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Cellular Mobile in India: Competition and Policy

Subhashish Gupta
Associate Professor
Economics & Social Science
Indian Institute of Management Bangalore
Bannerghatta Road, Bangalore – 5600 76
Ph: 080-26993030
sgupta@iimb.ernet.in

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Introduction

Telecommunications in India has been one of the success stories of economic reforms that increased GDP growth to 9% from the earlier "Hindu rate of growth" of 3%. The number of telephone connections per one hundred people, or teledensity, has increased from a low of 0.8[1] in 1994 to 64.34 at the end of 2010[2]. By most standards this is a creditable achievement. The growth in telecommunication services has also been spectacular clocking some of the fastest growth rates in the world. A closer look at the sector though reveals a less rosy picture.

It has become fashionable to compare China and India across most parameters of economic growth and well being. Here, as with other parameters, India does not compare favourably. In 2009 India's mobile teledensity was 43.48 while that of China's was 55.97[3]. India also compares unfavourably with other Asian neighbours.[4] It could of course be argued that given her late start and current robust growth rates she will catch up, sooner rather than later. Yet, there are other misgivings. One is the sorry state of rural teledensity[5] and another is the lack of broadband penetration[6]. Further, the telecommunications sector seems to get embroiled in political problems from time to time. Currently, the Controller and Auditor General of India (CAG) has suggested that in the last round of allocation of 2G spectrum using administrative procedures rather than an auction has led to substantial loss of revenue to the government. One estimate[7] has pegged it at 176645 crores[8] (1.76 trillion Rupees). Regardless of the truth of the charge this event has caused some turmoil in the telecommunications sector leading to the resignation of the telecommunications minister and calls for cancellation of licenses. Clearly events of this kind should affect the health of this sector. However, nothing much seems to have happened. It is as if the key drivers of this sector are so strong that minor hiccups don't make a dent. The other possibility is that if such events had been avoided then telecommunications growth would have been even higher and conditions healthier.

In this paper I aim to take a closer look at the cellular mobile segment from the standpoint of competition and policy. The usual assumption is that the cellular mobile segment enjoys strong competition. It would be useful to try and take a closer look at that assumption. It is also intriguing that the Telecommunications Regulatory Authority of India (TRAI) while not interfering on a regular basis does, at times regulate tariffs on the basis of insufficient competition. The rationale behind the TRAI's decision seems to be based on casual observation of behaviour and not on robust analysis. The fact that now India has a

Competition Commission that is up and running makes the situation even more interesting. Anti-competitive behaviour is also the preserve of the Competition Commission of India (CCI). How the two agencies will coordinate their decisions in the future will be interesting to observe. Other actors like the Department of Telecommunications (DOT), the parent ministry, the incumbent state operators, BSNL and MTNL, also keep the plot ticking over.

Competition

The trend towards increasing competition in all segments of the telecommunications industry worldwide is unmistakable, even though the degree of competition varies. The International Telecommunications Union (ITU) estimates that 90% of countries have competition in the markets for mobile and internet services[9]. It should be noted though allowing competition does not necessarily translate into the presence of meaningful competition. Often countries are not sufficiently proactive in their efforts to establish competition since they see little virtue in competition as such, being more interested in matters such as teledensity and universal coverage. It is also the case that incumbent telecom operators, whether state owned or private, have no interest in the development of competition and in fact try their best to thwart it. The result is that even after the introduction of competition, incumbent operators tend to dominate.

In terms of the institutional arrangements that have an impact on the sector, 157 countries possess a telecommunications regulator by the end of 2010, up from 106 in 2000[10]. A large number of countries also have separate competition authorities and competition laws. The competition laws have standard proscriptions against anti-competitive agreements, abuse by dominant firms and mergers and acquisitions. Network externalities, a fundamental feature of telecommunications, make it vulnerable to monopolization. An individual subscriber to a telephone network derives benefits from being connected to a larger network since he is able to connect to a larger number of persons. The incumbent state operators typically have the largest networks due to historical reasons.[11]Effective interconnection rules are required to ensure non-discriminatory access to rival networks.

Most countries around the world, particularly developing ones, are concerned with providing access to the telecommunications network to all its citizens, termed Universal Service Obligations (USO). Access to telecommunications services is seen to be a driver for greater prosperity.[12] It is felt that reliance on the market alone would not deliver access to

telecommunications services to the poor. The state would have to step in to provide access for preserving equity. Equally, the presence of externalities could lead to market failure whereby the size of the network is less than what it should be. Government policies designed to correct the market failure is a possibility. A potential problem with government intervention, particularly cross-subsidization, is that it could distort competition. Recently efforts are being made to design subsidies in a way that is neutral in its effect on competition.

Some parts of the telecommunications sector are characterized by large sunk costs, particularly the fixed-line part. This acts as a barrier to entry by private operators. Often, the incumbent operator is the sole repository of expertise in engineering and network management. Also, as a government operator it is sometime more trusted than private operators. Further, presence of scale and scope economies, established sales and distribution networks and the benefits of vertical integration all serve to strengthen the dominant position of the incumbent.

Regulators have often sought to discipline dominant incumbent operators, in order to foster competition by a number of methods. Perhaps, the most benign of these is to mandate separate accounts for the different businesses that the operator runs. It has been the practice in the past, and India is no exception, for dominant operators to cross-subsidize their local basic services from long distance operations. Accounting separation provides some hope of discovering the extent of such cross-subsidization. More stringent remedies would include vertical or horizontal structural separation, line of business restriction and the most extreme of all, divestiture. Typically, governments baulk at such drastic interventions, because of the irreversible nature of such decisions and the risk of getting it wrong. Further, size is seen as being important to compete effectively in a globalised world. Finally, it is sometimes argued that incumbent operators have been the first to introduce innovations[13]. Restricting incumbent operators could have a detrimental effect on the dynamism of the industry[14].

The dynamism inherent in the industry has made governments less inclined to rely on competition authorities for market development.[15] Since competition authorities typically act ex-post their actions may be too delayed to be effective. Sector specific regulators have often introduced competition law principles into their regulations. These include mandated interconnection and access obligations. Regulators have also moved away from specific taxes to a broader based funding of universal service obligations. Further, they have often introduced more onerous burdens on the incumbent operators. For instance incumbent

operators have been mandated to provide access to the local loop on a non-discriminatory basis but cable TV providers, who provide a substitute to the local loop, are usually not required to do the same. The issue of local access has been a vexing problem from the point, among others, of internet access. The same is true of the pricing practices of internet backbone providers.

Measuring the extent of competition in telecommunications markets is a difficult task. The problem lies in both in the metrics to be used and the market segments to be looked at. Market segmentation can be done on the basis of products or geographically or both. Segmentation on the basis of products is difficult without knowing the substitution possibilities between products. If two products are very good substitutes for each other then there is no point in treating them as different. Increasing convergence in telecommunications technologies are making some product divisions redundant. Table 1 shows suggested product definitions for Canada, EU and one that the OECD favours. A broader definition of the market will automatically lead to a larger number of firms being included and that could throw up measures that overstate the amount of competition.

Table 1:
Categorization of current telecommunications markets (as of 2001)

Canada	European Union	Proposed
Voice – individual lines, Centrex, PBX access, intra-regional long distance, domestic long distance, cross border (US), international (non-US)	International voice telephony	Voice – local, long distance, international (residential and business respectively)
Data access – high speed	Packet-switched data	Payphones
Local private line	Resale of international transmission capacity	Leased lines – domestic, international
Foreign exchange line	Audio-conferencing	Data network service
ISDN lines	Satellite services	Internet access
Inter-exchange private line	Enhanced global telecom services	Mobile
International private line	Directory-assistance	Network access - local loop unbundling, interconnection
Data network services (frame relay, ATM, etc.)	Internet access services to end users	
Cross border data circuits	Mobile	
Carrier network access services		
Unbundled network element		
Internet access – Dial-up, high-speed, dedicated		
Mobile – post paid, pre pay, long distance		
Specialized mobile, Operator services		
Payphone lines, Calling features		

Source: OECD, Indicators for the Assessment of Telecommunications Competition[16]

Traditional measures of competition have centered on market shares such as the Hirschman Hirfindahl index (HHI). It is fairly straightforward to calculate when market share numbers are available. The other standard measure, Lerner's index is more difficult to calculate in the absence of pricing and cost data. However, it can be substituted by profitability, since higher profits would correspond to higher figures for the index. Entry barriers also constitute an impediment to competition and government policy in that regard is an important consideration. A list of possible indicators of competition is provided in Table 2.

Table 2:
Indicators for the evaluation of telecommunications competition

Category	Indicator	Parameter
Market Structure	Market Share and its trends	Volume-based: call minutes, number of subscribers; Value-based: revenues; Capacity-based: number of lines installed
	Entry Barrier/Ease of entry	Parameters for absolute barriers: number of firms, regulatory restrictions, control of essential facilities, extent of economies of scale and scope Parameters for strategic barriers: advertising & capital intensity Vertical integration / Parameters for exclusionary barriers: existence of vertically integrated firm and its price levels, including non-discriminatory access to wholesale products
Supply Behaviour	Active competition in price and rivalries	Rivalry in price competition: pricing trends, the extent of reaction to a price change, existence of price leadership Rivalry in non-price competition: level of marketing & advertising costs, coverage of services or networks Indirect measure: the existence of recent entry or exit, the extent of such movement in the past
	Absence of anti-competitive behaviour and collusion	Anti-competitive practices: number and time spent for agreements on LLU and interconnection, percentage of lines for LLU by incumbent, existence of carrier pre-selection and number portability, number of complaints reported. Existence and level of collusion (subjective assessment according to the context)
	Provision of innovative services	Rate of diversification (differentiation) and speed for innovative services
	Profitability	Trends in profits across firms
Consumer Behaviour	Access to information	Consumer survey: regular information notice to customers, quality of websites for information, in-time provision of requested information
	Ability to use information and market opportunities	Consumer survey: possession of correct and sufficient information for current services and alternatives, clear criteria for comparison
	Costs and barriers to switching suppliers	Consumer survey: extent and substance of barriers to switching suppliers; Level of switching made compared with level of satisfaction on information provided
	Countervailing buying power	Number of consumer groups, percentage of large users and its portion in revenues, level of consumer expenses for services to total income
Consumer Benefits	A wide range of competitive services offered	Churn rate of offered services to a threshold Consumer survey: presence of sufficient service offers and changes in level of satisfaction
	Consumer satisfaction with	Revenues/number of calls (fixed costs), revenues/number of calls

	price and affordability Consumer satisfaction with the quality of services	minutes Consumer survey: price adequacy, affordability, simplicity and ease in rate structure Call completion/congestion/disruption rate, time for installation and repair, number of faults, number of reported complaints Consumer survey: level of quality, areas of concerns, the reason for low quality service

Source: OECD, Indicators for the Assessment of Telecommunications Competition[17]

Developments in India

Introduction of private operators in provision of telecommunication services began in 1995. The government, concerned with the dismal teledensity figures allowed private operators to offer local calling on fixed lines. Not surprisingly there was not that much enthusiasm from private operators. They were much more enthusiastic when the government opened up the cellular mobiles service to private parties. In their enthusiasm these operators bid fairly large sums for their licenses and soon found that their expectations of revenues had been too optimistic. The government was faced with a situation where the mobile operators would have to default on their payments and their licenses would have to be cancelled. Faced with the crisis the government in 1999 responded with a new telecom policy that mandated moving to a revenue share regime where the operators were to pay their license fees through a share of their revenues over a 20 year period[18]. This policy document also made important changes in the role of the regulator. Since then the telecommunications sector has witnessed strong growth in most parts. The growth in mobile services has been exceptional with subscriber numbers crossing the 500 million mark.

The government slowly opened up different parts of the telecommunications sector, increased the number of operators and introduced policies that increased competition. In 2000 the domestic long distance, usually referred to as national long distance (NLD), market was opened up to private operators[19]. It also separated out the operations part of the Department of Telecommunications (DOT), named it Bharat Sanchar Nigam Limited (BSNL) and changed its status to a corporate body owned by the government. BSNL and MTNL[20] were allowed to enter the cellular mobile market. It also created the Wireless Planning and Coordination wing in DOT for overseeing spectrum allocation. The Telecom Regulatory Authority of India (TRAI) Act was amended to allow it complete authority to regulate tariffs and interconnection. It made it mandatory to seek the TRAI's view on issues pertaining to entry. The dispute settlement role of the TRAI was hived off to a newly created Telecom

Dispute Settlement Appellate Tribunal (TDSAT). Next year a fourth operator was allowed entry and the year after, the International Long Distance (ILD) market was opened up. The incumbent state operator for ILD, Videsh Sanchar Nigam Limited (VSNL) was privatized. An USO fund was set up under the DOT, funded through a 5% tax on revenues. The steps taken by the government in this period served to provide the structure that would allow competition and growth in telecommunications.

The next few years saw an active TRAI using its powers to regulate tariffs and foster competition. First it classified interconnection charges into origination, termination and carriage. It then imposed price ceilings for all of these for basic, cellular and limited mobility. It also introduced an Access Deficit Charge (ADC) on all types of calls to compensate BSNL for operating in rural areas. However, by 2005 the TRAI began phasing out the ADC and by 2007 had reduced it to fairly low amounts. The TRAI introduced the Calling Party Pays (CPP), a move that was credited with a sharp increase in the number of mobile subscribers. The government also played its part. The customs duties on capital goods for telecommunications were reduced to 15% and that on cell phones reduced to 5%. It also allowed foreign direct investment up to 74%. The Unified Access License regime was implemented allowing any operator to offer services using any technology and the Broadband Policy was unveiled. The industry also responded to these moves. Reliance Communications offered connections bundled along with phones and offered prices as low as Rs. 0.40 per minute. Motorola launched its first made in India phone for Rs. 1700.

From 2006 onwards the narrative has been one of relentless increase in the number of subscribers, strong competition and growth. In 2006 India became the fifth country to cross the 100 million mark and it overtook China as fastest growing telecom market in the world. In 2008 India overtook USA in terms of number of subscribers and the number is now more than 500 million. Vodafone acquired Hutchison Telecom India's 67% stake for USD 19.3 billion and Bharati became the third largest mobile operator in the world. Tata Teleservices in a strategic move introduced per second billing and others followed. Previously customers would be billed per minute, so that even if a customer talked for a few seconds the whole minute would be charged. Obviously, increased competition was directly beneficial to consumers.

As the number of subscribers rose operators began suffering from a lack of spectrum. A possible method of alleviating this problem was to allow them to share towers. Even though it raised the possibility of collusion, the government allowed it. The use of both GSM and CDMA by the same license was also allowed and the government gave the go ahead for mobile number portability. The TRAI reduced the roaming rental to zero and sharply reduced roaming tariffs. 2010 saw successful auctions of 3G licenses with the government earning Rs. 67718.95 crores (USD 14.78 billion) for the government. The latest development involves the allegation by the CAG that the previous communications minister, Mr. A. Raja, might have bent the rules to provide licenses to some favoured investors. It is alleged that some of these investors had no interest in telecommunications and only applied to get scarce spectrum that was then resold at a profit. Mr. Raja has had to step down and the government and the TRAI are trying to cancel the licenses of some of the operators who have defaulted on roll-out commitments. The result has been that the industry and the entire political system have been thrown into turmoil. Several members of Parliament, including the erstwhile minister, have been incarcerated while the matter is being heard in the courts.

Table 3:
Revenues of major telecom operators by segment

Service Providers		**Cellular Services**		**Fixed Services**	
Company	**Revenue (cr)**	**Company**	**Revenue (cr)**	**Company**	**Revenue (cr)**
Bharati	38,800	Bharati	28,000	BSNL	13,575
BSNL	30,240	Vodafone	20,500	MTNL	2,400
Vodafone	23,200	Reliance	15,000	Bharati	1,200
Reliance	22,130	Idea	10,300	Reliance	500
Idea	11,390	BSNL	9,725	TTML	500
NLD Services		**ILD Services**		**Internet Services**	
Company	**Revenue (cr)**	**Company**	**Revenue (cr)**	**Company**	**Subs (lakhs)**
Bharati	4,800	Tata	8,193	Reliance	2,730
BSNL	3,600	Bharati	2,632	BSNL	2,250
Reliance	2,100	Reliance	1,729	Bharati	2,200
Vodafone	1,900	BSNL	1,052	Tata	720
Tata	1,045	Vodafone	450	MTNL	500

Source: Voice and Data, July 2010

A glance at Table 3 shows the predominance of Bharati which operates under the Airtel brand. It has the highest revenue and is among the top 3 in every segment. The incumbent state operator is now in second place in terms of revenues. It still retains its leadership in the fixed wire-line segment and that remains its main source of revenues. This is in contrast to other providers who rely on mobile for most of their revenues. Fixed services, a primary source of revenue for BSNL, has been under threat for a while. Table 4 shows total revenues for 2009-10 and percentage growth. The market for fixed access has shrunk by 23% in 2009-10 while other segments showed positive growth. In terms of total revenues though, growth has been sluggish at 2.36%, though in terms of subscriber numbers the sector grew at 44.17%. Table 5 shows that there are a total of 17 companies providing fixed and/or mobile services with a total of 272 licenses of which 238 are operational. There are, in addition, 24 ILD, 29 NLD and 378 Internet Service Providers (ISP).

Table 4:
Revenues and Growth, Different Segments 2009-10

Service Category	Revenue (crores)		Growth (%)
	2008-09	**2009-10**	
Fixed Access	24,649	18,900	-23.3
Cellular	93,522	96,860	3.6
NLD	14,432	16,400	13.6
ILD	15,000	17,600	17.3
Broadband	7,500	9,000	20
Total	155,103	158,760	2.36

Source: Voice and Data, July 2010

Table 5:
Number of Licenses in basic and cellular mobile

No	Service Provider	Circles	UASL	CMTS	Operational
1	Bharti	22	21	1	22
2	Aircel Group	23	21	2	23
3	Reliance Communication	20	20		20
4	Reliance Telecom	8	8		8
5	Vodafone	23	23		23
6	Tata Teleservices	22	22		22
7	Idea Cellular	22	11	11	22
8	Sistema Shyam Telelink	22	22		16
9	BSNL	21		21	21
10	MTNL	2		2	2
11	Loop Telecom Private Ltd.	22	21	1	9
12	Unitech Group	22	22		13
13	Datacom Solution Pvt. Ltd. (Videocon)	21	21		16
14	Etisalat DB Telecom Pvt Ltd & M/s Allianz Private Ltd.	15	15		15
16	S-Tel Ltd.	6	6		5
17	HFCL	1	1		1
	Total	**272**	**234**	**38**	**238**

Source: DOT

Mobile Services

Mobile services were introduced in India in the year 1995. Licenses were issued in 20 circles which are roughly contiguous to states and four metros. The government followed a duopoly policy, where there to be two operators per circle. Thus there could be a total of 48 operators in the market, which would seem far too many. Of course some operators had multiple licenses, though the number of licenses was capped at three, and some circles did not find two bidders. Licenses were awarded in terms of the highest license fees that were bid by the operators. These fees were for the spectrum, which is a scarce resource. The government congratulated itself on generating large revenues, though the fees that had been bid did not bode well for the sector. For the first few years the mobile services sector saw a lot of turmoil which ended with the government moving over to a revenue sharing regime in 1999. After that mobile services took off, but not without a few hiccups. In a span of 15 years the number of customers has reached 584.32 million in 2010. The number of customers per year

is shown in table 6 and Figure 1 shows the current state of the market. There have been wide variations in the growth rates across the years and the peaks and troughs can be associated with specific events. For example the peak growth of 159.84% in 2004 can be associated with Reliance's entry into the market with very aggressive marketing schemes.

Table 6:

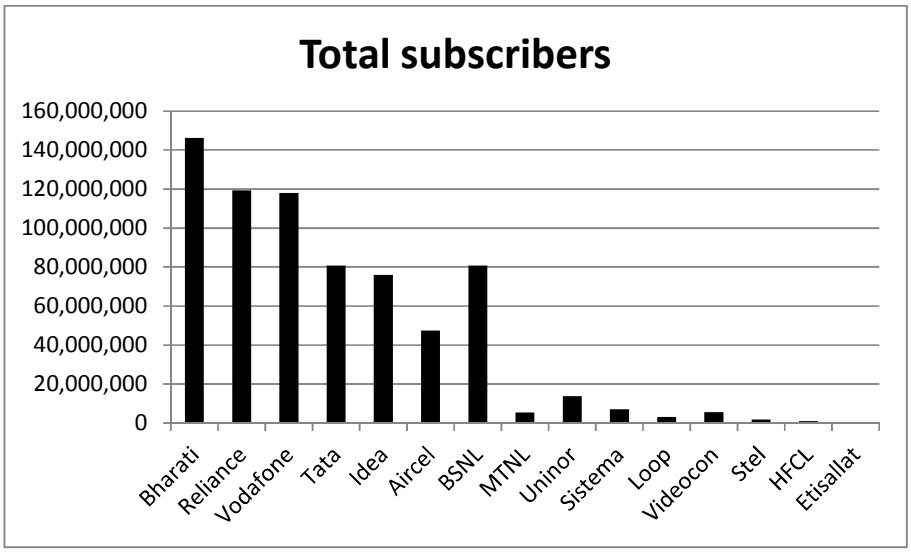
Subscribers per year

Year	Number	Growth (%)	Year	Number	Growth (%)
1996	0.06		2004	33	159.84
1997	0.38	533.33	2005	52.4	58.79
1998	0.88	131.58	2006	90.8	73.28
1999	1.20	36.36	2007	156.57	72.87
2000	2.46	105	2008	205.5	30.92
2001	3.57	45.12	2009	391.76	90.64
2002	7.00	96.08	2010	584.32	49.15
2003	12.7	81.43			

Source: Voice and Data

Figure 1:

Total subscribers per operator[21]



From Figure 1 we can get a snapshot of the mobile market in 2010. There are 7 fairly large operators and 8 very small ones. Among the large ones Bharati predominates while Reliance and Vodafone are neck and neck at second place. BSNL, Tata and Idea are some distance behind with Aircel bringing up the rear. The 8 small operators are mostly ones who have just

begun their operations. MTNL is a government operator, initially formed to provide fixed access services only in Delhi and Mumbai. The government is interested in merging MTNL within BSNL. The all India picture can hide regional differences. For example Figure 2 shows Aircel as the largest operator in Tamil Nadu while Figure 3 shows that Idea predominates in Kerala. The circles also differ in their growth rates as seen in Figure 4. In October 2010 Bihar witnessed the highest growth rate. It could be surmised that Bihar being one of the poorer states, is exhibiting high growth because coverage is lower than in other states and consequently there is more room for growth. The same may be true of Madhya Pradesh. This thesis does not explain why the next highest growth rate is in Karnataka, Gujarat and Delhi. There is obviously a complex interplay between demographic factors, economic factors and growth rates. When we compare growth across operators, in Figure 5, it is the new entrants that have grown the fastest.

Figure 2:
Subscribers in Tamil Nadu

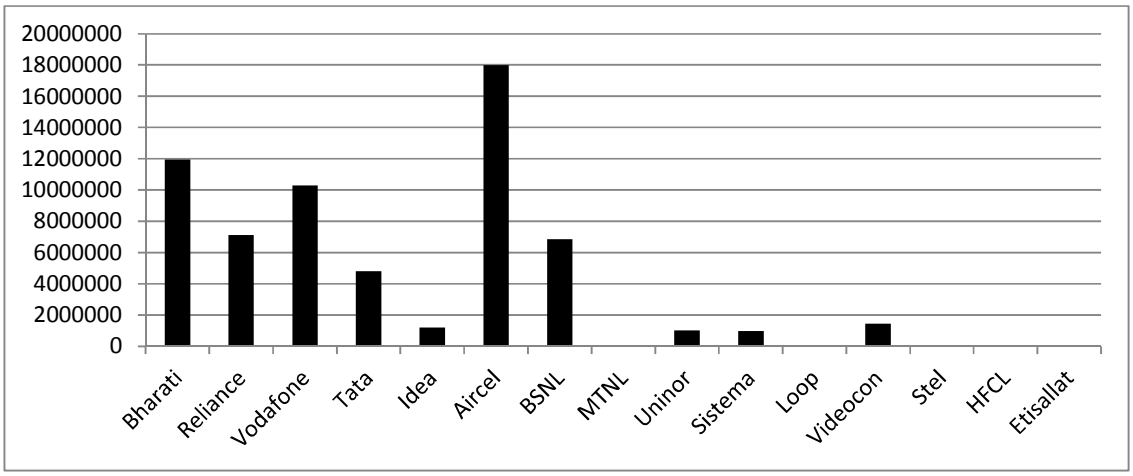


Figure 3:
Subscribers in Kerala

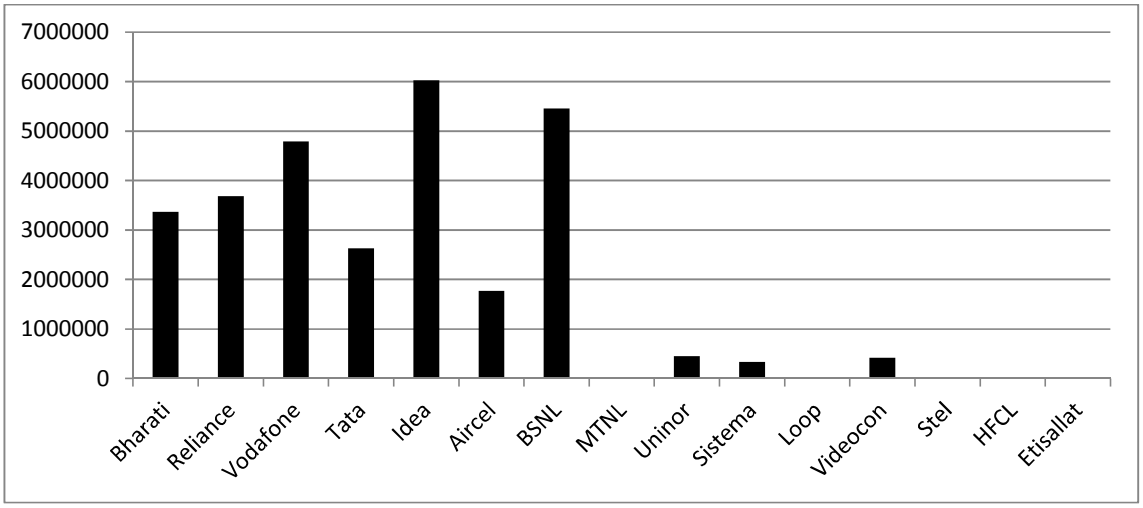


Figure 4:
Growth rates across circles (October 2010)

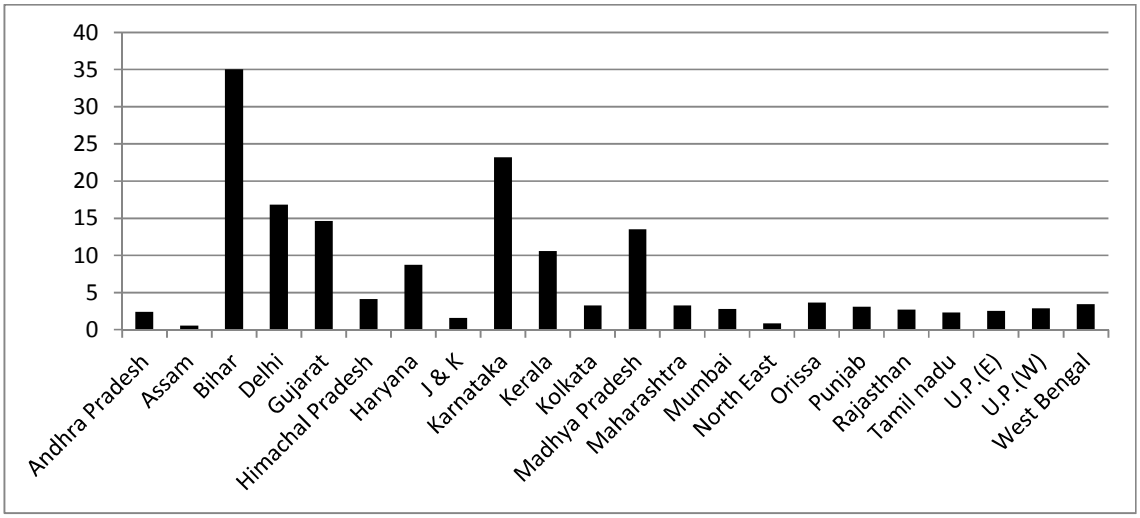
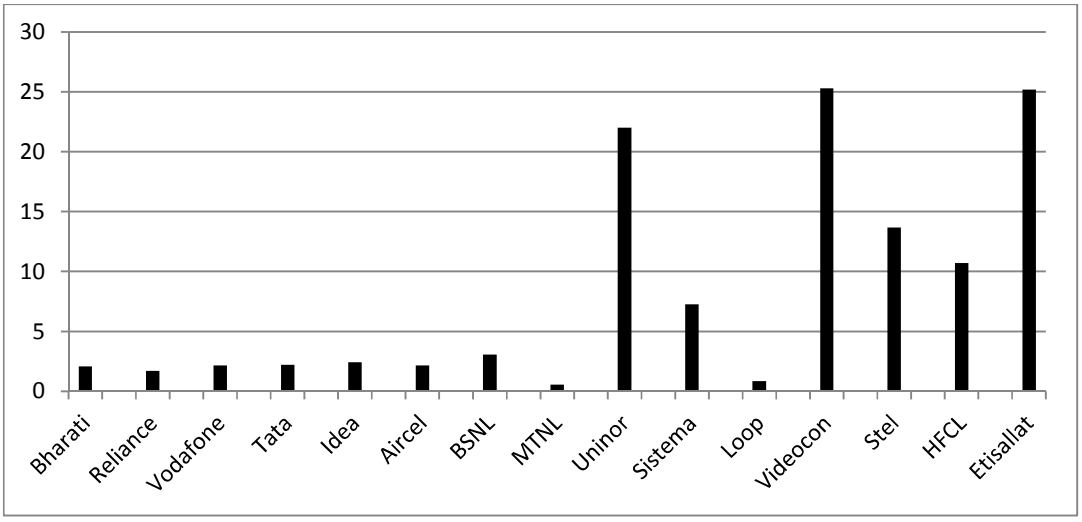


Figure 5:
Growth rates across operators



Competition in the cellular phone market

The first issue that we have to tackle is market definition[22] . Here we have assumed that the circles form separate markets. Support for this assumption can be derived from the fact that these markets have been created artificially by the government. A mobile operator with licenses in two contiguous circles cannot serve the combined area with the same equipment but is required to set up separate networks. Also, considering geographical markets as the appropriate market is standard practice. The Hirschman-Herfindahl Index (HHI) for mobile services for the whole of India stood at 1421.29 which would indicate healthy competition. The four firm concentration ratio of 66% also suggests fairly strong competition. It would useful not to rely on concentration measures alone. A complementary approach would be to look at price-cost margins. Additionally, we can use market behaviour as an indication of competition. Frequent changes in fortunes of operators, lower tariffs, strong branding activity, frequent entry and market expansion can signal strong competition.

Figure 6:
HHIs for Circles

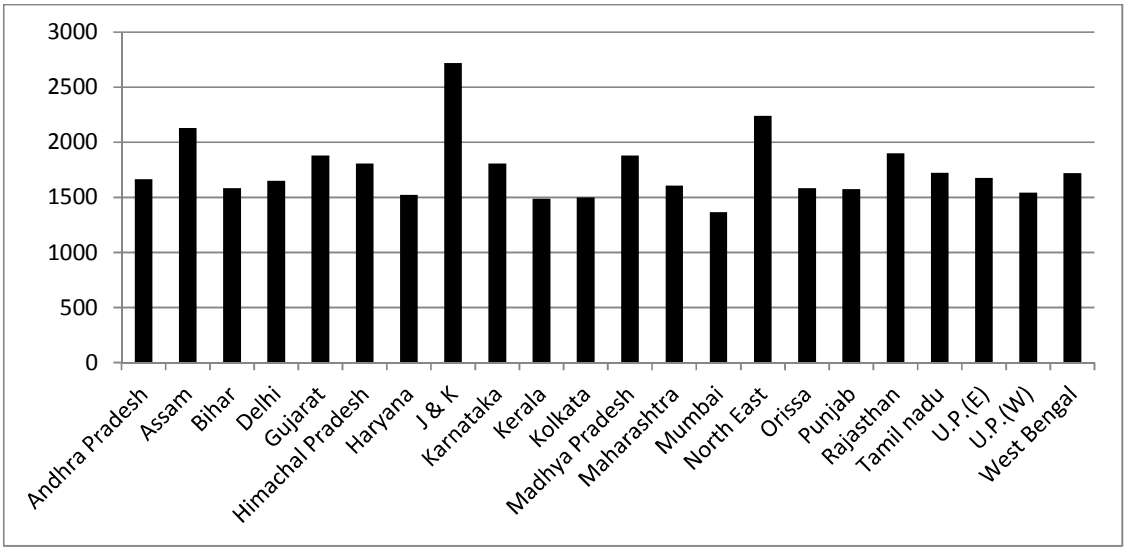


Figure 6 shows the HHIs for different circles. The numbers range between 1366.78 in Mumbai and 2718.94 for Jammu and Kashmir. Only Assam and the North East, besides Jammu and Kashmir have HHIs over 2000. The numbers would indicate fairly strong competition all across the country. To get a better picture we could look at other market definitions such as rural and urban. We could also classify markets into residential and business since residential and business customers respond to price signals differently. Finally, one could separately investigate the markets for local calling, intra-circle long distance and the market for inter-circle long distance on the mobile. Unfortunately, we do not have the necessary data.

We can use other proxies for indicating the level of competition such as entry and exit, as well as growth rates of different operators. Table 7 shows the ranks in terms of subscriber numbers starting in 2002. As we notice Bharati has retained the first or second position throughout. Vodafone has over time improved its position and is currently ranked third. Reliance improved its position dramatically with strong growth and is currently second. BSNL, which also started well, could not maintain its momentum and has been at the fourth place for the last three years. Idea has held steady at 5 since 2005.The Tatas have made steady progress over the years to reach sixth position. Some operators such as Escotel, Sterling and Koshika have left the industry while others have entered or expanded their operations. The fortunes of the BPL group have rapidly diminished and they have rebranded

themselves as Loop Mobile. Five new operators started operations in the last two years and it is too early to study their impact on the market.

Table 7:
Ranks of operators by subscriber numbers

	RANK								
Operators	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Bharati	1	1	2	1	2	1	1	1	1
Vodafone	2	4	5	4	4	4	2	3	3
BPL	3	6	6	7	8	12	11	-	-
Idea	4	5	4	5	5	5	5	5	5
Escotel	5	8	-	-	-	-	-	-	-
Spice	6	7	8	8	11	11	9	-	-
Sterling	7	-	-	-	-	-	-	-	-
Reliance	8	3	1	2	1	2	3	2	2
Fascel	9	9	9	10	9	9	-	-	-
MTNL	10	11	11	11	10	10	10	9	9
Usha Martin	11	-	-	-	-	-	-	-	-
RPG	12	12	-	-	-		-	-	-
Aircel	13	10	7	6	7	7	-	7	7
Hexacom	14	14	12	12	12	-	-	-	-
Koshika	15	-	-	-	-		-	-	-
BSNL	16	2	3	3	3	3	4	4	4
Dishnet	-	-	-	-	13	8	-	-	-
Escorts	-	-	-	-	16	-	-	-	-
HFCL	-	16	13	13	14	13	12	12	14
TTML	-	13	10	9	6	6	6	8	8
Shyam	-	15	14	14	15	14	13		
TTSL								6	6
Loop								10	12
Sistema								11	11
Uninor									10
Stel									13
Etisallat									15

Source: Voice and Data

Table 8 shows the growth rates of different operators across the years. Bharati, Reliance, Vodafone, Idea, TTSL and Aircel have retained fairly healthy growths over the years. Among the top 5 BSNL's growth rate has been declining over the years. Idea, which has been steady at the 5th position, has grown through acquisitions. Loop is the new avatar of BPL and Sistema has merged with Shyam. There are a number of new entrants, as noted earlier, and naturally they have grown the fastest. What is remarkable is that the top 2, Bharati and

Reliance have posted growth rates over 100 in 2009. This may be an indication that these two are pulling ahead, a hunch that is reinforced by the financial data in table 9.

Table 8:
Growth rates of operators (%)

Operators	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Bharati	118.87	62.4	78.3	89.7	66.9	51.5	127.52
Reliance	384.33	43.9	65.6	60.9	64.4	72.67	102.42
BSNL	123.79	65.2	81.6	51.4	46	27.9	33.2
Vodafone/Hutch	138.34	51.5	68.1	72.1	**66.9**	55.9	46.7
Idea	113.49	36.3	45.4	90.1	71.3	52.5	48.4
BPL	66.62	36.7	8.9	-20.1	20.6	**Loop**	
Spice	88.89	314.69	34	41.5	54.2	**Idea**	
Aircel	128.08	70.9	48.3	111.1	92.6	74.1	99.6
Escotel	70.53	**Idea**					
TTSL	324.27	73	345	135.7	117.4	43.3	90.3
MTNL	29.09	93.9	105.2	38.2	28.4	26.9	13.6
Hexacom	53.73	**Bharati**					
HFCL	2.82	-16.7	20	16.7	900	30	
Shyam/Sistema	-	-62.5	0	0	57.1	445.5	526
TTML					95.8	48.7	76.5
Loop						67.4	31.5

Source: Voice and Data

Table 9:
Revenues and profits (Rs. millions)

	Financial Year		Financial Year		Financial Year	
Company	2006-07		2007-08		2008-09	
	Revenue	Profit	Revenue	Profit	Revenue	Profit
BSNL	397.15	78.06	380.47	30.09	358.12	5.75
Bharati	185.20	42.57	270.25	76.01	373.52	80.44
MTNL	55.82	4.66	54.07	5.07	45.77	2.15
Tata Communications	86.11	0.02	82.63	-0.28	99.63	1.92
Tata Teleservices (Maharashtra) Limited	14.07	-3.11	17.07	-1.26	20.46	-1.70
RCOM	144.68	31.63	190.68	54.01	222.51	62.49
Idea Cellular	43.87	5.02	67.37	10.42	101.54	8.82
Shyam/Sistema	2.40	-0.41	1.17	-1.81	1.28	-5.91

Source: Voice and Data

It should be noted that Vodafone does not disclose earnings data so we can't know for sure. We see BSNL's profits have steadily declined and a loss in terms of subscriber base and the

declining fortunes of their fixed access business indicates problems down the horizon. The mystery is why none of the other operators have been able to replicate the success of Bharati and Reliance. It is reported that Bharati has an EBIDTA (Earnings before Interest, Taxes, Depreciation and Amortization) of 40% and it manages to achieve this figure pricing calls at USD 0.02 per minute[23]. As we can see from table 10 Average Revenue per user (ARPU) is quite low. Thus revenues have to be generated by having large volumes.

Table 10:
Average Revenue per user across circles

Circle	Average ARPU	Circle	Average ARPU
Delhi	230.78	UP(West)	129.25
Mumbai	226.05	UP (East)	136.18
Kolkata	142.26	Rajasthan	127.32
Chennai	137.12	MP	130.70
Maharashtra	168.61	WB	109.53
Gujarat	148.82	H.P	127.25
AP	162.00	Orissa	118.37
Karnataka	168.58	Bihar	120.41
Tamil Nadu	138.23	Assam	149.59
Kerala	155.06	NE	160.27
Punjab	179.17	J & K	134.04
Haryana	121.01	All India	150.23

Source: TRAI

A different indicator of the extent of competition is the amount of activity in terms of investments. This can take different forms such as mergers and acquisitions, bonds and debt issues and Initial Public Offerings (IPO). There have been a fairly large number of transactions for stake sales, as shown in tables 11, 12 and 13 so that companies are unlikely to complain about lack of funds. So there should be healthy competition in the future, even from new entrants.

Table 11:
Stake sales in Telecom companies

Stake Sales (2008-2009)				
Year	**Acquiring Company**	**Target Company**	**Equity Stake (%)**	**Deal Value**
2009	Telenor	Unitech Wireless	67.25	Rs. 61.2 billion
	Sahara Group	S Tel	11.70	Rs. 2.5 billion
	Bahrain Telecommunications	S Tel	6.30	Rs. 1.25 billion
	Emirates Telecommunications	Etisalat DB	5.27	Rs. 3.8 billion
2008	Idea Cellular	Spice Communications	49.00	Rs. 281.4 billion
	Tata Communications	Neotel	30.00	NA
	NTT DOCOMO	Tata Teleservices	26.00	Rs. 130.7 billion
	Telenor	Unitech Wireless	60.00	Rs. 61.2 billion
	Etisalat	Swan Telecom	45.00	$ 900 million
	Sistema JFSC	ShyamTelelink	63.71	NA

Source: Voice and Data

Table 12:
Financing

Key bond and debt issues (2008-2009)			
Year	**Company**	**Type of debt/bond**	**Deal Size**
2009	Vodafone Essar	Loan	Rs. 100 billion
	Aircel	Loan	Rs. 143 billion
	Unitech Wireless	Loan	Rs. 50 billion
	ETHL Communications	Bonds	Rs. 42.8 billion
	Indus Towers	Loan	Rs. 100 billion
2008	Reliance Communications	Loan and lines of credit	$ 150 million
	Quippo Telecom Infrastructure Limited	Loan	$ 185 million
	Idea Cellular	Loan	$ 100 million
	GTL Infrastructure	Loan	$ 150 million
	Reliance Communications	Loan	$ 750 million

Source: Voice and Data

Table 13:
Initial Public Offerings

Key telecom IPO's					
Company	**Month**	**Issue price** (Rs per share)	**Issue size** (million shares)	**Amount raised** (Rs million)	**Oversubscription** (times)
Idea Cellular	Feb 2007	75	325.83	24437.50	50.00
Spice Communications	Jun 2007	46	113.10	5202.60	37.00
Onmobile Global	Jan 2008	440	10.90	4796.24	10.90

Source: Voice and Data

It is difficult to reach a definite conclusion on the level of competition. On the positive side there are a large number of players and some circles have up to 12 operators. HHIs and four firm concentration ratios indicate healthy competition in all circles. There is not too much discrepancy in terms of market shares among the top 6 firms. There has also been a fair amount of entry and all the operators are flush with funds. On the negative side the steady decline of BSNL, one of the top 6, is a cause for worry. A second cause for worry is the difference in profits between the top 2 and the rest. It is true that prices in India are among the lowest in the world but even then Bharati and Reliance managed to post very high EBIDTA.

Policy

The extent of competition that can be achieved is dependent on institutional factors, particularly in a country like India, where the government's reach can be substantial. The policies adopted by the government and its attitude towards competitive forces shape the actual level of competition. Other institutions such as the legal system and regulatory bodies affect the nature of competition as well[24].

The starting point should be to articulate the government's view on competition. Unfortunately, in India, with its tradition of a mixed economy, the attitude to competition and a market economy has been ambivalent. The emphasis is often geared towards policy goals and competition is often a by-product, sometimes unwelcome, of the process. The policy developments in the telecommunications sector illustrate this notion quite well. When in 1994, the government took the first tentative steps to liberalize the sector competition did not figure as either an outcome to be desired or a means to achieve an outcome.

The government set out its policy in 3 pages stating such objectives as the need to connect all villages and to provide affordable services. It then decided on concrete goals such as "telephones to be available on demand by 1997"[25] and that in urban areas a public call office (PCO) would be provided for every 500 persons. The government's estimate of the funds needed amounted to Rs. 23,000 crores which it clearly did not have and could not raise. So "private initiative would be used to complement the Departmental efforts." Thus the entry of private players was not designed to provide competition. In fact the DOT viewed itself as the primary provider of telecommunications services and private players would only operate on the fringes and most importantly provide it with resources garnered through license fees for its own expansion plans.

The government was quite willing to let the DOT orchestrate developments in the telecommunications sector for the next four years. In the meanwhile private participation in basic services did not take off and the cellular mobile sector was in a mess. Another major development was the setting up of the regulator, TRAI. Initially, the DOT wanted the regulator to be a part of the DOT and subservient to it. Fortunately, the government deemed fit to make it independent, but not too independent. In the initial years DOT contested TRAI's jurisdiction over it and fought a number of battles over tariff regulation. The TRAI was not provided with licensing powers and could not arbitrate disputes between the DOT and other private operators. The government also saw no reason to overhaul the antiquated 1885 Indian Telegraph Act.

The problems besieging the telecommunications sector prompted the government to take a fresh look at the sector. The result was the New Telecom Policy of 1999. This document observed, "Result of privatization has so far not been entirely satisfactory." For the first time it mentioned as one of the objectives the need to "transform in a time bound manner, the telecommunications sector to a greater competitive environment in both urban and rural areas providing equal opportunities and level playing field for all players." The most important step was the movement to revenue sharing, which provided much needed relief to the cellular mobile sector. It also removed a number of constraints in operations of private operators. The national long distance market was opened to private participation and cable operators were allowed to provide telecommunications services. The TRAI's powers were strengthened and a separate dispute settlement body, the TDSAT, was set up. Finally, DOT was divided into DTS, the operator from the DOT, which was to be the policy making body. It suggested that

DTS should eventually stop functioning as a government department and operate as a commercial entity. This was eventually done.

NTP 99 had a strong pro-competitive message as it substantially eased entry restrictions and strengthened the regulator by clearly setting out its powers. Soon after VSNL, the state owned international long distance monopoly operator was privatized and its monopoly ended. The government also came out with a bill, the Communications Convergence Act 2000, to set up a unified regulator for all communications services, with even more powers for the regulator. This bill, however, has not been passed by the parliament and its current status is unknown. In the meanwhile broadcasting services have been brought under the purview of the TRAI.

The actions of the government may suggest that it suffers from schizophrenia. It is important to note that the government is not a monolith. Various constituents of the government often, hopefully inadvertently, work at cross purposes to each other. Quite often the actions of other ministries affect the telecommunications sector. For instance private operators are supposed to have rights of way to lay cables at par with the BSNL. Yet they often faced harassment from the Ministry of Environment. The finance ministry reduced the duty on handsets which boosted the fortunes of mobile operators. At other times the same ministry determined that all those who own mobile phones would have to file income tax returns, a move that reduced the number of connections. Such, policy decisions often provide a competitive edge to some operators to the detriment of others. The effect on competition does not seem to be considered in making these decisions.

The other players in the policy environment have been the DOT, the Communications ministry and the prime minister's office (PMO). The views of the communications ministry seem to depend on the minister in charge. Even though the DOT has a strong influence on the ministry an independent minister can ignore the DOT's advice. The problem though is with the role the minister chooses to play and to what extent he can affect the market.

A previous minister, Mr. Dayanidhi Maran, is credited with persuading the government to increase the FDI cap to 74%, which was a pro-competitive move. He also managed to get BSNL to reduce its tariffs and badgered private mobile operators to reduce roaming rates. This form of intervention in the market, even if it is well intentioned and beneficial to the consumer, can increase the risk profile of investors and eventually prove harmful. Finally, the

prime minister's office (PMO) was credited with the creation of the NTP 99. Again, one wonders whether it is the PMO's business to micro manage other ministries. It is certainly possible that he might have to intervene at times but surely a broad pro-competitive policy stance should have provided a clear direction to the ministry.

The issue of spectrum allocation caused a fair amount of stir. For a while spectrum was allocated on the basis of subscriber numbers and the technology used. The entrenched operators, who typically operated on the GSM standard, would have liked this practice to continue as it would inhibit entry and cement their current positions. The newer entrants, prominent among them the Tata group, wanted spectrum to be made available based on auctions.[26] This had been interpreted as a fight between GSM and CDMA operators, though it is better interpreted as a fight between older and newer operators. The existing operators also opposed allowing firms to offer both GSM and CDMA services and were in favour of capping the number of operators. Their argument was that larger numbers of operators reduce the efficient use of spectrum. Taking this argument to its logical conclusion one could argue that mobile telephony is a natural monopoly and so there should be only one mobile operator. Spectrum allocation is probably best done through properly designed auctions. It has been argued that high spectrum bids eventually find their way into high prices. The problem is that it is difficult to find an alternative to auctions.

The two other approaches are to depend on executive decision, which is difficult, time-consuming and prone to manipulation or lotteries. It was the use of executive power to implement a first come first serve (FCFS) process in the last allocation of 2G spectrum that caused the previous telecom minister's downfall. Charges were made that particular firms were given spectrum out of turn and that the prices were too low. Also, some of the beneficiaries had no interest in telecommunications, being real estate firms, and they merely got spectrum at a low price and promptly resold it a handsome profit. Lotteries are also problematic since typically there are a large number of applicants and the market in second-hand spectrum may not work efficiently.

The telecom regulator, TRAI has usually not interfered with pricing, usually practicing "forbearance". Its approach has usually been pro competitive, as when it grappled with the issue of telecom operators charging their own customers at a different rate than other operator's customers. Sometimes though, it has been a bit too intrusive. Some time back it concluded that there was not sufficient competition in the market for roaming and that the

operators were colluding to keep charges high. The TRAI came to this conclusion after a very cursory analysis of the data. This is an issue where the TRAI could have approached the Competition Commission for advice.

The last issue pertaining to policy matters is the behaviour of BSNL. Like most incumbents it tried to make life difficult for the new entrants. To some extent it was thwarted by the TRAI and successive ministers. It was also not helped by its large workforce and its inherent inefficiency. Dealing with BSNL and MTNL will be an issue in the future, particularly since they have most of the fixed access network that is important for higher broadband penetration.

Conclusion

This paper set out to examine the cellular mobile success story in India. In comparison with other regional countries there might be reason to be less ecstatic. On the other hand the growth in the number of subscribers remains unabated, adding some 17 million every month. There are a large number of operators and investments are pouring in. For the near future, at least, competition in cellular mobile is likely to be healthy and the numbers of subscribers continue to grow. At the same time issues of governance have from the beginning troubled this sector and that has continued till the present time.

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