India Telecoms

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Telecommunications

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SO WHAT? THE BNP PARIBAS ANGLE

-	Initiate with OVERWEIGHT.	Stock Pick	s								
•	Spectrum not a constraint for growth		BBG		Share	Target	Upside/	Mkt		- Rec P/F	: ———
_	Compatition pat a threat to	Company	code	Rec	price	price	(Downside)	сар	2007	2008E	2009E
-	incumbents.				(INR)	(INR)	(%)	(USD m)	(x)	(x)	(x)
	Infrastructure sharing is big	Bharti Airtel	BHARTI IN	BUY	802.80	1,075.00	34	37,614	35.9	22.7	17.8
	trigger for next level of	Reliance	RCOM IN	BUY	558.50	718.00	29	27,659	35.8	23.7	19.5
	growth.	Idea Cellular	IDEA IN	BUY	97.50	139.00	42	6,343	43.6	22.6	19.8
	Bharti Airtel is our top pick.	Source: BNP Paribas	estimates								•••••

We initiate sector coverage with an OVERWEIGHT. We expect record growth of more than 100m subscribers in FY09. Spectrum is not a constraint to growth. Competition from new entrants is not a threat to incumbents. Established players such as Bharti Airtel, Reliance Communications and Idea Cellular will continue to lead. Bharti Airtel is our top pick.

India Telecom – Enough steam left

Fastest-expanding telecom market in the world

India is the fastest-expanding telecom market in the world (Exhibit 2) with more than 8m subscriber additions per month. India had 238m mobile subscribers as of January and we expect it to overtake the US in terms of mobile subscribers by mid-2008. A low overall telephone density (or teledensity) of 25% coupled with a huge population base of 1.1b should provide sufficient growth opportunities for the telecom sector in India. India's teledensity improved to 25% from 4% within a short span of four years due to favourable demographics, consistent regulatory changes and the low cost of service.

Triggers for Indian telecom industry

The next wave of network expansion, infrastructure sharing, sufficient allocable spectrum, favourable policy changes, rising demand for global connectivity and new technologies such as 3G, WiMax, DTH and IPTV should drive the future growth of the Indian telecom industry. We expect a record number of mobile subscriber additions in excess of 100m in FY09 and the total subscriber base to cross 500m by 2010.

Leaders will continue to forge the way

We expect established service providers such as Bharti Airtel, Reliance Communications and Idea Cellular to lead the Indian telecom growth story. New entrants will struggle to find a niche. We expect consolidation in the next two to three years, with industry revenue growth of 33% and earnings growth of 25% in FY09.

Sector valuations

Indian telecom companies are currently trading at an FY09E P/E multiple of 18x lower than their historical trading multiple of 25x. We expect the core businesses to trade at 20x FY09E P/E with incremental contribution from the demerger of tower assets. Bharti is our top pick among the Indian telecom operators with an expected ROE of 35% in FY09. Bharti should continue to lead the Indian telecom sector in returns because of its superior margins and higher asset turnover.

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India Wi	reless Statistics		
Operator	Wireless Subs	M Share	Existing circles
		(%)	
Bharti	57,417,625	24.1	23
RCOM	42,566,333	17.9	23
Vodafone	41,145,413	17.3	16
BSNL	33,748,599	14.2	21
Tata Tele	22,541,429	9.5	20
Idea	21,954,685	9.2	11
Aircel	9,933,815	4.2	9
Spice	3,942,828	1.7	2
MTNL	3,013,199	1.3	2
BPL	1,256,534	0.5	1
HFCL	268,830	0.1	1
SHYAM	102,995	0.0	1
	237,892,285		

Source: BNP Paribas estimates

Company Share Performance vs Sensex





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Please see India Research Team list on page 29.

INDIAN TELECOM MARKET

Fastest-expanding telecom market in the world



India is the third-biggest cellular market in the world by number of subscribers and is set to become the second-largest market after overtaking the US by mid-2008

Sources: Telegeography; BNP Paribas

Exhibit 2: Subscriber Net Additions – September 2006-September 2007



Sources: Telegeography; BNP Paribas

- India is the fastest-expanding telecom market in the world, adding more than 8m new mobile subscribers per month.
- The country is set to become the second-largest cellular market in the world by number of subscribers, surpassing the US before the end of 2008 and becoming second only to China.
- India had 281m telephone subscribers as of January, of which 238m are wireless subscribers and the remaining 43m are wire-line subscribers.
- Wireless penetration of 21% in India is lower than in other emerging countries such as China, Brazil and Russia, which have wireless penetration of 38%, 60% and 110%, respectively.
- India is also the second-most populous country in the world with a population of 1.1b, second only to China's 1.3b.
- The low teledensity and a huge population provides for significant growth potential for the country's telecom sector.

India added the most subscribers in the world between September 2006 and September 2007; we expect the leadership to continue in 2008

EXPECTATIONS FOR THE INDIAN TELECOM INDUSTRY

Great expectations



Sources: COAI; AUSPI; BNP Paribas estimates

- We expect the wireless subscriber base in India to double to 500m by end-FY11.
- FY09 should have record subscriber net additions of more than 100m.
- The majority of growth should come from the A and B circles with additional contribution from the C circles. Regions in India have been classified as A, B, C and metro circles for telephony licences with metros having the most potential in terms of penetration followed by the A, B and C circles, respectively, in that order. However, in terms of population, metro, A, B and C circles account for 5%, 31%, 44% and 20% of India's population. The metros are aligned with the bigger cities like Mumbai, Delhi, Chennai and Kolkata, while the A, B and C circles are mostly aligned with the states in the country. There are 23 telecom circles in India, which comprise five A circles, eight B circles, six C circles and four metro circles.

Exhibit 4: Net Change In Proportion Of Subscribers By Circle In Past Two Years (%) 2 1 0 (1) (2) (3) (4) Andhra Haryana Gujarat MB ЧΜ F Orissa Vaharashtra limachal Jammu Kolkata Chennai Bihar Punjab Rajasthan ПП MAN Assam ƙarnataka Kerala Delhi Mumbai

Sources: COAI; AUSPI ; BNP Paribas estimates

Proportion of Indian cellular subscribers in the four metro circles dropped to 18% in January 2008 from 25% in January 2006





Metro circles nearing saturation with ~75% penetration; growth to come from A and B circles, which are large and have low penetration of 25% and 17%, respectively; C circles with 10% penetration to provide growth in longer run

Sources: COAI; AUSPI; BNP Paribas estimates

- Average revenue per user (ARPU) and average revenue per minute/message (ARPM) should fall as a result of increased competition and the removal of regulatory overheads such as Access Deficit Charge (ADC) and a reduction in spectrum and licence fees.
- We expect ARPU and minutes of usage (MOU) to increase, following a period of decline for the next three to four years, due to a higher contribution from mobile value-added services (VAS) and improvement in usage patterns of newer subscribers.
- The telecom industry will require about 300,000 telecom towers by FY11 to support the increased subscriber base of 500m, which will be met by aggressivepassive infrastructure deployment by independent tower companies.
- Fixed lines should show relatively slower growth as the decline of fixed lines is balanced by increased broadband penetration.

KEY DRIVERS OF INDUSTRY GROWTH

Macro trends - Indian telecoms

Teledensity in India has improved to 25% from 4% within a short span of four years due to favourable demographics, consistent regulatory changes, the low cost of service and innovative tariffs.



Wireless monthly net additions currently >8m per month, have been increasing consistently due to increasing competition and innovative plans

Sources: COAI; AUSPI; BNP Paribas estimates

Exhibit 7: GDP Growth Rate (%) 10 9 8 7 6 5 4 3 2 1 0 FY93 FY91 FY 95 FY97 FY99 FY01 FY03 FY05 FY07

Favourable demographics with a booming economy

Source: CMIE

Indian GDP has expanded at a growth rate of 8% over the past four years and is expected to increase by 9% in FY09 fuelled by domestic demand, services and manufacturing. The growth that was earlier restricted to urban regions is spreading to suburban and rural regions with the expansion of information-technology companies to tier-one and -two cities, growth of organised retail chains, infrastructure development and manufacturing.

GDP growth has averaged more than 8% pa over the past four years



Increasing household incomes are fuelling domestic demand

Source: NCAER

The booming economy and capital markets have resulted in wage increases that in turn have stimulated consumer spending. Consumers in India are being exposed to global consumer goods and services and now have more aspirations. Approximately 65% of the Indian population is below 35 years in age. This population distribution is well-suited for higher adoption of telephone services.

Favourable regulatory environment for growth

The Indian regulator took concrete steps to ensure the growth of the telecom industry. Some of the past key regulatory decisions that have helped the industry are listed below:

Exhibit 9: T	elecom Regulatory Timeline
Year	Development
1994	The National Telecom Policy (NTP-94) opened up private investment in the telecom sector including foreign direct investment
	(FDI), loosening the grip of state-owned telecom companies such as MTNL and the Department of Telecommunications' service
	arm (now called BSNL).
1999	National Telecom Policy (NTP-99) introduced, which led to conversion of fixed-fee licences to revenue-share licences.
2000	Liberalisation of domestic long-distance services resulted in reduction of national tariffs.
2002	Liberalisation of international long-distance service resulted in removal of VSNL's monopoly over the international long-distance
	market.
2003	The entry of wireless local loop operators brought in competition and gave strong boost to subscriber additions and resulted in
	substantial reduction in tariffs.
2004	Introduction of unified access service licence (UASL), which enable private operators to provide fixed-line as well as mobile
	telephony.
2005	Reduction of duties on handsets. Increase in FDI limit in telecom sector to 74%
2007	TRAI encourages sharing of active, passive and backhaul infrastructure and deployment of USO to subsidise wireless services
	rollout in rural areas.
2007	Cap on number of service providers in a circle removed and licences granted to new entrants.

Source: TRAI

BNP PARIBAS

Lowest cost of ownership of telecom services

The tariff regulations imposed by the Telecom Regulatory Authority of India (TRAI), coupled with competition and volume growth, have helped Indian telecom tariffs remain the lowest in the world at about USD0.02 per minute. The low tariffs have in turn enabled greater adoption of wireless services in the country.

An ARPM and MOU comparison of Indian telecom operators with global operators reveals that Indian wireless operators have the least revenue per minute of USD0.02. The operators are making up for this low ARPM through economies of scale generated through high utilisation of networks. Even at USD0.02 per minute, the leading operators are making EBITDA margins in excess of 40%.



High MOU and low ARPM of leading Indian operators provide a competitive advantage to incumbents due to economies of scale

Sources: Telegeography; BNP Paribas estimates

Innovative pricing plans

Fierce competition has led to a reduction in tariffs and the introduction of several innovative tariff plans. Two schemes that have resulted in increased adoption of mobile services are listed below.

Lifetime plans

Bharti Airtel introduced the lifetime plan in 2006, offering free incoming calls for life for an upfront payment of INR999 (USD25) and a minimum recharge of INR200 (USD5) every six months. This was followed by the introduction of similar plans by other major operators. This offer has gained significant traction among prepaid subscribers with about 40% of new subscribers adopting these plans. Subscribers on these plans benefit by having a low monthly fee of INR33 (USD0.82) and getting almost full talk time on the recharge voucher. The plans brought in a completely new segment of users, infrequent users who did not want to commit to paying high monthly rentals or recharges. Telecom operators charge higher rates of up to INR2 per minute for such plans to compensate for the initial low minutes of usage pattern of these subscribers. The entry costs for lifetime plans have been further reduced to INR199 (USD5). The lifetime plans have provided the following benefits:

- Reduction in churn by lowering cost of ownership and increasing validity period.
- High revenue per minute under these schemes made up for the initial low MOU.
- Companies benefit from termination revenue for the incoming calls.
- Increased subscriber base resulted in higher network utilisation, improving EBITDA margins.

Micro prepaid

Vodafone Essar (formerly Hutch) was the innovator in this category. The company launched a minimum recharge coupon of INR10 (USD0.25) per day. These small recharges allow full talk time at a higher rate per minute. Coupled with lifetime validity and low-priced handset, these recharge coupons have resulted in the addition of a new segment of price-sensitive customers.

TRIGGERS FOR FUTURE GROWTH

Triggers for future growth of telecom industry

We expect sufficient allocable spectrum, infrastructure sharing, favourable policy changes, demand for international connectivity and new technologies such as 3G and WiMax to drive the future growth of the telecom sector in India.

Spectrum not a constraint on growth

We believe there is sufficient 2G spectrum available to support growth of 2G services in the country. The unallotted 2G spectrum is sufficient for allocation to new entrants as well as for meeting the incremental needs of existing operators. The only constraint is the time required to free this spectrum from current users such as the Indian defense services. A 3G spectrum auction in FY09 should allow operators to decongest their 2G networks by helping customers make the transition to the 3G network.

Exhibit 11: Spectrum Allocation for 2/2.5G GSM - International Telecommunications Union												
GSM band name	——— GSM b	and ——–	— Paired wi	th band —	Allotable frequency							
	From Mhz	To Mhz	From Mhz	To Mhz	MHz							
GSM 900	935	960	890	915	25							
GSM 900 EGSM	925	935	880	890	10							
GSM 1800	1,805	1,880	1,710	1,785	75							
Total					110							
-												

Source: ITU

As per the International Telecommunication Union (ITU), 110 MHz of spectrum is recognised for 2G and 2.5G cellular mobile services. The spectrum currently allotted to cellular mobile service providers in India ranges between 25 MHz and 50 MHz with an average of 35 MHz per circle. Based on the recent grant of mobile telephony licences, an incremental maximum of 31 MHz will be required per circle to provide spectrum to all new applicants. This leaves an average of 34 MHz per circle that can be released for incremental 2G services. We believe that the incremental 34 MHz of spectrum per circle is sufficient to support the future growth of 2G mobile services in the country. However, the full allocation of the spectrum is contingent upon the Department of Telecommunications freeing spectrum from current holders such as the Indian defense services. The telecom department is building a nationwide fiber-optic network to migrate defense communications, freeing up precious wireless spectrum. We expect the telecom department to release the first tranche of spectrum by the end of 2008. Auctions of 3G spectrum in FY09 should allow operators to decongest their 2G networks by helping customers make the transition to the 3G network.

ITU recognises 110 MHz of spectrum for 2G services

Maximum of 50 MHz allotted per circle in India for 2G services Infrastructure sharing to aid deeper penetration



Infrastructure sharing to drive next level of growth; government subsidies to promote rural telephony

Sources: Company reports; BNP Paribas estimates

To tap into the lucrative Indian telecom market, existing telecom service providers are rapidly expanding their networks into suburban and rural regions as the metro areas are reaching levels of saturation. In an attempt to unlock value, telecom service providers are hiving off existing telecom towers into an independent tower company that will enable new entrants to reduce time-to-market by rolling out services on the existing tower infrastructure.

The telecom regulator is encouraging sharing of passive infrastructure and is utilising the Universal Service Obligation (USO) fund to subsidise the rollout of mobile networks in nonprofitable rural areas. The USO fund was created by collecting 5% of operators' revenues to fund the growth of telephony in rural parts of India. TRAI has recommended that the USO fund be made available to private cellular operators in addition to state-owned company BSNL to drive penetration in rural areas. We believe that as these recommendations are implemented, more operators will set up towers in suburban and rural India, contributing to overall subscriber growth.

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Favourable policy changes

Removal of access deficit charge and reduction of levies

A cut in the access deficit charge (ADC), which is the charge paid to wire-line operators to subsidise them for deploying rural telephony, would result in a reduction in tariffs as operators pass on the benefits to consumers. Currently, the ADC is charged as 0.75% of operators' adjusted gross revenue (AGR). Regulator TRAI has recommended that the ADC, which primarily benefits the state-owned incumbent BSNL, be phased out. TRAI is of the opinion that BSNL's rural network should be supported through the unused portion of the USO fund.

Exhibit 13: Consolidation	n Of Licence Fees			
Regulatory charges	Pakistan	Sri Lanka	China	India
	% of revenue	% of revenue	% of revenue	% of revenue
Service tax, GST	GST	VAT	3%	12% + GST
License fee	0.5% + 0.5% R& D	0.3% turnover (t.o.) + 1% of capital invested (inv)	Nil	6 – 10%
Spectrum charge	Cost recovery	~1.1% to to	~0.5%* (China Mobile)	2 ~ 6%
USO	0.015	Nil (only on ISD calls)	Nil	Incl. license fees
Total Regulatory charges	2.5% +GST+ cost recovery	1.3% t.o.+1% inv+VAT	0.5%+3% (Tax)	20-28% + GST

India has higher levies on telecom services compared with other Asian countries

Source: COAI

Indian telecom operators pay licence and spectrum charges of up to 16%, which are among the highest in the world. The telecom department is currently reluctant to reduce these levies and is considering a hike in spectrum charges. However, based on the telecom department's expectations of seeing telecom tariffs as low as INR0.10 (USD0.0025), it will have to reduce these levies to enable service providers to pass on the benefits to the customer in the form of lower tariffs. If the government reduces these levies, there is further room for tariff reduction stimulating increased customer adoption and usage.

Grant of new mobile licenses

Increased competition should induce increased subscriber additions due to lower tariffs and improved customer service. Recently the telecom department invited applications from new entrants for wireless services. Existing CDMA operators also applied for cross-over spectrum to start offering GSM services in the country. The telecom department has granted mobile licences to nine operators to start wireless services in the country in addition to granting CDMA operators permission to launch GSM services.

Implementation of mobile number portability

Mobile number portability (MNP) enables a user to switch service providers without changing his phone number. We expect established private telecom operators such as Bharti, Reliance and Idea to gain market share after implementation of MNP because of better quality of service and increasing network coverage. The Indian telecom regulator is considering implementing MNP in the country in FY09. MNP has evoked a mixed response in the countries in which it has been implemented. MNP has been successful in Hong Kong, while it has had a tepid response in Taiwan, Singapore and Pakistan. The effectiveness of MNP depends on the following factors.

Increased competition should drive network expansion and spur subscriber growth

Effectiveness of MNP depends on factors such as awareness of MNP, switching costs, time delay, technology and promotions for switching providers

- Switching costs and waiting time to switch service providers;
- General awareness of the MNP facility;
- Technology used to implement MNP; and
- Promotions and value-added services offered by service providers to attract customers.

The implementation of MNP has resulted in overall improvement of customer service for subscribers and increased cost to telecom service providers. Few of the efficient service providers have managed to gain market share on implementation of MNP.

Entry of mobile virtual network operators

Mobile virtual network operators (MVNO) are cellular service providers who do not own any network assets and provide services by leasing network infrastructure from other operators. MVNOs focus on marketing and customer service and typically provide differentiated services for a specific target segment. The Indian government is considering allowing the entry of MVNOs in the country to foster increased competition. Virgin Mobile has already announced a brand franchising agreement with Tata Teleservices to offer its services in the country over the latter's infrastructure. MVNOs have been successful in Europe but have failed in the United States. The following factors are critical to the success of MVNOs in the country.

- Transparent regulation for infrastructure sharing;
- Selection of a dependable partner to lease infrastructure;
- Choice of a distinct target segment;
- Point of differentiation of service attractive to the target segment;
- Distinct distribution channel to effectively reach target segment.

The success of MVNOs in the country could provide customers with a distinctive and customised offering, increasing the level of customer service for wireless subscribers driving increased adoption.



Virgin Mobile has entered into a franchisee arrangement with Tata Teleservices in India; it operates as an MVNO in the US and has ~2% market share

Sources: Telegeography; BNP Paribas estimates

MVNOs could provide customers with a distinctive and customised offering, increasing the quality of customer service resulting in increased adoption



Enterprise and global connectivity demand on the rise

International traffic volume to and from India has increased substantially in the past few years

Source: Telegeography

With the booming economy, corporates are in expansion mode. The level of M&A activity has increased significantly, driving up the communication needs within and across companies. Global organisations looking to reduce costs are offshoring their operations to India. Indian telecom providers have acquired international undersea cable network assets at cheap valuations following the dot-com bust. These telecom operators, with their domestic and global network assets, are well-suited to cater to this increasing need for corporate connectivity and offshoring. The cost of laying new undersea cable has also decreased significantly since the late 1990s. The sizeable nonresident Indian population and business travelers are also contributing to the growth of international voice traffic in the country. The entry of private carriers, increased submarine cable capacity and price regulation resulting in a decline in international tariffs have aided the growth of international voice and data services in the country.

New technology to sustain growth

3G and WiMax auction to open new avenues for wireless growth

The government is expected to auction 3G and WiMax spectrum in 2008. The 3G auction will allow existing telecom operators to decongest their 2G networks by moving "early adopters" on to 3G services, which should also trigger greater adoption of mobile value-added services (VAS) and improve operators' ARPU. Some players are looking at offering WiMax services to their consumers. We are bullish on WiMax as a technology as we believe that it has the same "disruptive technology" potential in wireless networks as Internet protocol (IP) networks had in terms of legacy data and voice networks. The standardisation of WiMax and drop in price of equipment from the current level of USD150 per subscriber should enable widespread adoption. Sprint and ClearWire in the US are examples of a few wireless service providers that are aggressively rolling out services based on WiMax.

We are bullish on WiMax technology as India has only 1.33% broadband penetration and companies are keen on investing in wireless broadband rather than wire-line broadband as the last mile

Satellite TV – the cable killer?

The cable TV industry in India is still unorganised. Cable networks do not have the right-of-way privileges of a telecom operator, resulting in cables stretched over buildings, poles and trees and that are vulnerable to disruption. Local cable operators also understate their subscriber numbers, to evade paying taxes to the government. To counter this tax evasion, the regulator is enforcing a conditional access system (CAS) that will enforce appropriate audits of the actual subscriber base. The CAS involves deploying a set-top box at the subscriber's premise to decrypt the encoded signal. Telecom operators are trying to win customers who have been exposed to vanilla cable service by offering them satellite television or direct-to-home (DTH) services. DTH will circumvent the need of a cable network as the TV signal is beamed directly to the consumer's home via a satellite. DTH also offers better performance in terms of MPEG-4 picture quality, and better sound and interactive channels. The two existing DTH operators have been able to garner about 4m subscribers within a couple of years. We believe that DTH has big potential in the country as the start-up cost (cost of set-top box and satellite dish) is lowered from the current levels of USD75 per installation.

IPTV – seeking interactivity

For consumers seeking a higher level of interactivity with their television, telecom operators are launching Internet protocol (IP) TV services. These services will enable them to get a bigger share of the wallet of consumers by bundling voice, data and video services. However, we are not very bullish on the prospects of IPTV in the near term as the number of subscribers for IPTV will be restricted by the pace of rollout of the broadband network in the country.

Mobile TV – TV on the move

The Indian telecom regulator is working on regulation related to mobile TV services in the country. We do not expect mass adoption of this technology for at least two to three years until service providers get 3G spectrum, mobile TV technology matures, mobile TV standards converge, infrastructure costs become economical and there is proliferation of mobile-TV-capable handsets. The regulator is considering the terrestrial as well as the satellite transmission mode for mobile TV in the country. The mobile TV licences are planned to be granted via auction. With the existing unified access service licence (UASL), which allows service providers to offer wireless as well as fixed-line telephony services, service providers can provide mobile TV services on their existing infrastructure and spectrum by notifying the ministry without applying for a separate licence. There will be a new class of licences for services. Existing telecom providers will have to participate in the bidding if they plan to use the broadcasting technologies to offer mobile TV services.

We are bullish on satellite TV as it provides a better alternative to cable TV; market size is 70m households, and current DTH subscribers are 4m

We are not very bullish on IPTV as it will be limited by rollout of broadband network

We believe that mass adoption of mobile TV service is at least two to three years away

MOBILE SERVICE PROVIDERS IN INDIA

Leaders will continue to forge the way

We expect that companies such as Bharti Airtel, Reliance Communications and Idea will continue to lead the Indian telecom growth story. We are of the opinion that it will be difficult for new entrants to gain sizeable market share in this highly competitive and overcrowded cellular market. We expect at most two new entrants to survive in this market. In our view, the government has introduced a speed bump to the Indian telecom growth story by fragmenting scarce 2G spectrum across 17 telecom operators (including 12 existing operators). We believe that consolidation is inevitable in the next three to five years and that established operators will regain this valuable resource from the new entrants, but probably at a higher cost.

Exhibit 16: Wireless Subscriber Market Share – January 2008



Sources: COAI; AUSPI

India currently has 12 wireless service providers, of which only Bharti Airtel and Reliance Communications have pan-India operations. Reliance Communications, Tata Teleservices, Shyam Telecom and HFCL Infotel are CDMA-based service providers, while the others are based on GSM technology. Reliance Communications also provides GSM services in eight circles. Vodafone Essar (formerly Hutchison Essar) operates in 16 circles, Idea Cellular operates in 11 circles and Tata Teleservices operates in 20 circles. However, the competitive scenario is set to change as the telecom department has issued spectrum to Reliance, Vodafone and Aircel to complete their pan-India GSM footprint as well as granted mobile licences to nine other players. All four CDMA operators applied for GSM licences during the current round. These operators have been granted permission to offer GSM services in the country. If spectrum is allocated to all licence holders, India could have as many as 11 pan-India operators and 6 regional operators, making it one of the most competitive mobile markets in the world (see appendix for current spectrum and licence holders).

There are eight listed wireless service providers in India. We have selected Bharti Airtel, Reliance Communications and Idea Cellular as our first choices for initiating coverage as these companies have pan-India operations or the scale to survive in this highly competitive market. Tata Teleservices Maharashtra, Spice Communication, MTNL, Shyam Telecom and HFCL Infotel are the other listed companies, but are restricted to a few circles. Shyam Telecom has received a pan-India telecom licence to start GSM services in partnership with Sistema of Russia. The licence grant to Spice Communication for pan-India operations is on hold due to issues related to net worth required for the granting of mobile licences.

Vodafone Essar, state-owned BSNL and Maxis-owned Aircel are a few of the unlisted companies with existing mobile operations in India. Vodafone, which acquired Hutchinson Essar in 2007, is one of the leading wireless service providers in the country. Government-owned BSNL has a pan-India operation except for the Mumbai and Delhi metro areas. BSNL recently lost market share due to capacity constraints as a result of a delay in a tender for network expansion. Aircel received a pan-India licence in the recent round of allotments, and we expect the company to steadily increase market share by expansion into new circles.

Comparison of operators



Bharti consistently ranks No. 1 in net additions, with RCOM and Vodafone competing for No. 2 position and BSNL losing ground

Sources: COAI; AUSPI; BNP Paribas estimates

We expect Bharti to continue to lead the sector with most subscribers in FY09 in spite of a lower share of net additions due to the increased number of pan-India players. Reliance Communications should gain market share from the launch of pan-India GSM services in addition to its CDMA service. Idea Cellular should benefit from the launch of operations in two additional circles of Mumbai and Bihar in FY09 followed by a launch in nine other markets on receipt of spectrum.



Pan-India operators have significant advantages over regional players

Source: Company reports

 Pan-India operators Bharti and RCOM have consistently improved their margins due to economies of scale. We expect steady improvement in their EBITDA margins due to better network utilisation offset by an increase in licencing, network and selling costs. Idea's EBITDA margins are lower than Bharti's and RCOM's as it does not have the economies of scale of pan-India operators and is yet to break even in its three newly launched circles of Rajasthan, UP East and HP. We expect the blended margins to remain under pressure as the company expands in new circles.



RCOM: High but stable broadband segment margin; Bharti: significant margin improvement

Source: Company data

The broadband margin for Bharti has improved over the past few quarters to match the higher margin level of RCOM. We expect broadband margins to stabilise around these levels. Idea does not provide broadband services.



ARPU declined for all operators due to reductions in price and initial low usage by new subscribers; RCOM improvement was because of subscriber write-off in 4QFY07

Source: Company data

- Reliance Communications experienced a one-time increase in ARPU in March 2007 as it wrote off subscribers after the TRAI-prescribed subscriber verification norms.
- ARPU is showing a declining trend, which we expect to continue due to the reduction in tariffs as a result of increased competition and the reduction of overhead such as ADC.
- Idea's ARPU is lower than that of the pan-India operators as the company is yet to launch its operation in some of the high ARPU circles such as Mumbai.



Revenue per minute of all operators is converging and is now at INR 0.75, or USD0.02

Source: Company data

- Average revenue per minute (ARPM) for operators has converged over the past few quarters and has been declining steadily.
- The converging and declining ARPM is evidence that tariff reductions are not a sustainable competitive advantage as rate cuts can be matched overnight by competitors.
- Declining industry ARPM will make it difficult for new entrants to break even due to the lack of economies of scale.
- Operators manage their ARPM by rebalancing tariffs.



Bharti has taken a significant lead in terms of network wireless minutes of use and now carries ~1b minutes per day on its network

Source: Company data

Bharti carries more minutes over its network than Reliance Communications and Idea Cellular, providing it with better economies of scale. We expect network utilisation to improve with an increased number of subscribers and the sharing of network infrastructure.

VALUATIONS

Sector valuations

The three stocks under our coverage are trading at an FY09E P/E multiple of 18x lower than their historical range of 25x and on an FY09E PEG basis of 0.8. We expect sector revenue growth of 33% and EPS growth of 25% in FY09. We expect the core businesses in the sector to trade at an FY09 multiple of 20x with incremental contribution from demerger of the tower assets.

						—— P/E ·		PEG	—— P/S ——		P/BV	- EV/E	BITDA -
	Ticker	Price	Currency	Mkt cap	2007	2008E	2009E	2008E	2007	2008E	2007	2007	2008E
				(USD m)	(x)	(x)	(x)	(x)	(x)	(x)	(x)	(x)	(x)
India													
Bharti Airtel*	BHARTI IN	802.80	INR	37,614	22.7	17.8	14.8	0.6	5.7	4.4	7.4	13.7	10.8
Reliance Communication*	RCOM IN	558.45	INR	27,659	23.7	19.5	17.0	1.0	6.0	4.6	4.6	14.8	12.3
Idea Cellular*	IDEA IN	97.50	INR	6,343	22.6	19.8	16.5	0.8	3.9	2.8	5.8	12.6	11.7
Mahanagar Telephone Nigam*	MTNL IN	109.85	INR	1,708	14.0	12.0	9.7	0.7	1.4	1.4	0.6	8.0	6.7
India mean					20.8	17.3	14.5	0.8	4.3	3.3	4.6	12.3	10.4
India median					22.6	18.7	15.6	0.7	4.8	3.6	5.2	13.5	11.3
China													
China Mobile	941 HK	111.10	HKD	285,740	23.7	18.6	14.7	0.7	5.9	5.1	4.9	7.5	6.7
China Unicom	762 HK	17.80	HKD	31,165	23.1	20.6	18.2	1.7	2.3	2.2	2.0	4.5	4.6
China Telecom	728 HK	5.62	HKD	58,392	20.1	21.7	20.1	neg	2.6	2.6	2.0	5.4	5.6
China Netcom	906 HK	24.00	HKD	20,579	18.8	16.5	17.1	1.2	1.9	1.8	2.0	4.6	4.6
China mean					21.4	19.4	17.5	1.2	3.2	2.9	2.7	5.5	5.4
China median					21.6	19.6	17.6	1.2	2.4	2.4	2.0	5.0	5.1
Other Asia Pacific													
SK Telecom	017670 KS	180,000	KRW	15,118	12.3	10.4	9.7	0.6	1.3	1.2	1.3	4.9	4.7
KT Corp	030200 KS	48,750	KRW	13,878	13.8	12.2	10.6	0.9	1.1	1.1	1.5	3.9	3.8
Hanaro	033630 KS	10,550	KRW	2,565	NM	18.4	11.6	na	1.3	1.2	1.6	5.4	4.8
KTF	032390 KS	25,000	KRW	4,984	21.3	16.3	11.5	0.5	0.9	0.8	1.1	4.3	3.9
LG Telecom	032640 KS	7,720	KRW	2,214	7.2	6.6	5.8	0.8	0.7	0.7	1.3	4.3	4.0
LG Dacom	015940 KS	15,950	KRW	1,374	9.2	7.3	6.2	0.3	1.0	0.9	1.0	5.3	4.9
NTT DoCoMo	9437 JP	158,000	JPY	71,209	15.0	13.4	13.8	1.1	1.5	1.6	1.5	4.4	4.3
NTT Data	9613 JP	467,000	JPY	12,868	28.2	22.0	19.8	0.8	1.2	1.1	2.1	7.1	6.9
KDDI	9433 JP	600,000	JPY	26,433	11.7	10.1	9.0	0.6	0.8	0.8	1.4	5.4	4.9
Other Asia Pacific mean					14.9	13.0	10.9	0.7	1.1	1.0	1.4	5.0	4.7
Other Asia Pacific median				13.1	12.2	10.6	0.7	1.1	1.1	1.4	4.9	4.7	
* Financial Year ending for India	March; FY09(Y	'E Mar'09)	taken as 20	08									

Sources: Bloomberg; BNP Paribas estimates

Bharti is our top pick among the Indian telecom operators with an expected ROE of 35% in FY09. Bharti should continue to lead the Indian telecom sector in returns because of its superior margins and higher sales turnover.

Mobile Service Provider - DuPont Analysis



Sources: Company data; BNP Paribas estimates





Sources: Company data; BNP Paribas estimates

Sources: Company data; BNP Paribas estimates



Sources: Company data; BNP Paribas estimates

Sources: Company data; BNP Paribas estimates

VALUATIONS

Tower company valuations

Infrastructure sharing is a significant driver for the future growth of the Indian telecom sector. We expect India will need about 300,000 towers to support a subscriber base of 500mn by 2010. All major telcos are investing in setting up passive infrastructure, de-merging tower assets into independent tower companies and negotiating infrastructure sharing agreements. However we remain conservative about external tenancy of these tower companies compared to the street as we expect consolidation in the industry which would reduce potential number of external tenants. In our view, tower companies with higher number of anchor tenants are better positioned compared to tower sis better positioned compared to Reliance Infratel because of the 3 anchor tenants compared to only 1.5 for Reliance Infratel (RCOM CDMA and GSM operations).

Exhibit 30: Recent Tower Company Deals													
Company	When	Stake (%)	Amount (USD)	Valuation (USD)	Investors								
Bharti Infratel	Dec-07	8 to 10	1b	10b to 12.5b	Temasek Holdings, The								
					Investment Corp of Dubai								
					(ICD), Goldman Sachs,								
					Macquarie, AIF Capital,								
					Citigroup & India Equity								
					Partners (IEP)								
Bharti Infratel	Feb-08	2 to 2.5	250m	10b to 12.5b	Kohlberg Kravis and								
					Roberts								
Reliance Infratel	Aug-07	5.0	338m	6.75b	Fortress Capital, HSBC								
					Principal Investments,								
					Galleon Group, New Silk								
					Route, GLG Partners,								
					Quantum Fund (George								
					Soros) and DA Capital								
Spice Telecom	Dec-07	100(875 towers)	126.5m	126.5m	Quipo Telecom								

We have valued the tower companies using a DCF valuation with peak tenancy reaching 2.5 and 2.3 for Indus Towers and Reliance Infratel respectively over a 10 year period. Please refer to the respective company reports for the detailed DCF valuations. Bharti Infratel can have upside to valuations if Vodafone and Idea agree to share its towers in the remaining 7 circles in which Indus is not present. Currently we have valued Bharti Infratel's towers at EV/tower of \$113,920 which is lower than Indus EV/tower of \$178,314 and Reliance Infratel at EV/tower of \$187,224.

Exhibit 31: Tower Company Valuations													
Company	Valuation F	Y08 towers	FY08 tenancy	Tenants	EV/Tower	EV/Tenant							
	(USD)				(USD)	(USD)							
Bharti Infratel ex Indus	2,848	25,000	1.00	25,000	113,920	113,920							
Indus Towers	12,482	70,000	1.30	91,000	178,314	137,165							
Reliance Infratel	6,899	36,849	1.25	46,061	187,224	149,779							
O	Death an active stars												

Sources: Company reports; BNP Paribas estimates

APPENDIX

Devil's advocate: Risks to our investment case

The phenomenal run the Indian telecom industry has had during the past four years could be derailed by the following:

- We see regulatory uncertainty as the biggest risk for the industry.
- Excessive price competition could adversely affect overall industry profitability.
- Capacity glut could adversely affect operating margins.

Regulatory uncertainty

The regulatory environment for telecommunications has been favourable and has fostered phenomenal growth of wireless telephony in the country. However, in the current environment, we see it as the biggest threat that could derail this run. The following aspects under the regulator's control could affect the industry:

- Spectrum: Spectrum is a scarce resource and is critical to support incremental subscribers for a telecom operator. The regulatory policies on spectrum have not been transparent, which has led to a series of litigation over allocation of spectrum. By fragmenting this scarce 2G spectrum across multiple new entrants, we believe that the regulator has increased the cost of acquiring spectrum for existing operators via future industry consolidation.
- Levies: Indian wireless operators pay a substantial portion of their revenue to the government in the form of levies. There have been talks on increasing the charges on spectrum allocated beyond 6.2MHz in a circle to an operator. Any substantial increase in government levies could affect the operator's margins adversely.
- Price regulation: The telecom minister has gone on record stating that he expects to see local call rates reduced to 10 paise (USD0.003) and national long distance rates reduced to 20 paise (USD0.005). Any attempts to regulate tariffs at these levels would be a serious negative for the industry as MOU elasticity would not compensate for price declines, affecting overall margins.
- Stringent M&A rules: The regulator is expected to come out with a regulation on mergers and acquisitions that would discourage M&A for new entrants. Most of the new entrants with no prior telecom experience applied for spectrum assuming that they would sell the spectrum at a higher price to incumbents or foreign partners interested in venturing into the attractive Indian telecom market. Making M&A rules stringent would result in delaying the inevitable industry consolidation and increasing the cost to serious telecom operators.

Excessive price competition from new entrants

Attempts to compete on price by new entrants to gain market share will be detrimental for the overall industry. We do not expect new entrants to undercut the incumbents in pricing as they would be leasing a large portion of their infrastructure from the incumbents and would not have economies of scale to support a low-cost strategy.

Capacity glut could adversely affect operating margins

Wireless operators are investing heavily in network assets expecting efficiencies from increased network sharing by new entrants. Industry consolidation could reduce the number of new entrants, resulting in excess capacity affecting margins. Lower utilisation of network assets in rural areas could further weigh upon operators' margins.

Regulatory uncertainty, price wars and excessive capacity could adversely affect the overall industry

1	4	М	А	R	С	н	2	0	0	8

Exhibit 1.1:	Subscribe	r Base O	f GSM, C	DMA An	d Wire-L	ine Subs	cribers							
(m)	Operator	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08
Service														
GSM														
	Aircel	4.80	5.09	5.51	5.93	6.41	6.78	7.16	7.62	8.04	8.52	9.03	9.43	9.93
	Bharti	33.73	35.44	37.14	38.89	40.74	42.70	44.76	46.81	48.88	50.91	52.96	55.16	57.42
	BPL	1.06	1.07	1.07	1.08	1.08	1.09	1.09	1.10	1.15	1.20	1.22	1.24	1.26
	BSNL	24.44	25.44	27.43	27.76	27.99	28.42	28.98	29.70	30.30	31.03	31.95	32.71	33.75
	IDEA	13.07	13.64	14.01	14.56	15.27	16.13	17.00	17.87	18.67	19.42	20.22	21.05	21.95
	MTNL	2.50	2.58	2.75	2.48	2.55	2.61	2.67	2.73	2.77	2.83	2.89	2.95	3.01
	RCOM	3.88	4.11	4.50	4.66	4.81	4.96	5.12	5.27	5.42	5.34	5.67	6.00	6.34
	Spice	2.52	2.58	2.73	2.81	3.01	3.17	3.29	3.40	3.48	3.57	3.66	3.80	3.94
	Vodafone	24.41	25.34	26.44	27.70	29.21	30.75	32.44	34.12	35.66	37.19	38.56	39.86	41.15
	Total	110.42	115.30	121.59	125.87	131.07	136.61	142.52	148.63	154.38	160.01	166.16	172.22	178.75
00144		0.40	0.40	0.40	0.45	0.45	0.45	0.45	0.45	0.40	0.40	0.00	0.05	0.07
CDMA	HFCL	0.13	0.13	0.13	0.15	0.15	0.15	0.15	0.15	0.16	0.19	0.22	0.25	0.27
	RCOM	27.51	28.28	24.62	25.40	26.57	27.73	28.91	30.09	31.29	32.49	33.73	34.96	36.23
	SHYAM	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	ТАТА	15.01	15.49	16.03	16.22	16.58	17.33	18.09	18.90	19.50	20.21	21.04	21.74	22.54
	Total	42.74	43.99	40.87	41.87	43.39	45.30	47.25	49.24	51.05	53.00	55.08	57.06	59.14
Total cellular		153.16	159.29	162.45	167.75	174.46	181.92	189.76	197.87	205.43	213.01	221.24	229.28	237.89
Landline – Ex	BSNL													
	Bharti	1.78	1.82	1.87	1.91	1.94	1.97	2.00	2.04	2.08	2.11	2.14	2.18	2.21
	HFCL	0.20	0.19	0.19	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15
	RCOM	0.51	0.54	0.57	0.59	0.61	0.64	0.66	0.68	0.70	0.72	0.75	0.78	0.81
	SHYAM	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
	TATA	0.49	0.51	0.53	0.54	0.56	0.58	0.59	0.61	0.63	0.63	0.65	0.67	0.69
Grand total	Wireline	3.13	3.21	3.31	3.36	3.43	3.51	3.58	3.65	3.72	3.77	3.85	3.94	4.02
Total telecom		156 29	162 50	165 77	171 11	177 89	185 42	193 34	201 52	209 15	216 78	225.09	233 22	241 91
subscribers		.00.20	. 02.00				100172		10.102	200110	210110	220.00	200.22	241101
(Fx RSNI Wir	reline)													
Net additions			6.21	3.27	5.34	6.78	7.53	7.92	8.18	7.63	7.63	8.30	8.14	8.69
Sources: COAI;	AUSPI													

Exhibit 1.2: Forecast Of Sul	oscribers, Penetratio	on, Net Additions	And Market Share	2		
Period	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12
India population	1,116,885,073	1,131,486,883	1,146,196,212	1,161,096,763	1,176,191,021	1,191,481,504
India penetration (%)	14.5	22.5	31.0	38.3	44.1	47.3
India subscribers	162,453,649	254,501,686	356,803,905	445,110,484	518,494,639	564,021,359
Net additions	66,297,871	92,048,037	102,302,219	88,306,578	73,384,155	45,526,720
Total subscribers						
Bharti	37,141,210	61,795,954	87,330,588	104,991,904	118,391,851	126,905,347
Vodafone	26,441,838	43,765,742	63,714,674	79,256,632	92,047,490	99,787,033
BSNL	27,428,884	35,556,828	45,132,315	52,903,294	58,994,179	62,089,996
IDEA	14,010,551	23,657,811	34,829,213	44,719,550	53,246,789	59,051,446
Aircel	5,514,467	10,863,138	16,448,839	22,100,460	27,582,256	31,065,051
RCOM	29,121,585	45,725,462	64,084,618	85,331,181	103,817,383	114,900,863
Spice	2,728,956	4,202,208	5,798,123	7,211,028	8,429,205	9,203,159
MTNL	2,746,814	3,137,619	3,935,576	4,642,029	5,251,117	5,638,094
BPL	1,070,853	1,292,984	2,090,941	2,797,394	3,406,482	4,180,437

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Exhibit 1.2: Forecast Of Subs	cribers, Penetratio	n, Net Additions A	And Market Share	(Cont'd)		
Period	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12
ТАТА	16,025,731	24,079,909	32,857,439	39,745,352	44,610,722	47,274,035
HFCL	127,551	319,483	432,015	520,322	582,699	616,844
SHYAM	95,209	104,549	149,562	184,885	209,835	223,493
New entrants			_	706,453	1,924,630	3,085,561
	162,453,649	254,501,686	356,803,905	445,110,484	518,494,639	564,021,359
Total market share (%)						
Bharti	22.9	24.3	24.5	23.6	22.8	22.5
Vodafone	16.3	17.2	17.9	17.8	17.8	17.7
BSNL	16.9	14.0	12.6	11.9	11.4	11.0
IDEA	8.6	9.3	9.8	10.0	10.3	10.5
Aircel	3.4	4.3	4.6	5.0	5.3	5.5
RCOM	17.9	18.0	18.0	19.2	20.0	20.4
Spice	1.7	1.7	1.6	1.6	1.6	1.6
MTNL	1.7	1.2	1.1	1.0	1.0	1.0
BPL	0.7	0.5	0.6	0.6	0.7	0.7
ТАТА	9.9	9.5	9.2	8.9	8.6	8.4
HFCL	0.1	0.1	0.1	0.1	0.1	0.1
SHYAM	0.1	0.0	0.0	0.0	0.0	0.0
New entrants	0.0	0.0	0.0	0.2	0.4	0.5
Net adds						
Bharti	17,539,491	24,654,744	25,534,634	17,661,316	13,399,947	8,513,497
Vodafone	11,080,830	17,323,904	19,948,933	15,541,958	12,790,858	7,739,542
BSNL	10,270,115	8,127,944	9,575,488	7,770,979	6,090,885	3,095,817
IDEA	6,644,118	9,647,260	11,171,402	9,890,337	8,527,239	5,804,657
Aircel	2,902,753	5,348,671	5,585,701	5,651,621	5,481,796	3,482,794
RCOM	8,909,891	16,603,876	18,359,156	21,246,563	18,486,203	11,083,480
Spice	795,548	1,473,252	1,595,915	1,412,905	1,218,177	773,954
MTNL	805,659	390,805	797,957	706,453	609,088	386,977
BPL	(266,736)	222,131	797,957	706,453	609,088	773,954
ТАТА	7,566,748	8,054,178	8,777,530	6,887,913	4,865,369	2,663,313
HFCL	11,882	191,932	112,532	88,307	62,377	34,145
SHYAM	37,572	9,340	45,013	35,323	24,951	13,658
New entrants			_	706,453	1,218,177	1,160,931
	66,297,871	92,048,037	102,302,219	88,306,578	73,384,155	45,526,720
Market share net adds (%)						
Bharti	26.5	26.8	25.0	20.0	18.3	18.7
Vodafone	16.7	18.8	19.5	17.6	17.4	17.0
BSNL	15.5	8.8	9.4	8.8	8.3	6.8
IDEA	10.0	10.5	10.9	11.2	11.6	12.8
Aircel	4.4	5.8	5.5	6.4	7.5	7.7
RCOM	13.4	18.0	17.9	24.1	25.2	24.3
Spice	1.2	1.6	1.6	1.6	1.7	1.7
MTNL	1.2	0.4	0.8	0.8	0.8	0.8
BPL	(0.4)	0.2	0.8	0.8	0.8	1.7
ТАТА	11.4	8.7	8.6	7.8	6.6	5.9
HFCL	0.0	0.2	0.1	0.1	0.1	0.1
SHYAM	0.1	0.0	0.0	0.0	0.0	0.0
New entrants	0.0	0.0	0.0	0.8	1.7	2.6

Sources: COAI ; AUSPI ; BNP Paribas estimates

Exhibit 1.3	: Performance By Circ	le Of New Entrants Over P	ast Three Years
Circle	New entrants in last 3	Market share captured by	Observations over last 3-4 years regarding subscriber market share trends
	Years	new entrants	
Andhra	No	na	Bharti, Vodafone market share is improving. BSNL and RCOM market share is reducing
Assam	Aircel and Bharti	New entrants have taken #1	RCOM the incumbent now is #3 with 24% Market share
		and #2 positions with market	
		share of 32% and 25%	
Bihar	Aircel in 2007	5%	RCOM and BSNL incumbents, have lost market share, Bharti launched in 2004 and is
			the market leader now with 38% market share. Tata also launched with Bharti but has
			8% market share
Chennai	No	na	Aircel and Bharti incumbents still lead, Aircel has maintained lead with 27% market
			share compared to 24% for Bharti. RCOM gained market share on launch but is loosing
			market share consistently thereafter.
Delhi	No	na	Incumbents Bharti and Vodafone have maintained #1 and #2 position but have lost
			some market share. Highly competitive market with 6 operators.
Gujarat	No	na	Incumbent Vodafone has maintained 37% market share with a lead of 20% compared
			to competitors Idea, RCOM and Bharti
Haryana	No	na	BSNL leads but all the 6 operators have market share of more than 13%
Himachal	Idea In 2006 and Aircel in	Market share of only 2.8%	Incumbent Bharti loosing market share but has maintained its leadership position with
	2007	and 1.7% respectively	almost 38% market share which is 10% more than key competitors BSNL and RCOM
Jammu	Aircel in 2005	11.30%	Low competition. Bharti and BSNL have more than 40% Market share
Karnataka	No	na	Bharti leads with a market share of 40.9% and improving inspite of presence of 5
			competitors for last 4 years. Nearest competitors Vodafone has 16.7% market share.
Kerala	Tata Tele in 2005	5%	Incumbent Idea had lost its leading position to BSNL but has regained the same as
			BSNL is facing a capacity crunch
Kolkata	Tata Tele in 2005	15%	Close competition between leader Vodafone with 25% market share and Bharti and
			RCOM with 23% market share
Maharashtra	No	na	Incumbent Idea has retained leadership but has lost more than 10% market share over
			the last 3 years. 6 players operating since 2003 and all have more than 10% market
			share. Incumbent Vodatone has lost substantial market share and is currently #6
MD	Toto Tolo in 2005	60/	operator
MF		0%	Phorti's market chore is improving PCOM declining
Mumbai	No	22	brands market share is improving, KCOW declining.
Mumbai	140	Πά	BPL has lost share consistently and its share is now down to 10% RCOM and Tata
			Tele launched around same time in 2004 but RCOM is number 2 with market share of
			20% compared to Tata Tele at 13%
NF	Bharti and Aircel in 2005	Aircel is close to being	RCOM is the oldest operator but is now behind with 15.5% market share
		number 1 with 30.7% market	
		share compared to 31.2%	
		market share of BSNL. Bharti	
		has 22.5% market share	
Orissa	Aircel in 2005	9.10%	Bharti launched in 2004 and has overtaken RCOM and BSNL to be number one
			operator with 34% market share. Incumbent RCOM loosing market share
Punjab	No	na	Incumbent Spice is consistently loosing market share with current share being 21.9%.
			HFCL the other regional operator has only 2.4% market share though it has been
			present for over 5 years.
Rajasthan	Idea in 2006	6%	Shyam a regional operator has 0.9% market share after more than 5 years of
			operations and is still loosing market share. Bharti the market leader and Vodafone
			gaining market share, RCOM and BSNL are loosing market share
TN	No	na	Aircel has retained leadership position. Vodafone is gaining rapidly in last 1 year. Bharti
			has improved market share consistently over last 3 years
UPE	Idea in 2006	5.30%	Bharti improving market share since launch in 2004 and has 18.1% market share.
			Incumbent BSNL leading while Vodafone is a close second
UPW	No	na	Close competition with all the 6 operators having more than 10% market share.
			Vodafone was 5th to launch the services and is now the market leader with 23% market
			share
WB	Aircel in 2006	6%	Incumbents RCOM and BSNL have lost market share. Bharti and Vodafone have
			gained market share. RCOM has GSM and CDMA in WB since 2003

Sources: COAI; AUSPI; BNP Paribas estimates

Exhibit 1.4: Subscriber Base And Spectrum Holding Of Operators By Circle Grand Aircel Bharti BPL BSNL HFCL IDEA MTNL RCOM SHYAM Spice TATA Vodafone Total CDMA Data GSM GSM GSM GSM CDMA GSM CDMA GSM CDMA GSM CDMA GSM CDMA GSM State Circle A 5.538.2 2.208.5 3.001.0 3.455.6 2.243.4 2.386.3 18.833.0 Andhra Subscribers 8.0 5.0 62 Spectrum 78 25 8.0 5.0 42.5 Gujarat Subscribers 2,402.5 1,815.6 2.440.2 2.295.4 909.8 5,709.6 15,573.0 Spectrum 6.2 2.5 7.4 6.2 3.8 3.8 9.8 39.6 Karnataka Subscribers 6.465.4 1,732.1 2.355.4 1,532.2 1,089.1 2,642.3 15,816.5 ____ 3.8 43.3 Spectrum 9.8 2.5 8.0 5.0 6.2 8.0 Maharashtra 3,860.4 2,797.7 4,424.5 2,765.9 2,291.0 18,890.2 Subscribers 2,750.7 6.2 2.5 8.0 9.8 5.0 5.0 6.2 42.7 Spectrum ΤN Subscribers 4,825.6 3,739.5 2,316.8 2,474.7 588.8 2,903.4 16,848.9 Spectrum 9.8 6.2 2.5 8.0 5.0 2.5 6.2 40.2 4.825.6 22.006.1 10.870.6 9.865.7 1.532.2 7.581.7 15.932.6 85.961.6 13.347.1 A subscribers A spectrum 9.8 36.2 12.5 39.4 24.0 23.8 6.2 20.0 36.4 208.3 Circle B Haryana Subscribers 1,000.6 1,206.1 902.3 777.1 805.8 1,180.1 5,871.9 Spectrum 6.2 2.5 6.2 6.2 3.8 3.8 6.2 34.8 Kerala Subscribers 1,477.8 2,123.3 2,500.8 1,881.8 588.8 1,806.8 10,379.3 Spectrum 6.2 2.5 8.0 8.0 5.0 3.8 6.2 39.7 MP Subscribers 2,562.2 1,663.5 2,853.3 2,277.0 1,481.6 736.1 11,573.7 6.2 2.5 6.2 8.0 5.0 6.2 2.5 36.6 Spectrum 951.8 2.410.6 890.9 1.600.4 Subscribers 3.092.6 1.727.5 268.8 10.942.7 Puniab 2.5 2.5 3.8 3.8 6.2 40.5 Spectrum 7.8 6.2 7.8 2 678 6 2 212 4 792.6 1 546 6 12 322 8 Rajasthan Subscribers 3 480 9 103.0 1.508.6 Spectrum 6.2 2.5 8.0 6.2 3.8 5.0 3.8 6.2 41.6 UPE Subscribers 2,819.9 4,060.9 864.8 2,770.2 953.4 3,402.7 14,871.9 Spectrum 6.2 2.5 8.0 6.2 5.0 3.8 8.0 39.7 1,881.5 2,635.8 UPW Subscribers 1,442.9 2,279.1 2,093.3 11,647.9 1,315.5 Spectrum 6.2 2.5 8.0 8.0 5.0 3.8 6.2 39.7 WВ Subscribers 517.9 1,811.2 1,187.3 1,072.9 649.1 575.8 2,563.2 8,377.4 Spectrum 4.4 4.4 2.5 6.2 3.8 6.2 2.5 4.4 34.4 517.9 17,688.0 B subscribers 16,062.5 268.8 10,192.8 13,370.6 2,130.8 103.0 2,410.6 7,375.0 15,867.7 85,987.6 B spectrum 4.4 49.4 20.0 56.8 2.5 42.6 35.0 12.4 5.0 7.8 27.5 43.4 306.8 Circle C Assam Subscribers 1.058.9 795 1 _ 595.6 7934 3.243.0 Spectrum 6.2 6.2 2.5 6.2 6.2 27.3 Biha Subscribers 544.2 3,922.7 485.1 1,733.6 1,639.2 836.0 10,160.8 1 4.4 8.0 2.5 8.0 5.0 8.0 3.8 39.7 Spectrum Himachal Subscribers 36.4 784.3 517.8 63.8 159.8 401.8 106.5 2,070.5 2.5 2.5 4.4 6.2 2.5 6.2 4.4 6.2 34.9 Spectrum 903.9 0.2 Subscribers 234.2 801.6 1.939.9 Jammu Spectrum 4.4 6.2 2.5 8.0 2.5 23.6 NF Subscribers 543 6 406.4 _ 562.2 288.9 1.801.1 Spectrum 44 44 25 62 6.2 23.7 Orissa Subscribers 388.5 1,520.3 961.6 449.8 774.7 385.7 4,480.5 4.4 8.0 2.5 6.2 3.8 6.2 2.5 33.6 Spectrum C subscribers 2,805.8 8,332.7 4,923.8 63.8 2,343.4 3,898.0 1,328.2 23,695.8 C spectrum 28.2 39.0 15.0 40.8 4.4 13.8 32.8 8.8 182.7

Cont'd on next page

Exhibit 1.4: Subscriber Base And Spectrum Holding Of Operators By Circle (Cont'd)

																	Grand
		Aircel	Bharti	BPL	BSNL		HFCL	IDEA	MTNL		RCOM		SHYAM	Spice	TATA	Vodafone	Total
State	Data	GSM	GSM	GSM	CDMA	GSM	CDMA	GSM	CDMA	GSM	CDMA	GSM	CDMA	GSM	CDMA	GSM	
Circle M																	
Chennai	Subscribers	1,784.5	1,622.6		_	905.0					872.5				359.5	1,102.3	6,646.4
	Spectrum	8.6	8.6		2.5	8.0					5.0				3.8	8.0	44.5
Delhi	Subscribers		3,763.7					1,832.4	—	1,397.5	2,291.5				3,049.4	3,136.3	15,470.7
	Spectrum		10.0					8.0	3.8	8.0	5.0				5.0	10.0	49.8
Kolkata	Subscribers		1,635.7		_	986.6					1,323.2	309.0			1,123.0	1,831.1	7,208.6
	Spectrum		8.0		2.5	6.2					5.0	6.2			3.8	9.8	41.5
Mumbai	Subscribers		2,368.8	1,256.5					_	1,615.7	2,680.2				1,724.7	3,275.5	12,921.5
	Spectrum		9.2	10.0					5.0	8.0	5.0				5.0	10.0	52.2
M subscribers	6	1,784.5	9,390.8	1,256.5	—	1,891.6		1,832.4	—	3,013.2	7,167.4	309.0			6,256.5	9,345.2	42,247.3
M spectrum		8.6	35.8	10.0	5.0	14.2		8.0	8.8	16.0	20.0	6.2			17.5	37.8	187.9
Total subscribers		9,933.8	57,417.6	1,256.5	_	33,748.6	268.8 2	1,954.7	_	3,013.2	36,228.5	6,337.8	103.0	3,942.8	22,541.4	41,145.4	237,892.3
Total spectro	um	51.0	160.4	10.0	52.5	151.2	2.5	79.0	8.8	16.0	92.5	51.4	5.0	14.0	73.8	117.6	885.6

Sources: TRAI; Company reports

Exhibit 1.5: Spectrum Requirement And Availability Estimate

		Curre	ent Spe	ectrum Gr	ant and A	Availability	Letter of Intent Holders									
		Maximum								Total	Spare					
		С	urrent	GSM sp	ectrum	Available									spectrum	spectrum
		spe	ectrum	allotta	ble as	GSM	UNI		DATA						required	for
		allo	otment	—— per	· ITU ——	Spectrum	TECH	SHYAM	COM	LOOP	STEL SPICE	IDEA	SWAN	TTSL	for Lol	incremental
Circle	State	GSM	CDMA	900 Mhz	1800Mhz	GSM	GSM	GSM	GSM	GSM	GSM GSM	GSM	GSM	GSM	holders	allotment
А	Andhra	38.8	12.5	35	75	71.2	4.4	4.4	4.4	4.4	4.4	Alloted	4.4	4.4	30.8	40.4
	Gujarat	38.4	10	35	75	71.6	4.4	4.4	4.4	4.4		Alloted	4.4	4.4	26.4	45.2
	Karnataka	40.8	11.3	35	75	69.2	4.4	4.4	4.4	4.4	Alloted	4.4	4.4	4.4	30.8	38.4
	Maharashtra	39	12.5	35	75	71	4.4	4.4	4.4	4.4	4.4	Alloted	4.4	4.4	30.8	40.2
	TN	34.6	10	35	75	75.4	4.4	4.4	4.4	4.4		4.4	4.4	4.4	30.8	44.6
В	Haryana	33.6	10	35	75	76.4	4.4	4.4	4.4	4.4	4.4	Alloted	4.4	4.4	30.8	45.6
	Kerala	37.2	11.3	35	75	72.8	4.4	4.4	4.4	4.4		Alloted	4.4	4.4	26.4	46.4
	MP	35.4	10	35	75	74.6	4.4	4.4	4.4	4.4		Alloted		4.4	22	52.6
	Punjab	36.8	12.5	35	75	73.2	4.4	4.4	4.4	4.4	Alloted	4.4	4.4	4.4	30.8	42.4
	Rajasthan	35.4	15	35	75	74.6	4.4	Alloted	4.4	4.4		Alloted	4.4	4.4	22	52.6
	UPE	37.2	11.3	35	75	72.8	4.4	4.4	4.4	4.4		Alloted	4.4	4.4	26.4	46.4
	UPW	37.2	11.3	35	75	72.8	4.4	4.4	4.4	4.4		Alloted	4.4	4.4	26.4	46.4
	WB	25.6	8.8	35	75	84.4	4.4	4.4	4.4	4.4		4.4		4.4	26.4	58
С	Assam	29.2	5	35	75	80.8	4.4	4.4	4.4	4.4	4.4	4.4		4.4	30.8	50
	Bihar	37.2	11.3	35	75	72.8	4.4	4.4	4.4	4.4	4.4	Alloted		4.4	26.4	46.4
	Himachal	31.8	7.5	35	75	78.2	4.4	4.4	4.4	4.4	4.4	Alloted		4.4	26.4	51.8
	Jammu	27.4	5	35	75	82.6	4.4	4.4	4.4	4.4	4.4	4.4		4.4	30.8	51.8
	NE	25.6	5	35	75	84.4	4.4	4.4	4.4	4.4	4.4	4.4		4.4	30.8	53.6
	Orissa	29.2	8.8	35	75	80.8	4.4	4.4	4.4	4.4	4.4	4.4		4.4	30.8	50
М	Chennai	37.6	11.25	35	75	72.4	4.4	4.4	4.4	4.4		4.4	4.4	4.4	30.8	41.6
	Delhi	44.8	13.75	35	75	65.2	4.4	4.4	4.4	4.4	4.4	Alloted	4.4	4.4	30.8	34.4
	Kolkata	34.6	11.25	35	75	75.4	4.4	4.4	4.4	4.4		4.4		4.4	26.4	49
	Mumbai	50.4	15	35	75	59.6	4.4	4.4	4.4	Alloted		Alloted	4.4	4.4	22	37.6
Avera	ge	35.6	10.4	35	75	74.4	4.4	4.4	4.4	4.4	4.4 4.4	4.4	4.4	4.4	28.1	46.3

Sources: TRAI; BNP Paribas estimates

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