Telecommunications regulation in Hong Kong

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Abstract Telecommunications regulation in Hong Kong (China) is interesting as a case study of pro-competitive regulation in a geographically small city of some 6.8 million people. It is also of particular interest because The Office of the Telecommunications Authority, the sector regulator, has for four years running (1999-2002) been voted the best Asian regulator by readers of Telecom Asia. What policies were applied to warrant this sustained approval rating? This paper examines these policies and suggests further improvements.

Introduction

Telecommunications regulation in Hong Kong (China) is interesting as a case study of pro-competitive regulation in a geographically small city of some 6.8 million people. It is also of particular interest because The Office of the Telecommunications Authority (OFTA), the sector regulator, has for four years running (between 1999-2002) been voted the best Asian telecommunications regulator by readers of *Telecom Asia*[1].

This paper examines the policies that received this sustained popular approval. It begins by examining policies pertaining to the liberalisation of market entry, then proceeds to examine post entry regulation, concluding with recommendations for further improvements.

The Hong Kong government's telecommunications policy objectives

The Hong Kong SAR Government considers telecommunications to be a vital industry underpinning the services sector and believes that competition is the best vehicle to protect and enhance consumer interests in the telecommunications sector. The Government's broad telecommunications policy objectives are (Information Technology and Broadcasting Bureau (ITBB), 2000):

- to enable Hong Kong to be recognised as a world-class telecommunications centre for doing business;

- to ensure that Hong Kong has available high quality telecommunications services at competitive prices; and
- to ensure that Hong Kong has high performance in telecommunications as measured against the Organization for Economic Co-operation and Development (OECD) economies.

The pro-competitive regulatory reform in HK's telecommunications sector has been driven by the desire to accelerate network development and modernisation and to enhance Hong Kong's position as a telecommunications hub. A specific target is that more residential customers have a choice in regard to the supplier of local fixed line service. This is seen to be particularly important because the Internet (including broadband) is provided largely through fixed line service (with cable playing a far less significant role than in some other countries such as the USA and the UK).

Regulation of market entry

The telecommunications authority

OFTA is the executive arm of the Telecommunications Authority (TA) whose role is to regulate and facilitate the development of Hong Kong's telecommunications sector. The TA's responsibilities include economic and technical regulation, enforcing fair competition rules, setting technical standards, co-ordinating the development of telecommunications infrastructure, investigating consumers and industry complaints, managing the radio spectrum, providing advice to the Government on telecommunications

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matters and representing Hong Kong in international telecommunications organisations.

A notable aspect of the regulatory framework in Hong Kong is the absence of a general Competition Law and a Competition Authority.

Local fixed line telecommunications network services

In June 1995, following the expiry of the exclusive franchise of PCCW-HKT Telephone (formerly known as Hong Kong Telephone Company) in the local fixed telecommunications network services (FTNS) market, the Government awarded three new licences to Hutchison Communications (now called Hutchison Global Crossing Limited), New T&T Hong Kong (now called Wharf New T&T Limited) and New World Telephone for offering services in competition with PCCW-HKT Telephone.

To encourage the roll out of the fixed telecommunications networks, the Government announced on 5 May 1999 that a moratorium on the issue of further local FTNS licences would be extended to 31 December 2002. In return, the three new entrant FTNS licensees provided undertakings to the government on their network roll-out aimed at offering over 50 per cent of households a choice of an alternative fixed network operator to PCCW-HKT by the end of 2002 (OFTA, 2001a).

These commitments were guaranteed by the provision of performance bonds of HK\$50 million per operator. FTNS operators that failed to meet the interim milestones would be required to comply with directions by the TA to take such action or remedial measures as required.

Table I summarises the market structure of local network market of Hong Kong, the USA, the UK and Australia. By the end of 2001, the new entrants in Hong Kong had obtained a market share of 11 per cent, which is similar to the 10.2 per cent attained in the USA in December 2001 where competition was introduced years earlier. As of 2001, Hong Kong had the highest percentage of newly constructed direct access lines. In terms of local loop unbundling, Hong Kong also appeared to be ahead of the USA, UK and Australia.

Cable TV has played a less significant role in providing alternative local telecommunications service in Hong Kong compared with some other countries. In January 2000, the

existing subscription television licensee, Hong Kong Cable Television Limited (HKCTV), was granted a licence to provide telecommunications services, including voice service, over its hybrid fibre coaxial network, to constitute the fifth wireline-based local fixed network. It is notable that although licensed to provide voice service, Hong Kong Cable has not done so. This has been disappointing because in Hong Kong (as in many OECD countries) there had been considerable expectation that cable would provide the potential for using alternative infrastructure to bypass the incumbent's control of the local loop. A major reason, according to some analysts, is that Hong Kong Cable has been using technology (analogue) that cannot interoperate with other telephone systems. The company has (reportedly) been testing IP (Internet Protocol) based telephone system with a view to introducing this technology.

Business users vs residential users

The Hong Kong Consumer Council has voiced concerns that new entrants have targeted more profitable business users rather than residential users. By the end of July 2001, the new entrants had only served 4.45 per cent of the residential market, by contrast with 13.8 per cent of the business market. This asymmetric development is in fact quite common, at least in the early stages of a competitive market. In the USA, new entrants had attracted only 6.6 per cent of residential and small business customers by the end of December 2001[2].

Figure 1 indicates that, although the new entrants have a higher market share in the business market, the annual growth rate in residential market penetration has accelerated and, in recent years, has exceeded that in the business market.

Local fixed wireless FTNS

To further encourage competition, five wireless local fixed network operators (see Table II) were licensed in the first quarter of 2000 to operate non-wireline based FTNS networks based on LMDS (Local Multipoint Distribution System) technology[3].

An LMDS network requires building access for installation of antenna and in Hong Kong this was a problem until the

Table I — The local fixed network market in HK, the USA, the UK and Australia

Type of access	Hong Kong (since 1995) (%)	USA (since 1996) (%)	United Kingdom (since 1984) (%)	Australia (since 1999) (%)
Direct access line	55	30.9	89.7	86.25
Resale	0	(include 7% TV cable) 21.6	(including TV cable) 10.3	(including TV cable)
Unbundled local loops (type II interconnection)	45	47.5	0	13.75
Total market share by new entrants	11.0	10.2	17.4	8
	(by December 2001)	(by December 2001)	(by December 2001))	(by December 2001)
Source: US data from FCC (http://www.fcc.gov) and Credit Suisse First Boston (http://www.scfb.com); Hong Kong data from OFTA (http://www.ofta.gov.hk); UK data from OFTEL (http://www.oftel.gov.uk); Australian data from Paul Budde Communications (2001)				

Figure 1 — Market share of the new entrants in Hong Kong's business and residential market

Table II — Local wireless FTNS

Licensee	Licence issue date
Hong Kong Broadband Network Limited	03/02/2000
SmarTone Broadband Network Limited	03/02/2000
Hua Nan-Teligent Co., Limited	10/02/2000
Eastar Technology Limited	16/02/2000
PSINet Wireless Hong Kong Limited	07/03/2000

Source: OFTA at www.ofta.gov.hk

amendment of the Telecommunications Ordinance in June 2000, which granted the regulator power to enforce building access.

Fixed wireless licensees performance in meeting licence commitments

Of the five licensees, only SmarTone Broadband and Eastar Technology met all commitments in regard to service launch, network rollout and capital expenditure. CCT-Intelligent had to forfeit its HK\$10 million of performance bonds for failing to meet its commitments on cumulative capital expenditure and launch of service. OFTA extended the compliance deadline for Hong Kong Broadband Network, which had met requirements of service launch and the number of hubs, but had failed to meet the requirements of network coverage and capital expenditure by one year. OFTA explained that the extension was granted on the grounds that difficulties in accessing buildings had made the company fall short of these two requirements. Meanwhile PSINet Wireless Hong Kong met its requirements of network service rollout and network coverage.

Broadband

Hong Kong has performed well in terms of overall broadband coverage (ITBB, 2001) with practically all commercial buildings and some 95 per cent of households covered (compared to below 75 per cent coverage in mid-1999) (Figure 2). Several broadband technologies have been

deployed, which include ADSL (PCCW-HKT), Ethernet (Hutchison), LMDS (Hong Kong Broadband Network etc.) and Cable Modem (Hong Kong Cable).

The moratorium on issuing of new licences (until 2003)

The moratorium (noted earlier) has delayed full market liberalisation in Hong Kong. Two new fixed carrier licences were issued in 2002, but will not be effective until 1 January 2003. Given the large scale of investment and work involved, it will take some time to roll-out new fixed networks. In view of the rapid pace of regulatory reform and commercial developments, both regionally and worldwide, a significant delay could threaten Hong Kong's aspirations to be a regional hub.

Mobile

With mobile becoming increasingly a substitute for fixed line service, it is relevant to consider developments in Hong Kong's mobile market. Hong Kong has one of the most competitive mobile markets in the world. By 1987, three licences for analogue mobile service had been issued. In 1992, SmarTone obtained the fourth licence and immediately began offering digital GSM service. In 1996, OFTA issued another six licences for PCS service which triggered off another round of fierce competition. By August 2002, the mobile penetration rate in Hong Kong exceeded 85 per cent – one of the highest in the world. After a period of mergers and alliances, six mobile operators (holding 11 licenses) remained by August 2002 (ABN-AMRO, 2002), namely CSL (formerly jointly owned by PCCW-HKT and Telstra, but now solely by Telstra, 19 per cent), Hutchison (32 per cent), New World (10 per cent), Peoples (11 per cent), SmarTone (17 per cent), and Sunday (Mandarin) (11 per cent). Although Hutchison and CSL are the two leading operators in terms of market share, none of the operators dominates the market and there is high subscriber churn facilitated by number portability.

Figure 2 — Broadband deployment for major markets (broadband subscribers per 100 inhabitants, for major markets, December 2000)

Source: ITU (2001)

In 2001, four 3G licences were awarded but operations have not yet commenced. (3G licensing issues in Hong Kong have been discussed by the authors elsewhere[4] and are beyond the scope of the present paper.)

A measure of the successful development of Hong Kong's mobile market is provided by the International Telecommunication Union's (ITU) mobile/Internet Index that gives Hong Kong the top ranking, as shown in Table III.

Post entry regulation

The regulatory issues focused on in this section are those of most importance to the local fixed line market, including:

- pricing and price regulation;
- universal service; and
- interconnection.

Pricing and price regulation

Sustainable competitive entry by new competitors in the local market depends on the profit margin attainable in that market. This profit margin depends on the level of end-user prices relative to operator cost. If end-user charges to customers are low (as they are for local service in Hong Kong), and costs are high, the profit margin will be relatively narrow and so too will be the margin for sustainable competitive entry. This will make it difficult for new entrants since, in order to attract customers away from the incumbent, they will typically need to set prices a little below the incumbent's prices (unless they can provide a service of demonstrably superior quality). A narrow profit margin will also make it difficult to earn sufficient profit to be

Table III — Top 20 mobile/Internet index rankings, worldwide

Economy	Mobile/Internet score ('100)	Ranking
Hong Kong (China)	65.88	1
Denmark	65.61	2
Sweden	65.42	3
Switzerland	65.10	4
USA	65.04	5
Norway	64.67	6
Republic of Korea	63.42	7
United Kingdom	63.00	8
Netherlands	62.25	9
Iceland	62.03	10
Canada	61.97	11
Finland	61.22	12
Singapore	60.58	13
Luxembourg	58.58	14
Belgium	57.80	15
Austria	57.72	16
Germany	55.53	17
Australia	55.40	18
Portugal	55.13	19
Japan	54.94	20

Note: This table is an extract from the ITU/Internet Index included in the full Internet for a Mobile 3Generation Report. The Index measures how each economy is performing in terms of information and communication technologies (ICTs) while also capturing how poised it is to take advantage of future ICT advancements. The Index covers 26 variables sorted into three groups: infrastructure, usage, and market structure. These three components combine for a score between a low of 0 and a high of 100

Source: ITU (2002)

commercially viable in the medium term, forcing some companies to leave the market.

Profit margin squeeze

A common strategy adopted by incumbents in many countries is to deliberately keep low (or lower) end-user charges and/or increase costs (including interconnection charges) incurred by the operator, so as to “squeeze” (narrow) the margin for sustainable competitive entry.

If the “wholesale” price of interconnection charged to new entrant operators by the incumbent is set higher than the price the new entrant can charge to its customers, new entrants will clearly find it very difficult to survive. This is not just a theoretical possibility, and is something that has occurred in a number of countries. Indeed, there are indications that this is occurring in Hong Kong for local service as well as for Internet service.

Level of prices

Under the so-called “Framework Agreement”, PCCW-HKT was allowed to increase the tariff for residential telephone lines to \$90, \$100, \$110 per month as from 1 January 1999, 2000 and 2001 respectively, as indicated in Table IV.

Table IV — PCCW-HKT telephone’s direct exchange line monthly tariff (in Hong Kong \$)

	1/8/1996	1/8/1997	1/9/1999	22/1/2001	2002
Business	\$104.6	\$108.8	\$108.8	\$128	No price control
Residential	\$67	\$68.9	\$90	\$110	No price control

Source: OFTA at <http://www.ofa.gov.hk>

The level of prices for local service in Hong Kong at a flat monthly payment of HK\$110 (from January 2001) without any further usage-sensitive charge remains relatively low by comparison with many other OECD countries. This conclusion is supported by the data in Table V. (In reviewing this comparison, it should be borne in mind that the monthly rental charge in Hong Kong is a flat rate that includes all local call charges.)

If the monthly rental charge payable in Hong Kong is low, operators would be under increased pressure to attract customers who are likely to be high value users of advanced services. Residential customers are less likely to be high value users compared with business users (and there are fears that this could contribute to a digital and broadband “divide”).

Structure of prices

The structure of prices in Hong Kong does not reflect costs. The existing flat rate pricing structure was designed decades

Table V — PSTN connection charges, December 2000 (in Euros excluding VAT)

	Connection charge		Monthly rental	
	Business	Residential	Business	Residential
Belgium	54.54	54.54	13.39	13.39
Denmark	101.88	101.88	12.90	12.90
Spain	44.46	44.46	10.94	10.94
Greece	29.35	29.35	7.04	7.04
Germany	127.72	127.72	8.67	8.67
France	38.56	38.56	11.43	9.86
Ireland	103.88	103.88	13.87	13.87
Italy	103.29	103.29	13.63	9.66
Luxembourg	61.97	61.97	11.90	11.90
Netherlands	38.62	38.62	15.68	13.36
Austria	116.28	116.28	17.44	14.53
Portugal	71.83	71.83	11.17	11.17
Finland	100.07	100.07	9.65	9.65
Sweden	90.07	90.07	13.39	9.70
UK	161.50	137.44	21.45	13.87
USA,CA	66.89	66.89	10.93	6.35
USA,OH	66.89	66.89	22.41	7.47
Japan	715.71	715.71	25.84	17.40
EU Average	82.93	81.33	12.84	11.37
Hong Kong^a	68.15	68.15	18.36	15.78

Note: ^aHong Kong's monthly rental is a flat rate that includes unlimited local calls

Source: DG Information Society (2001)

ago when the telecommunications line was used only for telephone conversations. The flat rate charges were set on the basis of an average usage of all customers in the services offered (OFTA, 1996, p. 1). For example, the charge for business lines was set higher than residential lines because the average use of a business line was higher than that of a residential line.

The rationale of reform to the level and structure of pricing (to make prices more cost reflective) is similar to that arguing for price re-balancing. If price levels are unattractive, the commercial incentives to vigorously enter the market are weak and regulatory initiatives to extend coverage into such commercially unattractive services are likely to meet only limited success. Moreover, if the structure of prices does not reflect costs, inefficient distortions will emerge in terms of usage and investment patterns.

The recent development of flat rate pricing in a number of countries, especially for “always-on” broadband use, introduces complicating considerations in regard to the appropriate price structure for telecommunications. Thus, the discussion here is not meant to be urging change in favour of a traffic sensitive pricing scheme, but rather that a thorough review of pricing is necessary in Hong Kong.

Prices need not necessarily increase as a result of reforms to pricing structure; some charges are likely to decline. In any case, price cap regulation can be applied to ensure that prices do not change unacceptably sharply in regard to nature, extent and direction. (In the UK, low user schemes and monitoring of the bills of an “average residential customer” were introduced to help ensure that such customers were protected.)

Price regulation

Under the licence issued to PCCW-HKT, the company's tariffs are subject to regulatory approval while the company remains the dominant operator in the market for fixed telephone line services. An application for tariff revision may be rejected if the application is in breach of licence conditions (which prohibit unauthorized discounts, anti-competitive practices, and abuse of dominant position.)

However, in January 1998, the Framework Agreement provided that no price-control arrangement would be applied after 1 January 2001. The CPI – 4 per cent price cap on PCCW-HKT would be withdrawn. The reason given for lifting the price control for local telephone line services is that with the liberalization of the market OFTA considered that competition in the market would be sufficient to constrain the ability of PCCW-HKT to raise the charges for local fixed telephone line services (OFTA, 2001b). The strong competition expected has in fact not developed. The three wireline-based FTNS operators have a market penetration of less than 10 per cent and have voiced complaints about the difficulties faced in obtaining interconnection (these difficulties are discussed below). The wireless FTNS have also faced difficulties in establishing their networks and

attracting business. In regard to additional licensees, (although they are permitted to operate from January 2003), it will probably not be until perhaps 2004 or 2005 before the new licensees actually commence service. Mobile service is offering competition for voice service, but this is not currently the case for Internet and broadband data service.

Universal service

In Hong Kong, a Universal Service Contribution (USC) scheme compensates PCCW-HKT for providing local telecommunications services to uneconomic customers who would not otherwise be served on commercial grounds.

It is notable that subsidisation programmes can have the effect of limiting competition because potential market entrants could be discouraged if they have to compete against a subsidized provider offering high capability services at prices significantly below costs. Thus a universal service (USO) programme can impact adversely on the development of competition in the industry, both by any imposition of higher USO levies on an incumbent's competitors, and by further entrenching subsidization of the incumbent's services in USO net cost areas. This development may well have the perverse effect of dissuading innovative alternative providers from entering markets. This is also true in the case of providers of broadband data services that can be delivered through a number of different platforms, many of which are offered by new competitors.

With the limited amount of information on the recipients of universal service available in Hong Kong, it is not possible to gauge the extent to which this may be influencing the coverage of residential customers by new operators, thereby constricting the choice of alternative supplier to some residential customers.

Subsidization programmes may turn out to have only short-run advantages if they result in adverse long-run outcomes, including distortions to the nature, extent, and speed of technological innovation and investment. This does not necessarily argue against the provision of universal service, only that such programmes must be transparent, limited and delivered cost-effectively. Regular systematic monitoring must occur to ensure accountability (including the accountability of the USO provider).

Interconnection

There are two kinds of network interconnection in Hong Kong defined as Type I interconnection and Type II interconnection.

Type I interconnection

Type I interconnection refers to interconnection between network gateways via a point of interconnection (POI) enabling consumers subscribing to different networks to communicate with each other.

In Hong Kong, as in most countries, the preferred arrangement is for network operators to agree among themselves the terms and conditions for interconnection on a commercial basis. However, if commercial agreement

cannot be reached within a reasonable time, either party may ask the Telecommunications Authority for a determination of the relevant terms and conditions.

In Hong Kong, new entrant operators have complained about:

- excessive charges imposed by the dominant operator for implementation of various interconnection facilities;
- lack of transparency in charges imposed by the dominant operator;
- refusal to provide sufficient point of interconnection capacity on fair and reasonable terms, promptly and efficiently;
- the insufficient quota unilaterally set by the dominant operator in the cutover of local access links (LALs);
- the insufficient quota unilaterally set by the dominant operator in the processing of number port requests; and
- unreasonable delay in the implementation of various interconnection requests.

Type II interconnection: local loop unbundling

Hong Kong was one of the earliest to require unbundling of the local loops to facilitate local network competition doing so in 1995 (Table VI). Local loop unbundling has the potential to enhance competition in high-bandwidth local loop services but (as in many other countries) there have been problems in implementing local loop unbundling. New entrants have alleged that PCCW-HKT is restricting Type II interconnection through administrative bottlenecks such as:

- restrictions on the rate of implementation of co-location exchanges;
- restrictions on the rate of pre-provisioning of facilities in co-location exchanges;
- restriction on the quantity that can be ordered to only 36 lines per day per exchange;
- refusal to perform cutover after 8p.m. or on Sunday or public holidays (although it does so for its own customers);
- refusal to perform large volume cutover on the same day (although it is able to do so for its own customers).

The new operators claim to have been forced to agree to unfavourable terms to avoid the interconnection issue dragging on at their expense with some of the new operators urging the government/regulator to (New T&T, 2001):

- proactively promote competition;
- provide fast response to mediation and determination to interconnect issues;
- provide assistance to the new operators at least in the initial phase until the market matures;
- enforce transparency of information, including cost of provisioning, of the incumbent's network required for interconnection; and
- review interconnection charges to ensure that they are equitable.

Table VI shows the prices for a transferred unbundled local loop copper pair at the lowest bit rate available. Prices shown in parentheses are for subsequent copper pairs. Co-location offers are noted for those countries where such information is available. However, comparison cannot easily be made because Hong Kong's price of local loops is for voice service only.

Mobile interconnection

A major problem in regulating the mobile phone market is interconnection between the mobile and fixed network. Very high interconnection charges imposed by European mobile operators on calls from fixed to mobile (well above cost and several times higher than mobile to fixed interconnection charges) have been a major problem (ITU, 2000). In Hong Kong, the problems have been relatively less (due to a number of commendable features in OFTA's policy towards mobile-fixed network interconnection).

PCCW-HKT's categorisation as a dominant operator (due to its more than 90 per cent market share of the local fixed network) means that mobile interconnection with PCCW-HKT's fixed network is subject to regulation. OFTA prescribes that the interconnection fee be based on the actual cost incurred in the process of interconnection. Costs are to be compiled in accordance with OFTA's Accounting Manual. PCCW-HKT's interconnection charges arrived at on this basis are accepted by the OFTA only if they are in line with the regulator's own cost analysis. The transparent, cost-based process, together with the provision of a cost accounting manual are features that have received praise[5].

OFTA's cost-based interconnection policy has resulted in relatively low interconnection rates that have assisted the rapid development of mobile service in Hong Kong. The benefits to the public in terms of choice and decline in overall price have been substantial. There is however, another side to this picture of successful development of Hong Kong's mobile market. During 2001-2002, only one operator (CSL) earned a profit. Some commentators may argue that this financial outcome is consistent with allowing the market to decide on the number of entrants and profit/survival outcomes. On the other hand, some might argue (as some operators have) that too many operators were licensed, implying a regulatory mistake[6].

Broadband interconnection

Although the growth of broadband service in Hong Kong is impressive, interconnection remains a major problem. PCCW-HKT's local loop is still virtually the only option for other FTNS licensees. (The exception is Hutchison Global Crossing which has been rolling out a complete optical fibrebased Ethernet system directly to buildings.)

Price squeeze?

PCCW-HKT has offered a Type II interconnection price for full bandwidth and partial bandwidth. With full bandwidth, the new entrants can provide both broadband and voice service,

Table VI — Unbundled local loop services

Country	One-off charge	Monthly rental	Co-location offer	Service availability	Last updated
Austria	54.50 (36.34) ^a	11.63 ^b	Yes	Since July 1999 RIO available since 26 June 2000	September 2001
Belgium	N/A	N/A	N/A	1 January 2001	February 2001
Denmark	47.10 (16.39)	8.26 full access 6.20 shared access	N/A	Since 1 September 1999	September 2001
Finland^c	5,320 average 200	< 3km: 12 > 3km: 17.5 Shared access: < 3km: 7.5-11 > 3km: 10-13	Yes	1 January 2001	September 2001
France	107.93 ^d	14.48 full access 6.10 shared access ^d	Yes	1 January 2001	September 2001
Germany	92.59	12.48	Yes	Since 8 February 1999 prices posted on RegTP's Web site. Offer fixed until March 2001	September 2001
Greece	N/A	N/A	N/A	N/A	February 2001
Iceland	N/A	N/A	N/A	N/A	September 2001
Ireland	119.73	13.54 full access 6.77 shared access	Yes	1 January 2001	September 2001
Italy	92.03	11.62	Yes	Since May 2000	September 2001
Liechtenstein	N/A	N/A	N/A	N/A	September 2001
Luxembourg	135.03 (91.03)	13.26 ^e	Yes	June 2001	September 2001
Netherlands	133.90	11.93	Yes	March 1999	September 2001
Norway	56.02-162.02	12.05-40.45	N/A	Since 6 February 2001	September 2001
Portugal	82.8	11.96	Yes	1 January 2001	September 2001
Spain^f	75.38	13.00 full access 5.39 shared access	Yes	26 March 1999	September 2001
Sweden	94.80	15.00	N/A	March 2000	February 2001
UK^g	139.28	16.09	Yes	1 January 2001	September 2001
Hong Kong	68.15	6.03	Yes	1995	October 2001

Notes: Hong Kong's price is for voice service only. All prices are given in Euros. ^aPrice in parentheses is the connection charge for additional copper pairs. ^bPrice until 31 December 2001; €10.9 from 1 January 2002. ^cApproximate numbers. There are 46 network operators in Finland with SMP in local network. Ficora does not fix the prices for the operators' services: [each operator determines its own prices](#). ^dThese prices are the ceilings set by ART in its decision number 01-35 on 8 February 2001. See <http://www.art-telecom.fr/communiqués/communiqués/index-07-2001.htm>. ^eMonthly rental for voice (broadband usage) €15.79. ^fThe monthly rental of €13.00 per copper pair applies during 2001. Prices for this service are also fixed at €12.62 in 2002 and €12.32 in 2003. Shared access prices have been fixed at €4.77 for 2002 and €3.49 for 2003. ^gOFTTEL is proposing an annual rental of £68 and a connection charge of £127 per shared loop

Source: Analysys (<http://www.analysys.com/atlas/series/LLUB.asp>)

while with partial bandwidth, the new entrants can focus only on broadband services. However, Wharf New T&T alleges that the discrepancy between the wholesale (i.e. the inter-carrier) and the retail interconnection charges penalizes network operators for winning ISP customers from PCCW-HKT. For example, the PCCW-HKT's tariff for broadband Type II interconnection is HK\$198 per month plus a HK\$1,491 one-off charge for full bandwidth, or HK\$196 per month plus HK\$2,576 for partial bandwidth. This compares with PCCW-HKT's tariff to its residential customers and to its ISP customers of HK\$198 per month (Wharf New T&T Limited, 2001).

In addition to the per minute interconnection charge, there are also various interconnection charges levied on new operators. For broadband Internet access, one of the fastest growing sectors, PCCW-HKT wholesales its lines for HK\$198 per month plus a one-off connection fee of HK\$475 for a

basic line and HK\$875 for a Premium line. The fact that PCCW-HKT and its rivals retail broadband access for little more than HK\$198 has led to speculation of a "price-squeeze".

On 14 November 2000, the TA issued a statement on the principles for determining interconnection for broadband services:

- broadband is defined as not lower than 144kbps;
- when making a final decision on mandating Type I interconnection, due consideration be given to the availability and effectiveness of other forms of broadband interconnection, e.g. through IP networks;
- Type II interconnection should be made at any technically feasible points along the local loops of the local wireline-based fixed networks;
- Type II interconnection should only be required on local loops based on copper medium at this stage and be

available after the end of February 2001. Open access should apply to the hybrid fibre coaxial network of Hong Kong Cable Television; and

- LRAIC would be adopted as the pricing model for determination of interconnection charges, and forward-looking or replacement costs standards should be adopted.

It is still too early to assess the effectiveness of this regulatory measure.

One approach to addressing the "price squeeze" problem: a wholesale cost imputation requirement

To prevent vertical price squeezing, a regulator could impose a so-called "wholesale cost imputation requirement".

Essentially what this tries to do is ensure that the same cost for essential wholesale services (of interconnection) faced by the new entrant is imputed to the dominant operator's retail services.

Non-price terms and conditions of interconnection

Another common tactic used by incumbents is to employ "sabotage" tactics, including inferior terms and conditions of interconnection and delayed provision of interconnection (see, e.g. Beard *et al.*, 2001).

PCCW-HKT has been critical of the current local loop unbundling arrangements in Hong Kong and has proposed the "sun setting" of unbundled local loops. That is, that the Type II interconnection arrangement be abandoned 3-5 years after the new licensees obtain their licences. PCCW-HKT argued that, in this way, there would be pressure on new operators to engage in infrastructure investment, and hence infrastructure competition would be promoted (Chiron, 2001). In fact, little evidence has been tendered to substantiate the claim that unbundling or line sharing discourages investment in new infrastructure (Paltridge, 2001).

PCCW-HKT's opposition to unbundling is not unusual. Indeed, local loop unbundling has encountered opposition by almost all incumbents in almost all countries. Ironically, when these incumbent operators go abroad, they are often the loudest proponents of local loop unbundling.

Reference interconnection offer (RIO)

Hong Kong is a member of the WTO, and is committed to adopting the regulatory principles contained in the so-called reference paper (attached to the February 1997 agreement on basic telecommunications). Accordingly, Hong Kong is obliged to ensure that the incumbent publishes either interconnection agreements or a reference interconnection offer (RIO). A RIO is one means of increasing transparency of interconnection arrangement. Confidential treatment of interconnection arrangement would provide incumbents with an opportunity to act strategically to thwart competitors. For example, incumbents could enter into confidential interconnection arrangements that provide less favourable

interconnection arrangement to competitors than to affiliates. Dominant operators could also limit the functionality and quality of the types of interconnection offered, levy excessively high charges, and otherwise act strategically to limit competition. It is easier for regulators to detect and remedy such anti-competitive behaviour if interconnection arrangements are made public. Publication of arrangements also makes it easier for a regulator and all industry participants to compare interconnection rates, terms and conditions. Transparency also assists in developing industry standards and benchmarks, as well as best practices on operational and administrative issues.

Under the Telecom Ordinance (as amended in June 2000), TA has the power to publish Interconnection Agreements. But neither individual interconnection agreements nor RIOs have been published in Hong Kong. Instead, after consulting with licensees, OFTA released a detailed Industrial Code of Practice for Interconnection[7] that defines the principles of interconnection and the obligations of each party. Issues such as co-location, submission of information, service level agreements, dispute procedures and charging arrangements are specified in the code.

The code does not appear to have had the desired effect in regard to restricting anti-competitive behaviour. PCCW-HKT should be required to publish both a RIO as well as Interconnection Agreements. These requirements will make it more difficult for discrimination between operators to occur and will also help accelerate agreements on interconnection terms and conditions. Moreover, PCCW-HKT should be required to enter into Service Level Agreements (SLAs) with new entrants to ensure timely delivery of leased line capacity, and quality of service requirements.

Best practice benchmarking

OFTA should use comparison with best practice prices prevailing in OECD countries as a cross-check (reality check) to prices established on the basis of commercial agreement or on the basis of regulatory determination on the basis of (contentious) cost principles such as FDC and LRAIC. This is not just a matter of academic interest. There has long been concern that basing interconnection charges on cost principles is "contentious". Certainly it is true that different cost principles can yield different interconnection prices. Indeed, even if the "forward-looking" LRAIC principle is accepted as the appropriate cost principle (and this is a contentious issue over which there has been strident debate in Hong Kong), it can spawn a range of values. At any rate, regulation in Hong Kong (and most OECD countries) professes to be a "surrogate" for competition. Therefore, there should be interest in the prices and conditions that are actually being generated in those economies where competition is relatively developed.

It seems surprising (especially in view of the Government's expressed policy objective that

Hong Kong's performance in regard to telecommunications be benchmarked against those of OECD countries) that OFTA has not conducted and published comparisons of interconnection prices (and other aspects of developments in Hong Kong's telecommunications market).

A preliminary benchmarking exercise presented in Figures 3 and 4 concludes that interconnection prices in Hong Kong are relatively low at present. But interconnection charges could rise significantly in the future. Also, the best practice pricing comparisons should be made not just in terms of interconnection prices but also together with the additional one-off connection charges associated with gaining interconnection, payable by a new entrant operator. If prices in Hong Kong (for say the one-off connection fee or monthly rental) are much higher than in best practice countries, this should alert the regulatory agency to the need to investigate. Moreover, the fact that interconnection prices can change significantly over time means that there will be need for continued monitoring by OFTA.

Price cap regulation for interconnection charges?

Although interconnection prices appear relatively low at present as noted above, there are signs that PCCW-HKT is endeavouring to raise them, either through commercial agreement or by regulatory determination (through a change in the cost principle to LRAIC which, in the case of Hong Kong, would result in higher interconnection prices). There is considerable pressure on PCCW-HKT to raise interconnection prices. If this can be done, retail end-user prices can be raised (and there could be scope for this as a result of the withdrawal of price controls) while maintaining a narrow margin between retail prices and what a new entrant's interconnection costs is.

If this eventuates, that is if interconnection charges are raised, one possible regulatory response would be for OFTA to apply price cap regulation on PCCW-HKT's interconnection prices (as is done in the UK). This would help ensure that interconnection/wholesale prices are not increased as part of a price-squeeze tactic or to leverage additional revenue for PCCW-HKT from its dominant power in the local service market. And it would ensure that over time interconnection costs fall (at least in real terms).

Install additional regulatory rules concerning non-price terms and conditions of interconnection, including delay in provision

The practical tools available to a regulator to promote high quality interconnection include:

- establishing interconnection quality of service monitoring requirements;
- monitoring complaints vigorously and establishing significant penalties for clearly unequal service quality; and

- establishing an independent Interconnection Services Group within the incumbent's organization.

An Interconnection Services Group can measure quality of service to interconnecting operators, and compare it with the incumbent's self-provisioning. For example, it could ensure that new circuits ordered by interconnecting operators are provisioned, on average, within the same number of days as internal orders.

Deterrent fines to reduce delays

The APEC Principles of Interconnection states under Principle 4 that: "A major supplier has an obligation to provide interconnection in a timely fashion and to negotiate in good faith. The regulatory regime has dispute resolution mechanisms, which may include the application of general or sector specific competition law and associated penalties, if the major supplier delays in fulfilling its obligations[8]".

In the UK, telecommunications regulator OFTEL has proposed that if an operator requests access to a BT exchange for "local loop unbundling" to install its equipment[9], BT will have to pay £80 for every working day's delay (Wearden, 2001). Once the operator has installed its equipment and has orders from customers, BT would face a further £10 fine for each day it delays connection of a single local loop. Each house will typically account for one local loop connection, but a business could have several each.

Structural separation?

Is a more radical approach needed? In some OECD countries, concern that the current market correction over the potential returns on telecommunications investments combined with a measure of despair over the ability of regulation to achieve effective interconnection and promote competition is leading to support for a more radical approach to unbundling, involving so-called "structural separation" (see e.g. Cave, 2002). There may be value in placing the structural separation option on the policy discussion agenda in Hong Kong as an implied warning to PCCW-HKT that if it persists in stalling efforts to promote competition, regulators may be forced to consider this approach.

Publication of PCCW-HKT agreements and tariffs

As noted earlier, publication of commercial agreements can be a measure that helps prevent the dominant operator from engaging in anti-competitive conduct by assisting the regulator and the dominant operator's competitors and customers (both retail and wholesale) in monitoring discrimination and preference as they relate to the charges, terms and conditions (enabling detection of possible instances of undue discrimination and undue preference).

Market information transparency

OFTA provides comprehensive information over its Web site (<http://www.ofta.gov.hk>). However, information about market

Figure 3 — Comparison of type I interconnection charges per minute

Note: Euros as at 1 November 1999

Source: European Commission and National Regulatory Authorities

competitiveness, such as market share of each individual licensee, is not published. The regulator considers such information to be commercially sensitive, but regulators in a number of OECD countries, such as OFTEL in the UK, the Australian Communications Authority, and FCC in the USA, have periodically published very detailed market information

on their Web sites, including detailed information allowing assessment of the development of effective competition[10].

OFTA has long collected such data and has been monitoring market competitiveness. It should publish the information. In this context, it is notable that, the Consumer Council of Hong Kong (2001) has also pointed out that

Figure 4 — Price of unbundled local loops (Type II interconnection)

Note: Hong Kong's price is for voice service only

Source: Analysys, in Euros as at September 2001 (www.analysys.com)

“reporting of the incremental advances of new entrants, in terms of market shares, and area coverage, at regular intervals, would provide a degree of transparency for consumers, to assure them that the regulatory regime designed to facilitate competition is working”.

Anti-competitive practices

There have been repeated calls for the establishment of a Competition Authority in Hong Kong. For instance, Hutchison Telephone Company Limited has argued that

were a body to be set up for the purposes of reviewing industry specific mergers and acquisitions in the telecommunications market in Hong Kong, it should be separate and independent of OFTA to ensure its integrity, independence and fairness and to develop the necessary skill set for analysis and determination of competition issues (HTCL, 2001).

The absence of a Competition Law and the lack of a Competition Authority in Hong Kong is not necessarily, in itself, a major problem (at this stage at any rate) as long as

there are adequate legal provisions that enable the control of anti-competitive conduct. Therefore, it must be equipped to do so effectively. (The effectiveness of Hong Kong's Anti-competitive Appeals Tribunal is yet to be demonstrated since the only appeal to be brought before it was subsequently withdrawn.)

The absence of a Competition Authority does mean, however, a dependence on OFTA to police anti-competitive behaviour of telecommunications operators. In this context, while appropriate anti-competitive rules are necessary, also required is enough staff with the skills to apply the rules effectively. Certainly, as demonstrated by the experience in OECD countries, as competition intensifies in Hong Kong, so too will the demand for staff to attend to anti-competitive issues. This is not necessarily a matter of increasing but rather of re-profiling OFTA staff.

Rights of way

Impediments to obtaining rights of way, including long delays or excessive requirements, can pose significant problems for new entrants thereby slowing down the deployment of infrastructure and service provision.

OFTA has tried to ensure co-ordination and sharing of telecommunications sites to minimise environmental disruption and to avoid unnecessary site proliferation. The regulator has also installed obligations to share equipment rooms and cabling ducts in buildings to ensure that operators and residents have access to a wide range of telecommunications services.

Conclusion

Hong Kong has installed modern legislation applied by a well-empowered and well-resourced pro-competitive regulatory agency. A very good start to regulatory reform has been made and in many areas, OFTA is deserving of its awards as "Asia's Best Telecommunications Regulator". But there is scope for further improvement. A broad conclusion is that OFTA's endeavours to maintain a "light-handed" approach to regulation seem premature. There is need for strong asymmetric regulation in favour of new entrants until it is demonstrable that effective competition has developed. This is especially true in the case of the local fixed line market in Hong Kong where PCCW-HKT still has over 90 per cent of the market with less than 10 per cent shared among all other local fixed line operators.

The study leads to a number of recommendations for improving regulatory effectiveness[11]:

- A streamlined framework of market entry be implemented through the use of a class licensing system with simplified requirements for obtaining a licence and minimum conditions attached to a licence.
- The Hong Kong government commission an independent review to advise on the principles that should govern spectrum management, including what further action is necessary to ensure that all users,

including non-commercial users, are focused on using their spectrum in the most efficient way.

- There be a thorough review of the level and structure of prices in the market for local services in Hong Kong (bearing in mind the full liberalisation of the Hong Kong telecommunications market in January 2003 and the development of broadband and 3G services).
- That a thorough review of the principles relating to the provision of universal service in Hong Kong be conducted, taking into consideration the need for enhanced transparency and accountability. The portability of universal service should also be considered.
- The regulator direct the publication of all tariffs by PCCW-HKT for all retail and wholesale services in accordance with its licence condition and the Ordinance.
- The dominant incumbent (PCCW-HKT) be required to enter into Service Level Agreements (SLAs) with other operators.
- To prevent vertical price squeezing, the regulator impose a "wholesale cost imputation requirement" on PCCW-HKT to ensure that the same cost for essential wholesale services (of interconnection faced by the new entrant) is imputed to the dominant operator's retail services as is borne by PCCW-HKT's competitors.
- The regulator be vigilant in ensuring that the dominant operator complies with the established Codes of Practice.
- That, in the interests of increased transparency, the regulator publish Interconnection Agreements concluded with the dominant operator PCCW-HKT and also requires PCCW-HKT to publish a Reference Interconnection Offer (RIO) to help accelerate agreement on interconnection terms and conditions.
- The regulator consider applying price cap regulation on PCCW-HKT's interconnection prices (as practised in the UK).
- The regulator conduct benchmarking comparisons with best practice prices prevailing in OECD countries as a "reality check" (cross-check) to prices established on the basis of cost principles such as LRAIC. These best practice comparisons should be made at regular intervals, not just in terms of per minute interconnection charges but also together with the various additional charges associated with gaining interconnection.
- The regulator impose deterrent fines to reduce delays in provision of interconnection and local loop unbundling.
- The regulator monitor complaints vigorously and impose significant penalties for clearly unequal service quality.
- The regulator establish best practice interconnection quality of service requirements and targets for inclusion in Reference Interconnection Offers and Service Level Agreements and monitor compliance.
- The regulator report on: the time taken to complete an investigation from the date the complaint is received; and the average time taken to handle all complaints.

- The regulator enforce regulatory rules in a timely, vigorous and effective manner.
- The regulator be re-profiled to significantly boost expertise in regard to monitoring and addressing anti-competitive conduct. In the medium term, the government should introduce a Competition Law and establish a well-empowered and resourced Competition Authority. ■

Notes

- 1 For details see <http://www.ofta.gov.hk>
- 2 http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/lcom0501.pdf
- 3 LMDS is a broadband wireless technology used to deliver voice, data, Internet, and video services in the 25-GHz and higher spectrum (depending on licensing). Via the transmission of microwave signals, LMDS networks can provide two-way broadband services including: Video; High-speed Internet access; and Telephony services. LMDS can potentially provide an effective last-mile solution for the incumbent service provider and can be used by competitive service providers to deliver services directly to end-users.
- 4 Patrick Xavier's briefing Paper on 3G licensing prepared for the ITU workshop and Xu Yan's case study on 3G licensing also prepared for the ITU's 3G Workshop, are useful references. See <http://www.itu.int/osg/spu/ni/3G> and http://www.itu.int/osg/spu/ni/3G/casestudies/china/China_3g_Final.doc.
- 5 For example, by Dr Tim Kelly, Head Strategic Planning Division, ITU.
- 6 Some analysts have urged a review of the "mobile party pays" system prevailing in Hong Kong (with a view to its replacement with the more common "calling party pays" system). Analysts have also suggested a review of the present interconnection system whereby mobile operators charge flat rates for calls to end-users but have to pay the fixed line operator a per-minute interconnection charge are experiencing a profit squeeze. These issues deserve detailed examination, but are outside the scope of the present paper.
- 7 For details of the code, see <http://www.ofta.gov.hk>
- 8 Finalized Text, 14 May 1999.
- 9 Local loop unbundling and co-location would allow rival telecommunications operators to install their equipment in the incumbent's local exchanges. For example, it would let them operate their own broadband services rather than buying wholesale ADSL capacity from the incumbent.
- 10 http://www.ofel.gov.uk/publications/market_info/index.htm; <http://www.aca.gov.au>; and <http://www.fcc.gov/ccb/stats>.
- 11 Some of these recommendations may have wider applicability since the concerns in Hong Kong over the limited market share gained from the incumbent by new entrants are in fact also present in many countries that have liberalised telecommunications markets.

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