International telephony

Telecommunications management & strategy

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Introduction

- A very old business
- Liberalisation has opened most markets
- Competitive pressures have driven down prices
- FCC initiative to push down settlement rates
- Call back
- Voice over Internet Protocol
- Hubs, markets and variety
- Conclusions

Settlement system

- Traditionally prices settled on a bilateral basis between two monopolies
- No competitive pressure
- No drive for efficiency
- No incentive to reduce prices
- Revenue from high prices used to cross-subsidise other elements of the service or supplement government revenue

Alternative Calling Procedures

- Callback
- Re-filing
- IP telephony
- Voice over Internet Protocol
  - Wireless VoIP

Callback

- To exploit cheaper rates from the destination:
  - call to a number
  - hang up
  - the service calls back with a dial-tone
- Much lower prices
- Only possible where one end has artificially high prices
- ITU annual surveys until 2005, many countries maintain a legal ban on callback

Banning callback

- Who benefits from a continuing prohibition?
- A blanket ban, without the creation of domestic competition in international telephony, creates enormous incentives for a grey market to emerge
- If the retail prices are far in excess of cost, then the potential profit margins will attract in new market entrants
- Combined with a prohibition on callback, the unscrupulous will be tempted to dubious and even illegal means to meet demand at lower prices
- At best a ban will buy a monopoly operator a little time, at worst it gives the impression of a market closed to change, or completely under the influence of the operator, both of which discourage investment

http://www.itu.int/md/meetingdoc.asp?type=sitems&lang=e&parent=T05-TSB-CIR-0007

FCC actions

- Competition in the domestic market led to:
  - competition to terminate calls
  - reductions in prices
- Foreign settlement rates remained high, creating a net outflow of revenues
- The FCC capped the prices that could be paid to foreign operators
- A major effort to drive down prices
- However, high mobile termination rates have pushed prices back up
  - typical retail surcharge of 15 to 25 cents per minute

FCC (2)

- U.S. billed minutes increased 32.5% from 48.0 billion in 2003 to 63.6 billion in 2004.
- In 2004, seventy-two U.S. facilities-based and facilities-resale carriers reported that they billed $8.7 billion for international telephone service, $458 million for private line services, and $136 million for other miscellaneous international services, compared to $8.9 billion, $620 million, and $156 million, respectively, in 2003.
- U.S. carrier's net settlement payments – the amount paid to foreign carriers to compensate those carriers for completing calls – increased from $3.1 billion in 2003 to $3.6 billion in 2004.
- Retained revenues – revenues billed by U.S. carriers, less settlement amounts owed to foreign carriers for U.S. billed traffic, plus settlement amounts due to U.S. carriers for foreign-billed traffic – decreased 13.6% from $6.6 billion in 2003 to $5.7 billion in 2004.
- Pure resale providers resell the services of underlying U.S. facilities-based and facilities-resale carriers. The number of reporting carriers grew from 776 in 2003 to 794 in 2004. Pure resale minutes grew from 36.1 billion in 2003 to 38.5 billion in 2004. Billed revenues decreased from $5.8 billion in 2003 to $5.2 billion in 2004.

http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-264309A1.pdf

Broadband Internet access

- A significant push by operators towards broadband
  - growth
  - new revenues
- Often bundled with voice telephony:
  - cable modem plus cellular
  - ADSL plus CPS/VoIP
- For example, “Free” in France (free.fr):
  - 24Mbps/1 Mbps ADSL2+ for €29.99 per month
  - with free calls to the fixed networks in France and Germany, Australia, Austria, Canada, China, Spain, USA, Ireland, Italy, Netherland, Portugal, UK, Singapore
  - €0.03 per minute for many other countries
  - surcharge for mobile networks

International telephony

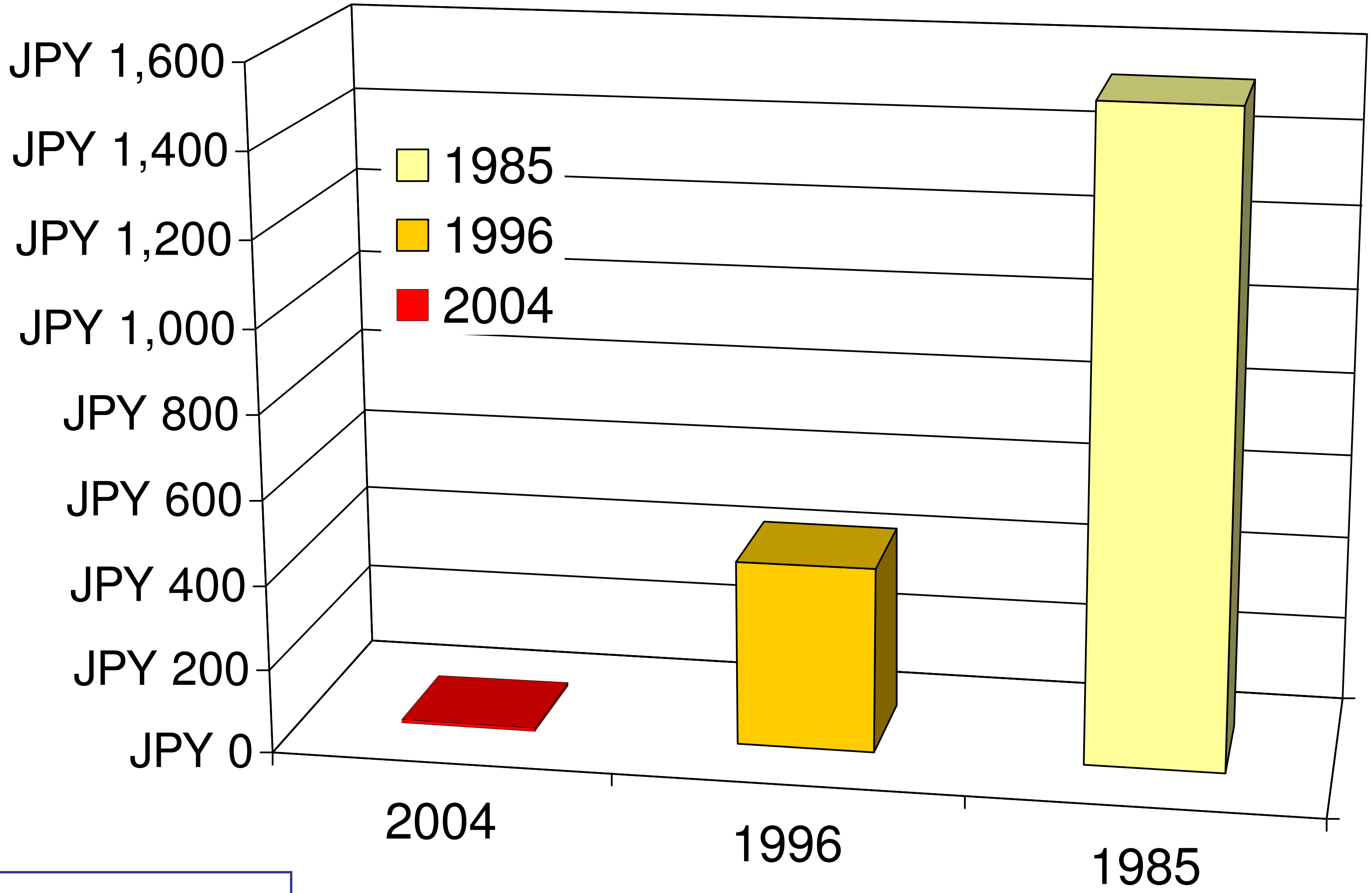
- Governments have removed bottlenecks:
  - which has increased competition
  - causing sharp reductions in prices
- The exception is for calls to mobile networks with Calling Party Pays (CPP)
- In developed countries:
  - the response of incumbent operators to the challenged of cheap VoIP is to bundle:
    - “all you can eat” national tariff, concealing per minute rates
    - DSL plus “telephony” (plus video, etc.)
    - but excluding fixed-to-mobile calls
  - enormous benefits from economies of scale
  - some operators offer in-bound numbers in other cities and countries

Japan

- BBphone launched in August 2002:
  - now has > 5 million lines
  - VoIP is a significant factor in consumer selection of broadband supplier
  - free on-net calls
  - ¥ 7.5 for 3 minute call to PSTN in USA
  - 50 Mbps downstream 12.5 Mbps upstream
- NTT launched VoIP in February 2003:
- Some operators began peering VoIP August 2003
- Ministry of Internal affairs and Communications has defined:
  - ambitious targets for the ubiquitous network society
  - 4 classes of Quality of Service (QoS)
  - special 050 number range

10 Yen = 1 Birr

A call from Japan to the USA



JPY 10 = 1 Birr

USA

- Mobile operators offer flat-rate plans with hundreds of minutes
- Vonage (unlimited calls within USA and Canada):
  - works with broadband connection
  - area codes available in most states
  - US$ 24.99 per month residential
  - US$ 49.99 per month small business
- Broadvoice:
  - Unlimited world US$ 24.95 per month (35 countries, only fixed)
  - also numbers for United Kingdom
- The end of the independent long distance operators:
  - AT&T acquired by SBC
  - MCI acquired by Verizon

US$ 1 = 10 Birr

VoIP as an application

- Simple download
- Instant messaging (ICQ, Yahoo, etc)
- Skype:
  - is not a service
  - already reached 5,000,000 concurrent users
  - shows on-line status of “buddies”
  - can be embedded in a PDA
  - SkypeOut gateway to the PSTN
  - SkypeIn gateway from PSTN
- Games consoles with voice (and Wi-Fi):
  - Nintendo DS
  - Sony PSP

Corporate IP-VPNs

- Regulation in most countries is:
  - antiquated
  - silent on IP, MPLS, etc.
- Thus it is very unclear what is (not) permitted
- Problems of integration of VPN with mobile
- Corporate users want:
  - truly global services on resilient infrastructure
  - dial-in access from fixed and mobile networks
  - IP/IP.sec access from DSL, cable modem, etc
  - break-out to PSTN and the Internet
  - binding Service Level Agreements (SLAs)
  - MPLS interconnection
  - SIP client with Wi-Fi on handsets

OECD report

- "The analysis in this paper emphasises that liberalisation in international telephony services has brought tremendous benefits to users through price reductions"
- Liberalisation of the international telephony market brought a sharp decrease and increasing diversification in international telephony prices.
- The standard rates which are officially published by telecommunication carriers significantly decreased over the years. From 1993 to 2003, the OECD average calling rate for a one minute international call using incumbent carriers to other OECD countries at peak time decreased by 56%.
- International telecommunication carriers now offer many types of discount options for users. The OECD average one minute rate with discount options in 2003 is 74% lower than the OECD average standard rate in 1993.
- IP telephony is increasingly impacting on international telephony using the PSTN in terms of reducing international calling charges due to its very low rates. Moreover, some IP telephony services allow users anywhere in the world to get a local number in another country. This means that IP telephony might change the concept of international telephony.

http://www.oecd.org/dataoecd/52/9/23901905.pdf

World Bank

- “While part of the world makes international calls at a price of a few cents a minute, other very poor countries pay exorbitant prices for international calls. The paper explores some of the reasons for this divide; and the findings are interesting and relevant to economic development.”
- International call *volume* increased from less than 20 billion minutes in 1984 to over 144 billion minutes in 2001, a 13 percent annual growth rate
- Industry *revenues* experienced modest growth, and recently, a decline
- The relative decline of international revenues is expected to continue

http://wbln0018.worldbank.org/ict/resources.nsf/a693f575e01ba5f385256b500062af05/369a6c0624b1cbf985256e47005a20c4/$FILE/InternalDocumentNo1027671.pdf

Everything changes

- Tariff rebalancing was a common change in the business model, to reduce dependence on international communications:
  - a business choice of the operator
  - mandated by regulation, to prepare the incumbent operator for competition
- Incumbent operators undermined the settlement system, being paid to terminate traffic new global, competitive carriers
- "International voice communications shows most of the features of a competitive market: many suppliers, low barriers to entry, and stiff competition on price."

World Bank analysis

- When full liberalization occurs, the incumbent operator may retain a dominant position for a number of years, but the erosion of its dominant position is inevitable
- Competition in the international communications market is sustainable over time
- Where full competition is introduced, a high number of firms will operate in the market segment
- Where competition is absent:
  - the prices for international communications are higher, with negative consequences for:
    - consumers
    - domestic enterprises
  - call volumes will be lower
  - countries that retain a monopoly will attract less network investment and be excluded from the development of international backbone networks

Reasons for resistance

- Lack of institutional capacity
- Fear of undermining the sustainability of the incumbent operator
- Fear of losing fiscal revenues and control
- Political economy reasons:
  - the beneficiaries of the *status quo* are few and well organised
  - the beneficiaries of reform are many, diffused and do not easily find ways to get their views heard
- Corruption and nepotism

ITU-T Study Group 3

- These issues are discussed in ITU-T SG 3
- Very little progress, not going anywhere soon
- Caused by differences in interests of those present
- Still some attempts to justify higher prices
- Political positions, not always related to events on the ground
- Sub-group: Tariff Group for Africa

http://www.itu.int/ITU-T/studygroups/com03/index.asp
http://www.itu.int/ITU-T/othergroups/taf/index.asp

WTSA

- At the World Telecommunications Standardisation Assembly (WTSA) in October 2004, Kenya expressed concern that:

  "... besides call-back, now there are other alternative calling procedures, such as unauthorised use of home number identifier, refiling, transit, etc, which could hinder the sound development of telecommunications networks and services, particularly in the developing countries."

- Resolution 29 on ACPs, in particular:

  i) to encourage all administrations and international telecommunication operators to enhance the effectiveness of ITU's role and to give effect to its Recommendations, particularly those of ITU-T Study Group 3, in order to promote a new and more effective basis for the accounting regime which would help limit the negative effects of alternative calling procedures on developing countries;

- Asked to take a cooperative approach, respecting the national sovereignty of others.
- Not made clear what are the "negative effects" of ACPs

http://www.itu.int/ITU-T/wtsa/resolutions04/Res29E.pdf

Interconnection markets

- Logical response to interconnection is a market
- Places of common interconnection
- Prices rise and fall according to demand and supply
- Much faster than traditional settlement rates
- Much easier for market entrants
- For example:
  - Arbinet-thexchange
  - Band-X
  - Telehouse Europe

Closing the digital divide

- Lower costs so more affordable telephony
- But in developing countries many incumbent operators are denying, delaying and degrading VoIP
- Some governments support this, trying to retain foreign currency revenues
- Others use competitive telecommunications to attract Foreign Direct Investment (FDI)

> "More than 50% of Africans have never made a phone call" Ekwow Spio-Garbrah, CTO, 2004

VoIP in Africa

VoIP is an important technology that has the potential to transform telephony in Africa. Entry of IP telephony service providers whether legal or illegal in domestic markets has facilitated the acceleration of pace of market liberalisation and the introduction of competition in the long-distance and international service markets.

The general approach evidenced in Africa of prohibition is at best, short sighted, and at worst, a serious threat to innovation, eventual competition and overall consumer welfare.

Tracy Cohen and Russell Southwood
CTO report, funded by UK DfID

http://www.cto.int/downloads_programmes/voip_africa_overview.pdf

Challenges to policy makers

- Declining cost of basic telephony
- Increasing range and richness of services
- Blurring of traditional distinctions
- Change undermines:
  - the regulatory regime
  - the established operators
  - fixed opinions
  - mechanisms to fund universal service

Challenges to regulators

- Access for the disabled to VoIP services
- Assignment of telephone numbers:
  - geographic and non-geographic
  - "nomadic“
  - cross-border
- Quality of service:
  - defining
  - measuring
- Anti-competitive effects of bundling
- Definition:
  - one service or many?
  - how to distinguish types?

Challenges for fixed carriers

- Low (economic) barriers to entry
- New carriers with lower cost structures
- Perceptions of the financial markets
  – they do not like declining revenues
- Loss of revenues
- Additionally, in developing countries:
  – lack of resources, skills and capital
  – "grey market" eroding their profit margins
  – bundling with broadband and video is not significant

"If PLDT were to stay on its legacy business and continue offering voice as a primary service, I think we would be dead pretty soon." Manuel Pangilinan, Chairman of Philippine Long Distance Telephone Co.

Challenges for GSM operators

- VoIP “prices” make fixed-to-mobile look yet more expensive:
  – for many the only itemised call charges
- Can MNOs move to “flat fee” model?
  – for subscription customers?
  – for pre-paid customers?
- VoIP over GSM or 3G?
  – not with per Megabyte charges
  – not necessary with flat rate voice fees
- Arun Sarin (Vodafone) thinks VoIP is 3-5 years away

Wireless VoIP

- Still early adopters:
  - special handsets (e.g., net2phone)
  - softphones
- Needs consumer-friendly VoWi-Fi products
- Corporate campuses
- Some developing countries (e.g., Bhutan)
- IM over Wi-Fi is a substitute for SMS

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