

Tariff setting in telecommunications in India: Progress to date and the way forward

Sanjay Kumar¹

Daljit Singh²

Introduction and Background

In the early 1990s, the Government of India (GOI) acknowledged the need to set-up world-class telecommunications networks and ushered in a process of economic reform. The key objectives of the telecommunications reforms were to introduce competition in the various telecom services so that customers received better service at affordable prices, and to increase the availability of telephones in the country. The National Telecom Policy (NTP) 1994 provided a statement of these objectives, and a reiteration of the Government's commitment to pursue these reforms. Shortcomings in the sequence of reforms and institutional changes, as well as the overall policy framework, however, slowed the process of reforms in the sector. Private investments were made but high license fees committed by the new operators did not make them financially viable and also subverted the concept of "affordability" as the license fee eventually got built into the tariff of the service to be provided by the new operators. Besides the issues of high license fees, the attitude of the incumbent operator, the DOT, on the issues relating to interconnection and spectrum allocation further slowed progress in the sector.

The Government recognized that the result of privatization was not satisfactory. It realized that most of the telecommunications projects of the new operators were facing problems. The actual revenues to the operators were far short of the projections. Most of the investors' capital was being used just to pay the license fee, rather than for setting up projects. The financial institutions were thus unwilling to support the projects and the operators were finding it increasingly difficult to arrange finances for their projects and to complete the

¹ Sanjay Kumar is from the Indian Revenue Service. Previously, he was with TRAI. The views presented in this paper are his own.

² Daljit Singh is with the Regulatory Studies and Governance Division of TERI. Previously, he was with the Massachusetts Department of Telecommunications and Energy.

projects. Against this background, the Government felt that the objectives of NTP 1994 remained unfulfilled, and concluded that in order to tackle the shortcomings in the telecommunications liberalization process and to take into account the fast changes in the telecommunications technology relating to convergence in the sector, it needed a new policy. The outcome of this appraisal was the announcement of the New Telecommunications Policy (NTP) in July 1999. The key objectives of NTP 1999 were essentially a re-statement of the objectives set in NTP 1994. One of the differences between the two policy statements was in the area of the method of fixing the license fee. NTP 1999 stated that a new operator would pay a one-time entry fee and would pay the annual license fee based on a share of that its revenue, as opposed to the earlier system of a license fee based on auctioning. For existing operators also, a license fee regime based on revenue share was announced. The regulator, TRAI (Telecommunications Regulatory Authority of India) was given a role in fixing the license fee. In addition, the Government showed its commitment to set up a strong and independent regulator to provide an effective regulatory framework and provide adequate safeguards to ensure fair competition and protection of consumer interests.

The TRAI Act gave TRAI the authority to set rates for all telecommunication services including international calls (MLJ, 1997). Based on this authority and recognizing that the tariff structure in the telecommunications sector has an important bearing on the viability of any business plan, TRAI focused its attention on changes in the tariff structure in the sector. On this issue, TRAI stated that an objective and transparent tariff structure would not only protect consumer interest but would also ensure financial viability of the service providers, thus encouraging increased investment for the rapid development of the sector (TRAI, 1998a). In March 1999, TRAI released a new tariff order establishing rates that it stated would move the telecommunications sector towards greater competition.

In this paper, we examine the tariff rebalancing effort of TRAI. After evaluating whether the tariff achieves TRAI and GOI's objective, we look at what further steps need to be taken regarding tariff-setting to help move the telecommunications sector in India in the direction stated in GOI's policy announcements.

The rates that customers pay for telecommunications service are clearly one of the most important factors of a successful telecommunications policy. However, another important factor that is often overlooked when thinking about the impact on customers is the quality of service. In this paper, after reviewing

TRAI's tariff changes, we review recent progress in regulation of service quality. Next, we review developments in the calculation and implementation of interconnection costs which ultimately have a significant impact on the rates paid by customers for their telephone and other communication services. Finally, we examine the issue of convergence and its impact on tariff setting in the telecommunications sector. With the rapid development of new technologies, the distinction between telecommunications, information technology and broadcasting is getting blurred. The convergence of these three areas requires a rethinking of policies in these areas to achieve lower tariffs for customers, and to ensure greater coordination between the services to achieve better quality of service and greater customer satisfaction.

Tariff Re-balancing

Telecommunications Tariff Order

TRAI stated that tariff re-balancing was essential for competition and for the introduction of new services (TRAI, 1999a). Without such tariff reform, it argued that the development of telecommunications, in particular for basic telephone services, was not sustainable. The objective of the tariff re-balancing was to align prices for telecommunications services with the costs for providing those services. TRAI believed that the re-balancing would reduce the vulnerability of the DOT to competition. In addition, the tariff was designed to provide adequate resources to the DOT to achieve its network expansion. Furthermore, while re-balancing the tariff, TRAI wanted to ensure that the resulting rates would promote the social objective of encouraging low users of telecommunications to get connected and use the system more intensively.

The Telecommunications Tariff Order (TTO) was released on March 9, 1999. While TRAI would have liked to use long run incremental costs (LRIC) to develop tariffs, it decided to use fully allocated costs instead because the required data was not available. Costs were allocated across four categories of charges: 1) rental fee; 2) charges for local calls; 3) charges for long distance and 4) charges for international calls. Rates were calculated for six rate classes: rural low use, rural general subscriber, rural commercial, urban low use, urban general subscriber, urban commercial. Further, the changes to the rates were to be phased in over three years, with a change in rates occurring every April 1. Table 1 shows the rates established by the TTO. For comparison, we have also included the rates before the TTO and the fully cost-based rates. In the rates in the TTO, charges for local calls were increased over the previous rates while state trunk dialing (STD) rates were decreased. However, the actual

changes in the charges in the TTO were not entirely based on costs because TRAI stated that the resulting changes would have been too large. For example, the rental rates which were about Rs. 138 for an exchange with 30,000 lines before the TTO would only increase to Rs. 180 for low use rural customers and to Rs. 220 for general urban customers, even though the cost-based rental fee would have been about Rs. 600. According to TRAI, the rental fee increase in the TTO was determined by inflation and increases in incomes since 1993. Similarly, the per call charge for local calls was increased, but in this case, particularly for urban customers this rate was closer to a cost-based rate. Table 1 also shows the decrease in the STD rates.

It was stated in the TTO that an appraisal of the first rebalancing exercise would take place within a year. This had to be postponed as the composition of TRAI was changed in February 2000, and because the data to see the various effects on the revenue of the incumbent were not available. The new TRAI issued the second tariff order on August 28, 2000, to be effective from October 2000. In its appraisal of the effects of the TTO, TRAI found that the revenue loss suffered by DOT during the first year due to the re-balancing was not too severe. However, it extended the start date for the second phase of the rebalancing by one year, and ordered service providers not to increase rental fees because of the desire on the part of TRAI to increase teledensity and because TRAI found that the costs of telecommunications equipment were declining. STD and international rates were frozen at the 2000-2001 level until March 31, 2002. Table 2 shows the revised rates after the appraisal. TRAI stated that it lengthened the second phase of tariff reduction in order to give the market to adjust to the changes in telecom policy and to allow demand elasticity to manifest itself. Further, while providing a rationale for to not decrease STD rates during the year 2001-2002, it asserted that opening up the national long distance market would put downward pressure on STD rates causing them to decline.

While the re-balancing effort by TRAI has moved telephone rates closer to the associated costs, there is still a substantial difference between the rates and the associated costs. STD calls in India still cost the consumers four to fifteen times as much as similar calls in US. Should TRAI have continued the re-balancing per the original schedule in the TTO? Or will competition in the long distance market obviate the need for further reductions by TRAI? We now look at the various issues related to tariff setting that have been raised by TRAI's re-balancing efforts.

Tariff Issues

DOT Revenue Loss

As part of the development of the re-balanced tariffs, TRAI had solicited comments from the various stakeholders. In its comments, DOT had expressed concern that the re-balanced tariffs would lead to a decline in revenues because the long distance rates would be lowered. TRAI had reasoned that because of the price elasticity of demand, call volume would increase with the decreased rates, and consequently, the reduction in DOT's revenues would not be as steep as DOT stated.

In the ninth Amendment to the TTO, TRAI calculated the revenue loss that can be ascribed to the TTO and found that it is no more than Rs. 250 crores for the year 1999-2000 (TTO Amendment 9, 2000). This seems to vindicate the assumptions made by TRAI. TRAI estimates that during the year 1999-2000, DOT lost an additional Rs. 1,200 crores because it provided an alternative tariff (i.e. other than the standard tariff³) for rural and low use urban subscribers (TRAI, 2000a). Under the alternative tariff package, rental fees were not changed for rural subscribers and for those urban subscribers who made less than 200 metered call units per month. In addition, the number of free calls were not reduced (TTO Amendment 9, 2000). Although this policy made telecommunication services more affordable for low use subscribers, it also resulted in DOT losing revenues it would otherwise have earned under the standard tariff package. Thus the total loss in revenues for DOT is calculated to be Rs. 1450 crores.

According to TRAI even though there was a shortfall in the revenue of the DOT, it was not likely to falter in its development plan even in the first year of tariff re-balancing. TRAI reasoned that the cost of installing a line was falling, and therefore, the revenues DOT required to fulfil social objectives would be lower than DOT had originally projected.

³TRAI requires that the options offered to a subscriber include a tariff package that is specified in the schedules. Such tariff packages are defined as "standard tariff packages." Further, TRAI allows service providers to offer alternative tariff packages with the following conditions: (1) An alternative tariff is allowed for those items for which TRAI has specified tariffs as amounts or levels; (2) For those items for which TRAI specified a ceiling, the alternative package will also be constrained by those ceilings; (3) For those items subject to forbearance, providers are free to offer any tariff; and (4) subscribers will be free to choose among the tariff packages, including the standard tariff package. (TRAI, 1999a).

Conflict Between Cost Based Prices and Social Objectives

As we stated earlier, the Government and TRAI would like to use the tariffs as an instrument to increase the teledensity in the country and to encourage the use of telecommunications by low users of these services. So far, this responsibility for fulfilling these social objectives has fallen on the DOT as the private operators have a very insignificant presence (only six of them at present) and they have also not fulfilled their license commitments. DOT's concern about lost revenues and about its potentially not being able to fulfill the social objectives highlight the inherent conflict between the objectives of having cost based rates and yet providing cross-subsidies to encourage the use of the system by low use customers, particularly in the rural areas. While there is some cross-subsidization in almost all situations, the situation in India is unusual because of the degree of cross-subsidization. About 70 percent of the subscribers fall into the category of low use subscribers (Sinha, 2000). Thus 30 percent of the subscribers are subsidizing the remaining 70 percent. Because the rates for the 30 percent high use subscribers are likely to be well above costs, they are prime candidates to be recruited by competitive suppliers. If these high use subscribers start leaving DOT, DOT's revenues would be further eroded causing it to charge yet higher rates to these customers, which, in turn, would cause more of them to leave. This would cause DOT's revenues to spiral down.

This conflict between cost-based pricing and the need to subsidize rural and low use customers can be handled by making the subsidy explicit. One way of providing the subsidy in a transparent and explicit fashion is through the use of a universal service fund. The New Telecom Policy 1999 envisages the creation of a universal service fund. This fund would be utilized to compensate those who physically provide and maintain the telephones in areas where costs surpass revenue. Currently, only FSPs (fixed service providers) have an obligation to provide a minimum number of DELs (direct exchange lines) and VPTs (village public telephones). A paper for Regulatori noted that telecom operators have not fulfilled their commitment, probably because of financial difficulties due to high license fees (Kumar, 2000). Most of the operators have found it economically more advantageous to pay the fines than set up the village telephones. This paper calls for reassessment of the policy framework that should recognise the fact that success of rural telecom would depend not only on right choice of technology, but also on appropriate policy and institutional framework for making the system work. In fact, in the paper the author has recommended that the market system be used for providing the subsidies by using the

mechanism used in Chile and Peru. In Chile and Peru the market system was used for providing the subsidies and areas were auctioned for the minimum subsidy. This was a transparent mechanism for managing the funds and the goals were achieved in a realistic and speedy manner. The auctioning system also brought down the cost of providing access to the lowest and so, there was efficiency in managing the funds.

While the NTP 1999 provides for creation of an universal service fund out of the money from a small percentage of revenues generated by all service providers, such a fund has not been created. According to our scheme, this fund would be used for providing subsidies for two purposes: (1) to make up the difference between cost-based prices and subsidized prices for existing facilities; and (2) to set up new facilities in rural and/or low use areas. A key prerequisite for an efficient management of such a fund would be an independent body, which would carry out its functions in a participatory and transparent manner.

Under our scheme, general users and others not eligible for a subsidy would pay cost based rates. For existing facilities, subsidized subscribers would pay the reduced rates, but DOT would be reimbursed the full cost based rate, with the difference being made up by contributions from the universal service fund. For subsidies for new facilities, the right to provide service in a particular rural area would be auctioned with the winning bidder being the entity that would require the lowest subsidy to provide telecommunications service in that area. We believe that our proposed mechanism would decouple the provision of subsidies from the imposition of cost-based tariffs. We also believe it would be efficient.

Would the example of Chile and Peru be applicable in India? Or are there some unique characteristics of the Indian telecom sector that would make our proposed approach inapplicable? Are there other ways of handling the inherent conflict between providing subsidies and the need to have cost-based prices?

High Debt/Equity Ratio and High Capital Costs

One of the major factors affecting the capital costs for any service is the weighted average cost of capital (WACC) which, in turn, is affected by the ratio of debt to equity. Generally, the cost of debt is lower than the cost of equity upto a certain point. If a company is heavily leveraged, that is the amount of debt relative to the amount of equity is high, then the cost of debt rises. Thus there is generally a range of debt to equity that results in the lowest overall cost of capital. DOT has a debt to equity ratio of 11.8 percent (Sinha, 2000) which is

very low compared to most other utility companies. A higher amount of debt relative to equity would make the capital costs for DOT lower and the resulting benefits could be passed on to subscribers in the form of lower rates. This can be seen by comparing the WACC for MTNL with DOT. MTNL has a debt to equity ratio of 246 percent, and has a WACC of 13.75 percent compared to a WACC of 20.74 percent for DOT even though the cost of debt is higher for MTNL (Sinha, 2000). Should DOT (now BSNL) raise money through borrowing? What implications would this have for other players in the market? Would it crowd out lending to private service providers?

Lack of Unbundled Cost Data

As we noted earlier, TRAI decided to forgo the use of LRIC in setting rates and had to use embedded costs because data was not available to calculate incremental costs. We also found that in many places in the calculation of rates, TRAI used approximations because data was not available. For example, the capital cost per line was based on data from three secondary switching areas backed up by DOT officials judgments (Sinha, 2000). Also, in calculating the fixed charge factor (or annual recurring expenditure), the depreciation rate was based on "informal estimates" of the economic life equipment as about ten years (Sinha 2000).

It is important that TRAI develop a schedule for the unbundling of costs. Accurate unbundled cost data is important for several reasons. First, it is required for the implementation of policies. The benefits of using the best ratemaking approach based on a detailed and well-thought out policy analysis are diluted if the data to implement the approach are unavailable. Second, the use of informal estimates could easily result in either an under-recovery or over-recovery for DOT of crores of rupees, thus either costing the customers or the DOT these large sums of money. Third the lack of real data on costs makes it difficult to establish whether rates charged to customers are just and reasonable. Given the lack of unbundled cost data, it is very difficult for the regulator to assess whether costs claimed by a service provider are appropriate or reasonable, and thus the regulator cannot disallow any costs that otherwise would be found to be unreasonable. Furthermore, there is no way to monitor the efficiency of the provider, in this case, the DOT. This is because if data on real costs are not available, then it is impossible to determine whether DOT is managing its operations efficiently. Further, if DOT is inefficient and it is able to recover all its costs inspite of the inefficiencies, then customers end up paying for the inefficiencies. This could be really unfair to customers. The first

step in addressing the lack of cost data is accounting separation which we discuss next.

Accounting Separation

Cost allocations for different services in telecommunications sector which has an integrated network is a difficult task. Lack of source-wise unbundled cost data appeared to be a major a constraint in determining the cost of service. Accounting separation is, therefore, a step forward in the tariff re-balancing as it would help the operators in preparing the accounts in such a manner that the regulator would be able to identify the cross-subsidization of services to provide regulatory supervision. Information on market segments and segment profitability are crucial not only for regulation but also for management purposes to analyze the costs, revenues and capital employed.

In the service sector such as telecommunications, accounting details are normally available in aggregate form. Such aggregated accounting information has its limitations for the purposes of cost analysis and thereby fixing tariffs of one particular service segment. Accounting Separation lays down concepts, approach and practices for attributing revenues and costs, captured in entity accounting, to individual products and services, or aggregations thereof. This is particularly significant from the regulatory perspective in a multi-operator environment as information on market segments and segment profitability is critical to developing effective competitive responses from the regulatory as well as business perspective. The accounting separation helps in providing financial details for:

- measuring performance of products and services;
- monitoring licensees' returns on products and services regulated with price ceilings;
- identifying cross subsidisation practices, which influence the profitability of any segments;
- understanding the inter-operator arrangements in terms of their associated pricing and costs; and
- monitoring the adequacy of access deficit charge payable by the contributing licensees.

TRAI has put out a Consultation Paper on Accounting Separation. As part of that document, TRAI has proposed costing concepts based on two systems: (1) Broad Financial Category Costing (BFCC); and (2) Service Specific Costing (SSC). BFCC assigns a service providers' overall revenues and costs among a

few broad categories of services, and this provides a framework for identifying the sources and recipients of cross subsidies among broad categories of service. This would be particularly useful in determining whether there is any subsidy by a service provider's monopoly services to its competitive services. SSC estimates future revenue and cost streams produced by the introduction of a new service. SSC would be useful in comparing alternative courses of action particularly for the introduction of a new services. We look forward to regulations from TRAI regarding accounting separation.

It may be argued that the accounting separation is largely for the incumbent operator, as it provides a number of services. Licenses in India have been given on the basis of different services and so, accounting separation may not be really important for the new operators at present. But as the tide of convergence hits the Indian shores and there are large number of mergers and acquisitions (signs of that are already visible), the issues relating to accounting separation would be important for other operators. In that context, it is important to understand that there is no conflict between the regulatory need of accounting separation and the convergence, pushed by technology.

Quality of Service

Some of the tariffs that are given in the TTO are in the form of price caps and thus service providers have the flexibility to provide service at lower rates. In such situations, the service provider may have an incentive to lower the quality of service (QOS) in order to be able to earn a reasonable return at the lower rate. Furthermore, there have been some concerns about the quality of service being offered by DOT and MTNL (Chowdary, 2000).

In July this year, TRAI issued regulations regarding QOS standards. TRAI lists performance measures and associated thresholds separately for basic telecommunications services and cellular mobile service. The standards cover both technical measures such as dial tone delay, call completion rate, and percentage of good connections and customer satisfaction measures. In addition, perhaps recognizing that quality of service cannot be improved overnight, the standards become more stringent with the passage of time. For example, a telephone is to be supplied to a customer within 21 days in the short term (12 months), within 15 days in the intermediate term (24 months), and within 7 days in the long term (48 months).

TRAI is to be commended for drawing attention to QOS and establishing standards. However, in TRAI's regulations there are no penalties for not meeting the QOS standards. Without penalties or other financial consequences,

service providers are unlikely to have an incentive to invest resources for improving the QOS. Thus, the lack of penalties for poor performance has considerably weakened the effectiveness of the QOS standards.

Sri Lanka has instituted QOS standards and customers are compensated if the service provider does not meet the standard. For example, if the major operator is unable to provide telephone connections within the stipulated period, then customers are compensated for the delay (Gunawardene, 2000). Similarly, in response to a public outcry about rental charges being charged even for those periods where service was not provided due to faults, the regulator in Sri Lanka required that customers be compensated for each day of fault beyond the seventh day after the fault was reported at a rate tied to the rental fee. As Gunawardene reports, the regulator did not just levy financial penalties for sub-standard performance, but also met with the major operator periodically to review the QOS. According to Gunawardene, this showed that the penalty was not to cause a financial drain for the company but rather to provide an incentive to improve service.

Even if TRAI decides to impose penalties for sub-standard performance, several questions remain: (1) What form should the penalty take? (2) How would TRAI determine the the maximum amount of penalty to be imposed? And (3) How would TRAI apportion the maximum penalty level between the various performance measures?

Interconnection

Competition in the Telecommunications Sector in India has introduced new service providers in different segments, which include basic telecommunications, and cellular mobile telephone services apart from other value added services. Considering that most of the traffic is originating from or terminating in the local network, inter connection is extremely important for a new entrant for connecting his network to the facilities of the local network. Subscribers also need effective inter connection between networks so that they can access all other telephone subscribers and avail of other telecommunications services. Thus, equitable, non-discriminatory interconnect agreements are imperative for sustenance of the competition.

On May 28, 1999, TRAI released regulations on interconnections. These regulations mandate non-discriminatory interconnection by service providers. Equally important, the regulations cover payments by any service provider for connection to, and use of, another service provider's network. These charges are divided up into two categories — (1) set up costs which represent all the

costs for linking two networks including all hardware and software required for that purpose, and (2) usage charges that are payments for the use of the network by the subscriber of the entity seeking an interconnection.

Interconnection charges paid annually will cover the recurring amounts for the set-up costs. These charges are to be mutually agreed upon by the interconnection provider and the interconnection seeker, but are to be based on incremental costs. If the parties cannot reach agreement within three months TRAI may intervene.

TRAI has provided revenue specific sharing ratios for various interconnection types to cover the usage charges for these types of service. However, it stated that these revenue shares are interim and not based on a detailed cost analysis. The usage charges based on revenue sharing will be replaced by an access/carriage charge regime. That would require a detailed assessment of the underlying costs.

TRAI's regulations, with a focus on cost-based interconnection costs are an important step in the right direction. However, given the importance of interconnection to the development of competition and consequently to customer welfare, some additional issues need to be addressed. In addition to the level of interconnection charges, interconnection agreements contain information on the scope and definition of services, procedures for safety, procedures during faults, information exchange, billing arrangements, and other items. A monopoly provider of interconnection can easily subvert the business plans of smaller providers by creating obstacles in reaching an agreement in any of these areas. Therefore, model guidelines are necessary which prescribe the information to be incorporated in the Interconnect Agreement on these different aspect of interconnection and set limits for these various items in the interconnection agreement. Otherwise, the monopoly provider has tremendous leeway to create obstacles for smaller providers. In late 1998, TRAI stated that it was working on such model guidelines but has not established such guidelines yet (TRAI, 1998b). Since a viable inter connection may emerge solely through commercial and technical agreements, the regulators role in ensuring technical compatibility, effective interconnection and access between different service providers on an equitable and non-discriminatory basis for facilitating competition and promoting efficiency in the sector becomes important.

The Delhi High Court on a petition filed by the DOT had given a judgement whereby they stated that the inter connection agreement is basically an agreement between the two service providers. Notwithstanding the above judgement, the model guidelines definitely have significance in the years to come. It

has to be understood that the interconnection implies a need to create adequate conditions for participation in the market by multiple service providers, including through fixing appropriate inter connection charges. A crucial principle regarding inter connection charges is that they should not act as barriers to competition. An important way of avoiding this distinction is to base inter connection charges on the costs of providing inter connection. Cost based pricing therefore is a must for interconnection charges. Normally the inter connection charges would include the cost of link between the networks, port charges and access charges. Since inter connection charges feed into the prices charged to subscribers through a system of access charges, determination of such access charges are essential particularly now when long distance transmission has been liberalized in India. This requires information about costs at a considerable level of detail, involving unbundling of costs and so, the accounting separation becomes important. Unbundling of costs is required to ensure fair competition in a multi operator system.

This discussion raises a few questions. First, are model guidelines essential as we have indicated? Second, if model guidelines are to be promulgated, how should they be developed and what items should they cover?

Convergence

Convergence of technologies in the telecommunications sector has powerful technological ramifications. It means that hitherto separate sectors of telecommunications, information technology (IT) and broadcasting could be delivered by a converged network. This would give a slew of efficiencies – greater flexibility, more applications, and considerable cost reduction in initial outlays for providing the service. The Preamble to NTP 1999 also recognises the benefits of Convergence and states:

“In addition to some of the objectives of NTP 1994 not being fulfilled, there have also been far reaching developments in the recent past in the telecommunications, IT, consumer electronics and media industries world wide. Convergence of markets and technologies is forcing re-alignment of the industry. At one level, telephone and broadcasting industries are entering into each other’s market, while at another level, technology is blurring the difference between different conduit systems and services such as wire-line and wireless. As in the case of most countries, separate licenses have been issued in our country for the provision of basic, cellular, ISP, satellite, and cable TV operators each with separate industry structure, terms of entry and varying requirement to create

infrastructure. However, the convergence now allows operators to use their facilities to deliver some services reserved for other operators, necessitating a re-look into the existing policy framework. The new telecommunications policy framework is also required to facilitate India's vision of becoming an IT superpower and develop a world class telecommunications infrastructure in the country."

The converged network becomes possible mainly due to the following factors:

- a) standardisation on the basis of logic (moving from multiple protocols to a standard internet protocol),
- b) payload (with different types of data travelling over the same network),
- c) physical details (payloads with different quality specs moving over the same physical wires), and
- d) applications (with single applications uniting various functions).

This technological convergence has the potential to unleash a great deal of service innovation, blurring the boundaries among the sectors. Under such a converged environment, any network can be used to deliver a much wider range of services than is currently the case. New markets and new efficiencies are likely to be created due to such convergence, because particular services would no longer be locked into specific forms of infrastructure. Such developments are also likely to make possible that one service provider could be the contender for a service offered by others, blurring the concept of provisioning by a distinct service provider with the possibility of a multiple service provider. This would fuel the demand for inter-service interconnections. This possibility may not entirely be due to technological drivers but may also be due to various business objectives.

The above blurring of technologies, services, markets and geographies would make conventional analysis of telecommunications industry impossible. It is, therefore, important to analyze the industry for various purposes like tariff fixation, project viability on the basis of its core constituents that are immune to technological changes. A possible disaggregation could be on the basis of bandwidth, access, service provision, customer premises equipment and content. In order to facilitate convergence and to reap the consequent benefits, it would make sense not to fragment licensing. In fact convergence and market fluidity that comes with rapid technical change have made separate licenses redundant. Unified licenses with unrestricted entry policy would provide a

platform for better competition and the new entrants would soon rather later find their niches more effectively.

Such a policy of unified licensing will ultimately result in lower prices for the various telecom services. The transmission of multiple communications products, e.g. voice, data, and video, and the provision of multiple services, such as internet access, cable television, and telephony, over the same communication medium is naturally likely to result in lower costs. These lower costs will, in turn, lead to lower prices for customers. If instead of unified licensing, separate licenses are issued for the various services, then licensing costs for service providers will be higher which will ultimately mean higher prices for consumers.

Conclusions

Developments in tariff-setting in the telecommunications sector in India have moved the sector in the direction of the policy statements of the Government. However, more needs to be done. Partially re-balanced tariffs have shifted the prices for services closer to the costs of providing those services, thus improving the opportunity for competition to flourish. Rebalancing of tariffs needs to be carried further. Accurate cost data needs to be generated. TRAI has begun the process of developing regulations on accounting separation which will make it easier to identify and quantify cross-subsidies. In addition, to identifying cross-subsidies, we believe they need to be made more transparent and explicit. We recommend that the Universal Service Fund be set up as early as possible. The Government has recently set up a Roads Fund. The experience gained there would be helpful for setting up the USF. QOS standards have been established thus drawing attention to the importance of customer service and satisfaction. But, the QOS standards need to be given teeth by the addition of penalties for sub-standard performance. Regulations requiring interconnection charges that are non-discriminatory and based on incremental costs have been promulgated. For the way forward, TRAI should develop model guidelines for interconnection, which is a techno-commercial agreement. These guidelines would go a long way in furthering competition. Lastly, convergence needs to be facilitated by not fragmenting the licenses by service, so that customers can benefit from lower prices for telecommunications services.

References

- 1) Chowdary T H. 2000. Telecommunications – Quality of Service. P-Telcos in India: Why did India Get Them So Wrong. 73-78 pp. April 2000.

- 2) Gunawardene P S. 2000. Quality of Service in Telecoms: A Perspective from Sri Lanka, *Regulateri: Quarterly Review of Regulatory Developments*, Issue 6, September 2000.
- 3) Indian Infrastructure, 2000. TRAI Reconstituted, Indian Infrastructure, February 2000.
- 4) Kumar, S. 2000. Strategies for Fulfilling Universal Service Obligation. *Regulateri: Quarterly Review of Regulatory Developments*. Issue 4, March 2000. Pp 2-4.
- 5) MLJ, 1997. The Telecom Regulatory Authority of India Act, 1997. Ministry of Law and Justice, Government of India.
- 6) Sinha, S. 2000. Price Regulation of Telecommunication Services: TRAI's First Tariff Order, Sidharth Sinha, *Vikalpa*, Vol. 25, No. 1, January-March 2000.
- 7) TRAI, 1998a. Telecom Pricing: Consultation Paper on Framework and Proposals, Telecom Regulatory Authority, September 9, 1998.
- 8) TRAI, 1998b. Consultation Paper on Maintenance of Register for Interconnection, Telecom Regulatory Authority of India, 1998.
- 9) TRAI, 1999a. The Telecommunication Tariff Order 1999, Telecom Regulatory Authority, March 9, 1999.
- 10) TRAI, 2000a. The Telecommunications Tariff (Ninth Amendment) Order 2000, (3 of 2000), Telecom Regulatory Authority of India, August 28, 2000.

