



Fixed-mobile interconnection case studies

***Ben Petrazzini
Strategies and Policy Unit
ITU***



Agenda

- **Brief market profile**
- **FMI basics**
- **Main issues**
- **Experiences and “lessons” from the cases**
- **Summary and conclusions**



China's market profile

Population:	1'256 million
GDP per capita:	US\$ 768
Teledensity:	8.59%
Ownership of incumbents:	Public
Competition in LD & int.:	1999
Mobile density	3.41%
Competition in mobile	1993



Finland's market profile

Population:	5.15 million
GDP per capita:	US\$ 20'100
Teledensity:	55.2%
Ownership of incumbents:	private [%]
Competition in LD & int.:	1994
Mobile density	65.2%
Competition in mobile	1990



India's market profile

Population:	1'000 million
GDP per capita:	US\$ 475
Teledensity:	2.28%
Ownership of incumbents:	public
Competition in local:	1994
Competition in LD:	2000
Mobile density	0.12% [98]
Competition in mobile	1994



Mexico's market profile

Population:	95.8 million
GDP per capita:	US\$ 4'216
Teledensity:	11.3 [6-00]
Ownership of incumbents:	private
Competition in local:	1990
Competition in LD, int:	1997
Mobile density	10.6 [6-00]
Competition in mobile	1992



The diverstiy of FMI basics

- **China:**
 - ⇒ **M pays F**
 - ⇒ **F pays M [1/8 of M to F]**
- **Finland:**
 - ⇒ **Each segment charged separately**
- **India:**
 - ⇒ **M pays F**
 - ⇒ **F does not pay M**
- **Mexico:**
 - ⇒ **M pays F**
 - ⇒ **F pays M [70% more than M to F]**



Some key FMI issues

- **Economic**
 - ⇒ **Asymetries and wide variation of prices**
 - ⇒ **Lack of price setting transparency**
 - ⇒ **CPP vs. RPP**
 - ⇒ **Fixed-mobile cross-subsidy**
 - ⇒ **Role of competition**
- **Technical**
 - ⇒ **Links, POIs,**
 - ⇒ **Quality of services etc.**
- **Legal/institutional**
 - ⇒ **Institutional legacies and inertias**
 - ⇒ **dispute resolution**
 - ⇒ **Ownership and interconnection**



ECONOMIC ISSUES



Asymmetric F/M charges

	PSTN to PSTN	PSTN to mobile	Ratio
Spain	0.02	0.52	22.29
Germany	0.04	0.77	21.00
Sweden	0.03	0.56	16.80
France	0.03	0.50	15.00
Switzerland	0.04	0.58	14.50
Netherlands	0.04	0.53	13.25
Belgium	0.04	0.48	11.08

Some studies (e.g., ECTA) argue that 70% of the cost of fixed to mobile calls are on call termination



Asymmetric F/M charges: Mexico

	Caller pays	To fixed	To mobile
Fixed to mobile	40c	20c	20c
Mobile to fixed	28c	25c	3c

Mobile prepaid card users pay: 58c

Note: prices in US\$



Asymmetric F/M charges: Finland

	Sonera	Elisa
Fixed local charges	0.072 call + 0.0058 min	0.048 call + 0.0066 min 0.0037 ->10 min
Mobile charges	0.25 [peak] 0.16 [off-peak]	0.25 [peak] 0.16 [off-peak]

Note: prices in US\$

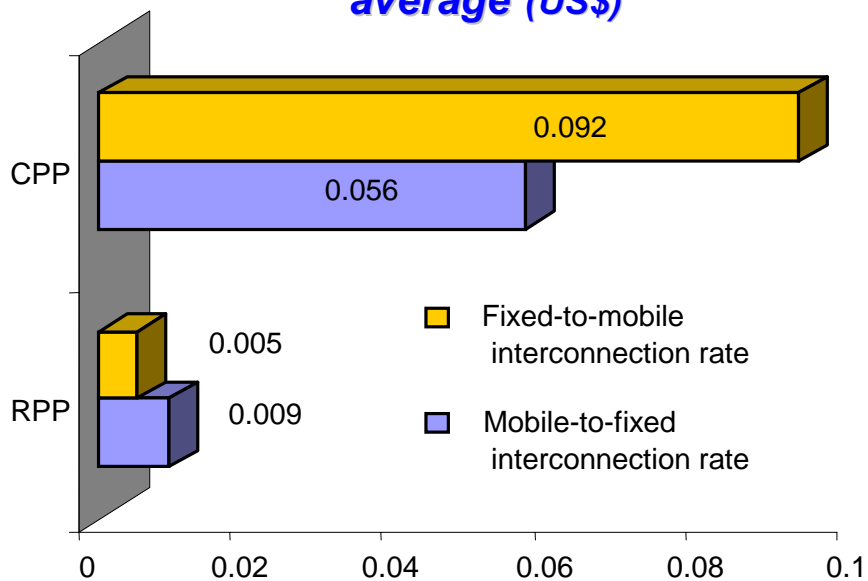


Asymmetric F/M charges

	Internat. to USA	Local to a mobile
Mexico	US\$ 0.46	US\$ 0.40
Switzerland	CHF 0.12	CHF 0.55

Note: prices per minute

CPP vs. RPP FMI charges average (US\$)





CPP vs. RPP & FMI charges

- In most CPP markets
 - ⇒ premium imposed on the fixed caller by the fixed-line operator = non-transparent prices
 - ⇒ No choice of termination carrier = lack of incentives for lower FMI charges
- In RPP markets
 - ⇒ Pricing more transparent
 - ⇒ Mobile operator has incentives to lower prices



Billing and collection in CPP

- **Bad debt: Finland**
- **Billing and collection: Mexico**

M-operators proposal	Telmex proposal	Rate set by Telmex	p/ mon. p/subsc.
US\$ 0.022	US\$ 0.135	US\$ 0.064	US\$ 6.0

- **Does CPP pricing affect fixed traffic?**
- **Does CPP pricing undermine the growth of mobile services?**



Impact of CPP on fixed traffic

- **India: Attempt to introduce CPP**

- ⇒ Reduced F to M charge (3.90 to 2.40) & reduced share (15/85 to 50/50)

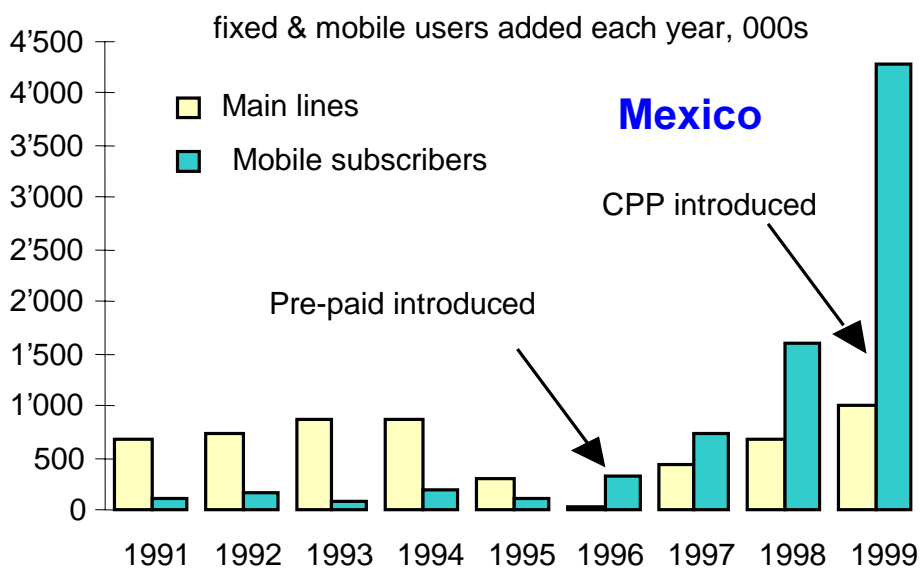
- ⇒ Then CPP delayed/blocked

- **Mexico:**

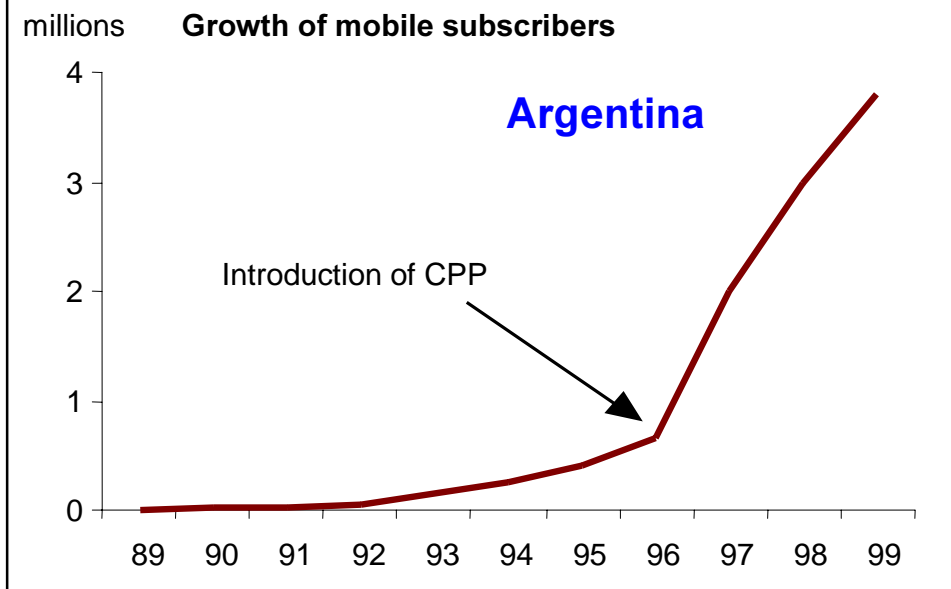
Minutes of traffic per month by cell subscriber

Cellular traffic	Before CPP 03/99	After CPP 12/99	Variation
Outgoing	89	83	-7%
Incoming	73	94	29%
Total	162	177	9%

Impact of CPP on cel subscribers



Impact of CPP on cel subscribers

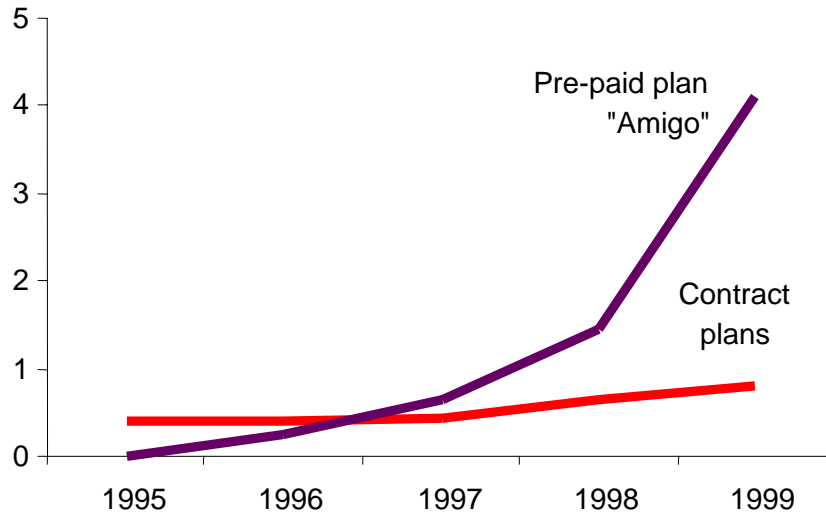


Are F-M charges a x-subsidy?

- Are high FMI charges just the product of CPP implementation in a market-driven and non-transparent environment?
- Do they constitute an implicit cross-subsidy? If yes, do they constitute a desirable and necessary cross-subsidy?
 - ⇒ **India:** fixed users poorer than mobile users. Reason for courts to overturn CPP?
 - ⇒ **Mexico & Venezuela:** mobile users poorer than fixed line users? CPP led to growth of mobile services for the poor?

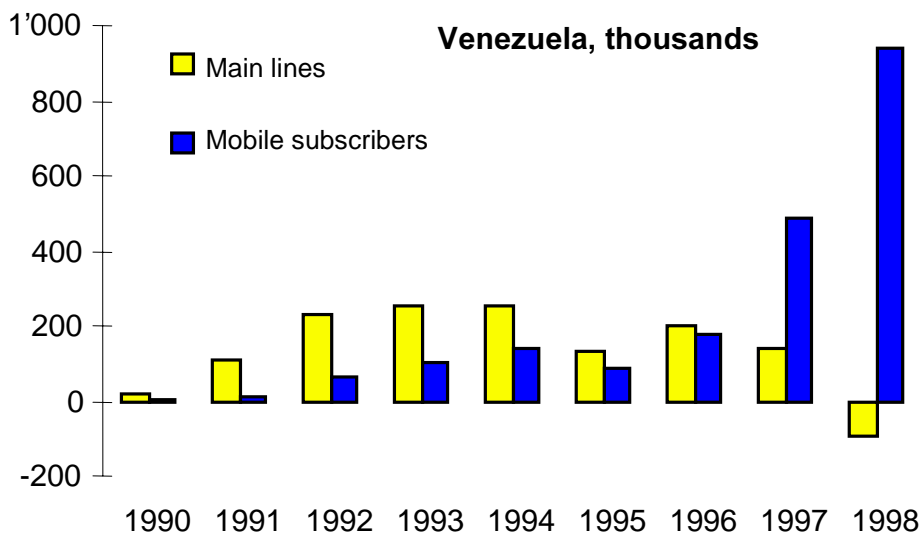
Why pay more for the minute?

Mexico, subscribers by contract type, millions



Who is disconnecting the fixed line?

Venezuela, thousands





Role of competition

- Does the licensing of more operators affect FMI interconnection rates?
⇒ **OECD, Mexico: yes; India: unclear**
- Does the definition of market power have any effect?
⇒ **Finland and EU: yes; Others: unclear**



TECHNICAL ISSUES



Links and POIs

- **Bi-directional or uni-directional links**
 - ⇒ **Mexico: Telmex uni-directional links approach**
 - Telmex no incentive to invest in new links. Traffic congestion and quality of service problems
 - Reason: billing
- **Single or multiple POIs**
 - ⇒ **India: Single POIs per SSA**
 - TRAI 1997 order for multiple POIs – no implementation
- **Quality of service**
 - ⇒ **Mexico: the impact of CPP**
 - Mobile density leaped from 1.8 in 1997 to 7.5 in 1999, to 11 in June 2000.



Other technical matters China

- **Slow business approval process**
- **Limited mobile switching center coverage**
- **Dedicated gateways for interconnection**
- **Per unit [3 min.] charging scheme**
- **Unfavorable routing plan**
- **Signaling and billing**
- **Quality of service deficiencies**
- **Emergency service interconnection**



INSTITUTIONAL ISSUES



The importance of regulators

- **Economic matters**
 - ⇒ **Market per se lacks of incentives to bring interconnection charges down to costs**
 - ⇒ **Long interconnection negotiations**
- **Technical matters**
 - ⇒ **points of interconnection**
- **Intitutional matters**
 - ⇒ **Institutional legacies and inertia**
 - ⇒ **Ownership and interconnection conditions**
 - ⇒ **Slow dispute resolution**



THANK YOU!