Fair Trading Commission

STAFF REPORT

Investigation into the conduct of Mossel Jamaica Limited with respect to the pricing of its fixed to mobile (FTM) voice termination service

Case no: 6489-09

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Final

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EXECUTIVE SUMMARY

The Allegation

1. In March 2009, the Staff of the Fair Trading Commission (FTC) received a complaint from Cable and Wireless Jamaica Limited (trading as LIME; and hereinafter referred to as LIME) alleging that Mossel Jamaica Limited (trading as Digicel; and hereinafter referred to as Digicel) has been engaging in conduct which is likely to have the effect of substantially lessening competition. Specifically, Digicel (i) retails its on-network fixed to mobile (FTM) voice service at a price which is less than the price it charges mobile voice termination (MVT) services, which is an essential input for rivals to offer competing voice services; and (ii) took steps which directly resulted in competing voice services being more than twice as expensive as Digicel's service. Specifically, Digicel charges its fixed-line business subscribers $4.00 per minute to call its mobile subscribers while causing LIME (its main rival) to retail competing fixed-line services for $8.50 per minute.

The Challenged Conduct

2. The conduct is being challenged to determine whether the pricing strategy outlined above is likely to lessen the ability of LIME to constrain Digicel's expansion in the market and subsequently allow Digicel to obtain a higher market price once the market is sufficiently concentrated.

Conclusion

3. Based on our review of the matter, we conclude that Digicel's conduct is likely to substantially lessen competition and harm consumers in the fixed and mobile voice (FMV) services market in Jamaica.

Background

4. Before summarizing the main conclusions, we discuss some general background matters underlying those conclusions, including basic industry characteristics, and the important role of the nature of the demand for voice services in analyzing the likely effects of the challenged conduct.

5. Digicel, LIME, Claro Jamaica Limited (Claro) and Columbus Communications Jamaica Limited (Flow) supply telecommunication services to final consumers of these services (subscribers) in Jamaica. These enterprises primarily offer voice services and, to a lesser extent, data services such as text messaging services (SMS).

6. Voice services are offered on fixed and mobile voice networks. Prior to the conduct, Digicel and Claro offered voice services on a mobile network only, Flow offered services on a fixed network only, whilst LIME offered services on both mobile and fixed networks. The challenged conduct involves Digicel's introduction of its fixed-line voice service.

7. Several markets are involved in our analysis of the challenged conduct. Of these, the markets in which we find that the challenged conduct is likely to substantially lessen competition include: (a) FMV; and (b) narrower markets within the overall FMV market such as business fixed-line voice (BFV) services.

8. Telecommunication service providers compete for subscribers in Jamaica. Since only the owner can legally complete (i.e. terminate) calls on a network, each provider purchases voice termination (VT) service from each other. VT is therefore needed by any provider seeking to offer its subscribers access to subscribers of other networks.

Accordingly, a service provider's demand for VT is derived from its subscribers desire to make calls to, and receive calls from, subscribers to other networks. Prior to June 2008, the derived demand for Digicel's VT is relatively large since Digicel had approximately [✂] percent share of the subscribers to fixed and mobile voice services in the relevant market (Table 1).

Economic Conditions

9. Our conclusions are as follows:

a. <u>Relevant Market 1</u>: Voice Termination (VT) Services

1. VT is a relevant product market for the purpose of assessing the likely competitive effects of the challenged conduct. There are no substitutes for VT.

2. Jamaica is a relevant geographic market for the purpose of assessing the likely competitive effects of the challenged conduct.

b. <u>Relevant Market 2</u>: Fixed and Mobile Voice (FMV) Services

1. FMV is another relevant product market for the purpose of assessing the likely competitive effects of the challenged conduct. There are no economically viable substitutes for FMV.

2. Jamaica is a relevant geographic market for the purpose of assessing the likely competitive effects of the challenged conduct.

3. The challenged conduct is likely to result in a substantial lessening of competition in the form of fewer discounts, less informed consumers and fewer product choices in the FMV market.

c. Other Relevant Markets

1. Other markets relevant to assessing the challenged conduct include (i) smaller markets within the FMV- in particular, the BFV; and (ii) smaller markets within VT- in particular each distinct network constitute a relevant market within the broader VT market.

2. Jamaica is a relevant geographic market for the purpose of assessing the likely competitive effects of the challenged conduct.

d. Assessment of Dominance

1. There are four enterprises participating in the broader market for VT: Digicel, LIME, Flow and Claro. Each participant has a market share of 100 percent of one of the narrower markets defined within VT. Further, each enterprise is considered to be the only supplier of the product in the foreseeable future.

2. We conclude that the Respondent is a dominant supplier in narrower markets defined within the broader VT market (specifically on Digicel's fixed and mobile networks).

e. Assessment of Competitive Effect

1. There are four enterprises participating in the broader market for FMV: Digicel, LIME, Flow and Claro.

2. Prior to the introduction of Digicel's fixed-line service, market share was estimated as Digicel ([✂] percent), LIME ([✂] percent), Flow ([✂] percent) and Claro (✂ percent).

3. We demonstrate that the challenged conduct is likely to result in, among other things, a market with shares distributed among participants as follows: Digicel ([✂] percent), LIME ([✂] percent), Flow ([✂] percent) and Claro ([✂] percent). Accordingly, the conduct is likely to result in the market concentration level (HHI) increasing by at least 68 points from 4,792 to at least 4,860.

4. The FMV market is characterized by network externalities in demand in that the value of a given provider's voice service increases when there are more subscribers to the service. This network characteristic represents an impediment to potential enterprises to enter the market or impediment to existing firms from expanding its output. Given the network characteristics, therefore, there is a danger that when a service provider reaches a critical size, potential new entrants and actual rivals would be unlikely to defeat the undue exercise of market power which is likely to result from the challenged conduct.

5. We conclude that the challenged conduct is likely to substantially lessen competition in the FMV, as well as narrower markets defined within, all of which were already highly concentrated and characterised by impediments to entry and expansion.

6. Consumers are likely to be worse off by virtue of less intense price competition between LIME and Digicel; and/or fewer informed consumers.

f. Efficiencies

1. There are no efficiencies specific to this transaction which is likely to mitigate the threat posed by the challenged conduct.

g. Overall Conclusion and Recommended Relief

1. The challenged conduct is likely to substantially lessen competition in the market for FMV. The most effective means to restore competition would be to alter the regulatory environment to remove Digicel's undue influence over the price of its rivals' voice services.

2. We recognize however, that it would take considerable time for the above suggestion to be implemented. In the meantime, therefore, we recommend that the price Digicel charges its business fixed-line voice (BFV) subscribers to call its mobile voice (MV) subscribers be no different from the price Digicel, by virtue of RIO-4, causes LIME to charge its BFV subscribers to call Digicel's MV subscribers; and further this price be no greater than is necessary to cover an appropriately measured cost of providing the service.

10. The conclusions we have drawn are supported by the evidence that we have reviewed in this matter, including responses to *Requests for Information* submitted by LIME, Digicel and the Office of Utilities Regulation (OUR).

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1. INTRODUCTION

1.1 The Allegation

1. In March 2009, the Staff of the Fair Trading Commission (FTC) received a complaint from Cable and Wireless Jamaica Limited (trading as LIME; and hereinafter referred to as LIME) alleging that Mossel Jamaica Limited (trading as Digicel; and hereinafter referred to as Digicel) has been engaging in conduct which is likely to have the effect of substantially lessening competition. Specifically, Digicel (i) retails its on-network fixed to mobile (FTM) voice service at a price which is less than the price it charges mobile voice termination (MVT) services, which is an essential input for rivals to offer competing voice services; and (ii) took steps which directly resulted in competing voice services being more than twice as expensive as Digicel's service. Specifically, Digicel charges its fixed-line business subscribers $4.00 per minute to call its mobile subscribers while causing LIME (its main rival) to retail competing fixed-line services for $8.50 per minute.

1.2 The Challenged Conduct

2. The conduct is being challenged to determine whether the pricing strategy outlined above is likely to lessen the ability of LIME to constrain Digicel's expansion in the market and subsequently allow Digicel to obtain a higher market price once the market is sufficiently concentrated.

1.3 Telecommunications Sector Overview

3. In Jamaica up until 2000, telecommunication services were offered by a single provider; initially by the Jamaican government which eventually divested the enterprise to Cable and Wireless Jamaica Limited which now trades as LIME. The telecommunications sector was liberalized in three phases commencing April 2000 and ending in April 2003.

4. Mobile Segment. LIME's strong position in the sector was successfully challenged from the mobile segment of the sector. In April 2001, Digicel entered the sector offering mobile voice services, and initially capable of serving only 80% of the geographic market. It became capable of serving the entire geographic market by 2003. It is reported that Digicel acquired 100,000 subscribers to its mobile network during its first one hundred days of operation and by 2002 had surpassed the incumbent's mobile subscription base. Late in 2001, MiPhone (which was subsequently acquired by Claro) entered the sector offering only mobile voice services.

5. Fixed-line Segment. There have been two somewhat unsuccessful attempts to challenge LIME's position from the fixed-network side of the sector. In 2003, Gotel entered the sector offering fixed voice services. Flow entered the sector in 2007.

6. Prior to the challenged conduct, Digicel and LIME were each other's main rivals, together accounting for 98 percent of voice services; each of the other two suppliers, Claro and Flow, held only 1 percent. Although LIME held only a

slight advantage over Digicel in the fixed and mobile voice (FMV) services sector, each had a considerable advantage in one segment of the sector. Specifically, for calls originating on fixed networks, LIME controlled 97 percent and Digicel was virtually absent (Flow accounted for the other 4 percent). For calls originating on mobile networks, LIME controlled 31 percent whereas Digicel held approximately 68 percent (Table 1).

7. Given that LIME needs to acquire voice termination (VT) service from Digicel to access Digicel's subscribers, Digicel has a clear opportunity to exploit its large subscriber base (representing approximately 47 percent of the market prior to the challenged conduct) to acquire market power in one of the most lucrative segments within the sector: business fixed-line voice (BFV) services. This segment is especially attractive to service providers as the profit margin for subscribers is generally greater than the profit margin in other segments. Specifically, average revenue per unit (ARPU) is generally greater for fixed-line voice (FV) subscribers than it is for mobile voice (MV) subscribers; and the ARPU is generally greater for business subscribers than it is for residential subscribers.

8. Since the implementation of the challenged conduct, at least one former subscriber to LIME's BFV service has publicly indicated the massive savings in telephone call charges since switching to Digicel's BFV service (and Digicel's mobile plans).[1]

2. SCOPE AND METHODOLOGY OF INVESTIGATION

2.1 Application of the Fair Competition Act (FCA)

9. Section 20 (d) of the FCA treats an enterprise as abusing its dominant position if it '*directly or indirectly imposes unfair purchase or selling prices or other uncompetitive practices*'.

10. The full text of the provision provides as follows:

20(1) 'An enterprise abuses a dominant position if it impedes the maintenance or development of effective competition in a market and in particular...if it –

- a) *restricts the entry of any person into that or any other market;*
- b) *prevents or deters any person from engaging in competitive conduct in that or any other market;*
- c) *eliminates or removes any person from that or any other market;*
- d) *directly or indirectly imposes unfair purchase or selling prices or other uncompetitive practices;*
- e) *limits production of goods or services to the prejudice of consumers;*

[1] Advertisement quoting Mr. Duane Lue-Fong, Managing Director of Lutec, appears on page 3 of the January 31, 2010 edition of *Style Observer*.

f) *makes the conclusion of agreements subject to acceptance by other parties of supplementary obligations, which by their nature, or according to commercial usage, have no connection with the subject of such agreements.*

(2) *An enterprise shall not be treated as abusing a dominant position—*

a) *if it is shown that—*

(i) *its behavior was exclusively directed to…promoting technical or economic progress; and*

(ii) *consumers were allowed a fair share of the resulting benefit;*

b) *by reason only that the enterprise enforces or seeks to enforce any right under or existing by virtue of any copyright, patent, registered design or trademark.*

11. This provision is similar to Article 82 (2) (a) of the Treaty Establishing the European Union.

12. Article 82 of the EC Treaty provides as follows:

> "*Any abuse by one or more undertakings of a dominant position within the common market or in a substantial part of it shall be prohibited as incompatible with the common market insofar as it may affect trade between Member States. Such abuse may, in particular, consist in:*
>
> *(a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions;*
>
> *(b) limiting production, markets or technical development to the prejudice of consumers;*
>
> *(c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;*
>
> *(d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts*".

13. Other provisions may be examined for abuse. Likely provisions include section 20 (1) (a) of the FCA, section 20(1) (b) of the FCA, and section 20(1) (c) of the FCA.

14. Regarding section 20(1) (a) of the FCA, a relevant market for the purposes of the enquiry is voice termination (VT) services. The issue arising is whether the discriminatory pricing by Digicel exemplified by the difference between termination rates for calls on its network regarding its subscribers and termination rates for calls from LIME's subscribers to its network results in the restriction of LIME's expansion within an appropriately defined market.

15. In this case the voice termination service at issue is that provided by Digicel to its customers, on the one hand, and that provided by Digicel to LIME's customer's terminating on Digicel's network, on the other hand. Specifically, the issue may be restated as whether the price differential in termination rates between Digicel's customers terminating calls on its network and LIME's subscribers terminating calls on Digicel's network results in the restriction of LIME's entry to Digicel's on-net termination market or the market for calls terminating on Digicel's network, which, for convenience, may be called the off-net termination market.

16. In as much as Digicel may be considered dominant in the market for termination services on its network and a relevant product market is termination services on its network, it is counter-intuitive to suggest that there can be competition in this market. This is so because a telecommunications provider that is the only person able to terminate calls on its network is thereby converted to a monopolist with respect to the provision of that service.

17. Therefore, in light of the nature of the service to be provided and that it can only be provided by the person on whose network termination is to be effected, there cannot in effect be a restriction of entry to that market since that market by definition is not open to competition.

18. The conclusion above would be similar in respect of the application of section 20(1) (b) of the FCA, and section 20(1) (c) of the FCA in so far as the market for voice termination services on Digicel's network is concerned.

19. However, since the provision is not limited to anticompetitive effects in the main market under investigation but also to 'any other market', the possible anticompetitive effects in other markets are to be examined. Other possible markets that may be identified include the aggregate of voice services provided on fixed and mobile networks (FMV); as well as the market involving business fixed voice (BFV) service.[2]

3. DEFINING THE RELEVANT MARKET

3.1 Analytical Framework and Overview

20. The purpose of defining the relevant market is to identify the arena in which the Respondent competes and therefore the exercise represents an important step in analyzing the likely competition effects, if any, of the challenged conduct. The framework used to define the relevant market is the small but significant non-transitory increase in prices (SSNIP) test as suggested in the

[2] Both Digicel and LIME compete for this market.

Horizontal Merger Guidelines issued by the United States (U.S.) competition authorities in 1992 and revised in 1997.[3] The framework has been adopted by authorities in many other jurisdictions, including Jamaica, to assess the competitive effects in even single-firm conduct.[4]

21. The Merger Guidelines defines a market as "...a product or group of products and a geographic area in which it is produced or sold such that a hypothetical profit-maximising firm, not subject to price regulation, that was the only present and future producer or seller of those products in that area likely would impose at least a 'small but significant and non-transitory' increase in price, assuming the terms of sale of all other products are held constant. A relevant market is a group of products and a geographic area that is no bigger than necessary to satisfy this test." (USDOJ and USFTC, 1997, 4).

22. The Merger Guidelines makes special provisions for defining markets in which the hypothetical monopolist can profitably engage in price discrimination. Price discrimination occurs whenever a supplier obtains different profit margins from sales of the same product to different customers or groups of customers. If the hypothetical monopolist can profitably impose a discriminatory price increase on sales to different customers, then each group of customer comprise separate relevant product markets within which we could analyze the potential anticompetitive effects of the challenged conduct.

23. Based on the evidence of price discrimination between business and residential customers, separate narrower product markets within the fixed and mobile voice (FMV) service.

3.2 The product market

<u>Voice Termination (VT) Services</u>

24. A relevant market in this matter is VT. VT is a crucial input for voice services providers (VSPs). Without VT, a VSP would be unable to facilitate calls to other networks.

25. A key consideration in determining whether it would be profitable for a hypothetical monopolist to raise price above the competitive level is the price sensitivity of demand in the market. If the market is sufficiently sensitive to prices, then the hypothetical monopolist will find it unprofitable to raise prices above the competitive level. This can occur because many customers switch to other products or decide to do without the service or any of its substitutes, if any. Customers are less likely to reduce consumption in a market in response to a price increase when the next best substitute is substantially less attractive.

[3] See U.S. Department of Justice (USDoJ) and Federal Trade Commission (USFTC). "Horizontal Merger Guidelines" *USDoJ Web site*. April 8, 1997..http://www.justice.gov/atr/public/guidelines/hmg.htm (accessed March 3, 2010).

[4] See Fair Trading Commission. 2002. The Fair Competition Act: A Guide to Anti-competitive Practices.

26. Market demand for VT is insensitive to price for two reasons. First, there are no substitutes for VT. Without VT, subscribers of VSP would be unable to complete calls to subscribers on other networks.

27. Second, the demand for VT is derived from the demand for voice services. The value of the voice service is directly related to the number of individuals to whom subscribers could place calls. The larger the number of subscribers of other networks, the more valuable VT will be to a given VSP; accordingly, each provider has an incentive to increase the size of its network(s). Based on data received from LIME, Digicel and OUR, we estimate that a 1 percent increase in the size of the fixed network will stimulate a 0.74 percent increase in the demand for mobile voice (MV) services; similarly a 1 percent increase in the size of the mobile network will stimulate a 0.66 percent increase in the demand for fixed-line voice (FV) services. [See Appendix for details]

Narrower Markets within VT

28. The Merger Guidelines shows that markets may be defined through price discrimination and argues that competitive harm may be present in such markets even if competitive harm is unlikely in broader markets in which there is no price discrimination. Price discrimination is said to occur whenever a supplier earns different profit margins from sales to different customers or groups of customers. The price differences are based on differences in the price sensitivity of these customers. Profitable price discrimination requires (i) the supplier to be able to identify members of the different customer groups; (ii) customers being charged higher prices are less sensitive to price increases above costs than other customers; and (iii) customers being charged the lower prices (relative to costs) are unable to resell the product to customers being charged the higher prices (relative to costs).

29. The conditions under which price discrimination is profitable are present in the VT market. Specifically, customers of VT (i.e., other network operators) are largely insensitive to price increases given that the demand for such services is derived from their subscribers' desire to contact specific individuals who may be subscribers to other networks. Further, it is technically infeasible for VT to be resold.

30. Accordingly, a VT monopolist could profitably engage in price discrimination based on the specific network on which the termination service is required by customers since there is no feasible substitute for terminating a call on a specific network. Accordingly, a hypothetical monopolist could profitably offer different prices for VT for the various networks under its control. Based on the Horizontal Merger Guidelines, each network on which VT are offered is considered to be a separate relevant product market for the purpose of assessing the competitive effects, if any, of the challenged conduct.

Fixed and Mobile Voice (FMV) Services

31. Another relevant product market within which to consider the competitive effects, if any, of the challenged conduct is FMV. These services allow for

two-way communication among subscribers, by way of voice telephony. Specifically, each subscriber of FMV is able to make calls to, and receive calls from, other subscribers of voice services.

32. A voice network is an example of an economic good described by economists as a multi-sided platform (MSP). In general, an individual is said to operate a MSP if he facilitates interaction among different groups (or sides) of its customers.[5] Voice network operators essentially allow one group of subscribers (‘*calling party*’) to communicate with another group of subscribers (‘*called party*’). The matter at hand surrounds the price at which Digicel allows its fixed-line calling party to communicate with its mobile called party and whether and the extent to which Digicel is influencing the price at which LIME offers its fixed-line business calling party competing services to Digicel’s mobile called party.

33. MSPs have received considerable attention from economists in recent times because of a special characteristic of these goods. Specifically, MSPs have network characteristics in which the value of the platform to one group of its customers depends on the size of other groups. The value of a voice network to a subscriber will depend on, among other things, the number of subscribers he can communicate with. The network effect is accounted for when defining the relevant market.

34. Critical loss theory is a useful analytical tool which economists use to carryout the SSNIP test for markets characterised by network effects. The theory, conceptually, seeks to establish the maximum level of sales that a hypothetical monopolist of a given set of products could lose without incurring a loss arising from a 5 percent price increase.[6] The critical loss is then compared to the likely actual loss in sales arising from a 5 percent price increase for a given group of products. If actual loss exceeds the critical loss, then the price increase would be unprofitable and suggests that the relevant product market is wider; the group of products should then be broadened to properly identify the relevant product. If actual loss is less than the critical loss, then the price increase is profitable and suggests that the relevant product market is narrower. The relevant product market is properly identified when the actual loss is identical to the critical loss.

35. Based on the results of our analysis, we conclude that FV and MV are part of the same relevant product market (See Appendix for details).

Narrower Markets within FMV

36. A FMV monopolist could profitably engage in price discrimination based on numerous dimensions such as: mobile/fixed; business/residential; pre-paid/ post-paid; international/ local destination; off-net/on-net; peak/ off-peak; and sending/receiving. This is evidenced by the fact that the current suppliers offer different tariffs based on numerous identifiable subscriber

[5] See Valletti, Tommaso. 2006. “Mobile Call Termination: a Tale of Two-Sided Markets,” Communications & Strategies, No. 6, pp. 61.
[6] Evans, David and Michael Noel. 2007. “Defining Markets that involve Multi-sided platform businesses: an empirical framework with an application to Google’s purchase of double-click.”

grouping. For instance, for any given call, only the calling party is charged; [7] calling another network (off-net) is generally more expensive than calling the same network (on-net);[8] a call made using calling cards (pre-paid) is generally more expensive than a call which is billed at the end of each month (post-paid); a call made from (respectively, to) a mobile network is generally more expensive than a call from (respectively, to) a fixed network; calling an international destination is generally more expensive than calling a local destination; and a call made during peak hours (weekdays) is generally more expensive than a call made during off-peak hours (weeknights and weekends).

37. Given the differential tariffs, consumers have the option of selecting from among at least thirty-two varieties of voice services according to their individual preference or need for voice services.

38. Based on the Merger Guidelines, as indicated earlier in this report, each subscriber grouping of the customer base can be considered to be a separate relevant product market. Given the number of dimensions along which suppliers price discriminate, there are at least thirty-two narrower markets within the FMV market.

39. For purposes of assessing the likely effects, if any, of the challenged conduct, we make specific reference to the price discrimination between business and residential fixed-line subscribers in the market as this is the market in which the immediate effects would be observed. Based on data received from LIME, there is a significant difference in the profitability from serving these subscriber groups as, on average, LIME business fixed-line subscribers generate an average revenue per unit (ARPU) of $[✂], some [✂] percent greater than the $[✂] ARPU generated by residential subscribers to fixed-line voice services.

3.3 The Geographic Market

40. It would be reasonable to examine the challenged conduct in a geographic region coinciding with the boundaries of Jamaica as there is no evidence to support the hypothesis that competition in any narrow region in Jamaica is any different from competition in the wider Jamaica. This is true for VT, FMV and the narrower markets defined therein.

4. ASSESSMENT OF DOMINANCE

4.1 Analytic Framework and Overview

41. An assessment of dominance is conducted to determine the extent to which the Respondent's conduct is likely to face competitive constraints from existing or future rivals. Any conduct which is unlikely to result in the

[7] For toll free numbers, only the receiving party is charged.
[8] LIME is an exception to this general rule.

acquisition, maintenance or extension of market power is unlikely to substantially lessen competition in an appropriately defined market. Market power is defined as the ability of an enterprise to profitably raise or maintain price above the competitive levels for a sustained period. High concentration, high impediments to entry/exit, and the absence of countervailing buyer power, are key indicators that the structure is conducive to the exercise of market power by suppliers. High concentration assesses the extent to which the enterprise face competitive constraints from existing rivals; impediments' to entry/exit assesses the extent to which the enterprise face competitive constraints from future rivals; and countervailing buyer power assesses the extent to which the enterprise face competitive constraints from their customers.

42. The Herfindahl-Hirschman Index (HHI) is a measure of market concentration and takes on a value between 0 and 10,000. A value below 1,000 is interpreted to reflect an unconcentrated (competitive) market structure, a value between 1,000 and 1,800 reflects a moderately concentrated market and a value above 1,800 reflects a highly competitive market.

43. The Merger Guidelines indicates that in a highly concentrated market, an increase of more than 50 points potentially raises significant competitive concerns. Further, an increase of 100 points in a highly concentrated market leads to a presumption of anticompetitive effects, barring contradictory evidence regarding impediments to entry/exit and countervailing buyer power. We generally agree with the Guidelines regarding the use of concentration levels to screen the potential for anticompetitive effects.

We conclude that Digicel is a dominant supplier in the market for VT services and the challenged conduct is likely to allow Digicel to acquire market power in the BFV market; as well as in the broader FMV market in Jamaica.

4.2 Structure: narrower Markets within VT market

44. We have determined that narrower relevant product markets exist within VT and that they coincide with the various networks. Due to technological and legal constraints, only the owner of a network could terminate calls on the network. This means that each provider is the only current and future supplier of VT services in the respective markets and could not face competitive constraints from future suppliers. Further, since consumers of VT services (i.e. voice service providers) demand these services to facilitate the demand of their subscribers, it is unlikely that the Respondent will face competitive constraints from its customers.

45. Accordingly we conclude that the Digicel is a dominant supplier in supplying VT services on Digicel's mobile and fixed network.

4.3 Structure: FMV and narrower markets

46. There are four service providers in the FMV sector: LIME, Digicel, Claro, and Flow. LIME is the incumbent provider and offers voice services on both fixed

and mobile networks; Digicel offers voice services on fixed (to business subscribers only) and mobile networks. Claro offer services on a mobile network only; and Flow offers services on a fixed network only.

47. The market share of an enterprise is one factor, but not the only one, which is used to assess the potential for enterprises to exercise market power. The two most obvious bases upon which to measure market share are (i) share of subscribers and (ii) share of call volume.

48. Call volume data is more likely than subscription data to provide an unbiased measure of market power. This as using subscription data is likely to lead to biased estimates of market power to the extent that some individuals subscribe to multiple service providers.[9] Accordingly, market share distribution based on call volume is presented in Table 1 below.

49. The table shows that the distribution of market shares as at the quarters ending June 2008 and June 2009. In May 2008, Digicel introduced its FTM service exclusively to business subscribers, at a price of $4.00 per minute. At that time, LIME's competing FTM service was being offered at $7.00 per minute. The table shows that during the quarter ended June 2008, LIME's subscribers generated [✂] percent of the domestic call volume. Digicel subscribers accounted for [✂] percent of the call volume. It is also shown that during the quarter ended June 2009, Digicel's market share increased by 5 percentage points to [✂] percent while LIME's share declined by 7 points to [✂] percent.

Table 1 Share of FMV market

	Outgoing Domestic Calls (000s mins.)			**Share (%)**
	Mobile	**Fixed**	**TOTAL**	
Apr.-Jun. 2008				
Digicel	[✂]	[✂]	[✂]	[✂]
LIME	[✂]	[✂]	[✂]	[✂]
Claro	[✂]	0	[✂]	[✂]
Flow	0	[✂]	[✂]	[✂]
TOTAL	[✂]	[✂]	[✂]	100
Apr.-Jun. 2009				
Digicel	[✂]	--	[✂]	[✂]
LIME	[✂]	[✂]	[✂]	[✂]
Claro	[✂]	0	[✂]	[✂]
Flow	0	[✂]	[✂]	[✂]
TOTAL	[✂]	[✂]	[✂]	100

Sources: OUR, Digicel.
Note: -- data unavailable

[9] For example, if there are only two suppliers in the industry and everyone subscribes to both suppliers, then subscription data would suggest that each supplier has only 50 percent of the market.

The distribution of market shares is a useful indication of which enterprises are likely to exert competitive constraints on the Respondent. The table shows that Digicel and LIME are the sector leaders with respect to the share of call volumes. As at the quarter ending June 2008, the market leader ([✂]) maintained a [✂] point advantage over the second largest enterprise (✂) whilst the second largest enterprise held a 46 point advantage over the third largest enterprise in the market. Market concentration, using the HHI, is calculated at 4792 points, suggesting a highly concentrated market.

50. We have shown that the challenged conduct is likely to have the effect of substantially increasing market concentration. Given that the market was highly concentrated before the challenged conduct, it is clear that without the appropriate intervention, there is a danger that the market will "tip" in Digicel's favour.[10] If "tipping" occurs, Digicel would be in a position to operate without effective competitive constraints from existing rivals, and therefore would have the opportunity to exercise market power.

4.4 Entry

Analysis Framework and Overview

51. The entry of enterprises motivated to contest excessive profits earned by incumbents is one way markets discourage incumbents from exercising market power. If entry is effective (i.e. timely, likely and sufficient), it may avert or reverse anticompetitive effects of the challenged conduct, even in a highly concentrated market. The Merger Guidelines defines entry as "timely" when it occurs in two years. Entry is likely when, prior to the challenged conduct, the entrant would be profitable and the entrant can obtain such prices subsequent to the conduct. Entry is expected to be sufficient if critical inputs are not controlled by incumbent suppliers and the entrant's products are positioned to be responsive to the output reductions with the competitive effects of concern.

52. Our conclusion is that new entry into the FMV market is unlikely to constrain the likely anticompetitive effects in the narrower BFV market, or in the broader FMV market. This as the challenged conduct is likely to allow Digicel to unduly acquire a significant share of the market and thereby will be shielded from competition, given the strong network effects and the high mobile penetration rate in the FMV market. We have outlined below, the bases upon which we arrived at this conclusion.

New Entry into the FMV Market[11]

53. As discussed earlier in the report, five enterprises have supplied the FMV sector since it was liberalized in 2000: Digicel and MiPhone in 2001, Gotel in

[10] Tipping refers to the tendency of a market to favour a supplier once the supplier has gained an initial edge.

[11] The information reported in this section was sourced from Fair Trading Commission (FTC). "Telecommunications Liberalization Impact Assessment." *FTC Web site*. August 2007. http://www.jftc.com (accessed March 2010).

2003 and Flow in 2007.[12] Only Digicel, however successfully entered the market in the sense of representing an effective constraint on the conduct of the incumbent, LIME. Digicel had an almost instantaneous impact on the competitiveness of the market in that it is reported that Digicel acquired 100,000 subscribers to its mobile network during its first one hundred days of operation and by 2002 had surpassed the incumbent's mobile subscription base. The other entrants have been considerably less effective in competing in the market.

54. It is unlikely that future entrants could be effective in averting the likely anticompetitive effects of the challenged conduct; due primarily to significant network effects and the high penetration rate of mobile subscriptions. Specifically, the relevant market is characterized by considerable network effects in which the bigger networks are valued greater than smaller networks. If, as a result of the challenged conduct, Digicel grows its market share to a level where the market is tipped in its favour, then even more efficient enterprises will find it difficult to enter into and expand within the market as consumers would be unwilling to switch providers unless they are sure that a significant number of consumers will do the same.

55. This tendency of subscribers to gravitate towards the larger network is reinforced by marketing strategies by providers which make on-network calls more attractive to subscribers; specifically, call charges are generally lower for on-network calls, and most promotions involving bonus/loyalty call credits are usually limited to on-network calls. Based on our analyses (presented in Table 1A in the Appendix), we estimate that the demand for a provider's mobile voice services is 66 times more responsive to the size of the provider's fixed network than it is to the size of a rival's fixed network.[13] Similarly, the demand for a provider's fixed-line voice services is 54 times more responsive to the size of the provider's mobile network than it is to the size of a rival's mobile network.

56. This means that the greatest opportunity for entrants to successfully challenge incumbents lies in serving new (i.e. previously unserved) subscribers. Indeed at the end of 2000, the year prior to Digicel's entry, market penetration for mobile subscribers was only 9.6 percent; by the end of 2001, the penetration level increased to 24.5 percent. The opportunity for future entrants to be as effective as Digicel is limited by the fact that by the end of June 2009, mobile penetration was 104.7 percent.[14]

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[12] American Movil, trading as Claro, entered by acquiring MiPhone in 2008.

[13] Specifically, it is shown that a one percent increase in the size of a provider's own fixed network will increase his mobile network by 0.74 percent; compared to a 0.012 reduction in the mobile network when there is an increase in the size of a rival's fixed network.

[14] OUR "Telecommunications Market Information Quarterly Report: Quarters 1 and 2 (January-June 2009)." *OUR Web site*. June 10, 2010. http://www.our.org.jm/images/stories/content/Publications/QuarterlyReport/OUR%20Telecommunications%20Market%20Information%20Quarterly%20Report%20-%20Q1%20&%20Q2%20-%20Jan%20-%20Jun%202009%20%28AMENDED%29.pdf (accessed March 30, 2010).

57. Apart from the network effects, other factors which are likely to deter a successful entry in the market includes (i) telecommunications licence requirement; (ii) spectrum availability; and iii) the absence of mandatory colocation agreements.

5. ASSESSMENT OF COMPETITIVE EFFECT

5.1 Analytic Framework and Overview

58. Competition provides the proper incentives for suppliers to behave efficiently and meet the customer demand for quality, quantity and variety. A substantial lessening of competition can cause inefficiencies that result in a waste of society's scarce resources. A substantial lessening of competition can harm consumers directly by increasing prices; reducing innovation; reducing quality; or reducing the variety of products relative to competitive levels. Consequently, consumer choices may be distorted and fewer consumer demands can be met with the productive resources available to the society.

59. The large gap between the second largest and third largest enterprises (Table 1) suggests that LIME is the only enterprise in the sector which is likely to represent a competitive constraint to the behavior of Digicel.

60. Table 2 below reports data on call traffic from LIME's fixed-line business subscribers to Digicel's mobile subscribers. It shows that the observed trend is consistent with the hypothesis that business customers substituted away from LIME's more expensive service to Digicel's cheaper one. Specifically, traffic increased during the first two quarters (January-June) of 2008. During the third quarter, proximate to the introduction of Digicel's fixed service, LIME's traffic started a downward trend. A drastic decline was observed during the first quarter (January-March) of 2009, proximate to the increase in Digicel's termination charges, as the traffic from LIME's business customers average [✂] thousands of minutes to Digicel's mobile network, representing a decline of 19.3 percent ([✂] thousand minutes) from the [✂] thousands of minutes placed during corresponding quarter in 2008.

61. Although the table falls short of establishing that Digicel was the only beneficiary of LIME's reduced traffic, we think this to be the only reasonable inference for the following reason: other than Digicel, Flow is the only provider offering fixed-line voice services and Flow's total call traffic also declined- from [✂] thousand minutes in Q2 2008 to [✂] thousand minutes in Q2 2009 (Table 1). If anything, this suggests that traffic on Flow's network was also adversely affected by Digicel's conduct.

Table 2 LIME's Business Fixed-line Calls to Digicel's Mobile Subscribers

	2008				2009
	Q1	Q2	Q3	Q4	Q1
Traffic ('000 min.)	[✂]	[✂]	[✂]	[✂]	[✂]
Revenue($ million)	[✂]	[✂]	[✂]	[✂]	[✂]

Notes: (i) The figures actually represent LIME's cross-side traffic to all mobile networks. Since Digicel and Claro are the only other operators of mobile networks, and Claro accounts for less than ½ of a percent of the market, we are confident that the figures are approximately equivalent to traffic placed to Digicel's mobile network. (ii) Revenue is based on amount retained by LIME and not the amount LIME collects from its subscribers. Pursuant to regulations governing interconnection (RIO-4), LIME retains only $1.82 per minute (during peak hours) while it charged $7.00 per minute to its subscribers (the remaining portion is forwarded to Digicel). LIME now retains $1.94 per minute since the price was increased to $8.50 per minute.

62. The observed trend in the revenue generated from LIME's business fixed-line subscribers to Digicel's mobile network is also consistent with the hypothesis that LIME's expected revenue in this narrow market will decline. Specifically, monthly revenue from this segment during Q2 (Apr-Jun) of 2008 was, on average, $[✂] million. By the end of Q1 (Jan-Mar) 2009, monthly revenue declined by $[✂] million (18.6 percent) to $[✂] million. In this respect, we note evidence of the likelihood of customers' switching was observed in advertisements published by Digicel in which a business customer (Lutec) states that "Digicel's business fixed line and mobile plans cut my company's phone bill in half!"[15] It is important to note that in the advertisement, phone bill reference both "Digicel Business fixed line and mobile plans," which shows that the switching will affect calls on both mobile and fixed networks.

63. We have demonstrated that the conduct is likely to significantly increase market concentration (Table 3). This as the challenged conduct is likely to increase the HHI by at least 68 points. Such an increase in an already highly concentrated market is evidence that the conduct raises significant competitive concerns, given the high impediments to entering and/or expanding in the market. The primary competitive concern is that the Respondent would exercise market power, given the strong network effects present in this market, and that the conduct would have moved the market closer to, if not beyond, its tipping point. Indeed, as at June 2008, the market share leader held a [✂]-point advantage over its rival. As a result of the conduct, we forecast that the market leader will eventually have a 12-point advantage. In markets like the FMV and smaller markets within, which are characterized by network effects, a potential source of harm to customers may arise if the market is "tipped". Tipping effectively results in a monopoly (or near monopoly) market structure and therefore would increase the opportunities for a supplier to profitably increase prices above competitive levels. Another source of harm from tipping is the tendency for a supplier to stifle the innovative process by reducing the expected profits to

[15] Advertisement appears on page 3 of the January 31, 2010 edition of the *Style Observer*. The quote is attributable to Duane Lue-Fung, Managing Director of Lutec.

be earned by entrants; this would be a concern even if the market is not tipped.

64. In competitive markets, the introduction of a new service under terms which are more favourable than pre-existing services would encourage rival enterprises to match these terms. Enterprises which are able to do so profitably will continue to operate and have the opportunity to share in the profits generated from supplying the service. Enterprises which are unable to profitably match these terms, however, will lose customers and increase their risks of making a loss. An important issue to recognize is that a crucial element of the competitive process is the ability of each enterprise to independently vary the terms of its service offerings according to the varying conditions of the market. Through the process of unrestrained competition, customers' demand for quality, affordable services are met with the most efficient use of the economy's scarce productive resources.

65. The challenged conduct involves Digicel introducing its service to a specific segment of subscribers (business fixed-line subscribers) at a price of $4.00 per minute, which was below its rival's competing service offered then at a price of $7.00 per minute. Such conduct, without more, is not anticompetitive. In fact, as explained above, such conduct is consistent with the operation of competitive markets.

66. The conduct is likely to keep prices higher than they otherwise would be, hence consumers are worse off. Specifically, because the challenged conduct is likely to result in Digicel controlling virtually the entire business fixed-line voice (BFV) service market, one of the effects would be to reduce significantly, LIME's revenue from this lucrative smaller market. A consequence of the challenged conduct, therefore, is that consumers are likely to be worse off by virtue of LIME's reduced revenues. This as the reduced earnings implies that LIME will have fewer funds to make promotional offers; or fewer funds to inform consumers of the offers. If fewer consumers are informed about LIME's promotional offerings, then Digicel will have less incentive to offer comparable attractive discounts. With fewer informed consumers, enterprises would offer discounts which are lower than that which would obtain if more consumers were informed. It is important to note that the anticompetitive effect of the challenged conduct is likely to be observed in the broader FMV market.

67. The harm to competition occurred because in addition to introducing its BFV service below the price charged by LIME, Digicel exercised its ability to directly influence upwards, the price of LIME's service, pursuant to regulations governing the telecommunications sector.[16] Note, however, that the increase from $7.00 to $8.50 in FTM termination rates did not create the anticompetitive conduct; rather, it exaggerated the effects of the anticompetitive conduct. And, in so doing, effectively further weakened competitive constraints which LIME could exert in this market. Further, due

[16] The regulation referred to is the Reference Interconnect Offer (RIO-4).

to the revenue generated by business subscribers, the conduct is likely to affect LIME's ability to compete in the broader FMV market.

68. The effect of the price differential between the fixed to mobile voice service to Digicel's customers is estimated based on econometric analysis describe in the Appendix. The analysis finds that in the long run, the price differential, if left unchecked, is likely to result in sales on LIME's fixed and mobile networks declining by at least 18 percent and 13 percent respectively. Table 3 below shows how market concentration is likely to be affected by the estimated changes in market share.

Table 3 Long term effect of price differential in FTM voice services

	Outgoing Domestics Calls (000s mins.)			**Market Share (%)**	**Concentration (HHI)**
	Fixed	**Mobile**	**Total**		
June 2008					
LIME	[✂]	[✂]	[✂]	[✂]	--
Digicel	[✂]	[✂]	[✂]	[✂]	--
Claro	[✂]	0.0	[✂]	[✂]	--
Flow	[✂]	[✂]	[✂]	[✂]	--
TOTAL	[✂]	[✂]	[✂]	100	4,792
Forecasted long-run effect[1]					
LIME	[✂]	[✂]	[✂]	[✂]	--
Digicel	[✂]	[✂]	[✂]	[✂]	--
Claro	[✂]	0.0	[✂]	[✂]	--
Flow	0.0	[✂]	[✂]	[✂]	--
TOTAL	[✂]	[✂]	[✂]	100	4,860

Note: (1) Based on our analysis, Digicel's conduct is likely in the long-run to lead to an 18 percent decline in sales on LIME's fixed network and a 13 percent decline in sales on LIME's mobile network. See Appendix for details.

69. The table shows that the conduct is likely to result in the market concentration level (HHI) increasing by 68 points from 4,792 to 4,860.

70. Prior to the challenged conduct, subscribers benefitted from substantial savings (on mobile handsets and air time); improved service quality; and innovative service offerings. Further, because these savings are offered usually for a limited period (in some instance only one day), informative advertising is an important dimension through which enterprises compete in the market. Advertisements by these enterprises typically alert consumers to a promotion and the terms and conditions under which the promotion is offered.

71. LIME and Digicel have competed with each other mainly through prices by way of discounted calling rates (for example loyalty credits, bonus credits 'double day', 'talk for free', 'double bubble', 'gimme five,' etc.) and lower priced mobile handsets.

72. In the absence of data on the advertising budget of the enterprises, we estimated expenditure on advertisements placed in the two leading newspapers in Jamaica, the Gleaner and the Observer.[17] We estimate that in December 2009, LIME spent at least $3.6 million on newspaper advertisements whilst Digicel spent at least $5.9 million.[18]

73. As explained earlier in the report, suppliers in the FMV market generally practice price discrimination. There is a significant difference in the revenue generated from various subscribers. Table 4 below compares the average revenue per user (ARPU) for LIME's mobile and fixed-line subscribers; as well as for LIME's business and residential fixed-line subscribers.

Table 4 ARPU for various subscribers (Jan 2005 - Jun 2008)

Subscribers	ARPU ($)	
Mobile		[✂]
Fixed:		[✂]
residential	[✂]	
business	[✂]	

Source: LIME

74. The table shows that on average, the ARPU generated by subscribers on LIME's fixed network ($[✂]) exceeds the amount generated by subscribers on LIME's mobile network ($[✂]). Business customers on LIME's fixed network generated ARPU amounting to $[✂] compared to the $[✂] generated by residential customers on its fixed network. Up to June 2008, LIME generated an average $[✂] million monthly in revenue from calls made from its fixed-line business subscribers to Digicel's mobile subscribers. This suggest that competition within the narrower market for business fixed customers has important implications for LIME's revenue earning capacity, and hence profitability of supplying the wider FMV market.

75. We have argued that the challenged conduct, if left unchecked, will result in LIME losing the majority, if not all, of its fixed-line business customers. Further, the loss of business subscribers is more likely to be reflected in reduced call volume rather than reduced subscriptions as enterprises may maintain LIME telephone numbers for purposes of only receiving calls (for which enterprises do not pay).

76. The effect of the conduct is likely to spillover to the broader FMV market and ultimately consumers. Specifically, the $[✂] million reduction in LIME's monthly revenue is considered to be economically significant in the sense

[17] Note that the total advertising budget is likely to be somewhat bigger since enterprises usually advertise via newspaper, radio and television.

[18] By way of comparison, we estimate that Claro and Flow spent approximately $6.9 million and $3.7 million respectively.

that it is at least on par with LIME's expenditure on promotional activities targeted to consumers of services in the broader FMV market.[19]

Less Intense Price Competition

77. An important benefit from competition between LIME and Digicel is the offering of discounts on calling rates and mobile handsets. An adverse effect of the challenged conduct is that consumers are likely to be worse off by virtue of LIME's reduced revenues. The reduced revenues, without more, do not suggest anticompetitive conduct. We draw attention to the reduced revenues because it is a direct consequence of Digicel's conduct and is important to assess the competitive effects of the challenged conduct. The reduced revenues imply that LIME will have fewer funds to make promotional offers; or fewer funds to inform consumers of the offers. If consumers are less than fully informed (uninformed) about LIME's promotional offerings, then Digicel will have less incentive to offer comparable attractive discounts. With uninformed consumers, enterprises would offer discounts which are lower than that which would obtain if consumers were informed.

Higher search costs from fewer informative advertising

78. Another important benefit of competition is the relative intensity with which LIME and Digicel informed consumers about their product offerings. In its All Media Survey 2008, Market Research Services Limited reports that newspapers reached 32.2 percent of Jamaicans exposed to print and electronic media; television (free to air) reached 29.2 percent, radio reached 24.7 percent and subscriber television (cable) reached 13.9 percent.

79. The staff's investigation indicates that during December 2009, using the two leading nationally-circulated newspapers (i.e., the *Daily Gleaner* and *Observer*) LIME booked a total of 38 advertising spots while Digicel booked a total of 60 spots. In addition to using the printed and electronic media, both LIME and Digicel also disseminate information on promotional offers via individuals issuing pamphlets/flyers on the streets to passers-by and motorists.

80. Consumers benefit because advertising reduces the costs for consumers searching for the best product offerings. Advertisements make it easier for consumers to compare competing offerings and thereby allow consumers to select the ones which are more suited to their preferences.[20] Without advertising, it is likely that many subscribers would be unaware of

[19] This revenue reduction was calculated based on the revenue retained by LIME as opposed to the revenue collected from subscribers.

[20] A distinction is made in the economics literature between informative advertising and persuasive advertising. Informative advertising are those which provide consumers with information on only the product characteristics. Persuasive advertising is one in which consumer's taste is altered. Informative advertising has been found to be procompetitive. For a discussion on the role of informative advertising in the competitiveness of markets, see Kevin Harriott "Advertising and Consumer Search in Differentiated Markets," *Ph.D. Dissertation, Texas A&M University.* 2005).

promotional offers, and by extension not be in a position to take advantage them.

Anticompetitive Effects

81. By lessening the ability of LIME to at least maintain its share of the FMV market, Digicel's conduct will lead to a substantial increase in the level of concentration. Given the network effects, this is likely to take Digicel very close, if not beyond, the point where the market is tipped in its favour. After the market is tipped, Digicel would have extended its ability to profitably increase prices.

82. Even if the market is not tipped, the decline in expected profitability of serving business customers would decrease the incentives for existing and potential suppliers to undertake research and development expenditures geared toward expanding in or entering this or other segments of the FMV market. This means that consumers will be harmed by lower rates of product innovations in the market, relevant to rates of innovation which would occur absent the challenged conduct.

6. ASSESSMENT OF PRO-COMPETITIVE EFFECTS

83. The pricing structure of multisided platforms has implications for the efficiency with which resources in these markets are deployed. By pricing structure, we mean the relative price paid by the various groups of customers of the platform.

84. In assessing the likely impact of the challenged conduct, the Merger Guidelines suggest considering only cognizable efficiencies; that is "efficiencies that have been verified and do not arise from anticompetitive reductions in output or service..."[21]

85. As mentioned earlier in the report, one consequence of the challenged conduct is that more subscribers will be attracted to Digicel's fixed and mobile networks. The network effect will result in the value to Digicel's network increasing (i.e. product innovation). These benefits to consumers do not warrant consideration because it would have arisen due to anticompetitive conduct on the part of Digicel.

86. Even if there are other efficiencies, it is unlikely that they would be sufficiently large to overcome the fact that the challenged conduct is likely to lead to a monopoly market structure whereby the Respondent has increased opportunities to exercise market power.

[21] (DOJ and FTC, 1992, pp.31)

7. CONCLUSION AND RECOMMENDATION

7.1 Conclusion

87. We have demonstrated that Digicel is dominant in the termination of calls on its own network and that by maintaining a price differential for fixed business telephony service offered on its network, as against that offered on LIME's network to the latter's subscribers, competition in the wider FMV market is affected and in the narrower significant other market of fixed line voice services to business customers.

88. Robust competition in the fixed line voice services to business market is significant because it is the most lucrative market within the wider FMV market with profit margins being higher than profit margins in other markets within the FMV market.

89. Access to this market affects competition in the FMV for two main reasons. First, the Voice Termination (VT) Services market is one which allows no competition and for which, there are no feasible economic alternatives. Competition in the FMV market is therefore necessary to counter the dominance that a telecommunications service provider enjoys with respect to termination services on its network.

90. Second, the FMV market is such that the value of the voice service provided depends on the number of subscribers on one's network, thereby increasing incentives for attracting more subscribers. Competitive access to business fixed- line voice services facilitates competition within the other markets identified in the broader FMV market.

91. Conduct that significantly affects the extent to which incentives can be offered to attract or retain subscribers or results in a one way movement of subscribers (that is, either a movement or switching to or away from a particular network service provider) would affect the extent of competition in the FMV market.

92. Therefore access to and competition within the BFV narrowly defined market affect the extent to which competing telecommunications service providers, in particular LIME, can compete in the wider FMV market through the offering of discounts to existing and potential subscribers to its network.

93. Accordingly, we concluded that the challenged conduct implemented by Digicel constitutes an abuse of dominance pursuant to section 20 (1) (b) of the FCA. Further, the conduct is likely to have the effect of substantially lessening competition in the FMV market as well as narrower markets defined therein.

7.2 Recommendation

94. It is clear that the regulations governing the pricing strategy of declared dominant telecommunication service providers is contributing to the inadequacy of the market to avert or reverse the anticompetitive effects of the challenged conduct. At the centre of the issue, is the fact that the

regulations permit one supplier (in this instance, Digicel) to have direct control over the price of its rivals' competing fixed voice services.

95. Based on the above, we recommend that the relevant regulations be amended to limit the opportunity for any supplier to directly influence the price that rival suppliers charge for competing services. We recognize however, that it would take considerable time for the above suggestion to be implemented. In the meantime, therefore, we recommend that the price Digicel charges its business subscriber of fixed-line voice services to call its mobile subscribers be no different from the price Digicel causes LIME to charge its business customers to call Digicel's mobile customers; and further this price be no greater than is necessary to cover the appropriately measured costs of providing the service to subscribers.

APPENDIX A

DEFINING THE RELEVANT MARKET

1. The relevant product market was defined with reference to the SSNIP test introduced in the Merger Guidelines issued by the U.S. competition authorities and described in Section A of this Report. There are two key issues which one would need to address to successfully implement the SSNIP test: First, one needs to establish the relationship between changes in price and changes in the volume of sales of a given product or group of products; second, one needs to identify the appropriate competitive benchmark price.

A: Framework

2. There are established frameworks developed by economists within which one could address both issues. To address the issue of the relationship between price and sales volume, one would rely on the framework known to economists as the "demand equations" This is a longstanding concept through which economists identify the main influences (or determinants) on the demand for a given product. The more common determinants have been found to be: the price of the product; the price of related goods (i.e. substitutes and complements); income; and consumers' tastes. Further, the discipline of econometrics allows us to scientifically measure the economic relationship between demand and its determinants. This is an important tool because it allows us to quantify the likely effect on demand, and therefore sales, of a change in any of its determinants.

3. To address the issue of identifying the appropriate competitive benchmark, one would rely on the framework articulated by Salop.[22] Salop argues that "…the proper competitive benchmark for evaluating alleged anticompetitive restraints in antitrust is the price that would prevail in the absence of the alleged anticompetitive restraints or conduct…" (Salop, 2001, 196). Since the issues under investigation surrounds the price differential between FTM voice services being offered by rival providers, the benchmark price is one which is consistent with uniform pricing of the voice services.

B: Estimating Demand Equations

4. The various differential tariffs (prices) charged by the telecommunications providers presumably reflect the heterogeneity of consumer preferences for telecommunication services in Jamaica. Prices differ along many dimensions such as: whether the individual is sending or receiving a call; whether the call is made off-network or on-network; whether the call is being made on a pre-paid or a post-paid plan; whether the call is being placed from a mobile or fixed network; whether the call is being made to an international or local destination; and whether the call is placed during peak or off-peak period.

[22] Salop, Steven (2001), "The First Principles Approach to Antitrust, Kodak, and Antitrust at the Millennium," *Antitrust Law Journal*, Vol. 68, p. 187-202.

5. Specifically, for any given call, only the calling party is charged; [23] calling another network (off-net) is generally more expensive than calling the same network (on-net); a call made using calling cards (pre-paid) is generally more expensive than a call which is billed at the end of each month (post-paid); a call made from (respectively, to) a mobile network is generally more expensive than a call from (respectively, to) a fixed network; calling an international destination is generally more expensive than calling a local destination; and a call made during peak hours (weekdays) is generally more expensive than a call made during off-peak hours (weeknights and weekends). Given these differential tariffs, consumers have the option of selecting from among at least thirty-two variety of voice services.

6. The challenged conduct refers to only one variety of voice services: calls from fixed network to mobile network. To establish the competition effects, if any, of the challenged conduct, we would need to determine the other varieties of service with which this particular voice service competes. To assist the analysis, we requested data from LIME and Digicel. Specifically, by way of letter dated May 12, 2009, the Staff issued a *Request for Information* to Digicel and LIME. Information was requested on traffic, tariffs, subscriber base and interconnection charges for fixed and mobile networks. The data requested covered the period January 2005 through March 2008. Additionally, we issued Request for Information to OUR, by way of letter dated March 12, 2010.

7. In carrying out the SSNIP test, we include in the preliminary product market, voice services offered by way of LIME's fixed and mobile networks and Digicel's fixed and mobile networks. A framework for carrying out this empirical analysis is suggested by Evans and Noel (2007).[24] Using this framework, we model a system of demand equations for voice services offered by LIME through its mobile and fixed networks. Similarly, we establish the demand for voice services offered by Digicel through its fixed and mobile networks.

8. The Critical Loss, in response to changes in the prices on the mobile and fixed networks of $X^{fixed}\%$ and $X^{mobile}\%$ respectively, is given as:[25]

$$\sum_{s=mobile,\,fixed}\left[R^s\left(X^s+M^s\right)\left(\frac{\Delta Q^s}{Q^s}\right)+R^s X^s\right]=0$$

where $R^s = Q^s P^s$ is the revenue from network *s*;

$M^s = {}^{p^s-c}\!/_{p^s}$ (the percentage markup)

9. The critical loss is the set of percentage quantity reductions on each side, $\Delta Q^s / Q^s$, that would leave the hypothetical monopolist profits unchanged. We use

[23] For toll free numbers, only the receiving party is charged.
[24] Evans, David S. and Michael D. Noel. 2007. Defining Markets that involve multi-sided platform businesses: an empirical framework with an application to Google's purchase of double-click." Available at http://papers.ssrn.com/abstract_id=1027933
[25] See Evans and Noel (2007, equation 8).

the Critical Loss Formula (CLF) to assess whether a hypothetical monopolist could profit from a given price increase, by substituting the expression for critical loss with an estimate of the actual loss. When the CLF is negative, this indicates that the hypothetical monopolist would not profit from the price increase and one would conclude that the relevant market is wider than the group of products being considered. Similarly, when the CLF is positive it indicates that the hypothetical monopolist would profit from the price increase and one would conclude that the relevant product market is narrower than the group of products being considered. When the CLF is zero, the relevant market is identified as the group of products being considered.

10. We now outline the steps taken to estimate the actual loss in sales that is likely to result from an increase in prices on the mobile and fixed network. Recall that for the SSNIP test, we assume that all networks are under the control of a (hypothetical) monopolist. For the purpose of the test, the demand for voice services, offered through the fixed network, is defined to be a function of (i) the volume of mobile traffic on the own network (this measures the own-network effects); (ii) the volume of mobile traffic on competing networks (this measures the cross-network effects); (iii) the tariff for fixed voice services on the operator's network; and (iv) the tariff for fixed voice services on competing networks.

11. Similarly, the demand for voice services, offered through the mobile network, is defined to be a function of (i) the volume of fixed traffic on the operator's network; (ii) the volume of fixed traffic on competing networks; (iii) the tariff for mobile voice services on the operator's network; and (iv) the tariff for mobile services on competing networks.

12. Specifically, the relationship to be estimated is described as follows:

$$q_i^{mobile} = \mu_{mobile} + \alpha_{mobile} q_i^{fixed} - \delta_{mobile} q_j^{fixed} - \beta_{mobile} p_i^{mobile} + \gamma_{mobile} p_j^{mobile} \quad \ldots [1]$$

$$q_i^{fixed} = \mu_{fixed} + \alpha_{fixed} q_i^{mobile} - \delta_{fixed} q_j^{mobile} - \beta_{fixed} p_i^{fixed} + \gamma_{fixed} p_j^{fixed} \quad \ldots [2]$$

where the parameters $\alpha, \delta, \beta, \gamma$ captures the qualitative and quantitative relationship between the demand for voice services and changes in its determinants.

13. <u>The impact of network effects on demand</u>. The parameters α and δ capture the extent to which network externalities influence the demand for fixed and mobile services. α measures the responsiveness of the demand to changes in the size of the providers' cross-side network. All other things constant, we expect an increase in the size of, say, a provider's mobile network will increase the demand for the providers fixed network. δ measures the responsiveness of the demand to changes in the size of a rival's cross-side network. All other things constant, we expect an increase in the size of, say, a rival's mobile network will decrease the demand for a providers fixed network.

14. The impact of relative prices on demand. The parameters β and γ capture the extent to which the relative prices of voice services influence the demand for fixed and mobile servicers. β measures the responsiveness of the demand to changes in the price of a provider's service. All other things constant, we expect that an increase in the price of a service will decrease the demand for the service.[26] γ measures the responsiveness of the demand to changes in the price of the service of another provider. All other things constant, we expect for substitutable (respectively, complementary) services, an increase in the price of one service will lead to an increase (respectively, decrease) in the demand for the other service.[27]

15. Data sources: Data used to jointly estimate the above demand equations were obtained from LIME, Digicel and the Office of Utilities Regulation (OUR).

16. Sample: Although there are four suppliers in the relevant market, data from only LIME and Digicel were used since they jointly control approximately 9[✂] percent of the relevant market (See Table 1). The data comprise monthly time series covering the period January 2005 through March 2009.

17. The estimations were performed using Stata 9; the results are presented below:[28]

[26] Economists refer to β as the own-price elasticity of demand.

[27] Economists refer to γ as the cross-price elasticity of demand.

[28] The model parameters were estimated using seemingly unrelated regression equations (SURE) modeling. The two-stage least squares (2SLS) method was used in the estimation process to correct for the simultaneity bias inherent in estimating demand functions.

Table 1A: Estimation Results

determinants of demand	**Coefficient**	**std. error**	**p-value**
mobile network			
size of own fixed network	0.740**	0.057	0.000
size of rival's fixed network	-0.012*	0.006	0.047
own price	-3.233**	0.567	0.000
rival's price	3.071**	0.372	0.000
Constant	2.839*	1.461	0.052
fixed network			
size of own mobile network	0.659**	0.068	0.000
size of rival's mobile network	-0.012*	0.006	0.047
own price	-3.381**	0.860	0.000
rival's price	-0.001	0.085	0.988
Constant	13.063**	2.032	0.000

Note: (i) The 'size' of each network was measure by the volume of minutes placed on each network.
(ii) Each variable is measured in "logs."
(iii) *statistically significant at the 5% level.
(iv) **statistically significant at the 1% level.

18. The table above reports on the magnitude and significance of the economic relationship governing the demand for voice services and its specified determinants. The results indicate that there are statistically significant within-platform cross-side network effects. Specifically, the table suggests that for every additional 1 percent increase in the size of a provider's mobile network, the demand for its fixed network increases by 0.66 percent. Similarly, for each additional 1 percent increase in a provider's fixed network, the demand for its mobile network increases by 0.74 percent. The table shows that there are also statistically significant cross-platform cross-side network effects.

19. The results also indicate that the demand for mobile and fixed call services is highly sensitive to the price of these services. Specifically, it is seen that a one percent increase in the price of mobile calls will result in a 3.23 percent reduction in the volume of mobile calls. Similarly, a one percent increase in the price of fixed calls would result in a 3.38 percent reduction in the volume of fixed calls.

20.Evans and Noel (2007) provide a method of calculating the change in demand on each side of a provider's platform as a result of an X^{mobile} % increase in the price of calls made on the mobile network and a X^{fixed} % increase in the price of calls made on fixed network. The change in demand on the mobile and fixed network are given as:

$$L^{mobile} = \frac{(\gamma_{mobile} - \beta_{mobile})X^{mobile} + (\alpha_{mobile} - \delta_{mobile})(\gamma_{fixed} - \beta_{fixed})X^{fixed}}{1-(\alpha_{mobile} - \delta_{mobile})(\alpha_{fixed} - \delta_{fixed})} \quad \text{... [3]}$$

$$L^{fixed} = \frac{(\gamma_{fixed} - \beta_{fixed})X^{fixed} + (\alpha_{fixed} - \delta_{fixed})(\gamma_{mobile} - \beta_{mobile})X^{mobile}}{1-(\alpha_{fixed} - \delta_{fixed})(\alpha_{mobile} - \delta_{mobile})} \quad \text{... [4]}$$

21.Based on the results presented in the table above, the loss on the mobile network was calculated as 25 percent and the loss on the fixed network was estimated at 33 percent. Based on these estimates, the CLF was negative indicating that mobile and fixed domestic voice services are in the same market and compete in a wider relevant market.[29]

THE EFFECT OF PRICE DIFFERENTIAL ON COMPETITION IN THE FMV

22. It is important to note that the economic relationships identified in the table govern the wider FMV market, as well as the smaller markets within it. The market for fixed voice services from business subscribers to Digicel's mobile subscribers, the subject of the investigation, is one of these smaller markets. Digicel offers the service at $4.00 per minute, and it is alleged that due to actions taken by the Respondent, LIME is constrained to offer the service at a price which is 112.5 percent higher their rival ($8.50 per minute).

23. We are interested in quantifying the effect of the price differential on competition in the relevant market. The model as described in equations [3] and [4] above is unsuitable for this purpose as it was designed to calculate the loss in sales which would result from price increases on the mobile and fixed networks.

24. To adapt the model for our purposes, we estimate the effect of a 112.5 percent increase in the price of fixed services. There are two important issues we need to account for before we utilise the model to measure the effect of the challenged conduct. First, the model was designed to estimate the likely loss to a hypothetical monopolist regarding sales on both platforms. We are interested, however, in estimating the loss in sales to a single supplier. To the extent that the reduction in sales for an individual supplier will always exceed the reduction for a monopolist, then the estimates yielded by the model are properly interpreted as estimates of the least amount of sales that likely would be lost to an individual supplier. Second, the model was designed to capture the effect of a general price increase on each side of the platform. We are interested, however, to measure the effect of an increase in the price of only one service offered on the fixed network and used by a small fraction of subscribers to the fixed network (specifically to business subscribers). [30] To account for this, we modify the formulae as follows:

$$\hat{L}^{mobile} = \frac{(\gamma_{mobile} - \beta_{mobile})X^{mobile} + (\alpha_{mobile} - \delta_{mobile})(\gamma_{fixed} - \beta_{fixed})X^{fixed}.s^{fixed}}{1 - (\alpha_{mobile} - \delta_{mobile})(\alpha_{fixed} - \delta_{fixed})} \quad \ldots [5]$$

$$\hat{L}^{fixed} = \frac{(\gamma_{fixed} - \beta_{fixed})X^{fixed}.s^{fixed} + (\alpha_{fixed} - \delta_{fixed})(\gamma_{mobile} - \beta_{mobile})X^{mobile}}{1 - (\alpha_{fixed} - \delta_{fixed})(\alpha_{mobile} - \delta_{mobile})} \quad \ldots [6]$$

[29] The CLF was calculated as -3.3×10^{10}.

[30] Based on data from OUR and LIME, during the quarter ending June 2008, calls from fixed-line business subscribers comprised 2.5 percent of the total domestic calls made by subscribers of LIME and Digicel.

where s^{fixed} is the fraction of the FMV markets which comprise the narrower market for fixed voice service to Digicel's mobile subscribers.

25. To quantify the effect of the price differential therefore, we use the following parameter values: (i) There is a 112.5 percent increase in the price of fixed voice services (i.e. $X^{fixed} = 112.5$); (ii) there is no change in the price of mobile calls (i.e. $X^{mobile} = 0$); and (iii) only 2.5 percent of the FMV subscribe to fixed-line business services ($s^{fixed} = 0.025$).

26. Based on the restriction identified above, and the parameter estimates provided in the Table above, we calculate the change in sales to the hypothetical monopolist on mobile and fixed networks as:

$$\hat{L}^{mobile} = \frac{(0.74-0.012)(-0.001-3.381)\times 112.5\times 0.025}{1-(0.74-0.012)(0.659-0.012)} = \frac{-6.92}{0.53} = -13\%$$

$$\hat{L}^{fixed} = \frac{(-0.001-3.381)\times 112.5\times 0.025}{1-(0.659-0.012)(0.74-0.012)} = \frac{-9.51}{0.53} = -18\%$$

27. The numerator represents the expected decline in sales in the short-run, i.e. before the network effects works through the market, as a result of a given percentage increase in prices. The denominator captures the multiplier effect due to the network effects arising from the initial reductions in the size of the fixed network. Specifically it reflects the fact that, due to externality effects, an initial 9.5 percent reduction in sales on the fixed network will result in a 6.9 percent reduction in sales on the mobile network; which in turn will lead to a further reduction in sales on the fixed network; which in turn would lead to further rounds of reduction on the mobile network, etc.

28. We therefore conclude that, in the long run, the price differential is likely to result in sales on LIME's fixed network to decline by at least 18 percent and sales on LIME's mobile network to decline by at least 13 percent.