilize its market power to engage in anti-competitive pricing practices such as cross subsidization, price squeezes, and predatory pricing.
  - 3 It is considered necessary to achieve specific social objectives. For example, maintaining a low rate on a specific service, such as basic local exchange service, so as to ensure that at least basic connectivity to a telecommunication network is affordable to those in need.<sup>7</sup>

*Question 1 Do stakeholders agree that these are the only situations in which retail price regulation of telecommunications services ought to be considered? If you do not agree, please explain why and provide evidence in support of your explanation.*

6. Since retail price regulation attempts to achieve the benefits of a well-functioning market via judgments by a regulatory authority, which are prone to human fallibility, it should only be undertaken if it can be shown, based on a preponderance of the

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<sup>7</sup> See, for example, *The ICT Regulation Toolkit; Module 2—Competition and Price Regulation*, at



evidence, that the benefits of so doing offset the costs imposed on those affected. In deciding whether or not it makes sense to pursue a particular regulatory option it is prudent to have in mind a set of goals and objectives delineating just what it is the regulatory intervention is intended to achieve. Some of the more common goals of regulation are:<sup>8</sup>

- ❖ **Prevent the exercise of market power:** When competitive forces are not strong enough to keep prices in check regulation ought to ensure that prices are fair and reasonable and as close as possible to what would be observed in a more competitive environment.
- ❖ **Achieve economic efficiency:** Of which there are several measures;
  - **Productive efficiency:** Refers to a firm's costs of production and is achieved when output is produced at the lowest cost. This ensures that society's scarce resources are used efficiently and not wasted.
  - **Allocative efficiency:** Under allocative efficiency firms employ resources and productive energies to produce goods and services that provide maximum benefit to society. This is achieved when the value consumers place on a good or service (reflected in the price they are willing to pay) equals the cost of the resources used up in production. Theoretically, this is achieved when price = marginal cost.<sup>9</sup> When this condition is satisfied, total economic welfare is maximized. In the Telecommunications sector prices must include some mark-up to recover shared and common costs.<sup>10</sup> Mark-ups should be set so as to minimize departures from marginal cost pricing.

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<sup>8</sup> These goals are derived from the *ICT Regulation Toolkit §5.1 Why Regulate Prices?*, available at <http://www.ictregulationtoolkit.org/en/Section.2150.html> ICT stands for International Telecommunications Union.

<sup>9</sup> Of course the proposition that prices will be driven to marginal cost only holds true when certain theoretical conditions are met. These conditions are rarely observed in actual markets where firms typically engage in value-of-service pricing. For example, the price of vertical features such as call waiting, voice mail, and so on are typically well in excess of the costs of providing them, even in competitive markets.

<sup>10</sup> An alternative measure of social welfare, and one that is more in line with what is observed in competitive markets, is offered by John Wenders. Professor Wenders suggests measuring the social benefit of different policies by judging them based on an evaluation of individual behavior. Wenders points out that relying on individual decisions, rather than some arbitrary welfare function, is the essence of competitive markets: “[T]he desirability of the competitive approach is not that it maximizes the sum of the surplus, but that it maximizes individual voluntary exchanges, each of which leave both parties better off.” Wenders, John T.,



- **Dynamic efficiency:** Requires that firms have the appropriate incentives to invest, innovate, improve the range and quality of services, increase productivity and lower costs over time.
  - ❖ **Promote competition:** However, the promotion of competition should not be seen as an end in itself but rather as a means for achieving what modern economic theory considers to be the ultimate goal of economic policy, the enhancement of consumer welfare.<sup>11</sup>
  - ❖ **Minimize regulatory cost**
  - ❖ **Ensure high quality of service:** Regulatory interventions should be constructed so as to ensure that the regulated firm provides high quality of service to its customers.
  - ❖ **Ensure telephone prices are competitive with other jurisdictions:** This is especially relevant for those countries, such as Bermuda, that use telecommunications infrastructure as a tool for competitive advantage. In implementing a regulatory regime in countries such as these it would be wise to ensure that the resulting telecommunications prices are competitive with those observed in any jurisdictions perceived as being economic rivals.
  - ❖ **Generate compensatory earnings:** Any regulatory mechanism should provide the regulated company with the opportunity to earn a reasonable profit and to achieve compensatory earnings. If the regulatory intervention fails to do this the firm may be forced to reduce investment and quality of service may decline.
7. A more concise version of these goals may be found by examining the telecommunications-specific laws in force in various jurisdictions. For example, Article 8 of the European Community's (EC) *Framework Directive* defines three major policy objectives that national RA's are expected to pursue with regard to the regulation of the telecommunications sector:
- ❖ The promotion of competition;

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*Two Views of Applied Welfare Analysis: The Case of Local Telephone Service Pricing*, Southern Economic Journal 57 (1989), p. 340.

<sup>11</sup> See, for example, Hausman, Jerry A. and J. Gregory Sidak, *A Consumer-Welfare Approach to the Mandatory Unbundling of Telecommunications Networks*, **Yale Law Journal**, Vol. 109, No. 3, pp. 417-505, December 1999.



- ❖ Ensure that the regulation(s) contribute to the development of the internal market of the European Union (EU); and,
- ❖ Ensure that the regulation(s) promote the interests of the citizens of the European Union (EU), including consumer protection and the provision of universal service.<sup>12</sup>

*Question 2 Do stakeholders agree that the regulatory goals of the EU, as these are stated above at paragraph 6, are applicable to the situation obtaining in Bermuda? If you do not agree, please explain why and provide evidence in support of your explanation.*

8. There are several methods of intervention available to RA’s who determine that retail price regulation is a necessary course of action. These are discussed in the following section.

### III. Methods of Regulatory Intervention on Retail Prices

9. In the event that regulatory intervention in the retail pricing arena is called for an RA has several options to choose from:

- Rate-of-Return regulation, or ROR;
- Price Cap Regulation; and,
- International benchmarking of prices.

#### (1) Rate-of-Return Regulation (ROR)<sup>13</sup>

10. Under rate-of-return regulation, a firm is permitted the opportunity to recover its reasonably incurred expenses and to earn a fair return on its investment. The sum of the expenses and the return on investment is known as the firm’s revenue requirement.

11. The allowable return is a “reasonable” rate (an estimate of the cost of capital of the firm) multiplied by a rate base, which includes the un-depreciated portion of investments relevant to regulated operations, valued on a historical or current expenditure basis. Once the revenue requirement is decided, the regulator determines a

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<sup>12</sup> Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Framework Directive), Official Journal of the European Communities L 108, 24.4.2002, page 33.

<sup>13</sup> For a more complete discussion of rate-of-return regulation see, for example, Jamison, Mark A., *Rate Of Return: Regulation*, available at [http://www.cba.ufl.edu/purc/purcdocs/papers/0528\\_Jamison\\_Rate\\_of\\_Return.pdf](http://www.cba.ufl.edu/purc/purcdocs/papers/0528_Jamison_Rate_of_Return.pdf)



tariff structure designed to recover aggregate costs. These tariffs are subject to periodic review. The ROR formula can be represented as:

$$\text{Revenue Requirement} = \text{Total Cost} = \text{Variable Costs} + \text{ROR} \times \text{Rate Base}$$

*Question 3 If it is decided that employing ROR regulation would be beneficial, how do stakeholders suggest the rate of return (cost of capital) of the dominant firm, or firms, ought to be estimated? Please explain your response and provide evidence in support of your position.*

12. Under traditional profit regulation, such as ROR regulation, prices could be set at any level, so long as aggregate revenues equalled the revenue requirement.. Because the supplier typically was a monopolist, prices could be set with little consideration to the strategic decisions of rivals.
13. The rate-of-return regulatory regime promoted investment and expansion of telephone networks in the United States and many other developed countries. Companies knew that they could invest in network expansion because the ROR regulation allowed the recovery of expenses, investments, and a reasonable return on investments.
14. In many developed countries ROR regulation helped to create national telephone systems that provide reliable, modern and reasonably affordable universal telephone service. Arguably, it also exerted pressure on monopoly telephone companies to build out their networks and upgrade their equipment. Though critics of ROR regulation contend that the network would have been built faster, with more modern equipment, under a more competitive and less regulated market structure.



Table 1: Advantages and Disadvantages of ROR Regulation<sup>14</sup>

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Permits regulator to limit monopoly pricing through a close monitoring of the firm’s profits</li> <li>• Administered prices combined with restricted entry allow second-best or non-linear prices to be enforced<sup>15</sup></li> <li>• The rate hearings provide a forum where consumers have an opportunity to formally air their views about prices and quality of service, the firm can defend its record, and the regulator acts as an arbitrator.</li> </ul>	<ul style="list-style-type: none"> <li>• Cost-plus characteristic of ROR blunts the firm’s incentive to produce efficiently, i.e., at minimum cost</li> <li>• If the allowed rate of return on capital (rate base) is different than the cost of capital, an input bias can be induced</li> <li>• When a multi-product firm is subject to competition in a subset of its product line, predatory pricing behaviour becomes difficult to detect. The firm may have an incentive to cross-subsidise its competitive products by allocating a greater share of joint costs to the regulated markets.</li> <li>• There is a possibility that the firm will “capture” the regulatory body, which in turn will allow the firm to earn excess profits or to incur unnecessary costs.</li> <li>• ROR regulation also creates important financial inefficiencies. For example, the debt-equity ratio of a regulated firm may be too low.</li> <li>• ROR regulation entails high administrative costs and time-consuming hearings and requires considerable knowledge about the firm’s costs and consumers’ demands.</li> </ul>

<sup>14</sup> Liston, Catherine, *Price-Cap versus Rate-of-Return Regulation*, **Journal of Regulatory Economics**, 1993, vol. 5, issue 1, pages 25-48 at pages 27-28.

<sup>15</sup> Under the ideal of the competitive market, economic theory states that prices will be set equal to marginal cost and it is at this price that social welfare is maximized. This is the “first-best” price.

The problem is that for telecommunications firms marginal cost is typically below average cost. Thus setting regulated prices at marginal costs, the “first-best” price, would cause the firm to lose money. And so regulators that want to maximize social welfare without driving the regulated firm out of business will have to settle on a “second-best” price for the regulated service, which price will have to be set above marginal cost. How far above marginal cost this price should be set is beyond the scope of the current paper, however.



15. Rate-of-Return regulation has some additional and significant infirmities. One of the foremost being that under this form of regulation a firm's potential profits increased as its level of investment expanded. As pointed out by Averch and Johnson this direct link between investment and profits biases firms' investment decisions in favor of excess capital, relative to other inputs. This investment bias, they went on to argue, is not likely to lead to cost minimizing outcomes in the provision of service.<sup>16</sup> Subsequent empirical studies confirmed the existence of Averch and Johnson's hypothesized overcapitalization bias in ROR regulation.<sup>17</sup>
16. Rate base regulation has also been faulted for not providing incentives for firms to minimize production costs. Critics pointed out that basing rates on booked expenses, especially in markets where rivalry was lacking, provided no incentive to minimize these costs.<sup>18</sup>
17. Partially as a response to these concerns the United Kingdom began, in 1984, to experiment with a new form of economic regulation of retail telecommunications services. This was price cap regulation. Price caps were introduced as a means of improving the efficiency of telecommunications prices. Price-cap regulation is designed, in principle, to reward overall productivity rather than just capital investment. Since all that is being regulated is the price of the services provided, in theory, it will create incentives for firms to allocate resources optimally between capital, labor, and materials.<sup>19</sup> Rather than relying on regulators to undertake a periodic review of the existing rates, price cap regulation provided a systematic

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<sup>16</sup> The essence of the case against rate-base regulation is contained in the famous H. Averch and L.L. Johnson article, "Behavior of the Firm Under Regulatory Constraint," *American Economic Review* 52 (1962): 1052-69. Since this article appeared other economists have tested Averch and Johnson's hypothesis that rate base regulation distorted the inputs that were used to provide service. A summary of these studies can be found in Berg, Sanford V. and John Tschirhart, *Natural Monopoly Regulation: Principles and Practice*, Cambridge University Press, 1988, at pages 332-381.

<sup>17</sup> See, for example, Israilevich, Philip and Kim J. Kowalewski, *A Test Of Two Views Of The Regulatory Mechanism: Averch- Johnson And Joskow*, **Federal Reserve Bank of Cleveland**, Working Paper No. 8713, December 1987, at page 25. Available at <http://www.clevelandfed.org/Research/workpaper/1987/wp8713.pdf>

<sup>18</sup> See, for example, Berg, Sanford V. and John Tschirhart, *Natural Monopoly Regulation: Principles and Practice*, at pages 497-520.

<sup>19</sup> See, for example, Maine Public Utility Commission, Re: Investigation Into Regulatory Alternatives for the New England Telephone and Telegraph Company d/b/a NYNEX, Docket No. 94-123, May 15, 1995.



method for adjusting rates to reflect productivity gains. Under price caps, retail rates are adjusted on an annual basis to reflect the higher rate of productivity growth achieved in the telecommunications industry relative to the rest of the economy. The regulatory price adjustment mechanism is designed to emulate the behavior of competitive markets, where changes in a sector's total factor productivity growth is typically reflected in the final price of that sector's retail products.

18. Subsequent to its introduction in the United Kingdom, price-cap regulation has been widely adopted by regulatory agencies around the world.<sup>20</sup> By 2000, in the United States, price-cap regulation has replaced rate-of-return regulation in 70% of the states in the country, plus the District of Columbia.<sup>21</sup> This widespread adoption is attributable to the perceived shortcomings in rate-base regulation and a belief that the administrative costs of price cap regulation would be lower than those of traditional rate base regulation.

## (2) Price Cap Regulation<sup>22</sup>

19. Under price cap regulation, sometimes also referred to as RPI-X<sup>23</sup> regulation, an RA sets ceilings on prices, the "caps," below which the regulated firm has full pricing freedom (subject to the anti-trust constraint that prices exceed the incremental cost of production). Typically what is done is that the regulator groups services into separate price or service baskets and creates a price cap index for each basket. A general example of a price cap index formula is:

$$PCI_t = PCI_{t-1} * (1 + RPI - X)$$

20. In the above formula,  $PCI_t$  and  $PCI_{t-1}$  are the price cap index in the current year and the previous year, respectively. RPI is a measure of the retail price inflation of the

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<sup>20</sup> Organization for Economic Co-Operation and Development, *Price Cap Regulations for Telecommunications: A review of Policies and Experiences*, DSTI/ICCP/TISP (94) 3, 24 May 1994; and Ray Lawton, NRRI report to Idaho Commission, *ALTERNATIVE FORMS OF REGULATION: A STATUS REPORT*, May 23, 1994.

<sup>21</sup> Rowe, Bob, *Strategies to Promote Advanced Telecommunications Capabilities*, Federal Communications Law Journal, Vol. 52 No. 2, (2000), p. 394, footnote 51.

<sup>22</sup> For a more thorough discussion of price cap regulation see, for example, Intven, Hank, *Telecommunications Regulation Handbook*, World Bank, Washington, D.C.: 2000, Module 4. Available at [http://rru.worldbank.org/Documents/Toolkits/telecom\\_mod4.pdf](http://rru.worldbank.org/Documents/Toolkits/telecom_mod4.pdf)

<sup>23</sup> RPI stands for Retail Price Inflation.



previous year, either the Consumer Price Index (or an alternative index of inflation).<sup>24</sup> And X is the productivity offset factor, more commonly called the X-factor. Some regulators also allow the firm to adjust for changes in costs beyond its control<sup>25</sup>, by including an exogenous cost component in the price cap formula (the “Z-factor”). When this is included the price cap formula looks like:

$$PCI_t = PCI_{t-1} * (1 + RPI - X \pm Z)$$

21. Once the price cap mechanism is decided upon it then operates for a pre-established time period, typically about 5 years. At the end of this period, if continued retail price regulation is deemed necessary, a new starting price and a new X-factor are established after another cost-of-service and efficiency review of the firm’s costs.
22. Of critical importance to the viability of any price cap plan is the determination of the X-factor to be utilized. If the RA imposes an X-factor that is too small the firm will earn excessive profits, thereby running the risk of undermining political support for the regulatory regime. If the X-factor is set too high the financial integrity of the regulated firm may be put at risk. The essence of price cap regulation, therefore, is to select an X factor that poses a significant, but not insurmountable, efficiency challenge to the regulated firm while delivering gains for consumers.<sup>26</sup>
23. Generally speaking the X-factor should be designed to reflect the extent to which:
  1. The regulated industry is capable of increasing its productivity more rapidly than are other sectors of the economy; and,
  2. The prices of inputs employed in the regulated industry grow less rapidly than do the input prices faced by other sectors of the economy.<sup>27</sup>

*Question 4 If it is decided that employing price cap regulation would be beneficial, given the circumstances in Bermuda what is the opinion of stakeholders concerning*

<sup>24</sup> The inflation factor is adjusted yearly during the course of the price cap plan’s agreed upon operational time period.

<sup>25</sup> For example, weather extremes that result in un-anticipated damage to a firm’s network requiring costly repair.

<sup>26</sup> Sappington, David E. M. and J. Bernstein, *How to Determine the X in RPI - X Regulation: A User's Guide, Telecommunications Policy*, No. 24, February 2000, pages 63-68. Available at <http://www.regulationbodyofknowledge.org/documents/005.pdf>

<sup>27</sup> *Id.* at page 64.



*the utilization of a productivity offset factor (the X-factor) in the price cap formula? Please explain your response and provide evidence in support of your position.*

24. The price cap system seeks to eliminate scrutiny of particular rates by permitting service providers to charge whatever they want to – within a particular range of a specified cap – so long as the aggregate price for the basket of services subject to the particular price cap does not exceed a specified percentage above or below the cap. Prior to the adoption of price caps, an RA may want to evaluate the existing rate structure so as to determine the reasonableness of the getting started prices. The RA may also want to evaluate the reasonableness of the overall revenue of the firm, as well as the amount of money collected from different services.
25. Concerning the “baskets” of services established under a price cap mechanism, for markets that are beginning the process of de-regulation in the ICT sector three classes of baskets are typically established.
  1. The first basket contains those services considered to be core services for which it is assumed the incumbent will remain the dominant provider as the market moves towards maturity. Plain Old Telephone Service (POTS) is an example of a core service.
  2. The second basket contains those services for which there is some competition in which the incumbent does not necessarily have an overly dominant role.
  3. The third basket contains value based services. These are services which are not essential and which would have no price cap restrictions, because their tariff levels are based solely on what the market would support. Examples are call waiting, voicemail boxes, caller ID, and so on.

*Question 5 In the event that price cap regulation is adopted, what is the opinion of stakeholders concerning the types of services that ought to be placed in these three baskets? Please explain your response and provide evidence in support of your position.*

*Question 6 Are these three baskets enough or too much? Please explain your response and provide evidence in support of your position.*

26. The fundamental assumption of price caps is that, absent such a formula, the regulatory process will not result in a decline in prices that reflect the large productivity gains that are being achieved in the ICT sector of the economy. The price



cap mechanism effectively requires certain prices in the telecommunications sector to rise more slowly than prices in other industry sectors. Since telecommunications is one of the main pillars for economic development, this decrease of telecommunications tariffs in “real” terms does have positive linkages in all other sectors of the national economy.

*Table 2: Advantages and Disadvantages of Price Cap Regulation*<sup>28</sup>

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• The incentive to minimise cost re-emerges because, without the hearings, the regulatory link between costs and ceiling prices is severed</li> <li>• Connection between profits and the rate base is broken</li> <li>• Smaller administrative costs that ROR regulation</li> <li>• Price ceilings on monopoly services can help prevent predatory pricing on competitive services – provided the regulated and competitive products are placed in the different baskets for the purpose of the formula.</li> </ul>	<ul style="list-style-type: none"> <li>• Since the firm is usually the residual claimant of any surplus below the cap, it has an incentive to minimise costs. This implies that it also has an incentive to lower service quality, for a decrease in quality will be equivalent to an increase in price.</li> <li>• The incentive for predatory pricing will persist if both competitive and regulated services are subject to the same X-factor and if the firm exhibits joint costs</li> <li>• Implementing price caps in the context of informational asymmetries can be far from simple.</li> <li>• Price-cap regulators are not obliged to publish rate of return, and hence have greater discretion, entailing a greater potential for capture of the regulatory process by the firm. But the regulated firm can be required to publish its rate-of-return.</li> <li>• Without specific obligations to serve all customers of its monopoly services, the regulated firm may not have the incentive to service the classes of customers with the highest costs or the lowest willingness to pay.</li> </ul>

<sup>28</sup> Liston, Catherine, *Price-Cap versus Rate-of-Return Regulation*, at page 29.

Table 3: Rate of Return Regulation versus Price Cap<sup>29</sup>

	Rate of return (ROR)	Price cap
<b>Prevent exercise of market power</b>	<b>Yes.</b> The regulated firm can only earn a normal rate of return.	<b>Yes.</b> The CPI-X constraint in the price cap formula prevents the firm from exercising market power (if chosen with care).  The firm may exercise market power in prices for individual services, provided that the average price of the basket of services is within the cap. Some regulators impose additional caps on individual services to prevent this.
<b>Technical efficiency</b>	<b>No.</b> The regulator directly controls profits. If the firm lowers costs by becoming more efficiency, and so increases profits, prices will be lowered in the next rate case. The firm will not reap the benefit from reducing costs and so has no incentive to do so.	<b>Yes.</b> Firms are automatically rewarded with higher earnings when they reduce costs or expanding demand (and penalized when costs increase). This encourages efficient behaviour
<b>Allocative efficiency</b>	<b>No.</b> Prices usually based on embedded costs, not forward-looking costs. Prices for individual services need not equal the costs of the service.	<b>Yes.</b> Firms have flexibility to set prices for individual services based on forward-looking costs.  It is possible for individual prices to deviate from costs, particularly if the X-factor is set incorrectly.
<b>Dynamic</b>	<b>No.</b> The firm does not retain any increase in profit from introducing	<b>Yes.</b> The firm has incentives to invest efficiently, because it

<sup>29</sup> ICT Regulation Tool Kit, §5.10 Rate of Return Regulation versus Price Caps, available at <http://www.ictregulationtoolkit.org/en/Section.2156.html>



	<b>Rate of return (ROR)</b>	<b>Price cap</b>
<b>efficiency</b>	new technology or services, and so has no incentive to do so.	must justify its investment on the profits it expects to earn from the investment (like firms in competitive markets).
<b>Promote competition</b>	<p><b>No.</b> Does not generally permit pricing flexibility for the firm to set prices to reflect forward-looking costs in response to competition.</p> <p>Compared to price cap regulation, the firm is better able to misreport costs between competitive and non-competitive services, in order to cross-subsidize competitive services.</p>	<p><b>Yes.</b> The firm is less likely to cross-subsidize services. It is common to group regulated services into separate baskets for less competitive and more competitive services, preventing cross-subsidization.</p> <p>The firm has sufficient pricing flexibility to respond to competitive pressures by setting prices that reflect underlying costs and demand conditions</p>
<b>Minimize regulatory costs</b>	<b>No.</b> Rate proceedings are often lengthy and resource intensive.	<b>Yes.</b> Price cap proceedings are less costly than rate proceedings, and are infrequent (once every 3 to 5 years). Between reviews, regulatory costs are low.
<b>Ensure high service quality</b>	<b>Yes.</b> The higher the net book value of the firm's assets, the greater the return it is permitted to earn. There is a risk that service quality may be higher than efficient levels.	<b>No.</b> Firms have strong incentives to reduce operating costs, which may lead to reduced service quality
<b>Prices competitive with other jurisdictions</b>	<b>No.</b> Prices are generally set with no reference to prices in other jurisdictions.	<b>No.</b> Prices are generally set with no reference to prices in other jurisdictions.
<b>Generate</b>	<b>Yes.</b> Rate of return regulation	<b>No guarantee.</b> If the X-factor is



	<b>Rate of return (ROR)</b>	<b>Price cap</b>
<b>compensatory earnings</b>	ensures that the regulated firm generates sufficient compensatory earnings.	chosen correctly and the firm performs, the firm should generate sufficient compensatory earnings. A sound price cap penalizes the firm for business mistakes or poor performance.

27. One widely recognized concern with price caps is that they provide incentives to reduce both costs and the quality of service (QOS). Accordingly, well designed price cap regulations usually include specific QOS standards, accompanied by the threat of regulatory penalties if these are not met or maintained, or have more formal performance based rate making mechanisms built into them which establish specific performance standards to be met along with specified penalties and rewards if performance is above or below these standards.<sup>30</sup>
28. Another potential problem with price-cap regulation stems from the price flexibility it is designed to promote as this flexibility also allows for cross-subsidisation, which is allocatively inefficient and may be used in an anti-competitive manner. This arises if firms are permitted to bundle competitive services with non-competitive, or monopoly, services. British Telecom, for example, aggressively countered entry into its long-distance market by lowering prices in that market while raising prices in its uncontested markets even though it was operating under price caps.<sup>31</sup> To address this concern an RA ought to consider ensuring that non-competitive activities are separated

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<sup>30</sup> Joskow, Paul L, *Incentive Regulation In Theory And Practice: Electricity Distribution And Transmission Networks* (Joskow 2007), MIT and NBER, August 15, 2007, at page 35. Available at <http://www.electricitypolicy.org.uk/pubs/wp/eprg0511.pdf>

<sup>31</sup> See, for example, Gonenc, Rauf, Maria Maher and Giuseppe Nicoletti, *The Implementation And The Effects Of Regulatory Reform: Past Experience And Current Issues*, **Organisation for Economic Co-operation and Development (OECD)**, Economics Department Working Papers No. 251, ECO/WKP(2000)24, June 29, 2000, at page 19.



from competitive ones in creating the basket of goods and services to be subjected to price caps. An alternative would be to place sub-caps on non-competitive activities.<sup>32</sup>

29. While price cap mechanisms have been widely adopted around the world for retail price regulation of ICT when such is called for, RAs need to be aware that their implementation can be a complex and complicated task. It may require the presence of good accounting systems for capital and operating costs, cost reporting protocols, data collection and reporting requirements for dimensions of performance other than costs. Capital cost accounting rules are necessary, a rate base for capital must still be defined, depreciation rates specified, and an allowed rate of return on capital determined. Thus, comprehensive rate cases or price reviews may still be required in the implementation of price cap. Planning processes for determining needed capital additions are an important part of the process of setting total allowed revenues going forward. Performance benchmarks must be defined and the power of the relevant incentive mechanisms determined. In other words, to put into place a well thought out and effective price cap regime imposes a tremendous informational burden on the RA and the regulated firm.<sup>33</sup> This point was also made by Liston who argued "...at least in the multiproduct case, a well functioning price-cap regime requires about as much knowledge about the cost function as ROR regulation. Given that such information requirements are presently believed to be at the source of the encountered malincentives, most problems associated with ROR regimes can also be attributed to price caps."<sup>34</sup>
30. Another caveat concerning price caps has to do with the rise of intermodal competition and the convergence taking place in the ICT sector. Convergence has been defined in many different ways and can relate to several elements:
- Integration of Customer Premises Equipment (CPE)/ access devices such as the telephone, television and personal computer;
  - Provision of various communication services like text, data, image, multimedia and video over the existing infrastructure or over a single transmission medium;
  - Capability of the same technology to offer various services;

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<sup>32</sup> *Id.*

<sup>33</sup> Joskow 2007 at page 65.

<sup>34</sup> Liston, Catherine, *Price-Cap versus Rate-of-Return Regulation*, **Journal of Regulatory Economics**, 1993, vol. 5, issue 1, pages 25-48 at page 39.



- Different services under converged licensing regime;
- Fixed - mobile substitution/convergence.<sup>35</sup>

31. These trends, and the multiplay service offerings that are arising as a result, call into question the applicability of retail price regulation in this new environment. For one, determining the cost of providing additional multiple-play services will be very complex since telecommunication and cable firms face different incremental costs when adding multiple-play services to their subscriber offerings.<sup>36</sup> And too, there is the fact that the justification for regulating a telecommunications provider is weakened considerably when that provider is facing competition from competing infrastructures. In responding to the emergence of intermodal competition and the triple and quadruple play bundled offerings that are arising as a result some regulators are opting to exempt multiple play offerings from price cap regulation, while still permitting traditional voice telephony to be purchased at a regulated price. However, this is an emerging area and the policy questions are evolving rapidly.

*Question 7 Under the proposed standard communications license licensees will be better positioned to offer triple and quadruple play bundled offerings. How do stakeholders believe these types of offerings ought to be treated under price cap regulation, in the event this type of regulation is adopted? Please explain your response and provide evidence in support of your position.*

32. In the event a price cap regime is adopted the mechanisms for its employment would require, at a minimum, the following:
- a. The dominant firm would have to make an annual filing demonstrating that it is abided by the terms of the price cap for that year. In making this filing the dominant firm would have to show that the weighted average (weighted

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<sup>35</sup> *Part three: Convergence of telecom and media, Information and Communications Technology and Disaster Risk Reduction Division*, United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), 2008, <http://www.unescap.org/icstd/policy/publications/Integrating-ICT-into-Nat-Dev-Plans-for-Central-Asian-States/part3.asp>

<sup>36</sup> *Multiple Play: Pricing And Policy Trends, Working Party on Telecommunication and Information Services Policies*, Directorate For Science, Technology And Industry, Committee For Information, Computer And Communications Policy, Organisation for Economic Co-operation and Development, DSTI/ICCP/TISP(2005)12/FINAL, April 7, 2006 at page 25.



- by quantity of price capped goods and/or services sold) of the prices for price capped goods and/or services comports with the price cap terms.<sup>37</sup>
- b. The quantities used in the weighting would be those from the year prior to the price cap filing year. For example, a filing demonstrating that a dominant firm's prices for the 2010 reporting year were in line with the price cap formula agreed to would be based on the 2009 quantities of the price capped goods and/or services. The rationale for following this procedure is to speed up the compliance filing process.
  - c. Carry over effects would not be permitted. For example, suppose that a dominant firm could have raised its prices by 3% in 2010 but decided to lower them by 5% instead. Now further suppose that, as a result of this activity, there was an exit from the market by one of the dominant firm's competitors. Come the 2011 price cap year, the dominant firm cannot now raise its prices by 8% to take advantage of the market exit by its competitor and to make up for the 3% it could have raised prices by in 2010 had it not chosen to decrease them by the 5% during that same period.
33. In addition, in the event that a price cap regime is adopted for use in Bermuda, it would be our recommendation that a benchmarking approach for establishing the X-Factor of the price cap formula be adopted, as was done by Gibraltar as discussed at ¶¶41 and 42. While we believe that this would be the most cost effective way of establishing an X-Factor for use in Bermuda, this recommendation in no way commits the RA to adopting this particular mechanism in doing so. As in all other areas the RA has the latitude to pursue other courses of action than those that have been recommended.
34. Another methodology that has been employed by RAs in retail price regulation is benchmarking prices based on what is observed in other jurisdictions. This option will be discussed in the next section.

### **(3) International Benchmarking of Prices**

35. International benchmarking the process of establishing the price of a service based on prices in other jurisdictions. Benchmarking has been used to provide a reality check on cost model results and to directly set prices.
36. For example, the price SingTel of Singapore can charge for its telephone service offerings is based on the prices observed in neighboring Asian countries, New York, and London—jurisdictions it perceives as economic rivals.<sup>38</sup>

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<sup>37</sup> The percentage change in prices would be calculated using logarithms. For example, if the price for a service changed from \$26 to \$28, this would be reported as a  $7.4108\% = \ln(28/26)$  change in price.



37. This methodology was also used by the PUC in the Bahamas to lower international long distance calling prices. In a Public Consultation Document the PUC benchmarked the Bahaman Telephone Company's proposed International Long Distance (ILD) rates/prices with ILD rates/prices in:

- The Bahamas' major trading partners;
- High income island economies with per capita Gross Domestic Product (GDP) of \$17,000-\$40,000; and,
- The Bahamas' major competitors in tourism and financial services in the Caribbean Region.<sup>39</sup>

38. The outcome of this benchmarking exercise resulted in a finding by the PUC that BTC's proposed ILD rates/prices were:

- 62.1%-100% above ILD rates/prices observed among the Bahamas' principal trading partners;
- 112.9%-165.6% above ILD rates/prices observed in high income island economies; and
- 20%-247% above rates/prices observed in regional competitors in tourism and financial services.<sup>40</sup>

39. Performing a benchmark study involves:

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<sup>38</sup> *ICT Regulation Tool Kit, § 5.7 International Benchmarking of Prices*, available at <http://www.ictregulationtoolkit.org/en/Section.2149.html>

<sup>39</sup> *Statement Of Results: Public Consultation On The Bahamas Telecommunications Company's (BTC's) Application to Reduce International Long Distance Rates/Prices*, Public Utility Commission of the Bahamas, at §3.1. Available at [http://www.pucbahamas.gov.bs/download/BTC\\_reduce\\_rates\\_May\\_2006.pdf](http://www.pucbahamas.gov.bs/download/BTC_reduce_rates_May_2006.pdf)

Of the countries in the group of high income island economies Bermuda had the lowest international long distance rates--\$.21 per minute. This calculation represents a simple average for calls originating on fixed and mobile networks. Of the countries in the group making up the Bahamas' competitors in tourism and financial services, Bermuda had the second lowest international long distance rates. The lowest rate was \$.19 per minute offered by Digicel in Anguilla. Data is from *Public Consultation On The Bahamas Telecommunications Company's (BTC's) Application to Reduce International Long Distance Rates/Prices*, Public Utility Commission of the Bahamas, at §5.6 and §5.7. Available at [http://www.pucbahamas.gov.bs/download/BTC\\_rate\\_march\\_2006.pdf](http://www.pucbahamas.gov.bs/download/BTC_rate_march_2006.pdf).

<sup>40</sup> *Id.* at §3.2.



- Selecting a sample of countries or operators. Countries used in the benchmark should be at similar stages of socio-economic and industry development as the country whose interconnection rates are being considered;
- Gathering price data for the service(s) under consideration in each of the sample countries; and,
- Adjusting benchmarked rates to account for differences between the country being regulated and the benchmark countries. The adjustments made are usually to account for differences in population density, degree of urbanization, exchange rates, and so on.<sup>41</sup>

40. Benchmarking can be particularly useful, if done carefully, when the information required for other forms of regulation, such as price caps, is not immediately available. It is also useful in that it obviates the need for undertaking forward-looking cost studies, which are costly and time consuming.

#### **(4) Concluding Comments on the Types of Retail Price Interventions**

41. When considering what type of retail price intervention might be most appropriate it must be kept in mind that this is rarely a stark choice between competing options. Regulators typically utilize a combination of the basic forms of regulation discussed here when putting together a regulatory intervention. For example, U.K. regulators combined elements of rate of return regulation and price cap regulation to create their own particular form of RPI-X regulation.<sup>42</sup> And in Gibraltar and Guernsey regulators made the decision to utilize benchmarking to aid in the development of price cap parameters for their respective price cap plans.<sup>43</sup>

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<sup>41</sup> *ICT Regulation Tool Kit*, § 5.7 *International Benchmarking of Prices*

<sup>42</sup> *Basic Forms of Regulation* at <http://www.regulationbodyofknowledge.org/04/narrative/2/>. This site was developed by the Public Utility Research Center (PURC) at the University of Florida, in collaboration with the University of Toulouse, the Pontificia Universidad Catolica, the World Bank.

<sup>43</sup> See, *Retail Price Controls – Application of Rebalancing and a Price Cap control on Gibtelecom; Public Consultation 06/08 (GRA Price Controls)*, **Gibraltar Regulatory Authority** (GRA), 11 August 2008, at page 18; and, *Price Regulation of Fixed Telecommunications Services; Report on the Consultation Paper and Decision Notice*, **Guernsey Office of Utility Regulation** (GOUR), Document No: OUR 02/11, March 2002, at page 12. Available at <http://www.gra.gi/sites/communications/downloads/207/public%20consultation%2006-08.pdf> and <http://www.regutil.gg/docs/our0211.pdf>, respectively.



42. Gibraltar is an especially instructive case for Bermuda. As pointed out at paragraph 29 price cap mechanisms require an enormous amount of information to be gathered, especially for the computation of the productivity offset factor (the X—Factor). The Gibraltar Regulatory Authority (GRA) estimated that developing a full scale financial model to calculate the X—Factor for the country’s 24,000 exchange lines in use would impose a total cost burden on the GRA and the operators in excess of £6.25 per line. It was for this reason that the GRA made the decision to determine the X—Factor to be employed in Gibraltar by examining X—Factors employed in other jurisdictions.<sup>44</sup> Please see Appendix II for a fuller discussion of how Gibraltar settled on the X-Factor it did.
43. Another point to consider is the role of wholesale regulation in curbing a dominant firm’s activity in the market place, in enhancing consumer welfare, and in meeting the regulatory objectives discussed above. The imposition of access to unbundled network elements (UNEs) as was done in the US<sup>45</sup> and access to local loop unbundling (LLU) as has been done in the European Union<sup>46</sup> was also done to diminish the market power of incumbent network operators by allowing competitors access to network services at cost-based prices. In areas where these types of regimes have become well established, the need for retail price controls to counteract the market power of incumbents may well decline. For example, Ofcom’s decision in 2006 to allow retail price controls on BT to lapse as of their expiration date on July 31, 2006 was attributed to the increased

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<sup>44</sup> *GRA Price Controls* at pages 18-24.

<sup>45</sup> As a requirement of the *Telecommunications Act of 1996*

<sup>46</sup> By action of the European Parliament and Council in 2000; See *Regulation (EC) No 2887/2000 of the European Parliament and of the Council of December 18th 2000 on unbundled access to the local loop*, Official Journal of the European Communities L 336, 30.12.2000, 4-8. These requirements were expanded upon with the adoption of the *New Regulatory Framework* in 2002; See *Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive)*, Official Journal of the European Communities L 108, 24.4.2002, 7-17. However, it should be noted that prior to the involvement of the EU legislative body on this issue the decision as to whether or not to impose unbundling was left to the individual member states. Unbundling has been required in Germany since 1996, in Denmark since 1998, and in the Netherlands since 1999 (See, for example de Bijl, Paul W.J. and Martin Peitz, *Local loop unbundling in Europe: experience, prospects and policy challenges*, Communications & Strategies, Jan, 2005. Available at [http://findarticles.com/p/articles/mi\\_hb5864/is\\_57/ai\\_n29238029?tag=rel.res3](http://findarticles.com/p/articles/mi_hb5864/is_57/ai_n29238029?tag=rel.res3)



level of competition in the retail markets based on increasingly effective regulation in the wholesale telephony markets.<sup>47</sup>

44. In point of fact, as noted by the *European Regulator's Group*, the current view in the European Union regarding retail price regulation is that interventions on the wholesale market are seen as preferable to interventions on the retail market.<sup>48</sup> And the latter are only to be undertaken as a last resort in those instances where relevant wholesale or related measures would fail to achieve the objective of ensuring effective competition.<sup>49</sup>
45. Under the regulatory framework put forward by the *Telecommunications Regulatory Reform Policy* proposal, the *Retail Price Control Consultation* will be conducted concurrently with the competition analysis and the *Wholesale Consultation*.
46. As the outcomes of the both these proceedings will markedly affect the level of regulatory intervention into retail pricing that may be required, there are a number of possibilities to consider. Table 4, following, may be useful as an aid in visualizing this variety of possible retail pricing regulatory interventions given the level of observed market rivalry and the level wholesale regulatory intervention present.

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<sup>47</sup> *Retail Price Controls: Explanatory Statement*, Ofcom, July 19, 2006, at ¶1.3. Available at <http://www.ofcom.org.uk/consult/condocs/retail/statement/rpcstatement.pdf>

<sup>48</sup> *Revised ERG Common Position on the approach to Appropriate remedies in the ECNS regulatory framework: Final Version Mar 2006*, ERG (06) 33, at page 48. Document available at [http://www.erg.eu.int/doc/meeting/erg\\_06\\_33\\_remedies\\_common\\_position\\_june\\_06.pdf](http://www.erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf)

<sup>49</sup> *Id.* and also at page 85 referencing Directive 2002/21/EC, recital 26.



Table 4: Retail Price Control Interventions

Competition Analysis Findings Wholesale Regulations <sup>50</sup>	Low rivalry and/or threat of entry	Medium rivalry and/or threat of entry	Strong rivalry and/or threat of entry
None			
Resale <sup>51</sup>			
Local Loop Unbundling (LLU) <sup>52</sup>			
Resale and LLU <sup>53</sup>			
Unbundled Network Elements (UNE) <sup>54</sup>			
Resale and UNEs <sup>55</sup>			

47. While further refinements of this table, offering many other levels of granularity, are possible; it was felt it would be better to restrict the table to a reasonable number of

<sup>50</sup> These will come out of the access and interconnection decisions.

<sup>51</sup> This option would enable a licensee to obtain wholesale access to a dominant provider’s network at an avoided cost discount for purposes of its own retail services.

<sup>52</sup> This option would enable a licensee to obtain wholesale access to a dominant provider’s local loop network elements at cost based rates—most commonly something along the lines of LRIC or TELRIC. Under this scenario a provider would provide its own switching and transport elements.

<sup>53</sup> This option would enable a licensee to choose between utilizing resale or LLU in providing retail services to customers connected to a dominant provider’s network.

<sup>54</sup> This option would enable a licensee to obtain wholesale access to the switching, transport, and local loop network elements of a dominant provider’s network at cost based rates—most commonly something along the lines of LRIC or TELRIC.

<sup>55</sup> This option would enable a licensee to choose between utilizing resale or UNEs in providing retail services to customers connected to a dominant provider’s network.



combinations of outcomes, as presented above, unless a compelling reason can be provided for not doing so.

48. When viewing the table it is helpful to recall the points just raised in the two preceding paragraphs, ¶43 and ¶44, which imply that the level of retail price regulation called for in a given market ought to decrease as the level of regulatory intervention on the wholesale side of that market increases. As will be presented later in paragraphs 52 to 57, the introduction of local number portability (LNP), carrier pre-selection (CPS), carrier select (CS)<sup>56</sup> could also decrease the level of retail price regulation that may be called for given the level of rivalry and wholesale regulation existing in a market. In some circumstances it may be that only the most minimal of retail price regulation is called for, if any is called for at all. An example of this would be to mandate a special rate for a basic telecommunications services service.<sup>57</sup> The rate could initially be set at the current price and change over time to reflect the economy-wide rate of inflation.<sup>58</sup> Only a firm found dominant in the basic telecommunications service market would have to offer basic service at a price not exceeding the regulated retail rate.
49. Another aspect of the table that bears keeping in mind is that movement down the *Wholesale Regulations* column is indicative of movement going from less wholesale regulatory intervention to more.
50. As an aid in formulating your responses to the questions below, Appendix I presents, for illustrative purposes only, an example of how Table 4 could be populated.

*Question 8 Stakeholders are requested to populate Table 4 with their own suggested retail price control intervention level scenarios. The inputs currently depicted in the table as it is found in Appendix I are intended to stimulate discussion only and should not be construed to be indicative of a preferred regulatory*

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<sup>56</sup> CPS involves customers choosing to route all calls by default to the network of an alternative operator, while carrier selection (CS) provided customers with the possibility of using an alternative provider by dialing a call-by-call prefix. Both of these methods are other ways of reducing customer switching costs.

<sup>57</sup> The rate might only be made available to subscribers whose income level falls below a certain threshold. One problem with such an income based pricing plan is that the administrative costs can be high.

<sup>58</sup> For example, if the initial price for basic service is \$26, and the annual rate of inflation is five percent, the rate in the succeeding year could be no higher than  $\$26 * (1 + 0.05) = \$27.30$ . The dominant firm would not be obligated to raise the price to \$27.30 and a persistent decision to hold down the price would be suggestive of a lack of market power.



*approach on the part of the Department.. Please provide explanatory evidence and arguments in support of your suggested scenarios.*

*Question 9 If you believe that further refinements to this table would be useful, please provide a similar table utilizing those refinements. Please provide explanatory evidence and arguments in support of your proposed changes.*

*Question 10 In populating Table 4, or its proposed replacement, please consider where in the table price support for low income customers ought to be placed, in the event you believe that there should be such support at all. Please provide explanatory evidence and arguments in support of your placement, or your belief that no such support is required.*

*Question 11 If your response to Question 10 is that price support for low income customers ought to be provided please provide your opinion as to how this support should be provided.*

*a) If you believe that support of this nature is best provided by establishing a Universal Service Fund (USF) please explain why. As part of your explanation, please provide a list of the services you think ought to be included in the definition for universal service. Please provide supporting arguments for your choices.*

*b) If you do not believe that establishing a USF is the best approach in supporting low income customers, please provide an alternative by which this may be accomplished.<sup>59</sup> Please provide explanatory evidence and arguments in support of your opinions and proposals.*

*Question 12 In populating Table 4, or its proposed replacement, please consider where in the table quality of service (QOS) standards should be placed, in the event you deem these to be necessary. Please provide explanatory evidence and arguments in support of your placement, or your belief that QOS standards are not required.*

*a) If you believe that QOS standards are necessary please describe what you believe these standards ought to be and how they ought to be implemented and enforced.*

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<sup>59</sup> One possible alternative could be the creation of a special rate for POTS, or a specified minimum service bundle, that would be made available only to customers below a certain economic threshold.



*Question 13 Please include as part of the discussion concerning your proposed Table 4 scenarios your opinion, and support for same, concerning the type of retail price regulation that would be best suited to conditions in Bermuda, in the event any such regulation may be deemed necessary. For example, would ROR regulation of retail prices be preferable to price cap regulation? Or, would a blended approach such as was followed by Gibraltar and Guernsey be more suited to Bermuda?*

*Question 14 Under the proposed standard communications license, licensees will be better positioned to offer triple and quadruple play bundled offerings. How do stakeholders believe these types of offering ought to be treated under price cap regulation, in the event this type of regulation is adopted? Please explain your response and provide evidence in support of your position.*

51. Another set of regulatory actions that can be undertaken by RAs that have been shown to have a large impact on retail prices, but which don't involve the direct regulation of those prices, are actions referred to as customer demand side interventions.

#### **IV. Customer Demand Side Interventions**

52. Customer demand side interventions involve actions such as the imposition of local number portability (LNP), carrier pre-selection (CPS), carrier select (CS)<sup>60</sup> and other activities that reduce customer switching costs. Arguably, one of the factors in stimulating competition is providing consumers with the ability to easily choose between competing suppliers as well as to easily switch suppliers in the event they become dissatisfied. Giving consumers this ability can stimulate firms to innovate, improve quality and compete in terms of price to prevent customers from going elsewhere. These common sense sounding suppositions have also found support in the empirical literature.

53. In a study of several hundred AT&T telephone contracts for big 800-number users Dr. Brian Viard found that for the two types of toll-free services he examined, virtual private network (VPN) services<sup>61</sup> and stand-alone (unbundled) services, portability

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<sup>60</sup> CPS involves customers choosing to route all calls by default to the network of an alternative operator, while carrier selection (CS) provided customers with the possibility of using an alternative provider by dialing a call-by-call prefix. Both of these methods are other ways of reducing customer switching costs.

<sup>61</sup> Virtual Private Network (VPN) service consists of a bundle of long-distance services offered to large users.



lowered toll-free prices by and estimated 14% for the average customer.<sup>62</sup> For larger VPN contracts Dr. Viard found that AT&T lowered fixed fees on VPN contracts in addition to voice prices, so that overall margins fell by 22% after portability for the average contract.<sup>63</sup> In short what Dr. Viard found was that firms, at least in this market, reduced their prices in response to a decline in the switching costs faced by their customers as a result of the introduction of number portability for the service studied.

54. Similarly, a study by Minjung Park found that since the Federal Communications Commission mandated wireless number portability prices for the plans with fewest minutes decreased by 2.4%, while the prices for plans with intermediate and large numbers of minutes decreased by 4.5% and 5.6%, respectively. These correspond to absolute reductions in monthly prices of \$0.5, \$3.3, and \$8.0, respectively.<sup>64</sup> As was note by Mr. Park:

The observed heterogeneous impact of the policy is consistent with the prediction of a model on price discrimination based on heterogeneous switching costs. High-volume users tend to have more contacts to inform of a phone number change and are more likely to be business users who do not want to change phone numbers for the fear of losing business contacts. As a result, high-volume users faced larger switching costs than low-volume users did before number portability, other things being equal. Exploiting this, wireless carriers charged higher prices than they would have charged if numbers were portable, and the premium was bigger for higher-volume users. The introduction of number portability eliminates the switching costs arising from the inability to keep phone numbers, so it would eliminate price discrimination based on such switching costs. According to this model, the prices for high-volume plans should fall more than the prices for

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<sup>62</sup> Viard, V. Brian, *Do Switching Costs Make Markets More Or Less Competitive?: The Case Of 800-Number Portability*, Cheung Kong Graduate School of Business; Stanford University - Graduate School of Business, Research Paper No. 1773R2, December 2005. Available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=371921](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=371921)

<sup>63</sup> *Id.* at page 2.

<sup>64</sup> Park, Minjung, *The Economic Impact of Wireless Number Portability*, **Stanford Institute For Economic Policy Research (SIEPR)**, SIEPR Discussion Paper No. 04-17, May 2005, Available at <http://siepr.stanford.edu/papers/pdf/04-17.pdf> at pages 3 – 4.



low-volume plans in response to the introduction of number portability.  
This prediction holds true in the data.<sup>65</sup>

55. While these results are important as regards the impacts of wireless number portability on firm behavior, consumer behavior, and consumer welfare, another question that is equally important, given the several hundred million dollar price tag incurred by the carriers, is; was it worth it, or was it just a waste of valuable resources? According to Park:

Using the distribution of plan sizes of wireless subscribers in the US, I calculate that the net welfare gains from increased competition for consumers in the top 100 US markets were \$120.74 million per month, or \$845.18 million by June 2004 for the 7 months the policy was in place in those markets.<sup>66</sup>...However, the data show that consumer welfare for the very low-end users decreased because of number portability since they paid an equal share of number portability costs while the benefits to them from number portability were small. Customers who are not at the very bottom enjoyed net gains from number portability, and the size of the net gains increased with a customer's usage level.<sup>67</sup>

56. In short, what these studies have found is that number portability reduced carriers' market power by reducing network switching costs, and carriers' market power in the high-volume segment declined more than that in the low-volume segment as a result of the introduction of number portability. In another study of the impact of wireless number portability, this time focused on the EU, it was also found that the implementation of number portability has a negative impact on mobile phone prices.<sup>68</sup> A more recent study by Grzybowski points out that number portability also had an affect on the fixed line market in the EU where it caused a significant decrease in local prices but did not affect national prices.<sup>69</sup> This impact effect is echoed by a recent EU

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<sup>65</sup> *Id.*

<sup>66</sup> *Id.* at page 5.

<sup>67</sup> *Id.* at page 19.

<sup>68</sup> Grzybowski, Lukasz, *Regulation of Mobile Telephony across the European Union: An Empirical Analysis* (Grzybowski 2005), **Journal of Regulatory Economics**; 28:1 47–67, 2005.

<sup>69</sup> Grzybowski, Lukasz, *The impact of regulation on the retail prices in fixed-line telephony across the European Union* (Grzybowski 2008), **Telecommunications Policy** 32 (2008) 131-144, at page 142.



report which found “...fixed number portability remains an important contributor to competition.”<sup>70</sup>

57. Gryzbowski’s study also found that CS and CPS were key driving forces of competition in the fixed line market. CS/CPS penetration could be estimated at about 25% of all subscribers in the EU for long-distance and international calls and 13% for local calls in 2004.<sup>71</sup>

#### **V. The Impact of Price Cap Regulation on Price, Productivity, Network Modernization, Financial Performance, and Service Quality**

58. As was mentioned earlier price cap regulation was first put into practice in 1984. Has its implementation as the regulatory intervention of choice live up to its expectations? According to the underlying theory the major benefits of price caps derive from how the regulatory mechanism is designed and the behavior that creates in regulated firms as a result of the range of incentives it ultimately provides. Theory predicts that price caps encourage:

1. Cost minimizing behavior resulting in greater production efficiency;
2. Regulated firms to make investments in modern infrastructure and innovative services and products and, perhaps, dynamic efficiency;
3. Result in a decrease in regulatory monitoring costs vis-à-vis rate-of-return regulation.

59. It is against these expectations that the empirical literature on the effects of price cap regulation in action will be examined. As a cautionary statement before this is undertaken it is necessary to point out that in most of the studies reviewed the version of price cap regulation that had been put into practice and subsequently analyzed had been substantially modified from the ideal version found in the theoretical literature. For example, in the US it was not atypical for states to implement a price cap mechanism that included an earnings sharing component establishing an earnings sharing arrangement between the regulated firms and its customers. It is also not atypical to find infrastructure investment requirements, price freeze agreements, and service

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<sup>70</sup> Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions; Progress Report on the Single European Electronic Communications Market 2007 (13<sup>th</sup> Report), {SEC(2008) 356}, **Commission of the European Communities**, Brussels, 19/03/2008, COM(2008) 153, at page 6.

<sup>71</sup> Grzybowski 2008, at page 135.



quality goals built into price cap mechanisms. Such hybrid arrangements may distort the incentives for the firm's cost reducing activities and also make the empirical analysis of the price cap effects more complicated.

### Impacts on Price

60. An early study by Xavier demonstrates that price cap regulation has been effective in holding down price increases for services which are not subject to competition. This is demonstrated by the fact that prices for such services are typically close to their maximum price cap permitted levels. However, price cap regulation has been less relevant to the prices of competitive services since these typically fell far more sharply than required by the price cap.<sup>72</sup> In an extensive review of the empirical literature performed 5 years after Xavier's study Abel confirmed this finding. His review of the literature also found that, overall, price cap regulation held down price increases for non-competitive services and that several studies actually reported lower rates.<sup>73</sup>
61. On the other hand, a more recent study performed in 2006, found that consumer welfare markedly improved with the implementation of price cap regulation. In addition to the expected substantial efficiencies, the study concluded that customer prices actually decreased under price caps. On average, business consumers saw a greater decrease in prices coupled with a smaller increase, and in some cases a decrease, in price markups over marginal cost than residential consumers.<sup>74</sup>

### Impacts on Productivity

62. A study by Roycroft concerning the impact of alternative regulation, primarily price cap regulation, in states served by Ameritech in the United States found that "...the introduction of price cap regulation in the Ameritech region may have resulted in an

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<sup>72</sup> Xavier, Patrick, *Price cap regulation for telecommunications; How has it performed in practice?* (Xavier 1995), **Telecommunications Policy**, Vol. 19, No. 8, pp. 599-617, 1995 at page 611. Effects on price structures need to be interpreted with caution however as these are not typically chosen voluntarily by the regulated firm but are instead a product of negotiated give and take between the firm and the RA. (See, for example, Joskow, Paul L, *Incentive Regulation In Theory And Practice: Electricity Distribution And Transmission Networks* (Joskow 2007), MIT and NBER, August 15, 2007, at page 67.)

<sup>73</sup> Abel, Jaison R., *The Performance Of The State Telecommunications Industry Under Price-Cap Regulation: An Assessment Of The Empirical Evidence*, **The National Regulatory Research Institute**, NRRI 00-14, September 2000, at page 33.

<sup>74</sup> Eckenrod, Sarah B. Incentive regulation in local telecommunications: The effects on price markups, **Journal of Regulatory Economics** (2006) 30:217–231. However, as a caveat to these findings the author has pointed out that it is likely that competition influenced the degree to which cost savings affected prices.



increase in total factor productivity growth of about 4.5% when compared to ROR regulation.”<sup>75</sup> Unfortunately, Roycroft’s study also indicates a disproportionate share of this efficiency increase was retained by the company and not passed on to consumers in the form of lower rates. He ascribes this to the fact that this was a first move into uncharted territory on the part of the RA and the Company alike and posits that, as more time passes and more information is acquired concerning the operation of the company under price cap regulation a greater share of these efficiency gains will be passed on to Ameritech’s customers.<sup>76</sup>

63. Abel’s review also found that production efficiency has been shown to be increased under price caps. However, he cautions that it has not yet been determined if these changes are short run demonstration effects or long run improvements in efficiency.<sup>77</sup>

### **Impacts on Network Modernization**

64. According to Abel the research he reviewed appears to suggest that providing regulated firms with more earnings flexibility will lead to increased levels of network modernization. However, he qualifies these findings by noting that it is often the case that upfront agreements regarding the level of infrastructure investment are struck between the firm and regulator before the firm is permitted its desired method of regulation. This being the case, he goes on to state that it is therefore not clear whether the effects demonstrated in the studies he reviewed could be attributable in full to the incentives created under the price cap mechanisms.<sup>78</sup>
65. In a more recent study Gabel and Huang opined that their econometric analysis suggests that innovation occurs less rapidly under voluntary price cap regulation and that, perhaps as result of high federal authorized ROR, firms operating under certain ROR regulation exhibit a greater willingness to deploy packet switching. They go on to opine that this could be because ROR has the attractive property of shifting the risk of new investments primarily to rate payers.<sup>79</sup>

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<sup>75</sup> Roycroft, Trevor, *Alternative regulation and the efficiency of local exchange carriers: evidence from the Ameritech states*, Telecommunications Policy 23 (1999) 469 – 480, at page 478.

<sup>76</sup> *Id.*

<sup>77</sup> Abel at page 42.

<sup>78</sup> Abel pages 43 to 52.

<sup>79</sup> Gabel, David J. And Kenneth Guang-Lih Huang, *Promoting Innovation And The Deployment Of Advanced Telecommunications Services To Businesses*, **Contemporary Economic Policy** (ISSN 1465-7287), 2007.



## Impacts on Financial Performance

66. According to Abel's review of the literature, at a minimum, telephone companies under price-cap regulation appear to be performing no worse financially than telephone companies under other forms of regulation.<sup>80</sup>

## Impacts on Service Quality

67. A study by Sappington finds that the empirical research regarding the effects of incentive regulation on telephone service quality does not provide unequivocal conclusions. The empirical research provides mixed findings about the effects of incentive regulation on both specific measures of service quality (for example, trouble reports) and general potential indicators of service quality (for example, customer complaints to regulators). The findings vary with both the time period and the types of incentive regulation plans under consideration.<sup>81</sup>
68. In a later study Sappington reiterates these results albeit in richer detail. In this later study he and his collaborators found that alternatives to ROR regulation are associated with higher levels of service quality on several dimensions, including more rapid installation of new telephone service, fewer initial and repeat trouble reports, and reduced dissatisfaction with some of the services delivered by incumbent regulated suppliers. And that two measures—the frequency with which commitments to install new telephone service are kept and the speed with which reported service problems are resolved—on which alternatives to ROR regulation are associated with lower levels of service quality. Thus, while service quality increases on more dimensions than it declines under alternatives to ROR regulation, the association between incentive regulation and service quality is not entirely systematic.<sup>82</sup>
69. Abel's review finds that no definitive conclusion regarding the impact of price-cap regulation on service quality can be made at this time.<sup>83</sup>

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<sup>80</sup> Abel, pages 52 to 56.

<sup>81</sup> Sappington, David E. M., *The Effects of Incentive Regulation on Retail Telephone Service Quality in the United States*, **Review of Network Economics**, Vol.2, Issue 4, December 2003 355 – 375.

<sup>82</sup> Ai, Chunrong, Salvador Martinez, and David E. M. Sappington, *Incentive Regulation and Telecommunications Service Quality*, **Journal of Regulatory Economics**; 26:3 263–285, 2004

<sup>83</sup> Abel at pages 56 to 60.



## Regulatory costs

70. As was noted previously, at paragraph 29, price cap mechanisms require an enormous amount of information so there may not be much in the way of regulatory cost savings over the monitoring and information requirements demanded by traditional ROR. Furthermore, not only have protracted debates over the appropriate rate of return continued under price cap regulation in the UK, the US and Australia, they have expanded to include disputes over those aspects affecting the calculation of the X-factor, such as the potential rate of productivity improvement.<sup>84</sup>
71. Interestingly enough one study found that the creation of a strong Regulatory Authority that is structurally separated from, and independent of, the Ministry to which it reports had a significant positive effect on operating efficiency in the telecommunications sector and overall sector performance. The author hypothesizes that this effect results from a perception that the existence of an independent regulator acts to reduce discretionary actions on the part of political operators or appointees, which reduces uncertainty. This, in turn, reduces obstacles to sector investment and reduces the regulatory risks associated with the supply of telecommunications services.<sup>85</sup>

## VI. Concluding Comments Concerning Retail Price Regulation

72. Bermuda has a larger number of licensed telecommunications providers than most other markets of its size. This is partly a result of the current licence framework where cross-service competition is not accommodated. Removing the service-specific licensing currently in place may result in a reduction of the total number of licensees operating in the market. However, the increased scope granted to licensees under the proposed standard communications license will likely give rise to increased innovation in the services and tariff plans offered to residential and business customers, such as various flavors of triple and quadruple play offerings of voice, ISP, and TV service from a single provider. It is also possible that an increase in price competition will occur as a result of the switch to a standard communications license, which could result in some price reductions on services.

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<sup>84</sup> Xavier 1995 at page 615.

<sup>85</sup> See, for example, Ros, Agustin J., *The Impact of the Regulatory Process and Price Cap Regulation in Latin American Telecommunications Markets*, **Review of Network Economics**, Vol.2, Issue 3 – September 2003, 270—286. Also Grzybowski 2008, at page 133.



73. Furthermore, as the discussion to this point has indicated, the performance of price cap regulation vis-à-vis traditional ROR is rather mixed and better results may be achieved, as far as increasing rivalry in a market is concerned, via the introduction of local number portability, carrier select, and carrier pre-select and by wholesale regulation.
74. Given this situation it may well be that the regulatory interventions on retail prices discussed above would not be applicable to Bermuda. There is also this to consider; the new regulatory authority will just be getting established and one of the first items on its agenda will be to perform a thorough study of the Bermudian telecommunications market,<sup>86</sup> which will be undergoing significant change as firms are re-licensed under the new standard Communications License (CL) structure and figuring out how to adjust their business operations going forward given the new freedoms the CL offers. With so much uncertainty as to how all this change is going to impact the competitive landscape in the market, a case may certainly be made to hold off on retail price regulation for the time being.

*Question 15 In your opinion, ought the Government take a wait-and-see approach to the imposition of retail price regulation, or are conditions in Bermuda such that some level of retail price regulation ought to be imposed concurrently with the switch over to the CL, the imposition of any recommended wholesale regulation, etc. etc.? Please provide detailed support for your position.*

## VII. Imputation

75. Many of the costs incurred in the provision of wholesale interconnection and access are identical to those incurred in the provision of retail access. As the establishment of wholesale interconnection rates is a part of the proposed Regulatory Reform process and because the wholesale price of interconnection impacts the pricing of retail services by any company interconnecting with a dominant provider, the Government is considering ensuring that a dominant firm's retail prices pass an imputation test.

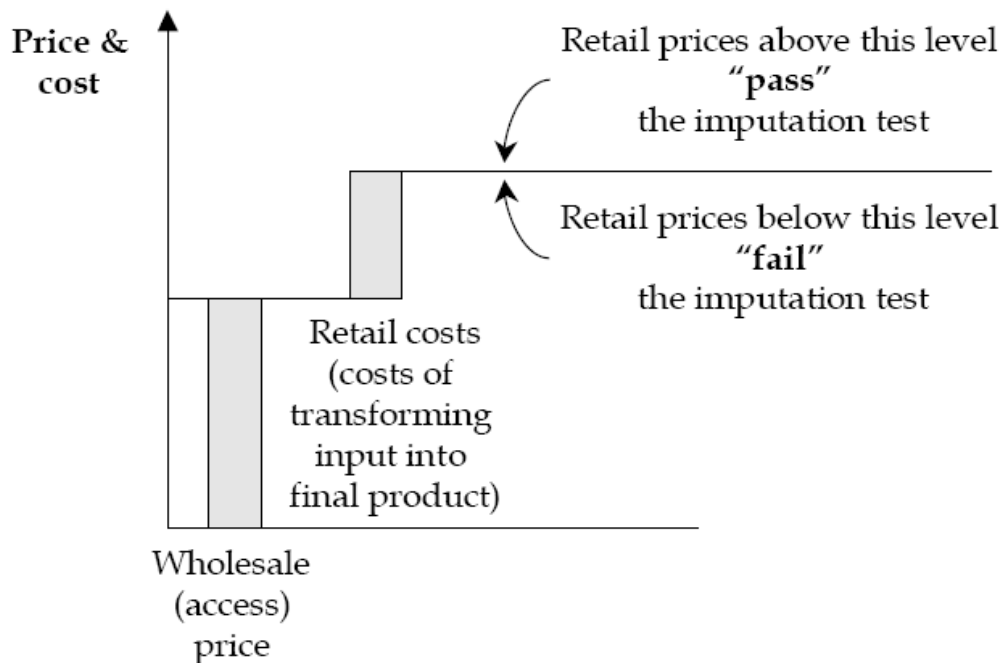
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<sup>86</sup> *Telecommunications Regulatory Reform Policy (Regulatory Reform)*, The Hon. Terry E. Lister, JP, MP, Minister, **Ministry of Energy, Telecommunications, and E-Commerce**, 18 November 2008, at pages 23 to 27.



76. An imputation test is typically utilized by an RA to either test for price squeezing behavior on the part of a dominant vertically integrated firm or, when used prospectively, as a means of ensuring that the dominant firm does not engage in a price squeeze. When used prospectively an imputation rule stipulates that the retail price for a regulated service (basic local service, for example) may not be less than the wholesale price of the input(s) utilized by a competitor in creating an equivalent service *plus* the costs incurred by an efficient firm in transforming those input(s) into the retail service in question. Graphically, an imputation rule/test looks like the

Figure 1: Schematic of an Imputation Test



following:

77. Implementing the imputation test can be challenging. Some of the well known controversies associated with imputation tests include identify the efficient level of retail costs,<sup>87</sup> identifying which wholesale inputs are needed in order to provide the

<sup>87</sup> During the FCC's 271 proceedings, the Commission rejected each effort by a party to establish a benchmark for the retail costs incurred by an efficient firm. See, for example, *Application of Verizon to Provide InterLATA Services in Massachusetts*, CC Docket No. 01-9, DA 04-422, February 24, 2004; and



retail service,<sup>88</sup> and identify which service revenues should be compared with the cost of obtaining the wholesale inputs.<sup>89</sup>

*Question 16 In your opinion, ought the Government establish an imputation rule to set the retail price of regulated local services? Please provide detailed support for your position. Please include in your response a discussion as to how the establishment of an imputation rule might affect your response to Question 12 and Question 15.*

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*Application of Quest to Provide InterLATA Services in Colaroad, et.al.*, December 23, 2002, WC Docket No. 02 – 314, FCC 02-332, par. 426.

<sup>88</sup> For example, should the price squeeze be based on the cost of using unbundled network elements, resale, or a combination thereof? See, *Id.*, par. 423.

<sup>89</sup> For example, should the wholesale price of a loop be compared with the price of basic exchange service, or should the stream of retail revenues include charges associated with long-distance, data, and custom-calling services.



## VIII. Responding to this Consultation

METEC invites written views and comments on the issues raised in this document, to be submitted by 5pm on June 8, 2009.

Please submit your responses in MS Word or Adobe Acrobat format by email to [gtelecom@gov.bm](mailto:gtelecom@gov.bm) and a hard copy delivered by hand to:

F.B. Perry Building  
2nd Floor 40 Church Street  
Hamilton, HM12.

It would be helpful if you could include direct answers to the questions asked in this document which is listed together below. It would also help if you could explain why you hold those views.

METEC expects to hold a public forum to present and discuss the issues raised in this consultation.

In the interests of transparency, we will publish all responses sent to METEC. All comments will be treated as non-confidential unless respondents specify that all or part of their response is confidential and should not be disclosed. If possible, please place all confidential material in a separate annex so that non-confidential parts can be published.

### (1) Consultation Questions

- Question 1 Do stakeholders agree that these are the only situations in which retail price regulation of telecommunications services ought to be considered? If you do not agree, please explain why and provide evidence in support of your explanation.*
- Question 2 Do stakeholders agree that the regulatory goals of the EU, as these are stated above at paragraph 6, are applicable to the situation obtaining in Bermuda? If you do not agree, please explain why and provide evidence in support of your explanation.*
- Question 3 If it is decided that employing ROR regulation would be beneficial, how do stakeholders suggest the rate of return (cost of capital) of the dominant firm, or firms, ought to be estimated? Please explain your response and provide evidence in support of your position.*
- Question 4 If it is decided that employing price cap regulation would be beneficial, given the circumstances in Bermuda what is the opinion of stakeholders*



*concerning the utilization of a productivity offset factor (the X-factor) in the price cap formula? Please explain your response and provide evidence in support of your position.*

*Question 5 In the event that price cap regulation is adopted, what is the opinion of stakeholders concerning the types of services that ought to be placed in these three baskets? Please explain your response and provide evidence in support of your position.*

*Question 6 Are these three baskets enough or too much? Please explain your response and provide evidence in support of your position.*

*Question 7 Under the proposed standard communications license licensees will be better positioned to offer triple and quadruple play bundled offerings. How do stakeholders believe these types of offerings ought to be treated under price cap regulation, in the event this type of regulation is adopted? Please explain your response and provide evidence in support of your position.*

*Question 8 Stakeholders are requested to populate Table 4 with their own suggested retail price control intervention level scenarios. The inputs currently depicted in the table as it is found in Appendix I are intended to stimulate discussion only and should not be construed to be indicative of a preferred regulatory approach on the part of the Department.. Please provide explanatory evidence and arguments in support of your suggested scenarios.*

*Question 9 If you believe that further refinements to this table would be useful, please provide a similar table utilizing those refinements. Please provide explanatory evidence and arguments in support of your proposed changes.*

*Question 10 In populating Table 4, or its proposed replacement, please consider where in the table price support for low income customers ought to be placed, in the event you believe that there should be such support at all. Please provide explanatory evidence and arguments in support of your placement, or your belief that no such support is required.*

*Question 11 If your response to Question 10 is that price support for low income customers ought to be provided please provide your opinion as to how this support should be provided.*



- a. *If you believe that support of this nature is best provided by establishing a Universal Service Fund (USF) please explain why. As part of your explanation, please provide a list of the services you think ought to be included in the definition for universal service. Please provide supporting arguments for your choices.*
- b. *If you do not believe that establishing a USF is the best approach in supporting low income customers, please provide an alternative by which this may be accomplished.<sup>90</sup> Please provide explanatory evidence and arguments in support of your opinions and proposals.*

*Question 12 In populating Table 4, or its proposed replacement, please consider where in the table quality of service (QOS) standards should be placed, in the event you deem these to be necessary. Please provide explanatory evidence and arguments in support of your placement, or your belief that QOS standards are not required.*

- a. *If you believe that QOS standards are necessary please describe what you believe these standards ought to be and how they ought to be implemented and enforced.*

*Question 13 Please include as part of the discussion concerning your proposed Table 4 scenarios your opinion, and support for same, concerning the type of retail price regulation that would be best suited to conditions in Bermuda, in the event any such regulation may be deemed necessary. For example, would ROR regulation of retail prices be preferable to price cap regulation? Or, would a blended approach such as was followed by Gibraltar and Guernsey be more suited to Bermuda?*

*Question 14 Under the proposed standard communications license, licensees will be better positioned to offer triple and quadruple play bundled offerings. How do stakeholders believe these types of offering ought to be treated under price cap regulation, in the event this type of regulation is adopted? Please explain your response and provide evidence in support of your position.*

*Question 15 In your opinion, ought the Government take a wait-and-see approach to the imposition of retail price regulation, or are conditions in Bermuda such that some level of retail price regulation ought to be imposed concurrently*

<sup>90</sup> One possible alternative could be the creation of a special rate for POTS, or a specified minimum service bundle, that would be made available only to customers below a certain economic threshold.



*with the switch over to the CL, the imposition of any recommended wholesale regulation, etc. etc.? Please provide detailed support for your position.*

*Question 16 In your opinion, ought the Government establish an imputation rule to set the retail price of regulated local services? Please provide detailed support for your position. Please include in your response a discussion as to how the establishment of an imputation rule might affect your response to Question 12 and Question 15.*



## Appendix I

### Illustrative Retail Price Control Intervention Scenarios For Table 4

As an aid in conceptualizing how a stakeholder might approach filling in Table 4, which is replicated below as Table 5, consider the following illustration.

Assume that an RA examined the markets for retail fixed wireline narrowband exchange access and calls services and determined the relevant markets to be the following:

1. Residential fixed access service;
2. Business fixed access service;
3. Residential fixed local calls;
4. Business fixed local calls; and,
5. The provision of leased lines

As an overarching set of simplifying postulates, please assume, for purposes of this illustration only:

1. That there is only a single dominant provider, DP.
2. It has been determined that a Universal Service Obligation (USO) is not necessary.
3. That some form of price cap regulation is being considered.<sup>91</sup>
4. The decision has been made not to include a quality of service (QOS) factor in the price cap calculations.

### Conditions Of Strong Rivalry And/Or Threat Of Entry

Under these conditions DP's dominance in the 5 relevant markets has sufficiently eroded so that only a very light regulatory hand, if any at all, is called for. Any tariff rebalancing that has been required is considered to have been accomplished and it may be that the only

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<sup>91</sup> The assumption of price cap regulation here is being made for purposes of illustration only so as to simplify the example presented. It was decided that it would be too unwieldy to do multiple examples utilizing other forms of retail pricing intervention, such as Rate-of-Return regulation, to illustrate how the table might be filled in. Thus, the utilization of the type of price cap regulation discussed here should not be taken as a sign that the Department has decided, even tentatively, on adopting price cap regulation for use in Bermuda at this juncture.



type of regulatory intervention an RA may require is some form of consumer protection for a certain class, or classes, of customers. As mentioned previously, at footnote 57, an example of this would be to mandate a special rate for a basic telecommunications services package available only to households with qualifying income levels. Another option would be for the RA to mandate that DP establish a basic tier of service for low spending, low usage residential users to keep them connected at low cost. This latter option may be the more efficient one as it would avoid imposing a means test on the customer and additional record keeping at DP's end and so for this illustration the mandated basic tier option for low volume users will be adopted.

Recall that as one moves down a column, the level of wholesale regulation increases and so, arguably, the need for retail price intervention decreases. Some options that an RA may choose to employ in a situation of strong rivalry and increasing levels of wholesale regulatory intervention are:

**Option 1**—No Retail Price Control/Regulation beyond that of placing a safeguard cap on DP's basic tier of service for low spending, low usage residential users. As rate rebalancing is assumed to have already occurred, it would make sense to set the cap for this basic tier of service at RPI + 0%--meaning that the price on the basic tier is permitted to increase at the rate of inflation.

However, given that the assumption here is of strong rivalry and market entry, the RA may want to think about whether or not it wants to impose the RPI + 0% cap on a basket of access and call charges for the basic tier of service or just on the access portion. Imposing the cap on both access and calling services may have the result that DP provides discounts only to high volume calling users on the non-regulated tariff packages, while maintaining current prices of regulated services, which would mean that basic tier customers may not benefit from any competition or innovation in the calling services market. Applying the RPI + 0% cap to the access portion only of the basic tier of service would focus the RA's attention on that market for which there, arguably, ought to be a greater concern for the potential and impact of price increases. For this reason Option 1 will only have the RPI + 0% cap imposed on the access portion of DP's basic tier of service.

**Option 2**—No Retail Price Control/Regulation but the RA will request assurances<sup>92</sup> from DP to protect low volume residential customers. This would be a good option when wholesale regulation is not as interventionist and/or when wholesale products are just being introduced.

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<sup>92</sup> Ofcom obtained certain assurances from BT when it deregulated some services.



**Option 3**—No Retail Price Control/Regulation at all and no assurances from DP to protect low volume residential customers. This would be a good option when wholesale regulation is highly interventionist and/or when wholesale products are beyond the introductory phase and there has been a large uptake in their usage in addition to there being a great deal of rivalry in the market.

### **Conditions Of Medium Rivalry And/Or Threat Of Entry**

We will assume that under these conditions the DP's dominance in the above 5 markets is starting to be challenged by rivals who have already entered the market and threatened by the potential of new entrants as wholesale regulatory interventions increase. Given the pattern of market entry observed elsewhere it would be reasonable to assume that in a market with medium rivalry or threat of entry a dominant firm such as DP would retain significant dominance in the residential and small business markets while its rivals pursued the more lucrative high volume business users. Also, as rivalry is just beginning to enter the markets under this scenario it would not be unreasonable to assume that tariffed rates were unbalanced and that some rate adjustment would be occurring.

One strategy that would be worthwhile pursuing under these conditions would be to divide up the 5 markets into 3 baskets:

- Basket 1:** Consisting of markets 1 and 3, fixed access services and fixed local calling services for the lowest 80% of residential customers by average bill spend.<sup>93</sup>
- Basket 2:** Consisting of markets 2 and 4, fixed access services and fixed local calling services for the lowest 80% of business customers by average bill spend.
- Basket 3:** Consisting of market 5, the provision of leased lines to the lowest 80% of leased line customers by average bill spend.

**Option 4**—Following the methodology of the Gibraltar Regulatory Authority, see paragraph 42, the RA benchmarks X factors utilized in other jurisdictions and comes up with an X factor of 3% for Basket-1 and Basket-2, and 7% for Basket-3. So overall prices for baskets 1 and 2 cannot increase any faster than the inflation rate minus 3% and Basket-3 cannot increase any faster than the inflation rate minus 7%.

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<sup>93</sup> These are the consumers considered to have the least access to competition and the charge control is designed to ensure adequate protection for these customers as competition develops.



Because of concerns about rebalancing residential access rates too rapidly, the RA also decides to place a subcap on residential access service of RPI+2%, meaning that the price of residential access service cannot be increased beyond the rate of inflation plus 2% in any plan period, which will cushion residential customers from any dramatic changes in relative prices. Similar concerns lead the RA to place a subcap on small to mid-sized business access service of RPI+5%.<sup>94</sup> Subcapping like this gives DP some pricing flexibility in pricing the services that make up these two baskets. To illustrate this we will use Basket-1 as an example.

Assume for Basket-1 that:

$(P_{bt-1})$  = The overall price for the basket in the previous time period = \$25.00

$RPI_t$  = The RPI in the current period = 5%

X Factor = 3%

$(P_{bt})$  = The overall price for the basket in the current time period. And so,

$(P_{bt}) = (P_{bt-1}) * (1 + (RPI_t - 3\%)) = \$25.00 * (1 + (5\% - 3\%)) = \$25.50$

Now assume that:

$(P_{at-1})$  = The price of residential access in the previous time period = \$5.00

$(P_{ut-1})$  = The price of residential usage in the previous time period = \$20.00

$(P_{at})$  = The price of residential access in the current time period

$(P_{ut})$  = The price of residential usage in the current time period

Numerically this would give us:

$(P_{bt}) = (P_{at}) + (P_{ut})$

$\$25.50 = [ (P_{at-1}) * (1 + (RPI_t + 2\%)) ] + (P_{ut})$

$\$25.50 = [ \$5.00 * (1 + (5\% + 2\%)) ] + (P_{ut})$

$\$25.50 = \$5.35 + (P_{ut}),$  or

$(P_{ut}) = \$25.50 - \$5.35 = \$20.15$

Stated another way, what the above means is that the overall price for the basket in the current time period,  $(P_{bt})$ , increased by  $(RPI_t - 3\%) = (5\% - 3\%) = 2\%$ . And this result was accomplished by increasing the price of residential access in the current time period,  $(P_{at})$ ,

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<sup>94</sup> The subcap on small to mid-sized business access service is greater than that for residential access services because the RA is of the belief that business owners are better able to accommodate rebalancing than are residential customers.



by  $(RPI_t + 2\%) = (5\% + 2\%) = 7\%$  and the price of residential usage ( $P_{ut}$ ) in the current time period by only  $((\$20.15 - \$20.00) / \$20.00) = 1\%$ .

This Option 4 which was just discussed will be used in Table 5 where there is no, or very little, wholesale regulation. Moving down the medium rivalry column, as the level of wholesale regulation increases an RA may want to ease up on some aspects of the retail price control laid out in Option in 4. Some possibilities will be discussed in

**Option 5**—As wholesale regulatory intervention increases from resale to resale + LLU the RA may want to encourage DP to develop costs based wholesale options for other service providers that go beyond the resale option. One way of doing this would be for the RA to reduce the X factors in Baskets 1 and 2 once a commercially viable LLU option is made available by DP and there are signs that entry via LLU is going well.<sup>95</sup> For Basket 3, the RA could reduce the X factor on leased lines once DP has introduced commercially viable, cost based, wholesale leased line service products for use by other providers.

So, for this option the baskets of services will stay the same, but the X-factors will be changed as follows:

- Basket 1:** The X factor and subcap will remain the same here.
- Basket 2:** The X factor will change to 2% and the subcap will change to RPI +0, once there are signs that entry via LLU is going well.
- Basket 3:** The X factor will go from 7% to 4%, once DP has introduced commercially viable, cost based, wholesale leased line service products.

This option will be used for the LLU and the Resale + LLU scenario. For the other two scenarios in the column **Option 6** will be used.

**Option 6**—Is structured essentially the same as Option 5, however some of the X factors are changed again so as to account for the increase in competitive entry that is anticipated

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<sup>95</sup> Ofcom, for example, encouraged BT to develop a cost-based wholesale line rental (WLR) product by offering to change the charge control from RPI-RPI ( no price increases permitted in response to inflation ) to RPI+0 per cent when Ofcom was satisfied that a commercially viable WLR product had been fully implemented and was having an effect on the market (*Fixed Narrowband Retail Services Markets Identification and analysis of markets; making of market power determinations and setting of SMP conditions Final Explanatory Statement and Notification Office of Communications, UK* (Ofcom), 28 November 2003, at ¶4.28)



as the wholesale services market expands with the introduction of UNEs and resale + UNEs.

- Basket 1:** The X factor will change to 2% and the subcap will change to RPI +0, once there are signs that entry via UNEs is going well.
- Basket 2:** The X factor will change to 0% and the subcap will disappear, once there are signs that entry via UNEs is going well. This will result in a price cap on the basket being set at RPI + 0%.
- Basket 3:** The X factor will go from 4% to 0%, once DP has introduced commercially viable, cost based, wholesale leased line service products. This will result in a price cap on the basket being set at RPI + 0%.

### Conditions Of Low Rivalry And/Or Threat Of Entry

Under these conditions the dominant provider is considered to have Significant Market Power (SMP) status in all 5 of the relevant markets, and for all classes of users and so the baskets will not be limited to only the lowest 80% of residential and business customers by average bill spend until UNEs are introduced.

- Basket 1:** Consisting of markets 1 and 3, fixed access services and fixed local calling services for residential customers.
- Basket 2:** Consisting of markets 2 and 4, fixed access services and fixed local calling services for business customers.
- Basket 3:** Consisting of market 5, the provision of leased lines.

**Option 7—** As with Option 4 earlier the RA benchmarks X factors utilized in other jurisdictions and comes up with X factors that are higher than before, due to the lack of rivalry found in the markets under consideration. So now there is an X factor of 5% for Basket-1 and Basket-2, and 9% for Basket-3. So overall prices for baskets 1 and 2 cannot increase any faster than the inflation rate minus 5% and Basket-3 cannot increase any faster than the inflation rate minus 9%.

As these markets have experienced little to no rivalry or competitive entry, the RA has similar concerns as were expressed at Option 4 regarding the effect of rebalancing residential access rates too rapidly. As a result here as well the RA will place a subcap of



RPI + 2% on residential and single business line access services. A subcap of RPI+5% will also be placed on all multi-line business services.

**Option 8**— Here also, as wholesale regulatory intervention increases from resale to resale + LLU the RA may want to encourage DP to develop costs based wholesale options for other service providers that go beyond the resale option. One way of doing this would be for the RA to reduce the X factors in Baskets 1 and 2 once a commercially viable LLU option is made available by DP and there are signs that entry via LLU is going well.<sup>96</sup> For Basket 3, the RA could reduce the X factor on leased lines once DP has introduced commercially viable, cost based, wholesale leased line service products for use by other providers.

So, for this option the baskets of services will stay the same, but the X-factors will be changed as follows:

- Basket 1:** The X factor of 5% and the subcap of RPI + 2% will remain the same as in Option 7.
- Basket 2:** The X factor of 5% and the subcap of RPI + 2% will remain the same as in Option 7.
- Basket 3:** The X factor will go from 9% to 7%, once DP has introduced commercially viable, cost based, wholesale leased line service products.

This option will be used for the LLU and the Resale + LLU scenario. For the other two scenarios in the column **Option 9** will be used.

**Option 9**—With the introduction of UNEs and resale + UNEs wholesale regulation presents the possibility of introducing increased competitive entry into the relatively uncontested markets depicted in this low rivalry and entry market column. In order to encourage this trend the RA could decide to limit the scope of the market to which price cap regulation will be applied by restricting the baskets so that they apply to only the

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<sup>96</sup> Ofcom, for example, encouraged BT to develop a cost-based wholesale line rental (WLR) product by offering to change the charge control from RPI-RPI ( no price increases permitted in response to inflation ) to RPI+0 per cent when Ofcom was satisfied that a commercially viable WLR product had been fully implemented and was having an effect on the market (*Fixed Narrowband Retail Services Markets Identification and analysis of markets; making of market power determinations and setting of SMP conditions Final Explanatory Statement and Notification Office of Communications, UK* (Ofcom), 28 November 2003, at ¶4.28)



lowest 80% of customers by average bill spend, which is what shall be done for this option. So now the baskets of services will be as follows:

**Basket 1:** The X factor of 5% and the subcap of RPI + 2% on residential access will be applied to the lowest 80% of residential customers by average bill spend.

**Basket 2:** The X factor of 5% and the subcap of RPI + 2% on business access will be applied to the lowest 80% of business customers by average bill spend.

**Basket 3:** An X factor of 7% will be applied to leased lines on lines leased by the lowest 80% of leased line customers by average bill spend.

All of the Options depicted and discussed above are depicted in Table 5, below.



Table 5: Retail Price Control Intervention Scenarios

Competition Analysis Findings Wholesale Regulations <sup>97</sup>	Low rivalry and/or threat of entry	Medium rivalry and/or threat of entry	Strong rivalry and/or threat of entry
No Wholesale Regulation	Option 7	Option 4	Option 1
Resale Option Only <sup>98</sup>	Option 7	Option 4	Option 1
Local Loop Unbundling (LLU) Option Only <sup>99</sup>	Option 8	Option 5	Option 2
Resale and LLU Option's Only <sup>100</sup>	Option 8	Option 5	Option 2
Unbundled Network Option Only Elements (UNE) <sup>101</sup>	Option 9	Option 6	Option 3
Resale and UNEs Option's Only <sup>102</sup>	Option 9	Option 6	Option 3

<sup>97</sup> These will come out of the interconnection decisions.

<sup>98</sup> This option would enable a licensee to obtain wholesale access to a dominant provider's network at an avoided cost discount for purposes of its own retail services.

<sup>99</sup> This option would enable a licensee to obtain wholesale access to a dominant provider's local loop network elements at cost based rates—most commonly something along the lines of LRIC or TELRIC. Under this scenario a provider would provide its own switching and transport elements.

<sup>100</sup> This option would enable a licensee to choose between utilizing resale or LLU in providing retail services to customers connected to a dominant provider's network.

<sup>101</sup> This option would enable a licensee to obtain wholesale access to the switching, transport, and local loop network elements of a dominant provider's network at cost based rates—most commonly something along the lines of LRIC or TELRIC.

<sup>102</sup> This option would enable a licensee to choose between utilizing resale or UNEs in providing retail services to customers connected to a dominant provider's network.



## Appendix II

### Gibraltar's Benchmarking Approach in Determining an X-Factor

As mentioned above at ¶41 and ¶42 Gibraltar utilized, for reasons of cost efficiency, a benchmarking approach in determining the X-Factor to be employed in that country's price cap formula.<sup>103</sup> The benchmark values that Gibraltar reviewed are depicted in the tables below:

*Table 6: X-Factors of Selected National Price Cap Regulation Plans*

Country	X Factor <sup>104</sup>
Argentina	5
Australia	3
Canada	3
Chile	4.3
Colombia	4.5
Denmark	4.1
France	1
Mexico	2
Portugal	3
UK	3
Ireland	6

<sup>103</sup> *GRA Price Controls* at pages 18-24.

<sup>104</sup> *Id.* at page 24.



*Table 7: X Values in Selected State Price Cap Regulation Plans in the USA*

State	X Factor <sup>105</sup>
Connecticut	5
Delaware	3
Georgia	3
Illinois	4.3
Maine	4.5
Massachusetts	4.1
Michigan	1
New York	4
North Carolina	2
Ohio	3
Rhode Island	4
Wisconsin	3

In addition to the countries and states illustrated in the previous two tables, Gibraltar Regulatory Authority (GRA) also noted that national regulatory authorities of Malta and Jersey applied X-Factors of  $x = 2$  to their respective incumbent operators, which price caps were in place for five years. As was pointed out by the GRA, when the values of the X-Factors presented in the tables are averaged with the values of Malta and Jersey, an international average value of  $x = 3$  is arrived at, and it is this value that the GRA chose for its initial X-Factor.<sup>106</sup>

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<sup>105</sup> *Id.* at page 23.

<sup>106</sup> *Id.* at pages 18-24.