

**Competition in
Telecommunications in India**

by

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ABSTRACT

This paper describes the evolution of competition in telecommunications in India. It begins by describing the experience with liberalization in cellular mobile services and basic services. Factors affecting competition such as the number of players and regulation are discussed with reference to the two segments. An attempt is made to ascertain the degree of competition. Further, this paper discusses the history of policy making in the telecommunications sector. It ends by discussing the lessons regulators can learn from this experience.

Introduction

The telephone came to India, when in 1881, the Government of India granted licenses to The Oriental Telephone Company to establish exchanges in Calcutta, Madras, Bombay, Rangoon and Karachi. After independence the government emphasized the importance of the telecommunications network in its first five-year plan. Sticking to the fashion of the times telecommunications was considered a natural monopoly and the government owned Department of Telecommunications (DOT) was entrusted with its development. It was often criticized for its lack of efficiency but the DOT made continuous, if uninspiring, progress in its efforts to expand the size of the network. The only nod to its critics was the formation of separate entities, the Mahanagar Telecommunications Nigam Limited (MTNL), for Delhi and Bombay and the Videsh Sanchar Nigam Limited (VSNL) for international operations. The reluctance towards change can be gauged by the fact that the 1885 Telegraph Act still formed the basis for the development of this sector. By 1994 the government woke up to the problems confronting the telecom sector. The teledensity in India was only 0.8 per hundred persons as compared to 10 per average worldwide and 1.7 in China and 2 in Pakistan. The waiting time for a connection could be as long as 7 years and only 1.4 lakh villages out of the nearly 6 lakh that existed had been connected.

The New Telecom Policy produced in 1994 (NTP 94) marked the advent of liberalization in telecommunications in India. For the first time a policy document suggested the possibility of private sector participation in telecommunications. This step was necessitated by the resources needed to meet the target levels of telecom density, which, was estimated at Rs. 23,000 crores. As the NTP 94 says, "Clearly this is beyond the capacity of Government funding and internal generation of resources. Private investment and association of the private sector would be needed in a big way to bridge the resource gap." However, this participation should not be equated with privatization of the telecommunications sector. It was seen as a reluctant measure needed for resource generation and it was envisaged that the DOT would remain the preeminent entity in the sector. NTP 94 makes this clear; "With a view to supplement the effort of the Department of Telecommunications..... companies registered in India will be allowed to participate...." The only reference to competition appears in the end where it is said that "In order to implement the above policy, suitable arrangements will have to be made (a) to protect and promote the interests of the consumers and (b) ensure fair competition." The document is silent on what constitutes fair competition and it seems to indicate that competition alone would not protect the interests of the consumers.

It is hardly surprising that with such an ambivalent attitude competition did not flourish in the years following the aftermath of the NTP 94. A major problem was that liberalization was left in the hands of DOT which was never very keen on private participation and was only willing to contemplate it on its own terms. Nevertheless some progress was made and it would be instructive to look briefly at the actions taken and the results obtained.

In January 1995 the government invited bidding for twenty telecom circles for local telecom services. The whole process was mishandled and the results are apparent in the

fact that after five years the private operators provide only 0.55% of the total number of connections. The picture is better for cellular services even though mishandling by the government plagued this sector too. In particular high license fees paid by the licensees combined with below expectation growth in the number of subscribers led to financial problems for cellular service providers. This period also witnessed the setting up of the Telecom Regulatory Authority of India. Even this was botched with the authority granted powers to regulate tariffs only. The power to grant licenses remained with the government. The only bright spot was the performance of Internet Service Providers. This sector had always been open to private service providers though they had to link up with VSNL since they could not set up their own gateways. This restriction was later removed and the sector has since seen rapid growth and strong competition.

The year 1999 saw the unveiling of yet another new telecommunications policy document, NTP 99. The failure of NTP 94 prompted this move and it sought to address some of the problems. As such it was a more comprehensive document than its predecessor even though it did not completely move away from government control of the telecommunications sector. For cellular services the document suggested that the license fees could be paid by revenue sharing. This provided a much needed breathing space for cellular service providers. They were also allowed to carry long-distance traffic within their own circles and to interconnect with other service providers. Similar provisions were put in place for fixed service providers in local telephony. Regarding regulation the NTP 99's record is mixed. TRAI's ambit was enlarged to include government service providers and to arbitrate disputes but it still had no licensing powers.

The following year saw further movement on the liberalization front. The government announced the opening up of the long distance sector and brought forward the termination of the monopoly position of the Videsh Sanchar Nigam Limited (VSNL) in international voice calls to April 1, 2002, two years earlier than planned. This prompted renewed interest in the telecommunications sector and new players evinced an interest in entering the market. The government also took away the powers of settling disputes from the TRAI and bestowed them on a telecom tribunal. This move, if it leads to quick settlement of disputes among the various parties in the telecom sector, should be welcomed. In the long run, however, dispute resolution along with licensing issues is better handled by the regulatory authority.

We have provided a snapshot of the history of telecom liberalization till the present date. We shall now provide a more detailed picture of each of the sectors. This is important because the experience has been different in different sectors. We shall evaluate the progress made and the problems faced in each sector. This will allow us to consolidate the discussion and view competition within the telecommunications sector as a whole. To analyze the degree of competition we will look at the following factors.

1. Areas of service: In some countries service providers are restricted to exclusive geographical areas. While this would increase the number of competitors it might give rise to increase in monopoly power within those areas.
2. Number of players: There are often restrictions on the number of firms operating in a particular area or offering a service.

3. Restrictions on services offered: There might be restrictions which disallow service providers from operating in the local, long distance and value added services markets. Further, there could be restrictions on agreements between service providers for providing access to each other's areas of operation.
4. Nature of Regulation: The presence or absence of a regulatory authority would be important. Equally important would be the powers of the regulator and the type of regulation adopted, Rate of Return (RoR) vs. incentive based regulation.
5. Competencies of entrants: Monopolization of telecommunications services by state owned operators often implies lack of expertise among potential private operators. Also, private operators require access to substantial amount of capital. Consequently, budding private operators might need to team up with foreign operators for expertise. At the same time they might need to team up with firms who have access to capital but who are otherwise not interested in entering the telecommunications business.
6. Institutional problems: Introduction of competition has often been delayed by legal problems. Lack of competition laws and imperfections in the capital market will affect the nature of competition.
7. Conduct of incumbent: Predatory activities undertaken by the incumbent in terms of interconnection charges and cross subsidization are important.
8. Government Policy: Obviously government policy matters and restrictions of all forms within the industry, be it in terms of number of players, Universal service obligations (USO), right of way and license fees form a part of policy. At the same time the attitude of the government towards competition is very important. Policy making in terms of import duties and foreign investment also affects the industry.

A historical account of the experience in each segment followed by a description of the situation in each segment with reference to the above factors would provide the backdrop for further study. Using this knowledge we will attempt to qualify the degree of competition in each segment. This could be done by calculating the price-cost margin (a version of the Lerner's index) for each segment. Since cost data are difficult find we will content ourselves with discussing the movement of prices. It should be expected that with increasing competition prices would come down. Greater competition should lead to firms adopting innovative pricing and marketing strategies. We shall look for evidence of these.

Mobile Services

Cellular service operations made their debut in India in the year 1995-96. Eight licensees in the metros began their operations and fifteen others were given licenses to provide services in 18 circles. Modi Telstra in Calcutta was the first to start, followed by Bharti Cellular in Delhi. By March 1996, the total number of subscribers in the four metros was 63,642. Delhi had the largest number of subscribers during this period and Bharti had the lead in this market. The other competitor Essar in the Delhi circle was lagging behind in the subscriber registration. In the Mumbai circle both Hutchison Max and BPL mobile were running neck to neck in the subscribers base. Mumbai followed close behind Delhi in the number of subscribers during this period.

Table 1. Cellular Subscribers (1995-96)

Modi Telstra, Calcutta	3,680
Usha Martin, Calcutta	3,154
Bharti Cellular, Delhi	18,772
Essar, Delhi	9,775
RPG Cellular, Chennai	3,175
Skycell, Chennai	2,502
Hutchison Max, Mumbai	11,250
BPL Mobile, Mumbai	11,250
Total	63,633

Source: Voice and Data

The cellular services were just beginning to make their presence felt in this period. The total estimated revenue in this period for all the metro operators was estimated to be Rs. 140 crores. This included the sales of handset which, being expensive, stood in the way of quick adoption of this new service by consumers. In the handset segment a major issue facing the players was the gray market that, according to some estimates, constituted approximately 50-55% of the total handset sales.

By the next year total subscriber numbers had reached 376,000, a growth of 490%. 86.7% of the total market was accounted for by the metros, of which Delhi had 41.7% and Mumbai 30%. The revenue per line was between Rs.800 and Rs.1200. The key factors driving sales were price and bundling; pricing schemes combing handset sales with free airtime were successful. Bharti with subscriber base of 82,000 emerged as the leader. This period also saw many operators defaulting on their license fees. On the government side DOT faced increased competition from cellular operators particularly when Koshika Telecom announced its tariff package for Bihar, Orissa and Uttar Pradesh. At the same time the government announced concessions for the industry, chief among them being lower import duties for telecom equipment. Finally MTNL declared its plans to enter the cellular market with Code Division Multiple Access (CDMA) technology.

This was a year of strong growth, mainly in the metro circles. It also marked the start of operations in the non-metro circles. Competitors vied with each other to enroll as many customers as possible. Air-time usage, which ranged between Rs. 800 to Rs. 1200, fell victim to this strategy. BPL emerged as the leader in terms of airtime usage. The high cost of handsets prompted the use of bundling the price of handsets with free air-time as a marketing strategy. Cellular phones were perceived as toys for the affluent and the criteria for competition was price rather than services.

1997-98 was a year of fluctuations. The subscriber base in the country grew from 3.39 lakh in March 1997 to 8.82 lakh by March 1998 - an increase of 5.43 lakh subscribers during the year. Most of the subscribers (5.51 lakh) were from the metro operations, but the growth was more in the non-metro segment where the subscriber base increased from 0.16 lakhs to 3.29 lakhs. Mumbai grew 122 percent in subscriber base. It overtook Delhi in January 1998 and by the end of March 1998 had lead of almost 30,000 subscribers. Delhi and Chennai grew 44 percent each; Calcutta could register only a 35 percent

growth. The total growth in numbers hid a disturbing fact that the per month growth rate diminished after the third quarter. In May 1998 only 8,000 subscribers were registered. At the same time more companies started cellular services and total cellular coverage was extended to almost 130 cities in the country. Troubled times ahead for the cellular industry were indicated by the estimated cash losses of Rs 400 crore suffered by the industry even though Bharti managed to break even.

The focus of the metro companies had been on expanding their subscriber base. However, they realized that the actual airtime usage was nowhere near their expectations. Their new strategy was to promote airtime usage rather than increasing the subscriber base. This assumed more significance since from October 1998 the metro companies had to pay DOT Rs. 500 per month per subscriber as levy. Political uncertainty and lack of transparency in policy decisions played some role in the reduction of growth in metro areas. Many subscribers were waiting for duty reduction on handsets in the budget. The decision of the government to bring all the cellular phone owners into the income tax net further affected the growth in subscriber base. In response cellular operators devised innovative tariff structures involving bundling and two part tariffs. Pre-paid services were also launched but the year ended on a sour note for the industry.

This trend continued next year. The cellular industry grew from a subscriber base of 8.82 lakh in March 1998 to 11.95 lakh by the end of March 1999. There was negative growth in metros and the total metro base declined to 5.19 lakh in March 1999 from the figure of 5.6 lakh in April 1998. The cellular industry incurred an estimated loss of Rs 5,000 crores from its operations. The decrease in the number of subscribers was partly due to the operators suspending all the defaulters from their base. There was a 20% decrease in airtime usage. Further, the mandatory payment of Rs 500 per subscriber per month to the DOT meant that operators were losing money on those who spent less than this amount on airtime. Consequently, there was an attempt to focus on high usage customers. The popularity of bundling as a marketing technique began to wane. General economic slowdown and license-fee related issues also affected the performance of the metro operators.

At the end of a gloomy year there was some hope on the horizon for private operators. The prime minister announced the formation of yet another new telecom policy to address some of the problems with the old one. Value added services, which carry a higher margin, were picking up. The industry pinned its hopes on the proposed policy of Calling Party Pays (CPP) and revenue sharing arrangements with the DOT. There were some indications that these hopes were not entirely unfounded. The New Telecom Policy 99 was announced in the latter part of 1999.

There has been a marked improvement in the cellular phone industry the past year. In terms of revenue, the cellular market in India grew by 80 percent to reach a turnover of Rs 2,252 crore. The national cellular subscriber base grew by about 58 percent to reach 1,884,311 by March 2000. More than 6.5 lakh cellular subscribers were added to the network. In August 2000 the total number of subscribers stood at 2,456,983 as shown in table 2. It is often argued that the diffusion of new products, particularly those with

network externalities, follows an S-curve. Usage is slow to begin with, till a critical number of people are connected, after that usage picks up very quickly. It is possible that cell phone usage in India has passed that critical level and is set to explode. The only hiccup was the cancellation of the licenses of three operators in six circles in the first quarter, which led to the suspension of their services from June.

Table 2. Number of Subscribers (August 2000)

Circle	Name of Operators	Numbers
Andhra Pradesh	Bharti Mobile, Tata Cellular	51249, 67040
Gujarat	Birla AT&T, Fascel	50062, 113563
Karnataka	Modicom, Bharti Mobile	86910, 69480
Maharashtra	Birla At&T, BPL Cellular	70804, 81529
Tamil Nadu	BPL Cellular, Srinivas Cellcom	75760, 70764
Haryana	AirCell Digilink, Escotel	10866, 35437
Kerala	BPL Cellular, Escotel	87881, 92328
Madhya Pradesh	RPG Cellcomm, Reliance Telecom	20342, 37446
Punjab	Modicom, J. T. Mobile	116340
Rajasthan	Aircell Digilink, Hexacomm	10992, 29238
Uttar Pradesh (E)	Koshika Telecom, Aircell Digilink	99610, 37039
Uttar Pradesh (W)	Escotel, Koshika Telecom	83688
West Bengal	Reliance Telecom	6842
Assam	Reliance Telecom	8325
Bihar	Koshika Telecom, Reliance Telecom	13123
Himachal Pradesh	Bharti Telenet, Reliance Telecom	7890, 1043
Orissa	Koshika Telecom, Reliance Telecom	13123
North East	Hexacom, Reliance Telecom	1112
Calcutta	Spice cell Ltd., Usha Martin	69703, 55013
Chennai	RPG Cellular, Skycell	44758, 33,785
Delhi	Bharti, Sterling Cellular	221227, 163150
Mumbai	BPL Mobile, Hutchison Max	224566, 176123

Source: Tele.net

The main factor responsible for the revival of the market was the move to the revenue sharing regime provided the operators paid up 20 percent of their license fee dues. The TRAI's tariff order also brought about standardization of airtime tariffs. Billing slots were reduced into two: standard hours and concessional hours. Rental charge, which carried a cap at Rs 156, was hiked to a cap of Rs 600 per month. Operators had to provide a standard tariff package in which the maximum airtime rate of Rs 6 per minute could be charged. There were other important developments in this year. MTNL and DOT contested TRAI's order on Calling Party Pays (CPP). It was hence deferred several times during the whole year. The cellular phone operators were disappointed since many believed that such a move would multiply the growth in the number of subscribers. DOT's problem was that it would mean higher tariffs for its customers making calls to a mobile phone. MTNL's entry into the cellular market remained an unresolved problem. When MTNL introduced mobile services in Mumbai using the Wireless in Local Loop (WILL) technology at lower tariffs it was forbidden to do so by the TRAI. The ostensible

reason being that MTNL had to submit its tariffs to the TRAI before it could begin service. MTNL, in its defense, said that since its service used different technology it was essentially a new service and the TRAI did not have licensing powers. The private operators are understandably worried since MTNL would be able to operate without the burden of license fees and would have an advantage over the other operators.

By the end of the year the market for cellular services had bounced back. Operators were now considering offering value-added services like mobile email and mobile banking. These were popular when offered free, but evoked lukewarm interest when operators tried to make customers pay for these services. An interesting development this year was the consolidation of the industry. There were numerous mergers and takeovers. Bharti acquired the Karnataka and Andhra Pradesh operations from J.T. Mobile and the Chennai operations from Skycell. Hutchison has also been on an acquisition spree, gobbling up Sterling cellular in Delhi, Fascal in Gujarat and Usha Martin in Calcutta. Birla AT&T merged their operations with Tata Cellular and acquired Madhya Pradesh from RPG. BPL, which fought over some of these acquisitions with Bharti and Hutchison lost out. Apparently, Koshika is up for sale. Some cellular operators have formed alliances, notable among them being Bharti and BPL and Hutchison and Aircell Digilink. One possible reason could be that the industry had matured and the initial method of dividing up the country into circles had yielded too many players. A second reason could be that private operators had better estimates of the viability of their businesses. The initial euphoria had passed. It also possible that operators expected opening up of the long-distance market. Indeed the long-distance market has been opened up. If the government allowed networks to connect across circles the result would be in saving the interconnect charges that are mandatory to be paid as of now in case of a cross network call. There could also be economies of scale in terms of lower procurement costs and costs of deploying new technology. The move could also be ascribed to strategic reasons such as increased monopolization of the industry. However, the government has plans to allow two more operators per circle with DOT/MTNL being one of them which might make the industry more competitive.

If we summarize the experience in the cellular phone industry we can divide it into three phases. Phase 1 marked the birth of the industry with the government and the DOT having found a new way of generating revenues. The private sector had very high expectations as is evident in the high bids received. The initial period was marked by the private operators trying to increase their subscriber bases and the players competed mainly in the form of bundling. This initial euphoria soon died down as the operators faced the grim realities in the second stage. Even though the subscriber base kept on growing this growth was already slackening. Further, air-time usage was low so that the mobile phone operators were not bringing in enough revenues. They now had every reason to regret their high bids and were faced with the prospect of defaulting on their license fees. The government and the DOT were reluctant to provide any relief. Indeed, the DOT made life even more miserable by imposing a levy of Rs. 500 per customer per month. There was also the possibility of MTNL coming into the market. TRAI was of some assistance as it, temporarily, prevented the entry of MTNL into the mobile telephone market. The third phase saw the regeneration of the industry. The operators

moved to a revenue sharing mechanism, which, even though it might have unhealthy long term consequences, alleviated their present financial problems. The operators also changed their marketing strategies and concentrated more on customers who would notch up more air time. Competition in this phase was in the form of price competition with operators conjuring up innovative pricing schemes. The government and NTP 99 also helped with the move to a revenue sharing mechanism. This period also witnessed a consolidation in the industry. This might mark the beginning of a fourth phase where private operators begin offering services across the whole range of telecommunications services.

Competition in the cellular phone market

The government invited tenders for 40 GSM licenses in January 1995 and by December of the same year 34 licenses had been issued. There were to be two private operators per circle with the possibility of DOT/MTNL being the third operator. The restrictions on the number of operators partly arose out of spectrum availability. There were initially no restrictions on the number of circles that a company could bid for. However, after the bids were opened a cap of three per operator was introduced. BPL-US West had to give up the profitable circles of Andhra Pradesh and Gujrat. HFCL, Fascel and Tata Bell Canada were the beneficiaries of this policy change. The operators were not allowed to offer long distance calls within their own circles. So to make a call on a cell phone from one city to another within the same circle the operator would have to use the DOT network. Further, operators could not enter into agreements regarding the usage of their networks over circles. A cellular phone customer based in Delhi could not use his phone to make calls in Mumbai through an arrangement with the operator in Mumbai. To use his cell phone to make a call in Mumbai the customer has to make a long distance call to Delhi and another long distance call to Mumbai to reach the number in Mumbai. This increases the cost of the "roaming" facility. The operators had to pay their license fees and had to pay DOT for using its network for calls made from a cell phone to a DOT phone. The amount paid to DOT was the amount the DOT charged its customers for the type of phone call made.

Table 3. License fee Schedule for Metros (Rs. Crores)

Service Area	1 st year	2 nd Year	3 rd year	4 th to 6 th year	7 th year onwards
Mumbai	3	6	12	18	24
Delhi	2	4	8	12	16
Calcutta	1.5	3	6	9	12
Chennai	1	2	4	6	8

Source: TRAI

Table 4. License fees for circles (Rs. Crores)

Circle	Name of Operators	License fees
Andhra Pradesh	J. T. Mobile, Tata Cellular	1001.00, 858.00
Gujarat	Birla AT&T, Fascel	1794.10, 1229.25
Karnataka	Modicom, J. T. Mobile	1393.00, 1320.00

Maharashtra	Birla At&T, BPL Cellular	1657.70, 1463.00
Tamil Nadu	BPL Cellular, Srinivas Cellcom	836.00, 450.00
Haryana	AirCell Digilink, Escotel	240.00, 245.86
Kerala	BPL Cellular, Escotel	517.00, 384.83
Madhya Pradesh	RPG Cellcomm, Reliance Telecom	51.00, 5.61
Punjab	Modicom, J. T Mobile	1266.00, 914.50
Rajasthan	Aircell Digilink, Hexacomm	382.00, 161.00
Uttar Pradesh (E)	Koshika Telecom, Aircell Digilink	210.88, 210.00
Uttar Pradesh (W)	Escotel, Koshika Telecom	406.21, 258.21
West Bengal	Reliance Telecom	42.00
Assam	Reliance Telecom	1.32
Bihar	Koshika Telecom, Reliance Telecom	136.53, 2.64
Himachal Pradesh	Bharti Telenet, Reliance Telecom	14.96, 1.32
Orissa	Koshika Telecom, Reliance Telecom	89.32, 2.64
North East	Hexacom, Reliance Telecom	1.90, 1.32

Source: TRAI

From the beginning the operators found it difficult to pay the license fees that they had bid. It should have been apparent that there was trouble afoot from the bids received (Tables 3 and 4). Table 4 shows the two operators and their bids in each circle with the higher of the two bids being the final license fee. In some cases there are huge differences in the bids, in a few occasions by as much as a factor of 10. It would be extremely unlikely that two individuals with roughly the same information could reach such widely divergent views on the value of a license. The precarious situation most operators found themselves in can be gauged from table 5 which shows the gap between license fees payable by 1999 and the revenues of these operators. The DOT was flexible in the beginning but later took a tougher stance and began encashing the bank guarantees that the operators had provided. Most of the operators went to court claiming problems with the bidding process since the rules were changed after bidding. The DOT did not help its case by imposing a Rs. 500 levy per customer per month from October 1998.

Table 5. Revenue and Payable License Fee (Rs. Crore)

Circle	License fee payable till 31.7.99	Revenue (98-99)
Category A		
Andhra Pradesh	341.25	38.37
Gujarat	611.63	36.68
Gujarat	611.63	34.44
Karnataka	443.23	64.43
Maharashtra	569.13	46.88
Category B		
Haryana	91.79	5.00
Madhya Pradesh	17.78	20.68
Punjab	402.81	80.23
Rajasthan	130.23	

Rajasthan	121.54	13.49
Uttar Pradesh (E)	189.78	16.53
Uttar Pradesh (W)	138.47	13.22
Category C		
Bihar	81.92	4.03
Himachal Pradesh	5.10	1.87
Metros		
Chennai	18.53	24.4
Chennai	17.05	37.3
Mumbai	84.33	154.9
Mumbai	91.54	186.6
Delhi	65.48	135.5
Delhi	82.29	173.6
Calcutta	21.53	23
Calcutta	27.62	

Source: TRAI

Initially the operators had to charge a monthly rental of Rs. 156. The charge for a minute of calls was Rs. 8.40 for standard hours and double that for peak hours. Peak hours had to be restricted to a maximum of four per day. All of these charges were price caps. The TRAI notes that the rentals were lower than paging services and that for DOT customers. The call charges were, on the other hand, much higher. In its consultation paper the TRAI wondered if the cellular sector should be regulated at all, but decided that since the market has not matured regulation would be useful. It suggested that there be two time periods, peak and off-peak, with the peak hours not exceeding eight hours. This was a departure from the practices of some operators of dividing the day into peak hours, standard hours and off-peak hours. This move reduced the flexibility of operators. Further it could facilitate collusion by operators or it could nudge the market towards non-price competition. The peak hour price could not exceed Rs. 6 per minute. It also removed the Rs. 500 levy on operators. The new ceiling for rentals was capped at Rs. 600 per month. Installation charges were left to the discretion of the service operator but deposits could not exceed rentals for one year. More controversial was the suggestion of instituting a calling party (CPP) pays regime. This would have been a departure from the practice of charging cell phone customers for incoming calls. It also suggested that fixed phone customers should pay a higher charge for calling cell phone customers and that these be shared with the cellular operator. These last two suggestions were not put in the final tariff order even though the operators were enthusiastic. This was largely due to opposition from DOT. For calls made from cellular to basic the operator had to pay the prevailing price for basic services. For the other way around the charge to a basic customer was capped at Rs. 3.90 with the cellular operator receiving 85% of the revenue. It was proposed that there be revenue sharing for long distance and international calls made from cell phones. Finally the TRAI said that the interconnecting service provider must be allowed access to unbundled elements of the network that it requires.

Most of the cellular operators tied up with foreign companies (table 6). The new entrants often did not have the expertise to run a telecom operation and foreign companies had the

necessary know how. Also some companies did not have the financial muscle required and so had to leverage on partners who often had no knowledge of the telecom industry. There was a period when there were regular fights between the members of the consortia who won the bids. Allegations were made that some bidders had included foreign telecom companies or Indian firms to leverage on their expertise and financial muscle. After winning the bid there was an effort, allegedly, to get rid of some of the partners. An example is the experience of Modicom. The Modi group claimed that Vanguard, the original foreign partner did not abide by the agreements of the alliance. Vanguard accused the Modis of using the network and experience of itself and Telecomasia, the other partner, to win the bid and then trying to get rid of them. Later Motorola and Distacom joined the alliance in place of the original partners.

Table 6. Operators and their Partners

Operators	Partners
Aircell Digilink	Essar, Swiss PTT
Bharati	Bharti Telecom, Stet, Italy
Birla Communications Ltd.	AV Birla (51%), AT &T Wireless, U.S. (49%)
BPL-US West Ltd.	BPL (51%), U.S. West, U.S. (49%)
Evergrowth Telecom Ltd.	Essar (80%), JT Mobile (20%)
Fascel	HFCL (51%), Shinwatra, Thailand; Bezeq, Israel
Hexacomm	Shyam Telecom (40%), TCIL (30%)
HHS Communications	RPG (70%), HCL (10%), Hindujas (10%), Singapore Telecom (10%)
J. T. Mobile	RK Associates/PCIL (20%), Sanmar Electronics (20%), United Telecom (11%), Telia AB, Sweden (26%), Jasmine, Thailand (13%), TOT, Thailand (10%)
Koshika Telecom	Usha India (82%), C. Kathuria (5%), PILTEL, Phillipines (10%), Alcatel, France (3%)
Modicom	BK Modi (51%), Motorola (10%), Distacomm, Hongkong (39%)
Tata Bell Canada	Tatas (51%), Bell Canada, Canada (29%), AIG, U.S. (10%)
RPG Airtouch	RPG, Airtouch

Source: Voice and Data

Institutional problems marked the beginnings of the cellular phone industry from the very beginning. The TRAI Act left the authority over the DOT unclear. It was envisaged that TRAI would have jurisdiction over tariff setting and handling disputes between operators while the DOT would make policy. When the TRAI came out with its tariff order the DOT went to court claiming that tariffs were a matter of policy, over which the TRAI did not have any jurisdiction. Specifically, within the cellular segment the DOT and the TRAI clashed over the issue of CPP with the DOT dragging TRAI to court again. Part of DOT's efforts was probably to test the limits of TRAI's powers. It is interesting that the government was not interested in defending its own regulator. It gives the impression that the government felt the need to constitute a regulator in order to appease investors but tried to make it as powerless as possible. Another troublesome issue was the migration of

cellular operators to a revenue sharing regime. This was clearly the government's area since the TRAI did not have licensing powers. It was faced with the early death of the cellular industry on one side and a sizeable revenue loss from revenue sharing on the other. It did not help that the government was a minority government and that new elections were due. Predictably there were charges of corruption when the government accepted revenue sharing. The whole problem could have been avoided if the government had instituted a stronger regulator and had endowed it with licensing powers. If the government had in place a competition policy a competent authority could have taken up the matter. As such it ended up in court which looked at it from a different point of view. The need for a competition policy arises again with a more recent development, the consolidation taking place within the industry. Some of the mergers could be viewed as hindering competition and even though there are rumblings of discontent SEBI is yet to act. A more recent development has been fights between MTNL and VSNL over plans to enter each other's markets. While this may be welcomed as enhancement of competition, it makes one wonder how two parts within the same ministry can publicly fight over policy issues.

A presumption in policy making was that the incumbent operator, DOT, was acting in the public good and did not need to be regulated. From the point of view of private operators the behaviour of DOT has been anything but benign. In the Koshika Telecom case the DOT increased tariffs when it was faced with the prospect of competition. As we have already noted the DOT fought tooth and nail to clip the wings of TRAI. In recent times DOT and MTNL has threatened to enter the cellular market. Neither, probably, will have to pay license fees and in the case of DOT could cross-subsidize its operation from its long distance operations.

It would be more useful to look at policy making from the viewpoint of the telecommunications industry as a whole. The bulk of the attention of policy makers has been directed at local and long distance services. Cellular phones were seen as catering to the wealthy and as such of not much interest beyond generating revenues. The most vexing problem was the move to a revenue sharing regime. This was ultimately done with unpredictable long term consequences. A less important example of how government policy affected the cellular phone industry is the insistence by the finance ministry that people with cellular phones file tax returns. This probably dampened the market for cell phones slightly. More worrying is the mindset of policy makers in that it refuses to acknowledge that poorer people could also use cell phones. The possibility of cell phones enhancing rural penetration also seems to have not been considered. Perhaps, when comparing themselves with the fate of basic service operators the cellular operators should congratulate themselves on having escaped the steely gaze of policy makers.

Table 7. Revenues of operators (Rs. Crores)

Circle	Name of operator	Revenue (99-00)
Calcutta	Spice Cellular Ltd.	40
	Usha Martin	35
Chennai	RPG Cellular	32
	Skycell	30

Delhi	Bharti	210
	Sterling Cellular	165
Mumbai	BPL Mobile	205
	Hutchison Max	170

Source: Voice and Data

Table 8. Market Structure

Rank	Operator	City/Circle	Subscribers Mar 1999	Subscribers Mar 2000
1	Bharti	Delhi	118833	184110
2	BPL Mobile	Mumbai	128711	173017
3	Hutchison Max	Mumbai	99586	146292
4	Sterling Cellular	Delhi	96804	148220
5	BPL Cellular	Tamil nadu	25121	50704
		Kerala	22158	52314
		<i>Total</i>	<i>91776</i>	<i>168395</i>
6	Spice	Karnataka	42045	80027
		Punjab	43374	94403
		<i>Total</i>	<i>85419</i>	<i>174430</i>
7	J. T. Mobiles	Andhra Pradesh	33048	46393
		Karnataka	34939	47940
		<i>Total</i>	<i>67987</i>	<i>94333</i>
8	Birla AT&T	Maharashtra	52707	49709
		Gujarat	32620	36688
		<i>Total</i>	<i>67987</i>	<i>94333</i>
9	Fascel	Gujrat	48879	109487
10	Escotel	Kerala	23465	54246
		Haryana	13103	25047
		UP (W)	27978	55950
		<i>Total</i>	<i>64546</i>	<i>135243</i>
11	Tata Cellular	Andhra Pradesh	40943	59076
12	Koshika	UP (W)	43864	cancelled
		UP (E)	43986	88,111
		Bihar	11225	cancelled
		Orissa	6516	cancelled
		<i>Total</i>	<i>29273</i>	<i>69143</i>
13	Reliance Telecom	Madhya Pradesh	10619	27007
		West Bengal	2497	3978
		Himachal Pradesh	343	573
		Bihar	7972	21901
		Orissa	3417	9139
		Assam	3869	5823
		North East	556	722
		<i>Total</i>	<i>29273</i>	<i>69143</i>

14	Modi Telstra	Calcutta	21653	48478
15	Usha Martin	Calcutta	18124	41558
16	RPG Cellular	Chennai	19010	29097
17	Skycell	Chennai	16822	25159
18	BPL US West	Maharashtra	44497	65377
19	Hexacomm	Rajasthan	10784	20025
		North East	Not Started	Not started
		<i>Total</i>	<i>10784</i>	<i>20025</i>
20	Aircell Ltd.	Tamil nadu	0	40252
21	Aircell Digilink	Haryana	4047	cancelled
		UP (E)	10276	25476
		Rajasthan	5342	cancelled
		<i>Total</i>	<i>19665</i>	<i>25476</i>
22	RPG Cellcom	Madhya Pradesh	10195	13537
23	Bharti Telenet	Himachal Pradesh	3015	4475
24	Evergrowth Cellular	Punjab	12051	cancelled
		<i>Total</i>	<i>1089403</i>	<i>1796200</i>

Source: Voice and Data

The degree of competition is difficult to judge without substantial information. Certainly the amounts spent on advertising by the cellular companies has been impressive. It is difficult to miss the numerous billboards advertising cellular services in most cities. There have also been innovative tariff packages. BPL in September announced the launch of three new tariff plans and the other operators haven't been standing idle. These were named the Samridhi Value Plan, the Aiswaryam Business Super Value Plan and the Premium Value Plan. The Samridhi Plan is targeted towards first time users and comes with 50 free minutes for Rs. 425. The Aiswaryam Plan offers free incoming calls for the first 30 seconds. In the Premium Plan outgoing calls are charged at Rs. 1.50 per minute from the second minute onwards.

From the data we have on market shares and revenues (table 7 and 8) we can make some judgements. The revenues of operators in metro circles show most operators running neck and neck. So the markets are likely to be competitive. We can use the subscriber numbers in Table 8 to calculate Herfindahl indices. The values for 1999 and 2000 come to 859.62 and 748.10, respectively. By most standards these values would suggest fairly strong competition. In fact, since the index has reduced it would suggest that the market has become more competitive. However, the trend towards consolidation would increase the index making the market more monopolistic. In fact if we calculate Herfindahl index for the data in table 8 taking into account the mergers which have taken place we get a value of 1377.64. Also, for the same data, Hutchison would have 23% of the market while Bharti's market share would be 15%. Another, interesting feature is that some operators are concentrating on some geographical areas. This is driven by the ease of offering long distance services with circles bordering each other. The situation in portrayed in Figure 1. One should note though that a mere reduction in the number of competitors does not indicate monopolistic outcomes. One has to look at the nature of

competition itself. For example in price competition with a homogenous good and only two operators with identical costs, prices are equal to marginal costs, the competitive outcome. So one cannot say anything definite without looking at the price-cost margin. Finally, some of these deals have been transacted at huge sums of money (table 9). It might be a sign that cellular operators now have adequate resources and competition is about to heat up.

Pre-Consolidation BPL is the leader

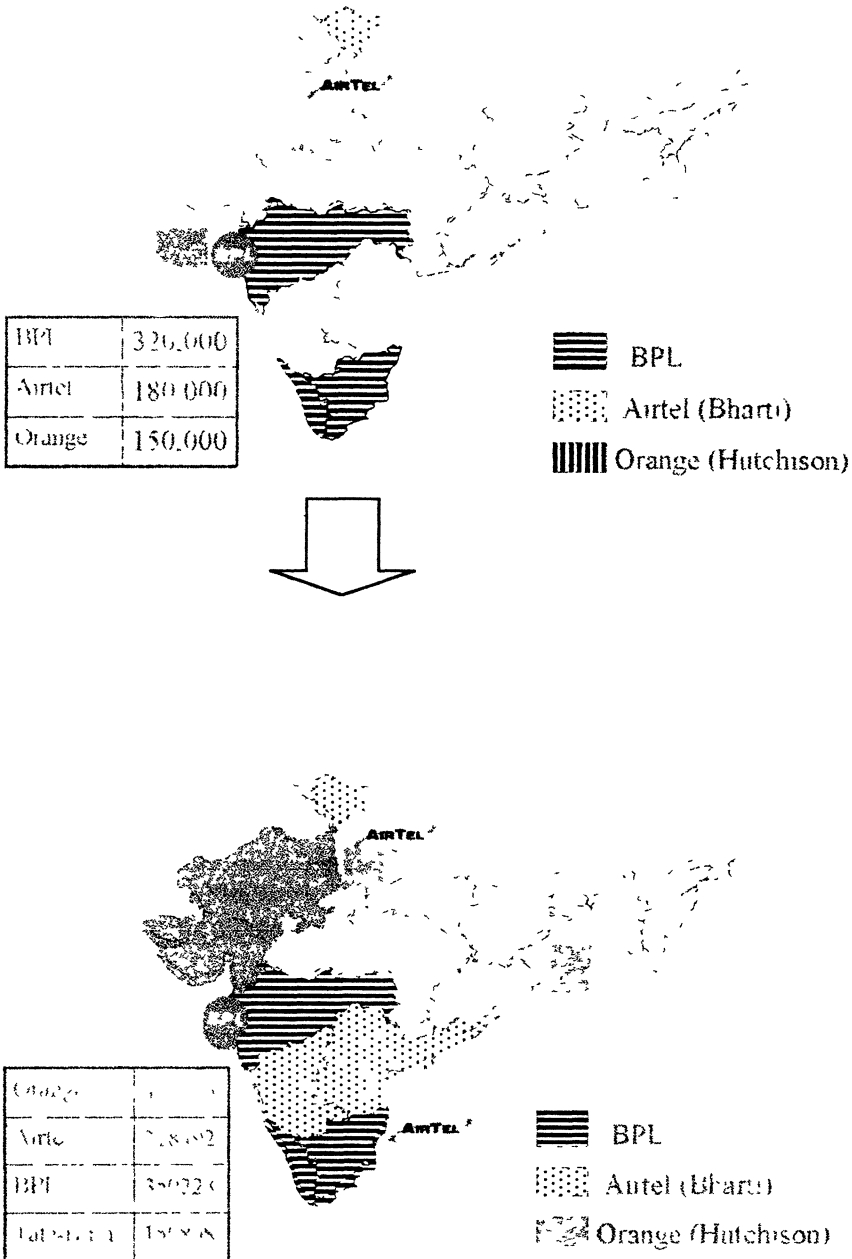


Figure 1. (Source: CCS Amol Maheshwari)

Table 9. Restructuring in the cellular services segment

Operator	Divestment by	Acquisition by	Stake (%) status	US \$m
JT Mobiles	Sanmar group	Bharti Televentures Ltd.	18 acquired in Dec. 1999	Undisclosed
Sky cell	Crompton Greaves	Bharti Televentures Ltd.	40.5 agreement signed in Dec. 1999	22.8
Sterling	Swisscom AG and NRI stake	Hutchison Telecom international Ltd.	49 agreement signed in Dec. 1999	125
Modi Telstra	Telstra International and Telstra South Asia	Modi Group	49 signed an agreement to acquire in Jan 2000	43.7
RPG Cellcom	RPG group	BATATA	49 acquired in aug. 2000	61.2
Hutchison Max	Max India	Telecom Investment India (Hutchison Whampoa)	41 acquired in 1998	142
Evergrowth	JT Mobile	Essar Investment Ltd.	51 acquired in 1999	Undisclosed
Bharti Cellular	SRF, France	British Telecom	22 acquired in 1999	Undisclosed
Bharti Cellular	Millicom International	British Telecom	17.5 acquired in 1999	Undisclosed
Bharti Cellular	Mobile system	British Telecom	4.5 acquired in 1999	Undisclosed
Bharti Tele	Bharti Enterprise Telecom Italia	EM Warburg Pincus and Co. US	20 acquired in 1999	Undisclosed
Usha Martin	Telekom Malaysia usha Martin	Hutchison and Kotak Mahindra	95	Undisclosed
AirCell Digilink	Swisscom AG		10 under consideration	

Source: CCS Amol Maheshwari

Basic Services

The government invited tenders for private participation in basic services 1995. The country was divided into 27 circles, which roughly coincided with DOT's existing switching areas. These were designated as A, B and C type depending on their revenue generating capacities. By 1997, even after the third round of bidding seven circles did not find any takers. Some of these were C circles but there were some B circles as well. By 1998 six companies signed licenses. These were Bharti Telenet (Madhya Pradesh), Essar Commvision (Punjab), Hughes Ispat (Maharashtra), Reliance Telecom (Gujarat), Tata

Teleservices (Andhra Pradesh) and Telelink (Rajasthan). As with the cellular segment some of the private operators bid very high license fees, though in some circles the bids were below the reserve prices and some circles did not find any bidders at all. The total bids stood at Rs. 27,363 crores which the companies will pay over 15 years. In June, Bharti became the first to start services. According to its agreement with the government it was required to set up 150,000 lines in three years. There was supposed to be a fourth round of bidding, which did not take place. Next year two more operators, Hughes Ispat and Tata Teleservices, started services. By now Bharti had an installed capacity of 57,000 lines. By 2000 Bharti expanded to 22 cities and towns in Madhya Pradesh. Its mobile arm plans to set up a 3,500 km. fibre optic link of which 2100 km. has been laid. It has joined up with Bharti BT Internet to provide free internet access at the price of a local call. Hughes Ispat has changed its name to Hughes Tele.com and has come out with its Initial Public Offering (IPO) in order to raise Rs 74,92,11,600. It has been concentrating on providing value added services. It plans to lay 2,20,000 lines in the next two years. Tata Teleservices started operations in March 1999 and has 35,000 subscribers. It is committed to 50,000 lines in the first year and is using WILL with CDMA technology to achieve this target. It has also been providing value-added services like call forwarding, call waiting etc. Reliance Telecom has started operations in Jamnagar, as has Shyam Telelink in Jaipur and Jodhpur. Essar should start operations this year in Punjab. In Haryana HFCL have legal problems with DOT. As a part of the agreement with the government the private operators supposed to have 10% of their connections in rural areas. By July the total number of rural connections stood at 12. The next round of bidding for the remaining circles is yet to take place.

Table 11. Turnover, subscribers and VPT targets

Circle	Operator	Turnover	Subscribers	VPT targets	VPT status
Madhya Pradesh	Bharti	51.90	88000	16500	12
Andhra Pradesh	Tata Teleservices		35000	9635	0
Maharashtra	Hughes Ispat	67.01	22000	25760	0
Rajasthan	Shyam Telelink			18068	0
Gujarat	Reliance Telecom		700	8635	0
Punjab	Essar Commvision			5442	0

Source: Voice and Data

Competition in basic services

The experience in the basic services segment mirrored that in the cellular segment to some extent. Initially the operators could bid for any number of circles. After bidding had taken place the DOT installed a cap of three bidders per circle. This could have been done to prevent monopolization of this segment, but since the segment was already monopolized by the DOT it merely served to weaken the potential entrants. The DOT also announced reserve prices after the bidding was completed and the highest bids in ten circles were cancelled. Another issue that came up was that of assignability of licenses. The winning bidders wanted to pledge their licenses to financial institutions as a guarantee against default. DOT was dead against and it took 33 months before

assignability was allowed. It is difficult to ascribe reasons for DOT's behaviour. If one is inclined to be charitable it could be presumed that the DOT was bothered about the structure of the market. If a private operator failed the license would accrue to the financial institution which could then sell it to another private party. It could then fall into the hands of people considered undesirable from the point of view of DOT. A less charitable view is that the DOT was worried about potential competition. If licenses found their way to the most competent operator, even if through the back door, the DOT's carefully constructed plans would be destroyed. Market structure is an issue best left to a regulator. Finally after bidding the DOT imposed a levy of Rs. 136,000 per customer. After much wrangling, this was reduced to Rs. 54,000, but the addition of an installation fee took the amount to Rs. 100,000.

There was to be one private operator per circle. Thus the duopoly structure of the cellular market was to be replicated here. There is one important difference though. In the market for basic services there was a monopoly incumbent operator, DOT, which was also the monopolist in the long distance segment. Allowing more operators per circle would not have alleviated the problem. It could only have been done by scrapping the cap on the number of circles that a bidder could operate in. Only then would a private operator have the required size to take on the DOT.

The restrictions on operations of private operators were similar to that faced by cellular operators. The operators were not allowed to provide long distance services within their circles. They could also not connect adjacent circles to provide long distance services and could not interconnect with VSNL directly to provide international services. Further, there were restrictions on the type of technology they could use; WILL was not allowed since it would imply use of the frequency spectrum. All of these restrictions served to protect the lucrative long distance and international calls business of the DOT.

The TRAI served as the regulator for this segment as well. The important areas of regulation were prices of local, long distance and international calls. Interconnection was important as well. It has always been alleged that the DOT priced local calls below cost and subsidized local calls from its long distance business. If this were so then private operators would find it difficult to compete with DOT. Even if they were more efficient than the DOT they would have still found it difficult to compete with the DOT without access to the long distance market. The TRAI embarked on a tariff rebalancing exercise meant to align prices with costs. It significantly reduced the prices of long distance and international calls while increasing the cap on rentals and local calls. Thus the ability of the DOT to cross subsidize was eroded to some extent. The DOT after much fighting implemented the tariffs for long distance and international calls but did not increase the rentals and prices of local calls to the extent allowed by the price caps. Thus private operators were now more competitive vis-à-vis the DOT. However, the fact that the DOT did not raise prices of local calls and rentals indicates that prices of long distance and international calls should come down further. Indeed, the TRAI phased in the implementation of its tariff order and recently the second phase of its rebalancing has been implemented. In the case of interconnection charges the TRAI sharply reduced port charges. For example the charge for a 2 PCM port was reduced from Rs. 2,16,200 to Rs.

36,940. The TRAI also suggested a move to revenue sharing for long distance and international calls. The proposed shares were 60 to 40 for long distance calls and 45 to 55 for international calls.

Table 9. License fees for basic services (Rs. Billion)

Circle	Consortium	License Fee
Andhra Pradesh	Tata Bell Canada	42.00
Delhi	HFCL Bezeq	158.5
Gujarat	Reliance Nynex	34
Karnataka	Hughes Ispat	58
Maharashtra	Hughes Ispat	139
Tamil Nadu	RPG NTT	116.2
Haryana	HFCL Bezeq	40.6
Madhya Pradesh	Bharti Stet	6.45
Punjab	Essar Bell Atlantic	46
Rajasthan	Shyam Harris Lintech	11.1
Uttar Pradesh (W)	HFCL Bezeq	65.8
Bihar	Usha Moscow Tel	2.67
Orissa	HFCL	20.7

Source: Manikutty

Table 10. License fees and status

Circle	Operator	Date signed	Date commenced	License fee for 15 years	DELs established as on 1.2.00	Percentage of private DELs to DTS DELs
Madhya Pradesh	Bharti	28.2.97	4.6.98	655	68800	6.8
Andhra Pradesh	Tata Teleservices	4.11.97	31.3.99	4200	12851	0.88
Maharashtra	Hughes Ispat	30.9.97	30.10.98	13909	17949	0.68
Rajasthan	Shyam Telelink	4.3.98	Not commenced	1110		
Gujarat	Reliance Telecom	18.3.97	Not commenced	3396		
Punjab	Essar Commvision	7.11.97	Not commenced	4593		

Source: Voice and Data

The experience of the cellular sector was repeated in the basic services segment. Some companies such as Bharti entered both the segments. Almost all the companies who won licenses in this sector were competent. An exception was HFCL, which bid very high

amounts, Rs. 158.5 billion for the Delhi circle alone and Rs. 285.5 for the four circles it bid for. It was not clear how the small and relatively unknown company would pay these amounts. It is still involved in legal tangles and is yet to start operations.

Institutional factors have obviously affected the performance in this sector. We shall have more to say on this issue when we discuss the telecom sector as a whole. For the moment we should note that the private operators were supposed to have the right of way for laying cables on par with the DOT. Unfortunately, there have been problems with state governments and ministries. For instance the ministry of surface transport objected to private operators laying cables along national highways. It seems that different branches of the government do not always move in sync. The operators have also been allowed to move to a regime of revenue sharing for the payment of license fees, which should go some way towards mitigating their risk perceptions.

The conduct of the incumbent operator was very important. Through the license fees, other charges and restrictions the DOT made life as difficult as possible for the new entrants. Even without its actions the viability of private operators could have been threatened with the mere presence of the DOT. One could never be sure how it was likely to behave once it faced competition. So pitting oneself against a monopolistic incumbent, particularly one with the size of DOT must have increased the risk perceptions of potential entrants. Since the private operators are yet to achieve any significant size in terms of their operations the DOT is at present not threatened by them. It should be noted that the DOT has gone on an expansion spree and has been laying lines like never before. The government often points out that the private operators have not kept their USO obligations. The DOT could concentrate on the rural sectors and leave the cities to private operators. It is yet to be seen how the DOT responds to private operators eating away at their revenues. Already divisional managers of MTNL have been allowed to take tariff decisions. Competition policy issues are likely to crop up in the near future, as the DOT has now been corporatized.

Policy in the Telecommunications sector

The NTP 94 was the first attempt to delineate an exclusive policy for the telecommunications sector. This document, only 3 pages long, marked the beginning of a process of liberalization of the telecommunications sector. As such, this document was more a collection of pious hopes rather than a carefully thought out document setting out objectives and suggesting methods of achieving these. The document sets out 5 objectives, foremost among them being, “telecommunication for all and telecommunication within the reach of all. This means ensuring the availability of telephone on demand as early as possible.” The second objective is to connect all villages and provide access to basic telecommunications services “at affordable and reasonable prices.” Besides these service should be of “world standard” and India should become a major manufacturing base and exporter of telecommunications equipment. Finally, the defense and security interests of the country would be protected.

These objectives were translated into 4 targets. Telephones were to be available on demand by 1997, all villages were to be covered and in urban areas a Public Call Office (PCO) was to be provided for every 500 persons within the same time frame. At the same time all value-added services were to be introduced. The document estimated the necessary resources at Rs. 23,000 crores and concluded that “this is clearly beyond the capacity of Government funding and internal generation of resources.” So “private initiative would be used to complement the Departmental efforts.” The document noted that the value-added services of electronic mail, voice mail, data services, audio text services, video text services, video conferencing, radio paging and cellular mobile telephone had been opened to private participation since July 1992 and this policy would be continued. For radio paging and cellular mobile telephone there was a constraint on the number of companies that could be allowed to operate and a selection criteria would be used to award licenses to operators. Among the criteria to be used is “attractiveness of the commercial terms to the Department of Telecommunications.” Private operators would now be allowed to offer basic services with the same terms and conditions. It would also be necessary to protect consumers and ensure competition.

As we have remarked earlier NTP 94 did not provide sufficient guidelines on how its objectives were to be achieved. So in practice its implementation was left to the incumbent monopoly operator DOT. DOT’s view was that private operators were to supplement its efforts for expanding the network and it equated its welfare with that of the consumers. Consequently, all its efforts were geared towards generating revenues for itself. This showed up in the very high license fees that private basic operators and cellular operators were required to pay. In all fairness, though, these operators had bid for these licenses and if they had over estimated the market potential they had only themselves to blame. Nonetheless, given the wide differences in the amounts that different parties bid the DOT should have foreseen problems on the horizon. It is difficult to impute motives to DOT’s behaviour but one possibility is that it saw itself as the preeminent player in the market. It was least interested in the antics of private operators because it could not envisage a market with many players competing on nearly equal terms with itself. A less charitable view would be that the DOT’s actions were designed to preserve its monopoly status. The attitude of the DOT was also exhibited in interconnection charges, restrictions and tariffs it imposed on cellular players. Private operators were also burdened with USO obligations.

Finally, NTP 94 made no mention of an independent regulator. When the government mooted the idea of a regulator the DOT first insisted that it be a part of the DOT. Fortunately, the government thought otherwise, but it left the regulator’s authority over the DOT unclear. Thus, when the regulator came out with its first tariff order the DOT refused to accept it and went to court over the issue. This action considerably weakened the regulator. As it is the regulator did not have any licensing powers, only those of tariff setting. It had powers to settle disputes between any parties but according to the DOT only those that arose between two private operators. In disputes between private operators and the DOT it presumably had no powers. Thus it seemed its only power, that to set tariffs, was also under threat. The government finally persuaded the DOT to

withdraw its case against the TRAI. However, the jurisdiction of the TRAI vis-à-vis the DOT was not settled.

Between 1994 and 1999 there were three players in the policy arena; the DOT, TRAI and the government. The three had very different agendas and the policy measures undertaken can be seen as the result of their motives and the pressures each faced. The DOT saw itself as the guardian of the telecommunications sector. Private players existed to provide it with revenues. Consider the situation with license fees for cellular operators. It has been estimated that 40% of the revenues generated by the operators went to the DOT as fees. This had to be paid as a lump sum at the beginning of the year. Consequently, this sum of money was not available for the development of the cellular network. Presumably, the DOT spent this money on the development of its own network. One can question this on the grounds of efficiency. Most of DOT's expansion has been in basic services and in rural areas. One can question whether this was best use of resources. Also, the efficiency of the DOT vis-à-vis private operators is doubtful. Similarly, interconnection costs were to be shared only if a private operator used DOT's network for making long distance or international calls. If a call originated on the DOT network but terminated on the network of a private operator no interconnection charges would be paid. Thus interconnection charges were one sided. Rentals for cellular services were capped by the DOT at Rs. 156. As we have noted earlier the viability of the cellular operators depended on attracting customers with high airtime usage. One method of discouraging low airtime usage customers would have been through a high rental, which was not possible because of the low ceiling. The tariffs for airtime would then have to be high, reducing competition for the DOT's local services.

The TRAI saw its agenda as fostering competition through tariff restructuring. Its avowed aim was to make prices reflect costs. Thus it did not try to facilitate competition with the belief that competition would drive prices towards costs. It took the view that ensuring cost based prices would help competition. To be fair to the TRAI, it had no licensing powers and could go no further than regulating tariffs. Even with its limited powers the TRAI could have discriminated in favour of the private operators, but it shied away from doing so. Possibly, it did not want to incur the hostility of the DOT. If so, as we have noted, it failed. The TRAI did manage to restructure tariffs and reduce the ability of the DOT to cross subsidize its operations. It also reduced interconnection charges and introduced revenue sharing for long distance and international calls. It faced a problem in fixing rentals and airtime charges for cellular services. It would have liked to base these calculations on the cost of equipment alone but was forced to include the cost of licenses. Thus it had to cap these prices at higher values than what it would have liked. The TRAI did manage to eliminate some of the distortions within the market, but it was obvious that the real power lay with the government.

The government had been quite content to let the DOT run the show. Its actions sometimes helped the industry, for example when the government reduced import duties on cellular handsets. At other times its actions had the opposite effect. It was required to provide right of way for private operators but often operators complained of long delays in getting the necessary permissions. For a long time it took no further interest in the

telecommunications sector. It woke up from its stupor in 1999 and found the sector in disarray.

The government felt the need for corrective action and NTP 99 emerged. As it described the situation, “the result of privatization has so far not been entirely satisfactory.” Its objectives included all those mentioned in NTP 94. The notable addition was to “transform in a time bound manner, the telecommunication sector to a greater competitive environment in both urban and rural areas providing equal opportunities and level playing field for all players.” It also emphasized the importance of information technology.

NTP 99 was a much longer document and it spelt out the policy directives in much more detail. It divided up the telecommunications sector into access providers, radio paging, public mobile radio trunking, national long distance, International, Global Mobile, VSAT and others. It had specific suggestions for all of these. The ones for basic and cellular services have been described earlier, the most important being the move to revenue sharing. The other major steps were to open up national long distance and allowing cable operators to provide communication services at par with other operators. It noted that the government had separated the licensing and service provision functions of the DOT. It recommended the corporatization of the DOT by 2001. It also contained recommendations on spectrum management, the role of the regulator, USO and dispute resolution.

In terms of regulation NTP 99 clarified that TRAI had the power to provide directions to the government when it is acting as a service provider and also to resolve disputes between the government and private players. It could also arbitrate between the government in its role as a licensor and any other licensee. The government had to seek the recommendations of the TRAI on licensing issues; however this was not mandatory. On USO obligations NTP 99 suggested creating a fund by imposing a levy on the revenues earned by all operators. The exact percentage would be decided by the government in consultation with the TRAI. Providers of basic services would have to participate in implementation of USO obligations, for which they would be paid from this fund. It also suggested replacement of the Indian Telegraph Act, 1885. NTP 99 was certainly an improvement over its predecessor but it was still reluctant to take away too much power from the government. That it did not define what constituted service provision as opposed to policy making, a vexing issue in the past, suggests trouble ahead for the regulator. It still has a soft spot for the DOT as can be seen from its view on licenses for mobile service providers. It says that DOT/MTNL can enter as a third operator and in pursuit of fairness it should also pay a license fee, however, since “DOT is the national service provider having immense rural and social obligations, the government will reimburse full license fee to the DOT.”

The rejuvenation of the industry following NTP 99 has been recorded. We also mentioned the recent spate of mergers. An important trend is the move by telecom players at gaining stake in more than one segment of the market. For example Bharti, a major player in the cellular and basic services segments is interested in the long distance

segment and has tied up with SingTel for that purpose. Its internet venture Mantra Online is successful and it has plans of setting up a submarine cable connecting India with Singapore. BPL, on the other hand, has no interest in basic and long distance. It is more into broadband for which it is setting up 6000 km of fibre optic cables and five international satellite gateways. It is only to be expected that as the telecom market opens up operators will have stakes in more than one segment depending on their competencies and strategies. This will have important consequences for the regulator.

The government initially separated DOT into two parts; the DOT for policy making and the Department of Telecommunications Services (DTS) for providing telecommunications services. DTS has now been corporatorized after a bruising battle with its employees and made into the Bharat Sanchar Nigam Limited. How this will affect the performance of the erstwhile DOT is still to be seen. It is still controlled by the government but is no longer a government department. Theoretically the BSNL should have more flexibility for making decisions. This raises the possibility that it could now act in a predatory manner. At present it has reduced installation charges to Rs. 1000 in urban areas and to Rs. 500 in rural areas.

The other major decisions were the move to revenue sharing and opening up the long distance segment. Revenue sharing as a method of paying license fees brought relief to the cellular operators. It reduced the level of risk faced by basic operators. It has an inherent problem, though. Standard economics suggests that revenue sharing will lead to lower levels of output than profit sharing. If the intention of the government is to expand the network and to add to the number of existing customers profit sharing would have been a better approach. However, this would have pushed the income stream of the government further into the future and also made it more variable. The government has also, finally, opened up the long distance sector. Learning from its past mistakes the government has allowed unlimited entry with a 49% cap on foreign direct investments. There is a one time entry fee of Rs. 100 crores and the entrants are to furnish bank guarantees worth Rs. 400 crores based on network roll out obligations. Intra-circle connectivity is to be allowed based on agreements with operators providing basic services. VSNL's monopoly over international voice traffic is to be ended in April 2002 instead of April 2004.

Even though NTP 99 suggested strengthening TRAI it was still wary of providing it with licensing powers. The government, finally, removed the dispute settling powers of the TRAI and vested them with a tribunal. The TRAI now only has the powers to fix tariffs. The government has introduced a bill to institute a regulator on the lines of the Federal Communications Commission (FCC) for the communications sector as a whole. This move ought to be welcomed even if its is late. One hopes that it will be the final change in the regulatory structure as frequent changes imposes risks on private operators.

So at long last the telecommunications sector will be fully open. This does not mean that we are going to see meaningful competition in this sector any time soon. That will have to wait for the privatization of the incumbent operators.

Regulation and competition

Most manifestos of regulators and governments find some mention of competition. It is always perceived as a worthy aim to strive for. However, quite often nothing more is done and actual policies enacted are sometimes anti-competitive. An example is the NTP 94, which wants “fair competition” but leaves the DOT, the incumbent monopoly operator to carry out its mission. At other times a regulator is installed to oversee competition but without enough powers to fulfil its obligations. An associated problem is the definition of competition. The textbook model of perfect competition is never achievable in the real world, so one has to try to prod the industry towards competitive outcomes. One has also to be careful that in doing so incentives are preserved. Ensuring competition in a dynamic industry with fast changing technology is a demanding task. Finally, introducing competition can disturb the political equilibrium. A regulator who tries to bring about change too quickly is likely to fail.

What can we learn about competition from the experience in the telecommunications sector in India? The experience in both the cellular and basic services sectors shows the importance of licensing powers. In both sectors there were restrictions on areas of operation and on the number of successful bidders. This might had the laudable aim of boosting competition but the consolidation of the cellular industry shows that such efforts have failed. Indeed, what is needed now is a competition policy to check if these mergers and acquisitions are anti-competitive. The other route would be to vest the regulator with these powers. A regulator with licensing powers would have probably aimed at stronger competition and expansion of the network rather than at maximizing government revenues through licenses. In a similar vein the regulator should watch out for the anti-competitive actions of the incumbent.

The experience also shows how difficult it is to foster competition with an incumbent monopoly operator, particularly, if the incumbent is in charge of policy making. The bidding for licenses for cellular services and basic services began at the same time. Five years down the road there is vibrant activity in the cellular segment whereas there is hardly any activity in basic services. To be sure the TRAI’s tariff rebalancing exercise has helped to curb cross-subsidization but it could have gone a bit further to provide even more favourable terms for the new entrants. The investment requirements for basic services operators are higher than cellular operators. Without access to the lucrative long distance and international segments basic operators were hamstrung to begin with. In such a situation it would be futile to think about introducing competition.

The regulator should also think about the condition of the market and general economic conditions. It should have been apparent from the bidding process that some operators had wildly optimistic forecasts for the industry. The regulator could have intervened to restore some sanity to the market. Given our capital market imperfections and lack of expertise in telecommunications in the private sector a more gradual approach could have been better.

Experience also shows us that government policies in other sectors affect the market. In the case of cellular operations it was affected by the decision by the government to bring all cell phone operators into the income tax net. Similarly, rights of way have to be available to private operators and the regulator should be proactive in this matter. It is only to be expected that government policy decisions will affect the regulator, particularly, if he has few powers. It is important to be able to foresee the trend and the possible policy changes. This is of course difficult but the regulator has to find some way of reducing risks to private players.

Finally, it is important not to over-regulate. Operators should have the flexibility to charge different prices. Individual price caps should be avoided in favour of general regulating price levels. This will become even more important as firms begin offering a wide range of services. Segmenting the industry and regulating each segment may not be meaningful and could turn out to be self defeating. It is also not useful to reduce the operator's flexibility on time of day pricing. Such moves could make collusion easier to sustain and also produce non-price competition.

Conclusion

The history of competition in telecommunications in India is barely five years old. Even within that short period it has thrown up interesting material on the introduction of competition. With the recent moves by the government to open up other sectors in this industry to competition we can expect even more activity. It will make the job of the regulator more challenging and provide even more material for market analysts. Our review of the history in the cellular and basic segments along with policy making in general has yielded some lessons for regulators. It is interesting to note that the impetus for allowing private operators came from a need to generate resources. Five years down the road the sector has been opened completely to private operators. It seems that privatization as a process has its own momentum. We would hasten to add that it is too premature to herald the arrival of competition. Much will depend on the conduct of the incumbent operators and the ability of the regulator in controlling them. The role of the government, particularly on whether it transfers licensing powers to the regulator would also be important. On this issue it is important to note that World Trade Organization (WTO) commitments restrict the actions of governments. The key commitments are (1) competitive supply with two or more operators in any geographic location or service, (2) independent regulators, (3) non-discriminatory interconnection, (4) competitively neutral service obligations and (5) non-discriminatory procedures for the allocation and use of scarce resources. These should lead to stronger regulators.

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