THE TELECOM REGULATORY AUTHORITY OF INDIA'S PROPOSALS FOR TARIFFS FOR BASIC SERVICES : A DISCUSSION

BY

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Introduction

As a precursor to enhanced competition in the telecom sector the Telecom Regulatory Authority of India (TRAI) has published recommended prices of various telecom services. This move, along with TRAI's practice of consultation with potential entrants and consumers is to be commended. The avowed aim of TRAI is to calculate and enforce cost based prices. The reason behind this aim is that increasing competition would force prices towards costs and the TRAI would, through regulation, foster surrogate competition. Another reason behind this effort is to encourage entry into the telecom sector from private firms. Since most of these entrants would have to rely on the DoT network for initiation and completion of calls high costs of interconnection would discourage entry and thereby inhibit healthy competition from developing. The following excerpt from the TRAI's second consultation paper says: "The present exercise to restructure telecom tariffs primarily aims to link tariff formulation with some clearly specified principles, provide a consistent and transparent framework for tariff policy, simplify the prevailing system of telecom tariffs, and achieve cost based prices through regulation and /or competition." Our approach will be to look at some of the principles used in computing tariffs and explain and critique those choices.

The TRAI proposes to use the method of fully allocated costs to estimate cost based prices. It acknowledges that Long Run Incremental Costs or Total Service Long Run Incremental Costs would better reflect efficiency, being closer to the concept of marginal costs, but given the paucity of data it finds that it can do no better. We will

therefore start with a description of the methodology of fully allocated costs (FAC) and go on to consider the problems it raises

Some Concepts

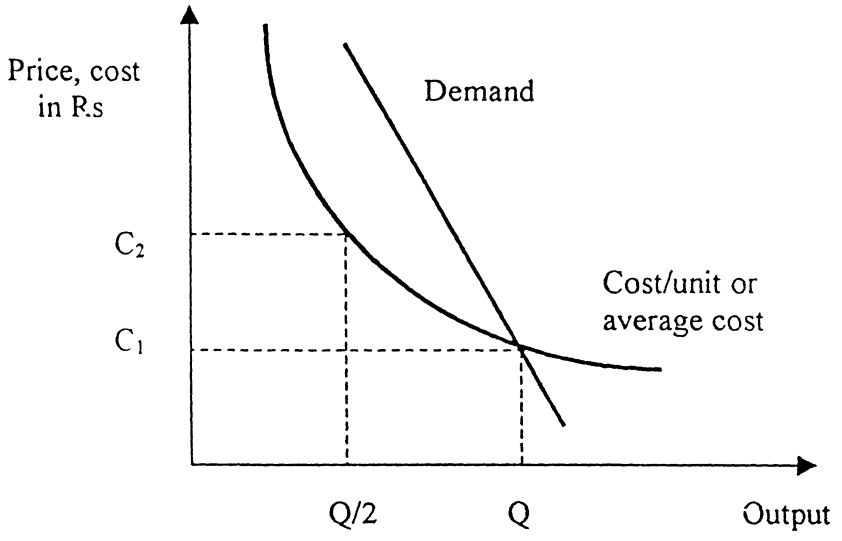

Figure 1. Natural monopoly.

It would be useful to start by explaining the origin of the problem and would require a detour through some economic concepts. It is generally acknowledged that competition in a market would promote consumer interests and would not require governmental intervention. One of the requirements of healthy competition is the presence of a number of competitors. However, most industries are characterized by the presence of a few competitors because of industry characteristics. An extreme example of this is where there is only one producer, a monopoly. Further if the situation is such that one producer can produce the whole industry output at a lower cost than two or more producers we have a natural monopoly. The diagram above explains the situation.

The average cost or the cost per unit of output is shown as a declining curve. Due to economies of scale the cost per unit goes down as more is produced. Consider the output Q, which is derived from the intersection of the average cost curve and the demand curve. This is the largest amount that a single firm would produce. A larger amount would imply that the price per unit would be greater than the cost per unit and the firm would make a loss. The total cost of producing this amount is the product QC_1. Suppose this output Q were instead to be produced by two firms with each firm producing Q/2. The average cost of producing Q/2 is C_2. The cost of producing this amount would be $C_2Q/2$. The total cost for producing the amount Q would be C_2Q, which is higher than C_1Q. It would therefore be beneficial to society to have only one firm producing the whole amount. Unfortunately, if we had only one firm it would use its market power as a monopolist and charge higher prices and lower quantities than we would expect with competition.

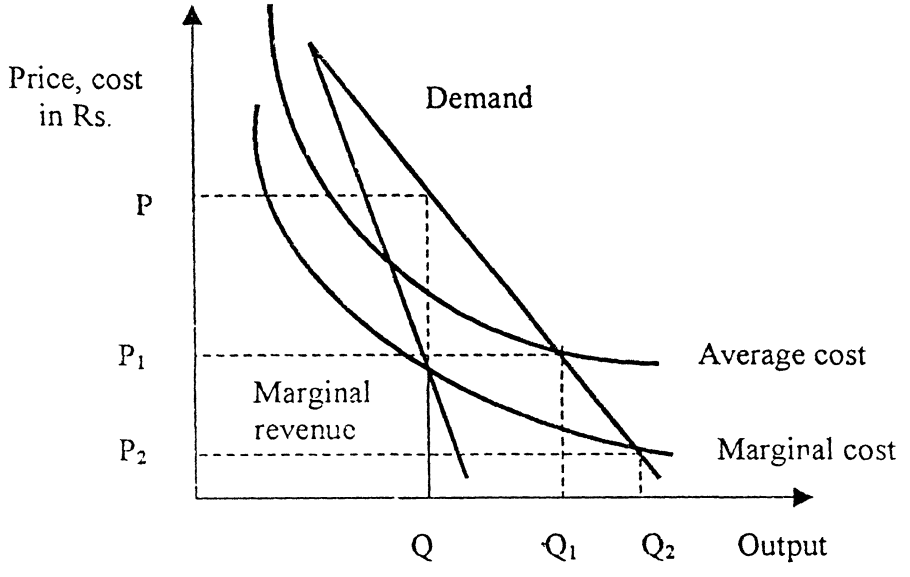

Figure 2. Pricing and output choices.

From the diagram above the monopolist would produce an output Q and sell it at a price P. It would arrive at this output by equating the extra income earned from selling

an unit (marginal revenue) to the extra cost of producing that unit. Having decided the output it would find out from the demand curve the price consumers would be willing to pay for this and arrive at the price P. In contrast, with competition the price would be equal to P_2, the extra cost of producing that unit. This is considered desirable since the price is equal to the cost of producing the last unit so those consumers are charged exactly the cost of producing it. One possible solution to this dilemma is to nationalize the monopolist and make it operate under different incentives than that of maximization of profits. The other is to let it continue under private ownership but regulate it to lower prices and increase output. If the second approach is to be chosen the question arises which price to allow the monopolist to charge. The best solution is to make it charge a price of P_2 and produce Q_2. However, at this price the cost per unit will be higher than the price and so the monopolist will suffer a loss and will have to subsidized. The other option is to let the monopolist charge a price P_1 and produce the amount Q_1. This state of affairs is considered less desirable than the competitive solution and is often denoted second-best in the literature on regulation. One possible problem with this solution is that the monopolist will have no incentive to reduce costs and might suffer from X-inefficiency.

Some complications

The previous argument is a simplified version of the problems faced by regulators One problem is that we assume that the monopolist produces a single product. Most real world firms produce a number of products. For example a telecom operator produces a host of different services such as local and long-distance calls. In such a situation the obvious solution is to levy a price equal to the cost per unit of producing

each service. This simple solution is unworkable in practice since often the same equipment is used to produce both types of services. To make a long distance call you have to use the local telephone exchanges. To ease exposition let us assume that there is a monopolist who produces two goods, Y_1 and Y_2. The cost of producing any combination of these two goods is $F + c_1Y_1 + c_2Y_2$. F is the fixed cost of production and would usually involve capital equipment but could also include other joint costs of production. For the telecom example fixed costs would include the cost of telephone exchanges. The marginal costs of producing Y_1 and Y_2 are given by c_1 and c_2. We should note that this is an extremely simple model and that life is usually more complicated. Some of these complications will be addressed later.

The problem faced by a regulator is that if prices are fixed at the marginal cost, c_1 and c_2 for the two products Y_1 and Y_2, the firm will make a loss by the amount of the fixed cost, F. The previous solution of charging the average cost of production is unimplementable since average cost cannot be defined. Since the same equipment is used to produce both the goods we cannot say which part of the fixed cost should be allocated to which product so as to arrive at an estimate of cost per unit. The practice, till recently, has been to allocate the fixed cost according to some criteria. If we denote the fraction of fixed cost to be allocated between the two products as f_1 and f_2, the question is what should be these values. The term fully allocated cost is used to suggest that f_1 and f_2 should sum to one. The suggested methods for allocation of fixed costs include (i) the ratio of the fractions should equal the ratio of revenues from the two products, (ii) the ratio equal the ratio of physical output and (iii) the ratio equal the ratio of marginal costs. All of these methods are arbitrary and prone to problems. The basic problem is circularity in reasoning. Prices and quantities are used

to allocate costs, which are used to set prices, which, in turn determine quantities. Among the different criteria discussed the method of directly attributable costs has some desirable properties, it conforms with a set of axioms regarding allocation of costs.

As promised earlier we will discuss some complications in this simple model. First, there may be costs which are not fixed but which cannot be attributed to any one product. Labour used for maintenance is useful for both local and long distance calls. Thus we need to allocate joint costs or common costs and need to keep in mind that these may not necessarily be capital costs. Secondly, marginal costs are usually difficult to calculate and regulators instead use the term directly attributable costs. These are costs that can be attributed to one product or service. The main concerns of the TRAI is with capital costs and operational costs. It is also concerned with setting two sets of prices, rentals and call charges. We will briefly discuss rentals before we tackle the TRAI's proposals.

Rentals

In the simple model we discussed above we pointed out that it is not possible to charge prices equal to marginal cost and still make a profit. This is not strictly true. We could devise a pricing scheme where the fixed cost is covered through entry fees and then a per unit price is charged for any amount bought. This is similar to the practice adopted by many clubs and entertainment parks and is an exercise in non-linear pricing. If this method were adopted for the simple example then the fixed cost would be recovered by charging all the customers a fraction of the fixed cost and then

charging customers the marginal cost for any units bought. In the telecom scenario the entry fee would be a rental and there would be a price per call, depending on the type of call made. This is called non-linear pricing because the expenditure on a call will decrease with the number of calls made, as the rental will be spread over a larger number of calls. This has the nice property that we can achieve marginal cost pricing without the firm facing a loss. There is a hitch though. While the cost per call may be low the entry fee may be so high as to inhibit some customers from getting a telecom connection. The answer to that would be to have different sets of entry fees for different classes of consumers. If the cost per call were to be the same, with different entry fees, then everyone would choose the plan with the lowest rental charge. Obviously, the price per call would have to be different as well. The best approach is to provide a menu of rental and call charges and let the customer choose his preferred option.

So we are faced with an array of decisions. The first question is how many different service categories are there? For instance we usually separate telecom services into basic and other categories such as mobile and leased lines. Within basic the three major categories are local, long distance and international calls. Further, long distance and international calls are priced according to distance and local calls are categorized into rural and urban. Finally all calls can be categorized into peak and off-peak. One can think of many other possibilities but these are the ones considered by the TRAI. The second decision is whether to use rentals or call charges or both. The TRAI decided to use rentals to cover all fixed cost for local calls. It says, "A starting point for determining cost-based rentals is to consider recouping all capital costs through rentals However, two different types of cost-based rental schemes could be devised.

One is to base rentals on total capital costs of the network, i.e., base rentals on cost per line estimates for the network as a whole. Another scheme involves considering capital costs, which pertain only to local calls network, and not those incurred for long distance transmission. Then, rentals could be based on capital costs of the local network, with the other capital costs being recovered through long distance and international call charges. Alternatively, under the latter scheme, separate rentals could be ascertained for those who make (or require) only local calls, and those who make long distance calls."

The TRAI then uses DoT estimates and other sources to estimate the capital cost of local lines. It provides us with two values Rs. 25,000 and Rs. 31,000. Using these numbers it suggests that cost based rentals vary from Rs. 485 to Rs. 625 per month These numbers can be interpreted as the annual expenditure needed to install equipment to provide local calls. It is not clear how these estimates were arrived at. If we look at Table 1 we see that some capital costs can be attributed to long distance and international calls. These are long distance switching, long distance transmission and Insat and Intelsat. One possibility is that the DoT excluded these and divided the remaining capital cost by the total number of lines and annualized the cost to arrive at figure of Rs. 25,000. The other possibility is that the DoT did the same exercise for the cost attributed for local telephone exchanges only. The point is that there is nothing sacrosanct about the Rs. 25,000 number. Capital costs can be allocated in a number of ways and the best approach would be to use the method of directly attributable costs. Unfortunately, we do no know the directly attributable costs of local and long distance calls. The best one can say is that local calls should not have to pay for capital equipment needed for making long distance calls. In fact, since

making a long distance call involves making a local call as well, long distance callers should pay a part of capital costs of local exchanges and equipment.

Table I. Scheme-wise breakup of DoT's annual plan allocations, Capital Outlays

	Name of Schemes	92-93	93-94	94-95	95-96	96-97	97-98 (B.E.)
1.	Telegraph and Telex	60.77	85.05	59.14	55.49	27.99	26.00
2.	Local Telephone Systems	3003.93	3376.94	4205.20	5359.55	5801.08	7216.00
3.	Long Distance Switching	59 33	62.28	94.09	79.37	112.90	188.00
4.	Long Distance Transmission	679.80	1090.59	1311.27	1485.04	1269.71	2660.00
5.	Insat and Intelsat	9.15	13.24	26.81	91.49	94.18	200.00
6.	Ancillary Systems	32.10	33.39	36.07	60.46	83.39	110.00
7.	Other land and Buildings	56.84	82.12	83.24	99.85	140.97	366.00
8.	Grants in aid (C-DoT)	29.00	60.0	28.00	40.00	58.50	100.00
9.	Total DoT plan	3930.93	4803.61	5843.86	7271.26	7588.72	10856.00
10.	MTNL	703.80	836.87	997.862	1156.00	913.00	1518.00
11.	Total	4634.80	5640.48	6841.48	8427.26	8501.72	12384.00

Further, rentals could be calculated on the basis of other categories of services. The TRAI has suggested that long distance callers could be charged a separate rental charge. It has however declined to do so and has instead suggested that capital costs be added to the call charges for long distance calls, "The TRAI does not favour fixing different rentals for those making only local calls in comparison to those making STD and /or ISD calls. Fixing such different rentals may provide a disincentive to making long distance or international calls. Furthermore, the capital costs per line for long distance transmission are recouped by adding these costs to long distance and international call charges." It is not clear to the author how higher rentals could prove more of a disincentive for long distance calling than higher call charges.

Table 2. Proposed Rentals

Capacity of Exchange Systems	Proposed cap for monthly rental (Rs)
Rentals in rural areas (for exchanges with capacity upto 999 lines)	120
Rentals in urban areas (for exchanges with capacity up to 999 lines)	160
Other Rentals	
100 to 999 lines	160
1,000 to 29,999 lines	160
30,000 to 99,999 lines	220
1 lakh to below 3 lakh lines	310
3 lakh lines and above	310
Social Package	
30,000 to 99,999 lines	160
1 lakh lines and above	250

The next point is that the cost of local calls could vary geographically. If the assumption of the existence of economies of scale or density in the telecom sector is correct then we should expect smaller rental costs in larger exchanges. Consider the costs of setting up an exchange with less than a thousand lines with that of an exchange with 30,000 lines. Obviously, the costs of the latter will be higher but the higher cost will be divided among a larger number of subscribers. If the increase in cost due to installing larger exchanges does not increase proportionately the rentals in larger exchanges should be lower. The TRAI lumps together all local calls and only provides one estimate of cost of a local call. However, when suggesting tariffs it does so for different sizes of exchanges. This departure from cost based rentals is to avoid hardship for impoverished local callers. In fact its suggested rentals are lower for all classes of consumers as shown in table 2. It would have been a useful exercise to calculate cost based tariffs for exchanges with different capacities. The proposed rentals go in the reverse direction of the movement in costs according to the size of

exchanges. Unless shown otherwise it seems that exchanges with large capacities are subsidizing exchanges with smaller capacities.

The social package is designed to favour people who only receive calls or who make very few calls. It comes with its own criteria

- No free calls
- No social package for exchanges with capacities below 30,000 lines
- Only available to consumers making not more than 30 calls per month

There is no difference in call charges for the social package. This leads to the question of tariff rental combination. The TRAI does consider the possibility but ignores the possibility when devising tariffs. It is possible that it was swayed by DoT's objections. "The DoT in contrast stated that there was little point in creating flexible options because, in its opinion, these option would not provide adequate return." This is a curious comment since telecom operators in other countries typically provide a plethora of options. According to Wilson, 1993, "MCI's tariff FCC #1 is over an inch thick " Flexible tariff-rental combinations can be used to address the problem of high rentals, which the social package is meant for Poorer consumers or people who make only a few calls would find the cost of rentals too high and drop out of the market. A lower rental for these consumers together with a higher call charge would benefit both the consumer and the operator. This would have been a superior option to the social package The present plan only allows customers to make 30 calls per month Nothing is mentioned about the consequences of making a larger number of calls. The TRAI suggests that a period of more than two months be considered before assessing violation of the stipulations of the social package. Presumably, violations will be met with termination of connection. In a sense this is an exercise in non-linear pricing. It

stipulates a low rental charge; a call charge for up to 30 calls and the price for making any further calls is forfeiture of deposits due to disconnection. A simpler method would be to stipulate, for example, a low rental charge, a normal call charge for up to 15 calls, a higher than normal charge for 15 to 30 calls and a still higher charge for any further calls. That would be a better option. We will have more to say on the issue of non-linear pricing when we discuss call charges.

Call Charges

The TRAI's estimate of cost based local charges is done on the basis of volume. The total number of minutes of local calls is estimated along with that of long distance and international calls. The operational costs are allocated according to the number of minutes of various types of calls. The operational costs of DoT are shown in table 3.

Table 3. DoT's operating costs and estimated ranges of local calls

	Particulars	crores
1	Operating costs of DoT (excluding depreciation and interest and corrected for telex)	Rs. 3,123.59
2	MTNL costs (excluding charges and license fee paid to DoT)	Rs. 905.20
3	Operating Expense related to Long Distance Calls	Rs. 1,045.03
4	Total Operational Cost for local network (1 + 2 -3)	Rs. 2,983.76
5	Total number of metered calls	Rs. 9,579.86
6	Estimated total number of local calls (a) with 25% share of total (b) with 30% share of total	 2,394.97 2,873.96
7	Estimated total minutes of local calls (assuming 3 minutes of holding time) (a) with 25% share (b) with 30% share	 7,184.90 8,621.87
8	Estimated total minutes of local calls (assuming 2.5 minutes of holding time) (a) with 25% share (b) with 30% share	 5,987.41 7,184.90

For example, one estimate of a cost of a local call can be got by dividing the operational expenses for local network Rs. 2,983.76 crores by the total number of local calls. One estimate of the total number of local calls is 2,394.97 and the cost of a local call comes out to be Rs. 1.25. Another approach could be to use item 8(a). Here the cost per minute comes out as Rs 0.50. The cost of a two and half-minute call is then Rs. 1.25.

There are a couple of problems with this approach. First any particular method of allocation is arbitrary. Using directly attributable costs has certain advantages but it is not clear that there are any directly attributable operational costs of local calls. The TRAI acknowledges that a percentage of local calls are also long distance calls. However it chooses to treat these as local calls thereby, in its view, overestimating the cost of local calls. This is misleading and as long as long distance callers pay the cost of making a local call as well as that of a long distance call there should not be any problem. The TRAI could have used revenues generated by different services to allocate costs and that would have produced different results. MTNL estimates that 30% of its revenues come from local calls. Then we could allocate 30% of the operational cost of local calls to local calls. Note that operational cost of local calls also includes long distance and international calls. Then we should allocate Rs. 895 13 crores to local calls. Dividing by the estimated number of minutes of local calls at 5,987.41 crores we get Rs. 0.15 per minute. The cost of a three-minute call would then be Rs 0.45, which is much lower than the TRAI's cost of Rs. 1.30

The TRAI has also not considered the possibility of volume discounts. To be fair the price of Rs 1.30 is a price cap and it is up to the operator to charge a lower price if it

feels so. However, it might be more efficient to charge a price higher than the price cap for a few calls and then the price could be lower. A better stipulation might be to say that the average price per call couldn't be higher than Rs. 1.30. Of course this is a demand side concern and the TRAI is concerned only with devising cost based tariffs The DoT is concerned with revenue losses and its quite simple to show that volume discounts will make all parties better off.

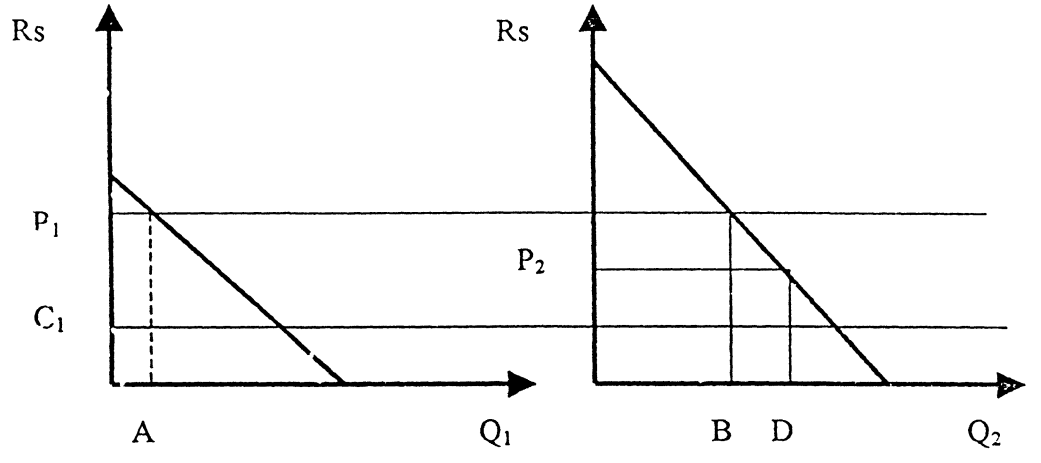

Figure 3. Non-linear prices.

In the diagram below the left panel shows a customer with a low demand and the right panel shows a customer with high demand. C_1 is the marginal cost of producing the product. Suppose a uniform price P_1 is charged to both customers. The price is higher than marginal cost since we assume that this is a natural monopoly and otherwise the firm would make losses. At this price customer 1 buys the amount A and customer 2 buys B. Suppose the firm charged a price P_1 up to the amount B and for amounts greater than B, charged a price P_2. The first customer would be no worse off as he would still buy the same amount. The second customer would then buy the amount D and would be better off. The firm's revenues would also increase. Similarly, the firm could increase profits by the method of price discrimination between classes of

consumers. Businesses and peak hour customers could be charged higher call charges. Admittedly, these are demand side considerations but it points to the need for regulating tariff baskets rather than individual prices An individual price cap is a blunt weapon and can adversely affect revenues of firms

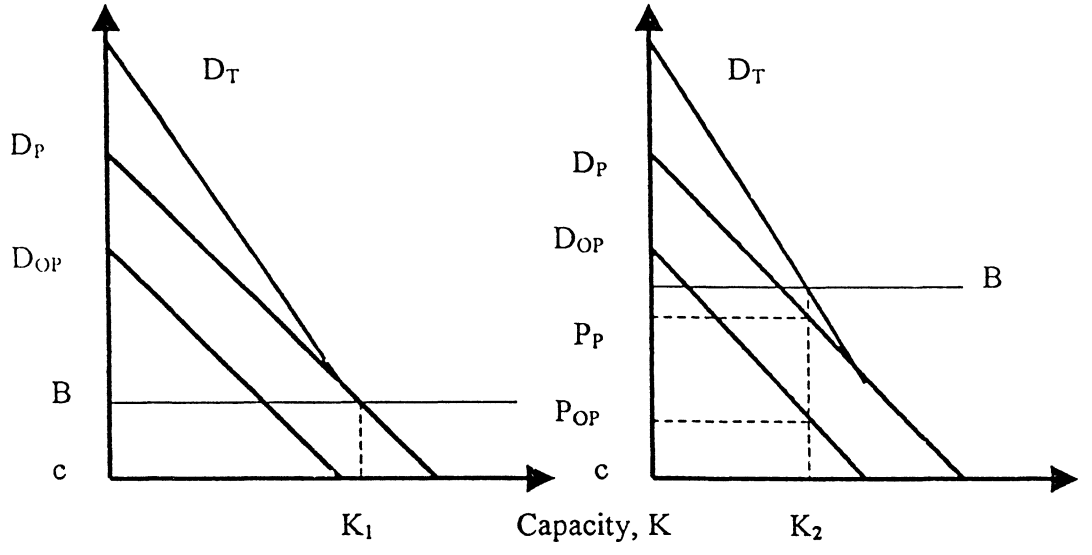

Figure 4. Peak-load pricing

The issue of peak period prices needs to be dealt with because it has cost implications The problem is that with telecom services the same equipment serves customers at different times of the day. So if the demand for telephone calls is higher during the day than at night adequate capacity has to be installed that can meet this demand. So peak hour callers impose a cost on the off-peak hour consumers Thus peak hour consumers should pay more for calls than other consumers The amount they should pay more depends on the technology On one extreme peak hour consumers should pay for the entire capital costs along with their share of operational costs Off-peak hour consumers should only pay for their share of operational costs Usually such extreme results do not apply and capital costs are shared between peak and off-peak

hour customers, with the latter paying a smaller share of the capital costs. This can be shown with the help of the diagram below.

In the diagrams above, D_P and D_{OP} represent peak period demand and off-peak period demand respectively. Since the same capacity has to be used to serve both types of customers we add the demand curves vertically to get D_T, the total demand. The marginal costs is c and the cost of capacity is B. We assume that capacity can be added one unit at a time. To keep things simple we have drawn the vertical axis from c instead of zero. This will allow us to derive the optimal choice of capacity and the prices individual types of customers will have to pay for this capacity. To find the total price we need to add on the marginal cost. In the left panel the optimal choice of capacity is K_1, where the marginal cost of capacity intersects the total demand curve Since the capacity is larger than the maximum demand for the off-peak customers they should only pay the marginal cost c. The peak period customers should pay c plus the cost of capacity B. On the other hand with a larger cost of capacity both types of customers would have to pay a part of the capacity costs. In the right panel the optimal choice of capacity is K_2. We then use the demand curve to find that peak period customers should pay a price of P_p and the off-peak period customers a price of P_{OP}. These two prices must sum to B. Thus peak period customers have to pay a larger amount than other customers. The point is that the determination of peak period prices will depend on the structure of demand and costs. It is possible that peak period prices are lower than off-peak period prices.

Most of the concerns we have raised also prevail for long distance and international calls. A particularly vexing problem is the association between distance and costs.

The TRAI notes that "the global trend is to reduce the maximum distance beyond which long distance rates do not change." It presents data from OECD and Indonesia as evidence and further says, " the number of DELs and equipped capacity in India is more than doubling every five years. With this rate of growth, the capacity of five years ago would account for about one-fourth of the capacity after five years, and about one-tenth of the capacity in a decade. Thus, in the next years to come, a major portion of the technological profile of India will likely comprise modern technologies, i.e., technologies that reflect a relatively weaker link between costs and distance." The present and proposed rates are shown in table 4 and 5.

Table 4. Per minute charges in Rs. for peak period with a call holding of 3 minutes.

Distance (kms)	Rs. 0.6/pulse	Rs. 0.8/pulse	Rs. 1.00/pulse	Rs. 1.25/pulse	Rs. 1.4/pulse
0 - 20	0.20	0.27	0.33	0.42	0.47
21 - 35	0.40	0.53	0.67	0.83	0.93
36 - 50	1.00	1.33	1.67	2.08	2.33
51 - 100	3.00	4.00	5.00	6.25	7.00
101 - 200	4.60	6.13	7.67	9.58	10.73
201 - 500	9.00	12.00	15.00	18.75	21.00
501 - 1000	12.00	16.00	20.00	25.00	28.00
Above 1000	18.00	24.00	30.00	37.50	42.00

Table 5. Proposed tariffs (peak period)

Distance (kms)	Proposed rate with tariff cap (Rs/minute)
0 - 50	0.43
51 - 200	3.90
101 - 500	9.75
Above 500	19.50

The TRAI has reduced the number of distance slabs and in most cases considerably reduced the price. It has also suggested that operators cannot enforce the peak period tariff for more than eight hours per day. It is not possible to comment any further on

these proposals since the link between distance and costs have not been made clear For instance, according to the proposals, the price of a call in the second distance slab is nine times that of the first slab. It is not known whether costs increase nine times over that distance. However, the TRAI has to be complemented for bringing prices more in line with costs. One problem remains, that of calculating generic prices. One would suspect that certain parts of the national network would be better connected than others or have more advanced technology. The costs for long distance calling between the large metros should be less than the cost of a long distance call between two remote villages. This avenue has not been explored.

For international calls the TRAI has suggested a reduction in rates by about 50% The rates are classified in to three categories: (a) those for SAARC countries, (b) for countries in Asia, Africa and Europe and (c) countries in the American continent. Thus the rates vary with distance but we are not informed about how the costs vary with distance.

Other Issues

The TRAI's obsession with cost based prices may seem strange. It has its reasons of course. It does consider demand based pricing in its first consultation paper and says, " under this methodology, prices reflect willingness to pay for the use of a product, or the value given to a particular product. These prices are shown by the demand curve In assessing the social value from a demand-price, it would be necessary to specify the social value of consumption of the service by different consumer groups. Demand-based prices are not easy to determine on account of the difficulty of

determining the demand curve." The task of determining the demand curve for various classes of consumers and for different products is indeed difficult, but it is a task undertaken by all businesses. It is inappropriate to discuss pricing methodologies in detail in this paper. However, we will discuss the problems raised by cost based prices and also, briefly, dwell on Ramsey pricing. The second topic is particularly important in view of the disenchantment with higher rentals and tariffs for local calls.

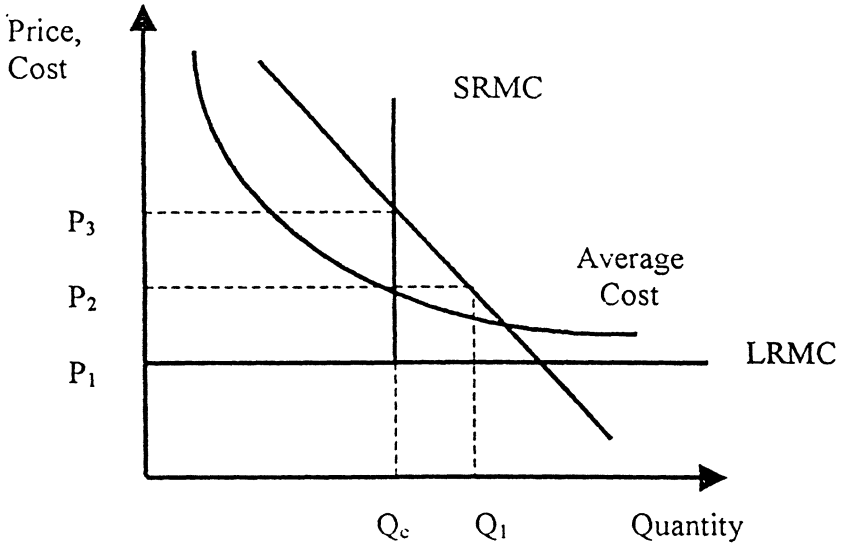

Figure 5 Pricing with a capacity constraint

The diagram above is similar to figure 1 and figure 2. The major difference is that the marginal cost curve is shown as a horizontal line and there is a capacity constraint. It is not possible to produce more than Q_c amount of the good. Thus Q_c can be interpreted as the capacity of the exchange. It is not possible to add one more line without building a new exchange and so at this point the short run marginal cost becomes infinite. If prices were based on demand the price would have been P_3. Instead the TRAI adopts P_2 as the price, so that the price is equal to the cost per unit. At this price the quantity demanded is Q_1, which is higher than the capacity and it

causes inefficiency Some people who would be willing to pay a higher price to be able to put a call through will not be allowed to do so

The TRAI uses the same diagram to argue against Ramsey prices. We have earlier seen that marginal cost pricing will lead to a loss for the operator. From figure 4 a price of P_1 will lead to losses. If the price has to be higher than the marginal cost the question is how much higher. Ramsey pricing provides an answer saying that the mark up will be higher for less elastic demands This is known as the inverse elasticity rule It is important to note that Ramsey prices are useful only when there is more than one market The principle behind the Ramsey rule is to find a set of prices, which maximize welfare and at the same time do not lead to losses. For a one-product case as in figure 4 Ramsey pricing will lead to average cost pricing at P_2. However, we have concluded, that a price of P_2 will lead to inefficiency. Segmenting the market and cha ging different prices to different consumers can mitigate this inefficiency One possible method is to segment according to business or residential customers, anothe: option is to segment according to urban or rural. Finally it should be noted that the rental is an entry fee and it is just another price, which too should be set according to Ramsey principles. It is true that calculating Ramsey prices requires information on elasticities for different classes of consumers and for different markets One would also need information on the elasticity with respect to the entry fee. Estimating all of these elasticities is a mammoth task and one can't fault the TRAI for avoiding the task given its tight schedules In the long run the TRAI should attempt some measure of elasticities to improve on their pricing methodologies

Conclusion

This paper looked at the methodology behind the TRAI's pricing policies as well as the actual prices calculated by it for basic services. Its favourite tool is the price cap for individual services. From our discussion it should be clear that a price cap is not a very effective tool for regulation. Even though it allows some discretion to the operator for pricing and is certainly better than a fixed price it removes a lot of independence. The operator cannot combine tariffs and rentals to some extent. A method of regulating tariff baskets would be preferable even though such expertise might be difficult to attain. This is even more important if the market for long distance calls is deregulated in future. The other major problem is that the TRAI is concerned with pricing and not in improving efficiency. Efforts should be made not only to align prices with costs but also to reduce costs in future with improving technology, so that prices could come down even more. There should be some incentive for the DOT to manage its network more efficiently. It is sobering to note that after the publication of the TRAI's prices the DOT has repeatedly said that its revenues will come down. Not for a moment has it suggested that even with these prices, with increased efficiency, it would be possible for the DOT to retain its level of profits. The message of increasing efficiency has either not been sent or not heard.

Bibliography

1 Consultation Paper No. 97/1, 4th November 1997, Telecom Regulatory Authority of India.

2. Consultation Paper No. 98/3, 9th September 1998, Telecom Regulatory Authority of India

3 Optimal Policies for Natural Monopolies, 1989, Ronald R Braeutigam in Handbook of Industrial Organization, Volume II, ed. Richard Schmalensee and Robert D. Willig, North-Holland, Amsterdam.

4 Economics of Regulation and Antitrust, 1995, W. Kip Viscussi, John M. Vernon, Joseph E Harrington Jr., MIT Press, Cambridge.

5. Nonlinear Pricing,1993, Robert B. Wilson, Oxford University Press, New York.