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Telecom

Spectrum auction: It's all about advancing the pawn!

"Every pawn is a potential queen." James Mason, chess player, journalist & writer

Though the general perception is that the upcoming auction will be focused on renewing spectrums expiring in CY21, fact is that renewal of spectrum has now become less relevant. The auction could be used by operators to align their spectrum portfolio for eventual launch of 5G and to strengthen their existing 4G services. 1,800MHz and 2,300MHz bands would play a crucial role in the fast-evolving 5G ecosystem. 700MHz is becoming popular in sub-GHz bands for 5G rollout, but the forthcoming auction would be a miss for this band due to higher reserve price. We expect the auction to be aimed at beefing up spectrum holding in the 1,800/2,300MHz bands, which potentially can be 'queen' in 5G ('king' being the C-band). ([Link](#) for spectrum auction details)

► **How we should see the upcoming auction:** The upcoming auction appears focused towards renewing spectrums expiring in CY21. However, we see operators, particularly Bharti Airtel (Bharti), advancing its pawn (1,800/2,300MHz spectrums, these were 'king' in 4G!) for the bigger game in 5G. Bharti, which wants to have equal footing in 5G, may play by advancing its pawn for the bigger role of 'queen' in 5G deployment. 1,800MHz and 2,300MHz bands are increasingly becoming popular globally for 5G deployment and, considering that they provide better coverage (compared to C-band), they may play a crucial role in 5G.

► **What telcos would buy in the upcoming auction:** Bharti has 57MHz spectrum (eight circles) in 1,800MHz and 6.2MHz (one circle) in 900MHz coming up for renewal. These are traditionally 2G spectrums that have very little relevance for the future as significant amount of industry revenue has moved to 4G. Thus, we don't see the imminent auction as aimed at spectrum renewal, but more as spectrum that can be used for 4G today and 5G in future. VIL has 46.2MHz spectrum (eight circles) in 1,800MHz and 6.2MHz (one circle) in 900MHz coming up for renewal.

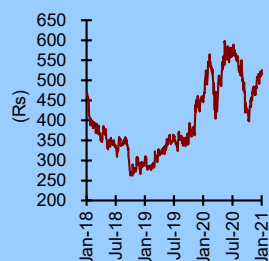
► **Band-wish demand driver.** Demand explained for each band.

- **1,800MHz:** Bharti and VIL have the highest spectrum coming up for renewal in 1,800MHz. However, they already have a lot of excess spectrum in this band. Bharti and VIL would therefore make their buying decision based on number of carriers (and also justifiable investment) in these circles. Bharti may want to take its total number of carriers to five in each circle with cumulative spectrum holding in 900, 1,800 and 2,100MHz bands – where one carrier can be put for 2G services, and the remaining four for 4G. VIL already has >5 carriers in many circles, hence would have very limited demand.
- **2,300MHz:** Bharti's CEO Mr. Gopal Vittal has stated earlier that the company sees a spectrum portfolio gap in sub-GHz bands and 2,300MHz band. In the upcoming auction, Bharti may take its spectrum holding to at least 30MHz in each circle, and may also opt for up to 40MHz in a few circles based on price.
- **900MHz:** Sub-GHz is a critical band, and both Bharti and VIL may renew their expiring spectrums in this segment.
- **800MHz:** Bharti got a little 800MHz spectrum on acquisition of Tata Tele, but none of it is 5MHz, hence cannot be used for 4G. Further, this band is not really popular for 5G (at least today) and to use it for 4G would increase complexity of network. Bharti may therefore give a miss to 800MHz spectrum.

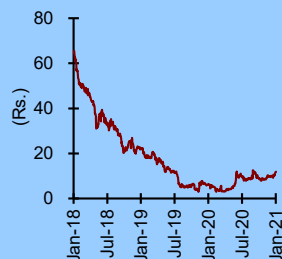
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Sector update

Bharti Airtel



Vodafone Idea Ltd



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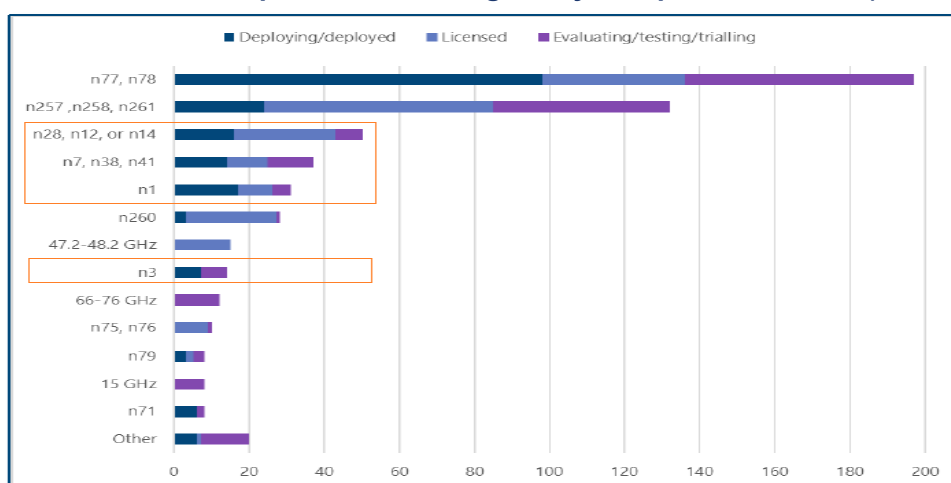
- **700MHz:** This is emerging as a popular sub-GHz band for 5G rollout and should be of interest for each telco. However, the reserve prices look higher, and may not find any bidder. Ideally, Bharti should aim to own 700MHz spectrum for 5G rollout in future.
- ▶ **Spectrum payout.** Based on above thoughts for each band: **1) Bharti** may buy 5MHz (one circle) in 900MHz band, and 31.2MHz (eight circles) in 1800MHz out of the spectrum coming up for renewal, which would amount to Rs68bn (upfront payment of Rs31bn); also, Bharti may buy growth spectrum of 27MHz (seven circles) in 1,800MHz band and 90MHz spectrum (nine circles) in 2,300MHz band, which could cost Rs53bn (upfront payment of Rs26bn). Therefore, total payout for Bharti is seen at Rs121bn (upfront payment of Rs57bn); **2) VIL** may buy 5MHz spectrum (one circle) in 900MHz band, and 10MHz (two circles) in 1,800MHz band out of spectrum expiring in CY21. This implies spectrum payment of Rs33bn (upfront payment of Rs14bn).
- ▶ **Spectrum portfolio.** Bharti may end up with five carriers (cumulative in 900, 1800, and 2100MHz bands in most key circles except in Kolkata and West Bengal), and would have 30MHz spectrum pan-India in 2,300MHz band. This should put Bharti in a strong position for 4G services and a good advance towards 5G rollout. VIL already has strong spectrum portfolio (thanks to merger of Vodafone India and Idea Cellular), and has more than five carriers (cumulative in 900, 1800, and 2100MHz bands) in most crucial circles except in Andhra Pradesh and Karnataka. High leverage should restrict VIL from investing in 2,300MHz band.

5G – beyond C-band (n77 & n78)

The king (most popular band) in 5G is C-band (3,300-4,200MHz spectrum). DoT has not put up any spectrum in this band for the upcoming auction, and it may therefore be part of next auction. However, there are other spectrum bands that are also gaining popularity in 5G deployment and, considering these bands provide much better coverage (compared to C-band), they can eventually play the critical role of ‘queen’ in 5G rollout, particular for non-standalone 5G deployment.

The spectrum bands that interest us are – n28 (700MHz spectrum band which has been put up in the upcoming auction), n41 (2,300MHz band), n1 (2,100MHz band, which was earlier used for 3G rollout, and has been refarmed to 4G), and n3 (1,800MHz band). These are the bands that are either owned by telcos in India or have been put for auction.

Chart 1: Count of operators investing in key 5G spectrum bands (Nov'20-end)



Source: GSA, I-Sec research

Bharti Airtel –spectrum holding would ease its transition to 5G

Table 1: Present spectrum holding for Bharti Airtel

MHz	Admin		Auction				
	900	1800	800	900	1800	2100	2300
Metros							
Delhi	-	-	1.3	6.0	7.0	10.0	30.0
Mumbai	-	9.2	2.5	5.0	11.0	5.0	30.0
Kolkata	-	-		7.0	9.0	-	30.0
A' Circle							
Maharashtra	-	8.2	2.5	-	15.0	10.0	20.0
Gujarat	-	6.2		-	10.0	10.0	30.0
A.P.	-	-	3.8	9.0	21.4	5.0	30.0
Karnataka	-	-		8.8	8.8	10.0	30.0
T.N.	-	6.8		-	5.0	10.0	30.0
B' Circle							
Kerala	-	6.2		-	5.0	10.0	20.0
Punjab	-	-		10.0	10.0	5.0	20.0
Haryana	-	6.2	1.3	-	10.0	10.0	20.0
U.P.(W)	-	6.2		-	12.0	10.0	20.0
U.P.(E)	6.2	1.0		-	11.8	5.0	20.0
Rajasthan	-	-		6.0	10.0	15.0	20.0
M.P.	-	8.0		-	10.8	10.0	20.0
W.B.	4.4	1.8		2.2	4.4	5.0	30.0
C' Circle							
H.P.	-	-		7.4	10.2	5.0	30.0
Bihar	6.2	3.0		1.6	12.2	10.0	30.0
Odisha	6.2	1.8		1.2	11.2	5.0	30.0
Assam	1.8	4.4		6.2	11.1	5.0	30.0
N.E.	-	-		8.8	10.0	5.0	30.0
J&K	6.2	-		-	5.0	10.0	20.0
Total	31.0	69.0	79.2	79.2	220.9	170.0	570.0

Source: DoT, I-Sec research

Table 2: Bharti Airtel spectrum payout seen at Rs121bn in upcoming auction

MHz	Renewal spectrum		Base case (renewal)		Base case payout (Rs mn)			Base case (Growth)		Growth spectrum payout (Rs mn)		
	900	1800	900	1800	900	1800	Total	1800	2300	1800	2300	Total
Metros												
Delhi								3.0		13,710		13,710
Mumbai		9.2		4.0		22,440	22,440					
Kolkata								6.0		10,380		10,380
A' Circle												
Maharashtra		8.2		-					10.0		7,200	7,200
Gujarat		6.2		5.0		13,650	13,650					
A.P.												
Karnataka								1.2		1,308		1,308
T.N.	6.2	6.8	5.0	5.0	11,750	5,000	16,750					
B' Circle												
Kerala		6.2		5.0		4,750	4,750	5.0	10.0	4,750	2,000	6,750
Punjab									10.0		2,100	2,100
Haryana		6.2		5.0		2,850	2,850		10.0		800	800
U.P.(W)		6.2		3.0		3,450	3,450		10.0		1,200	1,200
U.P.(E)								3.2	10.0	4,896	900	5,796
Rajasthan									10.0		600	600
M.P.		8.0		4.2		3,990	3,990		10.0		900	900
W.B.												
C' Circle												
H.P.								4.8		864		864
Bihar												
Odisha								3.8		1,026		1,026
Assam												
N.E.												
J&K									10.0		100	100
Total	6.2	57.0	5.0	31.2	11,750	56,130	67,880	27.0	90.0	36,934	15,800	52,734
Upfront payment					2,938	28,065	31,003			18,467	7,900	26,367

Source: DoT, I-Sec research

Table 3: Bharti Airtel would own at least five carriers across 900, 1800 and 2100MHz bands post auction

Circles	No. of carriers (post auction)			
	900	1,800	2,100	Total
Metros				
Delhi	1.0	2.0	2.0	5.0
Mumbai	1.0	3.0	1.0	5.0
Kolkata	1.0	3.0		4.0
A* Circle				
Maharashtra		3.0	2.0	5.0
Gujarat		3.0	2.0	5.0
A.P.	1.0	4.0	1.0	6.0
Karnataka	1.0	2.0	2.0	5.0
T.N.	1.0	2.0	2.0	5.0
B* Circle				
Kerala		3.0	2.0	5.0
Punjab	2.0	2.0	1.0	5.0
Haryana		3.0	2.0	5.0
U.P.(W)		3.0	2.0	5.0
U.P.(E)	1.0	3.0	1.0	5.0
Rajasthan	1.0	2.0	3.0	6.0
M.P.		3.0	2.0	5.0
W.B.			1.0	1.0
C* Circle				
H.P.	1.0	3.0	1.0	5.0
Bihar	1.0	2.0	2.0	5.0
Odisha	1.0	3.0	1.0	5.0
Assam	1.0	2.0	1.0	4.0
N.E.	1.0	2.0	1.0	4.0
J&K	1.0	1.0	2.0	4.0
Total	16.0	54.0	34.0	104.0

Source: DoT, I-Sec research

Vodafone Idea – Likely to skip 2,300MHz band

Table 4: Present spectrum holding for Vodafone Idea

MHz	Admin		Auction				
	900	1800	900	1800	2100	2300	2500
Metros							
Delhi		8.0	10.0	10.6	5.0		20.0
Mumbai		4.4	11.0	10.2	10.0		20.0
Kolkata			7.0	15.0	10.0		20.0
A' Circle							
Maharashtra			14.0	12.4	15.0	10.0	30.0
Gujarat			11.0	20.8	10.0		30.0
A.P.		6.2	5.0	6.6	5.0		10.0
Karnataka		8.0	5.0	11.0	5.0		
T.N.	6.2	1.0		11.4	15.0		
B' Circle							
Kerala			12.4	20.0	10.0	10.0	20.0
Punjab		6.2	5.6	15.0	10.0		10.0
Haryana			12.2	15.8	15.0		20.0
U.P.(W)	6.2		5.0	14.4	10.0		20.0
U.P.(E)		6.2	5.6	8.6	20.0		20.0
Rajasthan		6.2	6.4	10.0	15.0		20.0
M.P.			7.4	18.6	5.0	10.0	20.0
W.B.			6.6	23.4	5.0		20.0
C' Circle							
H.P.		4.4		11.2	5.0		10.0
Bihar		4.4		13.4	5.0		10.0
Odisha			5.0	17.0	5.0		20.0
Assam				25.0	5.0		20.0
N.E.				25.8	5.0		20.0
J&K				17.0	5.0		10.0
Total	12.4	55.0	129.2	333.2	195.0	30.0	370.0

Source: DoT, I-Sec research

Table 5: VIL spectrum payout seen at Rs33bn in upcoming auction

MHz	Renewal spectrum		Base case (renewal)		Base case payout (Rs mn)		
	900	1800	900	1800	900	1800	Total
Metros							
Delhi		8.0					
Mumbai							
Kolkata							
A' Circle							
Maharashtra							
Gujarat							
A.P.		6.2		5.0		13,950	13,950
Karnataka		8.0					
T.N.	6.2	1.0	5.0		11,750		11,750
B' Circle							
Kerala							
Punjab		6.2					
Haryana							
U.P.(W)							
U.P.(E)		6.2		5.0		7,650	7,650
Rajasthan		6.2					
M.P.							
W.B.							
C' Circle							
H.P.		4.4					
Bihar							
Odisha							
Assam							
N.E.							
J&K							
Total	6.2	46.2	5.0	10.0	11,750	21,600	33,350
Upfront payment					2,938	2,938	10,800

Source: DoT, I-Sec research

Table 6: VIL has strong holding across 900, 1,800 and 2,100MHz bands

Circles	No. of carriers (post auction)			
	900	1,800	2,100	Total
Metros				
Delhi	2.0	2.0	1.0	5.0
Mumbai	2.0	2.0	2.0	6.0
Kolkata	1.0	3.0	2.0	6.0
A* Circle				
Maharashtra	2.0	2.0	3.0	7.0
Gujarat	2.0	4.0	2.0	8.0
A.P.	1.0	2.0	1.0	4.0
Karnataka	1.0	2.0	1.0	4.0
T.N.	1.0	2.0	3.0	6.0
B* Circle				
Kerala	2.0	4.0	2.0	8.0
Punjab	1.0	3.0	2.0	6.0
Haryana	2.0	3.0	3.0	8.0
U.P.(W)	2.0	3.0	2.0	7.0
U.P.(E)	1.0	2.0	4.0	7.0
Rajasthan	1.0	2.0	3.0	6.0
M.P.	1.0	3.0	1.0	5.0
W.B.	1.0	4.0	1.0	6.0
C* Circle				
H.P.		2.0	1.0	3.0
Bihar		2.0	1.0	3.0
Odisha	1.0	3.0	1.0	5.0
Assam		5.0	1.0	6.0
N.E.		5.0	1.0	6.0
J&K		3.0	1.0	4.0
Total	24.0	63.0	39.0	126.0

Source: DoT, I-Sec research

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