Office of Utilities Regulation

REVISED C&WJ'S PRICE CAP PLAN

A DETERMINATION NOTICE

OFFICE OF UTILITIES REGULATION

Assessment of Cable & Wireless Jamaica's
Reference Interconnect Offer
Determination Notice,
Document No: TEL 2002/02
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Abstract

This Determination Notice contains the Office's decision regarding revision to Cable and Wireless Jamaica Price Cap Plan, which went into force on September 1, 2001. The Office's proposals for revision to the Price Cap Plan were set out in its Consultative Document of August 2002 (No. 2002/05). The proposals set out in that Document have been modified on the basis of feedback and information provided to the Office by various interested parties. Changes to the Price Cap Plan became necessary with the opening up of the international telecommunications market to facilities based competition in March 2003, and the need to incorporate Modern Equivalent Asset (MEA) values, submitted by C&WJ subsequent to the issuance of the Office's August 2001 Determination Notice establishing the regime which took effect on September 1, 2001. The X and Y factors have therefore, been the subject of review given the need to take account of the effect of these decisions. The determinations herein modify and amend as applicable the determinations set out in the Determination Notice of August 2001.

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CHAPTER 1

Introduction

1.0 Sections 46 and 81 of the Telecommunications Act, 2000 provide for C&WJ to be regulated under a Price Cap regime. The Act further mandates that the Office shall establish rules for the imposition, monitoring and enforcement of Price Caps. In August 2001, the Office issued a determination notice setting out the regime that would govern C&WJ's price changes over the ensuing four-year period (C&WJ's Price Cap Plan).

1.1 Prior to issuing the determination, the Office published Notice of Proposed Rule Making documents seeking comments from interested parties on both the general and specific rules to be applied in respect of Price Cap Regulation. Comments on these rules were received from a number of interested parties including C&WJ, Digicel and the Fair Trading Commission.

1.2 The Price Cap Plan detailed:

- The duration of the initial Price Cap period;
- The classification of C&WJ's services and their treatment under the Price Cap regime;
- The formulae for the Actual Price Index ("API") and the Price Cap Index ("PCI");
- Methods and model for estimating the value of the "X" Factor in the PCI;
- The measures taken in the Office's financial analysis to provide C&WJ with the opportunity to earn a fair return on its investment; and
- The initial treatment of imputation tests and the timetable for application of such tests to the pricing of C&WJ's services.

Purpose of This Document

1.3 March 1, 2003 marked the commencement of Phase III of the liberalisation of the telecommunications sector as per Section 77 of the Telecommunication Act 2000. As of that date, legally C&WJ ceased to be the exclusive international telecommunications carrier. To date more than sixty licences have been issued to competing providers of international services. The opening up of the market to competition and the need to include new asset values have made modifications to the existing Price Cap arrangement necessary.

1.4 The introduction of competition in the market for international telecommunications has brought the issue of rate rebalancing into even sharper focus. Revenues from international traffic, especially incoming traffic, provided a substantial portion of C&WJ's Public Switched Telephone Network earnings in former years. With the liberalisation of the domestic market and the introduction of competition in international, there is a need to allow greater scope for rebalancing and the application of cost recovery principles. These developments also oblige the Office to give consideration to the question of whether an explicit provision for an Access Deficit Charge (ADC) ought to be included. In the absence of such a charge the Office would also be required to remove the constraint imposed on access charges in the initial price cap determination of August 2001.

1.5 Changes to the C&WJ's Price Cap Plan is also necessary in order to incorporate new asset values approximating Modern Equivalent Assets which the Office had previously indicated in the Jamaica Price Cap Model Description July 2001[1], is the appropriate standards to be used to compute C&WJ's capital costs for Price Caps and other regulatory purposes. The Office's adoption of these modified MEA values is therefore consistent with its established position and is also in keeping with international best practice. The decision on C&WJ asset values is set out in the Office determination notice titled, Principles and Methodology of Asset Valuation for C&WJ, Document No: Tel 2003/06[2].

1.6 The Office issued a consultative document in August 2002 (No. 2002/05) proposing changes to the C&WJ Price Cap Regime and invited comments from interested parties. Initial responses were received from C&WJ, Digicel, Caribtel

[1] A copy of this document is available from the Office on request.

[2] Copies of this document can also be obtained from at the OUR Office at 36 Trafalgar Road or on line at www.our.org.jm.

Caribbean Limited and Grace Kennedy & Company Limited. Responses were circulated among participants. On the eve of the then scheduled publication of the Office's determination notice, comments were also received from AT&T, WorldCom and e-SCOM Incorporated. The determinations set out in this publication have therefore had the benefit of views and information provided to the Office by various interested parties.

1.7 Notably, this determination notice was initially set to be published in November 2002 to take effect at the beginning of December of that year. Prior to the issuance of its determination notice, however, the Office was notified that one of the parties to the process had initiated an action for judicial review of issues surrounding the possible inclusion of ADC on incoming international calls. The Office was therefore prevented from issuing its determination before the completion of the legal process. The court has now completed its hearing into the matter (Suit No. 2002/M-151) and a decision has been issued in favour of the Office. The Office's determinations are set out in the rest of this document.

Determination 1.1

The amendments determined herein shall take effect as of the date of this notice and any change in the existing Price Cap arrangement consequent on this determination notice shall become effective in the manner consistent with the applicable rules prescribed by the Office for the Price Cap regime.

CHAPTER 2

Principles Followed by the Office in Arriving at its Determination

2.0 At the time that the Office issued the original determination notice regarding Price Cap parameters (August 2001), C&WJ's study of critical aspects of its asset values based on Modern Equivalent Asset principles had not yet been presented to the Office. Since then the results of the MEA study have been submitted and the Office has had time to review it and to direct C&WJ to make appropriate modifications. Based on its analysis of C&WJ's data and the adjustments that have been prescribed, the Office accepted C&WJ's revised asset values as modified, the results of which have been set out in the determination notice on MEA valuation. These new asset values have been taken into account in revising the Price Cap parameters.

2.1 The new Price Cap parameters are designed so that C&WJ will have the opportunity to recover its costs, including its cost of capital, for the duration of the Price Cap plan. That is, the Office estimates that C&WJ will have the opportunity to earn returns whose net present value is the relevant cost of capital.

2.2 The Office has not made adjustments based on C&WJ's realised rate of return subsequent to the institution of the Price Cap plan in September 2001. In August 2001, the office made its determinations in good faith, based on the available information. The Office believes that it would be poor public policy for regulators to adjust Price Cap parameters retrospectively as such retroactive ratemaking inevitably dilutes the Company's efficiency incentives. In this regard, the Office has where it considers that it improves the accuracy of the regime given consideration to information applicable to the period prior to September 1, 2001 but which was not available to it at the time it issued its decision. By the same token it has refused to consider information relating to the period thereafter.

2.3 The Office has always taken the view that capital valuation, return on capital and depreciation must be considered jointly. Consequently, the Office has revised its treatment of return on capital and depreciation to be consistent with the new MEA values. The revisions herein also take account of certain data and studies that are applicable to the period before the Price Cap implementation but were unavailable when the plan went into effect and have become available since then. The Office believes that this new information should be taken into account so that the Price Cap parameters are based on the best relevant information that is available at the time of its institution. Nevertheless, the Office does not believe that it is appropriate to review all aspects of C&WJ's Price Cap plan at this time and has not undertaken to do so. The Office has instead limited its review to those items, which it considers to be inline with the principles that have been outlined above as conditions for review. The Office maintains that C&WJ should bear the risk under Price Caps, as it will reap the benefits of the regime. The Office does not purport to insulate C&WJ from risk by making *ex-post* adjustments for changes other than those specified above.

2.4 The revisions that have been made relate to a recalculation of the X factor to take account of:

- The MEA value of C&WJ's plant (Chapter 3) and the corresponding changes to return on capital and associated depreciation expenses;
- Actual data for fiscal year 2000-2001;
- C&WJ's initial price-cap compliance filing which provides data for the period April to August 2001;
- Estimated reductions in international settlement rates based on available data to August 2001.
- Actual data to August 31, 2001, for the fraction of incoming international traffic terminating on mobile telephones; and
- The removal of sub-constraint on access in light of the decision to forego access-deficit charges ("ADCs").

Determination 2.1

The Office will not reconsider any aspects of C&WJ's Price Cap plan on the basis of market experience since the implementation of the plan on September 1, 2001. Doing so would have the effect of compensating for market developments; in particular, punishing C&WJ where it has enjoyed market success and rewarding C&WJ where it has suffered market failure. The overall effect would be to move toward rate-of-return regulation, with its concomitant dilution of incentives for economic efficiency.

CHAPTER 3

Asset Valuation

3.0 The Office believes that asset valuation for regulatory purposes should reflect the economic value of existing plant. That value is calculated by determining the value of MEA (new) replacement plant that can perform the same functions. The value of (older) embedded plant is then depreciated using estimates of economic depreciation that are consistent with the asset valuations. This approach accounts both for inflation and cost reduction due to technological improvement.

3.1 Basically, there are two methods of performing this evaluation. The first is the bottom-up approach. This involves performing detailed studies of various portions of the plant, and recalculating the cost that would be incurred to build the network today. The second is the top-down approach, which is based on indices of asset values. A U.S. company periodically publishes a report called the Turner Index, in which changes in cost for various types of telephone plant are tracked.

3.2 C&WJ used both approaches for the determination of the value of its plant. For certain types of plant, such as switching and transmission and certain outside plant accounts, the bulk of the valuation was based on bottom-up studies. Remaining outside plant accounts and all others were evaluated using the Turner Index, appropriately modified to reflect Jamaican conditions.

3.3 On review of C&WJ's MEA submission, the Office mandated a number of substantial modifications to the initial MEA Study submitted by C&WJ. The modifications directed by the Office involved the following:

- Recalculation of accumulated depreciation to reflect economic depreciation rather than historical book depreciation. Current valuations take account of the large decline in net values of assets because of technological progress in the past.

- Discontinuing the use of Jamaican-specific labour indices in conjunction with the U.S. Turner indices employed by C&WJ. The initial indices included adjustments made by C&WJ for Jamaican labour costs that assumed zero growth in labour productivity.

- Changing a variety of assumptions used in the bottom-up studies, such as loadings for freight and insurance and the assumed discounts on equipment prices. These modifications generally led to lower asset values than those contained in C&WJ's MEA Study. They also corrected some misattribution of outside plant asset values that were formerly attributed to switching and transmission equipment.

- Expensing of elements of network planning cost and related activities associated with capital additions. This means that the current methodology involves expensing some items that were capitalised in the past and not treating such items as part of the MEA capital base.

- Disallowing the capitalization of interest accruing to "work in progress";

- Making adjustments for the treatment of spare capacity. The Office found that C&WJ's switching capacity was excessive and disallowed a significant part of that investment (until access lines in service grow to full capacity).

Determination 3.1

The Office is now satisfied that the results, as modified by C&WJ to reflect the Office's directives, fairly represent the economic value of C&WJ's telephone plant and has thus determined that the MEA values shall be used to determine the parameters in C&WJ's Price Cap Plan.

Return on Capital

3.4 In general, if asset valuations are based on current costs, the relevant cost of capital is the real cost of capital. The real cost of capital, unlike the nominal cost, does *not* include a premium for inflation.

3.5 A regulated company implicitly gets an inflation premium if its plant is revalued to reflect current costs. In particular, in future Price-Cap Plans, C&WJ will be entitled to earn a fair return on asset values based on current costs at that time. Those values will then reflect the higher price level in the ensuing period. If C&WJ were allowed a nominal cost of capital it would inappropriately be collecting the inflation premium twice.

3.6 The Office continues to use the nominal Weighted Average Cost of Capital (WACC) estimated by Charles River Associates (CRA) in June 2000. That study estimated separate WACCs for interconnection, retail telephone services and retail data services. The relevant nominal WACC for price cap purposes is that for retail telephone services of 23.79%. CRA's estimates of the pre-tax and post-tax WACC corresponding to this figure are 33.3% per annum and 22.2% per annum respectively.

3.7 The inflation premium must be subtracted from the nominal WACC to arrive at the real WACC. The relevant inflation premium is that applicable to the capital assets, which is precisely the rate for which the company is already compensated through its accounting policy of capital revaluations and should therefore not be compensated again. The Office has therefore adjusted the pre-tax nominal WACC of 33.3% to take account of this reality.

3.8 Specifically, the Office calculates that the rate of revaluation of C&WJ's assets is 8.0 percent per year. This calculation is based on proprietary data supplied by C&WJ. The rationale underlying the adjustment undertaken to arrive at the WAAC for the purposes of the Price Cap regime is set out in the paragraph below.

3.9 The benefit of asset revaluation accrues entirely to equity holders. The post-tax return to equity can therefore be reduced by 8% per year (below the nominal cost of equity) and still give equity holders a fair return. The pre-tax return that is necessary to generate 8% post tax is 12% calculated as 8% divided by unity minus the tax rate, which is assumed to be 331/3% per year [8/(1-0.33)]. Thus, the real pre-tax WACC of 21.3% is 12.0% below the nominal pre-tax WACC of 33.3% per year estimated by CRA.

Determination 3.2

The Office has determined that C&WJ's asset base is revalued at 8.0% per year. The corresponding value of the real pre-tax cost of capital is 21.3 percent per year. This is 12.0 percentage points below the nominal pre-tax cost of capital for retail telephone services.

Economic Depreciation

3.10 In telecommunications, one of the main reasons that assets decline in value over time is technological obsolescence. The calculation of accumulated depreciation reflects certain assumptions regarding the rate of technological obsolescence. The same views should be taken with regard to the calculation of depreciation expense. A view that technological obsolescence is more rapid leads to a lower capital valuation (which lowers estimated costs) but higher depreciation expense (which raises estimated costs). A view that technological obsolescence is less rapid has the opposite effect.

3.11 Some of C&WJ's historical depreciation has been too slow to adequately reflect technological obsolescence and consequent downward effects on asset values. C&WJ has proposed a set of higher depreciation rates to be used in the future. As indicated in its determination notice on Asset Valuation, the Office has concluded that these rates are reasonable estimates of economic depreciation and that they are appropriate for calculating cost-oriented rates for C&WJ's

Reference Interconnect Offer ("RIO") 4.[3] The Office has also determined that these rates are also appropriate for making revisions to C&WJ's Price-Cap Plan.

3.12 C&WJ's asset values have also been adjusted to make them consistent with these estimates of economic depreciation. This adjustment has resulted in a substantial decline in net asset values.

Determination 3.3

The Office has determined that the depreciation rates adopted in its decision on MEA valuation are applicable for making revisions to C&WJ's Price Cap Plan.

[3] *See* the Determination Notice for RIO 4.

CHAPTER 4

Treatment of Sub-Constraint on Access Charges

4.0 It has been contended that the cost of providing domestic telephone access has in the past been heavily subsidised by revenue from international calls, especially incoming. Since the late 1990s however, the basis for this claim has been eroded substantially. Among the factors leading to this erosion and increasing the pressure for rebalancing are:

- The unilateral Benchmarks Order issued in August 1997 by the US regulator, the Federal Communications Commission (FCC), which succeeded in reducing the settlement rates paid by US carriers worldwide. In the specific case of Jamaica incoming and outgoing traffic with the US constitute more than 50% of total traffic in each direction. The settlement rate between Jamaica and the US has dropped precipitously since 1985 from US$0.875 per minute to US$0.190 in 2002.[4]

- Recommendations of the International Telecommunications Union (ITU) to reduce the settlement rates charged worldwide.

- Increasing opportunities for bypass and arbitrage, due in part to technological advancements, especially with regard to Voice over Internet Protocol (VOIP).

- Competitive pressure from international competing carriers due to the opening up of this market segment to facilities based competition in March 2003.

4.1 In some jurisdictions it has been the practice to continue to maintain some sort of subsidy on access post liberalisation as a means of easing rate shocks, to prevent inefficient entry and to ensure competitive neutrality. This is usually provided for by the imposition of Access Deficit Charges (ADC) under certain conditions. The Telecommunications Act explicitly contemplates the imposition of an ADC in specific circumstances namely:-

(i) the recipient of the ADC is a dominant public voice carrier; and

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[4] Source: Federal Communications Commission at http://www.fcc.gov/ib/pdf/artsweb.xls.

(ii) regulatory constraints prevent the dominant public voice carrier from charging cost based rates for connection and line rental.

4.2 The Office's position on an Access Deficit Charge attracted the most comments in the responses to the August 2002 consultative document. The ADC proposals were also the main focus of the late submissions from AT&T, WorldCom and e-SCOM. The Office had previously taken the position that it would only consider the inclusion of an ADC with the onset of international competition. Consistent with this position; the Office has always expressed its reluctance to placing ADC on interconnection traffic from mobile operators, one of the arguments being that mobile carriers also provide domestic access.

4.3 The September 2001 Price Cap regime imposed the sub - constraint RPI+10% on the rate of increase in prices for business and residential line rental and the connection of lines. As these services are presently priced substantially below costs the effects of these constraints are that they prevent C&WJ from charging what it computes to be the cost based rates for these services.

4.4 In the August 2002 Consultative Document the Office proposed an ADC of J$3.50 per minute for incoming calls terminating on C&WJ's fixed network. Overseas carrier would ultimately pay this ADC, in addition to the cost based rates for termination determined by the Office.

4.5 Responses to the consultation document varied, but save for C&WJ all respondents oppose the imposition of an ADC.

4.6 In a correspondence to the Office subsequent to the issuance of the court decision in respect of Suit No. 2002/M-151, C&WJ has reiterated its arguments in favour of imposing an ADC on all calls originating or terminating on its fixed network. The Company also pointed to the changes in the situation in respect of international settlement rates that make it impractical to confine ADC to international calls terminating on the fixed network. The Office's position however, is that the concerns raised by C&WJ in its recent correspondence are essentially the same as those raised in various previous consultations and as such have already been addressed by the Office earlier in the consultation process..

4.7 The proposal to impose an ADC on incoming international explicitly recognised the historical situation where C&WJ's largest source of profit and by extension, largest source of subsidy for access would have been from that quarter. In this context, and to the extent that the fixed domestic network provides access to incoming international calls at less than the cost of such access an ADC on such calls would have been quite appropriate.

4.8 The reality however, is that in the period following the initiation of legal action there has been further significant development regarding settlement rates. Notably in this regard is the fact that current settlement rates are well below the US$0.19 per minute, which obtained when the consultation commenced. It is arguable that these reductions in rates have, in part, resulted from C&WJ's efforts to push down rates in a bid to reduce the arbitrage incentive for bypass as well as continued effort by FCC to push settlement rate even lower than US$0.19 per minute.

4.9 With the opening up of the international market in March 2003, C&WJ issued a Reference Interconnect Offer (RIO5), which contained a proposal for an ADC of J$0.98 or US$0.0163 per minute on all interconnection minutes. This despite the Office's well publicised proposal for an ADC of Jamaican $3.50 per minute on incoming international calls. The fact that the matter was before the courts meant that the Office was prevented from making a ruling on the proposed ADC charge. In the absence of a determination by the Office, however, carriers are free to negotiate freely and the Office's understanding is that a number of such agreements have been concluded. The effect of this is that existing settlement rate agreements between C&WJ and overseas carriers would have been signed on the basis of the ADC proposed in the RIO. Any ADC imposed by the Office, which exceeds this amount, would mean that these agreements would have to be re-negotiated as they are not sufficient to cover the combined cost of termination and an ADC of J$3.50 per minute.

4.10 The expected revenues from an ADC of US$0.0163 per minute on incoming international are relatively miniscule and its impact on the X factor is immaterial. Given this situation the Office has determined that it will not be making a provision for an ADC.. Consistent with this decision, the Office has also determined that the existing Y constraints on the charges for line rental and connection both in respect of residential and business customers are removed.

4.11 While this decision could result in increases in line rental and connection charges, among the possible positive spin-offs are that it will allow for the correct market signals to be sent to potential entrants in the market to provide fixed access. Additionally, it will allow greater scope for the both the Office and the Fair Trading Commission to examine allegations of selective pricing behaviour under the Price Cap regime that may amount to anti-competitive conduct.

4.12 To the extent that further mechanisms might be needed to support the availability of telecommunications services in Jamaica, the Office suggests that market solutions need to be explored before recommendations can be made to the Minister with respect to single line voice service under a Universal Service Programme. In any event, the phenomenal growth in the pre-paid mobile market suggests that with creativity, ways can be found to prevent a high fixed access charge from becoming a barrier to the roll out of service and causing fall-off from the network.

4.13 The Office calculates that the impact on the X factor of no ADC as against employing an ADC of $3.50 per minute on incoming international call is 0.5. Put another way the X factor would only be 0.5% higher if a charge of $3.50 per minute were to be imposed on each minute of international incoming call terminating on the fixed network.

Determination 4.1

The Office has determined that there will be no provision for an ADC. In the absence of a provision for an ADC, the Office has also determined that the existing constraints of CPI + Y on residential and business line rental and connection are hereby eliminated.

CHAPTER 5

Recent Data

5.0 Data for fiscal year 2000-2001 submitted by C&WJ prior to the issuance of the Office's determinations on the original Price Cap parameters, did not arrive in time for the Office to consider them in the calculations for the September 2001 regime. Furthermore, C&WJ's cost data for fiscal year 2000-2001 were based on asset values that the Office had not then approved. Consequently, the Office's original Price Cap determination was based on data from fiscal year 1999-2000 and earlier. Additionally, because data for 2000-2001 were unavailable, the Office developed and relied upon forecasts for the period (April 1, 2000 - March 2001).

5.1 The Office has now analysed the actual data for fiscal year April 2000-March 2001 and these have now been included as part of the calculation of the Price Cap parameters going forward. Additionally, it has resolved issues involving C&WJ's asset valuations. Moreover, the Office has also included in its analysis data submitted by C&WJ's in its initial Price Cap filing. That data relates to the period April to August 31, 2001, and indicates the precise relationship between the historical data and the aggregate levels of rates allowable under Price Caps.

Determination 5.1

The Office has determined that actual data for fiscal year 2000-2001 shall replace the forecasts that it previously relied upon for the initial Price Cap regime.

Mobile Termination of Incoming International Calls

5.2 The Office is of the view that it is reasonable to include in its review of the Price Cap Plan the growing fraction of incoming international minutes represented by mobile-terminated traffic. In projecting the amount of such traffic for the future, the Office deems it appropriate to utilize the only relevant available data; that provided by C&WJ for the period up to August 31, 2001.

5.3 The percentage of incoming international minutes terminating on mobile networks grew from 10 percent in April 2000 to 33 percent in August 2001. The

Office believes that the values in Table 1 below are reasonable extrapolations from the trend represented by the data prior to the Price Cap period[5].

Table 1: Share of Incoming International Minutes Terminating on Mobile Networks

	Percentage
Year 1: 2001/02	45%
Year 2: 2002/03	50%
Year 3: 2003/04	55%
Year 4: 2004/05	60%

Determination 5.2

The Office has determined that the projection in Table 1 for share of international traffic going to mobile shall be used for purposes of calculating the Price Cap parameters.

[5] The values in the table are *averages* for the Price Cap years, not end-of-year amounts, which would be higher.

5.4 During the Price Cap period, it is reasonable to infer that the growth of the fraction of mobile-terminated international calls is partly attributable to C&WJ's business decisions during that period. In particular, it is noticeable that C&WJ did not pursue expansion of its fixed network in terms of the number of access lines in service during the period April 2001 to August 2001. The upside of that policy for C&WJ would be that it has avoided the costs that would have been associated with such expansion. At the same time, a downside is that additional access lines were not available to receive incoming international calls. The Office believes that it would distort the market if it let C&WJ reap the benefit of cost avoidance from not expanding lines in service but held C&WJ harmless from one of the negative consequences of that policy.

Determination 5.3

The Office has determined that it will not take into account data on the termination of incoming international to mobile networks subsequent to the initiation of the Price Cap Plan.

International Settlement Rates

5.5 The Office anticipates that International Settlement Rates negotiated by Jamaican carriers will be enough to cover the cost of termination on fixed networks. For the purposes of calibrating the Price Cap model the Office, using the best data available to it up to August 2001, has made its own forecast of what settlement rates are likely to be over the period of the Price Cap Regime. These projections are set out in Table 2 below. The forecasted settlement rates reflect the Office's view that settlement rates are likely to trend downward over the period of the Price Cap.

Table 2 – Projected International Settlement Rates

International Settlement Rates	Year 1	Year 2	Year 3	Year 4
Fixed ($J/Minute)	8.735	8.400	8.000	6.000
Mobile ($J/Minute)	8.735	8.600	8.300	8.000

5.6 The Price Cap Plan includes a Z adjustment, which provides partial compensation to C&WJ for declines in international settlement rates. In revising the Price-Cap parameters, the Office is taking account of anticipated Z adjustments. The projections in Table 2 anticipate lower settlement rates and have been used to calibrate the model used to calculate the X factor. C&WJ is, of course; free to negotiate lower settlement rates. If it chooses to do so however, it will only receive partial compensation for the lower settlement rate through the Z factor.

5.7 Notably, no account has been taken of actual settlement rates negotiated since the commencement of the Price Cap period. It is appropriate for C&WJ to reap the full benefits and bear the full costs of any such negotiations. Projections are necessary for purposes of calibrating the Price Cap Model developed by the Office but in calculating the Z adjustment (set out later in this document) C&WJ will utilise actual settlement rates for the relevant periods. Notably, should the company succeed in negotiating higher settlement rates it is at liberty to use this to ameliorate rate shocks to consumers.

Determination 5.5

The Office has determined that it's projections regarding settlement rates will not take into account any development with regard to settlement rate after September 2001.

Competitive Losses in International Traffic

5.8 The Office, in developing the original Price Cap parameters, assumed certain levels of competitive losses (the fraction of current international traffic carried by C&WJ that is expected to migrate to competing international networks). These are set out in Table 3 below. No loss is projected for Year 1 as C&WJ up to that point remained the exclusive international carrier.

Table 3 – Projected Value of Competitive Losses

Competitive Losses (Fraction)	YEAR 1	Year 2	Year 3	Year 4
Incoming International	0	0.04	0.12	0.2
Outgoing International	0	0.06	0.16	0.2

Determination 5.6

The Office has determined that the values of projected competitive losses set out in Table 3 above will continue to apply.

Table 4 – Elasticity Estimates Employed in C&WJ's Price Cap Model

	Short-run Elasticity	Long-run Elasticity
Access (Business and Residential)	0	0
Intra-Parish	-0.05	-0.15
Inter-Parish	-0.50	-1.50
International Incoming	-0.20	-0.06
International Outgoing	-0.60	-1.80

Demand Elasticities

5.9 The Office, in its previous Price Cap analysis, took account of both short-run and long-run elasticities. The assumed elasticities are shown in Table 4 above. They are based on the academic economics literature[6].

5.10 The Office stated in the August 2002 consultative document that it did not intend to review demand elasticities. There has been relatively little change in the basis upon which the elasticities were determined; *i.e.*, the academic economics literature. Furthermore, changing the methodology for calculating Price Cap parameters in mid-course always runs the risk of diluting efficiency incentives. Thus, the Office believes that such changes should be undertaken only when the justification is exceptionally strong and even then should be limited to the minimum.

5.11 Nevertheless, C&WJ filed a study of demand elasticities for outgoing international traffic, along with its comments. The study, by PriceWaterhouse Coopers, purports to show that demand for outgoing international traffic from Jamaica is much less elastic than was assumed by the Office in the August 2001 Price Cap determination notice. Given the principles espoused above, the Office does not propose to comment on the validity of this study.

Determination 5.7

The Office has determined that the elasticities values employed in its previous price-cap analysis and replicated in Table 5 above, will continue to apply without change.

Productivity Analysis

5.12 C&WJ, submitted with its response to the Office's August 2002 consultative document, a study of its historical productivity. As discussed below, the Office's methodology for calculating the X factor is not directly based on productivity estimates. Rather, the X factor is chosen so that C&WJ will have the opportunity to cover its costs, including the cost of capital. This calculation involves many

[6] See various citings in related document, titled, C&WJ's Price Cap Plan Model Description a copy of which is available from the OUR's Trafalgar Road Office.

considerations other than productivity; e.g., projected declines in settlement rates and growth of mobile-terminated traffic.

5.13 Nevertheless, in the August 2001 determination notice the Office did cite productivity analysis to justify its assumption that the rate of technological progress is 5 percent per year. In particular, the Office stated its estimated productivity to be 6.3 percent per year during the historical period (fiscal years 1998-1999 and 1999-2000). The Office reasoned that scale economies could account for approximately one percentage point of productivity growth. The remainder was then attributed to technological progress.

5.14 Indeed, the Office's current best estimate of productivity growth for the fiscal years 1998-1999 and 1999-2000 is a bit higher than the previous estimate of 6.3 percent. Additionally, the more recent analysis has also confirmed that scale economies account for approximately one percent of the productivity growth.

5.15 The productivity analysis was not extended to fiscal year 2000-2001, because there are apparent anomalies in C&WJ's data for "other" services in that year which the Office believes are unlikely to be replicated in future years. Since the 2000-2001 data are anomalous, the best available estimate is that based on fiscal year 1998-1999 and 1999-2000.

5.16 The study conducted by C&WJ purports to show that productivity growth for the period 1994-2001 was 2.3 percent per year. That estimate is considerably lower than the estimate used by the Office.

5.17 The Office has reviewed the C&WJ study and found that it is seriously flawed. In particular, it uses the Turner indices for valuation of C&WJ's capital stock. This methodology greatly underestimates productivity growth, because the Turner indices are reproduction-cost indices-not replacement-cost indices. The indices do not reflect technological progress that takes the form of better equipment (MEAs) that becomes available over time. Consequently, the methodology does not reflect the productivity growth represented by such equipment. It therefore seriously underestimates productivity growth.

5.18 A further defect in the productivity study is that it weights outputs by prices. Such weighting is reasonable in unregulated markets. It is unsatisfactory, however, in regulated markets where prices may diverge substantially from costs. It is wholly inapt for the Jamaican telecommunications market, where rates are highly unbalanced. This weighting undervalues the productivity associated with expanding the number of access lines. In particular, each new access line is valued at the current low price – rather than the higher and more appropriate measure of cost. Productivity growth is thereby underestimated. The Office has therefore concluded that C&WJ's productivity study is flawed.

Determination 5.8

The Office has determined that it will continue to use its previous estimate that the rate of technological progress is 5 percent per year. As discussed above, the Office believes that price-cap methodology should be changed in midstream only if the justification is very persuasive.

CHAPTER 6

Revised X and Y Factors

6.0 The X factor has been recalculated, taking all the considerations discussed in previous chapters into account. For this purpose, the Office utilized a computer model that embodied all the factors discussed above plus the following:

- Specification of the price-cap formulae, which have changing quantity weights each year;
- Specification of scale economies that vary across services and differ for capital and non-capital costs; and
- Specification of the rate of inflation, which differs for capital expenditures and non-capital expenses.

6.1 Using this computer model, the Office found that with an X factor of –2.9 percent per year, C&WJ's average real rate of return over the remaining years of the price-cap plan would be 21.3 percent per year.

6.2 The value of –2.9 percent per year is based on historical growth of productivity. The Office expects that under the modified price-cap plan described herein, C&WJ will have both the ability and incentive to improve its productivity substantially. It is therefore appropriate that the price-cap plan continue to have a consumer dividend, so that consumers, as well as the company, benefit from productivity gains. On the basis of this reasoning, the Office determines that the X factor in C&WJ's price-cap plan will be revised to –2.4 percent per year for the remaining period of the regime.

6.3 Notably, since this review was scheduled to take place after the first year of the Price Cap Plan but was delayed to the present by ongoing court actions, the applicable headroom available for calculating price cap changes shall be calculated to include the period September 2002 to the present. The effect of this is that C&WJ will have accumulated headroom for two annual adjustments of the Price Cap Index that were made under the previous determination of X which will now need to be amended to conform with this determination.

6.4 This X factor does not correspond to C&WJ's productivity growth. On the contrary, it additionally reflects the one-off effects of the lowering of settlement rates instigated by the U.S. Federal Communication Commission, international competition, and the evidently rapid growth of mobile-terminated incoming international traffic in the period immediately preceding the initiation of the price cap.

6.5 The Office estimates that C&WJ's actual rate of productivity growth is over 6 percent per year. At the same time, C&WJ's rates must be increased if it is to retain the incentive to make infrastructure investments and have a reasonable return on capital as required under the Act.

6.6 Furthermore, the Office believes that on balance, consumers will benefit even in the short run from the competitive regime in telecommunications. Although they will pay higher rates to C&WJ fixed, indications going into the implementation of the price cap are that they are already reaping large benefits from competition for mobile services. Equally it is anticipated that the full liberalisation of the international market since March of 2003 will also generate large benefits arising from the price reductions and improved service that will inevitably result from international competition.

Determination 6.1

The Office has determined that the X factor in the C&WJ's Price Cap Plan will be revised to –2.4 percent per year. This value includes a consumer dividend of 0.5 percent per year. For the purposes of calculating price changes consequent on the current determination the Price Cap Index shall be calculated as if the X factor of -2.4 was in effect from September of 2002.

Determination 6.2

The Office has determined that the Y constraint on both residential and business access will be eliminated

Adjustment of Actual Price Index

6.7 The weights for calculating the Actual Price Index ("API") change each year. The Office has determined that the API formula should have an additional adjustment each year. The combination of this additional adjustment and the new weights should be such that the API does not change, given end-of-year prices. This adjustment, in effect, splices the new API values with the old API values to avoid a discontinuity.

Adjustment of the Z Factor for the First Year

6.8 The Office believes that C&WJ's calculation of the Z factor for the first price-cap year (September 2001 to August 2002) should be adjusted. In making the calculation, C&WJ assumed that mobile-termination costs for fiscal year 2000-2001 were zero. In reality, C&WJ – Mobile incurred costs for mobile termination of incoming international calls, and under calling-party-pays those costs are properly treated as payments of the fixed network. The Office believes that it is appropriate to impute the original RIO-3 rates for mobile termination of incoming international calls for the period during which calling-party pays was applicable for mobile-terminated calls. The effect of this treatment is that the Z factor would have been higher than it ought to have been because of the assumption that such out payments are moving from an initial point of zero. No imputation is required for the period prior to calling-party pays; as such payments would not have applied then.

6.9 C&WJ should make this adjustment to the calculation of the Z adjustment before making any further price changes for price-cap services.

Determination 6.3

C&WJ is directed to adjust the API each year so that the API does not change, given end of year prices when the new weights are applied. C&WJ is also required to recalculate the Z adjustment for the first year to impute mobile termination costs for fiscal year 2000-2001.