Office of Utilities Regulation

Assessment of Dominance in Mobile Call Termination

Supplementary Consultative Document

OFFICE OF UTILITIES REGULATION

March 30, 2004

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), as stated in Part V section 28. This duty is consistent with the Office's functions of promoting competition and protecting the interest of consumers as outlined in Part VII of the Act.

The OUR believes that the existence of effectively competitive telecommunications markets should lead to higher quality of service and prices that are more reflective of costs. The continued existence of dominant carriers in the Jamaican telecommunications markets suggests that the existing quality of service is likely to be lower and/or prices higher than in effectively competitive markets. To protect the interest of the customers, the OUR believes that regulations should be imposed where it is prescribed by the Act and it is demonstrated that this is justified, and that such regulation should reflect the level of competition in the relevant markets. In promoting the consumers' interest, the OUR must have due regard for the interest of carriers and service providers. In this regard, excessive regulation can reduce the incentive to invest and to innovate. The OUR has to ensure that these functions are balanced, since a failure to do so could have detrimental welfare effects. In a market where competition is not effective, as seems to be the case in mobile call termination, the OUR is obligated to make appropriate regulatory interventions.

During the consultation on Dominant Public Voice Carriers, the Office expressly stated that it intended to make a declaration on dominance in mobile voice call termination. Based on its assessment, the Office considers that each mobile operator constitutes a separate market for termination of voice calls on its network. Further, since there is no close substitute for call termination and entry barriers are high, each public voice carrier operating a mobile network are viewed as dominant in relation to the termination of voice calls on its mobile network.

Concerns voiced by at least one operator that the Office cannot make a determination of dominance in call termination markets since the matter was being considered by the court were negated by the issuing of Ministerial Order *1/2004 Tel*. This Order directs the OUR to, *inter alia,* undertake and implement such acts of regulatory intervention in the mobile (cellular) market (howsoever defined) as will stimulate sustainable, effective competition among carriers and service providers.

This Consultation Document sets out the Office's views regarding its assessment of dominance in the markets for Mobile call termination.

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COMMENTS FROM INTERESTED PARTIES

Persons who wish to express opinions on the issues in this document are invited to submit their comments in writing to the OUR.

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

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

Responses

Responses are requested by April 21, 2004. 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.

The OUR's intention in issuing this document is to stimulate public debate on the important regulatory issues surrounding the matter of dominance of public voice carriers and to observe reasonable standards of procedural fairness in the regulatory process. Any response to this Document will form a vital part of the public debate on the issue of dominance. Comments may take the form of either correcting a factual error or putting forward counter arguments.

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 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 completion of this consultation is summarized in the table below. This includes an indicative timing for the Determination Notice.

Event	*Date*
Official Presentation of Survey Findings by Market Research to OUR & FTC Representative	February 24, 2004
Consultative Meeting with FTC	February 26, 2004
Supplementary Consultative Document	March 30, 2004
Responses	April 21, 2004
Draft Determination Notice for FTC's Comments	April 27, 2004
Determination Notice	By May 7, 2004

CHAPTER 1: INTRODUCTION

1.1 The OUR's consultation on dominance in the local telecommunications markets commenced in March 2000. In August 2003, the Office issued its Determination Notice regarding the fixed telecommunications network markets in which Cable and Wireless Jamaica was declared dominant. Prior to publishing this Determination Notice, the Office issued three Consultative Documents on the issue of Dominant Public Voice Carriers.

1.2 In relation to mobile termination, the Office indicated that it would commission an independent telephone customer survey to test the validity of claims made by Mossel Jamaica Limited (Digicel) in relation to the definition of the relevant market(s). This survey is in addition to an earlier survey completed in April 2003 which gives some information on the Jamaican telecommunications markets.

1.3 In addition to Digicel's claim that there is a single market for call termination[1], Digicel also claimed that any determination of dominance in relation to mobile call termination must consider:

- ?? Buying power of corporate customers and
- ?? Substitution between mobile call termination and SMS, e-mail and call-back services.

1.4 Responses and reply responses (comments on responses) were received from Digicel and Cable and Wireless Jamaica Limited (C&WJ) on all three Consultative Documents. Responses were also received from both parties on the OUR's comments.

1.5 Additionally, the Office received responses from:

- ?? The Fair Trading Commission (FTC);
- ?? Infochannel
- ?? Reliant Enterprise Communications Limited; and
- ?? The Ministry of Commerce, Science and Technology.

Regulatory Framework

1.6 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), as stated in Part V section 28. This duty is consistent with the Office's functions of promoting competition and protecting the interest of consumers as outlined in Part VII of the Act.

[1] Call termination is the service of delivering calls to the intended destinations on a voice network (fixed or mobile).

1.7 According to Section 29(4) of the Act, "The Office may, either on its own initiative in assessing an interconnection agreement, or in resolving a dispute between operators, make a determination of the terms and conditions of call termination, including charges." Further, based on Section 30 of the Act, (in cases where a public voice carrier is found to be dominant):

(1) "…A dominant public voice carrier shall provide interconnection in relation to a public voice network in accordance with the following principles -

(a) the terms and conditions under which it is provided shall be -

(i) on a non-discriminatory basis;

(ii) reasonable and transparent, including such terms and conditions as relate to technical specifications and the number and location of points of interconnection; and

(iii) charges shall be cost oriented and guided by the principles specified in section 33;

(b) no unfair arrangements for cross subsidies shall be made;

(c) where technically and economically reasonable interconnection services shall be so diversified as to render it unnecessary for an interconnection seeker to pay unreasonably for network components or facilities that it does not require;

(2) Each dominant public voice carrier shall keep separate accounts in such form and containing such particulars as will enable the Office to assess whether that carrier provides interconnection services in accordance with the principles specified in subsection (1)."[2]

1.8 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 recommendations made by the Fair Trading Commission (Section 28(2)). There were extensive consultations with the FTC through a process of meetings and consideration of the written and oral comments submitted by that agency. In addition, the OUR also submitted the draft of this Consultative Document to the FTC and held a consultative meeting on February 26, 2004 to discuss a draft of this Document before it was finalized.

1.9 Section 19 of the Fair Competition Act (FCA) states that, "… an enterprise holds a dominant position in a market if by itself, or together with an

[2] See Section 30 of the Act.

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.” That is, the analysis of dominance must take place in a defined relevant market and should demonstrate that an entity has sufficient market power that enables it to act (by itself or with an interconnected company) without being effectively constrained by its competitors or potential competitors.

Consequence of a Declaration of Dominance

1.10 The lists below includes the main consequences that are likely to flow from a declaration of dominance:

- Price Cap as per Section 46
- Competitive Safeguard as per Section 35
  - (i) Separation of account;
  - (ii) Keeping of records;
  - (iii) Provisions to ensure that information supplied by other carriers for the purpose of facilitating interconnection is not used for any uncompetitive purpose;
  - (iv) Such other provisions as the Office considers reasonable and necessary for the purpose of competitive safeguard rules.
- Interconnection principles related to dominant public voice carriers are set out in Section 30 of the Act;
- Each dominant carrier shall lodge a RIO with the Office as per Section 32 of the Act;
- Where applicable, the Office may also make rules subject to affirmative resolution, imposing on a dominant carrier, the responsibility to offer a particular form of indirect access to its network to other interconnection providers; and
- The Office may also make rules subject to affirmative resolution, prescribing the system of regulatory accounts to be kept by a dominant carrier or service provider in relation to specified services.

Purpose of this Document

1.11 This Consultative document sets out the Office’s views regarding its assessment of dominance in the markets for Mobile call termination. ***In particular, this document addresses the mobile call termination interconnection markets for local fixed to mobile calls and mobile-to-mobile calls as well as the termination of international traffic on domestic mobile networks.***

CHAPTER 2: MARKET DEFINITION

International Experience

2.1 High mobile termination rates relative to estimated costs are of concern in several countries. In March 2003, the Office of the US Trade Representative (USTR), in its annual review of the operation and effectiveness of U.S. telecommunications trade agreements pursuant to Section 1377 of the Omnibus Trade and Competitiveness Act of 1988, indicated that one of its regulatory concerns in a number of countries is, the high charges for terminating calls to mobile and fixed-line networks in these countries.[3]

2.2 The report stated that "…high wholesale cost of completing calls onto mobile networks in foreign countries continues to hinder U.S. telecommunication suppliers seeking to offer competitively priced services." It further notes that with large and increasing number of mobile subscribers worldwide, reasonable connection charges are of increasing importance in ensuring overall growth of telecommunications services. As a consequence of these high termination rates, several national regulators (including in the U.S.) have began to investigate whether high wholesale rates are indicative of abuse of market power. In relation to WTO members, the report suggest that any abuse of market power would potentially fall within the scope of regulatory commitments relating to the establishment and maintenance of reasonable telecommunications network access rates.

2.3 As indicated in the report, some WTO members (example, UK and Italy) are beginning to address this issue. In Peru, after placing a cap on mobile termination rate in 2000 based on benchmarking, the regulator is reportedly seeking domestic costing information on wholesale charges.

2.4 The report gives data on proposed and actual termination rates in some important markets and notes that retail mobile rates in the U.S. (which include origination, termination, and, often, long-distance charges as well) are offered at below $.07 per minute.

[3] See http://www.ustr.gov/sectors/industry/Telecom1377/2003/2003-04-02-results.pdf.

Some of these Mobile Termination rates are (per minute, in $ U.S.):

United Kingdom (cost-based proposed rate):	$0.075
Australia	$0.13
Germany	$0.16
Italy	$0.165
France	$0.17
Argentina	$0.18
Peru	$0.205
Switzerland	$0.275

Source: Results of 2003 "Section 1377" Review of Telecommunications Trade Agreements, http://www.ofcom.org.uk/static/archive/oftel/publications/eu_directives/2003/ctm/ctm0503.pdf.

2.5 Oftel, the former UK telecommunications regulator, reviewed the mobile markets in July 2000 to ascertain if termination charges for any operator should be subject to control. In July 2001, Oftel concluded that each mobile network operator had market power in relation to mobile termination to its own network. Consequently, it proposed price controls on all four operators. Since these operators objected to the imposition of price controls, Oftel referred the matter to the Competition Commission.

2.6 The Commission concluded inter alia, that:

- Mobile charges in 2002/3 were 30 to 40% in excess of the Commission's estimate of a fair charge.
- In the absence of charge controls, termination charges may be expected to operate against the public interest.

2.7 These findings were challenged in the UK court by three mobile operators. However, on each substantive matter raised by the mobile operators, the UK Court ruled in favour of the Commission and the Director General of Oftel[4].

2.8 In Oftel's review of mobile wholesale voice call termination markets[5], based on its definition of the relevant market, its initial conclusion was that there is a separate market for termination on each mobile network operator's network. Thus implying that each mobile network operator is dominant (and effectively, a monopolist) in the supply of voice call termination service on its network. Additionally, since there no commercially viable alternative means of terminating a call to a particular

[4] See T-Mobile (UK) Ltd., Vodafone Ltd., Orange PCS Ltd. – v- The Competition Commission and D.G. Telecommunications (Oftel), Case No: CO/1192/03, CO1308/03, CO1536/03, Royal Courts of Justice, Strand, London, WC2A 2LL, June 27, 2003.

[5] See Review of Mobile Wholesale Voice Call Termination Markets, EU Market Review, 15 May 2003 at http://www.ofcom.org.uk/static/archive/oftel/publications/eu_directives/2003/ctm/ctm0503.pdf.

mobile subscriber elsewhere is likely to be available in the near future, and the fact that there is a general absence of competitive and consumer constraints, each mobile network operator is able to act independently of its competitors and consumers.

2.9 The main reasons behind this conclusion are that:

- ?? each mobile network operator has 100% of the relevant market and is thus a monopolist;
- ?? none of the purchasers of mobile termination have countervailing buyer power to constrain charges at the competitive level;
- ?? termination charges on 2G networks have been persistently above costs; and
- ?? there might be scope for competition to develop in the future; however, this depends on how technology and consumers' behaviour develop.

Calling Party Pays (CPP)[6] and the Economic Characteristics of Mobile Call Termination

2.10 The calling party pays (CPP) regime is a billing method in which a mobile telephone caller pays only for making calls and not for receiving them. That is, the calling party pays the total price for a retail call. Thus, the voice call termination charge is included in the originating network provider's (either fixed or mobile)[7] cost base and is a component of the retail price that the calling party's operator charges for calls originating on its network.

2.11 The effect of the CPP regime in the domestic mobile voice call retail market (i.e. the market for calls to mobiles) is that, mobile network operators have no incentive to lower the price of calls to their mobile networks from other networks (fixed or mobile). The fact is callers to mobile subscribers must terminate those calls on the particular network that the called party subscribes to.

2.12 The effect of the CPP regime is similar for the wholesale market for mobile call termination. In relation to domestic fixed-to-mobile and off-net mobile-to-mobile calls, apart from the originating operator's commercial interest in terminating these calls, each operator is obligated under the Act to facilitate any-to-any connectivity[8]. For these calls, the mobile public voice carrier has no incentive to keep termination charges low. Further,

[6] See Review of Mobile Wholesale Voice Call Termination Markets, EU Market Review, 15 May 2003 at http://www.ofcom.org.uk/static/archive/oftel/publications/eu_directives/2003/ctm/ctm0503.pdf.

[7] This is also the case even if calls originate from international or domestic carriers.

[8] This enables customers of another public voice network to complete calls to customers of another public voice network or to obtain service from other networks.

lowering these charges would give the competitors an advantage in the retail market since this would lower their costs. This implies that the effect of CPP regime enables mobile public voice carriers to price voice call termination services above cost without being constrained by competition or potential competition.

2.13 Based on the CPP regime, for off-network and fixed-to-mobile calls, since the calling party pays for the call, but does not choose the network on which its call is terminated, the calling party has no alternative to the purchase of call termination service[9] from the network on which the called party subscribes. This means that all mobile network operators have market power when setting its call termination charges.

2.14 Numbering rules that do not allow number branding lead to the efficient allocation of numbering resources and facilitates number portability but may also contribute to consumer ignorance. Market power is enhanced if consumers are unable to identify which network they are calling. The extent to which such consumer ignorance exists increases the mobile network operator's ability to raise termination rates without being affected by an adverse reaction from consumers.

2.15 In cases where the cost of switching mobile service provider is significant and one operator has market power in terms of its share of the access market, high off-network or fixed-to-mobile charge by that operator can create network externalities. For example, in a near saturated market for mobile telephony access, where one operator has most of the customers, it has the incentive to set a high termination charge for entrants. Consequently, existing subscribers to this network would have no incentive to switch to the service offered by the entrant. Further, subscribers to other networks have an incentive to switch to the network with high termination charges in order to avoid the high cost of cross network calls.

2.16 It is also important to note that since voice call termination (facilitating real time telecommunications service) to a particular customer is a bottle-neck in contacting a specific customer, termination charges on networks with small market shares are also unconstrained. Under these circumstances, it seems to be desirable that termination charges for all mobile operators are regulated.

[9] The consumer purchases call termination services indirectly through the retail prices its network operator charges to call subscribers to mobile networks.

Relevant Market(s)

2.17 Based on Digicel's suggestion that features like call-back, e-mail and text messaging are substitutes for mobile call termination; the suggested constraint of buyer power on the price setting behaviour of mobile operators, and the claim that there is one call termination market, the Office commissioned an independent customer survey to determine the validity of these claims. This survey is in addition to an earlier survey conducted between February and March 2003. The results of the December 2003–January 2004 survey were recently made available to the OUR.

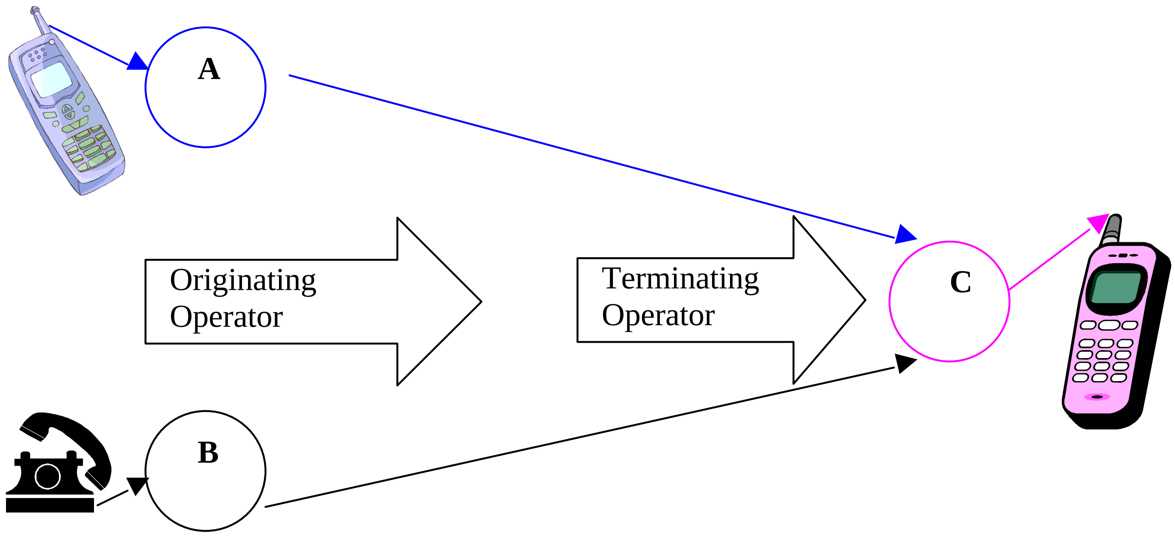
Mobile Call Termination

Product Market

2.18 Call termination is the service of delivering calls (domestic or international) to the intended destinations on a voice network (fixed or mobile). The smallest possible definition of the product market is wholesale mobile voice call termination for calls from a fixed or mobile telephone. Notably, this narrow definition of the market is attributed to the fact that, a call intended for a specific mobile subscriber cannot be sufficiently substituted by calls to other individuals.

2.19 The pricing of mobile call termination is usually of concern in cases where calls to mobile subscribers originating on other networks (fixed or mobile), and are terminated to the called party on the mobile network to which the called party subscribes. The originating operator (domestic or international) pays a per-minute or per second charge for terminating calls on other networks. However, the actual price to the calling party includes the termination charge and the retention charge of the originating operator. That is, the retail price for an off-net call (calls across networks, fixed to mobile or mobile to mobile). For international calls, this would include the international conveyance and switching charges.

Figure 1.0: Calls to a customer on a particular mobile network must terminate on the mobile network to which the customer is connected.



2.20 In figure 1.0, if a customer from the mobile network (labelled A) or from a fixed network (labelled B) wants to call a customer on 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 - CPP), the mobile operator has no incentive to lower terminating charges, even when faced with declining operating costs and increasing call volumes[10]. The Office wishes to state unequivocally, that the identification of this anomaly in market conditions does not imply that the Office intends to recommend that the industry reverts to a receiving party pays system[11].

Supply Substitution

2.21 The description of call termination services implies that 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[12] (the mobile operator) from

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

[11] Although the RPP is a technically feasible solution to the distortion of mobile operators' incentives to lower termination charges, it appears to be economically more efficient to have the calling party (the person that initiates the call) bear the cost of their consumption decision. Further, the experience in the Jamaican market as well as other markets (example, the US), suggests that penetration rates have remain relatively low under RPP systems.

[12] Based on the definition of the product market, each mobile operator would be viewed as a monopolist.

reaping economic profits. If a mobile operator increases its termination tariffs appreciably (usually 5% or greater) above the level of suppliers offering a supply side substitute, this price increase would be unprofitable since customers of the high priced operator are likely to subscribe to the lower priced suppliers instead of the hypothetical monopolist.

2.22 It has been posited by one respondent to the consultation that text messages and e-mail are possible substitutes. Both can be classified as messaging services and do not reflect real-time communication. It is important to note that text messaging and e-mail are not currently offered across mobile networks or between mobile and fixed networks.

2.23 Based on the December 2003-January 2004 survey, although 92% of the respondents indicated that they are aware of the text messaging feature, 47% indicated that they do not use this feature on a weekly basis. Additionally, 13% indicated that they use it weekly and only 27% indicated that they use this service daily. Even if this service was offered across networks, the Office does not consider that this would translate into a volume of use that would be sufficient to constrain the wholesale price of mobile termination and the retail price of calls to mobile subscribers.

2.24 Since some telephone subscribers have both mobile and fixed lines (38% of household respondents) it is possible for some callers to make fixed-to-fixed (FTF) calls instead of fixed-to-mobile (FTM) or mobile-to-mobile (MTM) calls. This suggests that the suppliers of fixed call termination service could offer this as a substitute for mobile call termination. However, since 55% of the respondents in the household survey have only a mobile phone, callers to these mobile subscribers have no choice but to use the termination service offered by the operator to which the called party subscribes. Additionally, as much as 43% of the calls to household respondents are received on the road. Hence, the Office does not consider fixed termination to be a close substitute for mobile termination.

2.25 Since mobile and fixed call termination services are not regarded as substitutes, the other likely alternative to termination service offered by a mobile carrier is that 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[13]. SIM cards are usually locked to prevent subscribers from switching to a

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

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

2.26 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 sufficient consumers are able to respond to high call termination rates. However, fixed to mobile (FTM) retail rate is not charged to called party on the mobile network. It is the fixed line subscriber who pays. The same is true for mobile to mobile (MTM) calls. Therefore, it is not likely that the FTM termination rates will factor into the consumers' decision to subscribe to a particular mobile network. The evidence from the survey data suggests that only 9.1% of the respondents indicated that they consider the cost of others calling them when deciding on the purchase of a mobile telephone. (See table 1.4).

2.27 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 these messaging services, their prices have consistently remained below termination charges and consequently, below FTM and MTM retail charges. Termination charges remained as high as $10.268 per minute (between April 2001 and August 2003). If these services were effective substitutes, the lower prices would constrain mobile call termination charges and FTM and MTM charges 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.

2.28 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, partly due to the convenience of making or receiving a mobile call at any given location in the coverage area while in transit and the fact that only 11% and 8.2% of the household and corporate respondents respectively, indicated that they would be prepared to replace their fixed line with a mobile line.

2.29 Call Back: A caller to a mobile subscriber (example, a FTM call) sometimes requests that the called party calls them back, hence reversing most of the call charges and avoiding most of the FTM retail charges. In the current context, the person initiating the call places a call to the called party just to request that they call back. The caller only pays for the short time spent requesting the called party to return the call. If sufficient subscribers engage in this action, it is argued that FTM call termination rates would be constrained. But, the OUR has no evidence that this is so. However, if this was the case, Digicel could not have maintained its FTM retail rate at 71% above the lowest FTM retail rate for over two years[14].

2.30 In relation to the termination of incoming international calls on mobile networks, between December 2003 and January 2004, the Office became aware that, certain mobile carriers served notice of their intention to increase international call termination charges on their networks. In an environment where telecommunications costs continue to fall, increasing the charge for termination without a commensurate increase in cost is indicative of market power.

2.31 The situation of converging settlement rate[15] and termination charge created the possibility of a collapse of the existing competition in the Jamaican market for incoming international calls between December 2003 and January 2004. This arouse from the ability of carriers with both domestic mobile and international licences to set both the call terminal charge to their network as well as the rates to be paid by foreign carriers (settlement rates) for the termination of international calls.

2.32 The Jamaican international carriers that have no domestic network (at the time there were 17 such carriers in operation) were in danger of been forced out of the market if the margin between the settlement rate and the termination charge was squeezed too far. The extreme situation could arise where international calls can only be economically terminated on a domestic network through its (connected investor owned and operated) international carrier's facilities. For example, if the international settlement rate and the international termination charge are equal, carriers with both domestic and international carrier licences could not cover the cost of termination plus their cost interconnection (conveyance and switching).

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[14] Between April 2001 and August 2003, Digicel's FTM rate was $12 per minute while the rate for calling C&WJ was as high as $7 per minute.

[15] The settlement rate is the charge agreed between the originating and the terminating carrier for conveying and terminating one minute of international voice traffic from the half way point of its origin to an international gateway in the country where the called party is located.

2.33 The above situation of rising call termination charges occurred in the context of full liberalization, where call back is allowed. This demonstrates that call back (whether in the ad hoc manner described above or through some kind of commercial arrangement) is also not a constraining influence in the markets for terminating incoming international calls.

Buyer Power

2.34 Theoretically, other operators could use their buyer power to force mobile operators 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*).

2.35 According to Digicel, "…By defining a relevant market in such a way that every supplier is dominant, it fails to take account of relative competitive power of market participants and the ongoing evolution of competition in the market. For example, in the corporate market a company will chose which mobile service to buy on the basis of both outgoing <u>and</u> incoming call rates. This is because a company's total telecommunications expenditure includes an amount of fixed to mobile traffic (i.e. employee's mobile phones are called from a fixed line in a company office). *Mobile operators must compete on the basis of the combined cost of outgoing and incoming call rates and therefore do face competitive forces in relation to their call termination rates*. This is not taken into account by the OUR. For the OUR to define a relevant market in such a way that key competitive forces such as the *links between wholesale interconnection and its influence on retail termination charges* cannot be considered is therefore seriously flawed." [16]

2.36 Digicel seems to be suggesting that the buyer power of corporate customers could constrain the pricing of its mobile termination services. That is, the volume of such purchases prevents Digicel from setting the price for its mobile termination services above the "competitive price". According to the corporate survey data, 78.2% of the respondents indicated that they are not members of a closed user group. It does not seem probable that 21.8% of the corporate customers who are members of user groups could constrain the pricing of mobile call termination. Further, since corporate mobile customers are estimated to be significantly less than residential customers, they are not expected to exert much influence on prices in the relevant market. (See Appendix 2).

[16] See page 16 of Digicel's response to "Dominant Public Voice Carriers No.2".

Geographic Market

2.37 The mobile licence requires each public mobile voice carrier to provide 90% geography coverage within 5 years of its licence being issued. Further, two of the three mobile carriers offer coverage in most areas within Jamaica. Based on the fact that all mobile public voice carriers have licences that authorize them to provide service throughout Jamaica and the fact that two of three operators' network extend to most areas across Jamaica, the Office considers that the geographic market for termination services for these two operators is Jamaica. In the case of the third operator, ODJ, the geographic market would be limited to the relatively few areas where service is now available.

Preliminary Conclusion

2.38 The foregoing analysis suggests that the relevant markets are the markets for wholesale mobile call termination service in Jamaica. The analysis points to the fact that there are no effective demand and supply side substitutes for call termination on any given mobile network. That is, mobile voice call termination to each mobile operator's subscribers constitutes a separate market. Therefore, the relevant markets are:

- wholesale market for voice call termination on Mossel's (Digicel's) mobile telephone network
- wholesale market for voice call termination on Cable and Wireless' (C&WJ's) mobile telephone network
- wholesale market for voice call termination on Oceanic Digital's (ODJ's – formerly Centennial) mobile telephone network.

CHAPTER 3: MARKET POWER AND DOMINANCE IN MOBILE VOICE CALL TERMINATION MARKETS

Introduction

3.1 Dominance in telecommunications markets is defined according to Section 19 of the Fair Competition Act (FCA). This section states that, "… 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." That is, the analysis of dominance must take place in a defined relevant market and should demonstrate that an entity has sufficient market power that enables it to act (by itself or in concert with other entities) without being effectively constrained by its competitors or potential competitors.

Relevant Markets

3.2 Based on the analysis in the previous chapter, the relevant markets in this determination are:

- wholesale market for voice call termination on Mossel's (Digicel's) mobile telephone network
- wholesale market for voice call termination on Cable and Wireless' (C&WJ's) mobile telephone network
- wholesale market for voice call termination on Oceanic Digital's (ODJ's – formerly Centennial) mobile telephone network

Market Share

3.3 Since there is no effective substitute for call termination on a given network, all mobile operators have 100% of their respective call termination markets. According to an FTC publication, it … "will generally consider an enterprise to be dominant if it has a 50 percent market share."[17] Based on the EU's Article 82 (the equivalent of the Fair Competition Act's Section 20) dominance is presumed if a company has a market share that is consistently over 50%. However, since market share does not provide conclusive evidence on dominance in a relevant market, an assessment of entry barriers is necessary.

[17] See the FTC's publication: A Guide to Anti-Competitive Practices.

Entry Barriers

3.4 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.

3.5 Call termination is often viewed as a technical barrier to entry. "Using existing technologies, a call to a CPE owned by a subscriber can only be terminated through the path which connects that CPE to the network. If a subscriber has only one line, there is no immediate scope for substitution in the absence of a technical means through which terminating access can be provided by a third party). … There is a substantial probability that technological exclusion of this kind will create a barrier to entry which justifies *ex ante* regulation".[18]

3.6 In relation to the termination of calls, the Office is not aware of the existence of a technology that allows a caller from a fixed line (for example) to select the network on which he/she wishes to terminate a call to a mobile phone, even if the call is to a mobile phone with multiple SIM cards.

Excessive Prices and Profitability

(a) Mobile Termination Rates for FTM Domestic Calls

3.7 Mobile call termination cost is the most significant component of the FTM termination rates. The three components of the FTM charges are termination, spectrum cost and the fixed network retention cost. Since the only information that is available to the Office on the cost of mobile call termination is that supplied by C&WJ, the Office decided to use this as a proxy for the industry. However, since the economic cost of spectrum was not included in C&WJ's costing but is a part of the other operators' costs, an imputed price of spectrum will be added (see Appendix 1).

3.8 C&WJ's charge for FTM calls is $7 per minute. Because C&WJ's fixed network business unit's retention for a FTM call remains at J$1.732 per minute, its mobile termination rate is $5.268 pm. On the other hand, Digicel's peak fixed to mobile retail rate up to August 2003 was J$12 per minute. This means that Digicel's termination charge was J$10.268 when C&WJ's fixed retention charge is deducted. This implies that Digicel earned excess profits of $5.00 per minute above the cost of terminating traffic from C&WJ's fixed network. When compared with the OUR's

[18] See Squire, Saunders and Dempsey, May 2002, Market Definition for Regulatory Obligations in Communications Markets (A Study for the European Commission).

estimated maximum mobile termination charge of $6.929 per minute[19], this suggests that Digicel earned excess profits of $3.339 per minute above the cost of terminating traffic from C&WJ's fixed network.

3.9 Notably, as at September 1, 2003, Digicel reduced its retail charge for FTM calls to $7 per minute.

(b) Mobile Termination Rates for MTM Domestic Calls

3.10 Off-net MTM voice call[20] termination rates range from a low of $17.70 per minute (for calls to C&WJ and Digicel) and $19.70 per minute for calls to ODJ. ODJ's off-net MTM rate increased from $15.00 to $19.70 per minute on November 29, 2002. This increase was more than 11% in excess of the peak rate charged by other mobile carriers. ODJ has maintained this rate for a period in excess of one year. If only one voice call termination market existed, ODJ's off-net MTM termination rate would be constrained by the rate charged by other mobile carriers. Further, this rate took effect when ODJ's coverage was limited to three of fourteen parishes and its customer base less than 100,000. This suggests that market power is, to a significant extent, not dependent on coverage and subscriber base.

(c) Mobile Termination Rates for International Calls

3.11 In the recent (December 15, 2003) oral judgment of the Supreme Court of Jamaica in the suit M-074/2003-Office of Utilities Regulation vs. Minister of Commerce Science and Technology, certain carriers have responded by serving notice of their intention to increase call termination on their networks. In fact, even before this judgment, Digicel indicated on November 5, 2003 that it intended to increase its international mobile termination charge to US$0.1661 compared to the OUR's estimated cost of US$0.1108.[21] This is approximately 50% above the estimated cost. The action created an immediate danger to the telecommunications market in that there was a real possibility of a collapse of competition in the market for incoming international calls. This action and its likely consequence of eliminating competition and potential competition are clear indicators of market power and dominance.

Market Power and Dominance

3.12 In its response (dated May 2000) to the OUR's first consultative document on Dominant Public Voice Carriers, 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

[19] See Appendix 1.
[20] A call made from one mobile network to another.
[21] The estimated cost and proposed per minute charge for termination were converted to US dollars based on the relevant daily exchange rate. See http://www.boj.org.jm/HistoricUSseries_Updated.xls.

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. As demonstrated above, this has not been the case. In fact, mobile operators have maintained their termination charges at levels higher than 10% above other operators and have increased their market share.

3.13 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[22] amounts to J$1.732 per minute[23] (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 ODJ for FTM calls[24]. Since C&WJ's retention remained at J$1.732 pm, its mobile termination rate is $5.268 pm (the OUR's estimate of the peak mobile voice termination rate is J$6.929 per minute). [25]. However, Digicel's peak fixed to mobile retail rate was J$12 pm between April 2001 and August 2003. This means that the Digicel's termination charge was J$10.268 when C&WJ's fixed retention charge is deducted. Therefore, Digicel's termination rate was more than three times greater than that of C&WJ up to December 31, 2001 and approximately twice that of C&WJ from that date up to August 31, 2003.

3.14 As at May 2002, Digicel had attracted over 400,000 subscribers within thirteen months of operation. By September 2003, Digicel's subscriber base was estimated to have increased by more than 100,000. However, if there were a single competitive national termination market in which customers choose a mobile provider partly based on the cost of terminating calls on that network, would Digicel have been able to maintain a growing customer base over the period (April 2001 to August 2003) and an increasing share of the mobile telephony access market given that its FTM charge remained at 71% above the lowest FTM charge?

3.15 Increased competition between mobile service providers for subscribers is expected to reduce the on-net MTM retail rates. But, competition for subscribers is not likely to reduce the off-net and FTM call termination rates. The fact is termination on one mobile network cannot be

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[22] The retention charge includes the switching and transit cost of the PSTN.
[23] This excludes the call setup charge of $0.622 per call.
[24] ODJ increased it FTM retail rate to $9.00 per minute as at October 2002 but subsequently reduced it to $6.95 per minute.
[25] See the Appendix 1 for the computation of the OUR's estimate of mobile voice termination rate.

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 is not located on that network. Therefore, all mobile carriers are dominant with respect to the voice call termination service offered.

Conclusion

3.16 Based on the foregoing analysis, the relevant markets are the wholesale markets for terminating domestic or international calls on a given mobile operator's network. That is, there is a separate market for terminating calls on each mobile network.

3.17 There is no supporting evidence that indicates the existence of a national market for mobile call termination. Further, each mobile carrier is dominant in relation to the voice call termination service it offers. If this remains unchecked, a profit maximizing monopolist (in this case, the mobile operator) is expected to maintain high prices or increase its price in excess of cost, over time.

3.18 Under the CPP regime, the effect in the mobile voice call retail market (i.e. the market for calls to mobiles) is that, mobile network operators have no incentive to lower the price of calls to their mobile networks from other networks (fixed or mobile). The fact is callers to mobile subscribers must terminate those calls on the particular network that the called party subscribes to. Further, since there is no close substitute to this real time service, the Office considers that the CPP regime facilitates unconstrained pricing of mobile call termination service by operators of mobile networks.

3.19 Even without the information from the recent survey, given the existence of the CPP regime and the economic and technical characteristics of call termination services, mobile operators pricing of termination services is unconstrained by competition. To avoid the anticompetitive effects of differential and above cost termination rates, it is desirable that termination charges for all mobile operators are regulated to reflect cost based pricing consistent with the requirements of the Act.

[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.

APPENDIX 1

Mobile Termination Rate for Domestic Calls

A1.1 The costs of mobile termination are the most significant component of the overall maximum FTM termination rates. As was previously noted, the Office has determined that this charge shall be the sum of C&WJ's mobile termination costs plus an imputed charge for spectrum. The imputed spectrum charge shall be the capital cost of a US$50 million investment based on a 34.5% cost of capital, or US$17.25 million per year. The per-minute costs of this element shall be determined based on traffic levels exclusive of incoming international traffic expected for the year beginning in July 2002.

A1.2 C&WJ submitted, on February 22, 2002 an estimate of its costs and prices for mobile termination. Its mobile termination costs are:-
J$6.222 per minute peak,
J$4.977 per minute off-peak, and
J$3.733 per minute weekend

A1.3 It is necessary to add to this the cost associated with spectrum. As noted above, the annual cost of spectrum is US$17.25 million, or J$861 million (using an average exchange rate for the fiscal year 2002/2003 of US$1=J$49.93).

A1.4 On April 30, 2002, C&WJ submitted estimates of its mobile traffic, exclusive of incoming international traffic, for the years ending March 2001, 2002, and 2003. It estimated that, for the year ending March 2003, 1,219 million minutes would have been used.

A1.5 Dividing the annual cost of spectrum by this traffic estimate leads to a cost per minute for spectrum of J$0.707. This amount should be added to C&WJ's mobile termination costs, leading to a maximum mobile termination rate for domestic FTM calls J$6.929 per minute (peak).

APPENDIX 2

Telecommunications Industry Structure, Mobile Charges and Consumer Behaviour

A2.1 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.

A2.2 Two additional mobile licences were issued. Regarding the mobile voice service market, the effect of liberalization can be demonstrated by the degree of market concentration[27] (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 were initially becoming increasingly competitive. However, market concentration increased from 5,482 in December 2001, to 6,159.83 in December 2003. The latter figure was calculated based on the survey result in Figure 1.

Table 1.1: Mobile Voice Service Market Concentration

DATE	HHI
Mar-2001	10,000.00
Jun -2001	7,261.28
Sep-2001	6,240.20
Dec-2001	5,482.26
Dec-2003	6,159.83

[27] 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.

A2.3 The two major mobile operators (Digicel and C&WJ) have GSM networks while ODJ operates a CDMA network.

Mobile Service Subscription

A 2.4 The switch to calling party pays (CPP) and the introduction of the prepaid mobile package increased the growth of mobile subscription significantly in the run up to the liberalization of the telecommunications markets starting in the year 2000. As a consequence of the introduction of competition subscription ballooned from under 300,000 in 2000 to an estimated 1.4-1.5 million subscribers by December 2003. As evident from the survey data in Figure 2, prepaid subscribers are 97.5% of total subscribers, while those using postpaid only amount to 2.5%. Given the extremely skewed distribution of subscription type, it seems reasonable to conduct this analysis by concentrating on the behaviour of prepaid subscribers since their behaviour is likely to be representative of the entire subscriber base.

Figure 1: SERVICE PROVIDER OF MOBILE PHONE

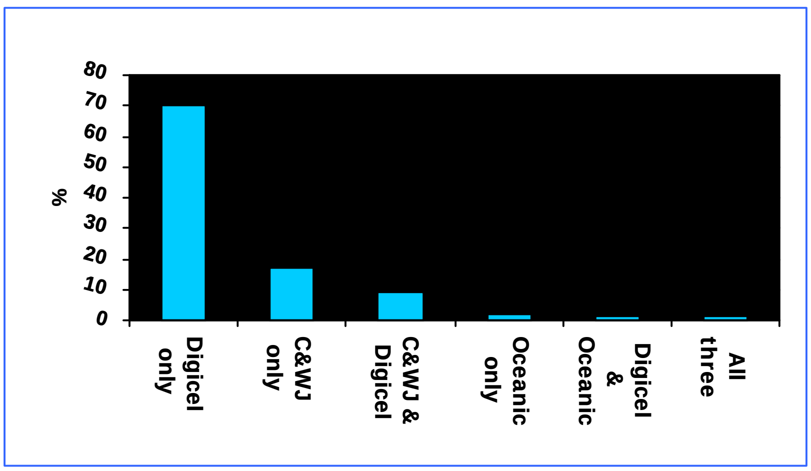
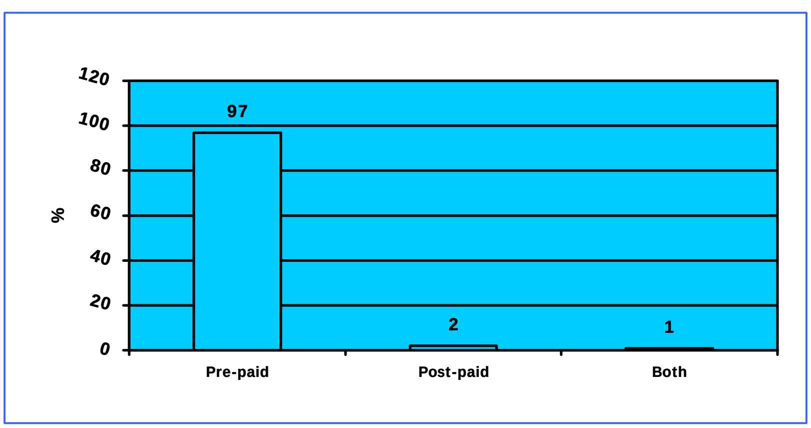


Figure 2: Service Provider for Connecting: Pre-Paid Vs. Post Paid



A2.5 The survey data suggest that Digicel now has approximately 75% of total mobile subscription with 70% of all subscribers having Digicel mobile only. Also, 11% of the respondents indicated that they subscribe to two or three mobile providers (see Figure 1). As much as 83% of the respondents with multiple subscriptions indicated that they do so to avoid cross-provide or off-net calls (See Table 1.2). As is evident from Table 1.3, the cost of off-net calls can be as high as $19.70 per minute compared to an on-net call which is as low as $4.00 per minute.

Table I.2: Reasons for Using More than one Provider for Mobile Service

	%
• To prevent cross provider calls	83
• Received both phones as gifts	6
• It's trendy	6
• In case one provider's system is down	3
• C&W not always clear	1
• Cheaper overseas calls	1

A2.6 Even with the exponential growth in mobile subscription, as much as 14% of the household respondents indicated that they do not have a telephone (See Figure 3). Further, 55% of those with telephones have only mobile (See Figure 4). Thus, they do not have the opportunity to actively substitute between mobile and fixed call. For the 7% of households with fixed lines only, if they wish to contact an individual that has only a mobile phone, they have no choice but to pay the FTM charge of the terminating mobile operator.

Figure 3: INCIDENCE OF TELEPHONES IN HOUSEHOLD

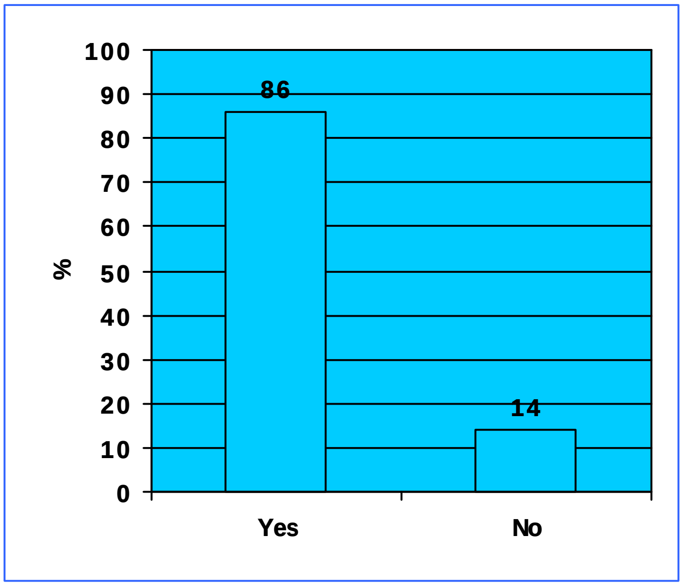
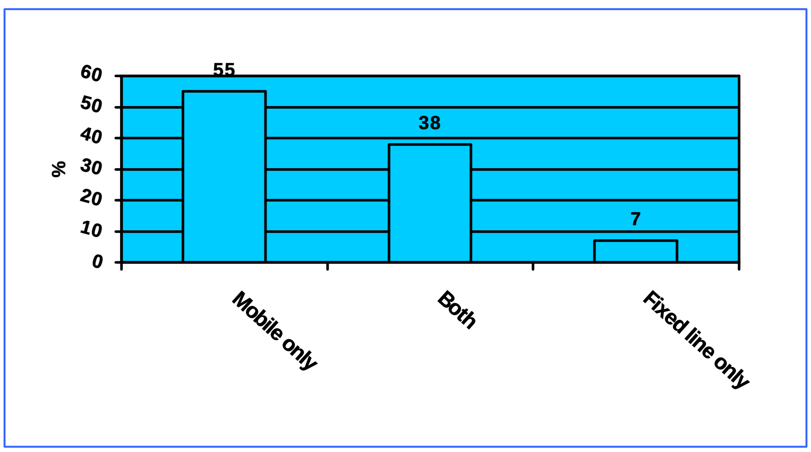


Figure 4: TYPES OF TELEPHONE SERVICE AT HOME



FTM and MTM Charges

A2.7 The three components of the FTM charges are termination, spectrum cost and the fixed network retention cost. However, mobile termination cost is the most significant component of the FTM termination rates. For the period 2001 to August 2003, FTM rates on CWJ remained at $7.00 per minute while Digicel maintained a peak rate of $12.00 per minute. ODJ rate remained at $7.00 per minute for 2001-2002, and was $9.00 per minute up to August 2003. If all mobile operators were in the same mobile termination market, demand side substitution (substituting mobile termination on CWJ for mobile termination on other mobile operators) would constrain the charges of both Digicel and ODJ.

A2.8 Similarly, the pricing of MTM termination on a given mobile network is not constrained by the price of termination on another mobile network. This is evident from the fact that the peak MTM retail rate to call ODJ has been maintained at over 11% above the peak MTM rate to call other mobile operators for the period November 26, 2002 to February 2004.

Table 1.3: Domestic Mobile Charges

FTM & MTM RETAIL TARIFFS			2000			2001			2002			AUGUST 31 2003	
		Peak	**Off-Peak**	**Wkend**	**Peak**	**Off-Peak**	**Wkend**	**Peak**	**Off-Peak**	**Wkend**	**Peak**	**Off-Peak**	**Wkend**
CWJ Fixed to Mobile													
To CWJ Mobile	**J$/min**	**5**	**4**	**3**	**7.00**	**7.00**	**7.00**	**7.00**	**7.00**	**7.00**	**7.00**	**7.00**	**7.00**
To Digicel Mobile	J$/min				12.00	11.00	10.00	12.00	11.00	10.00	12.00	11.00	10.00
To ODJ	J$/min				7.00	7.00	7.00	7.00	7.00	7.00	9.00	9.00	9.00
Mobile to Mobile													
CWJ Pre to Digicel Pre	J$/min				17.70	15.80	15.80	17.70	15.80	15.80	17.70	15.80	15.80
CWJ Pre to ODJ Pre	J$/min				17.70	15.80	15.80	17.70	15.80	15.80	19.70	17.80	17.80
CWJ Pre to CWJ mobile	J$/min	18	18	18	10.00	10.00	7.00	10.00	10.00	7.00	10.00	10.00	7.00
Digicel Pre to CWJ	J$/min				17.70	15.80	15.80	17.70	15.80	15.80	17.70	15.80	15.80
Digicel Pre to ODJ	J$/min				17.70	15.80	15.80	17.70	15.80	15.80	19.70	17.80	17.80
Digicel Pre to Digicel Post & Pre	J$/min				10.00	8.00	8.00	10.00	8.00	8.00	10.00	8.00	8.00
ODJ Pre to ODJ Pre	J$/min				7.00	7.00	7.00	7.00	7.00	7.00	4.00	4.00	4.00
ODJ Pre to other mobile	J$/min				15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00

NOTE: (1) Digicel's peak times are Monday-Friday 7am-7pm. All other times are off-peak.

(2) Oceanic's peak times are Monday-Friday 7am-7pm. These only apply to overseas calls.

(3) CWJ's peak times are Monday-Friday 5:59am-6pm.

(4) Digicel's prices are quoted per minute but are charged on a per second basis.

(5) Postpaid subscribers pay varying access fees.

USER GROUPS

A2.9 Although the survey did not unearth conclusive data to verify claims that a significant amount of calls from corporate fixed lines are to mobile phones, if this were the case, corporate mobile subscribers would have an incentive to minimize the FTM charges by forming user groups. It is hypothesised that these groups could use their buying power to pressure their mobile supplier to reduce its FTM charges.

A2.10 This implies that the buyer power of corporate customers could constrain the pricing of a given mobile operator's termination service. That is, the volume of such purchases is used to constrain the mobile operator from setting the price for its mobile termination services above the "competitive price". According to the corporate survey data, 78.2% of the respondents indicated that they are not members of a user group (see Figure 6).

A2.11 It does not seem probable that 21.8% of the corporate customers who are members of user groups could constrain the pricing of mobile call termination. Further, since corporate mobile customers are estimated to be significantly less than residential customers, they are not expected to exert much influence on prices in the relevant market.

A2.12 Additionally, mobile operators can separate corporate customers from other less sensitive subscribers by offering special arrangements to bypass high FTM termination charges. Domestic mobile operators have been known to supply equipment to corporate subscribers, specifically for this purpose. Thus, this separation allows the mobile operator to minimize any competitive pressure that might come from the more price sensitive users (corporate subscribers). However, the residential subscribers (the larger of the two groups) have no such option or buying power.

Figure 5: Persons Called from Fixed Lines (corporate customers)

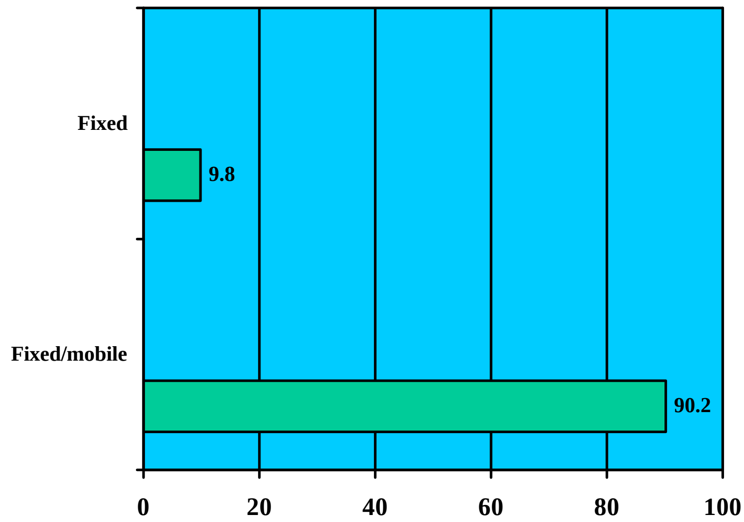


Figure 6: Number of Subscribers Belonging to User Groups

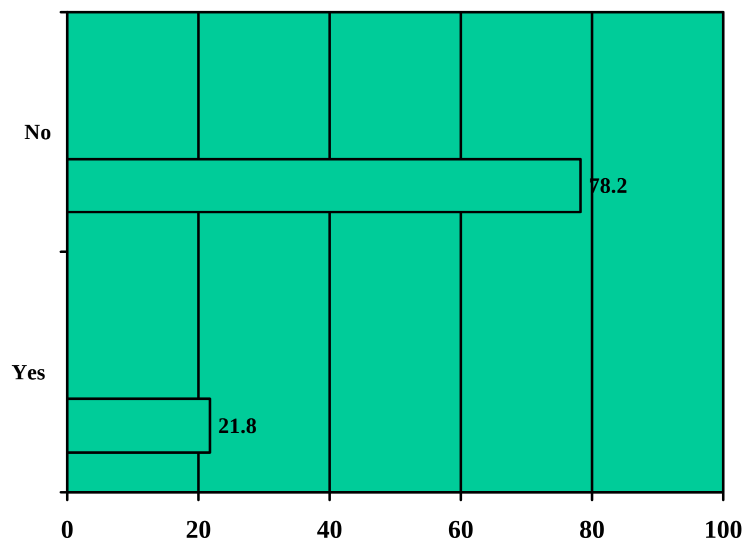


Table 1.4: FACTORS CONSIDERED WHEN DECIDING TO PURCHASE A CELLULAR PHONE

	%
• Price of phone	58.7
• Features on the phone	48.0
• Coverage area	43.9
• Cost of making calls	39.0
• Perceived clarity of the phone	31.0
• Brand of phone	30.3
• Design of the phone	16.3
• Cost of others calling you	9.1

A2.13 In relation to the household survey, only 9.1% of the respondents said that they consider the cost of others calling them when deciding to purchase a mobile phone. This provides further evidence that user groups are not likely to constrain the price setting behaviour of domestic mobile operators.

FTM and MTM Call Substitution

A2.14 Based on the fact that 38% of the household respondents have both fixed and mobile lines (see Figure 4), it is possible that some telephone subscribers could be substituting MTM calls for FTM calls. Since on-net MTM call charges were as low as $4.00 per minute while FTM calling were as high as $12 per minute, subscribers could substitute between FTM calls and on-net MTM calls. However, to make this strategy effective, the subscriber would need the called party's mobile number, the mobile network that the called party is on, and the caller must be a subscriber to the called party's mobile operator's network. However, only one per cent of the household respondents indicated that they subscribe to all three mobile network operators.

A2.15 It is the view of the Office that this kind of substitution is occurring to some extent. This is evident from the fact that 83% of the household respondents who subscribe to more than one mobile network (see Table 1.2) indicated that they do so to avoid cross network or off-net calls. However, it is evident that this is not occurring on a sufficiently large scale to constrain the pricing of FTM calls since peak FTM call charges remained as high as $12 per minute while on-net MTM calls were as low as $4.00 per minute.

Figure 7: Principal Place Where Mobile Calls Made from (Corporate Survey)

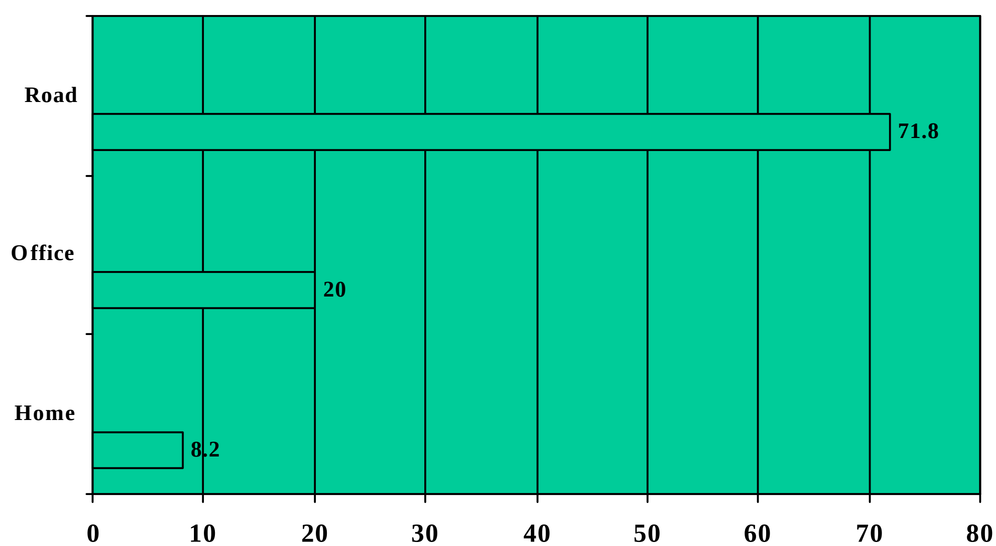
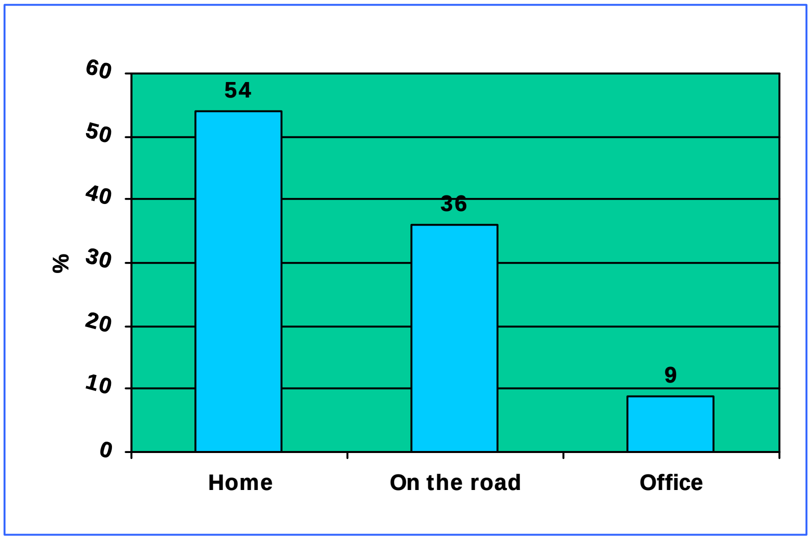


Figure 8: Places Mobile Calls Made from Most Often (Household)

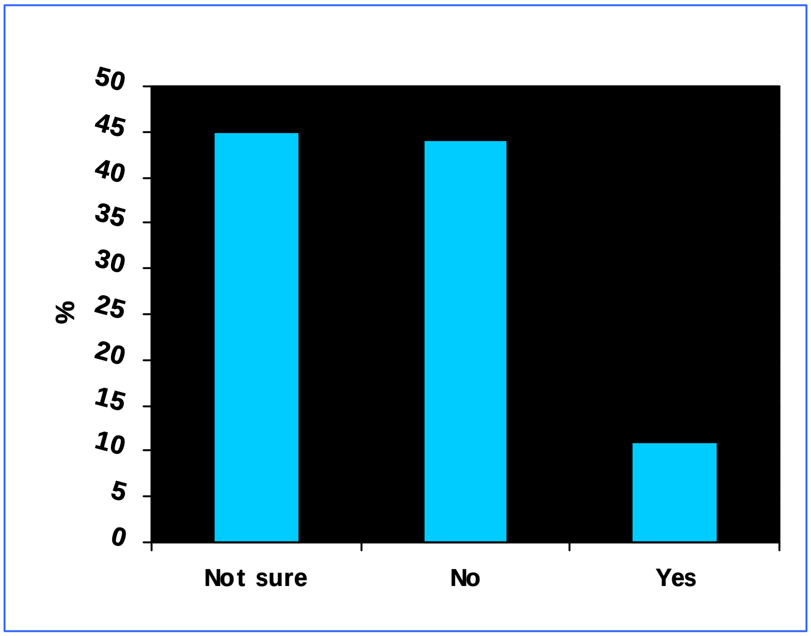


A2.16 The fact that 54% of all mobile calls are made from home may be viewed as consistent with the finding that 55% of those surveyed have only a mobile telephone mobile.

Mobile and Fixed Access: Complements or Substitutes

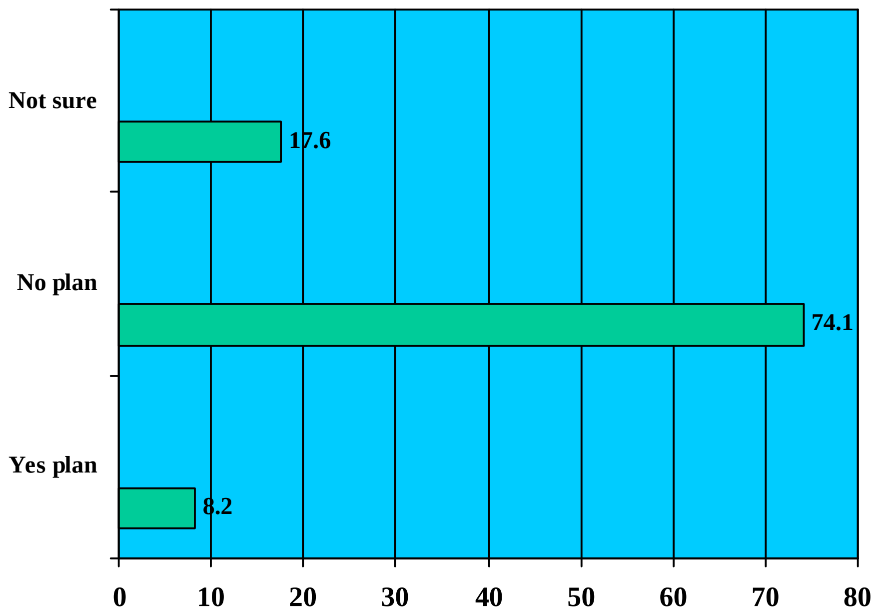
A2.15 When asked if they would replacing the fixed telephone line with a mobile line, only 11% and 8.2% of the household and corporate respondents respectively, said they may be prepared to do so (see Figures 9 and 10). Further, 38% of the household respondent with telephones indicated that they had both fixed and mobile phones. This suggests that subscribers do not view mobile and fixed telephones as substitutes. This is consistent with the Office's determination that mobile and fixed telephony access lines are complements rather than substitutes.[28]

Figure 9: Incidence of Plans to Replace Fixed with Mobile Access (Household)



[28] See Determination 2.3 in Document No: Tel 2003/07, Determination Notice: Dominant Public Voice Carriers.

Figure 10: Incidence of Plans to Replace Fixed Line with Mobile Line (Corporate)



GLOSSARY

2G NETWORK	-	Second Generation Mobile Network (an upgrade from analogue to digital network)
CALL BACK	-	Call back can arise informally where caller and call recipient agree that the recipient should call the original caller to complete their conversation or it can be automated, for example, whereby the caller dials an access number to a company offering call back services exploiting the differences between the price of making a call in one direction and the price of making the same call in the reverse direction.
CALL TEMINATION	-	Call termination is the service of delivering calls to the intended destinations on a voice network (fixed or mobile).
CDMA	-	Code Division Multiple Access
CLOSED USER GROUP	-	A group of people, such as a family, who care about the charges paid by other members of the group.
CPE	-	Customer Premises Equipment
CPP	-	**Calling Party Pays**. A system in which the subscriber initiating the call pays the whole price for terminating the call, so that the receiver pays nothing for call termination**.**
C&WJ	-	**Cable and Wireless Jamaica**
FCA	-	**Fair Competition Act**
FIXED RETENTION CHARGE	-	The proportion of FTM retail charges that are kept by fixed network operators.
FTC	-	**Fair Trading Commission**
FTF	-	**Fixed to Fixed**
FTM	-	**Fixed to Mobile**
GSM	-	**Global System for Mobile Communications**
HHI	-	**The Herfindahl-Hirschman-Index**
MTM	-	**Mobile to Mobile**
ODJ	-	**Oceanic Digital Jamaica**

OFF-NET CALL	**-**	**Off Network Call.** The description of a call where the subscriber is connected to a call recipient who subscribes to a different mobile network or to a fixed-line network.
OFTEL	-	UK Office of Telecommunications
ON-NET CALL	**-**	A call connected to a call recipient who subscribes to the same network.
OUR	**-**	**Office of Utilities Regulation**
PBX	**-**	**Private Branch Exchange**
PSTN	**-**	**Public Switched Telecommunications Network**
RIO	**-**	**Reference Interconnection Offer**
SIM	**-**	**Subscriber Identity Module**
SMS	**-**	Short Message Service. Allows the user to send text messages of up to 160 characters to other mobile telephone users.
Termination Charge	**-**	Payment made by the operator of the network on which a call originates to the operator of the network on which the call terminates**,** if the two networks are different.
The Act	**-**	**The Telecommunications Act (2000)**