

Competition, Price and the Demand for Telecommunications Services in Jamaica, 2000-2006

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September 2006

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ABSTRACT

The Jamaican markets for telecommunications services have undergone mixed changes over the years. The Jamaican telecommunications markets, once dominated by a monopoly provider in Cable and Wireless Jamaica Limited up to the year 2000, witnessed a structural or paradigm shift towards a drive for a competitive market environment. This initiative was largely controlled by the Government of Jamaica (GOJ) who not only renegotiated C&WJ license of exclusivity on the provision of telecommunications services in Jamaica but also enacted legislation that would see the gradual introduction of competition in the telecommunications markets on a phased basis that would last for a 18-month period. The Jamaican telecommunications markets since then have experienced increased competition in the retail markets for mobile services (voice and data), international outgoing voice and in internet service provisioning market, in some regards. However competition is yet to develop in the market for fixed-line access and related services such as fixed domestic voice. Since the commencement of the liberalization process sharp reductions in the price for many services such as mobile, internet, international outgoing, and many other services have been observed, but prices have remained fixed in other markets such as that for fixed telephony.. Additionally, the markets have enjoy monumental increase in the uptake of some services, mobile for example , while the demand for fixed-line services has experienced decline This paper will explore the dynamics of competition, price and demand for telecommunications services in Jamaica since the commencement of the liberalization process.

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1. INTRODUCTION

In the mid 1990's the World Trade Organization (WTO) became increasingly active in its effort to remove barriers to entry and promote the emergence of free markets on a global basis. This idea has caught on in many nation leaders who increasingly start embracing the benefits of the free market, i.e, having effective and sustained competition, for the provision of products and services. The WTO has various agreements (to which many countries such as Jamaica have become signatories) to address various markets, of which telecommunication services is a part. The provision of telecommunication services formed part of the many services that have international appeal. The emergence of Information and Communication Technologies (ICT's) and its likely positive impacts on national economies and the general way of life of people further propelled telecommunication services to the forefront. The emergence of the information age and the whole concept of knowledge based economies meant that telecommunication services and products as part of the whole ICT infrastructure could no longer be ignored.

The Government of Jamaica (GOJ) bought in the idea of promoting ICT infrastructure and therefore sought to transform the telecommunications industry. Cable and Wireless Jamaica Limited (C&WJ)² had monopoly right for the provision of all telecommunication services in Jamaica for 25 years under a license issued by GOJ in 1988. Further, license condition required C&WJ tariffs to be regulated by a rate of return regime. In years leading up to 2000, GOJ revisited its original philosophy on the telecommunications industry and its likely development in Jamaica and so sought to renegotiate the license of C&WJ that gave them exclusive rights to provide telecommunication services in and out of the island of Jamaica³.

² Cable and Wireless Jamaica Limited assumed ownership from GOJ of Telecommunications of Jamaica (TOJ) in 1989. TOJ was the holding company for the domestic provider Jamaica Telephone Company and an international provider, Jamintel. The original license issued to TOJ has under-gone amendments that would tighten C&WJ's exclusivity on the provision of telecommunication services in Jamaica.

³ GOJ efforts were further reinforce by GOJ commitment to the WTO to liberalize the telecommunications industry

The GOJ was successful in the attempt to renegotiate C&WJ's license and thus a timetable for the liberalization of the telecommunication sector was developed. The newly established multi-sector regulatory body, the Office of Utilities Regulation (OUR⁴) was given jurisdiction over the regulation of the telecommunications industry. The Fair Trade Commission (FTC) established under the Fair Competition Act in 1993 was set the task of addressing issues of competitive significance within the industry. The Telecommunications Act, 2000 was legislated and serves as the primary legislation for the regulation of the industry.

The liberalization process for the telecommunication industry officially started in 2001 and was done in 3 phases. The main features of phase 1 of the liberalization process included:

- Opening of the market in wireless cellular services
- An open market for the provision of customer premises equipment (CPE)
- Allowing companies with Single Entry Free Zone status to provide their own telecommunications services
- Opening of the market to the resale of data, international voice and internet service

During phase 1 Mossel Jamaica Limited (trading as Digicel) and Centennial Digital Jamaica entered the wireless cellular market.

Phase 2 of the liberalization process commenced in 2001 and included;

- Competition in domestic facilities and services
- Cable TV providers (Satellite Television Operators) being allowed to become Internet Service Providers

Phase 3 took place on March 1, 2003. Under this phase all telecommunications facilities would be opened to competition, including international voice and data.

⁴ The OUR was established as a body corporate in 1997 with responsibility to regulate electricity, telecommunications, water and sewage and public transportation by ferry, rail or road.

Since the commencement of the liberalization process the GOJ has sold and issued numerous licenses for almost all categories of services. Over 300 licenses have been issued, where 174 was issued in phase 1; 74 in phase 2 and 131 in phase 3⁵. The large number of licenses would imply that competition would be active throughout almost all segments of the market. This is viewed to be case given that Jamaica has an estimated 2.6 million inhabitants and about 750,000 households (residential) and over 70,000 businesses which should serve as a relatively reasonable market size to ensure effective competition in these market segments.

This paper will conduct an historical analysis of the various telecommunications markets in Jamaica spanning the period right before the liberalization process to present. It will also examine the dynamics of competition, price and consumers' demand for various products and services. The paper will review each major market for retail services, that is, mobile (cellular telephone), fixed line voice (domestic voice), internet (broadband), and outgoing international voice (mobile and fixed-line). It will then draw conclusion(s) on competition and its likely impacts on price and demand.

2. THE WIRELESS CELLULAR SERVICE/ MOBILE MARKET

Leading up to phase 1 of the liberalization process, C&WJ was the only provider of wireless cellular, i.e, mobile services in Jamaica. Digicel having obtained a license to provide mobile services started commercial operation in the year 2001. Digicel employs a Global System for Mobile Communications (GSM) mobile technology and was believed to be able to provide service to 80% geographic coverage. Digicel entrance in the mobile services market sparked enormous buzz. Digicel introduced a new and innovative business model that was designed to appeal to Jamaicans of all income brackets and boast large scale uptake of its mobile services. It was apparent back then that Digicel's strategic market approach would serve to revolutionize the mobile industry in Jamaica.

⁵ Source: OUR

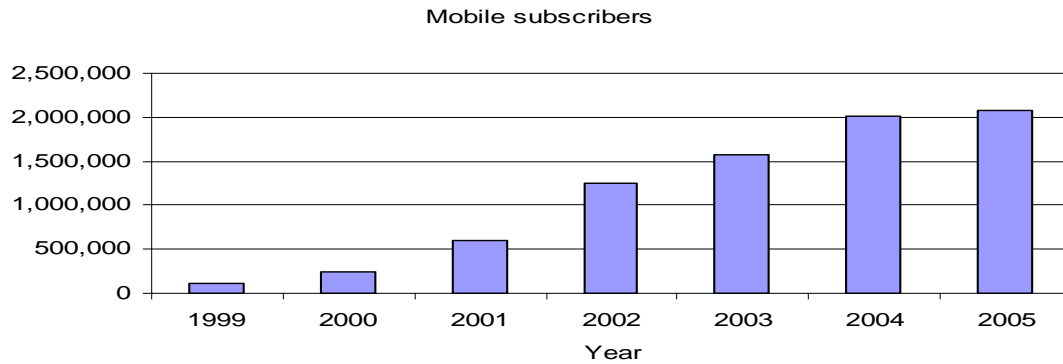
This new business model adopted by Digicel involved the introduction of prepaid billing which was further governed by a *Calling Party Pays* (CPP) billing arrangement. The prepaid service apparently appealed to many as it gave subscribers better control of their spending on telephone service. To add, Digicel's introduction of per second billing made its services even more appealing, as it gave subscribers flexibility and even more control of their expenditure on mobile telephone services.

Digicel's use of the GSM network, which had a smart card called a Subscriber Identity Module (SIM) as a mandatory feature, brought innovation, much ease and convenience to the use of mobile services. The SIM card provides identification, authentication and the basis for billing. The use of the SIM card provided further business innovation as numbers were no longer married to the handset and as such subscriber in some instances needed only buy a SIM card. C&WJ's Time Division Multiple Access (TDMA) network, mobile cellular technology did not provide that feature. Individuals therefore could purchase the handset as a separate item from the SIM card that contained the customer's personal information including their number. In addition, Digicel lowered the price of handsets thus encouraging further take up of its services.

All these new happenings marked the first real competition in the telecommunications market in Jamaica. Centennial Digital Jamaica, now Oceanic Digital Jamaica, entered the market too in 2001 but with less geographic coverage to Digicel. Centennial's presence nonetheless made it better for competition, innovation and choice for consumer.

Now given the introduction of competition to the mobile market for retail services through Digicel and Centennial Jamaica, what did we observed about consumers demand of mobile services?

Figure. 1: Mobile subscriber numbers from year 2000-2005



Source: OUR

Figure 1 above shows that between 2000 and 2001 mobile subscription increased by more than 100%, moving from just under 300,000 to a touch over 600,000 subscribers respectively. It is evident from Figure 1 above that the two market entrants impacted the market very strongly in a positive way. This indicates that consumers responded positively to the new innovations.

The surge in consumer uptake of mobile services did not abate as mobile subscriptions continued to increase significantly in the subsequent years. Mobile subscription has moved to an estimated 2.1 million in 2005. This represents an increased of roughly 800% from its 2000 number of 249,842 subscribers when there was only one provider. It would appear as if mobile penetration reaches a point of saturation in Jamaica as growth in the uptake of the service has slowed considerably in 2005.

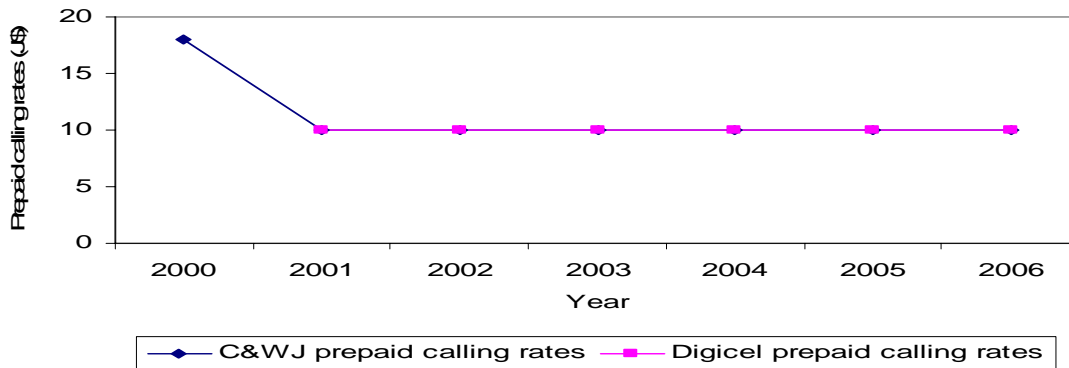
Competition through, innovation, convenience, choice, creativeness, among other things impacted demand strongly but what was the impact of increased competition on the price of mobile services or what did we observed of mobile prices over the same period?

2.1 Price Impacts

Close analysis of the price for mobile services clearly shows that mobile prices declined over the years, corresponding with the introduction of competition in the market. The dramatic reduction in mobile prices started in 2001, just when Digicel entered the mobile market in Jamaica for both calls and terminal equipments (mobile phones). Figure 2

below gives a graphical illustration of how price of mobile services behaved over the period 2000-2005. In 2001 prepaid mobile rates fell immediately from JA\$18 to JA\$10, a massive 44% reduction in mobile rates.

Figure 2: Mobile prepaid calling rates



Source: OUR

Rates have remained fixed at JA\$10 for the subsequent years which still represents a real reduction in mobile rates because of inflationary effects. At JA\$10 (approximately US\$0.15) mobile rates are very competitive even on an international context.

The rates mentioned above all refer to calls made on own networks, it therefore does not include any discussion off-network calls, i.e, calls across networks. The rate charge to make calls across networks over the period remained pretty sticky. It cost JA\$17.70 to make a cross network call, either way, in 2001 and today the rate remains the same with the exception of making calls from C&WJ network to any other mobile provider. C&WJ now charges JA\$10 to make a call to any other network.⁶

2.2 Today

Competition in 2006 remains vibrant with strong efforts from the incumbent C&WJ to win back mobile subscribers. C&WJ has certainly hit back with vast investment in its digital network, GSM and the removal of premium pricing to call across network (mentioned above) with its *Anyone calling Plan* for its mobile customers.

⁶ C&WJ mobile rate is \$US0.15 irrespective for network of termination. For many years it has cost substantially higher for off net calls. C&WJ has however synchronized the rates and it cost the same to place a call to any network from a C&WJ phone. Digicel’s rate however still remain above the its on net calling rate.

There is fierce competition among all three mobile providers, as they try to acquire and/or retain subscribers. Centennial Digital Jamaica while losing its way for part of the time, has reasserted itself and is making a valiant attempt at acquiring subscribers. Centennial Digital Jamaica seeks to leverage its Code Division Multiple Access (CDMA) wireless mobile technology to provide enhanced mobile services including internet browsing, picture texts and multi-media services.

Since 2001, there have been many promotional discounts in the retail market for mobile services. Whilst there may not have been any change in the per-minute rate for mobile calls, mobile operators constantly give free minutes on both prepaid and postpaid mobile service. Additionally, these promotions include specials from time to time on handsets. Generally there have been a reduction in handsets since 2000 but in 2005 handsets prices have trended back up a bit.

3. FIXED-LINE MARKET

The markets for fixed-line access and related services are very interesting. The fixed-line market can be broken down into the market for fixed access and related services and may not only be defined by wired access as the same line of services provided through wired access can be provided with a wireless connection. This market is defined by its fixed access nature and is neutral to the technology employed.

Competition has failed to develop in an effective way in these market segments in Jamaica since the liberalization process commenced. The fixed-line related services include domestic voice, inter-parish and intra parish⁷, internet services, international outgoing voice and a host of other services. However, for the purpose of this section only the access market and domestic calls market are considered and analyzed.

⁷ Intra-parish calls refer to a call that originates and terminates within the Parish in Jamaica and inter-parish calls originate but terminate outside the Parish of origination.

Domestic calls in Jamaica have a two-part tariff setup where customers are charged an access fee (a monthly rental fee) and a variable fee which is a per-minute charge. C&WJ still remain the sole provider of this service. C&WJ's complete dominance in this market is further enhanced by the non-existence of unbundling requirements of the local loop and the absence of Indirect Access provisions.

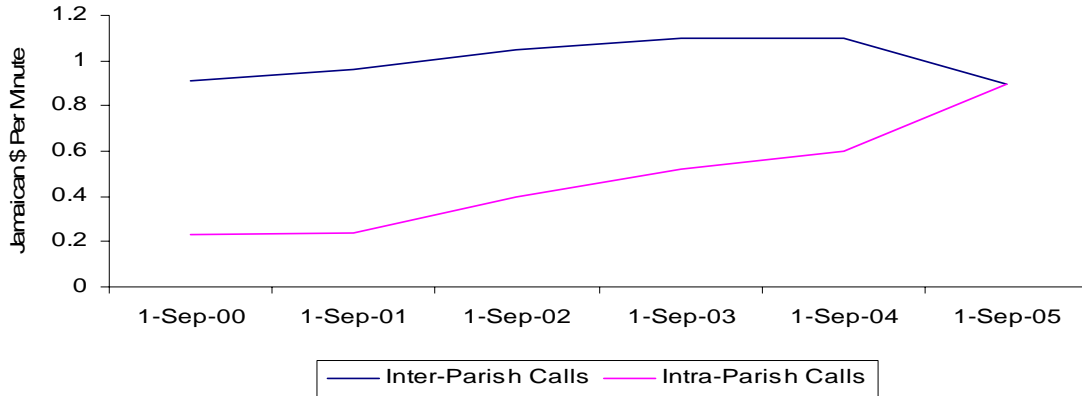
C&WJ has blanketed the island with its fixed network and therefore enjoys access to almost the entire island. One alternate provider, Gotel attempted in 2003 to enter the fixed-line market with a fixed wireless network. Gotel however failed to make any inroads in the market already dominated by C&WJ. This was particularly due to the failure of the network to get off the ground and provide service reliably. As a result even though Gotel was able to get customers it was unable to retain these customers. C&WJ is therefore left with complete control of this segment of the market. C&WJ was therefore left with complete ownership of this market segment. In a recent Survey commissioned by the OUR of all the interviewees C&WJ was their fixed-line provider⁸, which implies that C&WJ serve near 100% of the market with service.

3.1 Price Impacts

Price performance over the years vis-à-vis the lack of development of competition in this market is interesting, again only the access, inter parish and intra-parish domestic calls market are discussed. Traditionally, inter-parish and intra-parish calls were subjected to different calling rates. However, there no longer exist such distinctions as C&WJ introduced a Single National Rate (SNR) in 2005 which meant that all domestic calls are subjected to a single rate. Therefore inter-parish and intra-parish calls now have the same calling rate.

⁸ The OUR in 2006 commissioned a survey administered by Market Research Limited on the telecommunications market in Jamaica. The Report was submitted to the OUR in September, 2006.

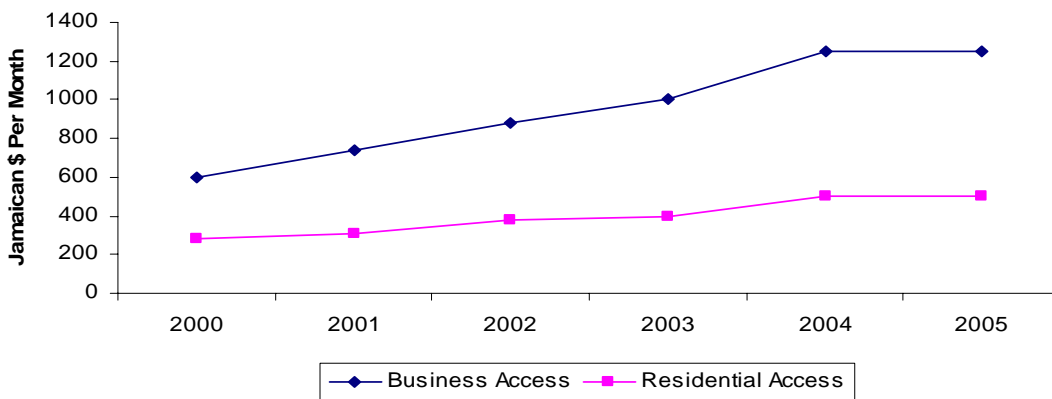
Figure 3: Inter-Parish and Intra-Parish calling rates over the period



Source: OUR

The above figure shows the price performance for inter-parish and intra-parish calls over the period. Inter-parish calls have remained fairly steady over the period 2000-2004, declining in 2005 to JA\$0.91 due to the SNR. On the other hand intra-parish calls rates recorded steady growth over the years to 2004, increasing tremendously from JA\$0.60 to JA\$0.90, in 2005, again due to the SNR. There was therefore a reduction in the rate charged for inter-parish calls over the period, while on the other hand intra-parish calling rates increased.

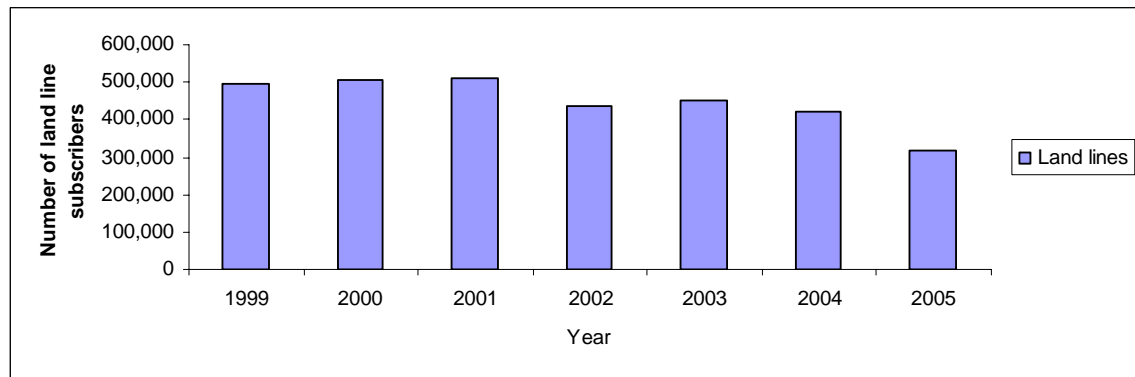
Figure 4: Monthly fixed access rates over the period



Source: OUR

Over the analysis period, the rate for access remained fairly steady for residential customers, but the rate for business access increased annually. The rate appears to have levelled out a bit over the period 2004-2005 as is depicted in Figure 4 above.

Figure 5: Number of fixed-line subscribers



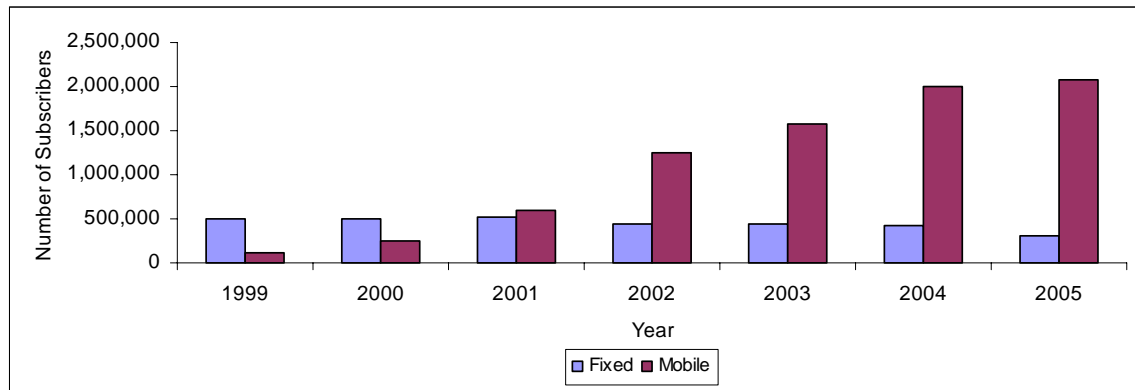
Source: OUR

In light of the performance of the price for access and domestic calls, how was the demand for fixed-lines performing? As depicted in Figure 5 above the number of landlines increased marginally over the years leading up to 2001, where it peaked, after that the number of subscribers declined. The fall off may not appear large, but in 2005 there were approximately 317,000 subscribers, compared to a little over 500,000 in 2001. This represents a fall off of 37% over the period. This fall off of subscribers is tremendous and may be viewed as a worrying trend especially as it regards the promotion of universal access.

3.2 Fixed-to-Mobile Substitution

The view is that fixed-line demand suffered and continues to suffer from many developments within the telecommunications sector. Among these include the increased in access rates, changes in billing arrangements and the surge in the use of mobile services. Mobile service apparently appealed to many through its innovation, convenience and economic features. The emergence of mobile services meant that customers had to share their existing voice services expenditure between mobile and fixed-line services. The end result is that some choose instead to subscribe to just one service, mobile, instead of holding both fixed and mobile, therefore consumers are substituting there fixed lines for mobile lines. This phenomenon is referred to as a fixed-to-mobile substitution within the telecommunications market. Figure 6 below juxtaposes the subscriber numbers for fixed and mobile services over the period under consideration.

Figure 6: Mobile vs Fixed-line subscribers



Source: OUR

Figure 6 above shows that while fixed-line subscriptions were declining mobile subscription were increasing over the same period. With Digicel's entrants to the market mobile subscription doubled and fixed subscription receded. Fixed-line subscriptions have not recovered since and as in fact continue to decline, while at the same time mobile subscriptions continue to increase (see Figure 6). Customers were therefore replacing there fixed lines with mobile telephone to some extent.

3.3 Price Cap and Rate Rebalancing

C&WJ, after operating as a monopoly for many years, was selling many of its products and services at prices that were considered to be below the actual cost of providing the service, while other products and services were sold at prices in excess of the cost of providing the product or service. Fixed-line access for example was one such service that was priced below cost. The Telecommunications Act 2000 makes provisions for the OUR to regulate the services provided by C&WJ that are deemed not to be subject to effective competition⁹ under a Price Cap regime. These regulated services included fixed-line access and many related fixed-line services. This gave C&WJ the opportunity to and was encouraged to rebalance rates to reflect the cost to provide the service as cost

⁹ The OUR defined effective competition to exist if :

- At least one competitor is actually operating in the relevant using its own switching and transmission facility;
- Other competitors, in aggregate, have capacity in place to meet a large portion of total demand in the relevant market;
- The market is not characterized by anti-competitive practices or pricing, including collusion among competitors.

oriented prices will send the right signals to the market thus promoting competition and ensuring the efficient use of resources.

C&WJ rebalancing efforts certainly explain the increased in the price for fixed-line access, inter-parish and intra-parish calls. The rebalancing process seemed to have been completed but it raises questions as this market segment is yet to attract new entrants. This is an indication that the process is not yet complete. Further the process seems to have been stalled by the migration of fixed line subscribers to the mobile services or subscribers choosing instead to hold just mobile phones instead of both mobile and fixed phones.

3.4 Today

Things are getting interesting with the many changes in technology within the telecommunications industry. Convergence in technologies such as Voice Over Internet Protocol (VoIP) have certainly put additional pressures on the fixed line market and so others might not see the benefit to invest in a fixed network which has such high sunk cost associated with it. Additionally, convergent technology means that cable TV markets and traditional telecommunications market are merging as traditional telecommunication services over the copper wire are now being transmitted over the coaxial cable and fibre-based lines. The internet is defining universal access because of the increasing use of VoIP to replace plain old telephone service (POTS) and further migration of many services to IP-based.

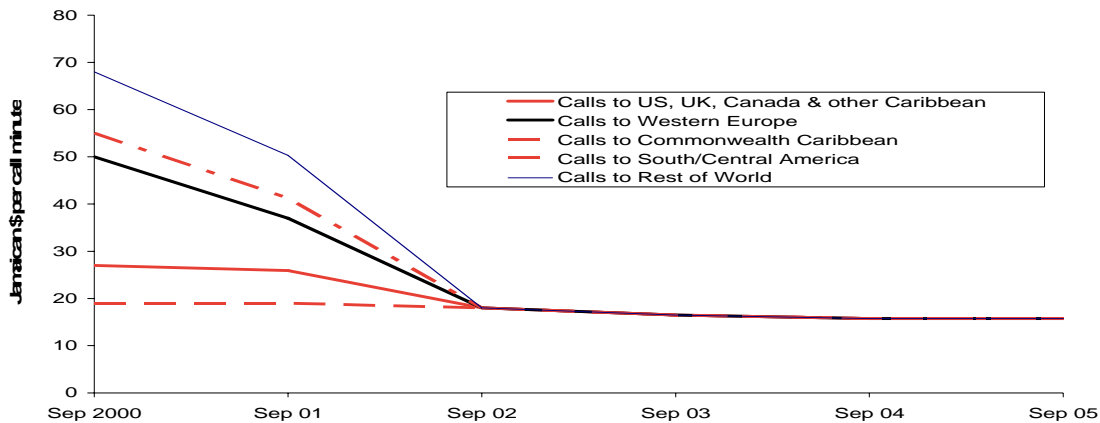
In Jamaica, Cable operators have somewhat positioned themselves to take advantage of this technological advancement and can be viewed as the most imminent competitor for 'last mile' access and related fixed line services in Jamaica. Armed with new and exciting business models and having the opportunity to bundle and provide the triple play of services; voice, data and video over a single network infrastructure, fixed-line services are set to receive very direct competition in the not distance future. With constant innovation in business models and technological changes there will be further blur in the boundaries that once defined these markets. It is expected therefore competition will

emerged in this market area, the market for fixed line access and domestic calls, in not distance future. For now however C&WJ continues to leverage its control of the market and further continues to dictate the price of these services, within the regulatory constraint of a price cap.

4. INTERNATIONAL OUTGOING CALLS MARKET

For many years the only avenue for furthering international outgoing calls was through the use of C&WJ network. Today, the market is much different and consumers can now make calls by using the international voice services provided by mobile operators, C&WJ's fixed-line, CATV operators and many resellers of international minutes. This was certainly not the case prior to the liberalization of the telecommunications sector in Jamaica. Certainly, with new technology such as VoIP and the constant increased use of the internet, people are accessing cheaper cost international voice solutions.

Figure 7: International calling rates (\$ per minute)



Source: OUR

Over the years, C&WJ and many other telecommunications company around the world made vast amount of their total revenues from international voice services, international outgoing voice calls included. In Jamaica, the service, for many years have been considered to be above the cost to provide it. This certainly appeared to be the case with C&WJ's international outgoing calls in 2000 costing \$27.00 from US, Canada and the UK, as much as JA\$50 from Europe and JA\$67 from the rest of the world (see Figure 7

above). These rates were from the fixed network. Similarly, it costs JA\$30 in 2001 to place a call from C&WJ's mobile network.

The doors for competition in the international outgoing calls market was opened in phase 1 of the liberalization process. This phase opened the market to the resale of international voice minutes. With the mobile operators in the market competition was introduced. The introduction of competition led to rapid reduction in the price paid to place international calls. Call prices reduced from the highs in 2001 to JA\$15.75 from the fixed network and JA\$17.75 from mobile in 2005 (see Figure 7 above). C&WJ as even sought to unify all costs to make international calls regardless of destination in 2001, as shown in Figure 7 above.

The cost to make outgoing international calls continues to trend downwards. Real deals can now be obtained from resellers of international voices minutes, via phone cards. Their service can now be obtained for JA\$8 and even JA\$5 in some instances, which translates into US\$0.12 and US\$0.09¹⁰ respectively.

Many VoIP type services are gaining popularity among internet subscribers. Local companies are now already offering VoIP services. Certainly, ISPs, including cable operators are poised to offer international voice through their very attractive triple-play of services.

With no precise data on the increase in international voice minutes in Jamaica over the period, it is suspected however that international outgoing minutes from Jamaica has increased which can be attributed to the rapid reduction in international outgoing calling rates. What is noticeable, however, is the decline in the number of minutes originating from the fixed network. This indicates that other means of furthering outgoing calls are providing stiff competition to fixed-line calls. The increased use of VoIP through certainly contributes to the noticeable fall off of traffic from the Public Switched Telephone Network (PSTN).

¹⁰ These US equivalents are expressed at the exchange rate of J\$66:US\$1.

5. THE INTERNET MARKET

The internet market may be the fastest growing market in the world today. The internet is heralded as the new gateway for many services in business, commerce, health, education, national security, just to name a few. With the enormous growth in Next Generation Networks (NGNs) it appears that it will just be a matter of time before all traditional telecommunications services become totally Internet Protocol (IP) based. Additionally, NGNs provide a cost effective alternative to traditional telecommunication networks. It also provides the opportunity for intelligence networks and related services.

The internet market in Jamaica has been dominated by C&WJ for a number of years. In addition, dial-up service has been the most heavily demanded service. In a 2003 Survey¹¹, it was estimated that there were 69,000 internet subscribers in Jamaica in 2003, of which 9,000 was Asymmetric Digital Subscriber Line (ADSL) broadband subscribers. Of the total, C&WJ was the dominant player accounting for over 50% of dial-up subscribers and 100% of broadband subscribers.

The estimated 69,000 subscribers represented an internet penetration of 3% or 3 subscribers per 100 inhabitants. Prices for the service were extremely high and may have been the main factor why internet penetration remained that low and why there were so many dial-up subscribers. The internet market in Jamaica is mostly concentrated in and around the urban areas of Kingston. The internet market suffered and was stifled for long, mainly because of international bandwidth constraints. For many years Jamaica had very limited international connectivity capacity which was reported to be around 2 Gbits/s (Gbps). The internet market in Jamaica therefore suffered largely from this as it could not meet the demand for internet connectivity even if it existed. Bandwidth supply was restricted in the wholesale market which meant high prices for bandwidth which translated into high prices for retail internet service.

¹¹ This survey was done by Market Research Limited for Jamaica Promotions Company (Jampro) in 2003

Phase 3 of the liberalization process sought to remove the international connectivity bottleneck when two licenses were granted license to construct and operate two submarine fibre optic cables from the island connecting Jamaica to the rest of the world¹². One operator, Fibra Link Jamaica, launched service in Jamaica in 2006 providing 40 Gbps capacity with the ability to increase bandwidth as demand from end users increases. Further, Fibra-Link even entered the internet retail market through a subsidiary company marketed as Flow¹³. This is a cable television system providing the full suite of cable television and telecommunication services including internet, international and domestic voice services. Flow has started building its own network across the island and therefore will provide stiff competition to C&WJ in the local loop. Additionally, companies that have been providing services through wireless solutions and other means can now compete better as they now have access to more and cheaper bandwidth.

Today, data is not available to give a precise market total of the number of internet subscribers (broadband and dial-up). Despite this however, the number of broadband subscribers has certainly increased, especially since 2003¹⁴ and the number of broadband subscribers is estimated to be around 45,000. The number of market participants remains pretty much the same, but new players are expected to enter the market, some are already entering the market, with the increased supply of bandwidth and at lower prices.

5.1 Price Performance

What have we now noticed of the price of internet service? There have certainly been drastic reductions in the price of internet service. With the vast amount of bandwidth available to Flow through Fibra-Link, Flow is flooding the retail market with bandwidth. This has served to reduce the cost per Kbits/s (Kbps) of bandwidth tremendously. The entry level price for broadband internet service has been reduced to about US\$10.00¹⁵ per month. The 2003 Survey by Jamaica Promotions Company Limited (JAMPRO) stated

¹² The licenses were granted to Fibralink Jamaica Limited and Trans-Caribbean Cable Company (TCCC), a consortium.

¹³ Flow is a member of the Columbus Communications group of companies, a CARICOM-based telecommunications company. They are planning to build all island internet and cable tv network.

¹⁴ This is use as a reference since 2003 was the year some form of official reporting on this statistic was done

¹⁵ This is just for a fixed number of hours per month. A variable rate is then charged for additional hours.

that dial-up providers were selling unlimited internet access for J\$1,000 (about US\$17). This was for internet access only, as the subscriber would then pay a per minute charge for use of the line at the existing domestic calling rate. This may translate in the subscriber paying over US\$30 even with moderate use of the internet (this includes the access charge and the per minute line usage). With Flow in the market a subscriber can obtain vastly more speed with unlimited access at a comparable rate of US\$30 (See Table 2 below).

On the broadband side, C&WJ has been retailing its ADSL service at very high rates for some time. Table 1 below shows C&WJ historical ADSL prices.

Table 1: C&WJ's broadband prices over time

Date	Speed)	Price (US\$)
Before July 7, 2005	128 Kbps	US\$45
July 7, 2005	128 Kbps	US\$29.95
August 2006	256 Kbps	US\$29.95

Table 2: Flow's broadband offerings as at August 2006

Speed (download)	Prices ¹⁶	Hours allocated	Cost for each additional hour
1,024 Kbps	US\$10.00	10 Hrs	JA\$50.00
1,024 Kbps	US\$19.00	30 hrs	JA\$20.00
4,096 Kbps	US\$28.00	Unlimited	N/A
6,144 Kbps	US\$37	Unlimited	N/A

Source: Flow's website at www.flowjamaica.com

The tables above give further indication of how much broadband internet prices have fallen in two years. C&WJ broadband rates decline substantially from US\$45 in July 2005 to US\$30 today, a reduction of 33%.

¹⁶ The rates as report on Flow's website are in Jamaican dollars, the conversion to US\$ for ease of analysis was done at a rate of US\$1:J\$66.00.

Although C&WJ has been reducing its broadband internet prices down there still exist vast differences in the rates charge by C&WJ and Flow. At a comparable rate of US\$30 the speeds offered by Flow (4,096 Kbps) compared to C&WJ's (256 Kbps) is hugely different. A plausible explanation for this disparity is that Flow is yet to have large scale coverage, in other words, Flow's network is not yet fully built out to meet a large portion of the market and as such is not able to provide effective competition at this point in time. Flow's network is presently only located in parts of Kingston and St. Andrew. Notwithstanding that, majority of internet subscribers and potential subscribers are still concentrated in and around the urban centres of the parishes of Kingston and St. Andrew. Flow has expressed a commitment to build an all island network so as to extend its service to all areas of Jamaica. As Flow continues to build and widen its access reach it will continue to put pressures on C&WJ for further reduction in internet (broadband in particular) prices and sooner than later the respective prices for the service will converge.

6. CONCLUSIONS AND CLOSING REMARKS

So what have we noticed from the review of the various markets? It is clear that in markets that are competitive, prices are generally lower than when there is no competition or less competition.

It is also apparent that the liberalization process may be working as it has introduced competition in many markets which has led to increased innovation, lower prices and more consumer choice. These have served to boost consumer demand for the various services. In the mobile market for example, since the beginning of the liberalization process in 2001, mobile subscriptions moved from 250,000 to an estimated 2 million at present, thus representing a 800% increase over a 5-year period. Likewise in the internet broadband market, with the introduction of competition in the market for the provision of broadband service, the market has observed massive reductions in the price for bandwidth and a corresponding massive increase in broadband subscription moving from 9,000 in 2003 to an estimated 45,000 in 2006, a 500% increase in just three years.

The liberalization process is far from complete however, as bottleneck facilities continue to restrict competition. Bottleneck facilities for many years have also resulted in some providers making excessive profits for some services and consumers paying far more than competitive prices for these product and/or services. This was the case for international gateway connectivity for many years which has restricted competition in the retail market for internet.

It is evident that high prices have served to restrict uptake of many services, broadband internet and mobile services for example. In the most recent survey commissioned by the OUR consumer cite affordability of telecommunication service to be the main hindrance to uptake of service. With competition and the eventual reduction in prices we have witnessed massive increased uptake of these services. We have also noticed that innovation through competition boost uptake of services as is the case with mobile services. C&WJ in trying to contain the fall off of customers from its fixed network and to boost uptake of the service, has introduced a prepaid fixed-line service, market as the *Homefone* product. With this service consumers do not pay an access charge but face higher per minute charges. The presence of an access charge and the absence of the prepaid feature on fixed lines many believed were the main features that made the fixed line service unattractive for years and more susceptible to fixed-to-mobile substitution. Additionally, the prepaid arrangement allows subscribers to have better control of spending on this service. This has heralded a new approach by C&WJ to being more innovative in an increasingly competitive environment.

The telecommunication markets in Jamaica continue to face many challenges especially in the area of facilities or lack thereof and for local loop access. As was clear with mobile services, facility based competition will sustain competition for many years and will ensure the right benefits to consumers in the form of lower prices, superior quality of service, increased innovation and consumer choice. As is noticed in the fixed-line market, lack of facility based competition generally means that prices are artificially kept high, and innovation and consumer choice are kept at a minimal.

With the constant advancement now taking place with telecommunications technology and business approaches, many things are changing. New and exciting business models are entering the fore, for example the bundling of services. There is now convergence in technology, services and service delivery. It is becoming increasingly challenging to define relevant product markets, as the way services were once delivered is fast changing. With many traditional PSTN services becoming IP-enabled, the rules of the game are fast changing and will continue to present numerous challenges for regulation. VoIP for example is one such service that will continue to present new challenges for regulation and the Local Exchange Carriers (LECs) themselves. It is even evident in Jamaica that with increased uptake of broadband internet much voice traffic will divert to the IP through VoIP. This is further made clear from the observed reduction in international outgoing traffic over the years on C&WJ's fixed network.

As for the future of the telecommunications market in Jamaica it is important that competition in network infrastructure is promoted, fostered and sustained. This will remain the real answer for sustained competition that will ensure that consumers get the best possible deal in quality of service, increased variety and affordable prices.

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