Office of Utilities Regulation

Dominant Public Voice Carriers No. 2

Consultative Document

OFFICE OF UTILITIES REGULATION

NOVEMBER 2002

ABSTRACT

The Office of Utilities Regulation (OUR) has a duty to determine which public voice carriers are to be classified as dominant public voice carriers for the purposes of the Telecommunications Act (2000) (the Act). Dominance is as defined in section 19 of the Fair Competition Act, 1993, the principal Act as amended by the Fair Competition (Amendment) Act 2001. Generally, dominance obtains where an entity, by itself or together with an interconnected company, holds a position of economic strength that enables that entity to act without effective constraint from its competitors or potential competitors. Section 28 of the Act provides that, before determining dominance, the OUR must invite submissions from the public and must consult with the Fair Trading Commission (FTC) and take into account, any recommendations made by the Commission.

Section 29 of the Act requires each carrier (upon request), to permit interconnection of its public voice network to the public voice network of any other carrier for the provision of voice services, and in doing so, a public voice carrier must give effect to the principles of: *any-to-any connectivity, end-to-end operability,* and *equal responsibility*. In Section 30 of the Act additional requirements are imposed on dominant public voice carriers, who must, for example, provide interconnection with: -

- terms and conditions that are: - non-discriminatory;
  - reasonable and transparent; and
- interconnection charges that are cost oriented.

This Consultative Document reflects the OUR's views on the issue of dominance in the Telecommunications sector and is the second Consultative Document on this issue. The first document concentrated on issues related to interconnection during phase I of the liberalization process as outlined in Section 78 of the Act. This document reiterates these issues but will also address issues from phases II and III. Additionally, while the previous document focused on the dominance of the incumbent public voice carrier, this document assesses the market power of both the incumbent public voice carrier (IPVC) and the competitive public voice carrier (CPVC).

Dominant public voice carriers will be subject to rules made by the OUR in relation to a prescribed system of regulatory accounts pursuant to Sections 4(5) and 30(2) of the Act. The OUR considers that Cable & Wireless Jamaica Limited (C&WJ) is dominant in various markets for fixed line interconnection services, the provision of local loop access and for international interconnection services. Notwithstanding this, the OUR is also of the opinion that, with the exception of retail mobile services, retail Internet service access and termination equipment,

C&WJ is dominant in all other markets for telecommunication products and services. Additionally, all mobile public voice carriers are dominant in relation to mobile call termination on their respective networks.

COMMENTS FROM INTERESTED PARTIES

Persons who wish to express opinions on this Consultative Document are invited to submit their comments in writing to the OUR. Comments are invited on all aspects of the issues raised, but especially the specific questions identified. These questions appear below the explanatory text to which they relate. To ease the OUR's processing of the responses, respondents are requested as far as possible to follow the order of the OUR's questions. If considered appropriate, respondents may wish to address other aspects of the document for which the OUR has prepared no specific questions. Respondents may of course only wish to answer some of the questions posed. Failure to provide answers to all questions will in no way reduce the consideration given to the response.

Responses to this Consultative Document should be sent by post, fax or e-mail to: -

Patrick K. Williams
P.O. Box 593, 36 Trafalgar Road, Kingston 10
Fax: (876) 929-3635
E-mail: pwilliams@our.org.jm

Responses are requested by December 20, 2002. Any confidential information should be submitted separately and clearly identified as such. In the interests of promoting transparent debate, respondents are requested to limit as far as possible the use of confidentiality markings. Respondents are encouraged to supply their responses in electronic form, so that they can be posted on the OUR's Website.

Comments on responses

The OUR's intention in issuing this Consultative Document is to stimulate public debate on the important regulatory issues surrounding the dominance of public voice carriers. The responses to this Consultative Document are a vital part of that public debate. Respondents will have an opportunity both to find out the non-confidential evidence and views put forward in other responses, with which they may disagree, and to comment on them. The comments may take the form of either correcting a factual error or putting forward counterarguments.

Comments on responses are requested by January 14, 2003.

Arrangements for viewing responses

To allow responses to be publicly available, the OUR will keep the responses that it receives on files, which can be viewed by and copied for visitors to the

OUR's Offices. Individuals who wish to view the responses should make an appointment by contacting Lesia Gregory by one of the following means: -

Telephone: (876) 968 6053 (or 6057)
Fax: (876) 929 3635
E-mail: lgregory@our.org.jm

The appointment will be confirmed by a member of the OUR's staff. At the pre-arranged time the individual should visit the OUR's offices at:

3rd Floor, PCJ Resource Centre, 36 Trafalgar Road, Kingston 10

The individual will be able to request photocopies of selected responses at a price, which just reflects the cost to the OUR. Also, copies of this document may be downloaded from the OUR's Web site at http://www.our.org.jm

Timetable

The timetable for the consultation is summarized in the table below. This includes an indicative timing for the Determination Notice.

Summary of the timetable for the consultation:

Event	*Date*
Response to this document	December 20, 2002
Comments on Responses	January 14, 2003
Determination	By February 28, 2003

TABLE OF CONTENTS

CHAPTER 1: MARKET LIBERALIZATION AND REGULATION

Key Terms

Access lines: *The local loop from the home/office to the exchange or local switch or end office.*

Dominance: *As per Section 19 of the Fair Competition Act (1993), incorporated in The Fair Competition Amendment Act 2001, "… an enterprise holds a dominant position in a market if by itself, or together with an interconnected company, it occupies such a position of economic strength as will enable it to operate in the market without effective constraints from its competitors or potential competitors."*

Interconnection: *As per Section 2(1) of the Telecommunications Act 2000, this "… means the physical or logical connection of public voice networks of different carriers."*

Network: *A series of nodes (switches and routers) and the transmission facilities that connect them.*

Public Voice Carrier: *A carrier who owns and operates a public voice network used to provide a voice service to the public.*

1.0 Part XVII of the Telecommunications Act (2000) (the Act) sets out the phased arrangements to a fully liberalized telecommunications sector in Jamaica. Phase I commenced with the passing of the Act, March 2000 and lasted for 18 months thereafter. During this period the following markets were opened to competition: -

- domestic mobile services;
- data services;
- internet service provision (excluding voice), using C&WJ facilities;
- provision of single line and multi-line (for example PBXs) customer premises equipment (CPE); and
- wholesale of C&WJ's international switched voice minutes.

1.1 In relation to mobile voice service and the resale of international voice service, two additional mobile licences and 42 international voice service provider licences[1] were issued. Also, during Phase I, carrier and service provider (SP) licences were granted for the provision of services solely for the purposes of free trade zone operations.

1.2 Regarding the mobile voice service market, the effect of liberalization can be demonstrated by the degree of market concentration[2] (see Table 1.1). Based on the number of mobile subscribers, market concentration moved from a high of 10,000 in March 2001 when C&WJ was the only service provider, to 5,482 in December 2001, after the two new licensees entered the market. On the basis of this data, it seems that the markets for mobile retail products and services are becoming increasingly competitive.

Table 1.1: Mobile Voice Service Market Concentration

DATE	HHI
Mar-2001	10000.00
Jun-2001	7261.28
Sep-2001	6240.20
Dec-2001	5482.26

1 These licences authorize the licensees to resale international switched minutes obtained from the incumbent public voice carrier (IPVC), C&WJ.

2 The Herfindahl-Hirschman-Index (HHI) is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers. The HHI approaches zero when a market consists of a large number of firms of relatively equal size. The HHI increases both as the number of firms in the market decreases and as the disparity in size between those firms increases.

1.3 Phase II commenced immediately after the ending of Phase I and will also last for eighteen (18) months. During this phase the Minister may grant licences for the following additional facilities and services: -

- domestic voice facilities and services, e.g. wireless in the local loop[3];
- resale of C&WJ's switched domestic voice minutes; and
- Internet access over facilities of subscriber television (STV) operators (excluding voice services).

Table 1.2 shows the number of licenses that were issued during phase II. These include domestic carrier (DC), domestic voice service provider (DVSP) and Internet Service Provider (subscriber television operator) (ISP(STVO)) licenses.

Table 1.2 **SUMMARY TELECOMMUNICATIONS LICENSING ACTIVITY 7TH MAY, 2002**

		LICENCE CATEGORIES	
LICENCES	**DC**	**DVSP**	**ISP (STVO)**
LICENCES ISSUED	**13**	**20**	**10**
PENDING OUR APPROVAL	**01**	**05**	**03**
TOTAL APPLICATIONS	**14**	**25**	**13**

1.4 Phase III is scheduled to commence in March 2003. During this Phase all market segments may be open to competition including international voice and data facilities. However, it should be noted that the term liberalization is not equivalent to competition. As per the *Act*, liberalization contemplates the removal of legal barriers to entry into telecommunications markets. That is, the exclusivity of C&WJ in relation to the operation of public voice carrier facilities and the provision of public voice services is being removed on a phased basis. However, other barriers to market entry such as economic and technical barriers could serve to limit competition. The existence of barriers to entry could place some competitors in a dominant position. In such cases provisions are made in the *Act* to regulate these carriers.

3 The access line between the customer's premises and the local PSTN exchange. This is also referred to as the last mile and is usually comprised of two copper wires.

Market Dominance and Regulation

1.5 With the exception of mobile services (such as retail mobile voice access and usage)[4], retail Internet service access and termination equipment, C&WJ is considered to be dominant in all other markets for telecommunication products and services. Additionally, some national regulators are of the opinion that mobile public voice carriers are dominant in relation to mobile call termination on each mobile operator's network. Mobile call termination rates in Jamaica, as well as other countries such as the UK, are considered to be in excess of costs[5]. This situation is due to the absence of competition in the markets for call termination.

1.6 In relation to retail mobile services, retail Internet service access and termination equipment, the OUR indicated that these services are to be initially excluded from Price Cap regulation[6]. The basis for excluding these services is that they face effective competition or that effective competition is imminent or that it is deemed that there are substantial public benefits to be gained from such exclusion. However, based on changes in market conditions or where it is apparent that effective competition is not developing, the OUR has the option of imposing regulation (price cap or otherwise) on entities in these markets. Further, where it is found that dominance exists, the OUR is obligated to subject dominant public voice carriers to rules made by the OUR in relation to a prescribed system of regulatory accounts, pursuant to Sections 4(5) and 30(2) of the Act

Purpose of this Document

1.7 Under section 28 of the *Act*, the OUR has a duty to determine which public voice carriers are to be classified as dominant. For this exercise, only the markets for interconnection services and the local loop are considered[7]. However, dominance in these markets can be extended to other markets, namely, the markets for products and services offered by service providers at the retail levels of those markets. In relation to interconnection markets, it is only those markets for public voice carrier services that are relevant and not markets relating to data carriers. The Act does not prevent interconnection of data networks, but it does not make it a requirement.

4 These services do not include fixed-to-mobile termination.

5 The definition of cost includes normal profit or the expected return on capital in a competitive market.

6 See the OUR's Determination Notice, "Cable and Wireless Jamaica Price Cap Plan, August 2001".

7 Currently, the Carrier Services Division of C&WJ is responsible for, inter alia, the development, pricing and marketing of wholesale products and services to C&WJ's retail business as well as competing carriers and service providers.

1.8 This document seeks to assess the markets for telecommunications services to determine which public voice carriers should be declared dominant. In doing so, the two-stage approach outlined in the first consultative document on dominance will be used to assess market dominance[8].

1.9 The categories of service that will be examined are listed below: -

- Fixed interconnection services and local loop access;
- International interconnection services; and
- Mobile interconnection services.

However, this list is not meant to be exhaustive.

Structure of this Document

1.10 The document is structured as follows: -

- summary of the responses and comments on issues raised in the first consultative document (Chapter 2);
- definition of relevant markets and assessment of dominant carriers (Chapter 3); and
- The competitive environment and fixed telephone networks (Chapter 4).

8 See the "Guidelines for Assessing Dominance in Telecommunications Markets" in the appendix to this document. These guidelines are based on the methodology outlined in the first consultative document (Dominant Public Voice Carriers, March 2000) on this issue.

CHAPTER 2: MARKET DEFINITION: SUMMARY RESPONSES

2.0 Although dominance is usually defined at a particular point in time, factors such as technological change may erode such dominance over time. However, in network facilities, including interconnection markets, it sometimes takes significant time for new entrants to overcome the incumbent's dominance.

2.1 Before making a determination of dominance the OUR is required to invite submissions from members of the public, and consult with and take account of any recommendations made by the Fair Trading Commission (see Section 28(2) of the Act). As part of the consultative process, comments on the issue of dominant public voice carriers were received from the Economics and Legal Departments of the FTC. Additionally, responses were also received from Mossel Jamaica Limited (now trading as Digicel Jamaica) and C&WJ.

Market Definition

2.2 The definition of the relevant market(s) is critical to the process of assessing dominance. The respondents to the first consultative document on dominant public voice carriers focused on various aspects of market definition.

2.3 On one hand, if the market is defined too narrowly, this will lead to carriers being categorized as having market dominance, that are in fact not dominant. On the other hand, if the market is defined too broadly, the analysis could point to the non-existence of dominant carriers, when there are in fact carriers that are dominant.

2.4 This chapter summarizes the responses and comments of the FTC, Digicel Jamaica and C&WJ. The OUR's current thinking in relation to the issues raised is also noted.

FTC's Comments

The Size of the Relevant Market

2.5 The FTC does not agree that the definition of separate markets for the assessment of dominance is the appropriate approach. The FTC argues that the appropriate market to be assessed is a single public voice market or the "telephony market". In this regard, the FTC suggests, …"that the interconnection market is too narrowly defined and could bestow a level of market power that is not truly enjoyed." The FTC concluded that the "public voice carrier market" is the relevant market although the interconnection markets can be identified as sub-markets for regulation purposes. (See FTC response dated September 21, 2000, pages 6&8).

OUR's Response

2.6 The OUR is not convinced that there is any such market as a 'public voice carrier market'. For example, mobile telecommunications carriers facilitate the supply of voice telephony services, but based on price and functionality, mobile telephony and fixed line telephony are not considered to be in the same market.

2.7 The suggestion that there is a "public voice carrier market" or a "telephony market" implies that the services and components offered on fixed line networks are substitutes for similar service and components on mobile telephone networks. If this were the case, the tariffs on fixed line services would constrain those charged for mobile services. However, this is not the case. For example, the regulated peak tariff for fixed call termination was set at J$0.82 per minute (pm) since February 2001, while peak fixed to mobile call termination tariff remains at a high of J$10.268 pm for the same period. In a competitive market, the low fixed termination tariff would prevent mobile carriers from charging termination tariffs in excess of 5%-10% above fixed termination tariffs and remain profitable.

2.8 Similarly, retail tariffs for calls from fixed lines should constrain retail tariffs for like calls from mobile telephones if the correct market definition was that of a "telephony market". Again, the retail tariffs vary widely, unlike tariffs in a competitive market. Further, since originating voice service in the mobile market is relatively competitive, the existing tariffs are likely to be at or approaching cost. At these tariffs (as high as $10.00 pm at peak for mobile-to-mobile calls on the same network) mobile carriers remain profitable although fixed-to-fixed calls are priced as low as $0.40 pm (peak intra-parish). If there were a "public voice carrier market" or a "telephony market", retail tariffs for fixed line voice services would constrain retail prices for mobile voice services. Therefore, a "public voice carrier market" would not constitute the correct definition of the relevant markets.

Digicel's Comments

Call Termination

2.9 Digicel stated its disagreement with the view that there are separate markets for mobile call termination. In its response, Digicel indicated that it believes that "… at present, only a general market for mobile call termination [exists] in Jamaica …, and that only CWJ is dominant in that market." Digicel also stated that the OUR should have additional powers to impose terms and conditions in interconnection agreements, inclusive of terms and conditions related to charges. It is argued that this would prevent non-dominant carriers from charging unreasonable termination tariffs.

OUR's Response

2.10 If the correct market definition were that of a national market for mobile call termination, it would suggest that termination on a given mobile network could be substituted for termination on another mobile network. The logic of the argument suggests that the pricing behaviour of each mobile carrier is constrained by the other mobile carriers. However, as the analysis at paragraphs 3.36 to 3.49 suggests, this is not the case. If a subscriber to network *A* wants to call a mobile subscriber on network *B*, the only carrier that can terminate that call is the operator of network *B*. Further, because mobile calls are real-time, other types of termination such as text messaging are not close substitutes. Therefore, the OUR maintains that the correct definition of the market is that each mobile carrier's network constitutes a separate market for mobile call termination.

C&WJ Comments

2.11 In its response to the first Consultative Document[9], C&WJ indicated that, market definition should include a time dimension as well as product and geographic dimensions. According to C&WJ, "…the time dimension of the market refers to the period over which substitution possibilities should be considered."

OUR's Response

2.12 Except for the consideration of potential competition, dominance is assessed at a particular point in time and not in relation to a future time period. In defining the relevant market, it is difficult to take account of products that are being developed or being modified that may become a competitive threat. In the application of the SSNIP test[10], a rule of thumb is that price increases that are sustained beyond twelve months suggest that the relevant firm is dominant. For this period, potential suppliers of existing substitute products are included in the market definition.

9 See C&WJ's response dated April 14, 2000.

10 This is an analytic tool used in the definition of markets. SSNIP stands for small but significant non-transitory increase in prices. The question that is posed is, whether a hypothetical monopolist in the relevant product or service market could profitably make such a price increase.

CHAPTER 3: DOMINANT CARRIERS

3.0 This Chapter sets out the OUR's analysis of the markets for components and services of public voice networks as well as the assessment of carriers that are dominant in those markets. The methodology used for the assessment of dominance is basically that which was outlined in the consultative document, "Dominant Public Voice Carriers", March 2000. This methodology was restated in the Appendix of this document.

The Markets for Public Voice Networks

3.1 The market for mobile network carrier facilities was opened to competition as at March 1, 2000. The market for domestic fixed network carrier facilities was opened to competition as at September 1, 2001. However, the market for international carrier facilities will not be open to competition until March 1, 2003. In relation to the latter, since there are no legal substitutes for this network, C&WJ, the incumbent international carrier is the dominant international public voice carrier. However, an assessment of dominance in relation to the domestic fixed and mobile networks is dependent on a more detailed analysis of the carrier services markets associated with these networks.

Interconnection Markets

3.2 Different interconnection markets may be defined. For example, international interconnection services are in separate markets from domestic interconnection services. Additionally, interconnection services supplied by a domestic fixed network operator are in separate markets from those supplied by a domestic mobile network. The policy of government is that the liberalization of international interconnection to international gateways other than C&WJ's gateway for the purpose of supplying international voice services is delayed until Phase III. Until Phase III international interconnection will be available to carriers (mobile and fixed entrants) only as wholesale services, i.e. interconnecting carriers are allowed to resell C&WJ's international services.

Geographic Market Definition

3.3 An examination of the carrier and service provider (SP) licences issued pursuant to Section 13 of the Act revealed that there are no geographic restrictions on the rollout of networks (fixed or mobile) or the provision of services from such networks. It is conceivable that the relevant Minister could impose geographic limits on a licensee. However, since a major objective of the *Act* is the promotion of competition, and given that the national market is relatively small, it is unlikely that regional licences will be issued. Such licences would serve to limit competition, by limiting the economic viability of the licensee as a result of reduced economies of scale.

3.4 In relation to ISP licences issued to Coax Cable TV operators, these licensees are restricted to the provision of Internet service within their designated geographic zones. This is so since each cable network cannot extend beyond the operator's designated zone. However, this is the only case where the geographic market is restricted to a segment of the national market. In all other cases, service providers are allowed to provide service in the national market.

Markets to be assessed for Dominance

3.5 The carrier service markets to be assessed for dominance are fixed interconnection services, international interconnection services and mobile interconnection services. The main types of interconnection services that are relevant are:

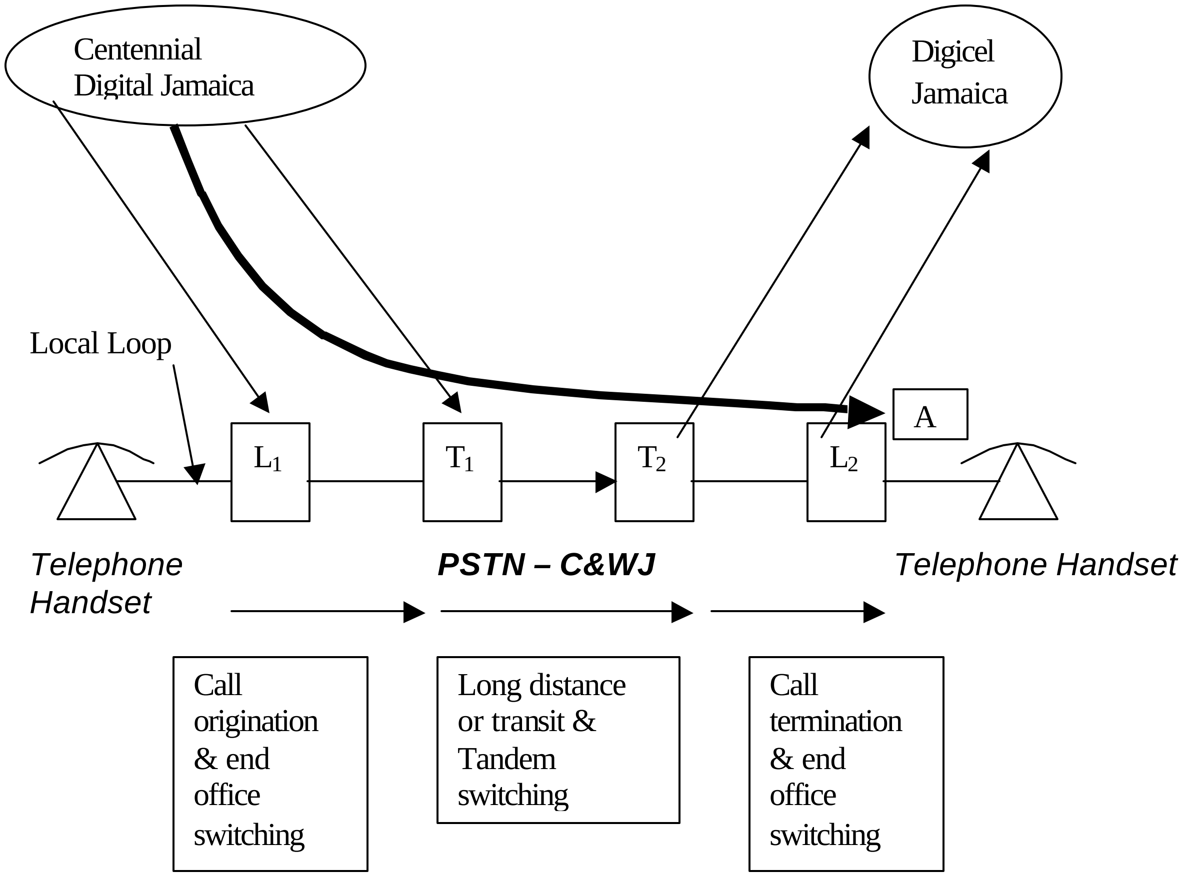
- Interconnection circuits
- Domestic long distance/transit;
- International transit;
- Local loop access;
- Mobile Termination;
- Fixed call termination.

Relevant Markets and Dominance

3.6 It is appropriate to define separate markets within fixed networks for different interconnection services. Domestic long distance or transit interconnection services should be defined in a separate market from local services, such as call termination and origination services. Further, call termination and origination on a fixed line network are different from call termination and origination on a mobile network. On the demand-side, call termination and origination services are complements not substitutes since they comprise different segments of an end-to-end call. On the supply-side, a long distance network cannot be used to supply local services and vice versa.

3.7 Figure 3.1 is used to demonstrate the distinction between local interconnection services and long distance or transit interconnection services. There are many other possible configurations of both call types and switching stages that may be required on C&WJ's public switch telephone network (PSTN).

Figure 3.1: Illustration of Long Distance/Transit versus Call Termination



3.8 For example, Centennial's mobile network is connected via an interconnection circuit to C&WJ's fixed network at T_1 (a tandem switch)[11]. A mobile call originates on Centennial's network and terminates on C&WJ's fixed network. To deliver the call to C&WJ's fixed customer, Centennial buys long distance transit (i.e. T_1 - T_2) and call termination from C&WJ's fixed network. This is demonstrated by line A.

3.9 Where two networks are not physically interconnected the principle of *any -to-any* interconnection is only possible if these networks are logically interconnected via a third network. In Figure 3.1 it is assumed that the mobile networks of Centennial and Digicel are not directly linked, as is still the case. Consider the situation in which a customer of Centennial makes a call to a customer of Digicel. In this instance Centennial will purchase transit (i.e. T_1-T_2) from C&WJ's fixed network. Centennial need not

11 During phase one of the liberalization process, interconnection was only allowed at the tandem switches but, as per the OUR's Determination Notice on C&WJ's RIO, February 2001, interconnection is now allowed at local switches or end offices (L_1 and L_2).

purchase call termination from C&WJ's fixed network since the call is terminated on Digicel's mobile network. C&WJ's is only paid for providing a transit service since the call did not originate or terminate on its network.

Fixed Interconnection Circuits

3.10 Interconnection circuits are used to physically join two networks. In this regard they are complements to other services since without them *any-to-any* interconnection is not possible. This implies a negative cross price elasticity of demand, thus demand-side substitution is absent. In general there are two kinds of interconnection links. One type is where both the interconnecting provider and the interconnecting seeker build out a circuit from their respective switches and circuits and the circuits are linked somewhere in between. The next possibility is where either the interconnecting seeker or the interconnecting provider supplies the whole circuit to the interconnecting provider's switch building.

3.11 These circuits may be divided into local long distance and international circuits, which are served by separate switches. Based on the configuration of the network, these circuits and switches are not substitutable.

Market Power and Dominance

3.12 Typically, entrants have to purchase at least some parts of interconnection circuits from the incumbent; they may be able to self-provide some of the circuits, but the final section of the link that connects to the incumbent's switch must usually be purchased from the incumbent; sometimes either the technical requirements or the economic/financial circumstances mean that self-provision for a substantial section of the circuit, or even the whole circuit, is not feasible or economic. C&WJ can be expected to be dominant for the following reasons: -

- it has a national network and so can generally provide circuits much more easily and cheaper than entrants; and
- it has much greater buyer power than entrants due to the volume of business.

3.13 In C&WJ's response to the first Consultative Document, it stated that it is not likely to remain dominant in relation to interconnect circuits when Phase I of the liberalization process commences. While it is true that the legal barrier to this market was removed as at September 1, 2001, competitive alternatives are likely to take some time to develop to the stage where they are effectively competitive.

Domestic Long Distance or Fixed line Transit versus Mobile Transit

3.14 Currently, C&WJ, the single fixed network operator provides facilities for local voice telephony service between fixed points within Jamaica. Such points include customers (residential or business) or SPs connected to its network, or interconnection to an international gateway. At the current stage of development, fixed and mobile systems are not yet effective substitutes. Based on functionality and price levels of the services offered on these systems, such services are in separate markets.

Market Concentration

3.15 Based on the inherent structural features in network industries, antitrust enforcement by itself cannot maintain competition. This is especially so in the context where monopoly power or the existence of market dominance does not breach the antitrust legislation. These structural features lend themselves to market concentration, price discrimination, and the exercise of market power.

3.16 Currently, C&WJ is the only participant in the market for domestic fixed line transit service. That is, C&WJ is the only licensee operating a fixed line network for public voice services, possessing both a Domestic Carrier (DC) licence and a Domestic Voice SP (DVSP) licence. Using any measure of market concentration, this situation yields the highest degree of market concentration possible, that of a monopolist. As at September 1, 2001, this market was open to competition with the issuing of thirteen domestic carrier licences and twenty domestic voice service provider licences. Assuming that entry is successful, it is expected that this will reduce the level of market concentration over time as more traffic transits the new carrier(s) network(s) relative to the incumbent's network.

Height of Entry Barriers

3.17 Interconnection is critical to the success of entry in the market for domestic fixed transit service. Competitive fixed network operators will need to purchase interconnect circuits from C&WJ in order to connect their networks to C&WJ's Tandems (T1 and T2 in Figure 3.1) so that they can provide a real alternative to C&WJ's fixed line transit service. In relation to such interconnection circuits, there is no substitute for these circuits. A call destined for a C&WJ fixed line customer necessitates interconnection circuits wholly or partly provided by C&WJ. Therefore, even if there are other suppliers of domestic fixed line transit service, dominance in the market for interconnection circuit could be extended to the market for fixed line transit service.

Local Loop Access

3.18 Since the transit portion of C&WJ's fixed network can be duplicated, provided that additional licensees (DC and DVSP) find it feasible to do so, the only major network impediment to competing effectively with C&WJ in the markets for voice services and in other downstream markets such as the market for digital subscriber line (DSL) and the provision of high speed Internet service, is getting access to the customers (homes/offices) via the local loop. The existing access lines are owned by C&WJ and rented to subscribers. These lines connect the subscribers to C&WJ's central office (the telephone exchange, represented by L1 and L2 in figure 3.1).

3.19 As indicated before, the liberalization of the DC and domestic voice service markets in 2001 resulted in the issuing of several licences in both categories. However, C&WJ's market share still remains at 100% in both the DC and domestic voice service markets.

Product Market

3.20 The local loop infrastructure (telecommunications access lines) connects the end-users (residential and business) to the local telephone exchange or end office. In Figure 3.1, the lines extending from the central offices L1 and L2, to the telephone handsets, represent the local loop. This allows for the delivery of traditional voice telephone services and other services such as high-speed telecommunications services.

Supply Substitution

3.21 Subscriber television (STV) networks are often seen as a possible substitute for the local loop. The local cable networks are designed for one-way transmission of audio-visual signals over regular coaxial cables. These networks would require significant capital expenditures in order to properly configure them for the provision of two-way voice telecommunication services. More importantly, except for a single wireless STV licence, cable operators are confined to a specific geographic segment of the country. Therefore, most cable operators cannot compete with C&WJ on a national basis in relation to the provision of a substitute for the local loop (see paragraph 3.26). Consequently, they will not be able to compete on a national basis in the provision of retail telecommunications services.

3.22 Wireless local loops (WLL) can also be used as a substitute for the existing copper loops. WLL is "… a local wireless communications network that bypasses the local exchange carrier and provides high-speed, fixed data transmission."[12] N5 Systems Limited (N5), the holder of the only all-island wireless STV

12 http://www.aethersystems.com/wireless/glossary.asp

licence issued to date, uses fixed wireless technology to deliver broadband services (video and high speed internet access) to most of Kingston and St. Andrew, and some areas of the adjoining rural parishes. N5 also has DC and DVSP licences. However, voice services are not currently offered. It is possible that this system could offer a competitive substitute for the existing domestic telecommunications network and the local loop but this is not likely to occur in the near term given that the backbone of the network has not been completed.

Entry Barriers and Competitive Constraints

3.23 Rate rebalancing: C&WJ's costing data indicate that fixed line access tariffs do not cover the cost of providing access. Access, as well as other domestic services is subsidized by economic profits from international services. Fixed access line tariffs are currently more than 60 percent below reported costs. In order to avoid rate shocks, tariffs must be rebalanced over a number of years. This requirement means that tariffs are likely to remain at levels that could be viewed as predatory if they were not due to regulation. At these levels, even efficient carriers may find it difficult to enter the market for access services.

3.24 Duplicating Local loop Access: The local loop is generally viewed as the last area of dominance in the world's telecommunications industry. In the UK, after 16 years of deregulation, British Telecom retains over 80% of the fixed-access market (business and residential) and the rate of erosion of their market share continues to decline.[13] In most regulatory jurisdictions, the telecommunications legislation enforced by the national regulatory authority (NRA) provides for local loop unbundling (LLU). This provision is in recognition of the fact that it is not economically feasible to duplicate the local loop on any significant scale. In addition to the cost of duplicating the local loop, an entrant would also have to invest additional amounts to encourage subscribers to switch to their service. Ensuring appropriate levels of quality would be a major determining factor of substitutability.

3.25 In the absence of supply substitutes for the incumbent's local loop, competitive provision of retail telecommunications service may be facilitated through the requirement for unbundling. However, under the *Act*, the Office has no powers to make rules to institute LLU before the commencement of phase III (see Section 83(1) of the *Act*).

3.26 Geographic Restrictions on Coax Cable TV operators: Currently, the island is divided into 241 zones and the policy of the Broadcasting

13 http://program.intel.com/solutions/shared/en/resource/insight/indtrends/stateoftheuk.htm

Commission is to license two operators per zone. Each operator can only supply service within a designated zone. Therefore, a single operator could not compete effectively with C&WJ in supplying a substitute for the local loop.

3.27 Number Portability: Number portability is the ability of customers to change public voice service providers without changing their telephone number. Customers (especially business customers) are likely to be unwilling to switch voice service providers since this will mean a change in their telephone numbers. This will entail additional advertising expenditure for business customers. Therefore, the lack of portability increases the switching cost[14] for customers.

Dominance

3.28 It is not within reason to expect competitive public voice carriers (CPVCs) to duplicate access lines on a scale that will allow for the development of a competitive market for local loops. Therefore, the local loop is a bottleneck facility[15]. Interconnection to C&WJ's switches (tandem and/or end office) could facilitate the sharing of the local loops (between carriers); eliminate the necessity for access line duplication and create the basis for effective competition in retail markets. However, rules to facilitate LLU cannot take effect until Phase III.

3.29 Based on the foregoing analysis, the incumbent DC (C&WJ) is a dominant public voice carrier in relation to the supply of local loop access lines.

International Transit and Switching Services

Product Market

3.30 The international call service provided by C&WJ depends on but does not include the local fixed line access service that allows the customer to connect to C&WJ's international gateway from a fixed telephone access line in Jamaica. International transit and switching services involving connectivity at and beyond the C&WJ international gateway are in the exclusive preserve of C&WJ until phase III of the liberalization process. It is illegal under the *Act* to bypass[16] C&WJ's international gateway and

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14 This is the cost to the consumer of changing from an existing service provider to an alternate service provider. The higher the degree to which the customer is locked-in to the service of its existing service provider, the higher the switching cost. These costs include costs of physical replacements of the telephone instrument as well as costs incurred in the transition (including learning) to the new service provider.

15 This is a facility that a competitor must have access to in order to compete with the operator of the facility.

16 Bypass operations means operations that circumvent the international network of a licensed

circuits. Thus, although there may be substitutes in the economic sense (for example VOIP[17] using VSATS), there are no legal substitutes. Hence, the incumbent DC (C&WJ) is the dominant public voice carrier in relation to the provision of international transit and switching services.

Market Concentration

3.31 International voice service is the most lucrative segment of the market. Traditionally, revenues from this segment of the market are used to cross-subsidize other services. Entry into the market for international voice services is barred until March 1, 2003. This condition leads to a maximum concentration ratio of 10,000 in the case of the Herfindahl-Hirschman-Index (HHI) since legally, there can be no substitutes for international transit and switching services provided by C&WJ.

Barriers to Entry

3.32 The legal barrier of C&WJ's exclusive licence for the international voice service market is the most formidable barrier to entry in this market. The removal of this barrier on March 1, 2003 would significantly lower the overall barriers to entry. However, it is expected that entry will still be limited by licensing which is to be done at the Minister's discretion.

3.33 Customer inertia[18] could constitute a barrier to entry. However, this can only be determined after entry has occurred and there is sufficient data to make a determination. A rapid loss of market share in the relevant market would be a clear indication that customer inertia is not a significant constraint on market entry. For example, if subscribers display an inclination to rapidly churn[19] from one provider to another to take advantage of price and/or quality benefits, customer inertia is not likely to be an entry barrier.

Competition from Resellers of International Minutes

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international voice carrier in the provision of international voice services (as per the definition at Section 2(1) of the Act).

17 The voice over Internet Protocol (VOIP) is the technology used to transmit voice conversations over a data network using the Internet Protocol. However, the voice service provided over VOIP is not viewed as a close substitute for calls over a public switched telephone network (PSTN).

18 Customer inertia is the tendency for customers to remain with the incumbent carrier or service provider. Simple inertia is exacerbated by the actual costs customers incur in changing suppliers.

19 Churn reflects the rate at which subscribers cancel service or switch suppliers. The churn rate is usually expressed as the percentage of total customers who cancel service during a month.

3.34 Competition from resellers of the incumbent's international voice minutes does offer some degree of constraint on the incumbent's pricing behaviour. Based on the Act, the wholesale price of these minutes are determined by subtracting the amount representing the net costs that C&WJ avoids from its retail price (see Section 79(2) of the Act). However, this kind of competition is limited since it is not able to drive down C&WJ's overall costs. This will, at best, lead to the minimization of avoidable costs.

Market Power and Dominance

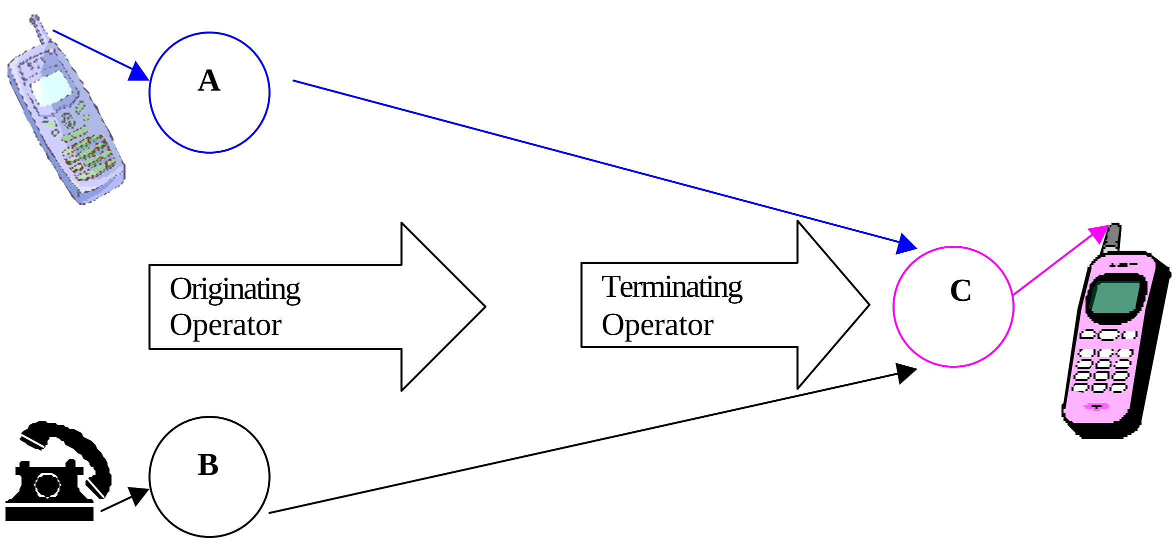
3.35 Since it is illegal under the *Act* to bypass C&WJ's international switch and circuits (see the definition of by-pass at Section 2(1) of the Act) and there are no legal substitutes, even though there are economic substitutes, the incumbent DC (C&WJ) is the dominant public voice carrier in relation to the provision of international transit and switching services.

Mobile Call Termination

Product Market

3.36 Call termination is the service of delivering calls to the intended destinations on a voice network (fixed or mobile). In relation to mobile call termination, this means that calls to mobile subscribers originating on other networks (fixed or mobile), are terminated to the called party on the mobile network to which the called party subscribes. The originating operator pays a per minute or per second charge for terminating calls on other networks.

Figure 3.2: Calls to a customer on a particular mobile network must terminate on the mobile network to which the customer is connected.



In figure 3.2, if a customer from the mobile network (labelled A) or from a fixed network (labelled B) wants to call a customer from the mobile network (labelled C), the operators of networks A and B must purchase mobile call termination service from the mobile operator of network C in order to complete that call. Since the caller pays the price for calling a mobile phone (based on the principle of calling party pays), the mobile service provider has no incentive to lower terminating charges, even when faced with declining operating costs and increasing call volumes[20].

Supply Substitution

3.37 Based on the description of call termination services, there are no supply substitutes for such services. Any possible supply substitute must enter the market within a relatively short time frame in order to prevent a price rise by a hypothetical monopolist[21] (the mobile operator) from being profitable. If a mobile operator increases its termination tariffs above the level of suppliers offering a supply side substitute, this price increase would be unprofitable since the other supplier would undercut the hypothetical monopolist.

3.38 Since mobile and fixed line telephones are not regarded as substitutes, the only alternative to termination service offered by a mobile carrier is termination service offered by another mobile carrier. This would only be possible if callers to mobile networks could select or pre-select the mobile network operator that terminates a given call to any given mobile subscriber. This competitive termination market would require each mobile operator to share Subscriber Identity Module (SIM) information[22]. SIM cards are usually locked to prevent subscribers from switching to a competing mobile service provider. Assuming that mobile operators act in a profit-maximizing manner, a terminating operator is likely to refuse to supply its subscribers' SIM information, thus eliminating supply side substitution.

Demand Substitution

3.39 Switching Network: In its response to the OUR's first consultative document, "Dominant Public Voice Carriers", Digicel noted that, "… existing CWJ customers will not be encouraged to switch to Mossel [Digicel] if they are … on the receiving end of unreasonable … termination charges." Additionally, network operators sometimes argue that high churn rates coupled with rapid network expansion demonstrate that

20 This observation was made by OFTEL in its newsletter (OFTEL News) at the end of its review of competition in calls to mobiles.

21 Each mobile operator would be viewed as a monopolist for the purpose of the SSNIP test.

22 The SIM information is usually stored on a SIM card, a chip in mobile telephones that only works on a particular network.

sufficient consumers are able to respond to high call termination rates. However, fixed to mobile (FTM) call termination rates are not charged to mobile subscribers, it is the fixed line subscriber who pays. Therefore, it is not likely that the FTM termination rates will factor into the consumers' decision to subscribe to a particular mobile network.

3.40 Alternative Methods of Communication: Mobile network operators often argue that short messaging service (SMS), E-mail, facsimile, voice mail and other similar methods of communicating are used to avoid high mobile termination charges. In relation to SMS and voice mail, the prices for these services have consistently remained below termination charges and in recent months, Digicel's prices for these services have been reduced even further, while termination charges remain the same. If these services were effective substitutes, prices would tend to equalize over time as excess profits are reduced by the effect of significant numbers of subscribers switching from mobile calls to these alternatives. Further, these alternatives to a voice call are imperfect substitutes since they do not occur in real time.

3.41 Substitution between Voice Calls: If the substitution between voice calls (for example, a fixed to fixed (FTF) call for a FTM call) was strong then the FTM termination charge would be constrained by the retail price of FTF calls. Further, if these calls were substitutes for each other, it would suggest that fixed telephony is a substitute for mobile telephony. However, this is not so due to the convenience of making or receiving a mobile call at any given location in the coverage area while in transit.

3.42 Call Back: A caller to a mobile subscriber sometimes request that the called party calls them back, hence reversing the call charges and avoiding excessive FTM call termination charges. It is sometimes argued that call back could effectively constrain the FTM call termination charges. Call back has been used as a means of bypassing international rates and could be used to constrain high FTM rates. However, the OUR has no evidence that this is so.

Buyer Power

3.43 Theoretically, other operators could use their buyer power to force mobile service providers (MSP) with high termination charges to lower those charges. However, any refusal to pass on calls to networks with high termination charges would be in violation of the any-to-any principle of connectivity (see Section 29(2)(a) of the *Act*).

Entry Barriers

3.44 Even if the technology existed for callers to mobile subscribers to select or pre-select a terminating operator based on price, the practice of SIM card locking would limit, if not nullify this effort at supply substitution.

Market Power and Dominance

3.45 In its response dated May 2000, Mossel (now trading as Digicel) stated that…"it is impossible to distinguish separate termination markets for individual carriers in Jamaica, and thus, the relevant market is for Jamaican mobile termination market as a whole". Digicel argued that this could be supported by the 5% test. That is, a mobile termination service provider is unable to raise its termination charges by 5-10% greater than the market price without fear of losing its customers to its competitors.

3.46 Digicel's mobile termination charge (fixed to mobile) is significantly greater than the termination charge of C&WJ (see the Determination Notice on C&WJ's RIO February 2001). C&WJ's fixed retention charge[23] amounts to J$1.732 per minute[24] (pm) and its peak fixed to mobile retail rate was J$5 pm for 2001, hence, its fixed to mobile termination charge was J$3.268 pm. On December 31, 2001, C&WJ's mobile retail rate increased to $7 pm, the same rate charged by Centennial for FTM calls[25]. Since C&WJ's retention remained at J$1.732 pm, its mobile termination rate is $5.268 pm. On the other hand, Digicel's peak fixed to mobile retail rate is J$12 pm which means that the termination charge is J$10.268 when C&WJ's fixed retention charge is deducted. Therefore, Digicel's termination rate was at least three times greater than that of C&WJ up to December 31, 2001 and currently, approximately twice that of C&WJ. This suggests that Digicel's termination rate does not pass the 5-10% test since it has consistently maintained its termination rate at greater than 10% above the rate of the other two mobile service providers.

3.47 As at May 2002, Digicel had attracted over 400,000 subscribers within thirteen months of operation. The question that must be asked is: if there were a single national mobile termination market, would Digicel be able to maintain a growing customer base over this period? An even more pertinent question is: if there were a single national mobile termination market, what accounts for the significant difference in termination charges?

23 The retention charge includes the switching and transit cost of the PSTN.
24 This excludes the call setup charge of $0.622 per call.
25 Centennial increased it FTM retail rate to $9.00 per minute as at October 2002.

3.48 Increased competition between mobile SPs is expected to reduce the mobile retail rates. But, competition for subscribers is not likely to reduce the call termination rates. The fact is termination on one mobile network cannot be substituted for termination on another network[26]. That is, a caller from C&WJ's PSTN who desires to contact a subscriber on Digicel's mobile network cannot use the termination service offered on the C&WJ's mobile network since the subscriber in not located on that network. Therefore, all mobile carriers are dominant with respect to the termination service offered. The same analysis would hold true for mobile-to-mobile call termination.

3.49 Based on the foregoing analysis, the OUR is of the opinion that the relevant market is the market for terminating calls on a given mobile network. That is, there is a separate market for terminating calls on each mobile network. There is no supporting evidence that indicates the existence of a national market for mobile call termination.

Q3.1 Should each mobile carrier be declared dominant in relation to the provision of call termination? Give details of the reason for your response.

Fixed Call Termination

3.50 Although the market for fixed network carriers was liberalized in September 2001, to date, none of the thirteen licensees have commenced offering services. Consequently, the incumbent, C&WJ, is still the only fixed line carrier providing retail, wholesale and interconnection services.

3.51 Similar to mobile termination, there is a separate market for call termination on each fixed line network. Fixed line network operators charge other operators (fixed, mobile and international public voice carriers) for terminating calls on their fixed network. The absence of appropriate substitutes, suggests, as in the case of mobile call termination, that each carrier has market power and can set termination rates that are in excess of that determined in a competitive market.

3.52 Moreover, since C&WJ is vertically integrated, providing interconnection services at the wholesale level as well as being a major player in the downstream (retail) markets, C&WJ can wield substantial influence in the marketplace, unless appropriately regulated. At the end of December 2001, C&WJ had approximately 511,000 fixed line subscribers for voice

26 For a detailed discussion on termination rates, see paragraphs 5.16 to 5.22 of the determination Notice on C&WJ's RIO – February 2001.

service. The new fixed line operators' customers wanting to make calls to this group of customers must terminate such calls on C&WJ's network. Further, there is not likely to be significant buyer power, because initially, traffic (and interconnect revenues) from fixed line entrants will be a small proportion of C&WJ's fixed network traffic. The OUR concludes, therefore, that C&WJ is dominant in the market for fixed call termination.

Q3.2 Are there alternatives to the services or network components that were identified in the definition of the relevant markets that could constrain the market behaviour of carriers identified as dominant public voice carriers? Identify these alternatives and demonstrate why each alternative would constitute a substitute.

Number Portability and Carrier Pre-selection

3.53 The question of customer inertia is integrally tied to number portability and carrier pre-selection. Although subscribers may be willing to switch SPs to take advantage of price and quality differentials, this is usually weighed against the loss of utility or the cost attributed to a number change. This cost is likely to exacerbate customer inertia and reinforce C&WJ's dominance, although there may be potential entrants that are more efficient in offering fixed telecommunications services.

3.54 Number portability would reduce the cost of switching[27]. However, before imposing the requirement of number portability on any public voice carrier, the Office must be satisfied that the benefits likely to arise from such a requirement outweigh the cost of implementing it (see Section 37 of the Act). To the extent that number portability constitutes a barrier to entry or a constraint on competition, the Office would not be able to ameliorate this until the commencement of Phase III as per Section 83 (1) of the Act[28].

3.55 In relation to carrier pre-selection, this is critical to the facilitation of competition among fixed network carriers and SPs. Like number portability, carrier pre-selection will further stimulate open competition in telecommunications. Since new fixed line carriers are unable to duplicate access lines in an economic manner, if interconnection is not granted to the incumbent's telephone exchanges, the incumbent's subscribers cannot access the network of new entrants.

27 That is, the cost incurred by a customer when switching from one service provider to another.
28 Section 83(1) of the Act prohibits the Office from making rules in relation to number portability under Section 37(1) of the Act.

Vertical Integration

3.56 The extent of vertical integration evidenced in the corporate relationships is an additional factor in the assessment of dominance. A licensee like C&WJ that is fully integrated (owning and operating all aspects of the fixed network and a mobile network) is more likely to be unconstrained by its competitors. That is, a vertically integrated carrier is more likely to be in a position to operate independently of its competitors.

3.57 Vertical integration need not constitute a barrier to entry since the integrated public voice SP may have a low market share and there might not be any regulatory, economic or technological barriers to entry. However, vertical relationship is important if it is coupled with dominance in a given market, since this can be used in an anti-competitive manner. Dominance in an upstream market can be extended to downstream markets through vertical relations. For example, without proper regulatory accounts, the dominance enjoyed by C&WJ in the international voice service market could be extended undetected into the predominantly unregulated market for public mobile voice service (through cross-subsidization).

3.58 Ideally, competitive safeguards are required to prevent anti-competitive conducts such as abuse of dominant position and cross subsidization. However, based on Section 83 of the Act, the making of competitive safeguard rules are deferred until the commencement of Phase III. In the interim, the FTC, without the benefit of competitive safeguard rules will assess any alleged abuse of dominance, discrimination or other anticompetitive activities. Given the paucity of relevant data, the FTC might not be able to conduct a thorough analysis, and may not be able to identify a true case of abuse of dominance.

Q3.3 To what extent does C&WJ's vertically integrated structure enhance its position of dominance in the markets for telecommunications services?

Conclusion

3.59 Based on the forgoing analysis, the OUR concludes that C&WJ is dominant in the markets for fixed call termination, domestic and international transit and switching services as well as interconnection circuits. Additionally, all mobile operators are dominant in relation to mobile call termination.

3.60 In relation to the fixed line network, although the liberalization process has remove the legal barriers to the establishment of these networks, the OUR is of the opinion that C&WJ will remain dominant with respect to the local loop. Duplicating access lines on any significant scale is not considered to be practical. Being a vertically integrated firm, it may be in C&WJ's interest to foreclose market entry in downstream markets by imposing a price squeeze on the entrant by charging itself a lower local loop access tariff than that charged to alternative network operators.

3.61 Given the extent of C&WJ's market power and dominance as a public voice carrier in some areas of its operations, the OUR is obligated under the *Act* to impose regulations on its operations, inclusive of a system of accounts that will mitigate the potential effects of this position of dominance. Such regulations will facilitate increased competitiveness in carrier services and related markets.

3.62 Further, based on the dominance of each mobile operator in relation to the supply of mobile call termination services, the OUR also has an obligation to regulate the tariffs for call termination. The OUR already regulate the fixed call termination rates charged by C&WJ and has established a ceiling for mobile termination rates.

Q3.4 Are there other markets in which C&WJ should be assessed for dominance? If yes, identify these markets and the reasons why C&WJ's is dominant.

CHAPTER 4: COMPETITION IN FIXED NETWORK MARKETS

Developing Market Conditions

4.0 Given the slow pace at which competition developed in markets for fixed network services in other countries, Phase II of the liberalization process was not expected to result in significant improvements in the competitive conditions in those markets in Jamaica. It is the view of the OUR that C&WJ will remain dominant in these markets during phase II and into Phase III of the liberalization process. Before the implementation of any changes to the existing and proposed regulation of C&WJ as the dominant public voice carrier, the Office would have to be satisfied that the entrants to the markets for fixed telephone network (FTN) and the fixed telephone network service (FTNS) as well as the market for access lines have an equal opportunity to compete.

4.1 The tariff constraints that are embodied in the Price Cap Plan are essentially based on an expectation of the pace and degree of changes in the managed transition of the telecommunications sector from monopoly to competitive markets. If the markets are becoming truly competitive and this is ahead of earlier expectations it would be appropriate to reflect these changes in the next Price Cap Plan[29].

Necessary Market Conditions

4.2 In the development of a set of necessary market conditions that would need to be met prior to any modification of existing constraint on C&WJ's pricing policy, the Office has considered recent regulatory developments in the United States and Hong Kong.

4.3 The US Telecommunications Act 1996 sets out various obligations on incumbent local operators to open their networks to competitors. These obligations are designed to reduce economic impediments to efficient market entry by new operators and thereby facilitate competitive local telecommunications markets.

4.4 In contrast to the mandatory approach taken by the US, Hong Kong's approach deliberately attempts to be less intrusive. The desired competitive environment will only come if competitive barriers are dismantled voluntarily or if the Hong Kong Telecommunications Authority makes appropriate determinations or takes other action to dismantle competitive barriers. Based on the *Act*, the Office intends to use a combination of these approaches. While interconnection is mandatory

29 See the Office's Determination Notice (August 2001), Cable and Wireless Jamaica's Price Cap Plan.

under the Act, other competitive measures such as number portability depend on whether the benefits of implementation outweigh the costs.

4.5 The actual progress of the Jamaican telecommunications market environment will be assessed against the following checklist.

Table 4.1: Jamaica's Competitive Checklist

Category	Checklist	Assessment
Interconnection and interconnection charges	Interconnection should be offered on rates, and terms and conditions that are reasonable, transparent and non-discriminatory. Additionally, charges must be cost oriented and based on the principles outlined in Section 33(1)(a)-(f) of the Act.	The current RIO covers interconnection between C&WJ's fixed network and the new mobile entrants and between C&WJ's mobile network and other mobile carriers. However, direct Interconnection is not yet available at C&WJ's international gateways. As at February 2002, C&WJ requested that direct connection to its international gateway await the upgrading of its infrastructure. See Determination number 3.5 of the OUR's Determination Notice February 7, 2002 for the conditions associated with the granting of this request.
Sharing of Facilities and Co-location	Access to ducts, pole and other similar facilities must be offered on non-discriminatory commercial terms and conditions.	The Determination Notice (February 21, 2001, para 5.28) indicates that disputes in relation to facilities sharing will be referred to the Fair Trading Commission. Section 54 of the Act allows for access to land and other facilities at the discretion of the providing carrier. However, the OUR is not empowered under the Act to order carriers to share their facilities or allow other carriers to co-location.
Access lines and carrier pre-selection	Since access lines and their connection to local switches are bottleneck facilities, appropriate solutions must be found to ameliorate these barriers.	Carrier pre-selection is a method of indirect access that can be used to enable customers to select the services of any service provider that uses a public voice carrier's network to provide specified services.

		Carrier pre-selection is not specifically addressed by the Act but this regulatory option could neutralize the bottleneck of the local loop and facilitate competition in the market for fixed line transit services.
Directories	Non-discrimination of access to emergency services and to telecommunications directory listing information. Additionally, tariffs for access to the aforementioned information should be cost based.	Based on C&WJ's current RIO, the requirement for non-discrimination of access to emergency services has been met. Additionally, C&WJ offers an interconnect directory assistance service to other service providers. However, C&WJ must demonstrate to the OUR that the services offered through this means are provided on a non-discriminatory basis. That is, directory assistance service must be offered on the same basis to all public voice service providers, including C&WJ's fixed line and mobile service.
Numbering	Non-discriminatory access to numbering resources, and number portability.	The OUR is currently consulting on a National Numbering Plan. However, a separate consultation is required for number portability.
Resale switched international voice minutes	C&WJ provides its international voice minutes to resellers at the retail price minus avoided costs.	C&WJ produced a draft SP agreement that will form the basis of the contractual sale of its international voice minutes. To date, there are 42 entities licensed to provide this service in this market.

4.6 It should be emphasized that the successful creation of a competitive environment based on this checklist is a necessary but not sufficient condition for competition in the various telecommunications markets in Jamaica. Any application for the declaration of non-dominance in a particular market must be assessed on its own merits.

Q4.1 Is the competitive checklist outlined in Table 4.1 adequate for the Jamaican telecommunications sector? If not, what additions or modifications would you make?

Sharing of Facilities and Co-location

4.7 Co-location and the sharing of facilities are not mandatory under the Act for the incumbent or any other public voice carrier[30]. However, where facilities are deemed to be essential facilities, access must be guaranteed on terms and conditions that are non-discriminatory and at prices that are cost based.

4.8 During Phase III, the OUR can make rules in relation to the unbundling of the local loop and include in those rules, regulations related to co-location directly linked to local loop unbundling. However, the OUR is not specifically empowered by the Act to make rules in relation to facilities sharing and co-location in general.

4.9 In relation to access to ducts, for example, C&WJ is likely to remain dominant in the provision of such access. This is so as the capacity to install such ducts along roadways is likely to be very limited.

Conclusion

4.10 Although the barriers to entry into the markets for FTN, access lines and FTNS are being reduced with the progression of the liberalization process, the competitive nature of these markets in relation to the checklist outlined in table 5.1 must develop further before the Office could consider that there is equality of opportunity to compete. As markets become sufficiently competitive, the regulations of these markets will be relaxed to reflect these changes. Further, under Section 28(3) of the Act, a dominant public voice carrier can apply to the Office at any time to be declared non-dominant in any of the markets in which that entity was declared dominant.

4.11 All dominant public voice carriers will be subject to rules made by the OUR in relation to a prescribed system of regulatory accounts pursuant to Section 4(5) and 30(2) of the Act. The OUR considers that Cable & Wireless Jamaica C&WJ is dominant in various markets for fixed line interconnection services, the provision of local loop access and international interconnection services. Additionally, all mobile public voice carriers are deemed dominant in relation to mobile call termination on each network.

30 See Section 54 of the Act.

LIST OF QUESTIONS

Q3.1 Should each mobile carrier be declared dominant in relation to the provision of call termination? Give details of the reason for your response.

Q3.2 Are there alternatives to the services or network components that were identified in the definition of the relevant markets that could constrain the market behaviour of carriers identified as dominant public voice carriers? Identify these alternatives and demonstrate why each alternative would constitute a substitute.

Q3.3 To what extent does C&WJ's vertically integrated structure enhance its position of dominance in the markets for telecommunications services?

Q3.4 Are there other markets in which C&WJ should be assessed for dominance? If yes, identify these markets and the reasons why C&WJ's is dominant.

Q4.1 Is the competitive checklist outlined in Table 4.1 adequate for the Jamaican telecommunications sector? If not, what additions or modifications would you make?

APPENDIX: GUIDELINES FOR ASSESSING DOMINANCE IN TELECOMMUNICATIONS MARKETS

Introduction

1.0 The methodology set out in this appendix is the OUR's approach to the identification of public voice carriers and service providers that are dominant in telecommunications markets. The approach is consistent with approaches in other jurisdictions such as the Office of Fair Trading (OFT)[31] in the UK, and the Australian Competition and Consumer Commission (ACCC)[32].

1.1 The analytic procedure is a two-step framework involving:

A) The definition of the relevant market
B) An assessment of dominant position

1.2 Prior to undertaking this procedure, the OUR should collect and collate the evidence required for the analysis. Such evidence include:

- Market share data (sales value and volume);
- Product functionality;
- Prices and costs;
- Inputs;
- Principal competitors; and
- Market entry conditions.

Additionally, the OUR would also wish to acquire information on the past conduct of the entity being assessed for dominance.

Relevant Market

1.3 Although the Act does not define the telecommunications markets, it can be gleaned from its wording which services and products may be included in the definition of the market. The OUR notes that the following may be included in a telecommunications market:

- A network service
- Access to facilities used in conjunction with a carrier or network service
- Goods or services used in conjunction with a network service (for example, customer premise equipment (CPE)).

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31 Source: http://www.oft.gov.uk.

32 Source: http://www.accc.gov.au.

1.4 Definition of the relevant market(s) is a necessary step in determining dominance. According to Oftel[33]:

> *"A market definition should normally contain two dimensions: a product and a geographic area. … The market definition analysis has to be applied separately to determine both the product and geographic area."*

Thus, by defining the relevant market, the analyst will identify the relevant products/services, as well as the extent of competition or the potential competition among firms within a specified geographic area. In relation to the geographic market analysis, the relevant question is whether a small but significant non-transitory increase in price (SSNIP) will result in customers switching to suppliers in other areas. The geographic area could be any part of Jamaica or the entire country. Similarly, in relation to the product market, the analyst would be concerned with the set of products that the consumers would switch to on the basis of a SSNIP. These products are identified based on functionality, quality, price, cost and customer groups.

Product Market

1.5 The critical issue in market definition is the identification of products to which the consumers might switch. The most well known, and used approach to market definition in competition and regulatory agencies across jurisdictions is the aforementioned SSNIP or 'hypothetical monopolist' test. The underlying approach is as follows: if there were a sole supplier of a defined set of products or services in a defined geographical area, would that 'hypothetical monopolist' find a small but significant (and permanent) price increase (say 5-10%) profitable? If so, then a relevant market can be defined for competition and regulatory purposes. The logic is that, if such a price increase was profitable, then other products or services and other geographical areas would not provide a competitive constraint on the set of services and geographical area under examination.

1.6 To apply the test, one starts first with the narrowest set of services and geographical area. Gradually widen the set of products and the geographic area and if the answer to the above question remains in the affirmative, then the supplier is dominant. The reason why a small but significant price increase might not be profitable is that the hypothetical monopolist could lose a sufficiently large volume of sales because of

[33] Source: http://www.oft.gov.uk/html/comp-act

demand-side or supply-side substitution or potential competition or all three sources of competitive constraint.[34]

1.7 To the extent that there are products or services with similar functionality, quality and price, demand substitutability usually imposes the greatest constraint on a 'hypothetical monopolist'. Supply substitutability and potential competition are usually less immediate as they generally take effect with a significant lag. These three constraints are discussed in turn below.

DEMAND-SIDE SUBSTITUTION

1.8 Demand-side substitution occurs when the price of the 'hypothetical monopolist' increases and consumers substitute other service(s) for the service being examined. If sufficient consumers behave in this way, even if all consumers do not, the price increase would be unprofitable. In other words, if the cross-price elasticity were significant, the price increase would be unprofitable.

1.9 The cross-price elasticity of demand-side substitution gives the sensitivity of the demand for one service (say Y) in response to a change in the price of another service or basket of services (say X). The value of the cross-price elasticity of demand for a product or service may be zero, negative or positive. If the cross-price elasticity is zero, there is no relationship between the demand for X and Y. That is, a change in the price of X does not affect the demand for Y. If the cross-price elasticity is negative, the services are complements. That is, an increase in the price of X results in a decrease in the demand for Y. A positive cross-price elasticity suggests that the demand for Y increases as the price of X increases. This is the case where X and Y are substitutes. That is, a positive cross-price elasticity reflects demand-side substitution.

1.10 The existence of substitutes, i.e. goods with positive cross price elasticity of demand, indicates that there are constraints to the price setting behaviour of the 'hypothetical monopolist'. Thus, if there are two local loop access providers (one via cable from the incumbent voice telephone provider and the other via a subscriber television (STV) operator), to the extent that the quality (inclusive of reliability and security) and functionality of the services are the same or similar, the pricing of one service should

[34] For a comprehensive discussion of market definition and dominance see the UK telecommunications regulator's document on *The Application of the Competition Act in the Telecommunications Sector*, January 2000. The document may be downloaded from Web site http://www.oftel.gov.uk/competition/cact0100.htm.

constrain the pricing of the other[35]. Therefore, a small, but significant increase in the price of voice telephony access from the incumbent is likely to result in an increase in the demand for the voice telephony access from the STV operator (assuming that the switching costs are low). Within this scenario, if the cross price elasticity is sufficiently large, subscribers could switch to the substitute access provider in sufficient numbers so that the imposition of a price increase on X is unprofitable for the 'hypothetical monopolist'. It follows that local loop access from the STV operator should be included in the relevant market for local loop access to voice telephony, since it constrains the price setting behaviour of the incumbent's access service.

SUPPLY-SIDE SUBSTITUTION

1.11 Supply-side substitution refers to the extent to which suppliers, other than those offering the product being examined can offer the same or similar products within a reasonable time period without incurring significant cost. In response to a non-transitory price increase by the 'hypothetical monopolist', supply-side substitution can be a major constraining influence on the pricing behaviour in the relevant market. Using the same example as above, if STV licensees found it easy to switch to the supply of local loop access to voice telephony, the 'hypothetical' monopoly supplier (the incumbent telephony provider) would be constrained in its price setting behaviour. If there were a small but permanent increase in the price of the incumbent's service, the entry by supply-side 'substituters' could render the price increase unprofitable, because a sufficiently large volume of sales may be lost to the entrants.

1.12 The easier it is for alternative suppliers to make substitute products available in sufficient quantity and within a relatively short time period, the greater the constraint on the pricing behaviour of the 'hypothetical monopolist'. If it is difficult to switch supply in a reasonable time period at sufficiently low costs, these services should be excluded from the definition of the relevant market.

POTENTIAL COMPETITION

1.13 The extent to which potential competition is taken into account depends on the analysis of the extent of entry barriers. If barriers to entry are insignificant, then potential competition imposes a significant constraint on the 'hypothetical monopolist'.

35 This example assumes that there are no cross-subsidies.

Geographic Market

1.14 In defining what is the relevant market, the relevant dimensions are not only the products or services and potential suppliers but also the geographic boundary of the market. This may be defined in terms of the entire country or a region within a country. The geographic boundaries of the relevant market are defined by the extent to which the product or products of rival suppliers at different geographical locations can impose competitive constraints on the pricing behaviour of firms operating in the relevant market.

Time Dimension of the Market

1.15 In assessing the extent of the market, the OUR is also willing to examine the time dimension of the market to the extent that potential competition is considered, and the global telecommunications market trend is taken into account. However, "potential products" are not considered in the definition of the market. This is due to the fact that dominance is assessed at a particular point in time. If a telecommunications carrier or service provider is declared dominant today, at any point in the future, that firm may apply to the OUR to be declared non-dominant should new substitutes become available.

DETERMINATION OF DOMINANCE

1.16 After defining the relevant market, the next step is to assess whether any supplier is dominant. According to section 19 of the Fair Competition Act of 1993, "… an enterprise holds a dominant position in a market if by itself or together with an interconnected company, it occupies such a position of economic strength as will enable it to operate in the market without effective constraints from its competitors or potential competitors."

1.17 The assessment of dominance should consider the factors such as market share, barriers to entry, buyer power, prices and profitability, and vertical relationships. Each of these is discussed in turn below.

Market share and Market Concentration

1.18 Market share or the firm's share of sales in the relevant market is useful in the assessment of dominance. This is so since market share and the degree of concentration are important structural indicators of dominance. However, it is important that these indicators are used in conjunction with other factors, as by themselves, they could be misleading measures of market dominance. An entity with substantial market share in the relevant market could be constrained in its price setting behaviour due to the fact that there are low entry barriers. In cases where a firm has a small market share, it is unlikely to hold a dominant position in the relevant market. The extent to which market shares imply dominance depends on effectiveness of existing competition, the level of barriers to entry, and the behaviour customers.

1.19 In measuring the degree of concentration, the OUR proposes to adopt Herfindahl-Hirschman Index ("HHI"). This index is a statistical measure used in industrial economics and adopted by many anti-trust and regulatory authorities in determining the degree of monopoly power in a relevant market[36].

1.20 The OUR will only attribute a high weighting to market share and concentration if there is a trend of increasing concentration and more importantly, if the OUR's assessment of the licensee's ability to use its market share to act without effective constraint in a relevant market.

Barriers to Entry[37]

1.21 The existence of dominance in a market is largely a function of the ease with which potential competitors may enter the relevant market and compete effectively against the incumbent(s). In telecommunications entry is very frequently restricted by the availability of licences to compete against the incumbent. For example, under the Telecommunications Act C&WJ enjoys a three-year monopoly for international telephony[38]. But even in markets in which entry is not barred by legal restrictive arrangements, there may be economic barriers, which deter entry. Economic barriers to entry may be derived from the incumbent's advantage, for example customer inertia, the large sunk cost of building a telecommunications network, cost to the consumer of switching from the incumbent service provider (SP) to a competing SP, uncertainty of new entrant's service quality, and unfair access and/or interconnection charges for entrants to incumbent's networks. Incumbency advantages also arise through control over "bottleneck" facilities. Additionally, the finite nature of the spectrum places a restriction on the number of entrants in the mobile telephony business and other markets requiring the use of wireless technologies.

Buyer Power

1.22 Buyer power is the ability of a buyer to constrain the pricing behaviour of the 'hypothetical monopolist' in the relevant market. The buyer's constraining influence is strongest where the buyer can switch between suppliers easily and where the seller invested in assets specific to that

36 For a full discussion on the HHI, see http://www.usdoj.gov/atr/public/guidelines/horiz_book/15.html.

37 Extract form the OUR's consultative document, "Dominant Public Voice Carriers", March 2000.

38 As at November 1, 2002, four months remain in this three-year term.

buyer. This is particularly so when there is no alternate use for such assets.

Behavioural Factors Associated with Dominance

Pricing Behaviour and Profitability

1.23 The process of price formation can be used as an indication of the degree of competition in the relevant market. The pricing behaviour and the associated level of profitability of a dominant firm can influence the profitability of other firms in the relevant market. If a firm is able to make sustained super-normal profits[39], this suggests that it holds a dominant position in the relevant market. Within this context, it is necessary to examine the way in which prices are formed. This might include:

- Predation: "The acceptance of losses in a particular market which are deliberately incurred in order to eliminate a specific competitor, so that super-normal profits can be earned in the future, either in the same or other markets."[40] One method by which predation could be carried out is through excessive discounting. This type of pricing behaviour should be minimized with the imposition of the OUR's regulatory system of accounts on dominant carriers and service providers, and the introduction of competitive safeguard rules in Phase III of the Liberalization Process.

- Excessive pricing: The flip side of predation is excessive pricing relative to the cost of the product or service. This could be attributed to a dominant position in the relevant market. Maintaining high prices and profit margins over a sustained period of time without attracting entry would suggest that competition in the relevant market is constrained and the incumbent could in fact be in a dominant position.

- Parallel pricing: Simultaneous price movements for competitors over time could be indicative of a dominant firm in the relevant market. The OUR will presume that this is not indicative of a dominant position if there is a rationale for the simultaneous variation of prices.

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39 Profit in excess of the minimum return required to compensate investors for the level of risk in the relevant market

40 Myers, Geoffrey (1994), *Predatory Behaviour in UK Competition Policy*, Research Paper 5.

Supply Behaviour[41]

1.24 If a firm (SP or carrier) consistently refuses to supply actual or potential customers (inclusive of other carriers or SPs) with bottleneck products/services without reasonable justification, or reduce its service quality, with negligible impact on its market share, this may suggests that the firm is in a dominant position in the relevant market. Such behaviour include:

- Refusal to supply services essential to any-to-any connectivity: The existing C&WJ RIO should serve to limit behaviour that might fall in this category. However, to the extent that such behaviour exists, this will constitute evidence of a dominant position and abuse thereof. This behaviour is likely to limit competition by restricting entry or retarding effective competition.

- Refusal to share scarce physical resources: Examples of these resources could include duct space and floor space in local exchanges. However, the OUR will only recognize such resource as scarce if they are impossible, uneconomical or not feasible to reproduce. The owners/operators of these resources would be in a dominant position and a refusal to supply the same could constitute an abuse of dominance.

- Reduction in the quality of supply: The ability to reduce the quality of supply, without a corresponding reduction in price, could be viewed as evidence of the firm's ability to act independently of its competitor. This would suggest that the firm is in a dominant position.

Vertical Relationships[42]

1.25 In analyzing market power the vertical integrated nature of firms operating in the industry needs to be taken into account. Vertical integration exists where a firm operates at both the downstream and upstream segments of an industry. For example, the incumbent provides fixed network interconnection services to mobile entrants and simultaneously competes with those entrants in retail markets for mobile services. If dominant in the upstream market, the vertical integrated firm may be able to frustrate downstream market entrants. Vertical integration need not constitute a

41 The supply behaviours identified in this section are similar to those listed by the Malaysian Communications and Multimedia Commission, *Guidelines on Dominant Position in a Communication Market*, RG/DP/1/00(1).

42 See the OUR's consultative document, "Dominant Public Voice Carriers", March 2000.

barrier to entry since such firms may have low market share and there might not be any regulatory, economic or technological barriers to entry at any level of the industry. However, vertical relationship is important if it is coupled with dominance in an upstream market (for example), since this can be used in an anti-competitive manner to extend dominance to a downstream market.

CONCLUSION

1.26 This appendix constitutes the OUR's two-step approach to the determination of dominance. The process as defined is intended to form the analytical framework in which evidence is collected, collated, analyzed and interpreted for the purpose of assessing dominance in telecommunications markets. Although the guidelines outline the factors that ideally should be assessed, the analysis of dominance is often constrained by the actual availability of evidence.

1.27 The two-stage methodology firstly identifies the relevant market. This involves a definition of the product and geographic markets. The second stage involves an assessment of the economic strengths of the firm being assessed and its ability to operate without effective constraints from competing suppliers and consumers within the relevant market.

1.28 The Guideline constitutes the framework for the OUR's assessment of dominance in telecommunications markets. More specifically, the methodology will be used in the identification of public voice carriers that are dominant, and consequently to be regulated as such.

1.29 If declared dominant, a telecommunications provider will be subject to rules made by the OUR in relation to a prescribed system of regulatory accounts, pursuant to Sections 4(5) and 30(2) of the Act.

1.30 In cases where the telecommunications provider wishes to be declared non-dominant, the provider must file with the OUR, an analysis based on these guidelines along with supporting information. An application for a declaration of non-dominance will be subject to public consultation before the Office makes a determination.

ACRONYMS

ACCC	-	Australian Competition and Consumer Commission
CATV	-	Cable Television
C&WJ	-	Cable and Wireless Jamaica
CPE	-	Customer premise equipment
CPVC	-	Competitive Public Voice Carrier
DC	-	Domestic Carrier
DSL	-	Digital Subscriber Line
DQ	-	Directory Enquiry
DVSP	-	Domestic Voice Service Provider
EC	-	European Commission
FTF	-	Fixed to Fixed
FTM	-	Fixed to Mobile
FTN	-	Fixed Telephone Network
HHI	-	Herfindahl-Hirschman-Index
IAA	-	Interconnect Access Area
IPVC	-	Incumbent Public Voice Carrier
LLU	-	Local Loop Unbundling
NRA	-	National Regulatory Authority
OFT	-	Office of Fair Trading (UK)
OFTEL	-	Office of Telecommunications (United Kingdom)
OUR	-	Office of Utilities Regulation

PBX	-	Private Branch Exchange
PTO	-	Public Telecommunications Operator
PSTN	-	Public telecommunications Network (fixed line and mobile networks)
RIO	-	Reference Interconnection Offer
SP	-	Service Provider
SSNIP	-	Small but Significant Non-transitory Increase in Price
STV	-	Subscriber Television
WLL	-	Wireless Local Loop

GLOSSARY OF TERMS

Barrier to Entry	-	Economic and technical factors that prevent or make it difficult for firms to enter a market and compete with existing suppliers.
Carrier Pre-selection	-	This is the situation where a subscriber keeps their telephone connection to the incumbent operator but has the ability to pre-select the carrier of their transit services.
Determination Notice	-	This constitutes the final position of the Office in relation to an issue.
Herfindahl-Hirschman-Index	-	The "HHI" is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers. For example, for a market consisting of four firms with shares of thirty, thirty, twenty and twenty percent, the HHI is 2600 ($30^2 + 30^2 + 20^2 + 20^2 = 2600$). The HHI takes into account the relative size and distribution of the firms in a market and approaches zero when a market consists of a large number of firms of relatively equal size. The HHI increases both as the number of firms in the market decreases and as the disparity in size between those firms increases. www.usdoj.gov/atr/public/testimony/hhi.htm
Number Portability	-	The ability of customers to change SP without changing their telephone number.

Public Telecommunications Operator	-	A network operator providing telecommunications service to the public.
Public Switch Telephone Network (fixed line network)	-	The telecommunications network of the major operator(s), on which calls can be made to all customers on the said network.
Service Providers	-	Those who provide telecommunications or related services to the public. They may have their own telecommunications network or use the network provided by others.
The Office	-	The Office of Utilities Regulation