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Price Regulation Induced Entry in China Mobile Telecom Market

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Abstract: The informal entry of Personal Handy Phone System (PHS) has reflected many problems of price regulation in China mobile telecommunication market — price regulation induced nominal price rigidities, nominal price rigidities induced informal entry of PHS, and informal entry of PHS induced efficiency loss. Because National Regulatory Authority(NRA) has not adjusted the approaches, objectives, and rate of return of price regulation duly according to the development of China mobile telecommunication industry, there were price rigidities in China mobile telecom market before PHS had entered. Price rigidities let mobile telecommunication market become an unsustainable contestability market. Because of price regulation partly, the competition in mobile telecommunication market of China was distorted
Keywords: Regulation, Price Rigidities, Entry.

1. INTRODUCTION

Up to May 2004, the users of Personal Handy Phone System (PHS) in China have been 50 millions, in which 33 millions users belong to CHINA TELECOM and 17millions users belong to CHINA NETCOM. While PHS entered mobile telecommunication market gradually, National Regulatory Authority (NRA) limited it early, acquiesced in it later, and awarded no license finally. Though there were two mobile telecommunications licenses in China only, but PHS had serviced a good many of users that exceeded that of CHINA UNICOM, provided with roaming functions, had become the third mobile telecommunication network actually.

Recently, The China telecommunication industry is developing rapidly. But the relevant academic research is not sufficient and many critical supervising policies and decisions under implementation or under development were conducted without clear applicable economic theories. The informal entry of PHS has reflected many problems of price regulation in China mobile telecommunication market — price regulation induced nominal price rigidities, nominal price rigidities induced informal entry of PHS, and informal entry of PHS induced efficiency loss.

2. PRICE REGULATION INDUCING NOMINAL PRICE RIGIDITIES

From Adam Smith (1776) to Ronald Coase (1945), the classic economics theory had

pointed that those enterprises which average cost exceeds marginal cost because of excessive fixed cost would loss, if they set price based on the marginal cost. So NRA had chosen Rate of Return Regulation among approaches of price regulation. Because NRA has not adjusted the approaches, objectives, and rate of return of price regulation duly according to the development of China mobile telecommunication industry, there were price rigidities in China mobile telecom market before PHS had entered.

2.1. lag of adjusting the approaches of price regulation

Price regulation has existed for a long time although it had changed over time as the market structure has changed from monopoly to competition. According to the experience of developed countries, the approaches of price regulation can usually be categorized into three groups: discretionary price, rate-of-return regulation, and cap regulation (Laffont 2000). Discretionary price is widely used when government operates the network to promote consumer-to-consumer equity objectives. For developing countries including China, which generally lack strong regulatory institutions, creating and staffing a regulatory agency that can perform ROR regulatory functions competently would be costly and take considerable time.

In 1997, the State Council issued No.39 bill ("The reply of solving development problem of China United Telecommunications Corporation") that allowed China Unicom setting mobile telecommunication charge 10 percent under standard of regulation. China Unicom extended market share rapidly (Table 1), and had become the third largest mobile telecom carriers in the world in 2003 and a powerful competitor in duopoly mobile telecom market of China.

Table 1
Market share of China United Telecommunications Corporation

Users(ten thousand)	1998	1999	2000	2001	2002
China Unicom	142	521	1874	4100	6817
China Mobile	1874	3829	8526	14482	20700
Market share of China Unicom	7.04%	11.98%	18.02%	22.06%	24.77%

Sources: Statistical Communique of Telecommunications Development, MII, (1998-2002)

Because the structure of mobile communications market of China has been an oligopoly which means a partly competitive and partly regulated market with two operators, price cap regulation may be more feasible than ROR regulation — developing countries are well advised to avoid rate-of-return regulation altogether and to leapfrog to price caps. Adjustment of approaches to price regulation in China has been lagged.

2.2. lag of adjusting the objectives of price regulation

The objective of price regulation can usually be categorized into three groups: financing objectives (to make operators get sufficient revenue to be viable), efficiency objectives (to reflect resource scarcity properly and to maximize the productivity), and equity objectives (to distribute the welfare benefits between operators and consumers, and also among different consumer groups fairly).

3. PRICE RIGIDITIES INDUCED INFORMAL ENTRY

Despite CHINA TELECOM as a fixed-line carrier had got a mobile telecom license never, it had entered mobile telecom market actually, and chose a kind of laggard technology. The theory of industry organization had studied many models of entry about new entrants (Tirole 1988), but the entry of CHINA TELECOM had brought many practical argumentations. Though CHINA TELECOM had to break entry barriers before entered mobile telecom market, the high level price of ROR gave it a hand. Price rigidities let mobile telecommunication market become an unsustainable contestability market, limited the strategy of limit pricing of the mobile communications carriers, and let the predatory pricing become an unbelievable threaten.

For describing the competition between mobile telecom carriers and fixed-line carriers, we assumed that there were a representative incumbent operator which had massive fixed cost, let it be C_f, less variable cost, let it be C_v.

The cost ($C(q)$) of the operator may be written by:

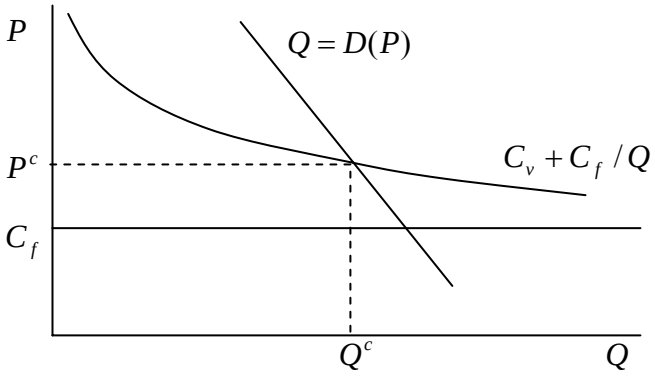
$$C(q) = C_f + C_v Q$$

$$\prod^m \equiv \max\left[(P - C_v)Q\right]$$

Where $\prod^m$ is the monopoly profit that includes fixed cost C_f. If the incumbent operator can survive, there is $\prod^m > C_f$.

The mobile telecom operators would choose limit-pricing as a barrier to impede entry of fixed-line carrier if they could set price independently, choose quantity-price $\left[P^c, Q^c\right]$ combination as depicted in Figure 3, because incumbent operator would lose if price were lower than P^c, and would face threat of entry if price higher than P^c. But in actual mobile telecommunication market of China, price had been regulated strictly and set in the higher level than P^c, so that the mobile telecommunication market in which there was monopoly profit was an unsustainable contestability market.

Figure 3



broken. Because of price regulation partly, the competition in mobile telecommunication market of China was distorted and got three failures — adverse selection of technology, adverse selection of rate balancing, and adverse selection of competition.

4.1. Adverse selection of technology

Though the NRA limited entry to mobile telecommunication market strictly, they left a huge profit space in the market because of price regulation. For evading entry limit in 1999, CHINA TELECOM chose PHS which has an ambiguous status for regulator and a kind of laggard technology.

First, because the signal of PHS was weak, it is necessary to build a base station every 200-500 miters, especially in downtowns. Secondly, there was no international standard of PHS up to now. Thirdly, the frequency for PHS is 1900MHz-1920MHz which was the programming frequency for 3G, would be transferred to TDS-CDMA (Table 4).

Table 4
Allocation of frequency

Carriers	Allocation of frequency
China Mobile（68MHz）	GSM900：885-909MHz；930-954MHz GSM1800：1710-1725MHz；1805-1820MHz
China Unicom（52MHz）	GSM900：909－915MHz；954-960MHz GSM1800：1745-1755MHz；1840-1850MHz CDMA IS95：825-840MHz；870-885MHz
China Telecom（20MHz）	PHS：1900-1920MHz
China Netcom（20MHz）	PHS：1900-1920MHz

4.2. Adverse selection of rate rebalancing

Rebalancing refers to moving the prices for different telecommunications services more closely in line with the costs of providing each service, should be treated seriously in price regulation. Theoretically, rate rebalancing will increase social welfare by moving pricing closer to costs. Therefore, there is a strong case to be made for rate rebalancing, with or without the introduction of competition (Intven 2000).

Usually, where telecommunication markets are open to competition, prices of different services will tend to move towards their costs. However, in monopoly or non-competition environment they may not (Ramsey 1927). In China, the entry of PHS brought adverse selection of rate rebalancing. PHS had obvious price advantage because the policy of transaction & clearing among networks encouraged cross-subsidy. According to the policy, as a calling party, mobile telecommunication carrier must pay ¥0.06 per minute to fixed-line carrier, however fixed-line telecom will pay nothing as a calling party. PHS had less sunk costs so that there were fewer barriers to entering to mobile telecom market — PHS had been built based on fixed-line system besides base station

4.3. Adverse selection of competition

Bertrand (1883) insisted that there would be sufficient competition in spite of that there were only two enterprises in an oligopoly market, if the enterprises had provided less differentiation product, had not limit of production capability, and had not tacit collusion. The

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