HITL-REG./TRAI/07-08/043 **6th July 2007**

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Sub: TRAI Consultation Paper No.7/2007 dated June12,2007 on Review of license terms and conditions and capping of number of access providers

Dear Sir,

We appreciate the opportunity to respond to the points presented in the aforementioned TRAI consultation paper.

The Indian Telecom sector has undoubtedly been one of the greatest success stories post-independence. The liberalization of the sector in 1994 coupled with the boost provided by the NTP 1999 and more recent changes allowing increased FDI to 74 percent in the sector have resulted in the overall tele-density of the nation increasing from a meager 1.3% in 1996 to the current levels of about 19%. Having crossed two hundred million access connections India has emerged as one of the top five networks in the world.

In this backdrop, we provide our response to the issue of determining the number of access providers in each service area.

Our Response

The very notion of a cap on number of access service providers is not only ill-conceived but also completely misguided. In the context of the huge potential demand for telecom services in India, the very thought of a cap on the number of access provider is bereft of logic.

As per our analysis of select countries (refer detailed analysis in Annexure), none of the countries have a cap. All of them extend full support to free and unfettered competition.

In addition, capping the number of players (in India) as per the UAS license regime in our country would lead to an automatic restriction on the number of basic service providers as well.

TRAI in its recommendations (no 101 -36/2006 – MN dated Sept 27, 2006) on spectrum allocation has recommended that even 3G and WiMAX spectrum, should be auctioned to existing service providers only. **It is shocking and completely unfair that along with 2G, even 3G and WiMAX spectrum would be the exclusive reserve of a few large monopoly-seeking super corporations.** Putting a cap will also completely shut the door on foreign investments and foreign technological know how which is so vital for our industry. Furthermore, it is hard to justify why a cap is being considered for telecom when we do not have a cap on any other comparable service in India. More than anything else, it will be a throwback to the debilitating license raj that we have just come out of.

In effect, putting a cap on the number of access providers would create mega corporations with US$ 80-100 bn market capitalizations who would exert undue influence on India's future

economic decisions and policy making. **This kind of an unjust and completely one-sided situation will not be tolerated by any right-thinking citizen in the world's largest democracy.**

India's telecom industry is at its infancy. No doubt, we have a very long and arduous journey to undertake in the telecom sector. Hence, using Hirschman Herfindahl Index (HHI) as a measure of competitiveness for the Indian telecom market is not just irrelevant but also frivolous. It is incorrect to use HHI index in a market like India which is still lagging behind at a penetration level of only 19% country wide and rural penetration languishing at a mere 6%. We need not even mention that telephony has not been able to cover the vast mass of India's geography and large chunks of our population. **Hence today's telecom market is nowhere close to what the telecom market in India can be. Therefore using HHI on the current Indian market is illogical.**

HHI as a measure of competitiveness has been challenged by many as being overly simplistic and a tool which needs to be used only after considering other qualitative factors as well (Federal Trade Commission, USA, 2004).

The population per operator and subscribers per operator in India is much higher than almost any other country in the world. India's population per operator is about 190 mn and is way higher than that of comparable large countries such as Brazil (23 mn), USA (4 mn) and Canada (3 mn). Clearly, the number of operators available to service the overall Indian population is far lower than what would have been in any other country with a similar population and geography. To put the Indian population per operator (190 mn) in perspective one needs to keep in mind that Vodafone which is a global giant has roughly 200 Million subscribers across 25 countries while Indian operators have a potential market of the same scale in one country alone. Further, the Indian subscriber per operator (24 mn) is also inordinately high when compared with that of other geographically diverse countries such as Brazil (13 mn), USA (3 mn) and Canada (2 mn). All the above statistics unambiguously point to the very low level of competition in India which can only be remedied by introducing more number of players. Indeed, it is unfortunate that the regulator is unwittingly becoming a party to this monopoly/ cartel like situation in India where the fruits of the telecom revolution are being grabbed by few large super corporations. **This is nothing but 'monopoly by regulation'. Moreover, t**here is no doubt that by keeping the number of players in the Indian market artificially low in this contrived manner, we are only shortchanging our Indian telecom customers.

Any one who understands the telecom industry in India will tell that tariffs in India shall go down further if no cap is applied on the number of players. Tariffs in India have seen a steady decline over the years as competition in the market intensified with the regular entry of new players. Clearly, with heavy reduction in capital expenditure on account of drop in equipment prices and passive infrastructure sharing, the tariffs can only go lower. The drop will be even more accentuated with more new players. One can see that even at such low levels of tariff, by virtue of humungous volumes of usage, most of the operators enjoy healthy EBIDTA margins of 35 – 40%. All international analysts are of the opinion that the margins are expected to rise over the next 2-3 years indicating fall in operating costs. If competition is allowed to increase, the benefit of decrease in costs shall be passed on to the consumers resulting in reduced tariffs. **However if a cap is imposed on the number of players, existing monopoly seeking mega corporations will not pass on the benefits of the drop in prices to the consumers thereby putting the brakes on the subscriber growth in the India.**

Today, Indian Telecom Companies are earning high returns on capital employed (RoCE) and is poised to improve even further. The RoCE will in fact outpace comparable telecom industries across the globe in the next few years. (India's wireless service providers' ROCE is 7.8% in 2005 compared to Canada's 4.5% and United States' 5.8%). It is expected that RoCE for Indian mobile services will rise up to 17% in 2010. This is despite the fact that overall ARPU will continue to drop (ARPU for 2010 has been considered at about Rs 200) as subscriber base grows for the industry. The sheer size of the demand, the overall growth of the economy and falling capital costs in India are expected to drive the ROCE northwards.

In addition, market valuations of most Indian companies are among the highest in the world. In this scenario of healthy future ROCE and ultra-high valuations, capping the

number of service providers would lead to the concentration of wealth in the hands of a few large companies at the cost of the average Indian consumer and our country.

Spectrum, which is a scarce national resource, is the essential element required for a mobile service. There is no doubt that the demand for spectrum which is coming from most existing operators is only on account of inefficient usage of spectrum. We firmly believe that existing operators should appreciate the value of this scarce national resource and develop more base stations in order to efficiently use spectrum instead of asking for more spectrum.

In this backdrop, it is disappointing and shocking that many existing operators have been issued spectrum far in excess of the contracted spectrum under the garb of increased number of subscribers. A back - of- the- envelope calculation reveals that this is tantamount to a dole of over Rs 1300 crores (value of excess spectrum pro-rata to entry fee). **It is beyond the realm of logic to decipher why these existing highly profitable companies are being distributed national resources at the cost of the national exchequer, the tax payer and the man on the street.**

Most countries evaluated were found to have resorted to market-oriented techniques for spectrum allocation. **Optimum utilization of spectrum is promoted worldwide by allowing spectrum trading/ sharing and auction of fresh spectrum whenever available. India should also go down the same path.**

TRAI in its consultation paper on Spectrum related issues in May 2004, suggested spectrum trading as a measure to ensure spectrum efficiency. Secondary trading of spectrum would lead to existing operators devising efficient spectrum utilization techniques as they would be able to reap the benefits by trading part or all of its allocation with others and lease spectrum on a temporary basis. In most of the countries analyzed, the method employed for award of license and spectrum is auction for spectrum. Such an auction ensures that due to the price being paid by spectrum awardees, it is put to optimum use.

There is the very grave danger that putting a cap on the number of players will adversely affect out rural telecom penetration and the rural population will completely miss the telecom revolution sweeping urban India. Even now telecom penetration in rural India is abysmally poor. While Indian urban penetration is 48%, penetration in rural areas is languishing at a mere 6%. There is an urgent need to bridge this ever increasing digital divide which in turn is deepening the divide between the haves and have-nots. The only way to do the same is to allow more players in the market. Putting a cap on the number of players at this juncture would be catastrophic with respect to the mobile services in the underserved and underprivileged rural areas of the country. **It is indeed unfortunate that the regulator is becoming an unwitting party to deepening the digital, economic and social divide in India. This situation cannot be accepted in any democratic country, particularly in a country like India with a vast population base.**

Increase in competition by way of new players is essential to ensure better QOS in the Indian market. The existing operators have been unable to meet various QoS benchmarks set by the regulator in their respective markets. If the number of operators were to be capped, there is a very high probability that QoS performance may fall even further as there would be little competitive pressure among operators to improve QoS performance. **On the other hand new operators offer low tariffs, innovative products and improved QoS to customers in the market.**

Market adjustments/ M&A/ strategic alliances and not regulatory intervention have addressed the needs of the changing market place across the world. Market forces and not regulatory oversight have driven business and commerce across the globe. There are global examples of market adjustments in the telecom market, in line with which, it can be argued that the Indian market would also witness M&A activity, alliances/ partnerships and entry/ exits in accordance with the opportunities and challenges of the market. Hence, there is no need for TRAI to control the intensity of competition by influencing the number of players in the market by putting a cap on licenses.

Keeping the above points in mind, it will indeed be a travesty of justice if the number of access service providers in India is capped. The so-called telecom revolution in India is one of the few success stories that our country has witnessed post independence.

It is the duty of every right thinking Indian and democratic institution to do everything possible to encourage free and unfettered competition in this crucial sector. Future generations will not forgive our decision makers if we let frivolous and unjustified notions (like capping) derail the telecom movement in India.

A detailed report with explanation and references is enclosed herewith as Annexure. We urge the regulator to seize the moment and take a landmark decision in this matter for the betterment of the telecom sector and for launching India on the road to prosperity.

Yours Faithfully,

Sd/-

(Surendra Lunia)
Chief Executive Officer
HFCL Infotel Limited

Enclosure:

Annexure: A report prepared by HFCL Infotel Limited on capping of number of Access providers in response to TRAI's Consultation paper on Review of License terms and conditions and capping of number of access providers

A Report Prepared By
HFCL Infotel Limited
On
"Capping of Number of Access Providers"

In Response to TRAI's Consultation paper on "*Review of License Terms & Conditions and Capping of number of access providers*"

Background

The TRAI consultation paper ('TRAI Consultation Paper on Review of license terms and conditions and capping of number of access providers') under consideration explores the issue of a cap on the number of access providers

We appreciate the opportunity to respond to the points presented in the aforementioned consultation paper. We are happy to submit our key observations (in respect of the clauses in the TRAI paper referred to in parentheses) in the order as they are presented in the paper:

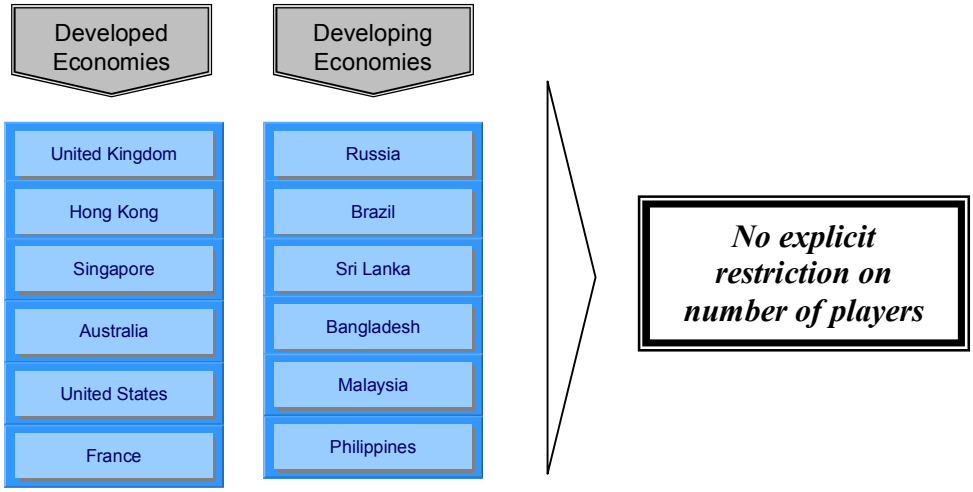
1. "…is there a case for limiting the number of access service providers in a service area on the basis of certain transparent and predetermined criteria or it should be left to the market forces?" (Refer 6.3 of the TRAI Consultation paper)

We believe there is a very strong case for India, with such high growth potential, to leave the question of number of access providers to the unfettered play of market forces.

1.1 Spectrum is the essential commodity and the scarce resource required for operation of mobile / wireless services. Analysis of some developing and developed economies shows that government policies are aligned towards realizing the maximum economic value of this scarce resource which is also a public property. In India, the total available spectrum for GSM is about 35-40 MHz in 900/ 1800 MHz band and 20 MHz in 800 MHz band for CDMA.

We have carried out an in-depth analysis of select countries comprising developed and developing economies.

Figure 1: List of Countries Analyzed



1.2 No country explicitly lays down a cap on the number of access service providers.

India's total number of licenses is meager when compared to number of licenses in countries such as Russia and the United States, which have comparable market sizes and populations.

Table 1: Comparison of number of Wireless licenses across countries

Country	Service Areas	Total Number of Licenses	Multiple of India's licenses
Russia	89	267	2
United States	734	2936	19
India	**23**	**153**	

98 percent of the total U.S. population lives in counties with the US market being divided into 734 license areas. There are four nationwide mobile telephone operators as well as the large regional and numerous other smaller operators have different geographic footprints. As a result, US has issued close to 3000 licenses to different players to provide services in the country. Similarly Russia's mobile market which is divided in 89 service areas has issued about 267 licenses across players. Compared to these markets India has only 153 license holders which are grossly inadequate to meet the colossal demand of a country of its size.

1.3 Furthermore, Mobile Virtual Network Operators (MVNOs) are increasingly entering and playing a significant role in further enhancing the market, reducing tariffs and service customization in many mature and relatively saturated telecom markets such as UK, USA, France, Finland, Sweden and Hong Kong. The same clearly brings out that whereas new players (including MVNOs) are playing a major role in expanding the market even in saturated markets, **there is an even stronger case for new players in developing markets with huge future potential like India.**

1.4 Further, encouraging more and more operators is essential to meet one of India's key goals – increased rural penetration

A tele -density of 19% still hides great disparity between the urban and rural penetration. The telecom penetration in rural India has not kept pace with the spread in urban areas. While urban tele-density has reached about 48%, rural tele-density is languishing at merely 6%. This reflects the inability and reluctance of the existing players to venture into rural areas. As has been noted in various study papers released by TRAI, the recommendations made towards improving rural penetration are

- Increase in rural tele-density "would only be possible when rural growth is mobile and competition driven, like in urban areas"
- "Niche Operators should be permitted to operate in SDCAs (Para 5 of TRAI's Recommendations on Unified Licensing Regime) where rural tele-density (based on fixed subscribers) is below 1%[1]. "

In order to address the deepening digital divide, more number of operators should be encouraged to enter the market so that our rural population is also able to share in the benefits ushered in by the telecom revolution.

1.5 Another important point to be highlighted here is the fact that given the UASL regime in our country, **capping the number of players would lead to an automatic restriction on the number of basic service providers per service area as well**. While countries such as Hong Kong, Singapore, Malaysia, Sri Lanka, Philippines etc. grant distinct licenses for fixed and mobile services, India presently accommodates for only one license for all access services.

While convergence is being talked of as a worldwide phenomenon, a move towards capping of players would affect services such as IPTV, fixed and wireless broadband in the Indian context. It is worthwhile to add that India's broadband household penetration at 1% today is much lower than that of neighboring countries such as China (12% household penetration). Restricting the number of licenses to the current players would amount to **only existing operators having the rights to provide all forms of communication services in the country**. This would be giving too much power and responsibility in very few hands and is a retrograde step. Considering the size of the country and the current penetration levels of all forms of communication services, it can be said without doubt that **many more players are required to ensure all forms of communication services get due attention**.

Keeping in mind the need for a broadband take off in the nation, the DoT has declared the year 2007 as India Broadband Year. However restricting competition at such a juncture could

[1] *TRAI Recommendations on Growth of Telecom Services in Rural Areas, October 2005*

also kill the hopes of a broadband success story, and related benefits to rural commerce, telemedicine, e-governance, e-education and overall administration thereof.

Finally, we firmly believe that the issue of number of operators in a market should be left to the operator/ applicant who can address the same based on market prospects and their future vision. Any move by TRAI to restrict competition in the market shall be the first step towards formation of monopolies within the country.

2. "Most countries have between three to four mobile operators. Even economically liberal countries like the United Kingdom have five operators. Canada has six mobile operators and countries like Australia, Malaysia and Thailand have five operators each. India has five to eight existing mobile operators providing services in each service area."(Refer 6.10 of TRAI Consultation Paper)

2.1 While the authority rightfully accounts for the number of mobile operators in each of these countries, it does not take note of the fact that most of these countries are open to the entry of Mobile Virtual Network Operators (MVNOs). When talking of and measuring the competitive scenario in the sector, **one ought not to overlook the impact of these virtual operators, as they appear as additional network choices to the end customer,** and lead to positive impacts such as the affordability of telecom services by way of tariff decline. (Refer clause 6.13 for details). Hence, while these operators may be running their networks on the backbone of a licensed network operator, there is no doubt that to the consumer they appear as multiple options as service providers fuelling competition.

Hence the number of service providers available in these countries is the aggregate of network operators and MVNOs.

Presently, MVNOs not only thrive successfully in the Scandinavian, European, US markets, they also exist in markets such as Russia, Hong Kong and Malaysia. In fact some countries closer home, such as Hong Kong and Malaysia also provide licenses to interested parties to provide services via the same route. Players such as Asia Telecommunications was awarded one of the first MVNO license in Malaysia, while Hong Kong as on date has seven such licenses with the latest being IMC Networks Limited which was granted a license in the year 2005[2].

Table 2: Country-wise estimate of number of MVNOs

Country	Number of MVNOs
United Kingdom	7[3]
France	17[4]
Australia	3[6]
Hong Kong	6[5]
United States	50[6]
Belgium	11[3]
Netherlands	10[3]
Denmark	3[3]
Finland	2[3]
Canada	6
Malaysia	2

3. "In India each service area currently has more competition in the market than most developed nations" (Refer 6.12 of TRAI Consultation paper)

3.1 The Authority has concluded the above based on HHI or the Hirschman- Herfindahl Index.

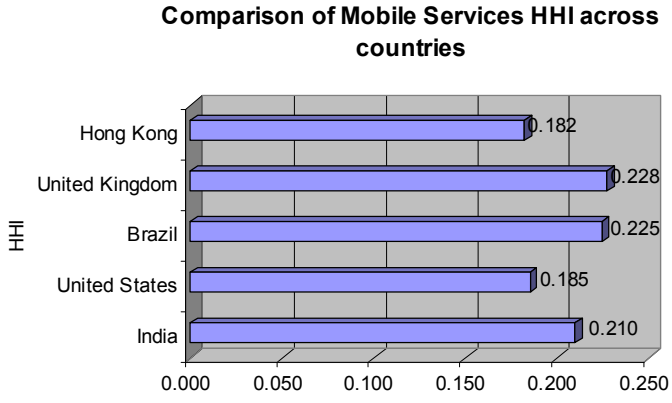
[2] *Source: Total MVNOs are Trident Telecom, China Motion, China Unicom, China Hong Kong, CITIC Telecom, Telecom Digital Mobile and IMC Networks Limited*
[3] *Source: The Communications Market Interim report by Ofcom, February 2006*
[4] *Source: ARCEP, French Regulator*
[5] *Source : OFTA*
[6] *Source: http://www.mobilein.com/what_is_a_mvno.htm*

However, we believe that using HHI as a measure of competitiveness in the Indian market is not only irrelevant but also ill-advised and misguided. The reasons for this are as follows:

- **The Indian telecom sector is still at its infancy. India is a massive country with a huge population base of over 100 crores and an area of 3.2 Million sq Km. In the context of this kind of potential demand and spread, India's tele-density is merely 19%.** Thus there is a long journey ahead in terms of fulfilling the telecommunications needs of our country. India truly is just about starting on the path to telecom growth and has a long way to go before it can be compared with any of the developed countries (as in Figure 18 of the TRAI paper).

- Given the emerging and evolving nature of the Indian Telecom sector, it is not appropriate to calculate the HHI for it at this juncture. While the HHI for India is 0.21, considering India's large population and vast geography, there are large parts of our population (in rural and far-flung areas) which still have to be covered by telephony. **With rural telephony penetration at 6% we cannot expect to be complacent and restrain market forces from benefiting this large segment untouched by the telecom revolution.**
- Across the world, HHI as an indicator is not considered alone as a measure of competition. It has to be considered in the perspective of the size of the market and the stage of evolution. The Federal Trade Commission in 2004, commented that HHI levels have no specific significance.
    - **The chairman of the FTC went on to suggest that "*the preeminence that some would continue to give to concentration or HHI numbers is misplaced since state-of-the-art merger analysis has moved well beyond a simplistic causality of high concentration leading to anticompetitive effects.*"**

3.2 Even if we consider the argument presented by TRAI regarding HHI, India's relative position in terms of competitiveness of the market should be evaluated by computing the HHI for other similar markets across the world. The analysis reveals that while countries such as **USA and Hong Kong are very clearly more competitive than India, there are a group of other countries (such as Brazil and UK) where the levels of competition is as intense as that in India.**

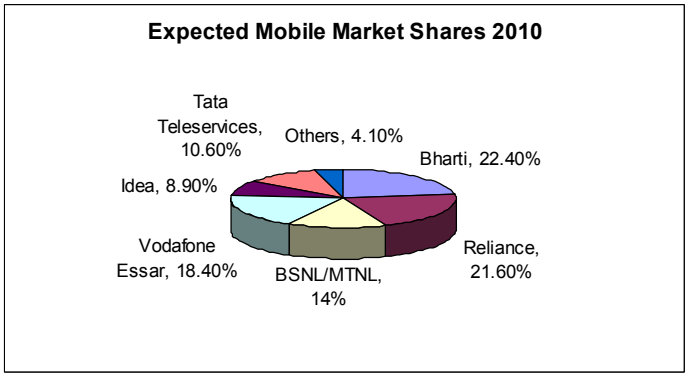


3.3 Another dimension to the above comparison is provided by the presence of large number of MVNOs in many other markets. In case the number of MVNOs in markets such as Hong Kong, UK, USA and other European countries were considered, the respective HHI index would significantly reduce and the true level of competitiveness in those markets would be reflected. For instance, if we include the MVNOs for calculating the HHI, the respective numbers for these countries are 0.159 for Hong Kong and 0.188 for the UK. Hence, it is

abundantly clear that the **HHI in other evolved markets would actually be even less** (than shown above) on account of the inroads made by MVNOs in these markets. Therefore, it is submitted that India is only at the first milestone in the long journey towards a fully competitive access provider market.

3.4 To take this point a step further, let us consider a hypothetical situation wherein a restriction on the number of players is introduced in India. In that situation, the market share concentrated with the top 4 players, namely Bharti, Hutch, Reliance and BSNL – may increase tremendously from the current levels of 74% and may reach approximately 80-85%. In this situation, the HHI will be in the range of 0.24 to 0.25, which in turn implies a deteriorating competitive scenario. Thus, putting a cap on the number of players may have serious repercussions on the nature of the Indian market and is also tantamount to putting the clock back on the Indian telecom market when the market was monopolized by few players.

3.5 On the other hand, if the access provider market were left to the unfettered inter-play of market forces, most analysts expected a changed future market scenario. According to analyst reports, under current market scenario, all players would be able to thrive due to rapid subscriber growth and reducing capital investments (due to falling RF equipment prices and tower sharing trends).



[7]

According to analysts, the top 4 players are expected to account for 76.4% of the market in 2010. Accordingly, the HHI based on these expectations works out to 0.17[8], (which is marginally lower than the current HHI of 0.21) and reflects the market's progression towards a competitive market place driven by greater customer choice, low tariffs and enhanced QoS.

A cap on the number of operators in each service area at this juncture would put the incumbent operators at an unfair advantage to the detriment of the overall market. In order to maintain a level playing field for all players, parties that were interested to enter the market should be allowed to bid for the frequency spectrum and the licenses on an equal footing with incumbent operators.

3.6 Service sectors such as airlines, IT and insurance are more competitive than telecom in India

To assess how the competitive scenario in the Indian Mobile market stacks up to the competition in similar service sectors, we calculated the HHI for the Airlines, IT/ITES and the Non Life Insurance sectors. The HHI results for these sectors were as follows:

- Airlines[9] – 0.16
- IT Software & Services Exports[10] – 0.18
- Non Life Insurance[11] – 0.13

[7] *B&K Securities Report on the Indian Telecom Sector, April 2007*
[8] *B&K Securities Report on the Indian Telecom Sector, April 2007*
[9] *B&K Securities Report on the Indian Aviation Sector, April 2007*
[10] *2004-05 NASSCOM Strategic Review*
[11] *Based on Gross premium underwritten by insurers, FY07, IRDA*

This highlights the fact that there are several other service sectors in the country where competition is higher than the telecom sector. Despite this there is no restriction on the increase in competition in any of these sectors as increased competition benefits the economy as a whole by its increasing contribution and improvement in the quality of products and services. Likewise there should not be any interference by the regulator leading to a restriction of free competition in the telecom market.

4. "…any significant reduction in tariffs is unlikely with the introduction of more service providers." (Refer 6.13 of TRAI Consultation Paper)

The above statement is in complete contrast to the ground reality of the Indian telecom market place.

The introduction of increased competition is always bound to bring prices down by making telecom services more and more affordable. This is particularly true in the case of markets as price sensitive as that of India's with a substantial portion of the population yet to be served.

4.1 Even while the mobile costs in India are the lowest in the world, effective tariffs are still falling very significantly every day. The intensity of competition has driven all operators to offer a plethora of options such as free SMSs and other value added services (VAS) such as ring tones, video clips, and music downloads without any changes in the tariff package. There are numerous examples where innovative services have been provided such as additional points on use of a service which can be redeemed by the subscriber for more talk time/ services. **Thus, it is amply clear that even though the rate for a call is about USD 0.2 today, fierce competition among players has drastically reduced the effective tariff for subscribers with free services and a range of incentive schemes. With free competition, this trend will not just continue but will intensify further.**

We can further substantiate our point based on the following:

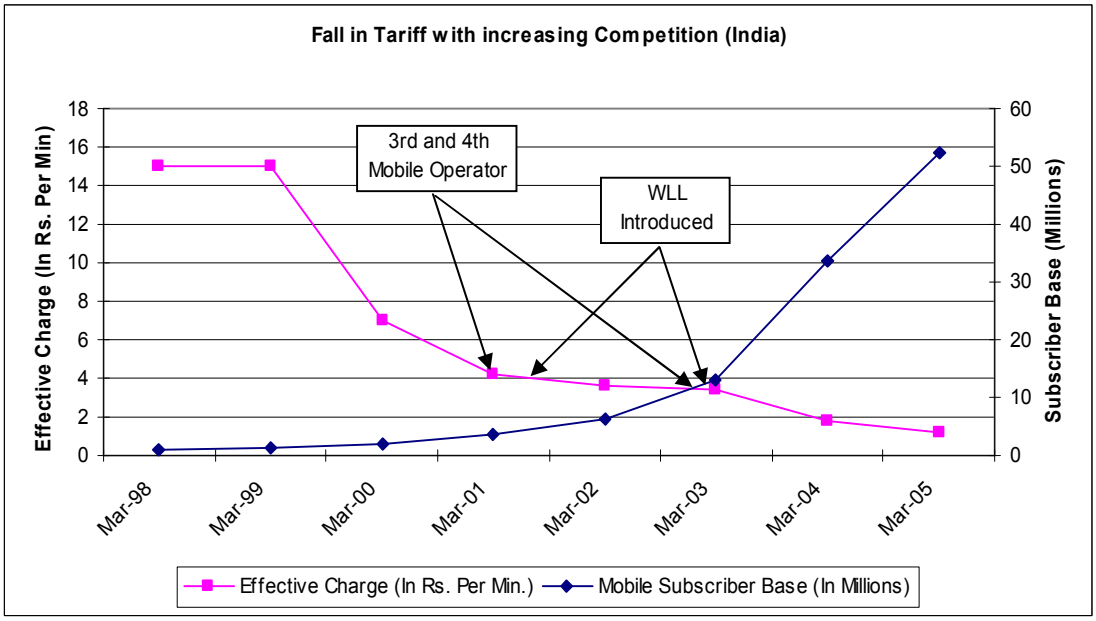
4.2 According to analysts, the EBITDA margins which are around 35-40% for major telecom players in the country will show substantial improvements over the next two to three years. This clearly indicates that there shall be a fall in the operating costs of these companies. **Thus it would be fair to say that there is a potential for the tariff to further go down from the present levels.** In addition EBITDA margins of most global players are around 25%. Thus the additionally 10% margins earned by the operators can be passed on to the subscribers when there is adequate competitive pressures. However, in the absence of adequate competition, it is very likely that the benefits of this phenomenon will not be passed on to the end customer.

4.3 Drop in Revenue per Minute of the operators subsequent to the introduction of a new wireless player

Telecom tariffs in India are the lowest in the world today. However this fall in calling rates did not happen overnight. Tariffs in India saw a steady decline over the years as and when there was additional competition introduced in the market. The first round of tariff cuts was triggered in the year 2001 with the entry of 3rd and 4th telecom operator in each circle. During the same time WLL licenses for limited mobility services were also issued resulting in increased competition and driving the tariffs further down south. Similarly the year 2003 saw the entry of CDMA players like R-Com 2003 which resulted in not only a spurt in subscriber numbers but also further fall in tariffs. At every stage whenever there was a fall in tariffs, the rise in subscriber base and usage traffic took the EBIDTA margins higher for the operators.

Figure 2: Fall in tariffs with increasing competition (Indian Telecom Market)

Reference: Para 6.11 and 6.22 of the TRAI paper



Besides price cuts, the new player offers new / innovative service in order to garner market share from existing players and to enhance the market size. On account of competitive behavior by most market participants, it is the average customer that is ultimately benefited.

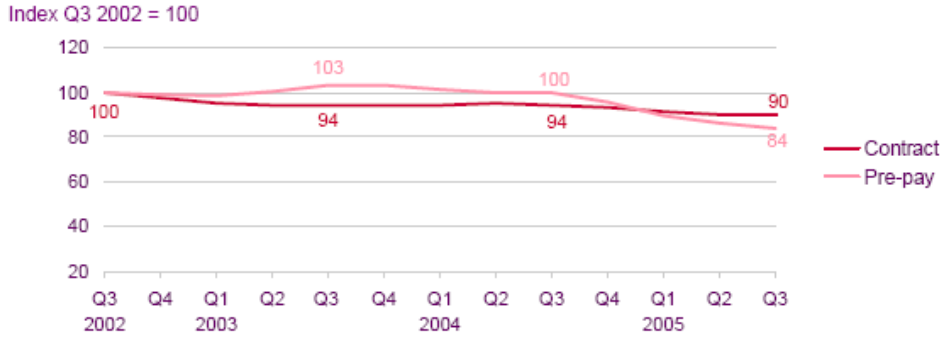
4.4 The launch of new operators brings in increased competition and reduced tariffs thereby enhancing the market size as well as benefiting the customer (Special reference to the UK market)

Increased competition at every stage of a market's development has been instrumental in bringing prices down. There is no question that greater number of players in the Indian scenario (given the current levels of telecoms penetration in our country), is an absolute necessity. We have also examined instances of the developed EU nations reaping benefits of higher competition by having more number of service providers (through the MVNO route) and thus greater choice to customers.

MVNOs are well -established and permitted to operate in countries such as US, UK, France, Australia, Hong Kong, Belgium, Netherlands etc. Industry watchers believe that they will be launched in other countries as well as this is one of the ways in which greater competition can be rapidly introduced in the market.

UK Case

Figure 3: Average UK Mobile Unit Price Indices[12]



[12] *Source: Ofcom/Operators*

Figure 3 above outlines the price reductions in the UK market from Q3 2002 to Q3 2005. Price decreases were particularly evident in pre-paid, with a 6% fall, reflecting the ongoing competition in the segment. Overall, mobile prices fell by 10% in the year to September 2005, compared to a drop of only 2% in the previous year. This accelerated pace of price reductions was caused due to heavy promotions from the then new comer, 3, and other new service providers, who were seen to heavily discount their tariffs in order to attract customers, have contributed to the acceleration in price reductions.

Hence we can conclude that with the introduction of a cap on the number of wireless service providers, there will is be less competition and hence less inclination on part of the operator to decline tariffs in the absence of stiff price wars.

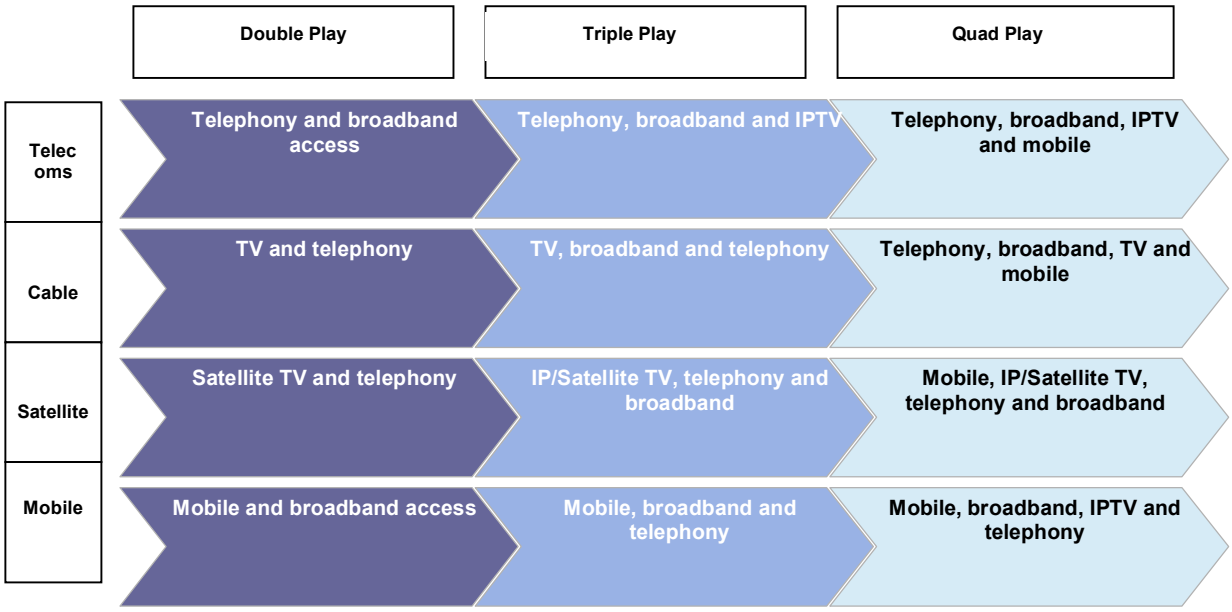
5. "After crossing the optimum point, addition of new operators adversely affects innovation by unduly intense competition." (Refer 6.14 of TRAI Consultation paper)

5.1 The inverted U framework discusses fall in innovation when increasing competition crosses a point of inflection. This typically happens in mature markets wherein all attempts at innovation have ceased as stagnancy in the market reduces the motivation of players to invest in R&D towards newer products and services.

5.2 Considering the nascent stage at which the Indian market stands as of today, it would be unfair to even mention that the point of inflection is near. In terms of services, 97% of the revenue comes from voice and text messaging services which is the most basic of all services that may be offered to a telecom customer. We still have a long way to go before the vast potential of data services can be realized. A look at range of services being offered to the retail and enterprise customers in developed markets like US & UK makes one realize that India is several years away before the services shall be available to the Indian consumer.

5.3 Today, convergence is being talked of as a worldwide phenomenon with multi-play being a catch-all term describing the provision of different communications services by organisations that traditionally only offered one or two of those services. ***However in the Indian context we are yet to witness the prevalence of such converged services in terms of triple play and quad play, and hence are far behind the peak innovation point as per the 'U' curve.***

Figure 4: Double Play, Triple Play and Quad Play



6. "Introduction of additional service providers will push up the competition for market share without any linkage to improvements in QoS. The threat of India becoming a high-growth, low quality market cannot be underplayed." (Refer 6.16 of TRAI Consultation paper)

6.1 The introduction of additional operators is expected to improve QoS performance tremendously. It must be noted that many operators (cellular mobile services) are currently unable to meet key QoS performance parameters (Refer QoS performance in respect of 'Response time to customer for assistance' and 'Complaints per 100 bills issued' as mentioned in TRAI's Telecom Services Performance Indicators Report -Dec 2006). In this scenario, if the number of operators were to be capped, there is a very high probability that QoS performance may fall even further as there would be little competitive pressure among operators to improve QoS performance. **Typically, new operators offer low tariffs and/or innovative and improved services to customers when they enter the market. As most existing operators respond on similar lines in order to maintain market share, the QoS performance for the entire industry is bound to improve**.

7. "The number of subscribers per service provider is lower than other countries of the world." (Refer 6.22 of TRAI Consultation Paper)

Table 3: Population per Operator Statistics: Country-wise

Country	Number of licensed service providers	Number of MVNOs	Total number of networks	Population Base (Mns.)	Population/ Operator (Mns.)
United Kingdom	5	7[13]	12	60	5.0
France	3	17[14]	20	64	3.2
Italy	4	0	4	58	14.5
Australia	4	3[16]	7	20	2.9
Korea	3	0	3	49	16.2
Philippines	4	0	4	86	21.5
Hong Kong	6	6[15]	12	7	0.6
Singapore	3	0	3	4	1.3
Malaysia	3	2	5	26	5.2
Thailand	4	0	4	65	16.2
Indonesia	7	0	7	226	32.3
United States	27	50[16]	77	300	3.9
Belgium	3	11[13]	14	10	0.7
Netherlands	4	10[13]	14	16	1.2
Denmark	4	3[13]	7	5	0.8
Finland	3	2[13]	5	5	1.0
Canada	4	6[16]	10	33	3.3
Brazil	8	0	8	186.8	23.4
India	***6****	***0***	***6***	***1,142***	***190.2***

**: Includes BSNL/MTNL, Bharti Airtel, Reliance, TATA Teleservices, Hutch and Idea Cellular*

We would like to present the following arguments in this regard:

7.1 While the authority has looked into the possible population per operator on a service area basis, we chose to take the pan India view, as service areas are gradually

[13] *Source: The Communications Market Interim report by Ofcom, February 2006*
[14] *Source: ARCEP, French Regulator*
[15] *Source : OFTA*
[16] *Source: http://www.mobilein.com/what_is_a_mvno.htm*

beginning to hold little or no meaning. This can be substantiated by the fact that 4 players Bharti, BSNL, Reliance and Hutch are already pan India players while others like Idea and TTSL are fast moving towards similar status.

Table 3 highlights how the population per operator in India is one of the highest in the world. Once the total number of players (including MVNOs) in each country is taken into account while estimating the total number of players competing for the total population, India emerges as the highest ranked, meaning the least number of players available to service the given population base. India's figure is six times that of the second highest figure of Indonesia which stands at 32.3million people available per operator.

This essentially means that if the number of access providers in India were to be capped today, the available population to be serviced per operator would be an astounding 190.2 million. It is unlikely that an operator may have the expertise, scale and the know-how to tackle such an enormous base when it has never been reported elsewhere in the world, as per our list of countries evaluated.

In order to put this in perspective, it must be noted that a global giant such as **Vodafone, (as on December 2006), had a combined subscriber base of roughly 200 million, that too across 25 markets around the globe while Indian operators have a potential market of the same magnitude in one country alone**.

Table 4: Subscriber per Operator Statistics: Country-wise

Country	Number of licensed service providers	Number of MVNOs	Total number of networks	Closing Subs Base: Dec 2006[17] (Million)	Subs/Operator (Million)
United Kingdom	5	7[18]	12	70.8	5.9
France	3	17[19]	20	48.3	2.4
Australia	4	3	7	20.2	2.9
Korea	3	0	3	40.2	13.4
Philippines	4	0	4	42.1	10.5
Hong Kong	6	6[20]	12	7.6	0.6
Singapore	3	0	3	4.6	1.5
Malaysia	3	2	5	19.5	3.9
Thailand	4	0	4	40.4	10.1
Indonesia	7	0	7	62.4	8.9
United States	27	50[21]	77	232.1	3.0
Belgium	3	11[18]	14	9.8	0.7
Netherlands	4	10[18]	14	17.1	1.2
Denmark	4	3[18]	7	5.9	0.8
Finland	3	2[18]	5	6.0	1.2
Canada	4	6[21]	10	18.5	1.8
Brazil	8	0	8	100.8	12.6
India	***6****	***0***	***6***	***142.1***	***23.7***

** Includes BSNL/MTNL, Bharti Airtel, Reliance, TATA Teleservices, Hutch and Idea Cellular, Subscriber base accounted for all India*

7.2 As per Table 4, the subscriber per operator in India is also the highest out of the sample set of countries evaluated above. Large geographical countries such as US and Brazil with comparable wireless markets in terms of highest volumes in the world also have lower subscriber per operator figures.

[17] *Source: Wireless Intelligence*
[18] *Source: The Communications Market Interim report by Ofcom, February 2006*
[19] *Source: ARCEP, French Regulator*
[20] *Source : OFTA*
[21] *Source: http://www.mobilein.com/what_is_a_mvno.htm*

Table 5: Number of Operators versus Population: India and Others

	Population (Mns.)	**Number of Wireless Operators**	**Country Population : Indian Population (Ratio)**
Brazil	186.8	8	1/6
Russia	142.2	3	1/8
Sri Lanka	19.9	8	1/57
Philippines	85.8	4	1/13
India	***1142***	***6***	***1***

It is significant to note that there are common instances of countries with a fraction of India's population still being home to similar or more number of operators. Going by the global trends, it is only fair to imagine that India, with its huge population base and addressable telecoms market, should have many more service providers than it currently has. If a cap were to be imposed on the number of players in the market, the time taken to reach out to the addressable population shall be much longer than what it could otherwise be when free competition and market forces are allowed to prevail.

8. "…may be an uphill task for other licensees to clock an adequate rate of return on the capital employed and this may pose the issues of financial viability for some companies" (Refer Section 6.23 of TRAI paper)

The Indian telecom industry is expected to enjoy healthy EBITDA and ROCE trends in the future despite reducing ARPUs.

8.1 The EBITDA margins of the telecom industry today are in the range of 35-40%. In case the telecom sector levies are not considered, the EBITDA margins would be in the range of 50-53% which will put the Indian telecom industry's EBITDA among the highest in the world. On top of this, if the number of players were capped, it is likely that the EBITDA margin would rise significantly to at least about 55-60%. Such a high EBITDA margin would only lead to the creation of few mega corporations which, in turn, would result in concentration of significant market power (SMP) as well as oligopoly/ cartelization trends. Eventually, these mega corporations would unduly influence policy making and all aspects of economic development in our country.

8.2 Further, though the ROCE of the Indian telecom industry has been low so far (FY 04-05 and FY05-06), the ROCE of the industry is increasing and will in fact outpace comparable telecom industries across the globe in the next few years. This is despite the fact that overall ARPU will continue to drop as subscriber base grows for the industry. The sheer size of the demand, the overall growth of the economy and falling capital costs are expected to drive the ROCE northwards. In this scenario of healthy future ROCE, capping the number of service providers may lead to a few companies in the industry making super-normal profits. This may eventually result in concentration of wealth in a few hands and would be detrimental to the interests of the average Indian consumer.

The following are some of the facts that support the above argument.

- **Indian mobile industry ROCE set to rise from 7.4% in FY 06 to 17% in FY10**

We have performed an analysis projecting the telecom sector revenues (basic, mobile and consolidated), EBITDA and overall capital employed. We have based our analysis on the information and views provided in the TRAI study paper "Financial Analysis of Telecom Industry of China and India" dated 27 June 2006 and this consultation paper. Further, we have made the following key assumptions in performing this analysis.

1. Total subscriber base to grow from 140 mn. in FY06 to 429 mn. in FY10. Mobile subscriber base to grow from 93 mn. to 361 mn. during the same period.

2. ARPU for basic services to decline from USD 14.5 per month in FY06 to USD 11.3 per month in FY10. ARPU for mobile services to decline from USD 10.4 per month to USD 5.2 per month during the same period

3. Capex/subscriber for basic services to decline from USD 250 in FY06 to USD 182 in FY10. Capex/subscriber for mobile services to decline from USD 140 to USD 77 during the same period.

4. While most analysts are optimistic on EBITDA margins, we have been very conservative on EBITDA margins for our analysis. EBITDA margins for basic services are assumed to decline from 41.4% in FY06 to 37.4% in FY10. EBITDA margins for mobile services for the period have been considered constant at 31.3% (as in FY 06).

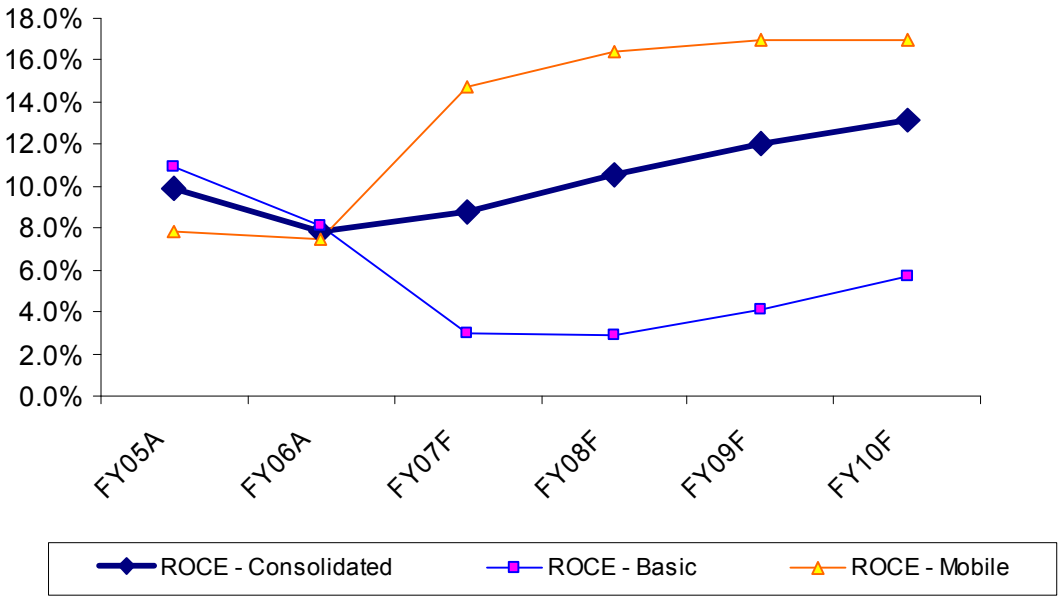
Despite making the most conservative assumptions – that is, ARPU for mobile services declines to less than Rs. 208 per month over the forecast period, EBITDA margins for fixed decline by 400 bps during the forecast period and capex costs decline only 10% per annum over the forecast period, the industry ROCE maintains a healthy trend.

We believe the above assumptions are very conservative based on the following key facts.

- Overall capex/subscriber for mobile services has dropped by 100% in the last 2 years.
- Radio equipment costs are nearly 33% of the cost today as compared to 2 years ago.
- There was limited sharing of passive infrastructure in the past (only 23% sharing as suggested by TRAI). This is likely to increase dramatically in the next 3 years. Currently passive infrastructure accounts for 67% of the cost of setting up a tower. This sharing would hence translate to significant declines in capex per subscriber.
- EBITDA margins for the industry have been increasing over the last 4 quarters and analyst reports for major wireless players (Bharti, Reliance, Vodafone Essar) suggest that EBITDA margins will continue to increase over the next 24-36 months.

  Figure 5 highlights the projected ROCE for the industry with the ROCE for mobile service providers at a healthy 17% even in FY2010.

Figure 5: ROCE – Actual and Projected for Indian telecom industry



Source: FY05 and FY06 data based on TRAI consultation paper on Financial Comparison dated 27 June 2006 & TRAI Consultation paper on review of license terms and conditions and capping of number of access providers. Projections based on internal analysis.

As can be seen from Figure 5, ROCE is only going to increase for the telecom industry. In general, the industry will hence be profitable despite the stiff competition and drastic fall in tariffs and operating margins.

- **Indian wireless industry ROCE is healthier than developed markets wireless industry**

As is illustrated by Table 6 even the current ROCE of the wireless industry is higher than that for developed markets.

Table 6: ROCE – Comparison for wireless service providers

	Canada	Europe	US	India
2005A	4.5%	0.9%	5.8%	7.8%*
2006E	6.7%	4.7%	5.5%	7.4%*

Source: Merrill Lynch report 'Global Wireless Matrix' September 2006
** Source – TRAI consultation paper on Financial Comparison dated 27 June 2006*

- **Indian mobile players have a higher ROCE than leading emerging market players**

One argument that maybe provided is that the overall cost of capital in developed markets is lower than the cost of capital in India. Hence we have analysed the ROCE for leading players in the telecom industry in India to that of players in emerging markets where cost of capital is also high.

Table 7 clearly indicates that ROCE for leading Indian mobile players is actually on the higher side when compared to telecom players even in high growth and inflation emerging markets.

Table 7: ROCE – Comparison for wireless service providers

Operator	Country	No of players	ROCE % 2007F
Bharti	India	6	22.1
RCVL	India	6	14.1
Advanced Info	Thailand	4	18.5
Excelcomindo Pra	Indonesia	3	7.3
Far Eastone	Taiwan	5	17.0
Globe Telecom	Philippines	4	12.9
Indosat	Indonesia	3	11.4
KTF	Korea	4	8.8
LG Telecom	Korea	4	16.5
RCVL	India	3	14.1
SK Telecom	Korea	3	15.2
SmarTone	Hong Kong	3	2.1
Taiwan Mobile	Taiwan	5	14.5
Total Access	Thailand	4	8.7
Entel	Chile	3	12.6
Telemig Cellular	Brazil	4	15.8
TimPart ON	Brazil	4	11.6
TimPart PN	Brazil	4	12.9
Vivo	Brazil	4	(2.0)

Source: Merrill Lynch report 'Global Wireless Matrix' September 2006

The above clearly brings out that despite being a very competitive market, having a large number of players, the Indian telecom industry as well its leaders have higher ROCE than peers in the developed markets as well as in emerging markets.

- **Indian players ROCE forecast to rise even further going forward.**

As we have seen from the arguments in II & III, the Indian telecom industry as a whole and its key players already have a high ROCE.

But, assuming status quo, in the market, analysts actually forecast that ROCE levels for Indian telecom players will rise even further and will continue this upward trend for the foreseeable future. Refer Table 8

Table 8 (A): Bharti Airtel - ROCE % forecasts

Analyst	FY07A	FY08F	FY09F	FY10F
Edelweiss	26.4%	26.9%	25.7%	NA
HSBC	NA	29.0%	31.0%	32.0%
ICICI Securities	NA	31.5%	33.6%	NA

Table 8 (B): Reliance Communications – ROCE % forecasts

Analyst	FY07A	FY08F	FY09F	FY10F
HSBC	NA	11.0%	14.5%	16.0%
SSKI Securities	11.9%	13.4%	17.4%	NA

Table 8 (C): Vodafone Essar – ROIC % forecasts

Analyst	FY07A	FY08F	FY09F	FY10F
Credit Suisse	21.40%	21.4%	21.2%	22.5%

Source: Credit Suisse 'Asia Telecom Sector' dated May 2007; SSKI – 'Telecom Wireless' April 2007; HSBC equity research on Bharti dated 05 June 07; Edelweiss equity research report dated May 2007

- **Indian telecom companies already have very high valuations**

Valuation comparisons indicate that the Indian telecom sector and its players have the highest valuations across the globe. Bharti, for instance in 2005 had an EV/EBITDA ratio of 22 and a PE ratio of 40. RCVL and Bharti, in fact even on 2007 forecasts have one of the highest EV/EBITDA and P/E ratios even when compared to emerging markets. The high valuations further underline the future growth opportunities in the Indian market and returns that can be earned in this booming sector.

Table 9: Valuation comparison – emerging market telecom players

	Country	Market Cap	EV/EBITDA		
ASIA PACIFIC		**USD bn**	**2005A**	**2006E**	**2007F**
Advanced Info	Thailand	7.5	6.5	6.2	6.5
Bharti	India	18.2	22.7	14.8	10.3
China Mobile	China	132.0	7.2	5.9	5.2
China Unicom	China	11.9	4.2	3.9	3.5
Digi.com	Malaysia	2.5	7.1	5.5	4.8
Excelcomindo Pra	Indonesia	1.6	11.9	8.7	6.9
Far Eastone	Taiwan	4.1	4.2	4.4	4.4
Globe Telecom	Philippines	2.7	5.6	4.9	4.7
Indosat	Indonesia	3.0	5.3	5.0	4.2
KTF	Korea	6.3	3.7	3.9	3.6
LG Telecom	Korea	3.5	5.7	5.1	4.7
RCVL	India	14.3	NA	14.6	10.0
SK Telecom	Korea	16.9	4.6	4.6	4.4
SmarTone	Hong Kong	0.6	4.5	4.7	4.6
Taiwan Mobile	Taiwan	4.6	5.3	5.6	5.6
Total Access	Thailand	2.0	7.1	6.3	6.1
EESA					
ECMS Mobinil	Egypt	2.4	6.0	5.5	4.9
MTN Group	South Africa	13.3	8.6	6.3	5.3
MTS	Russia	15.8	7.2	6.3	5.2
Partner	Israel	1.5	5.2	4.9	4.8
TurkCell	Turkey	10.2	5.1	4.7	4.5
VimpelCom	Russia	12.5	9.3	6.6	5.5
LATIN AMERICA					
America Movil	Brazil	69.0	14.6	9.6	7.6
Entel	Chile	2.3	5.3	5.0	4.9
NII Holdings	Mexico	10.4	22.2	15.9	10.1
Telemig Cellular	Brazil	0.7	3.5	4.1	3.9
TimPart ON	Brazil	8.9	13.7	9.8	7.3
TimPart PN	Brazil	7.1	3.6	3.6	3.6
Vivo	Brazil	4.6	5.4	6.6	6.9

Source: Merrill Lynch report 'Global Wireless Matrix' September 2006

9. A large number of economists favor unrestricted interplay of market forces. It is stated that the regulator and licensing regime should not decide the business case and decision of any operator. It should be left to the market forces to decide the number of operators and the viability issue. (Refer 6.24 of TRAI Consultation paper)

We are in complete agreement with the above. It can be argued that the Indian market would also witness M&A activity, alliances/ partnerships and entry/ exits in accordance with the opportunities and challenges of the telecom market.

9.1 There is no need for TRAI to control the intensity of competition through the number of licenses or by putting a cap on players. In fact, a liberalized telecommunications market implies that there are no regulatory barriers for entry or exit. However, it should be in the purview of the regulator to draft an efficient regulation of mergers and acquisitions in the telecommunications market to facilitate entry into and exit from the market in an orderly manner.

There are global examples of market adjustments in the telecom market

- In Italy, Blu exited the market in 2002, selling its assets to the remaining mobile operators.
- In France, the 3G license fees were reduced in 2001 from Euro 5 billion per license to Euro 619 million per license, and the fourth 3G license was not taken up by any operators.
- In Portugal, Oniway exited the market in 2002, selling its assets to the other mobile operators.
- In Sweden, Orange withdrew from the Swedish 3G market in December 2002, in direct response to the pressures placed upon it by the license requirements and market conditions.
- In Australia, the fifth mobile operator, One.Tel went into liquidation and exited the market in 2001, leaving 4 mobile operators.
- In Ireland, four 3G licenses were to be issued, but only three bids were received.
- In Norway, one operator returned its 3G license to the government in 2002.
- In Malaysia, the regulator decided three 3G licenses would be sufficient, but only two were taken up.

The primacy of competition as an effective instrument for addressing the requirements of a dynamic market place have been highlighted by major regulators in mature markets across the world.

For instance, according to Ofcom's (UK Regulator) strategic telecoms review, competition produces efficiency of three types: allocative, productive, and dynamic efficiency. Allocative efficiency occurs when firms produce the goods and services society values most highly—resources are allocated to their most productive ends. Productive efficiency requires that firms operate at the lowest possible costs. And dynamic efficiency refers to efficiency over time in investment and innovation and is the driver of consumer surplus in the longer-run.

In view of the above, wherever TRAI decides to regulate, it needs to ensure that it promotes competition. Consumers, through the interplay of the choices they make and the services they seek, should pick the winners; this should not be the role of the regulator. Intervening to protect a particular competitor runs the risk that this competitor may not be the lowest cost producer (resulting in lost productive efficiency) or the most innovative at investing (resulting in lost dynamic efficiency).

Further considering the heavy capital outlays required to operate in the sector, it is critical for players to achieve scale, i.e., achieve a critical size to make it economically viable for them to participate in the market. Without the prospect of achieving such scale, players will typically not enter the market in the first place. In most countries with a higher number of players, it has been observed that there is a tendency to correct and readjust through domestic consolidation over time, resulting in only a few players remaining.[22]

9.2 The airlines industry is one services sector where increase in the number of players has resulted in increased market size, reduced tariffs and enhanced service delivery.

A significant beneficiary of the unprecedented growth in the Indian economy has been the Indian Aviation Sector. The Indian Aviation Sector has reached a point of inflection and shot into the high growth phase with domestic air traffic growth being the fastest in the world.

Like telecom, Aviation Sector is also a sector of national importance, which has major implications on industrial development, economic growth & nation-building. Again, like wireless telephony, airlines are also characterized by a scarce national resource i.e. airport

[22] *Reference: "Achieving Telecom Sector Objectives in the Philippines" : Response by the PLDT Group to the NTC's Consultative Document*

infrastructure and related ATC resources. Further, large capital investments are also required for airlines.

We tracked the evolution and growth of this sector because of the noticeable similarities between the 2 sectors as depicted below:

Figure 6: Telecom vs. Aviation: A Snapshot

Indian Telecom space	Emerging Aviation Sector
• 5-6 operators fighting for market share	• Spurt of new players in the market
• Significant pressure on pricing	• Drastic reduction in domestic travel prices
• Identification of target customer – youth vs. professional; prepaid vs postpaid	• Clear shift in target segment – premium vs. low budget
• Loyalty programs for customers in the pipeline	• Miles programs – a retention mechanism in place
• Customer focus – a key to success	• Highly customer service oriented sector
• Mobile subscriber growth in non-metros has outpaced growth in metros over the past six years	• Most of the growth is expected from the smaller cities
• Clearly a masses product	• Huge upswing in passenger numbers

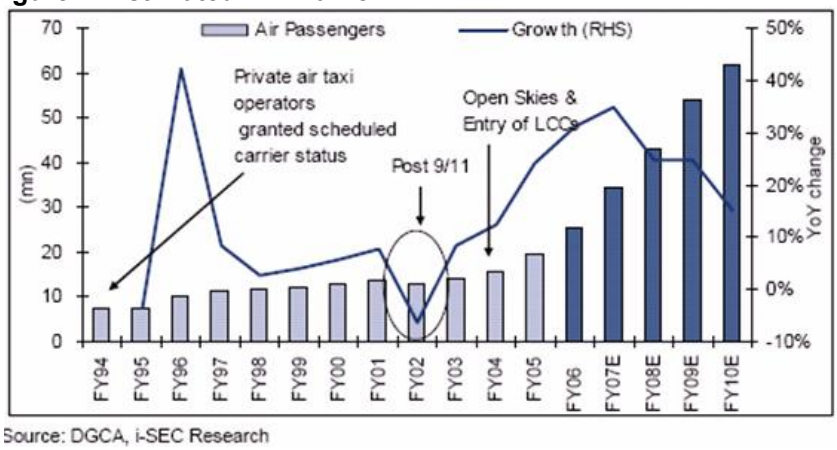
The Aviation sector has gained considerably from the opening up of the sector to private players. The market size of the Aviation sector has grown phenomenally with the entry of new players. It experienced an upward surge at two points in its evolution since 1994.

- The grant of scheduled status to private airlines in 1994.
- The introduction of open skies and the entry of LCCs in the industry in 2003.

The phase of the Aviation industry in the period between FY98 & FY02 saw no new entrant.

- National carriers, Indian airlines and Air India, however, faced threat from Jet and Sahara as the market share of the former reduced
- Overall traffic figure saw only a modest increase, while air fares remained prohibitive for the ordinary traveler

Figure 7: Estimated Air Traffic



Source: DGCA, i-SEC Research

The year 2003 saw the entry of Low Cost Carriers (Air Deccan being the first) and is therefore classified as the turning point for the Indian Aviation industry. Air traffic witnessed a phenomenal increase and it can be safely said that the Aviation sector reached a point of inflection leading to a high growth phase.

- The period from FY02 to FY06 witnessed unprecedented rise in air traffic following cheap air fares and mushrooming LCCs
- Several new players such as SpiceJet, GoAir, IndiGo, Paramount, Kingfisher entered the skies.

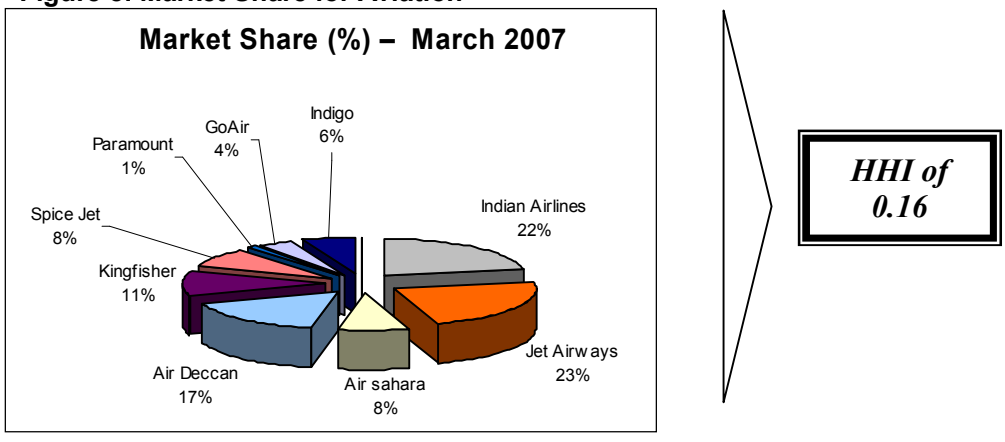
The domestic air passenger traffic in India in FY 06 stood at 27 mn. This figure is expected to rise to around 33 mn. for FY 07.

- The aviation sector is likely to witness the so called J-curve traversing a path similar to mobile telephony, organized retail and real estate.

Competition in the Aviation sector is much more than that of the telecom sector. The Aviation sector has a HHI of 0.16, with close to 12 players in the industry. In addition to this, there are several carriers waiting for approval to start operations in 2007/2008. some of these are:

- Mega Airways
- Magic Air
- Mukti Airways
- Sky King Airways

Figure 8: Market Share for Aviation



However, in aviation, the advent of low-cost carriers resulted in airlines cutting fares in order to grab market share; but this strategy requires deep pockets, which many of the new players did not have. The result is that a "normal" market structure is now emerging.

In the last year, three big deals, Jet-Sahara, Kingfisher-Deccan and Air India-Indian, have been completed. According to a Centre for Asia Pacific Aviation (CAPA) Outlook report,

consolidation in India will occur through a process of closure or mergers/acquisitions, leaving around two to three full service carriers, three to four large national LCCs (operating fleets of 70+ aircraft), and three to four niche, regional operators (with aircraft less than 80 seats).

Realizing the trend, the civil aviation ministry has also included a separate note on consolidation in the industry in the proposed civil aviation policy. Special mention has been made of the financial health of the sector - intense competition and steep losses - which could act as a trigger for consolidation.

However, the draft aviation policy states that subject to competition regulations, the government will play a supportive role only in establishing clear M&A policies in the sector.

Leaders of key players have also stated that, market forces should dictate how infrastructure is utilized. That will lead to the best utilisation of infrastructure, especially when there are constraints[23]

Thus, there are some key learning points from the airlines sector that would be instructive for the telecom sector:

- Entry of new players led to reduced fares.
    - Leading to increased passengers and thus greater market size

- Entry of new players put pressure on existing operators and improved on- time performance and customer services (e.g. personalized TV on select routes)

- While consolidation has taken place, the regulator has played a supportive role only to enhance transparency and to facilitate the inter-play of market forces.

10. Encouraging competition and new players is essential for the high capital investment required in the Indian Telecom sector for achieving tele-density targets (Refer 6.34 of TRAI Consultation paper)

10.1 The need of the hour is to roll out telecom services at faster pace and at affordable prices to ensure higher penetration of telecom services in rural areas. Providing telecom services in remote villages will require both additional resource and time to roll out the services. The goal is to provide 250 million telephones by December 2007 and 500 million telephones by 2010. Presently to cater to 136 million mobile subscribers, all service providers together have commissioned approx. 90,000 towers in the country. To meet the targets fixed by the Government, the number of towers required would be about 1,35,000 by 2007 and 3,30,000 by 2010[24]. This implies an additional 2,00,000 towers will be needed to meet India's mobile requirements. Assuming an average cost of Rs. 24 lakhs per tower, India's expected telecom growth entails an investment of at least Rs. 48,000 crores (USD 12-13 bn). Installing such a large number of mobile tower sites is a daunting task and may not be met with the participation of just a few number of players.

Hence, more number of operators should be encouraged to participate in this market so that the infrastructure requirements of India are completely met.

11. Spectrum availability has a bearing on the number of operators in any service area. (Refer 6.37-6.40 of TRAI Consultation Paper)

As spectrum is a scarce resource, most countries evaluated were found to have resorted to market-oriented techniques for spectrum allocation, as it ensures greatest benefits of a transparent market environment.

[23] *A director at SpiceJet*
[24] *TRAI Consultation paper on Infrastructure Sharing, November 2006*

Table 10: Top Three Spectrum Efficient Circles in India

	Closing Subs Base (Mns): 2006	**Total Frequency Available to the Circle**	**Subs (Mns)/MHz**	**Category**
Andhra Pradesh	11.4	2*42.5	0.27	Circle A
Gujarat	9.9	2*40	0.25	Circle A
Maharashtra	10.6	2*43	0.25	Circle A

11.1 Keeping in mind the need for higher bandwidth owing to a rapid subscriber growth and the introduction of new applications, TRAI in its consultation paper on Spectrum related issues in May 2004, had suggested measures to ensure spectrum efficiency by way of techniques such as spectrum trading. **It suggested that a move towards secondary trading of spectrum would lead to access to radio frequency to all in a given service area.**

This would also lead to existing operators devising efficient spectrum utilization techniques as they would be able to reap the benefits by trading part or all of its allocation with others and lease spectrum on a temporary basis.

Table 11: Subscriber per Mhz of Spectrum Statistics: Country-wise

Country	**Total Frequency Available in the industry (MHz)**	**No. of Mobile Network Operators**	**Average GSM Frequency (MHz)**	**Closing Subs Base: Dec 2006[25] (Mns)**	**Subs per MH (Mns)**
France	2*74.4	3	2*24.8	48.3	0.65
Italy	2*71.6	4	2*17.9	81.1	1.13
Australia	2*30	4	2*7.5	20.2	0.67
China	2*45	2	2*22.5	443.6	9.86
Philippines	2*25	3	2*8.3	42.1	1.68
Taiwan	2*75.2	6	2*12.5	21.9	0.29
Thailand	2*57.1	3	2*19.0	40.4	0.70
India (Max) AP Circle	***2*42.7***	***7***	***2*6.1***	***11.4***	***0.27***
India (Min) HP Circle	***2*35***	***8***	***2*4.375***	***1.1***	***0.03***

Source: ITU, Batlivala & Karani: "India Telecom-Its all about mobility"

11.2 In the context of the inefficient use of spectrum (as determined above) by most players in India, it is shocking to find that additional spectrum ranging from 1.8 Mhz to 12.4 Mhz has been provided free of cost to existing players in various circles. Not only is it a shocking waste of a scarce national resource, but is also tantamount to a free dole of over Rs 1300 crores (value of excess spectrum pro-rata to entry fee) to existing players. This goes against the NTP 99 which envisaged the growing need for spectrum with the manifold increase in demand of telecom services and thereby a need for utilization of spectrum in an efficient, economic , rational and optimal manner. It clearly states that, "*There is a need for a transparent process of allocation of frequency spectrum for use by a service and making it available to various users under specific conditions".*

11.3 Market-oriented methods (Spectrum auction) are followed in most countries for spectrum allocation and issue of license.

In most of the countries analyzed by us, the method employed for award of license and spectrum is bids along with auction for spectrum. The spectrum auction aids to resolve situations wherein demand exceeds supply. In some other countries (UK, Hong Kong, Philippines and France) there is a beauty contest in order to determine the awardees for license and spectrum.

[25] *Source: Wireless Intelligence*

However, in some countries such as Russia, a tender system is followed with Russian Rubbles 15,000 being the price per area/ territory applied for. In Malaysia, there are separate licenses for providing network infrastructure (NFP License) and for providing cellular services (ASP License). Any company holding the ASP license can provide services by using the network infrastructure owned by NFPs. Additional spectrum as and when available is awarded to NFP license holders at a fixed fee via beauty contest. Besides Malaysia, even France has a fixed price system and a beauty contest.

From the foregoing one can see that the auction process has been the most favored in countries across the world as it not only lends itself to greater transparency and fair play but is also in consonance with the philosophy of market forces.

11.4 Further, spectrum trading is also practiced in countries like Australia and USA.

The principle of spectrum trading involves open trading of spectrum thereby unleashing the full force of market dynamics. Licensees who do not have spectrum can use spectrum made available through spectrum trading based on existing market prices. This will also address the issue of optimum utilization of spectrum which is a scarce national resource. Besides, **spectrum trading offers licensees additional flexibility and presents itself as a more market friendly regime.**

Conclusion

From the points that we have presented in this response paper, we would like to summarize as under:

- The policies/ guidelines of none of the countries analyzed explicitly states that there is a cap on the number of access service providers
    - Encouraging more and more operators will help meet one of India's key goals – increased rural penetration
    - Capping the number of players (as per the UASL regime in our country)would lead to an automatic restriction / cap on the number of basic service providers per service area as well.
    - More number of operators should be encouraged to participate in this market so that the infrastructure requirements of India are completely met.

- HHI as a measure of competitiveness in the Indian market is not only irrelevant but also ill-advised and misguided as India is a virgin telecom market with a large potential subscriber base with only 6% rural tele-density
- Fierce competition among players is drastically reducing the effective tariff for subscribers with free services and a range of incentive schemes.
- India has relatively small number of operators as compared to the large population and subscriber base.
- EBITDA margin and RoCE of the telecom industry is high. Mobile RoCE is expected to be even higher in the future indicating remunerative returns for operators.
- Spectrum auction process has been the most favored in countries across the world as it not only lends itself to greater transparency and fair play but is also in consonance with the philosophy of market forces.
- Spectrum trading offers licensees additional flexibility and presents itself as a more market friendly regime.
- The Indian market would also witness M&A activity, alliances/ partnerships and entry/ exits in accordance with the opportunities and challenges of the telecom market.