

Competition Policy in Telecommunications in India

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EXECUTIVE SUMMARY

1. Telecommunication in India is seen as a resounding success of the policy of liberalization. There is vigorous competition in cellular mobile services and this sector continues to grow at a rapid pace and may soon boast of the world's second largest network in the not too distant future. Prices of mobile calls are reputed to be the lowest in the world.
2. The euphoria surrounding the success of telecommunications has to be tempered with the realization that the incumbent state operator still dominates the sector. It is the largest fixed-line operator, the second largest mobile operator, the largest National Long Distance operator and the largest internet service provider. There is strong competition in the mobile sector and the fact that it growing rapidly and has far eclipsed the fixed-line sector provides some hope for healthy competition in telecommunications as a whole. It is important that the benefits of competition are enjoyed by the other sectors in telecommunications besides cellular mobile.
3. The dominance of BSNL/MTNL, the incumbent state operators casts a shadow over the development of competition in telecommunications. Over the years BSNL/MTNL has tried to stymie development of private operators. In this they have used the clout they enjoy with the regulator, the Department of Telecommunications, the policy making body and with the ministry. In some cases they posed legal challenges to the regulator's powers. It has consistently posed problems with interconnection and even now does not provide interconnection at points advantageous to private operators. It has managed to extend its reach into mobile and internet service provision riding on its dominance in fixed line telephony. As a government operator it enjoys benefits that are not accessible to private operators. It does not have to pay license fees and enjoys rights of way, automatically, for laying lines and building towers.
4. The development of strong competition in telecommunications requires the concerted efforts of the competition authority, the sectoral regulator, the governmental telecommunications policy body, the Department of Telecommunications, the legal apparatus of the country and other governmental agencies and ministries. Quite often the different bodies which represent the institutional framework for the regulation of telecommunications work at cross purposes to each other. The DOT typically favours BSNL. The action of the regulator depends on his background. Usually, the chairman is from the DOT or from government telecom circles and has a similar bent of mind. The appellate tribunal and the courts have a judicial mindset and are not helped by ambiguous laws. Finally, the compulsions of the ministry are opaque to scrutiny. To what extent it is subject to pressures from the various corporate bodies is not clear. It would help if all these bodies used some clearly defined principles and rules to reach decisions. It would help if these rules were based on competition principles, but some rule would help.
5. The competition authority should aim its competition advocacy efforts towards inculcating a competition culture among the various stakeholders in the telecommunications sector and in society in general. In particular it should endeavour to foster a cooperative relationship with the telecom regulator. It should also try to get its views heard by the Department of Telecommunications. It can involve itself as an interested party in various disputes regarding telecommunications that come before the appellate authority as well as courts. It should also articulate its views on such issues as licensing and interconnection and other structural issues. Ideas such as a cap

on the number of cellular mobile providers, that have been recently suggested, should be vigorously opposed. Finally, since the commission has begun its implementation work it should cut its teeth on some cases. In order to get its views appreciated the authority's arguments should be based on data and rigorous analysis.

6. The paper is divided into three main sections. The first deals with the institutional framework and provides the background by discussing the experience internationally and in India in Telecommunications. There is increasing competition in telecommunications internationally and that experience is mirrored in India. The degree of competition varies across segments, typically being low in fixed services. All the three main forms of anti-competitive behaviour are exhibited in telecommunications, viz. anti-competitive agreements, abuse of dominance and mergers and acquisitions. In most developing countries abuse of dominance by the incumbent operator, which typically is (or was) owned by the government, is a problem. The major problems are with interconnection and the use of essential facilities. The institutional framework in terms of the sectoral regulator, the judicial system and the policy goals of the government has important repercussions on competition. There are jurisdictional issues between the competition authority and the regulator that need to be resolved. Equally important the regulator must be convinced of the importance of competition and be willing to incorporate competition policy principles in its deliberations. The judicial system needs to be educated in market economics and competition principles. The policy establishment should also incorporate competition policy principles while constructing policy goals.
7. The second part looks at the level of competition in cellular mobile, fixed (fixed and fixed mobile), national long distance, international long distance and internet service provision. There is very strong competition in cellular mobile but not in any of the other segments. The incumbents BSNL/MTNL and VSNL remain strong in fixed, national long distance, internet service provision and international long distance respectively. The cellular mobile service provides competition to fixed-basic and is probably used to make long distance calls as well. However, without better data and analysis it is difficult to judge to what extent cellular mobile is a substitute for fixed-fixed.
8. The third section looks at international cases and provides businesses and other stakeholders some idea as to the kind of cases the CCI might face. Cases have been chosen from Mexico, Turkey, South Africa, the European Union and the United States. In the case of Turkey, Mexico and South Africa the problems faced are very similar to some of the accusations raised against BSNL/MTNL. Some of these issues are discussed in the sub-section on Indian cases and includes a case on the possible hypothetical acquisition of Hutch by Reliance. This section ends with a discussion on the activities that the CCI should undertake to facilitate competition in telecommunications in India.

1. INTRODUCTION

- 1.1 In recent times it has become fashionable to cite telecommunications in India as the pre-eminent success story of economic liberalization. From a situation where the sector was dominated by the Department of Telecommunications, the sole government operator, in the early 1990s we now have a number of private operators jostling vigorously in mobile telephony, international long distance, internet service provision and other segments of telecommunications.
- 1.2 The pace of growth and the achievements in terms of statistics have been quite spectacular. From a teledensity² of 0.22 at the time of independence India achieved a very modest teledensity of 1.94 by 1998, the decade of introduction of liberalization. Since then India has achieved a teledensity of 18.74 overall and a rural teledensity of 6 by April 2007. Some of the metros have achieved a teledensity over 50. There are now 212 million telephone subscribers with 41 million fixed-access and 171 million mobile subscribers. Over 6 million subscribers have been added per month for the last six months and India has the fourth largest network after China, USA and Russia. There are currently 8.5 million internet subscribers with 2.43 million broadband subscribers. The sector has attracted a total of \$ 3.89 billion foreign investment in the period April 1991 till March 2007. Mobile call prices are reputed to be among the lowest in the world providing support to the benefits of competition.
- 1.3 Yet there are rumblings of discontent among private operators. Till recently they would bemoan the losses they were making in mobile telephony and the problems they faced with interconnection with the incumbent government operator. Over the years there have been instances where there have been allegations of cartel formations in telecommunications. In 2005 the telecommunications minister alleged that a cartel was in operation in the long distance calling segment of telecommunications.³ Recently the telecom regulator has suggested that pricing of roaming⁴ rates smacked of price coordination if not cartelization. In September 2007 the MRTPC⁵ ordered an investigation into the pricing practices of three private operators when they hiked some local calling charges by 20%. There have been a number of acquisitions over the years, capped off by the acquisition of the operations of Hutch, a very large and significant mobile operator, by Vodafone. As noted private players have complained about bullying by BSNL, particularly in interconnection. They have also complained about the government's partiality towards BSNL. These issues make competition policy and law important to telecommunications in India.
- 1.4 Abuse of dominant position, mergers and acquisitions and anti-competitive agreements are standard causes of concern of most competition authorities. Most countries also use a regulator for market development and regulation and its concerns are similar to that of a competition authority. The difference is that a sectoral regulator by mandate is more

² Teledensity is defined as the number of telephones per 100 people.

³ Hindu Business Line, Oct 7 2005, Long distance operators dismiss cartel allegations.

⁴ Roaming refers to the situation where a mobile phone customer registered in one state (circle) uses his phone in another. Typically the rates for such calls are higher than calling within the "home" circle.

⁵ MRTPC stands for the Monopoly and Restrictive Trade Practices Commission. It was the forerunner of the Competition Commission and is expected to stop functioning once the Competition Commission starts implementation.

specialized and involved with the day-to-day affairs of the industry. It is responsible for issues such as technical standards that have implications other than that on competition. In contrast the competition authority typically acts ex post and is wholly specialized in dealing with competition related issues across all industries and is only interested in technical industry issues to the extent they impinge on competition. One can imagine competition policy related issues falling in the intersection of the concerns of the industry regulator and the competition authority. Both are interested in it but in different degrees and with divergent views. In a country like India where the institution of regulatory bodies is still in its infancy and the competition authority is still being born, there could be problems with jurisdiction and authority. It is important that these two bodies operate in a harmonious manner.

1.5 Regulation of telecommunications in India is carried out by the Telecom Regulatory Authority of India (TRAI), established in 1997. It's not clear how much importance it gives to competition, even though the TRAI Act (1997) says that it should facilitate competition. Its own mission statement refers to protecting consumer interests and ensuring growth in telecommunications among its priorities. There is no mention of competition. What ever its views on competition its actions have had a strong impact on the development of competition. It was instrumental in getting BSNL, the incumbent state operator to rebalance tariffs, making local calls more expensive and reducing prices of long distance calls. It also allowed mobile operators to increase rentals to Rs. 600 from an absurd level of Rs. 156 as stipulated by the Department of Telecommunications (DOT), the government regulator before the birth of the TRAI. Each of these actions had strong pro-competitive effects since it allowed mobile operators room to raise revenues. Similarly, its insistence that all operators including BSNL sign interconnection agreements facilitated competition. More controversial would be its action of laying down norms for mergers as this would seem more in the realm of the competition authority. In its defence it could argue that when the need for such norms arose there was no competition authority. Now that there is a competition authority some method has to found for the two bodies to allocate responsibilities for the development of competition.

1.6 The OECD (2004) identifies the following different angles from which the need for regulation can be viewed:

- Competition regulation – It is necessary to protect the competitive environment by monitoring and investigating anticompetitive conduct and assessing mergers.
- Economic regulation – Tariff regulation should encourage efficiency and cost related pricing. In the absence of regulation, monopolists might charge excessively.
- Access regulation – where essential facilities are concerned, access by competitors must be monitored to ensure non-discriminatory, fair and equal access.
- Technical regulation – this type of regulation is necessary to assure compliance with quality, safety, privacy and environmental standards.

1.7 The question is whether these different forms of regulation are all necessary and how should these be divided among different regulatory or other authorities. It could be argued that as competition develops Economic and Access regulations should become less important. It is likely that for developing countries and countries that are in the early stages of liberalization all four forms of regulation will be required. As the market develops Economic regulation should become redundant but access regulation needs to be maintained. How does one divide up responsibilities among different regulatory authorities? Four approaches have been suggested.

- a. Competition authorities can be granted all sectoral regulatory functions for a particular sector or sectors.
- b. Competition law enforcement can be separated from sector-specific regulation, so that the competition authorities adjudicate all competition issues while the regulator deals with all other regulatory matters.
- c. The competition authorities can have concurrent jurisdiction with the sector regulator on competition issues.
- d. The sector regulator can retain exclusive jurisdiction over competition issues in its sector.

1.8 Technical regulation requires very specific telecommunications engineering knowledge. It would be expensive and probably wasteful to build such expertise within a competition authority. Also, this model of regulation would have to be replicated for other industries such as electricity, which would result in a competition authority of mammoth size and reach. It therefore seems very unlikely that technical regulation will ever become the preserve of a competition authority, which rules out the first option. The remaining three are possible with each being characterized by different set of problems. Separating competition issues from a sector regulator would present problems since technical matters affect competition and vice versa. Vesting all powers in a sector regulator is also problematic in that the sector regulator and the competition authority could have different approaches and abilities to judge the degree of competition and that would lead to uneven treatment across different sectors of the economy. Multiplicity of regulators in different sectors such as electricity, gas and ports would make the problem worse. Finally, separating competition issues from sector regulation provides some protection from regulatory capture. For all these reasons some form of concurrent jurisdiction seems to be the best approach, though the form needs to be spelt out clearly. It should also be noted that governments are usually reluctant to cede all power to regulators and often retain the right to intervene through policy directions. It would be useful if these policy directions were sufficiently broad but that depends on the predilection of the particular government.

1.9 The issue of jurisdiction is further complicated by the dynamic nature of telecommunications markets. It has been argued that the traditional competition policy derives its analysis and prescriptions from a static view of competition and is too preoccupied with price competition.⁶ However, documents of Federal Trade Commission, the Department of Justice and the Office of Fair Trading in the UK suggest that they are well aware of the importance of competition in a dynamic setting. One document⁷ notes that “the eruption of activity in the high technology sector, the burgeoning costs of research, and the intense competition along the dimensions of innovation have radically altered many firms’ basic approaches to designing, manufacturing, and distributing goods and services throughout the world.” Speeches⁸ by staff at the Department of Justice also underline the importance of innovation. Vickers (2001) talks about a case which illustrates the problem. The problem lay with Microsoft taking a stake in the UK cable operator Telewest. It was feared that Microsoft would come to dominate the set-top box software market through the acquisition. The OFT, however, declined to refer the merger for investigation saying that “[T]he possibility of foreclosure at some point in the future cannot be ruled out entirely. Indeed there are all sorts of possibilities in a dynamic and

⁶ Audretsch, Baumol and Burke (2001)

⁷ Competition Policy in the New High-Tech, Global Marketplace, A Report by FTC staff, May 1996.

⁸ Competition Policy and the Telecommunications Revolution. Address by Anne K. Bingham, Assistant Attorney General.

innovative market. However, given the facts at hand, the possibility that Microsoft's stake in Telewest will materially increase the risk that it will in future dominate the market for set-top box software in which it currently has no presence is speculative." As Vickers notes "The point is that competition policy sensibly applied has a key role in creating and maintaining conditions favourable to innovation and growth."

1.10 Recent developments in industrial organization have emphasized the multi-dimensional nature of competition. For example excessive advertising and product differentiation, pre-emptive patenting and excessive innovation may mark competition. All these strategies could be used to reduce the ability of rivals to compete successfully and some of the standard prescriptions to prevent anti-competitive behaviour can actually be detrimental to competition. The difficulty this concern expresses is compounded by the degree of dynamism that is inherent in telecommunication markets, a feature that it shares with information technology markets. Often the most important stage of the competitive process is in the race to bring to the market new products. Once a firm succeeds in this sphere no amount of tinkering with the market structure or pricing decisions, short of breaking up the firm, will provide any succour to the competing firms. They will have to devote their energies to producing rival products, which erode the market power of the successful firm. Thus both the regulator and the competition authority will have to keep abreast of new developments in industrial organization and market developments. It may be the case that developing new tools for analysis may be better served by the competition authority, while the regulator may be current in market developments. The need for close cooperation between regulator and competition authority is again emphasised by such a possibility.

1.11 The development of competition is marked by the interplay of a number of forces. Strategies of telecommunication companies with regard to pricing, entry, brand building, mergers and takeovers, innovations in marketing and new product launch have obvious effects on competition. However, the number and impact of institutions that affect the telecommunications sector is also vitally important. The obvious contenders for this role are the sectoral regulator, the parent ministry, the specialized appellate body and the competition authority. Often, though, the government as a whole and other ministry such as finance and environment also get into the picture. It is here that the advocacy role of the competition authority finds prominence. It appears that the government, currently, does not have a competition policy. Economic reforms are being carried out because the inefficiencies of the command and control regime have become unbearable. The introduction of market forces and competition is happening at different rates in different sectors according to the predilections of different ministers and the political situation on the ground. There is no common view on competition and the Competition Authority could try to articulate one. Finally, the legal system is of utmost importance, particularly in the early stages where the rules under which the market is to operate is still being worked out. Educating the judicial system in the ways of market economics is a challenge which the Competition Authority has made some inroads into.

1.12 One of the objectives of this study is to look at some international cases to suggest the kind of issues that the competition commission may have to deal with in telecommunications. Since the Competition Commission in India (CCI) is yet to adjudicate on a case and is in an advocacy mould it would be important for businesses who would be affected to appreciate the kind of cases that the commission could consider and how these could be decided. At this stage the only possible indicators are cases in

other countries and we will pick and choose a few, judiciously, to represent the gamut of experience with competition policy and law. We round this off with a few cases of alleged anti-competitive behaviour in India. The telecommunications sector in India has witnessed a spate of mergers and acquisitions, the latest being the acquisition of Hutch by Vodafone. Some of these mergers would have crossed the threshold limits, in terms of profits or turnover, for examination by the CCI. The TRAI's guidelines are, however, defined in terms of the number of competitors and market share leading to possible conflicting evaluations of mergers by the two authorities. This issue gains prominence since the telecom regulator has recently come out with a consultation paper seeking views on parameters for the evaluation of mergers and acquisitions.

1.13 To summarize, the challenges being faced by the competition authority in telecommunications are numerous. First is the standard bread and butter issue of enforcement of prohibitions against anti-competitive agreements, abuse of dominance and dealing with mergers and acquisitions. This is made complicated by the dynamic nature of the telecommunications industry. The authority would have to make some investment in personnel and training in telecommunications. The government and the regulator have in the past had to deal with the problems posed by technology, whereby boundaries between different segments tend to get blurred and result in turmoil and litigation. It is likely that such problems would plague the competition authority as well. It would also have to learn to live with the sectoral regulator who has been around for a while and not get into turf wars. How to get its views across forcefully in an unobjectionable manner would be a stern task. Finally, it has to educate the government and the legal fraternity in the ways of competition and market economics. It has to find a way to stop the minister of communications and information technology from meddling in the telecommunications industry through its government operator BSNL. The competition authority should have its hands full.

1.14 This paper reviews the state of competition and the need for corrective action in telecommunications in India. The paper is divided into four parts. This introduction forms part 1. This is followed up by a description of the background and institutional setting in part 2. We begin with a description of the international experience with competition and follow up with a discussion of anti-competitive behaviour in telecommunications. We go on to describe the legal and policy framework under which the telecommunications sector functions. Part 3 describes the evolution of competition in different segments of the telecommunications industry. The segments we look at include fixed telephony, mobile services,⁹ national long distance, international long distance and internet service provision.¹⁰ We provide some indications of the degree of competition in various

⁹ Fixed and mobile services may converge in the future. Some operators have already conducted trials in other countries. However, it has made no headway in India. The problem is partly regulatory in that the law does not allow the termination of PSTN and internet on the same machine. The other problem is the low penetration of broadband.

¹⁰ This particular segmentation is not without its problems. It merely reflects data which is available, not what is desirable. In particular, we could have included a segment called local calling. In fact fixed is actually local. There is no separate data available on local calling in mobile. Similarly when we discuss national long distance and international long distance we are again referring to calling through fixed phones. We have also included fixed mobile under fixed. The two services are virtually indistinguishable. CATV has been omitted since no operator provides voice communication through CATV. There is one significant operator, Hathway, which provides internet connection through CATV. Its market share is however insignificant. In the early 2000s there was some excitement about the possibility of providing internet connections through cable since CATV

segments as well as the industry as a whole. Finally, Part 4 provides some indications of issues that the competition authority may have to deal with and lessons that it can learn from international experience.

2 BACKGROUND AND INSTITUTIONAL FRAMEWORK

2.1 Developments in Telecommunications

2.1.1 The trend towards increasing competition in all segments of the telecommunications industry is unmistakable, even though the degree of competition varies. The amount of competition, measured as the percentage of countries allowing some form of competition, goes from a low of 38% in fixed services to a high of 86%¹¹ in the market for internet service providers. 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.

2.1.2 The experience in India mirrors to a certain extent the experience internationally. The advent of competition in telecommunications in India started with the declaration of the National Telecom Policy (1994). In that document, more a set of pious declarations rather than a policy paper, a suggestion was made that private sector participation should be allowed. This was not so much as to foster competition but to mobilize the resources of the private operators without which the targets set by policy regarding teledensity would remain just a dream. The policy envisaged a situation where the state owned DOT would remain the dominant operator and private operators would augment the DOT's efforts in increasing coverage. The introduction of competition began in earnest with the licensing of mobile operators and this heralded the flowering of competition, though with a few twists and turns, which are described later. The point though is that the BSNL, the new avatar of the DOT still remains the largest fixed line operator owning about 75% of the market by subscriber numbers and 69.6% by revenues.¹² There is vibrant competition in the mobile sector but even here BSNL has managed, after a late start, to become the second largest private operator. It remains the largest National Long Distance (NLD) operator and VSNL, the privatised International Long Distance (ILD) operator maintains its dominant position.

2.1.3 In terms of the institutional arrangements that have an impact on the sector, 112 countries possess a telecommunications regulator and a large number of countries also have competition laws. The competition laws have standard proscriptions against anti-competitive agreements, abuse by dominant firms and mergers and acquisitions. The reasons behind concentration of market power are easy to discern. The sector is

coverage is quite extensive and televisions were much cheaper than personal computers. Why, the market did not develop is a mystery.

¹¹ Competition Policy in Telecommunications, Background paper, 2002.

¹² Voice and Data, July 2007.

characterised by network externalities. 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.¹³ In India the same is true of the incumbent government operator, BSNL. The private operators mainly concentrate in urban and semi-urban areas. It is often not possible to avail of a fixed-line service run by private operators outside these areas. Given the lack of choice and high switch over costs it is not surprising that the incumbent has the largest network, at least in fixed-line services. It is also difficult to find mobile operators and even if available the quality of service leaves much to be desired. The private operators often indulge in cream-skimming. They concentrate in segments where margins are likely to be high and costs are low. Typically, that means corporate and high-end urban customers. Therefore competition is most likely to develop in these segments and rural and poorer customers are left at the mercy of the BSNL. In India, this is sometimes exploited by the BSNL to suggest that private businesses don't care about rural and poor customers and that BSNL is a more enlightened even if inefficient operator.

2.1.4 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. India has been extremely sensitive about the need to improve livelihoods in villages. In part this is due to the feeling that "India lives in its villages", which can be traced to writings by Gandhi. The need for a vibrant village economy has seen the allocation of a large amount of resources towards improving agricultural productivity and subsidizing the rural poor. The emphasis continues till date with the rural employment guarantee scheme. The urge to provide access to the telecommunications network is one part of effort towards rural development. The burden of providing access has been borne, earlier by the DOT, and now largely by BSNL. To relieve the burden on BSNL taxes have been imposed on private operators in the form of an Access Deficit Charge (ADC) to fund BSNL's subsidized operations. In addition subsidies are available to all players for providing connections in rural areas. These subsidies are available to all players and are auctioned according to lowest subsidy demanded to provide access in a particular area. Till date, BSNL has won most of these auctions. It could be argued that this tax and subsidy scheme is distortionary as most such schemes are. Unfortunately, without it a significant section of rural subscribers would be left without a connection. It has been argued that the present method of allocating licenses to entire circles prevents operators from providing services to smaller areas. The TRAI circulated a discussion paper on the concept of niche operators. This would amount to facilitating entry and would be in agreement with Noll and Wallsten's (2005) argument that "policies intended to bring telecommunication services to people who otherwise would not have access should focus on encouraging competition, which has proven worldwide to be the most effective mechanism for encouraging investment and reducing prices."

2.1.5 Some parts of the telecommunications sector is characterised 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

¹³ Competition Policy in Telecommunications, Background Paper, 2002. Telecommunications Regulation Handbook, Module 5, Competition Policy, The World Bank.

network management. Also, as a government operator it is sometime more trusted than private operators. In India, which is slowly transforming itself into a market economy, businesses and businessmen have often been viewed with suspicion. It is often assumed that businesses are simply out to exploit consumers and the public sector provides an alternative to their depredations. Of course, some consumers, tired of public sector inefficiency often welcome private operators. However, the brand name of the public sector incumbent, particularly if it remains in government hands, can still be powerful. 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.

2.1.6 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 fixed 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. Restricting incumbent operators can have a detrimental effect on the dynamism of the industry.

2.1.7 The dynamism inherent in the industry has made governments less inclined to rely on competition authorities for market development. Since competition authorities typically act ex post their actions may be too delayed to be effective. Sectoral 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.

2.2. Anti-competitive Behaviour in Telecommunications

2.2.1 Anti-competitive behaviour can be categorized into three, viz., (1) anti-competitive agreements, (2) abuse of dominance and (3) mergers and acquisitions. These categories are not watertight but are useful in analysing different situations that may occur.

Box 2.2.1. The Indian Competition Act 2002

Anti-competitive agreements

No enterprise or association of enterprises or person or association of persons shall enter into any agreement in respect of production, supply, distribution, storage, acquisition or control of goods or provision of services, which causes or is likely to cause an appreciable adverse effect on competition within India.

Any agreement entered into between enterprises or associations of enterprises or persons or associations of persons or between any person and enterprise or practice carried on, or decision taken by, any association of enterprises or association of persons, including cartels, engaged in identical or similar trade of goods or provision of services, which—

- (a) directly or indirectly determines purchase or sale prices;
- (b) limits or controls production, supply, markets, technical development, investment or provision of services;
- (c) shares the market or source of production or provision of services by way of allocation of geographical area of market, or type of goods or services, or number of customers in the market or any other similar way;
- (d) directly or indirectly results in bid rigging or collusive bidding, shall be presumed to have an appreciable adverse effect on competition.

Abuse of dominance

No enterprise shall abuse its dominant position. There shall be an abuse of dominant position if an enterprise

- (a) directly or indirectly, imposes unfair or discriminatory condition in purchase or sale of goods or service; or price in purchase or sale (including predatory price) of goods or service,
- (b) limits or restricts production of goods or provision of services or market therefore; or technical or scientific development relating to goods or services to the prejudice of consumers; or
- (c) indulges in practice or practices resulting in denial of market access; or
- (d) makes conclusion of contracts subject to acceptance by other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts; or
- (e) uses its dominant position in one relevant market to enter into, or protect, other relevant market.

Regulation of combinations

No person or enterprise shall enter into a combination which causes or is likely to cause an appreciable adverse effect on competition within the relevant market in India and such a combination shall be void.

The thresholds for which a merger or acquisition will come under scrutiny are that the combined assets of the enterprises are worth Rs. 1000 crores or the entities have a turnover of Rs. 3000 crores in India, or combined assets of 500 million USD or turnover of 1500 million USD outside India. The thresholds for different situations are provided in the appendix.

Source: Competition Act 2002

- 2.2.2 Competition authorities the world over have been concerned with anti-competitive agreements. Nothing stirs up public indignation as much as the existence of cartels. The idea of competitors entering into an agreement to divide up the market in some

way to the detriment of customers raises the hackles of public authorities. In India there are currently rumours of a cartel operating in the cement industry and there are stories of collusion in bidding for projects, particularly in rural areas. This public distaste with collusion raises a peculiar problem in telecommunications. If there are multiple operators in the telecommunications market then there must be some amount of cooperation, otherwise there would be disarray. An essential agreement is that on interconnection. Different operators must allow calls to be terminated on their competitor's networks. A BSNL customer must be allowed to call a friend who owns an Airtel phone. The question though is at what price this exchange should occur. How much should BSNL have to pay Airtel for the privilege of allowing its customer to call an Airtel number? Unfortunately, there are no easy answers. The present practice is to allow the parties to arrive at an agreement by themselves.¹⁴ It could be beneficial to both parties to agree to a high interconnection charge to preserve their own markets. That way calls made on an operators own network would be cheaper than calls made to another network, leading to a less elastic demand on the own network. The operator could then extract higher prices from its customers. Of late there have been calls for mobile operators to share their infrastructure especially their towers. The reasons behind this demand are due to cost as well as aesthetic considerations. The idea has its obvious merits but it could assist collusion as well. The problem is that the sector cannot exist without some agreements but the seeds of collusion might also be planted along with those agreements. There is an inherent tension between competition and cooperation in telecommunications.

- 2.2.3 Anti-competitive agreements can be categorized into two types, horizontal and vertical. Horizontal agreements take place between competitors and are likely to be detrimental to competition. Vertical agreements occur between upstream and downstream players. Thus a phone company might enter into agreements about the sale of customer premises equipment or handsets. These are a priori less likely to harm competition. Horizontal agreements include some form of price fixation and collusion in the form of bid rigging. Market allocation, whether geographic or product wise, is another form of an anti-competitive agreement that can be horizontal as well as vertical.
- 2.2.4 As we noted earlier some amount of agreement is necessary for the telecommunication market to function. The sectoral regulator is probably the best equipped to decide which agreements are beneficial and which harmful. The competition authority should not decide whether the interconnection agreements are anti-competitive unless the regulator has failed to do his job. On the other hand price fixing and bid rigging are standard fare for competition authorities. Thus some cooperation is required to decide which issues are best left to competition authorities and which to regulators.
- 2.2.5 In a large number of countries telecommunication services have been the preserve of state owned operators before the advent of liberalization.¹⁵ Even after the introduction of competition these operators, privatized or otherwise, continue to be the single largest operator, with a reach and scale of operations that new private operators

¹⁴ There are problems with this approach since the bargaining powers of the two parties can be vastly different, particularly, when one is the incumbent state owned operator.

¹⁵ For a detailed description of incumbency benefits consult Telecommunications Regulation Handbook, Module 5, Competition Policy.

cannot even dream of emulating. Typically, all new entrants have to rely on the incumbent operator to terminate their calls since the incumbent operator owns the bulk of connections. Incumbent operators are often accused of using their “dominance” to harm the profitability of competitors. To be fair to state owned operators some of the obstacles that they produce for private operators are due to organizational problems. The introduction of competition requires a sea change in attitudes in dealing with consumers, competitors and regulatory bodies. Quite often the management is not used to dealing within this environment and often view private entrants with a mixture of contempt and jealousy. Abuse of dominance, however, is likely to be the prime source of anti-competitive behaviour in telecommunications.

- 2.2.6 To discern dominance it is necessary to be able to define it. A standard method of doing so is by reference to market power. A fairly simple and straightforward method of establishing dominance is through the calculation of market shares. There are issues such as the proper metric to be used: should it be the number of customers, total usage or perhaps revenue. One also cannot compute market shares of all firms within an industry and declare the largest to be dominant. The market shares of other firms in the industry are crucial to reach any conclusion about the presence of dominance. Indeed, standard measures of the degree of competition such as the four-firm concentration ratio or the Hirschman-Herfindahl index take into consideration the market shares of more than one firm. Other factors that suggest market power are barriers to entry, strategic behaviour including pricing, profitability and vertical integration. It is easy to conclude that if new firms find it difficult to enter a market then it bestows some power to incumbents. Similarly, if a particular firm is acknowledged as a market leader, for example in pricing, then it usually enjoys some market power. Excessive profits also indicate market power, as does vertical integration to the extent it is possible for dominance in either upstream or downstream products to be extended to the market in question.
- 2.2.7 The dominance of incumbent operators usually operates through the control of essential facilities. As noted earlier incumbent telecommunications operators often have a long history of development under government control. This allows it to build large and extensive networks that a new entrant needs access to in order to be commercially successful. It is also virtually impossible for new entrants to duplicate this whole network. Also incumbent operators are usually present in all sectors of telecommunications markets while, in the beginning, competition and new entrants may be allowed into certain specific areas. In India, domestic and international long distance was deliberately kept out of reach of private operators at the start of liberalization. Finally these essential facilities are provided by a monopolist, be it a state owned one. The regulation of access to essential facilities at a fair price can determine to a great extent the success or failure of liberalization programmes.
- 2.2.8 The advantages of incumbent operators extend beyond control of essential facilities. As we have noted, incumbent operators have had the advantage of developing their networks for years under government control and are present in virtually all segments of the telecommunications industry. Consequently, they enjoy economies of scale and scope. Incumbents are also vertically integrated. They often produce their own customer premises equipment and operate local, long-distance and international calling and provide internet access. This allows them to better plan and deploy resources. Their predominance allows them to set network standards to which their

competitors have to adapt. Often, their presence in both competitive and non-competitive segments allows them to cross-subsidize their more competitive segments with the profits from non-competitive ones. Finally, the presence of switching costs leading to customer inertia is a formidable hurdle for new entrants. Existing customers of the incumbent are often extremely reluctant to switch to new operators if it means changing phone numbers and paying up-front fees. These advantages of the incumbent state operator are a major factor behind their dominance.

- 2.2.9 Abuse of dominance can take many forms. The most common are (i) denying, delaying or restricting access to essential facilities; (ii) price discrimination or margin squeezing; (iii) predatory pricing and/or cross-subsidization and (iv) tied-selling or bundling. The first is an obvious example of abuse of dominance. Price discrimination may not qualify as abuse per se. However, telecom operators sometimes charge higher amounts to rivals than they do to their own affiliates downstream. The question is whether such prices are warranted by the structure of demand for these two markets or is it simply being done to discomfit the rival. Often services are sold to rivals at a price that leaves them such thin margins so as to render their services unprofitable. Predatory pricing refers to a situation where an incumbent deliberately lowers its price below its profit-maximising price to prevent the entry of a rival or to induce exit. Tied-selling and bundling refers to the practice of tying the sale of one product with another. In telecommunications examples would be the sale of handsets with mobile connections or the sale of land-line connections with broadband access.
- 2.2.10 Finally, mergers and acquisitions can have anti-competitive implications through their effect on increasing market concentration. The harmful effects of mergers and acquisitions have to be contrasted with the benefits that accrue from the merger. In telecommunications the added concern is the dynamic nature of the market. Older and more established firms may try to buy out new firms that have access to disruptive technologies and that may pose a threat to them.
- 2.2.11 There are a couple of other issues of concern in analysing anti-competitive behaviour. The first is the concept of the relevant market. To appreciate the effect of some presumably anticompetitive practice one needs to draw a boundary within which to seek answers. The market for telecommunications is too broad a construct. It contains within it sub-markets defined by products as well as geographical boundaries. The method through which a relevant market is defined is to ask whether a hypothetical monopolist would be able to maintain a small but significant non-transitory increase in price. If such an increase would lead to customers switching to other suppliers and products these should also be included in the relevant market.
- 2.2.12 Another concept that has become important is that of significant market power (SMP). This is a concept used by the European Commission to flag possible dominance and has also been adopted by some non-EU countries to subject dominant operators with more onerous regulation. According to the EU “an organization shall be presumed to have significant market power when it has a share of more than 25% of a particular telecommunications market.”¹⁶ The EU directives allow additional obligations for access to the network to be imposed on organizations with SMP. In India it is conceivable that such restrictions could be imposed on BSNL. The

¹⁶ Interconnection Directive (97/33/EC).

Competition Commission could ask BSNL to provide unrestricted access to its network and provide interconnection at the points of presence demanded by private operators. BSNL has often said that this is technically not feasible, which is a claim that ought to be investigated. Further, there have been demands that BSNL open up access to local fixed-line connections. In a rather argument BSNL has said that it should not do so since its network has been built with public money and therefore should not be used by private operators. This is precisely the reason why it *should be* opened to private operators.

2.3. Developments in India

2.3.1 In this section we will begin by providing a short review of the history of developments in Telecommunications in India. We will then go on to the different segments such as Mobile Services and Fixed Services. This was done to provide different views to a fairly large and complex subject. If one looks at one particular segment too closely it is possible to miss the bigger picture. Also issues such as competition, government policy and regulation can be looked at separately as well as through the effects they have had on specific sectors.

2.3.2 The Indian experience with liberalization in telecommunications started with the National Telecommunications Policy of 1994. This was the first policy document that talked about allowing private operators. However, as mentioned earlier, the idea was that the state owned Department of Telecommunications (DOT) would remain the dominant player and private operators would augment its efforts. It was also clear from the document that the reason behind this was the lack of finances with the government and not an attempt to introduce competition.

2.3.3 The government was interested in private operators helping out in the fixed services segment, particularly in local calling. If private operators were to enter the fixed-line local calling business they would have to compete with the state owned DOT. So a telecom regulator was required to oversee competition. Thus was born the Telecom Regulatory Authority of India (TRAI) by the TRAI Act, 1997. It was clear from the beginning that the regulator was going to have minimal powers and even these were soon to be contested. In the beginning the DOT proposed that the regulator be a part of the DOT. This was resisted but the only real powers that the TRAI was given were to regulate prices. Even this was contested when the TRAI came out with its first tariff order raising rentals and prices of local calls and reducing prices of long distance and international calls. The DOT, using a clause in the TRAI Act that allowed the government to overwrite the orders of the TRAI in policy matters, claimed that telecom prices were a matter of policy and thus could not be determined by the TRAI. Thus from the beginning the TRAI faced a hostile DOT.

2.3.4 In the meanwhile the government had licensed mobile telephony operators in twenty circles and the four metros. The government allowed a maximum of two operators in each circle and these bid for the license to provide services. Soon it became clear that these firms had been too optimistic in their business projections and that they were in position to pay their license fees. It also became apparent that there was no progress in the fixed services segment. Faced with the prospect of the failure of their policies the government came out with a New Telecom Policy in 1999. This was a much better document in that it clarified the powers and roles of the TRAI. It however took away

the power of adjudicating disputes and vested it with the Telecom Dispute Settlement Appellate Tribunal (TDSAT) in the TRAI (amendment) Act 2000. Licensing powers still remained with the DOT. In a bold step the DOT was split up into a telecom operator Bharat Sanchar Nigam Limited (BSNL) and converted to a corporation. The long distance operator Videsh Sanchar Nigam Limited (VSNL) was sold to the Tatas, a well-known corporate house, which was one of the telecom operators.

- 2.3.5 In the policy arena the government proposed a Communications Convergence Bill (2000), which sought to have one regulator for the whole communications sector. This bill has not been passed because of the concern over regulation of both carriage and content. It is felt by some that the TRAI should not be in charge of regulating the content of say TV programmes and web sites. It is hoped that the disputes over the nature of the convergence bill will be resolved soon. The government has also come out with the Competition Act (2001) to replace the old Monopolies and Mergers Act. At present the Competition Commission of India (CCI) is in an advocacy role. In the latest move by the government it has set up a Competition Appellate Tribunal (CAT) to which people can appeal any decision by the Commission. The jurisdictions of the TRAI and Commission have not been made clear. Thus a telecom operator could find that he has to deal with the DOT for licensing and find that its destiny depends on the TRAI, TDSAT, CCI and the CAT, a potentially explosive situation. Recently Vodafone has acquired Hutch, one of the largest mobile operators. Reliance, another major operator was also in the fray and if it had succeeded it would have become the largest mobile operator. If Reliance had acquired Hutch, TRAI and the Competition Commission could have reached different conclusions about the acquisition. The decisions could have been appealed separately to TDSAT and CAT, which again could rule differently with the Supreme Court having to sort out the mess.
- 2.3.6 We have already recounted the birth of private participation with the licensing of mobile telephony operators. Initially these operators found their business in doldrums with most of them making losses. It looked very likely that they would renege on their license fees and the government would cancel their licenses. Faced with this problem the government suggested a move towards revenue sharing as a means to paying license fees in NTP 99. This provided much needed relief to the segment, which thereafter has seen phenomenal growth in terms of number of connections and lower prices. However, the average revenue per user (ARPU) has been continuously declining and some industry experts state that the sector lost a total of Rs. 7,000 crores from an investment of Rs. 25,000 crores by 2002.¹⁷ The earnings have improved of late and operating profits are quite healthy.¹⁸
- 2.3.7 We have noted that the government divided the country into 20 circles besides the four metros and licensed two operators per circle. Even though not all circles had two operators and some operators obtained licenses for more than one circle there were still too many firms in the fray for all of them to be profitable. Over time there has been consolidation within the segment. This should have been a matter for the competition authority, which unfortunately did not exist at the time. The norms for mergers and acquisitions were decided by the DOT with inputs from the TRAI.

¹⁷ COAI

¹⁸ TRAI consultation paper, No. 7/2007

- 2.3.8 The wireless in local loop (WLL) imbroglio indicated the problems associated with a technology driven industry like telecommunications. The problem started with the government allowing use of the WLL technology to provide fixed-line access. The same technology could be used to provide a service virtually indistinguishable from mobile telephony. These allowed operators like Reliance and the Tatas to provide mobile services at much lower prices since the license fee for WLL service was lower. The mobile operators were up in arms and finally the DOT allowed unified licenses, which did away with artificial boundaries such as fixed-line and mobile.
- 2.3.9 The other major events were the corporatization of DOT into BSNL and the sale of VSNL to the Tatas which we have already discussed. BSNL is the largest unified operator having become the largest mobile operator recently. It operates in every segment except international long distance. Bharati is the largest private operator, which is also active across all segments but is the second largest mobile operator. Reliance and the Tatas are strong competitors, with the first having a reputation for being a fierce competitor and the second being a venerable business house. Hutchison is a strong competitor in the mobile phone business. It is rumoured that BPL mobile, another large mobile operator, is up for sale. Thus the telecom sector should see some more consolidation the future. At present all the players seem to competing for market size and quality of service is falling by the way side. The TRAI has tried to mend this without much success.
- 2.3.10 In terms of regulatory decisions that have impacted the market we have already mentioned the tariff rebalancing exercise carried out by the TRAI. The TRAI has been active in setting up interconnection rules and prices. It has urged operators to publish Reference Interconnect Offer and it has had the most trouble with getting the BSNL to do so. BSNL is also compensated for providing access to poorer and rural households at low rates through an Access Deficit Charge that has been levied on all operators. The TRAI has lowered this amount over time accompanied by protests from BSNL. Some have questioned the need for the ADC given the existence of a universal service charge, which is also levied on consumers. The TRAI has asked the BSNL to maintain separate books of accounts without much success. It has also tried to let consumers choose their long distance operators. However, this requires other long distance operators to establish points of presence (POP) so that consumers can avail of their services, which they are slow to do. One gets the impression that most operators including the BSNL are concentrating on the mobile telephony segment for their revenues.

Table 2.3.1. Ranking and Revenues of Top 5 operators in different segments 2006-07

Service Providers		Cellular Services		Fixed Services	
Company	Revenue (cr)	Company	Revenue (cr)	Company	Revenue (cr)
BSNL	40,135	Bharati	13,431	BSNL	21,020
Bharati	17,888	Reliance	10,728	MTNL	4,116
Reliance	14,468	Hutch	10,565	Bharati	1,693
Hutch	10,565	BSNL	9,400	Tata	1,584
VSNL	8,857	Idea	4,335	Tata (Mah)	924
NLD Services		ILD Services		Internet Services	
Company	Revenue (cr)	Company	Revenue (cr)	Company	Subs (lakhs)
BSNL	4,665	VSNL	7,648	BSNL	40.9
Bharati	1,035	Reliance	2,110	MTNL	17.8
Reliance	635	Bharati	1,240	Sify	8.2

VSNL	505	AT&T	176	Bharati	6.8
RailTel	116	C&W	88	Reliance	6.6

Source: Voice and Data, July 2007

2.3.11 A glance at Table 2.3.1 will show that BSNL still remains the largest telecom operator in the country. It has more than twice the revenue of its closest competitor Bharati. In every segment it is among the top five operators, except in international long distance. Also, one operator, who earns the highest revenue, dominates every segment. The only exception is cellular mobile where all the operators make similar revenues. What this table hides is the fact that the numbers of fixed subscribers of BSNL and MTNL have been declining. BSNL and MTNL might be dominant in the fixed access market but it is a market that has weak prospects for further growth. Awake to this threat BSNL has managed to build a large mobile subscriber base particularly in smaller cities and rural areas by leveraging on its huge fixed access network. It is also using its fixed access network to become the predominant player in internet service provision.

Table 2.3.2. Revenues and Growth, Different Segments 2006-07

Service Category	Revenue		Growth (%)
	2006-07	2005-06	
Fixed Access	34,161	30,190	-11.6
Cellular	35,994	56,183	56.1
NLD	9,015	7,186	-20.3
ILD	7,251	11,506	58.7
Internet Access	1,620	2,040	26
Total			

Source: Voice and Data, July 2007

2.3.12 Table 2.3.2 shows the state of different segments in the telecommunications market. The first thing to notice is that cellular revenues have reached nearly double the size of fixed access revenues from that of near equality the year before. At the same time cellular is growing at 56% while the market for fixed access is actually going down. However, it is likely that the cellular market will remain strongly contested over while BSNL will reign supreme in the fixed access market.

Table 2.3.3. Top 10 Companies, 2006-07

Rank	Vendor	Revenue (Rs. cr)	Category
1	BSNL	40,135	Fixed, Cellular, ISP, NLD
2	Bharati Airtel	17,888	Fixed, Cellular, ISP, NLD, ILD
3	Reliance	14,468	Fixed, Cellular, ISP, NLD, ILD
4	Hutchison	10,565	Cellular
5	VSNL	8,857	NLD, ILD, ISP
6	TTSL	5,178	Fixed, Cellular
7	MTNL	4,923	Fixed, Cellular, NLD, ILD
8	Idea	4,413	Cellular, NLD
9	Aircell	1,507	Cellular, NLD, ILD
10	TTML	1,422	Fixed, Cellular

Source: Voice and Data, July 2007

2.3.13 Table 4.3 shows the top-10 telecom operators by revenues. Predictably BSNL is at the top. What is interesting is that the major operators BSNL, Bharati, Reliance and Tata are integrated telecom operators being present in all segments. Note that VSNL is owned by the Tatas. MTNL and Hutch will be the odd ones. The government wants to merge MTNL with BSNL, which is a strong anti-competitive move. If the merger comes through Hutch will be the only pure mobile operator.¹⁹

2.4. Regulation and competition

2.4.1 The TRAI was set up in 1997 to regulate the telecommunications industry. India woke up to the need for private participation in telecommunication in 1994, with its National Telecommunications Policy (NTP 94). At first the private operators were only supposed to supplement the efforts of the DOT and the emphasis was to get them to enter the basic fixed-line segment. NTP 94 made no mention of a regulator. Within three years, however, the regulator had been set up, but with limited powers. Its principle duty was that of tariff regulation and it had no licensing powers. Its other duties included looking after interconnection and settling disputes.

2.4.2 Within the limited powers of the TRAI it has tried to be pro-competitive. Its major achievement was the tariff rebalancing exercise that it carried out soon after it was constituted. In most countries the price of local calls is kept artificially low while the cost of long distance calls are kept high to subsidize the price of local calls. If there was private entry into the local calls market the entrants would not be able to compete with these low prices as they did not have access to long distance markets. Thus prices and rentals of local calls would have to be increased and prices of NLD and ILD calls would have to be decreased. This the TRAI did in the face of opposition of the DOT. However, desirable though this move was, it did not trigger entry into the market for fixed services due to the predominant position of the DOT and the unattractiveness of the market.

2.4.3 The TRAI in its early years used price caps for individual services as its instrument of control. Using the RPI – X method might have been more suitable for the flexibility it provides to operators. At any rate with the market becoming more competitive the TRAI has withdrawn from regulating a large number of tariffs and lets these be determined by the operators themselves. It has been able to get BSNL and MTNL to sign interconnection agreements with private operators, but not without a fight. It has also reduced the Access Deficit Charges (ADC) that private operators pay BSNL for operating in remote areas and for providing connections to poorer sections of the society.

2.4.4 A principle grouse with the TRAI would be that it does not seem to be using competition law principles in its decisions. Earlier its main thrust was to try and calculate costs of different services and force prices to converge to this cost since with competition prices should equal marginal costs. Thus it tends to concentrate on producing desirable outcomes and not bother too much on helping the competitive process. Of course it does not have any licensing powers and so can do little to affect entry and exit. It would never the less be useful to adopt a strong competition principle in its consultation papers and orders.

¹⁹ Hutch has got NLD and ILD licenses but is yet to start operations.

2.4.5 The TRAI's powers were both strengthened and weakened by the government through the New Telecom Policy (1999) and the TRAI (amendment) Act 2000. It now had a greater say in licensing even though it was not mandatory for the government to heed its advice. On the other hand its dispute resolution powers were removed and vested in a separate telecom dispute settlement body, the Telecom Dispute Settlement Appellate Tribunal (TDSAT). The government also mooted the idea of a communications convergence act, which would concentrate all communication related activities within one regulatory body. This bill has not been passed till date. Instead, the TRAI was given powers to regulate cable TV and broadcasting. As table 2.4.1 shows cable TV and broadcasting has been exercising the regulator's mind for the past two years.

2.4.6 Competition and tariff issues are also prominent in the list in table 2.4.1. However, it is not clear that the TRAI has a well defined view on competition. Certainly, there is no consultation paper on competition in telecommunications indicating how it will determine the level of competition in telecommunications. It seems to rely on market shares and price levels to assess competition and not on sophisticated analysis that the commission could produce.

Table 2.4.1. List of consultation papers issued by TRAI in 2006, 2007

Date	Title	Date	
2.1.06	Issues Relating to Convergence and Competition in Broadcasting and Telecommunications	3.1.07	Redressal of Consumer Grievances and Consumer Protection in Telecommunication
12.1.06	Issues Pertaining to Next Generation Networks	22.1.07	Revenue Sharing Formula for Service Providers in CAS notified areas
13.1.06	Differential Tariffs for On-network calls	31.1.07	Access Deficit Charge (ADC)
16.1.06	Tariff Plans with Lifetime Validity	2.3.07	Issues Relating to DTH
21.3.06	Issues related to broadcasting and cable services	13.4.07	Access to Essential Facilities (Including Landing Facilities for Submarine Cables) at Cable Landing Stations.
21.4.06	Issues Related to Commercial Tariff for Broadcasting and Cable	21.6.07	Tariff for Cable Television Services in Non-CAS areas
11.5.06	Interconnection Issues Related to broadcasting and cable	12.6.07	Review of license terms and conditions and capping of number of access providers
24.5.06	Fixing Benchmarks for quality of service for broadband	24.6.07	Headend-In-the-Sky (HITS)
5.6.06	Licensing Issues related to DTH	6.9.07	Provisioning of IPTV Services
12.6.06	Allocation and Pricing of spectrum for 3G services	18.9.07	Issues relating to Mobile Television Service.
13.6.06	Interconnect Usage Charges for SMS		
14.6.06	Tariff Order for CAS Areas		
16.6.06	Admissibility of Revenue Share between Visiting Network and		

	Terminating Network for Roaming calls		
1.11.06	Improvement in the Effectiveness of National Internet Exchange of India (NIXI)		
17.11.06	Measures to Enhance Competition in Domestic Leased Circuits (DLC) market in India.		
20.11.06	Unsolicited Commercial Communication		
24.11.06	Review of Ceiling Tariffs for Roaming Services		
29.11.06	Infrastructure Sharing		
22.12.06	Resale in International Private Leased Circuits (IPLC) segment		
27.12.06	Review of Internet Services.		

Source: TRAI website, www.traai.gov.in, December 2007

2.5. Competition and the Courts

2.5.1 As shown in table 2.5.1 below a large number of disputes have ended up before the courts.²⁰ Dispute settlement has been an issue with the entry of private operators and was one of the reasons for setting up the regulator. An unforeseen problem was the emergence of disputes between the DOT and the regulator. The government tried to speed up the dispute resolution process through the appointment of the TDSAT. However, the TDSAT has in the recent past taken a long time to reach decisions. Decisions of the TDSAT have also been appealed to the courts.

2.5.2 The concept of an independent regulator has also not been clarified in the legislation and new legislation has also not been passed to reflect new realities. At one point of time MTNL decided to enter the cellular mobile service with CDMA technology. At that time the duopoly policy of the government was in place. The private operators objected and TRAI supported them and forbade MTNL's entry. MTNL's response was that since it was using CDMA technology and not the then prevalent GSM, its offer constituted a new service. TRAI did not have any licensing powers and so MTNL argued was powerless to prevent entry. When TRAI was not moved by this argument it went to the high court. The court could not reconcile the idea of role of the executive with that of a semi independent body. It remarked that "it is unimaginable that the power to grant license rests with the government but would be subject to the discretion of another authority" and that it would make the DOT's powers under the Indian Telegraph Act 1885 "redundant". Thus the Delhi High Court excluded any role in licensing for TRAI. The DOT then allowed MTNL to provide the service which only led to further litigation.²¹

²⁰ Most of these cases were withdrawn because policy changes made them redundant or because withdrawal of cases was a precondition for new concessions being made. The MRTPC has recently become active in pursuing telecommunications firms. In the past it felt no need for action since telecommunications was owned by the government. The principle behind setting up of the MRTPC was very different from that of the competition commission.

²¹ For a detailed account consult Desai (2006)

2.5.3 For the development of the sector speedy dispute resolution is of utmost importance. The prospect of getting investment and entry plans mired in courts increases the risk associated with projects and raises the cost of capital. Alternative dispute resolution could be a way of reducing the delays associated with disputes. In some countries legal wrangles have proved to have a strong anti-competitive effect as incumbent operators have delayed entry and onerous regulation through court cases. It would also be useful for the judiciary to adopt economic principles to reach decisions. Perhaps, this is an area the competition commission could devote some energy.

Table 2.5.1. Litigation involving DOT, TRAI and TDSAT

Issue	Date	Court	Plaintiff	Defendant
Maintenance of lines	1998 July	TRAI	Indian Railways	DOT
Cashing of bank guarantees	1997 March	TRAI	6 cell operators	DOT
Charges	2000 Jan	Delhi HC	COAI	TRAI
CPP	2000 Jan	Delhi HC	MTNL + DTS	TRAI
Entry Fees	2003 Nov	Supreme Court	ABTO	TDSAT
Entry into cellular	1998 Feb	TRAI	COAI	MTNL
Entry into cellular	1998 Jul	Delhi HC	DOT/MTNL	TRAI
Entry into cellular	1998 Aug	Delhi HC	MTNL	TRAI
Entry into cellular	1999 Sep	TRAI	COAI	MTNL
Excess Interest Charged	2003 Apr	TDSAT	4 cell operators	DOT
Excess Interest Charged	2003 May	Supreme Court	4 cell operators	DOT
Interconnection	2003 Jan	TDSAT	COAI	TRAI
Reference to TRAI	1997 March	Delhi HC	COAI	DOT
TRAI order quashed	1997 Apr	TRAI	COAI	DOT
TRAI and licensing	1999 Oct	Delhi HC	COAI	MTNL
Unified Licensing	2003 Oct	Supreme Court	COAI	TRAI
WLL	1998 Mar	TRAI	COAI	MTNL
WLL	1999 Oct	Delhi HC	MTNL	TRAI
WLL	2001 Aug	Madras HC	BPL	DOT
WLL	2001 Aug	TDSAT	COAI	DOT
WLL	2003 Oct	Supreme Court	COAI	TDSAT

Source: Desai (2006)

2.6. Policy and Competition

- 2.6.1 The extent of competition that can be achieved is dependant 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. In this section and the following two sections we will discuss the effect of the institutional setting on competition. The way these interact is quite complex and we have included table 13.1 at the end of section to allow the reader to gain some insight into the various forces at play.
- 2.6.2 In this section we shall discuss the effect of government policies on competition. 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.
- 2.6.3 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"²² 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.
- 2.6.4 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 fixed 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.

²² NTP(1994)

- 2.6.5 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, “the 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.
- 2.6.6 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 privatised 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.
- 2.6.7 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 face harassment from the Ministry of Environment. The finance ministry reduces the duty on handsets which boosts the fortunes of mobile operators. At other times the same ministry determines that all those who own mobile phones would have to file income tax returns, a move that reduces 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.
- 2.6.8 The other players in the policy environment have been the DOT, the Communications ministry and the prime minister’s office (PMO). The negative attitudes of the DOT regarding competition have been well documented. Due to its strong links with BSNL/MTNL and its large presence in the TRAI it has had a poor opinion of private telecommunications operators. 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.
- 2.6.9 The previous minister, Mr. Dayanadhi 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 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.

Table 2.6.1 Market and Policy Developments in Telecommunications

Year	Market Developments					Policy Developments				
	Mobile	Fixed	NLD	ILD	ISP	DOT	TRAI	TDSAT	Courts	Government
1994					VSNL					New Telecom Policy
1995-96	Operators licensed	Tenders for private operators			VSNL					
1996-97	376000 subscribers, defaults on license fees	3 rd round of bidding, some circles still vacant			VSNL					TRAI set up, lower import duties for equipment
1997-98	8.82 lakh subscribers, Rs. 400 Crore loss	Six operators sign licenses			VSNL					
1998-99	11.95 lakh subscribers, Rs. 5000 Crores loss	Bharati expands service in MP			Entry of Private operators	Rs. 500 per month per customer levy for mobile	First tariff order, rebalancing			

Year	Market Developments					Policy Developments				
	Mobile	Fixed	NLD	ILD	ISP	DOT	TRAI	TDSAT	Courts	Government
1999-00	1,884,311, 3 operators licenses cancelled, mergers					Contest CPP, WLL controversy	Standard airtime rates for mobile			NTP 99, revenue sharing regime, 2 more operators per circle
2000-01	3.57 million	BSNL/MTNL 99.99% market share			2.8 million, 150 operators					Limited mobility in CDMA, corporatization of BSNL
2001-02	7 million, FDI Rs. 3014 million, BSNL/MTNL refuse to sign interconnection	17.48% growth			Broadband started		Roaming at Rs. 3 per min, rental capped at Rs. 100	Dismissed WLL limited mobility		Abolish 16% duty on handsets
2002-03	12.69 million, entry of BSNL, second position, Reliance CDMA entry	BSNL/MTNL 95% market share, Private operators use WLL	Entry of private operators, Bharati, Reliance, VSNL. Tariff cuts, BSNL loses 2000 Cr	Bharati, Data Access start operations, large gray market			Implement Tariff order, IUC regime, CPP, uniform termination charges			Service tax raised to 8%, Sale of VSNL to Tatas

Year	Market Developments					Policy Developments				
	Mobile	Fixed	NLD	ILD	ISP	DOT	TRAI	TDSAT	Courts	Government
2003-04	33 million, Reliance 6.9 million, overtakes Bharati	BSNL/MTNL lose subscribers, private operators gain	Revenues decline by Rs. 1000 Cr. Entry of Railtel, Gailtel, PGCIL	Revenues decline by 14%, VSNL market share at 63%						Unified License
2004-05	52.35 million, mobile overtakes landline	Private operators add 2.7 million lines, BSNL/MTNL lose 1 million each, bundle broadband	Revenues grow 22%, BSNL market share 80.5%	Lower revenues, VSNL share lower, exit of Data Access			Reduced ADC on long distance and international calls			Broadcast Policy, Amended license conditions for VSAT operators
2005-06	90.8 million, Tata Teleservices grows at 345%	BSNL loses 3.6 million customers, launch One India Plan, 44% revenue increase, market share 75.3%					Equal access to cable landing stations, ADC replaced with revenue sharing			FDI limit hiked to 74%, Entry fee reduced to 2.5 Cr from 100 Cr, ILD license fee reduced to 6% from 15%

2006-07							Reduced ADC further, reduced roaming rentals to zero, port charges reduced			Customs duties reduced to 15% on telecom capital goods, reduced duties on cell phones to 5% from 10%
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3. SEGMENTS AND COMPETITION

3.1. Mobile Services

- 3.1.1 In this section we describe the developments in the cellular mobile segment over the years. The main developments every year over the ten-year period 1995-2006 is described in appendix 5.1. At one level this might constitute an embarrassment of riches but we have provided such detail since it captures the interplay between regulation, government policy and market development. It is seldom that one has the opportunity to catalogue the growth and development of a market since its inception. For the general reader who only has a passing interest in the market we provide the main developments below.
- 3.1.2 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 presumably 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. The first year saw a total of 63,633 customers. In a span of 12 years the number of customers would reach 90.8 million in 2006. The number of customers per year is shown in table 3.1.1.

Table 3.1.1 Subscribers per year

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Number	0.06	0.38	0.88	1.20	2.46	3.57	7.00	12.7	33	52.4	90.8

- 3.1.3 In the beginning, as might be expected, adoption started in Mumbai and Delhi. Mumbai is the financial capital and Delhi is the seat of government and an important commercial centre. Bharati, in Delhi and BPL, in Mumbai were the leaders. The early leadership exhibited by Bharati has been maintained but BPL has fallen by the way side. After early growth in the metros, mobile phones started penetrating non-metros in 1998. By 2002 Bharati retained its first position, followed by Hutch, BPL, Idea, Escotel, Spice and Reliance. The next two years saw the entry of BSNL and the scaling up of operations by Reliance. First BSNL grabbed the second spot in 2003 and then Reliance, temporarily, took the first spot in 2004. The largest percentage increase in the number of subscribers occurred during this period. In the mean while Tata Teleservices has been growing fast, clocking a 107% growth rate in 2005. Thus the structure of the telecommunications market now looks set to be the big four, Bharati, Reliance, BSNL and Tata, plus Hutch, which is a purely mobile operator. Idea is still in the fray, though the fate of smaller operators such as Spice is doubtful.
- 3.1.4 The growth in numbers has been accompanied by a steady reduction in prices. In 1997 the Average Revenue per User (ARPU) stood at Rs. 800 to Rs.1200.

By 2004 this had reached Rs. 475. The entry of BSNL and the ramping up of operations by Reliance reduced prices of post-paid connections by 24% to Rs. 3.67 per minute. Prices of pre-paid connections reduced moderately to Rs. 5.43. These prices have come down even further to about Rs. 2 per minute at present. Revenues have followed a more volatile trend. Initially all operators made losses and these reached Rs. 400 crores by 1998. Next year the losses reached Rs. 5000 crores and operators started defaulting on their license fee payments. The demise of the sector looked imminent. By next year, after the government allowed operators to pay their revenues as a percentage of their revenues, total revenues had recovered to Rs. 2,252 crores. Even then Bharati could boast its first full year of profits only in 2004. By next year total revenues reached Rs. 23,284 crores. The sector has witnessed a large amount of Foreign Direct Investment, which in 2001 reached Rs. 39,709 million.

- 3.1.5 In the initial years the high price of handsets proved a deterrent to adoption. Firms responded by bundling the price of the handset along with a connection. This was abandoned later, even though Reliance used it as a strategy for penetration. Handsets are now available for less than Rs. 1000 and should come down further. The introduction of pre-paid connections proved to be a double edged sword. At one level it facilitated adoption and increased revenues. On the other hand customers found it very easy to switch operators if offered better prices. Part of the existence of low prices can be attributed to the fact that operators depend on pre-paid connections for a large part of their revenues and are subjected to very strong competition. Number portability would have accentuated the effect, probably the reason that operators have showed no great enthusiasm for it. There have been a large number of acquisitions over the years as would be expected with such a large number of operators. The latest was the acquisition of Hutch by Vodafone. Quality of service has been an issue for a long time. Customers have complained about dropped calls and billing problems.
- 3.1.6 The various actors on the policy and regulatory front have been very active in this segment. The combined effort may have been good for the sector but there have been problems. Initially, the sector had been under the purview of the DOT, which made life very difficult. For example the DOT capped rentals at an absurd level of Rs. 156 so that operators would have to charge extremely high prices for making calls. These reached as high as Rs. 16 per minute for peak hours. One suspects this was done to reduce the threat to its own operations. Similarly, the DOT, in 1998 imposed a levy of Rs. 500 per customer per month. The TRAI tried its best to thwart the DOT's efforts but was often tied down by legal problems. Finally, the government came to the rescue with revenue sharing and by strengthening TRAI through the New Telecom Policy 1999. Other parts of the government have also had its share of impact on the sector. For example the Finance ministry's decision to make it mandatory to file a tax return if one owned a mobile phone reduced the number of subscribers. The same ministry later reduced the duty on handsets which led to a fall in price and increase in subscriber numbers.

3.2. Fixed Services

- 3.2.1 The contrast between cellular mobile and fixed services couldn't be starker. While mobile services grew at 72.7% in terms of subscribers and at 56.1% in terms of revenue, the number of fixed subscribers actually declined by 3.3% and revenues declined by 11.6%. The total number of mobile subscribers stood at 156.97 million on March 31st, 2007. By the same time period, fixed phones, which had a head start over mobile phones, had only reached 48.91 million. The dominance of BSNL/MTNL continues to this day with a combined market share of 83%. The market share has indeed declined over the years from 100% at the start of the liberalization. There has been a certain amount of entry into the fixed segment with all major players except Hutch being present. In fact the private operators have been gaining ground at the expense of the state owned operators. However, over 2006-07 all operators except Tata Teleservices saw a decline in their subscriber base. It is interesting to note that the government's initial focus for liberalization was on the fixed segment. However, after more than ten years there is very little competition, as exhibited by market shares and very little growth. The reason behind this lacklustre performance could be the dominance of BSNL and the prohibitive cost of laying cables. There was a glimmer of hope from the advent of WLL connections. That glimmer seems to have been extinguished. For a first time consumer mobile phones with their pricing and convenience are just too attractive. In fact it could be argued that fixed phones face very strong competition, in the voice segment, from mobile phones. In a way it seems to turn the logic of policymakers on its head. It was thought that mobile phones were for the rich and the poor needed fixed phones. The opposite has turned out to be the case. In fact broadband connections are now an important factor for the adoption of fixed phones.
- 3.2.2 As in mobile services the government invited bids for private participation in fixed services in 1995. The country was divided into 27 circles, which roughly coincided with DOT's existing switching areas and 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. Obviously, given the unattractiveness of the C category markets, they would find it difficult to find bidders. The roll out obligations and high reserve prices also did not help. It is important at this juncture to question the policy of dividing the country into circles of uneven market sizes (though perhaps geographically of similar size) and inviting bids. It should be up to the operator to decide on the size of his operations, national, regional and local and pay a simple entry fee, if any, to demonstrate his seriousness. The method adopted led in some sense to too much entry into lucrative circles, too little entry into less lucrative circles and perhaps the wrong kind of entry.
- 3.2.3 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 would pay over 15 years. In June, Bharti became the first to start services. Next year two more operators, Hughes Ispat and Tata Teleservices, started services. By 2000 Bharti expanded to 22 cities and towns in Madhya Pradesh. It joined up with Bharti BT Internet to provide free internet access at the price of a local call. Tata Teleservices started operations in March 1999. Reliance Telecom started operations in Jamnagar, as did Shyam Telelink in Jaipur and Jodhpur. 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.

- 3.2.4 By 2002 the total number of DELs increased marginally to 38 million lines. The rate of growth was a measly 17.48 % compared with 80% for cellular services. BSNL and MTNL still accounted for 98.55% of subscribers. By the next year, 2002-2003 private operators began to make their presence felt mostly through the introduction of Wireless in Local Loop (WLL) technology. This technology was a big cost saver over fixed lines. BSNL and MTNL still accounted for 95% of telephone lines. However, Reliance, Bharati and Tata Teleservices each had 9,50,000, 3,70,000 and 6,00,000 lakh lines respectively. Tata Teleservices earned a revenue of 600 crores, whereas Bharati and Reliance earned 360 crores and 316 crores respectively. The TRAI implemented its new Telecommunications Tariff Order 1999. Monthly rentals were increased and free and discounted calls were decreased. The pulse duration of local calls were also decreased.
- 3.2.5 2003-04 saw fixed service providers losing subscribers for the first time. MTNL saw its subscriber base decline to 43.31 lakhs from 46 lakh customers. Except MTNL almost all operators witnessed a decline in ARPU. BSNL and MTNL were fighting hard to maintain their subscribers while the private players were aggressively competing with them and creating new markets for themselves. The total number of lines increased to 43 million with BSNL accounting for 36 million lines and MTNL 4 million lines. Tata Teleservices had about a million lines followed by Bharati with about 7 lakh and Reliance with 4 ½ lakh lines. In terms of revenues BSNL earned Rs. 21,856 crores followed by MTNL with 6,030 crores. Tata earned about a Rs.1000 crores and Bharati earned Rs. 776 crores. Tata Teleservices and Bharati added 1 ½ lakh new customers when MTNL was actually losing customers. Private operators also tried providing value added services like voice mail, audio conferencing and SMS. Unfortunately, none of these took off except the internet bundle offered by BSNL and MTNL.
- 3.2.6 The next year 2004-05 saw mobile phone subscribers overtake fixed line services for the first time. This was not too much of a surprise since mobile phones had been growing at a much faster rate than fixed phones. However, we should not suggest that this was the beginning of the end for fixed phones. Private operators more than doubled their fixed line subscriber base adding 2.7 million subscribers in the same period. At the same time BSNL and MTNL lost nearly a million subscribers each. Most of the additions were in the form of fixed wireless phones due to their mobility and their ease of deployment.

The total subscriber base grew at 4.22% compared to a growth of 5.6% the previous year and the total subscriber base stood at around 45 million. There was a decline in ARPU to Rs. 645.

- 3.2.7 Among the private operators Tata Teleservices led the way growing at 174% followed by Reliance at over 100%. All private operator except Bharati grew at over 50%. However, Bharati's concentration on business customers and more services provided it with a higher ARPU than the other operators. It seemed likely that BSNL and MTNL would continue to lose customers. One way to stem the tide would be to bundle internet services, especially broadband with fixed lines, a strategy both adopted.
- 3.2.8 This trend of the state carriers losing customers continued into the next year 2005-06. The increasing competition from mobile phones that were convenient and cheap saw BSNL losing 3.6 million fixed line customers. MTNL managed to add 32,000 new customers after losing 2 lakh customers in the previous year. The total revenue for the industry was around 34,000 crores, of which BSNL accounted for Rs. 25,000 crores. BSNL is currently losing some 30 lakh customers every month. Belatedly, BSNL tried to drive home the perceived advantages of fixed line services such as broadband services and voice clarity.
- 3.2.9 Tata Indicom and Reliance Infocom continued their strong growth performance of last year and grew at 120% and 139.2% respectively. Bharati grew at a more modest 57.1% partly through the sale of broadband services. BSNL and MTNL launched the One India Plan through which calls made to any part of India would cost the same. BSNL reduced its rental for fixed line services and tried bundling its fixed line, mobile and broadband services. Reliance also lowered tariffs and announced new schemes such as the zero rental, lifetime incoming free plan.
- 3.2.10 All operators concentrated on corporate clients since their numbers of household fixed line customers and margins were going down. All of them tried to sell their value added services such as audio conferencing. For a company not famous for customer care, BSNL started a dedicated 1500 customer care number for corporate clients.

3.3. National Long Distance

- 3.3.1 The first year of non-monopoly provision of national long distance (NLD) services was the year 2002-03. Bharati had earlier received its NLD license on 29th November 2001 followed by Reliance on 28th January 2002 and VSNL on 8th February 2002. VSNL was awarded the license for giving up its monopoly over International Long Distance (ILD) two years earlier than the scheduled 2004.
- 3.3.2 As expected, BSNL was by far the largest operator in the NLD market with only Bharati starting operations. The total market size was Rs. 5,790 crores. Of this BSNL garnered 92% or Rs. 5,500 crores. This was a reduction of Rs. 2000 crores of its revenues from the year before. Bharati's announcement of

lower rates forced BSNL to reduce the maximum peak time calling rates to Rs. 9 per minute from an earlier rate of Rs. 24 per minute. After Reliance announced rates of Rs. 1.20 for three minutes for a Reliance-to-Reliance call BSNL reduced its rates even further to Rs. 4.80 per minute throughout the day for distances greater than 500 km.

- 3.3.3 Bharati managed to get revenues of Rs. 430 crores from its NLD operations. Except for the North East and Jammu and Kashmir it started operations all over the country. It laid down 23,500 km of cable throughout the country and installed 15 switches. It also depended heavily on Gas Authority of India's (GAIL) infrastructure for its operations. Most of Bharati's revenues came from offering long-distance services to other mobile phone operators. These operators have now gone back to BSNL after it reduced its tariffs. BSNL charges were Rs. 1.10 per minute while Bharati was charging Rs. 1.49 per minute.
- 3.3.4 VSNL has adopted a strategy of buying capacity where it could since Reliance, Bharati and BSNL already had networks and many utilities like PowerGrid, RailTel and GAIL were planning to get their own networks. The Carrier Access Code (CAC) issue was still with the TRAI. Without it individual consumers cannot choose their long distance carrier.
- 3.3.5 The decline in revenues continued into the next year 2003-04. The total revenues declined by Rs. 1000 crores to Rs. 5141 crores, a decline of 14%. This was a result of declining tariffs not being compensated by increased usage. BSNL continues to be the leader with 88% of total revenues at Rs. 4510 crores, but year by year its share is declining while that of the others have increased. The largest private operator, Bharati, also saw its revenue decline to Rs. 341 crores from Rs. 430 crores. Reliance and VSNL increased their revenues to Rs. 177 crores and Rs. 48 crores respectively. This year also saw the emergence of utility players like RailTel, PGCIL and GailTel which added to their networks.
- 3.3.6 After a negative growth rate in the previous year the NLD market grew by 22% in 2004-2005. Part of this growth can be attributed to the growth in mobile services. Long distance calling is complementary to local calling. The total revenue for the industry in 2004-05 was around Rs. 6,261 crores compared to Rs. 5,140 crores in 2003-04. Both the state operated incumbents and new players contributed to the increase. BSNL continues to be the number one long-distance operator with 80.5% of the market. Bharati, Reliance and VSNL together contributed about Rs. 1,109 crores. Of this Bharati accounted for Rs. 482 crores, Reliance Rs. 381 crores and VSNL Rs. 231 crores. These were the pure play operators who only provide services. There are also the IP-II players who provide bandwidth to NLD operators. There are seven of these; viz., GAIL, Power Grid corporation of India (PGCIL), Railtel, Tata Power, Tata Power Broadband, HECL and Delhi Metro Rail. The IP-II providers accounted for only Rs. 126 crores as revenues. An interesting development is the sharing of infrastructure between Bharati and VSNL. While it did lead to a reduction in costs it could in the future pave the way for anti-competitive behaviour.

- 3.3.7 The year 2005-06 saw the NLD players making a total revenue of Rs. 9,017 crores, which represented a 44% increase over the previous year. BSNL remained at the top with Rs. 6,792 crores. A 34% increase from its previous year revenue of Rs. 5,041 crores but a declining market share of 75.3%. Bharati maintained its second position with a revenue of Rs. 801 crores. VSNL and Reliance increased their revenues at 157.6% and 80.8% respectively, continuing their pace of growth from earlier years. Their revenues were Rs. 595 crores and Rs. 689 crores respectively.
- 3.3.8 The first new development of the year was RailTel, GailTel and PowerTel forming a strategic alliance to face competition. As already seen these are very small players in the long distance market, but the fact that they could form an alliance, which could potentially be anti-competitive and do so without drawing any remarks is curious. On the policy front the government reduced the entry fee from Rs. 100 crores to Rs. 2.5 crores. This was bad news for the incumbents as some 14 companies were reported to be in the market for licenses. If this new competition emerges it could imply price cuts and lower revenues. On the other hand IP-II companies could benefit with increased demand for infrastructure.

3.4. International Long Distance

- 3.4.1 The introduction of competition in the international long distance market (ILD) coincided with that in the NLD market with Data Access and Bharati launching their operations in 2002. Reliance too started its operations and BSNL declared its intentions to start operations. The revenues for this segment reduced to Rs. 5,444.68 crores from Rs. 6,854 crores in the previous year. This was largely due to lowered tariffs, initially by 16-20% and by 40% in July, and reduced settlement rates. VSNL with a market share of 83.8% remained at the top position. Data Access stole a surprise over Bharati to take second position with 10.57% of the market. Bharati had to make do with just 5.5% of the market. The decrease in ILD tariffs boosted total minutes upwards by 19%, from 3,120 million minutes to 3,700 million minutes. ILD traffic can be divided into incoming versus outgoing. In this year outgoing traffic increased by 36% to 800 million minutes while incoming minutes increased by a more modest 14.5% to 2900 million minutes. Typically in India, since making an outgoing international call was relatively expensive, incoming calls outnumbered outgoing calls. The ratio of incoming to outgoing calls improved to 3.62 from 4.31 in the previous year. The sources of incoming and outgoing traffic are also different and can be thought of as distinct markets. Indeed, all of these different countries and the type of call could be considered as different markets. Incoming traffic in India is dominated by the USA, followed by the UAE, UK, Saudi Arabia and Canada. The bulk of the outgoing traffic goes to Saudi Arabia, the USA, UAE, the UK and Singapore.
- 3.4.2 Due to lower prices Voice over Internet protocol (VOIP) increased at a brisk pace. In 2002-03 the total number of minutes of VOIP calls stood at 296 million minutes. Again, because of traditionally high tariffs there has been the presence of an illegal market in international long distance market, known as

the grey market. For the year 2002-03 the grey market was estimated to be worth 1.5 billion minutes worth Rs. 1500 crores. The international connectivity market posted a growth of 12%, from Rs. 358.4 crores to Rs. 401.4 crores.

- 3.4.3 As agreed in the terms of its privatization settlement with the Tata Group VSNL had exclusive rights over BSNL and MTNL traffic. Thus its dominance in the ILD market was largely because of this arrangement. Data Access provided unexpectedly strong competition. It cornered 25-30% of India's incoming ILD traffic.
- 3.4.4 The reduction in revenues that characterised 2002-03 continued into the next year 2003-04. Revenues reduced by Rs. 655 crores to reach Rs. 4,346 crores, a drop of around 14%. Accompanying this reduction in revenues was an increase in usage of 22% to 4.5 billion minutes, 3.42 billion of which was incoming and 1.08 billion was outgoing.
- 3.4.5 VSNL's market share consequently reduced to 63% overall and its voice business fared even worse with a share of 58%. It did quite well on the international connectivity front where it garnered a market share of 87%. In 2003-04 it had revenues of Rs. 2,718 crores and has started expanding into other countries such as Sri Lanka, Europe, Singapore and the US. It has launched outbound calling cards under the Hello Duniya scheme and inbound calling cards under the India-on-call scheme to improve its revenues.
- 3.4.6 Data Access with a market share of 19% in the voice segment came in second with revenues of Rs. 835 crores. Its efforts on the data front, however, failed miserably. Bharati Infotel, in the third position with revenues of Rs. 505 crores, did well in both voice and data. Its voice share increased to 11.8% while its data share stood at 10%. Reliance came last with revenues of Rs. 288 crores. It launched pre paid cards in India, which allowed customers in the US to call Reliance phones in India at rates 40% cheaper than average US rates. It's acquisition of Flag, which has 55,000 Rkm of undersea cable and presence in 17 countries in four continents, should help in its ambitions to become a pre-eminent telecom provider in India. Bandwidth prices reduced by 20% and further cuts were on the anvil. VSNL and Bharati were the two main players in the international connectivity market, which was growing at 65% mainly due to the Business Process Outsourcing (BPO) boom.
- 3.4.7 2004-05 saw the familiar story of lower revenues, increased usage and lower revenue and market share for VSNL continuing. The twist was the exit of the second ranked company Data Access. Another interesting development was the entry of international firms in the international connectivity market.
- 3.4.8 Overall revenues declined by 12% to Rs. 3,800 crores. The international connectivity market however, showed an increase in revenues of 15% to reach Rs. 765 crores. VSNL was still number one with a market share of 54% and revenues of Rs. 2,800 crores. Its international connectivity business was thriving and it increased its reach with the acquisition of Tyco. It launched joint ventures with Cable and Wireless, NTT and KDDI for international

connectivity. It commissioned its 3,175 km undersea Chennai-Singapore cable in this year. Bharati was in second position with revenues of Rs. 810 crores and a growth rate of 60%. It shared VSNL's infrastructure of the Chennai-Singapore cable and entered into an agreement to join the South East-Middle East-Western Europe-4 (SEA-ME-WE-4) consortium. Reliance came in third with revenues of Rs. 655 crores with its accent on corporate data and international calling cards. The international connectivity market saw the entry of a number of players. Among them were AT&T, MCI, Cable & Wireless, SingTel, BT, Equant, Sprint, BT Infonet, NTT, KDDI, Orient Networks and Sify.

- 3.4.9 In 2005-06 the trend of falling revenues reversed with revenues going up by 89% to Rs. 7,251 crores. For the first time VSNL saw its share drop below 50% to 49.2%. Even then it was the largest operator with revenues of Rs. 3,579 crores. Reliance grew by 314% to reach revenues of Rs. 2,714 crores and a market share of 37.4%. Bharati came in last with growth rates 18.3% with revenues of Rs. 958 crores and a market share of 13%.
- 3.4.10 There was a lot of activity on the policy front with the government reducing the entry fee to Rs. 2.5 crores as in NLD, and reducing the license fee to 6% from 15% of the Adjusted Gross Revenue (AGR). The TRAI allowed equal access to cable landing stations and suggested that operators be allowed to resell bandwidth by 2007. It also recommended that international cable carriers would be allowed to terminate cable capacities at cable landing stations. They would not need to acquire an ILD license and were therefore exempt from entry fees or license fees.
- 3.4.11 VSNL became the fifth largest carrier of voice with impressive infrastructure. It expanded its operations into South Africa as a partner in the second network operator Consortium. Reliance grew at a fantastic rate and cornered 445.3 crores of minutes of voice usage. It reduced its ILD rates by 45% to 69% in March 2006. Bharati had a more sedate year where it consolidated its cable plans. The international operators continued to expand their operations in the Indian market.

3.5. Internet Service Providers

- 3.5.1 Prior to 1998 only VSNL was mandated to provide internet services. After this year private internet service providers (ISP) were allowed to operate. By the end of 2000 there were 437 licensed ISPs and by the end of 2000-2001 there were approximately 2.05 million internet subscribers. The numbers went up to 2.8 million subscribers with 150 ISPs by July 2001. Most of the growth achieved was through free ISPs, which put the margins of paid ISPs under pressure. Consequently, a number of ISPs went bust. This prompted companies to concentrate on corporates through the provision of leased lines. Their revenues from the dial-up business were meagre in comparison.
- 3.5.2 This was also the year that broadband ISPs emerged. The major players in the broadband on cable were Hathway, in2cable and Zee. There were a total of 50000 subscribers who accessed the internet through cable. Chennai based

Dishnet DSL had close to 90% of the DSL market in Chennai, Mumbai and Delhi. The cost of a cable modem at Rs. 15,000 was five times that of a dial-up modem and was a major deterrent in the spread of broadband access. The cost of a PC was also a problem, though the blossoming of cyber cafes helped. Clearly, prices were too high for the spread of the internet. The government allowed private ISPs to set up their own international gateways and some 25 of them did so.

- 3.5.3 By the year 2003-04 the number of internet subscribers increased to 4.15 million. The big players were BSNL, VSNL and MTNL. Of these BSNL and MTNL leveraged on their large fixed-line bases and provided dial-up connections while VSNL had a head start over the others. The other private players concentrated on broadband and internet telephony. A number of ISPs closed down and prominent among them were Data Access and Bharati's Mantra, which withdrew from the dial-up business.
- 3.5.4 BSNL and MTNL dominated the dial-up business with their innovative new packages such as the flat monthly charge of Rs. 750 for unlimited use by MTNL and BSNL's Rs 99 package for students. The dial-up segment accounted for 90% market share but contributed less than 30% of revenues due to low ARPUs. They could afford to do this by taking a hit on telephone rates since they were telecom companies unlike private ISPs who had to pay for these services.
- 3.5.5 Consequently private companies concentrated on DSL or broadband or both. Dishnet's dominance in the DSL segment continued and it was bought up by VSNL for Rs. 270 crores. Bharati expanded its DSL operations and Sify and Net4India concentrated on broadband. By the end of the year Sify had 1,700 cyber cafes. Internet through cable, impressively, grew faster than DSL. It worked on a revenue sharing model between cable operators and ISPs and provided a 64 kbps connection at Rs. 800 per month. Private leased line connections also increased.
- 3.5.6 Internet telephony was a big draw for ISPs, given that they could earn Rs. 4 per minute from a telephone call and only Rs. 10 for one hour of surfing the net. Unfortunately it was not possible to make calls within India using VOIP. The TRAI suggested a downward revision of bandwidth prices from the existing price of Rs. 2500-4500 per user per month. Since bandwidth takes up 60-80% of the costs of internet provision lower prices would ensure viability of ISPs. The TRAI recommended the setting up of more National Internet Exchanges (NIXI) at Chennai and Kolkata to reduce dependence on international bandwidth. It has also suggested unbundling the local loop, which has been strongly protested by BSNL and MTNL.
- 3.5.7 The broadband policy of the government was announced in October 2004. In it the government set out its ambitious goals for the spread of the internet. By 2004-05 the internet access market was worth Rs. 1,592 crores, a modest increase of 1.2%, entirely due to services like internet telephony, always on broadband and increased usage by corporates. By end march 2005 there were 5.5 million internet subscribers, an increase of 22%. The total number of users

stood at 35 million. The internet penetration level went up from 0.4 to 0.5. Only 182,987 customers had a 256 kbps broadband connection while 84% still used dial-up. The number of private ISPs decreased to 172 due to decreases in prices by BSNL-MTNL to as low as 6 paise per minute. It is almost impossible for private ISPs to pay for bandwidth and call charges and then make money.

- 3.5.8 BSNL and MTNL came out with a Rs. 500 scheme for a 1 GB download followed by other private operators which led to an initial rush of customers. Internet telephony increased by 110% to 143 million minutes, though domestic calls made up only a small fraction. Wi-Fi made its appearance, but as yet there were only around 500 hot spots around the country. There was total dearth of local content and most users primarily used the net for email. The number of cyber cafes dropped by 14%, even though Reliance and Tata also opened cyber cafes.
- 3.5.9 2005-06 was the first year that broadband made its presence felt. There were 13.1 lakh broadband subscribers among the 71 lakh internet subscribers. Even then this was way below the target of 50 lakh subscribers prescribed in the Broadband Policy 2004. For all that India now has the world's fourth largest internet subscriber base. The lowest tariffs available are Rs. 199 for a 400 MB free download. Charges for 1MB download are down to Rs. 1 per MB from Rs. 4 per MB. A majority of these broadband connections belonged to BSNL and MTNL. Dial-up subscribers reduced by 20% but even then accounted for 45 lakh customers. In the metros subscribers upgraded from dial-up while dial-up has been the preferred mode of introduction to the internet in the smaller cities and towns.
- 3.5.10 The number of ISPs has come down to 155 though 10% of ISPs have 90% of subscribers. There are new broadband entrants in the market with the addition of HCL Infinet and Hughes Communication. The number of cyber cafes rose after the decline in the previous year, particularly in smaller cities. The problem of content noted earlier is still an issue and internet on cable has been a dismal failure. Wireless internet access cards are now being priced aggressively by Bharati, Reliance and Hutch and prices for GPRS and MMS have been reduced significantly. Internet telephony grew to 200 million minutes from 143 million minutes. Now, however, service providers have to contend with a service tax of 12.24% and a 6% revenue share. The Indian ISPs want the government to restrict access to services such as Skype and Net2Phone to their customers only in return.

3.6. Competition

- 3.6.1 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. As noted earlier 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 10.1 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.

3.6.2 In India the HHI indices for fixed-line telephony remain above 5000, indicating very strong concentration and lack of competition. We have already noted the dominance of BSNL in fixed-line telephony and the entry of WLL fixed-line operators have not changed things much. If mobile and fixed-line telephony were considered to be substitutes then it would make sense to combine the two and look at HHIs there. The combined HHI for 2005 end stood at 2056 indicating concentration. This is in stark contrast to the concentration indices in purely mobile, which are at 1700.

Table 3.6.1. 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		
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Source: OECD

- 3.6.3 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 10.2. Unfortunately, we have access to information on only a few parameters. Also, except for mobile there has been very little action in any of the other sectors. Perhaps, the TRAI in conjunction with the competition authority can try to provide information that allows a better estimate of the degree of competition.
- 3.6.4 At this juncture we would reiterate the difference between the focus of this study and typical issues that confront a competition authority. Usually a competition authority is case driven. When a particular issue comes up that can have anti-competitive effects, a merger for instance, the competition authority swings into action. To evaluate the possible anti-competitive effects of the merger the authority would concentrate on the relevant market, which would hardly ever encompass the whole gamut of telecommunications services. The authority's focus thus tends to be narrowly defined to the case on hand. Here we would like to evaluate the state of competition in all segments of telecommunications services. This is a mammoth task, which would require considerable data for proper evaluation. The study here attempts to provide some indications regarding the state of competition by describing the history of developments in telecommunications, as provided in the previous sections. We also use the meagre data available to arrive at some more quantifiable conclusions. Finally, the state of competition is crucially dependent on the institutional structures that impinge on the sector. We have provided a short discussion on regulatory and policy matters in this regard.

Table 3.6.2. 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 and its trends	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 price and affordability	Revenues/number of calls (fixed costs), revenues/number of calls minutes Consumer survey: price adequacy, affordability, simplicity and ease in rate structure
Consumer satisfaction with the quality of services	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

3.7. Competition in the cellular phone market

3.7.1 Within the restrictions faced by the paucity of data we made some preliminary efforts at measuring competition in India. The primary problem faced here is with market definition and we have arbitrarily divided the market into mobile, fixed, national long distance, international long distance and internet service providers. Within each classification we however, looked at specific services. By our calculations the Hirschman-Herfindahl Index (HHI) for mobile services increased from 1200 in 2002 to 1700 by the end of 2005. This indicates that the market is getting more concentrated and could be less competitive. On the other hand mobile services are like a commodity and the low prices could also indicate Bertrand competition. Thus it would be useful not to rely on concentration measures alone. A better approach would be to look at price-cost margins. Finally, we can use market behaviour as an indication of competition. Frequent changes in fortunes of operators, lower tariffs, strong branding activity, entry and market expansion can signal strong competition. The cellular mobile segment experienced all of these while the market for fixed access has been relatively quiet.

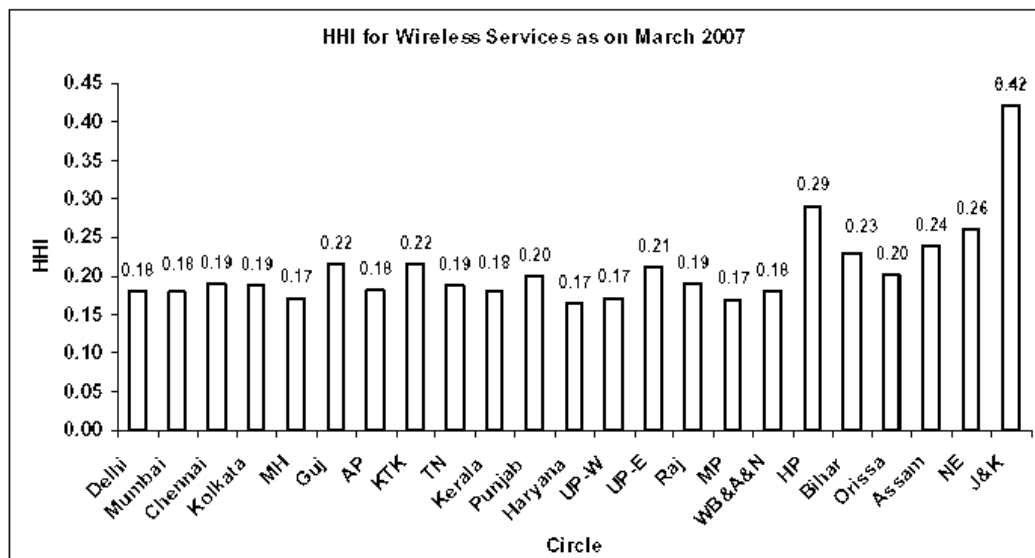


Figure 3.7.1 HHIs for Circles, source: TRAI

3.7.2 Figure 3.7.1 shows the HHIs for different circles. The numbers range between 0.17 and 0.29, the only aberration being the Jammu and Kashmir circle with a HHI of 0.42 for obvious reasons. The numbers would indicate fairly strong

competition all across the country. The problem with reading too much into these numbers is that the geographic areas represented by these circles do not necessarily form natural markets. A circle that is more urban would naturally have a higher HHI. It would make far more sense to look at rural and urban markets. 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.

3.7.3 Bharati has always been a predominant player in the mobile market but its fortunes have fluctuated over the years. Initially its strong competitor, in terms of numbers, was BPL Mobile in Mumbai while Bharati dominated in Delhi. Later on Hutch emerged as a strong competitor. However, in the initial years, there was very little competition as there were dominant players in each regional market. This was particularly true of the B and C circles. Only the metros faced fairly strong competition. Over time all the major players have some presence in almost all circles and the degree of competition has increased. The rate of growth of the operators have also been different over the years as some of them have entered at different times and adopted different strategies for growth. Initially Bharati and Hutch concentrated on Delhi and Mumbai and other metros and richer circles. When BSNL entered it found that it had a ready market in rural areas. Also, given the quality of its services, it was difficult to compete against Hutch and Bharati. At the same time Bharati and Hutch found it difficult to sustain growth rates through metro growth only and began to venture out into the hinterland. Reliance's entry shook up the industry as it began to market aggressively in both rural and urban India. However, after a promising start, its CDMA operations could only make limited penetration into the market. For this reason the GSM operations of Hutch would have been a boon to it. It still remains to be seen what Vodafone entry does to the market.

3.7.4 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 3.7.1 shows the ranks in terms of subscriber numbers starting in 2002. As we notice Bharati has retained the first or second position through out. Hutch and Idea are consistently at the fourth and fifth places. BSNL and Reliance have entered in a big way and are currently placed at third and second places respectively. The Tatas have made steady progress over the years to reach sixth position. In contrast to BSNL and Reliance the Tatas have not used a big-bang approach to entry. This could be due to different strategies being pursued or a lack of a clear strategy by the Tatas. 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 as they now stand at a lowly twelfth from their once lofty position of second.

Table 3.7.1 Ranks of operators by subscriber numbers

Operators	RANK					
	2002	2003	2004	2005	2006	2007
Bharati	1	1	2	1	2	1
Hutch	2	4	5	4	4	4

BPL	3	6	6	7	8	12
Idea	4	5	4	5	5	5
Escotel	5	8	-	-	-	-
Spice	6	7	8	8	11	11
Sterling	7	-	-	-	-	-
Reliance	8	3	1	2	1	2
Fascel	9	9	9	10	9	9
MTNL	10	11	11	11	10	10
Usha Martin	11	-	-	-	-	-
RPG	12	12	-	-	-	-
Aircel	13	10	7	6	7	7
Hexacom	14	14	12	12	12	-
Koshika	15	-	-	-	-	-
BSNL	16	2	3	3	3	3
Dishnet	-	-	-	-	13	8
Escorts	-	-	-	-	16	-
HFCL	-	16	13	13	14	13
Tata	-	13	10	9	6	6
Shyam	-	15	14	14	15	14

3.7.5 Table 3.7.2 below shows the growth rates of different operators across the years.

Bharati and Hutch have retained fairly healthy growths over the years. One can also notice the spurt in growth of Reliance and particularly BSNL in 2003 and 2004. The Tatas have put in impressive performance over the last few years and are slowly becoming a strong player. BPL is the only operator to have actually shrunk.

Table 3.7.2 Growth rates of operators

Operators	2002	2003	2004	2005	2006	2007
Total						
Bharati	1483367	134.23	103.26	59.06	85.36	70.20
Hutch	480104	287.76	101.61	44.63	78.29	71.67
BPL	931842	23.70	81.12	24.27	21.63	-66.22
Idea	873683	50.29	201.51	35.40	31.65	93.15
Escotel	552718	5.15	-	-	-	-
Spice	538477	26.87	86.03	15.30	38.37	27.18
Sterling	449580	-	-	-	-	-
Reliance	403444	387.06	314.69	37.32	92.03	50.76
Fascel	320505	68.49	--	28.88	96.93	56.39
MTNL	205377	44.63	33.41	161.95	102.06	22.95
Usha Martin	173870	-	-	-	-	-
RPG	127633	40.24	-	-	-	-
Aircel	274850	58.59	347.77	66.20	62.24	62.80
Hexacom	93706	53.73	-	103.03	81.58	-
Koshika	109207	-	-	-	-	-
BSNL	24308	12002.75	136.51	78.00	82.23	41.35
Dishnet	-	-	-	-	-	1387.16
Escorts	-	-	-	-	-	-

HFCL	-	-	24.38	69.31	8.38	19.49
Tata	-	-	299.14	103.14	345.16	87.90
Shyam	-	-	-18.26	-0.39	2.25	27.51

3.7.6 It would have been useful to look at other features of competition such as advertising and price plans but such data is unavailable. However, given the information that we have already provided it is unlikely it will provide a drastically different view of the extent of competition in the cellular mobile market. The fact that ARPUs have been continuously declining and that mobile companies have been making losses, though things have been looking up of late, should indicate fairly robust competition.²³ The TRAI calculates that the cost of owning a mobile connection was 29% of GDP per capita in 2006 and expects it to go down to 9% by 2010. Figures 3.7.2, 3.7.3 and 3.7.4 shows that revenues per minute are the lowest in India as compared to other countries while minutes of usage is the highest. The only cloud on the horizon could be the possible lack of services and competition in rural and remote areas. Unfortunately there is no data available in terms of subscriber bases in rural versus urban areas and on usage. Common wisdom suggests that consumers in rural areas are predominantly dependant on BSNL.

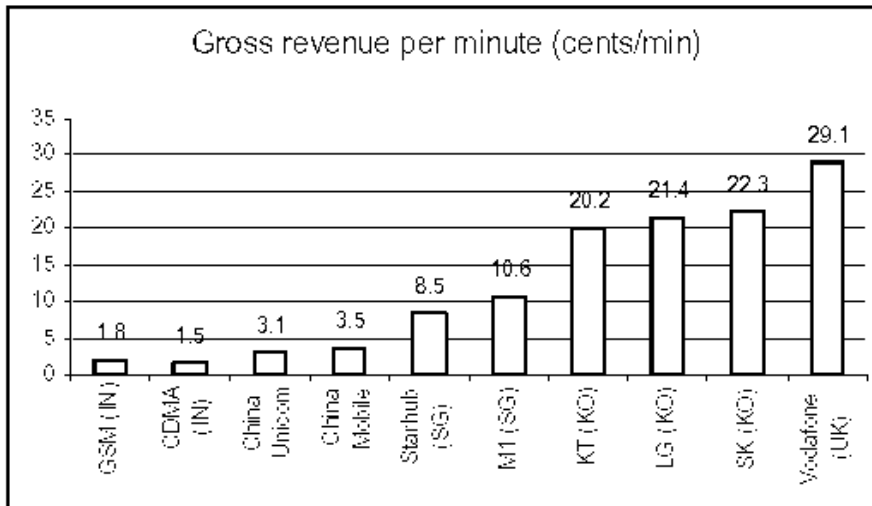


Figure 3.7.2 Gross revenue per minute (source TRAI)

²³ EBITDA for 2005-06 was Rs. 30137.92 crores as compared to Rs. 26785.70 crores. For private companies the EBITDA was 11428.80 crores in 05-06 versus 8172.49 crores the year before. In the same period capital employed has increased from 153864 crores to 170087 crores.

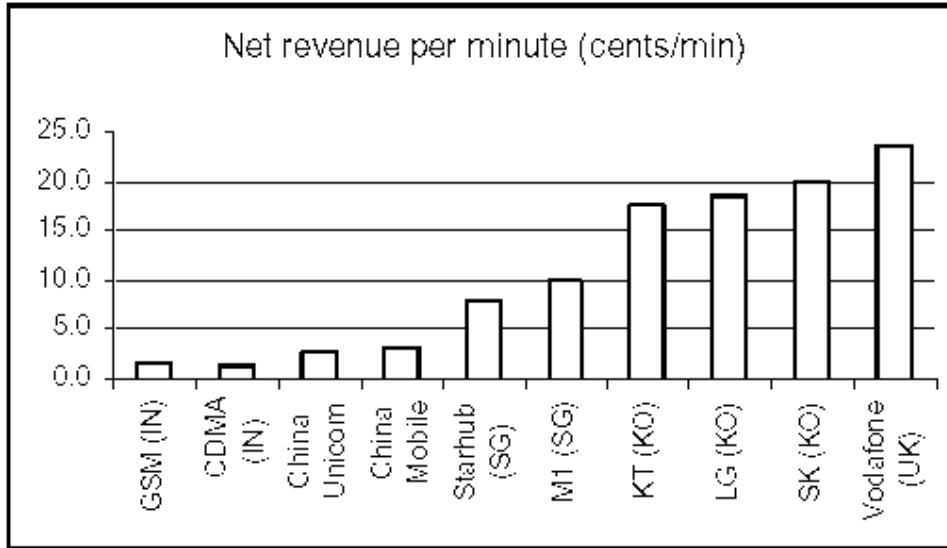


Figure 3.7.3. Net revenues per minute (source TRAI)

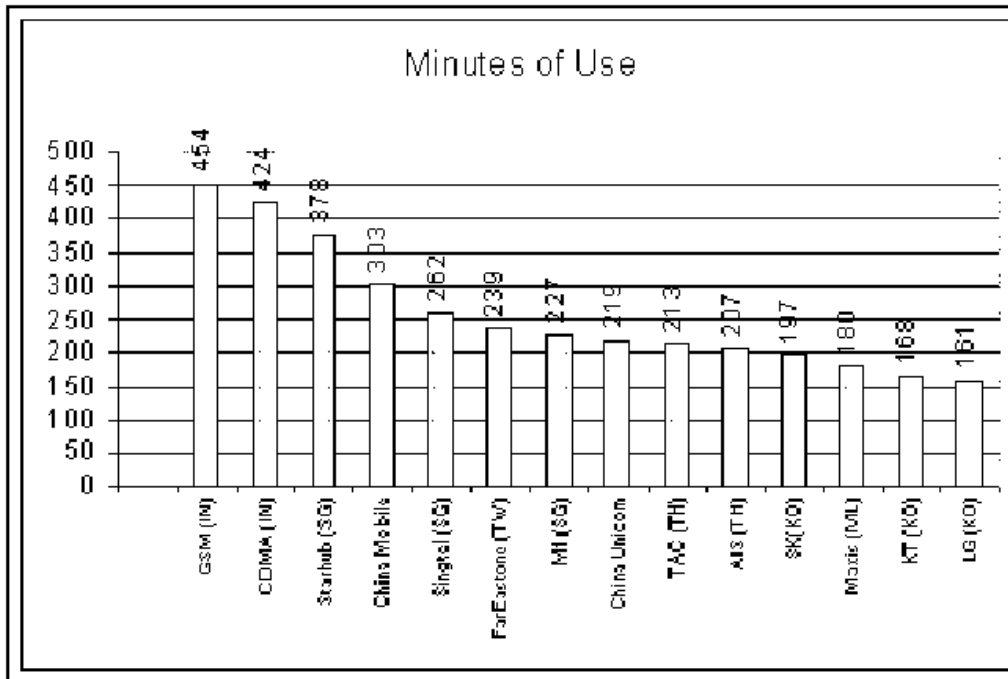


Figure 3.7.4. Minutes of usage (source TRAI)

3.7.7 We will now turn to restrictions in terms of licenses and other operating restrictions that have had an effect on competition. The government initially started with the idea that there were to be two operators per circle. The logic behind this move is not clear but it could actually have been pro-competitive. The division of the country according to A, B and C circles were done according to revenue generating capacities. Since firms could not bid for more than 3 circles this assured that a few large operators would not garner the coveted circles. Perhaps, this strategy succeeded all too well and ended up by producing too many operators. Eventually, there were a large number of mergers and

acquisitions that has produced some five dominant operators, thus negating the intended logic of the duopoly policy. Some of the acquisitions that took place in 1999 and 2000, shortly after the announcement of the NTP 99 are shown below in table 3.7.3. The process is still continuing today with the acquisition of Hutch by Vodafone and talks of Spice forming an alliance.

Table 3.7.3. 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: Amol Maheshwari

3.7.8 Eventually, the government allowed four operators per circle with BSNL/MTNL as the third operator. This policy decision was mired in trouble with existing operators approaching the regulator, TDSAT and the courts to preserve their duopoly status. The government managed to placate all sides and reached an agreement with regard to the license fees that new entrants would have to pay to safeguard the old operators. An additional problem was the license fees and spectrum allocated to those operators who offered fixed-

wireless connections. The license fees were lower for these services as they were seen to cater to the non-remunerative fixed phones category. However, mobile phone operators charged that fixed-wireless operators were providing a service virtually indistinguishable from cellular mobile services. The government had only itself to blame since it had mandated that cellular mobile services could only be provided on the GSM standard. Finally, the policy turned technologically neutral and a Universal Access Service (UAS) Licence regime was instituted. The existing cellular mobile service operators (CMTS) license holders were allowed to migrate to this license if they so wished. Currently, only UAS licenses are offered and the license fees are pegged at 10% of revenue for metros and category A licenses, 8% for category B and 6% for category C licenses. Entry is also possible through acquisition of existing operators but is subject to the cap on Foreign Direct Investment (FDI), which was increased to 74% from 49%. The cap on FDI reduces the amount of investment that operators can incur for network expansion. The current state of licenses for different operators and the technologies used is shown in Table 3.7.4.

Table 3.7.4 UASL and CMTS licenses

Name of entity	Number of licenses		Technology used	
	CMTS	UASL	GSM	CDMA
Reliance Infocomm/Telecom	8	21	8	21
Bharti Airtel	1	22	23	
BSNL	21		21	21*
Tata Teleservices		20		20
Hutch	14	8	22	
Idea	11	2	13	
Aircel	2	21	23	
MTNL	2		2	2*
Spice		2	2	
BPL	1		1	
HFCL		1		1
Shyam		1		1
Total	60	98		

* BSNL & MTNL have basic license and are offering limited mobility services.

3.7.9 The initial cap on FDI at 49% and the duopoly policy threw up companies with complex holding patterns. Further, operators had to exhibit financial muscle as

well as technical know-how. Consequently, some license holders included companies with these attributes for the purpose of winning licenses and then tried their best to get rid of their partners. As table 3.7.5 shows, the initial partners of mobile operators in India read like a who-is-who of international telecom operators. Such structures provided a lot of action and fodder for the business press but achieved little else.

Table 3.7.5. 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

3.7.10 The possibility of entry through acquisition is negated, partly, through the barriers on exit. There are strong barriers on acquisitions for pro-competitive reasons that have been instituted by the regulator, TRAI. Even though these restrictions are well meaning they have not been arrived at through stringent economic reasoning. Worse still some of the restrictions make some mergers per se illegal, which is against modern ideas of good competition policy. Mergers require prior approval from the DOT and monopolization is prohibited, which is interpreted as capturing 67% of market share. Markets are categorized separately as fixed and wireless, without any justification and mergers are only allowed within a given market. Post merger there should not be less than 3 operators within a service area and the merged entity is only allowed to retain 15 MHz of spectrum in metros and category A circles, and 12.4 MHz in category B and C circles.

Box 3.7.1. TRAI Recommendations on Intra Circle Mergers & Acquisition Guidelines

While mergers to encourage efficiencies of scope and scale are desirable, care has to be taken that monopolies do not emerge as a consequence. The Authority has recommended the following broad guidelines for intra circle Mergers & Acquisition cases.

- If consequent to the merger under consideration, the number of operators in any circle/served market reduces below three (3), the merger will not be allowed by the competent authority.
- Detailed examination of the impact of merger would be conducted by the Competent Authority in the following cases:
 - Market share of merged entity is greater than 50%; and
 - Concentration ratio of top 2 firms (CR2) in a post-merged scenario is greater than or equal to 75%.
- The competent Authority would also consider allowing mergers where one of the merging parties is a failing firm and in case :
 - The firm and its assets would have to exit the market in the near future irrespective of the merger; and
 - There should be no serious prospect of restructuring the business without the merger
 - However, in any such case, the onus to prove that the merger would substantially improve the prospects of the firm warding off failure would rest on the merging parties.
- The spectrum of the merging entities should be merged subject to the condition that the maximum spectrum that could be held by a Merged entity should be capped at 15 MHz per operator per service area for Metros & Category 'A' Circles and 12.4 MHz per operator per service area in Category 'B' and Category 'C' Circles. The merged spectrum subject to these limits would remain with the merged entity even after issue of detailed spectrum guidelines. The guidelines on Spectrum would entail details of efficient utilization and for this purpose the total amount of spectrum emerging after Merger would be treated as the starting point for further allocation. Any further allocation should be as per the spectrum guidelines to be issued separately.
- For the purpose of the above mentioned conditions, the impact of equity share holding by the same business group / promoter in more than one company in the same license area would be kept in mind.
- All telecom mergers are to be notified to TRAI. The merged entity should obtain the approval of the licensor, i.e. Department of Telecommunications (DoT) for the proposed merger.
- TRAI reserves the right to intervene and or inquire into expected or completed mergers.
- TRAI has already classified an operator having market share greater or equal to 30% of the relevant market as one having "Significant Market Power" in its Reference Interconnect Order (RIO). In case the merged entity becomes an SMP post merger then the extant rules & regulations applicable to SMPs would also apply to the merged entity.

Source: TRAI press release 30th Jan, 2004.

3.7.11 The issue of spectrum allocation is has caused a fair amount of stir in telecommunications circles. Presently spectrum is allocated on the basis of subscriber numbers and the technology used. The entrenched operators, who are typically operate on the GSM standard, would like this practice to continue as it will inhibit entry and cement their current positions. The newer entrants, prominent among them the Tatas, would like spectrum to be made available based on auctions.²⁴ This has 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 oppose allowing firms to offer both GSM and CDMA services and are in favour of capping the number of operators. Their argument is 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. We feel that spectrum allocation is best served through properly designed auctions. One can always hope that technological developments will assuage the inefficiency problem. Also new firms might emerge with new products to solve this problem. Finally, if spectrum is really an issue one can expect the market to nudge the existing firms to merge. Further, new entrants should be automatically wary of entry on a small scale and no entry barriers need to be erected.

3.7.12 In the initial years operators had to contend with a number of restrictions in their operations. For example even if an operator provided services in two adjacent circles it could not offer inter-circle calls. The operator would have to transmit the call using the services of the incumbent state owned operator who was allowed to provide long-distance calls. Similarly, an individual travelling to a different city could not make local calls there without the intermediation of the long distance operator, making “roaming” excessively expensive. It is not clear what effect such restrictions had on competition since all operators had to suffer such indignities.²⁵ However, most of these restrictions have been removed and operators are allowed to function much more freely.

3.7.13 The issue of license fees was a vexing problem in the initial years. All the cellular operators initially bid very high amounts for their licenses, which they later regretted as their revenues were miniscule compared with their projected revenues. The license fees that different operators had to pay in the metros are shown below in table 3.7.6. There was a wide discrepancy in the valuation of markets as shown by the license fees that different operators bid for their licenses (table 3.7.7). It is obvious that there was very little information about the prospects of the cellular mobile market. Under the circumstances it would have been better for the government to adopt a different structure for the auctioning of license fees.

3.7.14 Eventually the operators found it difficult to pay the license fees that they had bid due to their poor revenue streams as shown in table 3.7.8. It is not clear why there should have been a license fee at all. The government’s avowed aim was to increase network size and any amount that was being paid to the government

²⁴ The Economic Times, 10th July 2007.

²⁵ At the very least it would have made their operations less lucrative. The only beneficiary would be BSNL the incumbent operator.

as license fee was not available for network expansion. Further it acted as a barrier to entry to the cellular mobile market. A partial response would be that these license fees were for the spectrum that was in limited supply. In that case an auction could have been designed for spectrum alone. Finally, it is unfair and anti-competitive to allow BSNL entry without a license fee. The government moved to a revenue sharing mechanism for payment of license fees, which has its own problems.

Table 3.7.6. 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 3.7.7. 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

Table 3.7.8. 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

3.7.15 From the beginning the TRAI has been reluctant to regulate tariffs in the mobile sector. The TRAI has felt that if there is sufficient competition in the market there would not be any need to interfere with prices. Unfortunately, when it comes to charges for “roaming” the TRAI has not been that generous. Recently 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 consultation paper gives no indication as to the data on the basis of which they reached this conclusion. This is an area where the TRAI should have approached the Competition Commission for advice.

3.7.16 The behaviour of the incumbent BSNL/MTNL was certainly a stumbling factor for the development of the market and for effective competition. BSNL tried to make life difficult for all the operators in the market by charging them for terminating calls on its network but not paying them for doing the same for BSNL customers. It took a long time to sign interconnection agreements with other operators and even now does not allow interconnection at their most preferred points claiming that its is not technologically feasible to do so. Quite recently it has argued that unbundling of the local loop was not in the national interest.²⁶ In the past it has repeatedly questioned the authority of the TRAI and has filed numerous court cases against it. It has therefore tried to use its power as an incumbent to stymie the growth of competition. It has also used its clout with the government to try to tilt the scales in its favour. The fact that the current staff of the TRAI is mostly drawn from the DOT with its links to BSNL further inhibits competition.

²⁶ For instance look at Economic Times, July 2006, Private Companies may tap broadband networks of BSNL/MTNL. Given the dominance enjoyed by BSNL/MTNL in broadband connections such arguments could be construed as abuse of dominance.

3.8. Competition in Fixed, NLD, ILD and Internet Service Provision

3.8.1 At one level it seems rather pointless to even discuss competition in fixed services. The incumbent operator BSNL/MTNL controls some 75% of the market. Under the circumstances no creative way of looking at data is likely to suggest anything approaching competition in this segment. The one bright light is the success of the cellular mobile segment. Over time the share of landline phones as a percentage of total connections has been falling and now has reached less than 20%. There are now four times more mobile phone customers than land-line customers. The crucial test is to what extent are mobile phones substitutes for fixed phones. If the degree of substitutability is high then one should not treat these two services as being different and that would then indicate somewhat stronger competition. Indeed, it is possible that one should segment the market according to residential local calling and business traffic. Our conjecture is that for residential usage land-lines and cellular mobile phones are virtually indistinguishable for voice communication.

3.8.2 The government's policies regarding entry did not do anything to help foster competition in this segment. The duopoly policy in cellular mobile was replicated with an important difference. In each of the circles entry was allowed for only one operator with BSNL forming the other operator. Further the DOT allowed only three bidders per circle and announced high reserve prices post bidding. The DOT was also against operators pledging their licenses to financial institutions in order to raise funds. All of these actions erected barriers to entry into the fixed services segment. As it is the advantages enjoyed by BSNL were immense and it would have required a large operator entering the most lucrative areas to even have a chance of competing against the BSNL. As such the policies of the DOT ensured a very lukewarm response to the meagre opportunities present in this segment. Even today only a few national operators such as Reliance, Bharati and the Tatas are present in this segment and their subscriber numbers are paltry. It has been reported that these operators have concentrated on the high volume business consumers. To what extent they have succeeded in their endeavours is not known.

3.8.3 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.

3.8.4 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 indicated that prices of long distance and international calls could come down further. 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.

3.8.5 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 were also allowed to move to a regime of revenue sharing for the payment of license fees, which helped towards mitigating their risk perceptions.

3.8.6 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. It should be noted that the DOT went on an expansion spree and started laying lines like never before. Some commentators have inferred strategic behaviour on part of the DOT in its expansion.²⁷ The plan was to corner as much of the market as possible before entry occurs and force entrants to face the prospect of lower profits. Other countries, such as Turkey, have had similar experiences with incumbent operators.

3.8.7 In the other remaining sectors it is difficult to say much about competition because there is very little data or because some have strong incumbents. Both the NLD and ILD sectors have experienced entry and competition. However, the dominant position of the incumbent operators BSNL and VSNL has not been sufficiently eroded. BSNL still retains 65% of the revenues of the NLD market while VSNL continues to maintain a predominant position with 66.5% of revenues. During the last financial year BSNL has suffered a 31.3% drop in revenues. At the same time Bharati has increased its revenues by 29%. However,

²⁷ Desai(2006). This behaviour could be interpreted as abuse of dominance. Certainly it involved an effort towards establishing dominance prior to liberalization so that the market for new entrants would be reduced.

we must caution that considering the whole geographic region of India to constitute one single market is deceptive. There is also likely to be a large difference between residential calling and business calls. It is vitally important to arrive at a proper definition of the market before we can reach any conclusions about the state of competition. Similar arguments also hold true for ILD.

3.8.8 Prices have drastically come down largely because of regulatory intervention but also due to competition. Unfortunately, it is still not possible for consumers to choose their long distance carriers and that hampers competition. One result of this is the absence of any pure long distance operator in India on the lines of AT&T and MCI in the USA.²⁸ Long distance and local calling are therefore bundled together and with BSNL owning most of the fixed access lines its dominance is difficult to overcome. It is possible to make long-distance calls on the mobile network but the prices are typically much higher than that of local calls. Here again local calling is bundled along with long distance calling. To avail of lower prices a consumer would have to choose a different operator and given the transaction costs associated with a new connection few consumers are willing to go that far. BSNL can also use this access to the local loop to provide internet access, again, a sector which it dominates.

3.8.9 The ISP market had witnessed a spate of entry after entry was liberalized. Some 700 licenses were issued within three years and yet there are only 377 licenses that exist today. Given that BSNL and MTNL together control 64% of the market, there are probably still too many. In fact no other private operator can claim to control even 10% of the market.²⁹ Private operators have also been hit by a stream of restrictions emanating from the TRAI and DOT as well as low access prices coupled with high bandwidth prices.³⁰ The TRAI has recommended that free entry be replaced by an entry fee of Rs. 20 lakh for national level licenses and Rs. 10 lakh for state level licenses. It has also suggested a license fee of 6% of revenues. The other moves include removing Virtual Private Network (VPN) services out of ISP licenses, restricting internet telephony, disallowing Internet Protocol TV (IPTV) services and reducing FDI to 74% from 100%. It is strange to note that all these developments are taking place along with the government's push to expand internet access. Part of the reasoning behind the TRAI's moves is the wish to prevent ISP's to encroach into the domain of the mainstream telecom companies. This again exemplifies the problem of partitioning the telecommunications sector into watertight compartments.³¹ Technological developments sooner or later undo the strictures of regulators.

²⁸ We are not suggesting that there has to be pure long distance operators. The structure of firms and the sectors in which they operate should depend on market conditions.

²⁹ The Minimum Efficient Scale (MES) for an ISP is probably very low though we cannot find any data to support this contention. The size of a typical cyber café is quite small comprising of a couple of desktops.

³⁰ Rs. 250 per month (\$5) for a 2 Mbps download compared to \$25-30 in the US. Voice and Data, July 2007.

³¹ This again underlines the importance of the concept of the relevant market. Not only does it depend on the particular abuse that is being investigated but can change according to technological developments.

4. Lessons from International cases and issues to deal with

4.1. International Cases

4.1 One of the aims of this paper was to study some international cases so as to highlight the issues investigated in other countries and also to look at the methodology used. We have looked at some cases from the European Union, the United Kingdom, United States of America and other developing countries. Unfortunately, most developing countries do not seem to have a web site for their competition authority. For Latin American countries these are in Spanish, a language in which the author is not fluent.

4.1.2 Turkey

4.1.2.1 The problem of a dominant incumbent state operator along with that of restricted entry is highlighted by the example of Turkey. Liberalization of the telecommunications sector started in a limited way with mobile services being offered by two firms Turkcell and Telsim that had a revenue sharing arrangement with Turk Telecom, the incumbent state-owned operator, who in fact controlled the prices they set. This arrangement continued till 1998 when they were issued licenses to operate by the Ministry of Transport. It is interesting to note that Turk Telecom entered the mobile services market after 2001 and it has remained a relatively small player in the market. Turk Telecom's monopoly status formally ended in 2004 and Oger Telecom (part of the Saudi Oger group) acquired 55% of its shares in November 2005 thus completing the privatisation process.

4.1.2.2 A regulatory authority, Telecommunications Authority (TA), was established in 2000 with to oversee such issues as tariffs, interconnection, licensing and compliance. It is interesting to note that licensing has been handed over to the TA while we are yet to do so in India. The regulatory regime in Turkey closely follows that of the European Union in that it follows competition law principles. However, there are differences in licensing. The licensing process in Turkey has been seen as cumbersome with the approval of narrowly defined licenses that make these licenses ripe for legal challenges. Thus entry into the telecommunications sector is difficult. There is a separate competition authority (CA) that has intervened in the industry over abuse of dominance issues in fixed and wireless telephony. There are jurisdictional issues between the CA and the TA and just as in India the law is ambiguous.

4.1.2.3 As in India, competition in fixed line telephony has been unsuccessful. If we compare with the experience in India, where even after 10 years of liberalization there is very limited competition in fixed line telephony, it is unlikely that the situation in Turkey is going to improve in the near future. In mobile telephony the Turkish government opted for duopoly competition since 1990. India too opted for duopoly in mobile telecommunications but it divided the country into 20 different circles and allowed two firms per circle, which resulted in perhaps excessive entry. The Turkish government allowed the entry of two more mobile operators in 2000. One was a joint venture with Telecom Italia Mobile and the other was the incumbent operator Turk Telecom. The new entrants failed to eat into the market share of the dominant mobile operator Turkcell and later merged. Thus in contrast to the Indian experience the new entrants failed to make a mark unlike later entrants into the mobile telephony in India,

Reliance, Tata Teleservices and BSNL, the incumbent state-owned operator. One can conclude that entry before one or more operators establish dominance is crucial for competition to succeed.

Box 4.1.2.1: Turkcell's restrictive practices in mobile telephony and mobile handset markets

In January 2000 the Competition Board launched an investigation against Turkcell. The investigation was prompted by complaints from Basari Elektronik, a distributor of Nokia mobile handsets, and Telsim. According to the conclusions of the investigation Turkcell had used exclusionary agreements with handset distributors and dealers to restrict competition both in the mobile telephony and in the handset market.

Mobile handsets in Turkey were often sold with operators' SIM cards and subscriber lines, a practice that apparently developed to prevent sale of handsets that were not compatible with the GSM standard. The investigation revealed that Turkcell's agreements with distributors of major brands of handsets such as Ericsson and Panasonic prevented these distributors from marketing Telsim SIM cards and subscriber lines. In effect, these exclusionary clauses restricted end-users' ability to use these brands of handsets with Telsim subscriber lines; in other words, these clauses made it more difficult for potential Telsim subscribers to access these handsets. Since these were popular handsets, the exclusionary clauses made it more difficult for Telsim to attract subscribers. Parallel imports did not provide a cost-effective alternative since handsets brought in through parallel imports were more expensive and it was difficult for dealers selling parallel imports to obtain technical services that were made available to authorized distributors. Turkcell effectively penalized distributors that did not accept exclusionary agreements by reducing the amount of business Turkcell did with these distributors and/or by reducing handset subsidies. The Competition Board argued that because Turkcell had a large market share, distributors were compelled to accept Turkcell's terms in the vertical agreements.

Turkcell also had close ownership ties with KVK, the distributor of Ericsson handsets. It was found that Turkcell provided subscriptions sold by KVK a wider range of handset and other subsidies (such as financing certain taxes) than those sold by other distributors. Hence, it was decided that Turkcell used its dominance in the market for subscribers to leverage its market power in the market for mobile handsets.

Turkcell was also found to impose on dealers marketing Turkcell SIM cards the retail prices of these cards. These restrictions on retail prices were also seen in violation of the Competition Law.

Source: Atiyas Izak 2005

- 4.1.2.4 Turk Telecom has stymied effective competition in fixed line telephony by not providing carrier selection and carrier pre-selection services. In fact Turk Telecom has used numerous anti-competitive measures to thwart competition, which we will describe later. Till the end of 2005 competition for local access was not permitted and alternative access technologies such as cable, fibre optic and fixed wireless, an important device for providing entry into local access in India and other developing countries has not been permitted. In broadband Turk Telecom has 99% of the market. This mirrors the experience in India where BSNL has a dominant position in broadband access by leveraging its dominant position in fixed line telephony.

Box 4.1.2.3. Abuse of dominant position in the markets for internet services and internet infrastructure

The competition authority started an investigation in 2001 against Turk Telecom for abuse of dominance in the market for internet services and for internet infrastructure. It was alleged that (i) Turk Telecom doubled the prices of leased lines used by ISPs even though costs remained the same and forced ISPs to rent virtual points of presence (VPOPs) from its subsidiary TTNNet instead of providing Primary Rate Interface (PRI) lines, (ii) indulged in predatory pricing in internet markets, (iii) provided limited capacity to ISPs using cable TV infrastructure in contrast to its behaviour towards TTNNet, (iv) forced ISPs to disclose names, addresses and telephone numbers of its subscribers and (v) increased royalties to satellite earth station operators by as much as 6300%.

As preliminary injunctions the Competition Authority asked Turk Telecom to end cross subsidization of TTNNet through realignment of prices, to stop forcing ISPs to rent VPOPs and to provide interconnection for all possible technologies that could be used to provide internet services and to stop asking for names and addresses of customers of ISPs. Turk Telecom responded by saying that they had increased the price of dial-up internet services by 20%, that it was technically not feasible to provide interconnection for provision of internet services through cable TV and other technologies and it would stop asking for confidential commercial information from ISPs. The CA concluded that Turk Telecom did not abide completely by the preliminary injunction and imposed a fine on it. Turk Telecom appealed against this order at a higher court but lost.

In its final judgment the CA concluded that Turk Telecom had been guilty of abuse of dominance in the market for infrastructure for the provision of internet services and for corporate and residential users. However, in some cases the Board was more lenient than the investigative committee. A fine of about 691 million USD was imposed on Turk Telecom.

Box 4.1.2.2: The essential facility doctrine and mobile infrastructure: the roaming case

In its roaming Decision, the Competition Board first investigated whether Turkcell and Telsim have joint dominance over the GSM infrastructure market. Joint dominance is defined as ability of operators to behave as a single operator by coordinating their actions. The Board then argued that Turkcell and Telsim had effectively refused providing roaming services and that this refusal amounted to an abuse of dominant position by denying access to an essential facility.

Normally the essential facility argument is used for cases where the competing firm lacks a realistic ability to duplicate a facility that it needs to provide its services. In the roaming case Is-TIM eventually had to duplicate facilities in question by its license condition. Hence the Board argument had to be that full roll out of the facility would take time and that the passage of time would make it more difficult for Is-TIM to attract subscribers. The Board listed technical, legal and economic difficulties that would prohibit the installation of infrastructure in a short period of time (say one year). Although not always made in the most clear and economically consistent manner (see the discussion in Annex 2), the argument was that delays in attaining full coverage would seriously increase the cost of attracting subscribers, and the resulting delay in revenues would jeopardize the viability of the company and reduce its ability to compete with the incumbents.

Source: Atiyas Izak 2005

4.1.3 South Africa

4.1.3.1 As in many other countries telecommunications in South Africa was the preserve of the state operator Telkom Ltd to which the telecommunications assets of the state had been transferred in a bid to commercialize operations. This act mirrors the formation of BSNL in India. The South African government adopted a stance of managed liberalization over a number of years. One outcome of this was the exclusivity granted in 1997 to Telkom SA Ltd for being the only provider of public switched telecommunications services, i.e. fixed services, for a period of 6 years, till 2002. This exclusivity period came bundled with roll out obligations and very strict monetary penalties for failure to meet these obligations. The government sold a 30% equity stake to Thintana Communications consortium that included Telekom Malaysia Berhad and SBC Communications of USA. The government later reduced its stake to 38% essentially converting, as in Turkey, a public monopoly into a private one. While evaluating the history of telecommunications in South Africa it is important to bear in mind its history of apartheid and the subsequent efforts made by the government to provide opportunities to its black citizens. Social considerations often assume primary importance in South Africa.

4.1.3.2 During this period of exclusivity important policy changes were put in place. The markets for customer premises equipment, private networks and that for value added network services (VANS) were already competitive while that of cellular mobile and paging services were partially open to competition and were to remain so. However, VANS services were required to lease facilities from Telkom and were prohibited from resale and voice services. There were 2 mobile operators who operated on the GSM standard, Vodaphone and MTN, but they too were required to obtain facilities from Telkom. It was expected that competition would be introduced in the local loops, pay phones and national long distance after 2003. A second national operator would also be licensed after 2003.

4.1.3.3 In the regulatory sphere the Telecommunications Act of 1996 established the South African Telecommunications Regulatory Authority (SATRA), which was later merged with Independent Broadcasting Authority (IBA) to form the converged regulator, the Independent

Communications Authority of South Africa (ICASA). In India we are yet to pass the Communications Convergence Bill, though broadcasting has been brought within the purview of the TRAI. The Competition Act was passed in the 1998 after the Telecommunications Act as the case in India. Similarly, the two bodies have concurrent jurisdiction over competition issues in telecommunications.

4.1.3.4 The next phase of reforms involved the setting up of the second national operator that would have as partners Esitel, the internal telecommunications division of the state electricity operator Eskom and Transtel, the internal telecommunications division of the state transport operator Transnet along with a black empowerment partner. The state broadcasting signal distribution company, Sentech, would be licensed to provide international gateways and would also be licensed to provide a network for video content. Other reforms that would be of interest to India is the provision Under Serviced Area Licenses (USAL) for allowing small and medium sized enterprises to offer services in areas with low tele-density and the licensing of fixed-mobile services akin to our WLL operations.

4.1.3.5 It appears that the government is in no mood to relinquish control over the telecommunications sector and a number of its policy decisions have been driven by the desire to enhance the value of the government's telecommunication assets. Further, by granting exclusivity and delaying issuance of licenses new and established firms could cement their market shares and dominate the industry for some time to come. In an industry where network effects are of great importance and switching costs can be high this does not bode well for the development of competition.

4.1.3.6 The experience of the behaviour of telecommunications markets also mirrors, to some extent, the experience in India. Anticipating competition, Telkom went on a tariff rebalancing exercise, reducing the prices of long-distance calls while increasing the prices of local calls. In India, the regulator carried out the tariff rebalancing exercise. Cellular mobile tariffs are also regulated unlike in India where the regulator has generally practised forbearance. As in India mobile services have been a runaway success with fast growth but tariffs are still considered to be excessive. It should come as no surprise that, even with regulation, fixed line telephony did not prosper and tariffs are still relatively high. There have been a number of disputes between Telkom and the VANS sector. The competition authority has yet to pronounce judgement on any specific anti-competitive behaviour, though one such instance has been referred to it.

Box 4.1.3.1. Abuse of dominance by Telkom in VANS

VANS services includes email, electronic data interchange and internet service provision that are provided using telecommunications infrastructure currently provided only by Telkom. There has been a history of disputes between VANS operators and Telkom. One such instance was whether VANS operators could provide voice over internet protocol (VOIP) services since “voice” was the prerogative of Telkom. Following complaints by the South African Value Added Network Services Association (SAVA), Omnilink and others the Competition Commission found in Feb 2004 that its behaviour had been anti-competitive and had referred the matter to the Competition Tribunal. It had also fined Telkom an amount of R37.6 million.

Among the complaints against Telkom against Telkom was the refusal to provide infrastructure for the creation of VANS networks, for interconnecting of VANS networks, refusal to dealing with VANS providers directly, discriminatory pricing of leased lines and bundling competitive services with monopolized services. The commission found it to be a case of abuse of dominance except in the case of bundling where there was insufficient evidence.

4.1.4 Mexico

4.1.4.1 The perils of hasty privatization are evident in the development of competition in Mexico. The state owned operator Telmex was sold along with Telnor, the regional operator for the north of the country. For good measure the Federal Microwave Network was added to the package, thus replacing a public monopoly with a private one. Even worse, the government in a bid to improve the value of the privatization transaction granted exclusivity in long distance services (and by extension in local services) for a period of 5 years. The market for cellular mobile was opened up for competition in 1993 but by then Telmex had purchased several regional mobile licenses and established America Movil as the largest mobile operator. Given the dominance of Telmex it would be an uphill task to introduce competition in Mexico.

4.1.4.2 After the privatization process Mexico instituted its telecommunications regulator, The Federal Telecommunications Commission (COFETEL), enacted the Federal Law of Economic Competition (LFCE) in 1993 and put in place the Federal Competition Commission (CFC). Telmex, in the meanwhile improved its operations and local traffic more than doubled. The introduction of competition in the long distance segment led to numerous disputes regarding interconnection with Telmex. Never the less there has been a steady reduction in tariffs and an increase in traffic. Competition also led to new and innovative marketing strategies being offered by firms. However, Telmex continues to be the dominant operator with 80% of the volume of national long-distance calls in 2004. In local telephony competition has been very slow to develop due to the necessity of obtaining fair and reasonable interconnection terms from Telmex. Use of alternative technologies such as cable TV is slowly catching on. The fact that Telmex had a significant stake in the country's largest cable TV operator till 2002 did not help either. Mobile telephony offered the only glimmer of hope with there being 2 mobile phone users per fixed line since 2004. This development has been ascribed to the introduction of calling party pays in mobile telephony, even though; it has led to increase in tariffs for fixed services which were already high. Also, the costs of making a mobile call across different operators can be twice as high as that of making a call

on the same network, which further increases the dominance of Telcel, the largest mobile operator. At the end of 2004 Telcel controlled 77% of the market.

4.1.4.3 The continued dominance of Telmex and its subsidiaries in all telecommunications markets should have led to efforts to introduce competition by COFETEL and CFC. In fact CFC has been trying to discipline Telmex for a while with almost no result. Telemex has been able to use the legal system and its financial and political clout to stymie any action taken by the CFC. It is interesting to note that the entire annual budget of the CFC amounts to less than two days profits of Telmex.

Box 4.1.4.1. Declaration stating that Telmex enjoys substantial market power in five relevant markets.

Under Mexican law it is required that the competition authority declare that Telmex enjoys substantial market power for the sectoral regulator, COFETEL, to regulate tariffs and interconnection. In 1997 the CFC declared that Telmex had substantial market power in local service, access to local networks, domestic long distance, international long distance and signal transportation. Telmex appealed the decision in 1998 but was turned down by the CFC. The sectoral regulator then imposed specific regulations to control the market power of Telmex. Telmex then appealed to courts through *amparos* which are akin to writ petitions in India thereby resulting in the suspension of the declaration by the CFC and the consequent regulations by COFETEL. The CFC then issued a new declaration keeping in view the requirements laid down by the courts in 2004, which was again appealed by Telmex and which has not been decided till 2006. Thus the regulations imposed on Telmex have been held in abeyance.

4.1.4.4 All the cases that have been discussed pertaining to developing countries point to the problems of dealing with an incumbent operator. The need for governments to raise resources through privatization at the expense of proper regulation and competition has exacerbated the problem. In India the state-owned operator has also been accused of abuse of dominance. Perhaps the fact that it continues to be state-owned has not allowed it to fully flex its muscles and take full advantage of its powers. Also, being government owned it is susceptible to the usual inefficiencies that plague the government. Paradoxically, this might have given private players the breathing space needed for the development of competition.

Box 4.1.4.2. Auction to allocate spectrum at the 1.9 GHz band.

COFETEL announced an auction for allocating the remaining spectrum in the 1.9 GHz band in July 2004 for Personal Communications Services (PCS). Both the CFC and COFETEL were interested in the efficient allocation of a scarce resource. COFETEL imposed a cap of 65 MHz for combined usage for cellular and PCS to avoid concentration of frequency. Mexican law requires bidders to obtain a clearance from the CFC for their bids. Once the bids were in the CFC realized that the three larger incumbent's bids were more than the available spectrum though none exceeded the 65 MHz cap. The CFC then allowed the bidders to proceed with the auction provided they capped their bids to 35 MHz.

The three incumbents appealed against this decision in District Courts and obtained an injunction which allowed them to go ahead with the 65 MHz cap. However, the Circuit Courts revoked the injunction and the whole matter is still pending in the Circuit Courts.

4.1.5 European Union

4.1.5.1 Liberalization of telecommunications in the European Union started in the late 1980s and the early 1990s when the European Commission became aware of the telecommunications and multi media revolution that was taking place in the U.S. and how far behind Europe was. The unleashing of this technological revolution would require liberalization of national markets and the creation of one single market throughout Europe. This grand project of liberalization of telecommunications markets in so many different countries each starting with national monopolies and different degrees of affection towards competition could only be done gradually. An important milestone was the directive in January 1st, 1998 on the liberalization of voice telephony. The commission let national regulatory bodies and competition authorities in charge of implementing the liberalization of telecommunications markets. Never the less it has been more proactive than most competition authorities since some national authorities have not been as energetic and there is some inclination to treat firms in their countries leniently.

Box 4.1.5.1. Abuse of dominant position by Deutsche Telecom AG (DTAG) through unfair prices for the provision of local access

The charge against DTAG was that it charged competitors higher prices for access to the local loop than it charged its own customers. As the only German network operator with a nation-wide coverage it was required to provide fully unbundled access at cost oriented prices since 1998. The EC came to a judgement in May 2003 that DTAG indulged in margin squeezing in the period 1998 till 2001 since wholesale prices were above retail prices. In 2002-3 its behaviour was still considered abusive, even though wholesale prices were lowered below retail prices, because the difference was judged to be lower than warranted by DTAG's costs.

A fine of 12.6 million Euros was imposed on DTAG. A peculiar feature of the case was that DTAG's tariffs had been examined by the German national regulatory authority and no changes were mandated.

Box 4.1.5.2: Abuse of dominant position by Wanadoo Interactive through predatory pricing in ADSL based internet access services

Wanadoo, a subsidiary of France Telecom, offered ADSL services for high-speed access to the internet through telephone lines. Between 1999 and 2002 it offered its services at below unit cost. It suffered huge losses but clearly its intention was to corner the high-speed internet access market. Its market share rose from 46% to 72% between January 2001 and September 2002, that too when the total size of the market increased 5 times. The Commission concluded that this behaviour constituted abuse of dominance since retail prices were below operating costs and after August 2001 they approximately equalled operating costs but were still below total cost. The commission took cognizance of the fact that the abuse had been discontinued imposed a fine of 10.35 million Euros.

Box 4.1.5.3: Anti-competitive agreements in the mobile telephony market

The case concerns the sharing of information on new subscriptions and cancellations every month between 1997 and 2003 by the three mobile operators in France. The Conseil de la Concurrence argued that the operators could not have gained access to this information unless they systematically shared it and kept the arrangement secret. It was also clear from a perusal of the minutes of executive committee meetings that this information was used for commercial strategies. The investigations found evidence of collusive agreements to stabilize their market shares including hand written notes on “pacification of the market” and “Yalta of market share.” The competition authority also observed similarities in commercial decisions such as simultaneously charging calls at 30 second increments after the first minute.

Till 2000 mobile operators had concentrated on acquiring new customers for growth: a strategy that required considerable investment. In contrast a strategy of consolidating their market shares and improving their margins would present a better alternative. The mobile telephony operators achieved this through the collusive agreement which led to among other effects a hike in prices.

The Competition Authority took the view that a large penalty was in order since the infringement took place over a length of time, the considerable size of the market, the entry restrictions that existed and the harm caused to customers. A fine of 534 million Euros was imposed on the three operators.

4.1.6 United States

4.1.6.1 The United States has had the distinction of being a leader in the Telecommunications industry. The history of the development of the telecommunications sector and the somewhat complicated regulatory and competition authority set up has been described elsewhere. Here we note the importance of the Telecommunications Act of 1996 in ushering in competition through the dismantling of barriers between local and long-distance, wireline and wireless and cable TV and voice telephony. Over the last decade the Act has spurred a lot of economic

activity including mergers and acquisitions and consequently regulatory activity on the part of the various regulators that exist in telecommunications.

Box 4.1.6.1: Merger between Verizon and MCI as well as the merger between SBC Communications and AT&T

The case before the Department of Justice (DOJ) queried whether the proposed merger to combine the local telecommunications network and the voice and data services of the two firms would lead to a substantial lessening of competition in any relevant market. The DOJ coordinated with the Federal Communications Commission (FCC) during the investigation.

Verizon and MCI controlled wire-line connections to hundreds of buildings in eight identified metropolitan areas. SBC and AT&T had a similar position in eight metropolitan areas. These local lines provided voice and data services to business customers in these areas. The DOJ determined that local private lines constituted a relevant market after considering numerous product and geographic markets and evaluating all overlaps between the merging parties.

The DOJ concluded that the proposed mergers would result in higher prices in the 8 metropolitan areas that Verizon served and in the 11 that SBC had a presence. Verizon and SBC were required to divest portions of their fibre-optic facilities to proceed with the mergers. The DOJ also concluded that in the markets for residential local and long-distance service, Internet backbone services the proposed merger would not harm competition since there was existing competition or because of emerging technologies. Also merger-specific efficiencies played a part in allowing the merger without any stipulations in these markets.

Box 4.1.6.2. Merger between EchoStar Communications and Hughes Electronic

EchoStar and Hughes offered multichannel video programming distribution (MPVD) services through the Dish Network (DISH) and DirecTV (DTV) respectively. They were the two largest direct broadcast satellite (DBS) companies and the question was whether their merger would substantially lessen competition.

In 2002, when the case came up, MPVD services were subscribed to by 80% of United States households for whom the only options were DTV, DISH or local cable which in view of the DOJ constituted the relevant market. Rural areas had to do without the luxury of local cable. The merger would lead to a duopoly or even worse a monopoly in some areas. The DOJ concluded that the proposed merger would substantially reduce competition and filed suit in federal court to stop it. Similarly, the FCC decided to conduct a hearing on the merger decision. The parties then decided to call off the merger.

4.2. Indian Cases

- 4.2.1 There have been some allegations of anti-competitive behaviour in India. Most of these have to do with the practices of the incumbent operator BSNL. To begin with one should note that the entry of new players in the industry still rests with the DOT, whose criteria for allowing entry is not transparent. Thus the threat of potential entry, an important competitive mechanism, is naturally lowered. The license fees that entrants have to pay to operate lower it further. BSNL and MTNL, however, do not have to pay license fees. This provides a competitive advantage to BSNL and MTNL. Further private operators pay an ADC to BSNL and MTNL for their services for the poor and rural areas. Thus, in a lot of ways the scales are tilted in favour of BSNL. If BSNL were a private operator it could have wiped out its competitors with these advantages. As such it is a government operator with its own inefficiencies. What compounds the problem is that there is no clear idea as to the goals of the BSNL. Thus the nature of competition between BSNL and private operators remains a mystery.
- 4.2.2 The other major gripe of private operators is interconnection. For a long time the BSNL refused to come out with its reference interconnect offer. Even when it provides interconnection it does so at its own convenience. Even though the TRAI mandates interconnection to unbundled elements of the network BSNL simply refuses citing engineering reasons. TRAI does not have any powers to punish BSNL or any private operators. It should also be noted that operators in contiguous circles are not allowed to use their own networks to connect subscribers in these circles. They have to connect using a long distance carrier, which is most often BSNL.
- 4.2.3 We have already noted the financial problems being faced by mobile operators. That and the fact that there are some purely mobile operators left suggest that there should be some more consolidation in the mobile market. The TRAI has come out with its own set of guidelines for mergers. They will not be allowed if the number of operators fall below 3 and mergers that involve a firm which has more than 50% market share or the merged entity has more than 75% market share will attract scrutiny. The spectrum allocated has been capped at 15MHz for metros and at 12.4 MHz for other circles. Finally all mergers have to be notified to TRAI and permission sought from DOT. The competition commission's guidelines on mergers that attract scrutiny depend on the turnover or profits of these companies. Presumably, at the time of investigation the focus will be on economic considerations such as market share, but the decisions reached could be at odds with the TRAI guidelines.
- 4.2.4 The most significant development that should raise the hackles of any competition authority is the proposed merger of BSNL and MTNL. By any standards it would be deemed anti-competitive. It would be an interesting exercise to consider the arguments for and against the merger. Market definition would be an issue, since MTNL is primarily active in the fixed access market. BSNL is, however, active in all segments. So the merger could potentially reduce competition in all segments.
- 4.2.5 We have earlier noted the example of BSNL reducing the prices for internet access to as low as 6 paise per minute, which made the business unviable for some private ISPs. This could be an instance of predatory pricing or certainly margin squeezing.

- 4.2.6 Of late there are a couple of cases that certainly would have attracted the attention of the CCI. The first is acquisition of Hutch by Vodafone. The turnovers of Vodafone and Hutch are large enough to qualify under the size criteria of the Competition Act. However, since Vodafone is not a player in the Indian market, its entry is likely to enhance competition. Among the other bidders for Hutch was Reliance. We have already noted its presence in the Indian market and the judgement as to the effect on competition of Reliance's acquisition would have been quite complicated.
- 4.2.7 The other curious case has been the decision by the TRAI that there was a lack of competition in the market for roaming mobile calls and therefore it had to be regulated. It is not clear how the TRAI reached its decision. From the calculations it presents costs of making roaming calls are shown to be above costs. It is also true that the roaming plans of all mobile operators were very similar. One could suggest the possibility of tacit collusion or even cartelization. However, it is difficult to imagine such collusion in only one part of the market and not in others. Also, the mere presence of above cost prices along with similar prices cannot be accepted as proof of absence of competition. This certainly was one instance where the TRAI could have benefited from the expert advice of a competition authority.

Box 4.2.1 Takeover of Hutch by Reliance

When Hutch was offered for sale Reliance was extremely interested in acquiring it. The acquisition of Hutch would have made very good sense for Reliance. As a late entrant into the cellular mobile market, Reliance had relied on CDMA technology and had a relatively small GSM presence. The acquisition of Hutch would have augmented its low ARPU, mostly non-metro, CDMA customer base with high ARPU, mostly metro, GSM subscribers. Since Reliance is the third largest mobile operator and Hutch comes right behind it in terms of subscriber numbers an acquisition of Hutch by Reliance should have set off alarm bells at the Competition Commission of India. Going by subscriber numbers the HHI for 2007 for the cellular mobile market is 1625.43. If Reliance and Hutch were to merge and they both retained their market share the HHI would jump to 2220.15. The market would still be considered fairly competitive but the increase in HHI would be significant. The issue though is whether the national cellular market is the relevant market.

One could look instead at circles. In Delhi the HHI without the merger would be 1780 and 2426 with the merger. In Mumbai the corresponding numbers would be 1828 and 2878 and the Reliance-Hutch combination would account for 46% of the market. In terms of revenues the market share would be even higher at 50% and the HHI would be 3202. Thus one could argue that there is a substantial lessening of competition in Mumbai with the acquisition. One could carry out this exercise for every circle and check for the effect of the acquisition on HHI. However, the old question raises its head. Is the circle a relevant market?

We have noted that most Hutch customers are business users and high income individuals, whereas Reliance has been popular with low income users, particularly, since Reliance initially bundled its handset along with connections. These could constitute entirely different markets. It is possible that a fairly significant increase in Reliance's prices would not lead to an increase in Hutch customers, in which case these two markets are separate as the two products are not good substitutes. Thus the competition authority might conclude that the acquisition poses no problems. As an interesting aside it is possible that the limited substitutability is due to the Reliance's bundling of handsets along with connections. Since the customer has been paying for the handset and it is not possible to use it on a Hutch connection as it is only good for CDMA he may be reluctant to switch to Hutch. The limited substitutability may thus be due to bundling, a possible anti-competitive device, and not to an inherent difference between the consumers in the two markets. This issue serves to highlight the problems a competition authority faces when deciding on mergers and acquisitions.

4.3. The Way Ahead

- 4.3.1 We have discussed in fair detail the evolution of the telecommunications sector in India. The mobile sector has exhibited a fair amount of competition while the fixed-line sector is still quite monopolized. The interplay of competition, regulation and government policy has resulted in the market structure we see today. What are the lessons that we can draw for the competition commission?
- 4.3.2 First, the competition commission has to be very pro-active on the advocacy front. It should aim its efforts at the government in general and then at different ministries.
- 4.3.3 It is vitally important that the government has a competition policy. Even though India has embraced market reforms no clear direction regarding competition has emerged. The commission can try and articulate such a policy and ensure that telecommunications is mentioned. This would, hopefully, reduce the need for intervention at the level of the prime minister, to undo damage. This occurred at the time of the license fee problem with mobile operators. If the message is clearly articulated that there has to be competition in telecommunications and that BSNL and MTNL are not be unfairly advantaged and that solutions to universal service obligations should be found within a competitive framework it would go a long way towards preventing arbitrary decisions by the DOT and the parent ministry. Other ministries such as finance and environment would also examine the effect of their policies on competition in telecommunications.
- 4.3.4 It is very difficult for private operators to compete against a state owned incumbent operator. It is likely that the advantages that BSNL and MTNL enjoyed have diminished over the years. Never the less they are still formidable opponents. It is also not clear what their objectives are. Public welfare as an objective is laudable but that raises the question whether the private operators are also not serving the telecommunications needs of the nation. If they are why do we need a government operator? The answer often provided is that we need the government operator to provide for the telecommunications needs of the poor and those who live in remote areas. If that is so BSNL/MTNL should concentrate purely on such services³² and their other commercial operations should be privatised. The resources of BSNL/MTNL would be far better utilized in that case. The commission can propose a policy paper on why and how BSNL/MTNL should be privatised. If this is politically not possible then how should they be run to further competition? The resources of BSNL/MTNL belong to the people of India and not to the DOT.
- 4.3.5 The commission should extend its advocacy efforts to the DOT and the ministry of communications and information technology. In this it is not likely to be successful, not due to lack of effort, though. It also has to reach out to the judicial system and to the public in general, some of which it has already done. The DOT has in the past used the courts to try and prevent competition and to tame the regulator. Such instances should be catalogued and disseminated. Other countries also have had to

³² It is not clear that even if BSNL were to specialize in providing services for the poor it would be very effective. It would have to be funded out of the general exchequer. This would at least reduce the current distortions. In principle, the same effect should be evident if the government subsidized rural operations of all operators. Enacting policies regarding niche operators could also help.

suffer from such behaviour and the courts should be wary of various operators using the judicial system to their strategic advantage.

- 4.3.6 Perhaps the most significant contribution that the commission can make is to persuade the regulator and the TDSAT to use competition law principles in their consultation papers and in making orders. In fact the consultation papers should be written jointly. To be able to persuade the TRAI to do that the commission will have to make some investment in staff and expertise, otherwise it will have very little to contribute. Of course the commission may lack the resources and might find itself stretched given the gamut of its responsibilities. It could do well to invest in telecommunications since it could use this model to develop relations with other regulators. It is also the case that because of rapidly developing technologies competitive pressures are strong in telecommunications. Attempts to prevent competition are unlikely to be very successful in the long run.
- 4.3.7 Finally, the commission has to invest in staff and capabilities to do its job of implementing the Competition Act. It should learn from decisions reached by other competition authorities. The main objective would be to learn the methods of analysis. One way of getting heard is through superior work and in this regard it should not be too difficult to surpass the TRAI's efforts.

5. Appendices

5.1: Year wise developments in mobile services segment

5.1.1 The introduction of cellular services in India took place in the year 1995-96. The country was divided into 20 circles plus the four metros. According to the duopoly policy pursued by the government there were to be two operators per circle. After the first round of bidding was over, not without controversy, 8 licensees in the 4 metros and 15 others in 18 circles began operations. Delhi and Mumbai had the largest number of subscribers as befit their economic stature. The total revenues stood at a paltry Rs. 140 crores. High handset prices inhibited adoption and operators combined the sale of handsets along with connections to encourage sales. The heavy duties on handsets encouraged a black market in imported handsets, which further dampened the revenues of operators.

Table 5.1.1. 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

5.1.2 The next year witnessed impressive growth of 490%, though from modest beginnings, for subscriber numbers to reach 376,000. The growth was mainly concentrated in the metros, which accounted for 86.7% of the market. Delhi accounted for 41.7%, while Mumbai commanded 30%. Bharti emerged as the leader with 82,000 subscribers while BPL accounted for the most usage. Average revenue per user (ARPU) varied between Rs. 800 to Rs. 1200 and was subjected to downward pressure as competitors tried to entice consumers with lower prices. Bundling of handsets with free air-time emerged as a strategy to attract new connections. For the first time DOT woke up to the possibility of competition from mobile phones after Koshika announced its rates for Uttar Pradesh, Bihar and Orissa. MTNL's intention of entering the mobile market with CDMA technology provided the threat of new entry, that too from a government owned entity. As such it portended the end to the government's duopoly policy and led to the first public spat between the regulator and the government.

5.1.3 1997-98 was a turbulent year. The trends in growth in metros continued with the total reaching 8.82 lakh by March 1998. However, cell phones began to shed their niche metro image and non-metros registered an impressive growth to reach 3.29 lakhs. By the third quarter this growth had petered out. This was partly due to policy decisions such as including all mobile phone owners in the income tax net. Consumers were also expecting a cut in the duty on handsets in the budget and wished to delay purchases. DOT did not help matters by levying a levy of Rs. 500 per month per subscriber, making low-usage users a drain on the companies. Coverage was extended to 130 cities

in the country but the industry suffered losses to the tune of Rs. 400 crores and some operators defaulted on their license fees. In a bid to increase air-time usage innovative tariff structures were introduced that involved bundling and two-part tariffs. Pre-paid services were also introduced.

5.1.4 The total subscriber base grew to 11.95 lakh next year, with the metro base declining to 5.19 lakh from 5.6 lakh in April 1998. This was partly due to the Rs. 500 levy mentioned previously that led to operators discouraging low-usage subscriptions. The gloom that reared its head the previous year turned pervasive as cellular companies lost an estimated Rs. 5000 crores. There was some hope on the horizon with the announcement of a new telecom policy to address the problems of the sector. The operators also hoped that the introduction of calling-party-pays (CPP) would boost their fortunes.

Table 5.1.2. Number of Subscribers (August 2000)

Circle	Name of Operators	Numbers
Andhra Pradesh	Bharti Mobile, Tata Cellular	51249, 67040
Gujarat	Birla AT&T, Fascal	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

5.1.5 The introduction of payment of license fees through revenue sharing resulted in a dramatic improvement in the market for the year 1999-2000. By August 2000 the number of subscribers stood at 2,456,983, a growth rate of more than 60%. Revenues increased by 80% to reach Rs. 2,252 crores thereby assuaging the woes of the mobile operators. In terms of market developments the sector witnessed a large number of takeovers and mergers. Hutchison bought up Sterling cellular in Delhi, Fascal in Gujrat and Usha Martin in Kolkata, while Bharati bought up the J.T. Mobile's operations in Karnataka and Andhra Pradesh. BPL also tried to buy up some operations but failed to compete with Hutch. This probably marked the beginning of a

long decline of the BPL group in this sector. Alliances were also formed between Aircell and Hutch as well as between Bharati and BPL. These developments could be considered anticompetitive. However, it is also possible that the government's duopoly policy had yielded too many operators and the consolidation merely led to the eventual existence of a few large competitors competing much more effectively with each other. On the regulatory front TRAI tried to introduce Calling Party Pays (CPP)³³, but was stymied by the DOT and MTNL, which contested the move. At the same time the TRAI stopped MTNL from entering the mobile market.

- 5.1.6 The year 2000-2001 was interesting in that probably for the first time mobile operators spend more time on business strategies rather than grappling with the TRAI, DOT and the government. The total revenue earned was Rs. 3,865.29 crores which were almost evenly split between metros and circles. Thus mobile phones were no longer restricted to the metros. The total number of subscribers reached 3.57 million, which represented an 89% rise over the year before.
- 5.1.7 Prepaid customers formed the bulk of the additions, since rentals were still quite high at Rs. 400 to Rs. 600. This was the first year that we witnessed strong advertising with rival companies pushing their different brands and their different marketing strategies. The ARPU dropped to Rs. 731 per month. The prepaid segment had an ARPU of Rs. 450 while that of the post-paid segment stood at Rs. 970. However, roaming revenues went up, representing 30% of total revenue for some metro operators.
- 5.1.8 There were certain other notable features. The marketing efforts of almost all the providers concentrated on increasing the number of subscribers. Hardly any tried to increase usage. Short Messaging Service (SMS) became very popular. By March 2001, users in Mumbai were sending 5 lakh messages per day. This could have represented another potential revenue stream for operators, but hardly any content was made available. WAP services were also launched but did not gain in popularity. The consumers were plagued by indifferent quality of service and customer care was particularly bad.
- 5.1.9 The trend in consolidation that we witnessed in the previous year continued into this year. Hutchison bought stakes in Sterling cellular and in Fascal, while Bharati took a stake in JT Mobile. The government decided to allow fixed service providers to provide limited mobility through CDMA. This promised entry into the market from incumbent fixed service providers as well as new entrants enticed by the low license fees for fixed operators. The government announced plans for the fourth operator in each metro and circle, with BSNL/MTNL being the third operator. MTNL introduced its brand Dolphin in the market but failed miserably, showing how difficult it is for a government owned company to change its culture. Cellular service providers also bid for the fixed license in their own circles. This was a strategic move to get the spectrum that was to be allocated to fixed service providers.
- 5.1.10 2001-2002 witnessed a doubling of the number of cellular subscribers. By May 2002 the total number of subscribers reached almost 7 million. The Bharati Group led with the maximum number of subscribers closely followed by the Hutchison. BPL Mobile,

³³ Calling party pays refers to the practice of levying charges only on the individual who makes a call rather than also on the individual who receives a call.

Idea, Escotel, Spice and Reliance followed behind in the same order. Incumbent operators still relied mainly on voice for their revenues. The growth rate for metros stood at 88.4%, while that of category A, B, and C circles was 83.1, 60.9 and 96.1% respectively. Postpaid prices were reduced by 24% to reach an average of Rs 3.67 while that for prepaid customers registered a decrease of 4% to reach Rs 5.43 per minute. The FDI inflow for 2002 stood at Rs 3014 million. In contrast the previous year had witnessed the total inflow of Rs 39,709 million. TRAI directed all cellular operators to reduce roaming charges to Rs 3 per minute. Further the monthly rental for roaming was capped at Rs 100. The TDSAT dismissed the petition of the Cellular Operators Association of India (COAI) challenging the government's decision allowing fixed service providers to offer limited mobility WLL services. The TDSAT took one year to reach its decision. The apprehensions of cellular operators that limited mobility would cut into their subscriber base was allayed by the TRAI fixing monthly rentals at Rs 450 and a flat rate of Rs 1.20 per minute. This year also saw a large decrease in the price of handsets. Prices were reduced up to 47% with manufacturers passing on the benefits of the abolition of the 16 % duty on handsets. The only sour note for the year was the refusal of BSNL, MTNL and VSNL to sign interconnection agreements with some of the new entrants in the market. The communications convergence bill was introduced in the Parliament.

Table 5.1.3. No of Subscribers (June 2002)

Metro/Circle	Name of Operators	Numbers
Metros		
Delhi	Bharti, Hutch, MTNL	665023, 493987, 91238
Mumbai	BPL, Hutch, MTNL	508220, 503558, 109936
Chennai	RPG Cellular, Bharati	131782, 154265
Kolkata	Bharati, Usha Martin, BSNL	128609, 182370, 8915
Category A		
Maharashtra	BPL, IDEA	179812, 345122
Gujrat	Fascel, IDEA	330381, 184628
Andhra Pradesh	IDEA, Bharati	284565, 274491
Karnataka	Bharati, Spice	261033, 186164
Tamil Nadu	BPL, Aircell	135301, 175109
Category B		
Kerala	Escotel, BPL	250341, 153518
Punjab	Spice, Bharati	366712, 79503
Haryana	Escotel, Aircel Digilink, Bharati	93037, 16190, 10655
Uttar Pradesh (West)	Escotel, Bharati	228509, 10532
Uttar Pradesh (East)	Aircell, Koshika	60450, 58322
Rajasthan	Aircell, Hexacomm	28621, 96724
Madhya Pradesh	IDEA, Reliance, Bharati	97627, 138500, 3533
West Bengal	Reliance	50214
Category C		
Himachal Pradesh	Bharati, Reliance	19058, 8132
Bihar	Reliance, BSNL	126315, 15087
Orissa	Reliance	53118
Assam	Reliance	32423
North East	Reliance	5473

Source: Voice and Data.

- 5.1.11 The total number of subscribers in March 2003 was 12.69 million compared to 6.43 million in March 2002, comprising an increase of 97.3%. The primary event of the year was the entry of BSNL into the cellular market. It quickly grabbed the second position with a subscriber base of 2.25 million with Bharati occupying the first position with 3.07 million subscribers. The Hutchison group followed with 2.16 million, Idea Cellular with 1.13 million and the BPL Group with 1.13 million. Spice Communications and Escotel were reduced to small players with subscriber bases of 0.64 million and 0.58 million respectively. The entry of BSNL with a large national network led to the spread of the cellular network across the country. The growth in circles was approximately 113.5%, while metros grew at 72.8%. Delhi had the largest subscriber base of 1.8 million subscribers followed by Mumbai at 1.68 million. BSNL added that total of 2.25 million subscribers, a growth rate of 36%.
- 5.1.12 In terms of revenue Bharati took first spot at Rs. 2084.36 crores while the Hutchison group followed with Rs. 1735 crores. It is interesting to note that BSNL the second-largest in terms of subscriber numbers came a lowly sixth in terms of revenue of Rs. 430 crores. The ARPU fell to Rs 597 per month down from Rs 780 per month the previous year. However, usage grew to an average of 290 minutes per month compared to 200 in previous year. The introduction of CDMA service by Reliance worried the industry. Incoming calls were made free but the introduction of calling party pays and higher interconnection charges provided some benefit to the industry.
- 5.1.13 There was a 135% increase in the number of cellular subscribers in the year 2004 taking the total number of subscribers to 33 million. The largest contributor to this increase was Reliance Infocom, which added 6.9 million subscribers in 10 months. It seemed that the dominance of Bharati in the cellular services segment was over. Reliance's entry into the market was accompanied by great fanfare. The company advertised heavily in the media, particularly stressing on its STD plans for calls from one Reliance phone to another at 40 paise per minute. This plan was later disallowed by the TRAI but certainly caused a stir when first announced. Reliance depended on a franchise model to build up its subscriber base rather than using its own facilities. This attracted a large number of people who became Reliance franchisees. The immediate effect of Reliance's entry was the reduction in telecom tariffs even further. Tariffs declined an average of 23 per cent. The minimum effective per minute charge reduced to Rs 0.44 per minute from Rs 0.57 per minute the previous year. The amount of usage however increased by 45%. The ARPU decreased to a new low of Rs 475 per month as compared to Rs 595 in the previous year. Two factors accounted for this decrease, one the decrease in tariffs for voice and the other the preponderance of prepaid subscribers. At Rs 650 Tata Teleservices had the highest ARPU since its subscriber base was largely postpaid. Even though Reliance had a large number of postpaid customers its ARPU remained low because of billing problems. Hutchison at Rs 534 claimed the top spot in terms of ARPU among the GSM only operators. It had a stronghold in Mumbai which had relatively more postpaid customers. BSNL and MTNL experienced significantly low ARPU because of their no-frills offerings, which did not attract non-voice usage. Also BSNL had a large presence in class B and class C cities where usage is typically low.
- 5.1.13 In terms of revenue Bharati came first with revenues of Rs. 3261 crores. This represented an increase of 56% from its previous year revenue of Rs 2084 crores.

The next highest revenue earner was the Hutch group with revenues of Rs 2701 crores, an increase of 56 per cent as well. Reliance occupied the third spot with revenues of Rs 2571 crores and the fourth spot was occupied by BSNL with revenues of Rs 1984 crores. Both Reliance and BSNL made spectacular gains in revenue increases. Their percentage increases stood at 276% and 236% respectively. The Hutch group, Reliance and BSNL followed with 18.3%, 17.4% and 13.5% respectively.

5.1.14 In terms of the number of subscribers the Reliance group came in first with a total of over 7 million subscribers. This represented an increase of 384% from the previous year's subscriber base of 1.5 million. The Bharati group came in second with 7 million subscribers while BSNL and the Hutch group followed with 6.15 and 5.15 million respectively. Among the other major players IDEA Cellular, BPL Group and Spice had subscriber bases of 3 million, 1.88 million and 1.21 million respectively. It is interesting to note that Reliance came in third in terms of revenues even though it occupied first spot in terms of number of subscribers. Similarly the Hutch group, which stood fourth in terms of number of subscribers, had the second highest revenues. This year was also significant for Bharati as it was its first full-year profit. Reliance was yet to be profitable and in fact lost about Rs 300 crores in its CDMA business.

5.1.15 Bharati depended heavily on prepaid customers for growth in the number of subscribers. The problem with this approach was lowered ARPU. Prepaid customers also tend to be less loyal and lead to greater churn and therefore more variable revenue streams. Bharati tried to improve loyalty through greater brand building exercises and by a greater number of recharge options. In May 2004 Bharati introduced an electronic scheme for recharging and reported that 40 per cent of recharge were coming through the scheme. Hutchison relied less on prepaid as reported earlier. However it had to match Bharati's schemes and it introduced the "direct pop-up" which allowed prepaid customers to refill any amount between Rs 315 and Rs 5000 through SMS or bank ATMs instead of using pre-denominated cards. It is interesting to note operators trying to beat the increasing similarity of their products and offers through brand building and subtle differences in the schemes on offer. At one level whenever an operator introduced new tariffs or a marketing scheme other operators would quickly emulate. Yet now that their offerings were very similar, operators had to think of new schemes which differentiated them from their competitors, which were in turn emulated by their competitors and so the cycle continued. The trend towards consolidation also continued with Aircel buying out 79.24% in RPG cellular service for Rs 210 crores. Idea signed a share purchase agreement to buyout Escotel mobile communications.

5.1.16 If we look back on the year we see both increasing competition in terms of new entry and increased strategic activity. We also notice a decrease in the number of competitors through consolidation. The new entrants BSNL and Reliance were serious players. BSNL was the incumbent state operator with a nationwide presence. Reliance is one of the largest industrial houses in India. It should be expected that in the years to come the smaller players would either leave or be bought out.

- 5.1.17 In the year 2004-2005 mobile phones overtook fixed line subscribers for the first time. Growth in revenues and number of subscribers exceeded 50%. The total number of mobile subscribers reached 52.35 million. This represented an addition of 17.9 million lines of which 14.8 were GSM and 3.1 were CDMA lines. The industry added 1.5 million lines on average every month. Mobile operators particularly Tata Teleservices, Bharati and Hutch expanded into B and C category circles. By March 2005 the country had mobile services in 3000 towns using 118 GSM and CDMA networks. The total revenue of the industry stood at Rs 23,284 crores (\$5.2 billion).
- 5.1.18 A majority of the operators extended their services into different geographical areas. Bharati, Reliance and BSNL crossed the 10 million mark in the number of subscribers. Bharati came first with 10.98 million followed by Reliance with 10.45 million, followed by BSNL with 10.16 million. In terms of revenue Bharati came first with Rs. 5436 crores followed by Hutch with Rs. 4365 crores. Reliance, BSNL, Idea cellular and the BPL Group came behind with Rs. 4089 crores, Rs. 3700 crores, Rs. 2409 crores and Rs. 1012 crores respectively. The remaining players included Aircell with Rs 741 crores, Spice with Rs. 706 crores, Tata Teleservices with Rs. 523 crores, MTNL with Rs. 287 crores, HFCL Infotel with 10 crores and Shyam Telelink with 6 crores. The last two HFCL Infotel and Shyam Telelink have witnessed decreases in their subscriber base. Clearly they were no longer strong players and were likely to exit the industry. Among the others Tata Teleservices is a serious player and grew at 107%. It is prevalent across all services and is the predominant player in the international long-distance and Internet service provision with its acquisition of VSNL, the privatized international long-distance carrier. MTNL could also be a serious competitor since it is the incumbent National operator for Delhi and Mumbai. It is the dominant operator in the fixed fixed segment in these two cities. What the future holds for Aircell and Spice is unclear.
- 5.1.19 Bharati was the leading player in the mobile services segment with 21 per cent of subscribers and 23 per cent of revenues. However 98 per cent of its revenues came from old circles. It expanded into new circles like U.P. (East), West Bengal, Jammu and Kashmir, Bihar, Orissa, Assam and the northeast. The number two operator, Hutch, had 18.7% market share in terms of revenue and 14.9% in terms of subscriber base. It mainly operated in Metros and Category A and B circles which provided it with higher ARPU than other operators. It also concentrated on providing value-added services.
- 5.1.20 In terms of investment Bharati made a total investment of Rs 12,479 crores and invested around Rs. 2983 crores in the mobile sector. In the same period Hutch invested Rs 1400 crores. Reliance Infocom within a very short time invested Rs 14,000 crores most of which was in the mobile sector. An increase of the FDI limit from 49% to 74% promised even more investment. The increasing competition for voice led to operators seeking other revenue sources. Non-voice applications include SMS-based applications, EDGE PC cards for Internet access, entertainment based, content, sports-based content and directory services. Operators were also providing Internet access through mobile phones and Bharati launched its blackberry service for e-mail messaging. The prices of handsets also dropped with Motorola launching handsets at Rs. 1700. In the future we can

expect to see handsets priced below Rs. 1000 which will greatly assist in telecom penetration.

- 5.1.21 In the financial year 2005-06 there has been an addition of 38.5 million subscribers. This represents a growth of 114% over the previous year. The total number of subscribers stood at 90.8 million. Of the 38.5 million subscribers added in the past year GSM contributed 76% whereas CDMA contributed 24%. A large part of the expansion in numbers came through the introduction of service in smaller towns and cities. As of March 2006 there were total of 127 mobile networks.
- 5.1.22 The Tata Teleservices group led the way in terms off subscriber growth with an increase off 345 per cent. MTNL followed with a growth of 105 per cent. The top five players grew by more than 45 per cent. In terms of number of subscribers Bharati came in first with 19.5 million subscribers followed by BSNL with 18.4 million and Reliance with 17.3 million. In terms of revenue Bharati came in first again with revenues of Rs 7928 crores. Hutch and Reliance group had revenues of 6837 crores and 6673 crores respectively. BSNL came close with revenues of Rs 6574 crores. The other major players were Idea Cellular and the Tata teleservices group with revenues of Rs. 2966 crores and Rs 1878 crores respectively. The Tata teleservices group grew at an astonishing 259% to become one of the major players.
- 5.1.23 There were a number of policy announcements. The FDI limit was increased to 74% cent from 49% and the access deficit charge (ADC) was changed from per minute charge to revenue sharing of 1.5 per cent off adjusted gross revenue (AGR). The raising of the FDI limit led to the Vodafone group taking a 10% interest in Bharati for Rs 6700 crores. The Temasek group has taken a 9.9 per cent stake in Tata Teleservices. Aircell has witnessed an acquisition of 26 per cent by the Maxis group for \$280 million and Telecom Malaysia Berhad has brought a 49 per cent stake in Spice communication for \$178.8 million.
- 5.1.24 Bharati is the biggest player both in terms of revenue as well as number of subscribers. It has 22.1% of the total revenue and has 21.5% of the total number of subscribers. It is actively trying to increase its non-voice revenues through such innovative offerings as "Hello Tunes" where customers can download over 18,000 songs in 20 different languages. It has invested Rs 4159 crores in mobile services in the financial year 2005-06, bringing its total investment to Rs 15,923 crores.
- 5.1.25 Hutchison saw large jump in subscriber numbers from 6.2 million to 15.3 million. This was primarily due to its acquisition of BPL Mumbai and the BPL cellular circles off Maharashtra Tamil Nadu and Kerala for \$1154 million. It also acquired Essar Spacetel and thereby expanded into Madhya Pradesh, North East, Himachal Pradesh, Bihar, Orissa, Assam and Jammu and Kashmir. The company now has a presence in 23 circles. With revenues of Rs 6837 crores Hutch comes in second behind Bharati. In terms off subscriber numbers it comes in fourth with a subscriber base off 15.36 million. Among the top firms it is the only purely mobile operator. It also has a large number of value-added services that provides it with the highest ARPU among all the operators. In the last year it has

introduced services such as multiplayer gaming, SMS tones, Hutch alerts and corporate Hutchmail. It plans to spend around Rs. 6000 crores to double its network in the coming year. It also changed its logo in the last year.

5.1.26 Reliance Communications stands third in terms of subscriber base and fourth in terms of revenue. It has 17.3 million subscribers of which 79.3 per cent belong to the prepaid category. Most of its customers use CDMA technology with GSM contributing the only 1.9 million lines. Its revenues have grown to Rs 6673 crores, a growth of around 63 per cent. It has a national presence being available in 4500 towns and 242,814 non-census towns and villages. It has a large distribution network named Reliance Web World, which is available in around 700 towns. Reliance has the largest base of data subscribers of 6.4 million. It also has 320,440 wireless Internet users. It has a relatively low ARPU of Rs 379, when compared against GSM providers. This is partly because non-voice revenues contribute only 6.1 per cent. It came up with innovative new offers such as lifetime incoming free and launched India's first flat rate plan for national long-distance

5.1.27 BSNL, thanks to subscriber additions, came in second in terms of subscribers with the base of 18.45 million. It has seen an 82 per cent increase in the number of subscribers. It stood fourth in terms of revenues at Rs 6574 crores. It has the widest reach of all operators and is particularly strong in B and C category circles.

5.1.28 Tata Teleservices made a strong move to get its presence felt by launching services in 12 circles and adding 3.76 million subscribers. It is available in 2500 towns and plans to increase to 4000 by next year. It introduced innovations such as a plan where incoming calls were free for two years. This was a success as it added one million subscribers in 45 days. It has invested around Rs 15,000 crores and it plans to invest another 4000-5000 crores in the next year. It plans to move strongly into rural areas with investment plans of Rs 1000 crores to set up 3000 base stations in the rural areas.

Table 5.1.4. No of Subscribers (September 2006)

Metro/Circle	Name of Operators	Numbers
Metros		
Delhi	Bharti, Hutch, MTNL, IDEA	2510510, 2055740, 1091477, 1166091
Mumbai	BPL, Hutch, MTNL, Bharati	1045301, 2274775, 1198778, 1565745
Chennai	Aircell, Bharati, Hutch, BSNL	888200, 849616, 575971, 615827
Kolkata	Bharati, Hutch, BSNL, Reliance	790166, 1131325, 524528, 249609
Category A		
Maharashtra	BPL, IDEA, Bharati, BSNL	971001, 2275016, 1830841, 1521318
Gujrat	Fascel, IDEA, Bharati, BSNL	3128746, 1414849, 1163292, 953335
Andhra Pradesh	IDEA, Bharati, Hutch, BSNL	1350645, 2544421,

		1152516, 1405447
Karnataka	Bharati, Spice, Hutch, BSNL	3183033, 576956, 1402593, 1411108
Tamil Nadu	BPL, Aircell, BSNL, Bharati	710150, 2197436, 1825065, 1425045,
Category B		
Kerala	IDEA, BPL, Bharati, BSNL	1191935, 686046, 743385, 1757557
Punjab	Spice, Bharati, BSNL, Hutch	1620009, 2213367, 490609, 872939
Haryana	IDEA, Aircel Digilink, Bharati, BSNL	540358, 461885, 548008, 528285
Uttar Pradesh (West)	IDEA, Bharati, BSNL, Hutch	1333797, 751767, 1092410, 1073506
Uttar Pradesh (East)	Aircell Digilink, BSNL, Bharati, Escorts	2150927, 2257870, 966442, 1406
Rajasthan	Aircell Digilink, Hexacomm, BSNL, Escorts	915443, 1214539, 1439305, 487
Madhya Pradesh	IDEA, Reliance, Bharati, BSNL	1086153, 714186, 825181, 872953
West Bengal	Reliance, BSNL, Bharati, Hutch, Dishnet	21486, 21869, 71729, 75943, 12101
Category C		
Himachal Pradesh	Bharati, Reliance, BSNL, Escorts	442344, 100246, 296315, 2809
Bihar	Reliance, BSNL, Bharati	727697, 1065528, 1426246,
Orissa	Reliance, BSNL, Bharati, Dishnet	342887, 615372, 649557, 89882
Assam	Reliance, BSNL, Bharati, Dishnet	242734, 454836, 392280, 308540
North East	Reliance, Bharati, BSNL, Dishnet	112271, 129595, 321692, 170205
Jammu & Kashmir	BSNL, Bharati, Dishnet	620617, 398832, 34737

Source: Voice and Data

5.1.29 If we summarize the experience in the cellular phone industry we can divide it into four 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 private operators trying to increase their subscriber bases marked the initial period 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 consequences³⁴, alleviated their present financial problems. The operators also changed their marketing strategies and concentrated more on customers who would notch up more airtime. 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 marked the beginning of a fourth phase where private operators begin offering services across the whole range of telecommunications services and the market shrank to a few serious and competent players.

³⁴ Revenue sharing acts like a tax on revenues and could restrict network size. Profit sharing would better preserve incentives.

Appendix 5.2

Regulation of combinations

Combination

The acquisition of one or more enterprises by one or more persons or merger or amalgamation of enterprises shall be a combination of such enterprises and persons or enterprises, if

(a) any acquisition where

(i) the parties to the acquisition, being the acquirer and the enterprise, whose control, shares, voting rights or assets have been acquired or are being acquired jointly have,

(A) either, in India, the assets of the value of more than rupees one thousand crores or turnover more than rupees three thousand crores; or

(B) in India or outside India, in aggregate, the assets of the value of more than five hundred million US dollars or turnover more than fifteen hundred million US dollars;

or

(ii) the group, to which the enterprise whose control, shares, assets or voting rights have been acquired or are being acquired, would belong after the acquisition, jointly have or would jointly have,

(A) either in India, the assets of the value of more than rupees four thousand crores or turnover more than rupees twelve thousand crores; or

(B) in India or outside India, in aggregate, the assets of the value of more than two billion US dollars or turnover more than six billion US dollars; or

(b) acquiring of control by a person over an enterprise when such person has already direct or indirect control over another enterprise engaged in production, distribution or trading of a similar or identical or substitutable goods or provision of a similar or identical or substitutable service, if

(i) the enterprise over which control has been acquired along with the enterprise over which the acquirer already has direct or indirect control jointly have,

(A) either in India, the assets of the value of more than rupees one thousand crores or turnover more than rupees three thousand crores; or

(B) in India or outside India, in aggregate, the assets of the value of more than five hundred million US dollars or turnover more than fifteen hundred million US dollars;

or

(ii) the group, to which enterprise whose control has been acquired, or is being acquired, would belong after the acquisition, jointly have or would jointly have,

(A) either in India, the assets of the value of more than rupees four thousand crores or turnover more than rupees twelve thousand crores; or

(B) in India or outside India, in aggregate, the assets of the value of more than two billion US dollars or turnover more than six billion US dollars; or

(C) any merger or amalgamation in which

(i) the enterprise remaining after merger or the enterprise created as a result of the amalgamation, as the case may be, have,

(A) either in India, the assets of the value of more than rupees one thousand crores or turnover more than rupees, three thousand crores; or

(B) in India or outside India, in aggregate, the assets of the value of more than five hundred million US dollars or turnover more than fifteen hundred million US dollars;

or

(ii) the group, to which the enterprise remaining after the merger or the enterprise created as a result of the amalgamation, would belong after the merger or the amalgamation, as the case may be, have or would have,

(A) either in India, the assets of the value of more than rupees four-thousand crores or turnover more than rupees twelve thousand crores; or

(B) in India or outside India, the assets of the value of more than two billion US dollars or turnover more than six billion US dollars.

Explanation: For the purposes of this section,

(a) "control" includes controlling the affairs or management by

(i) one or more enterprises, either jointly or singly, over another enterprise or group;

(ii) one or more groups, either jointly or singly, over another group or enterprise;

(b) "group" means two or more enterprises which, directly or indirectly, are in a position to

(i) exercise twenty-six per cent. or more of the voting rights in the other enterprise; or

(ii) appoint more than fifty percent, of the members of the board of directors in the other enterprise; or

(iii) control the management or affairs of the other enterprise;

(c) the value of assets shall be determined by taking the book value of the assets as shown, in the audited books of account of the enterprise, in the financial year immediately preceding the financial year in which the date of proposed merger falls, as reduced by any depreciation, and the value of assets shall include the brand value, value of goodwill, or value of copyright, patent, permitted use, collective mark, registered proprietor, registered trade mark, registered user, homonymous geographical indication, geographical indications, design or layout-design or similar other commercial rights.

Regulation of combinations

No person or enterprise shall enter into a combination which causes or is likely to cause an appreciable adverse effect on competition within the relevant market in India and such a combination shall be void.

(2) Subject to the provisions contained in sub-section (1), any person or enterprise, who or which proposes to enter into a combination, may, at his or its option, give notice to the Commission, in the form as may be specified, and the fee which may be determined, by regulations, disclosing the details of the proposed combination, within seven days of

(a) approval of the proposal relating to merger or amalgamation, referred to in clause (c) of section 5, by the board of directors of the enterprises concerned with such merger or amalgamation, as the case may be;

(b) execution of any agreement or other document for acquisition referred to in clause (a) of section 5 or acquiring of control referred to in clause (h) of that section.

(3) The Commission shall, after receipt of notice under sub-section (2), deal with such notice in accordance with the provisions contained in sections 29, 30 and 31.

(4) The provisions of this section shall not apply to share subscription or financing facility or any acquisition, by a public financial institution, foreign institutional investor, bank or venture capital fund, pursuant to any covenant of a loan agreement or investment agreement.

(5) The public financial institution, foreign institutional investor, bank or venture capital fund, referred to in sub-section (4) shall, within seven days from the date of the acquisition, file, in the form as may be specified by regulations, with the Commission the details of the acquisition including the details of control, the circumstances for exercise of such control and the consequences of default arising out of such loan agreement or investment agreement, as the case may be.

Explanation: For the purposes of this section, the expression

(a) "foreign institutional investor" has the same meaning as assigned to it in clause (a) of the Explanation to section 115AD of the Income-tax Act, 1961(43 of 1961);

(b) "venture capital fund" has the same meaning as assigned to it in clause (b) of the explanation to clause (23 FB) of section 10 of the Income-tax Act, 1961(43 of 1961).

Appendix 5.3

Functions of TRAI as given in TRAI Act 1997

Notwithstanding anything contained in the Indian Telegraph Act, 1885, the functions of the Authority shall be to

- a) recommend the need and timing for introduction of new service provider;
- b. recommend the terms and conditions of licence to a service provider;
- c. ensure technical compatibility and effective inter-connection between different service providers;
- d. regulate arrangement amongst service providers of sharing their revenue derived from providing telecommunication services;
- e. ensure compliance of terms and conditions of licence;
- f. recommend revocation of licence for non-compliance of terms and conditions of licence;
- g. laydown and ensure the time period for providing local and long distance circuits of telecommunication between different service providers;
- h. facilitate competition and promote efficiency in the operation of telecommunication services so as to facilitate growth in such services;
- i. protect the interest of the consumers of telecommunication service;
- j. monitor the quality of service and conduct the periodical survey of such provided by the service providers;
- k. inspect the equipment used in the network and recommend the type of equipment to be used by the service providers;
- l. maintain register of interconnect agreements and of all such other matters as may be provided in the regulations;
- m. keep register maintained under clause (l) open for inspection to any member of public on payment of such fee and compliance of such other requirements as may be provided in the regulations;
- n. settle disputes between service providers;
- o. render advice to the Central Government in the matters relating to the development of telecommunication technology and any other matter relatable to telecommunication industry in general;
- p. levy fees and other charges at such rates and in respect of such services as may be determined by regulations;
- q. ensure effective compliance of universal service obligations;
- r. perform such other functions including such administrative and financial functions as may be entrusted to it by the Central Government or as may be necessary to carry out the provisions of this Act.

5.4. List of members in Advisory Committee on market studies

1. Bibek DebRoy
2. Bakul Dholakia
3. Vijay L. Kelkar
4. K. L. Krishna
5. Amitabh Kumar
6. N. L. Mitra
7. V. R. Panchmukhi
8. Urjit R. Patel
9. S. L. Rao
10. Pronab Sen
11. U. Shankar

Glossary

ARPU: Average Revenue per User
BSNL: Bharat Sanchar Nigam Limited
CAT: Competition Appellate Tribunal
CCI: Competition Commission of India
CDMA: Code Division Multiple Access
CMTS: Cellular Mobile Transmission Service
COAI: Cellular Operators Association of India
CPP: Calling Party Pays
DOT: Department of Telecommunications
FDI: Foreign Direct Investment
GSM: Groupe Special Mobile
HHI: Hirschman Herfindahl Index
ILD: International Long Distance
ISP: Internet Service Providers
MTNL: Mahanagar Telecom Nigam Limited
NIXI: National Internet Exchange
NLD: National Long Distance
NTP: National Telecom Policy
OECD: Organization for Economic Cooperation and Development
SIM: Subscriber Identity Module
SMS: Short Message Service
TDSAT: Telecom Dispute Settlement and Appellate Tribunal
TRAI: Telecom Regulatory Authority of India
VANS: Value Added Network Services
VOIP: Voice Over Internet Protocol
VSNL: Videsh Sanchar Nigam Limited
WAP: Wireless Application Protocol
WLL: Wireless in Local Loop

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