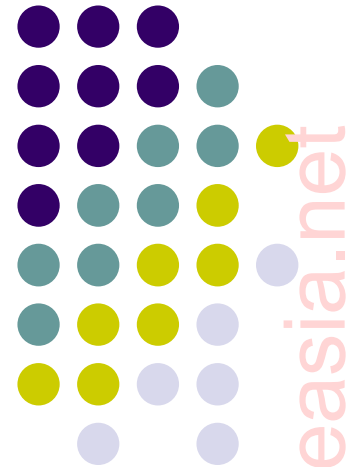


Spectrum Allocation in India Monkey on a Greased Pole?

Payal Malik

Associate Professor of Economics, Delhi University
Senior Research Fellow, LIRNEasia



Why is allocation an important public policy issue?



- Public resource and not private
- Allocation creates “private” rights
- Spectrum can be used strategically
 - hold on to unused spectrum
 - acquire fresh spectrum with an eye on future commercial value
 - restrict entry into markets
- Allocation and trading design blunt these incentives
- Scarcity can effect expansion of essential services
- Allocation Mechanisms to reconcile market realities and public interest



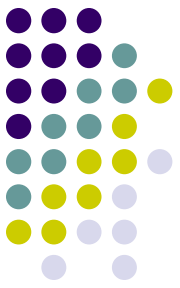
Why is allocation an important public policy issue?



- **Government as a Custodian**
- efficient utilization
- optimal revenue generation for the public exchequer
- sufficient competition in the telecom market
- rapid diffusion of telecom services

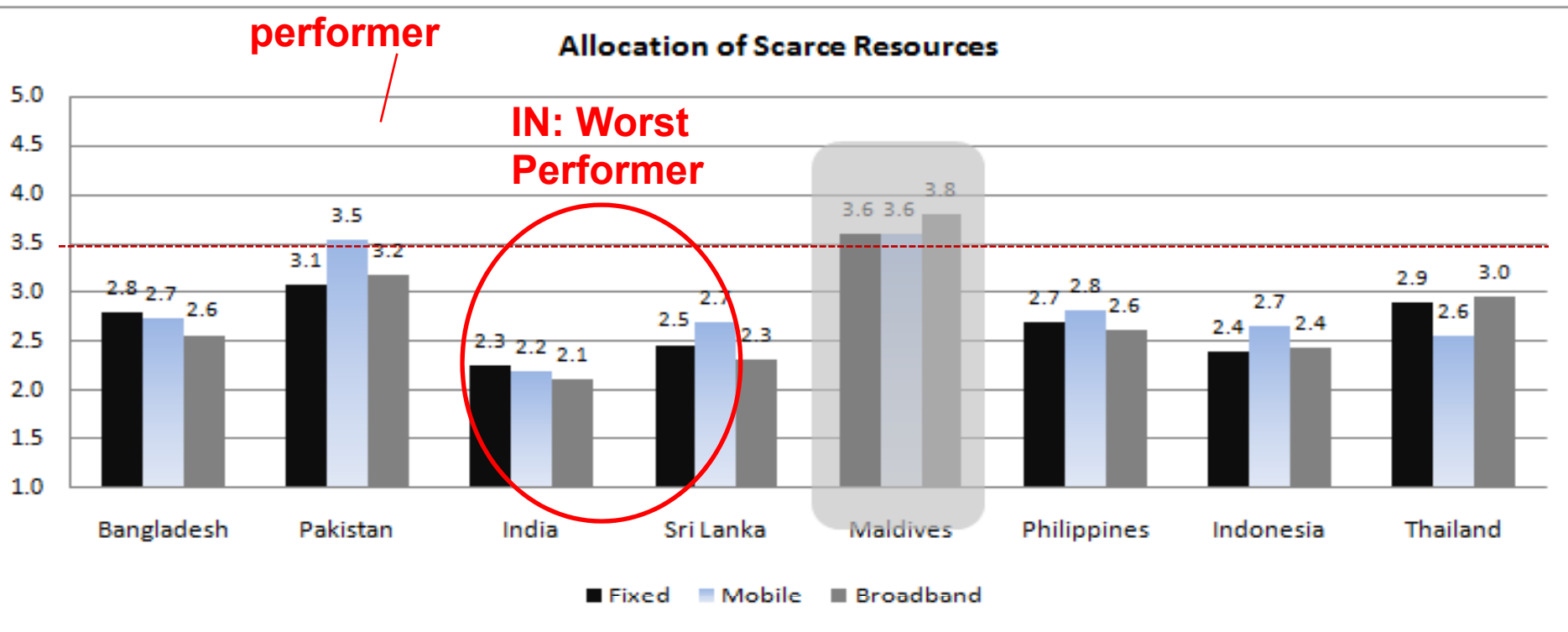


Allocation of Scarce Resources: PK fast response gives certainty. India's bungles 3G and 2G spectrum issuance creating negative impact



PK: Best performer

IN: Worst Performer



Spectrum Assignment 2G



- Indian mobile market is divided into 22 service areas
- UASL licensee initial assignment of 4.4 + 4.4 MHz (paired FDD spectrum assignment) for GSM technology in the 890–915 MHz band paired with 935-960 MHz, or 1710-1785 MHz paired with 1805-1880 MHz band
- 2.5 MHz + 2.5 MHz for CDMA technology in the 824-844 MHz band paired with 869-889 MHz band
- Actual assignment of start-up spectrum is based on availability and is on a first-come-first-served
- Percentage of revenue as annual license fee and another percentage as annual spectrum usage charges
- Spectrum usage charge is based on the amount of spectrum licensed and on the technology



Circle-wise Spectrum/operator



Service Area	Category	Bharti	BSNL	Vodafone	Idea Cellular	Spice	MTNL
Andhra Pradesh	A	9.2	10.0	6.2	8.0	4.4	
Assam	C	6.2	10.0	4.4			
Bihar	C	8.0	10.0	4.4	4.4		
Chennai	Metro	9.2	10.0	8.0	4.4		
Delhi	Metro	10.0		10.0	8.0		12.4
Gujarat	A	6.2	7.4	9.8	6.2		
Haryana	B	6.2	10.0	6.2	6.2		
Himachal Pradesh	C	6.2	10.0	4.4	4.4		
Jammu & Kashmir	C	6.2	8.0	4.4			
Karnataka	A	9.8	10.0	8.0	4.4	6.2	
Kerala	B	6.2	10.0	6.2	8.0		
Kolkata	Metro	8.0	10.0	9.8			
Madhya Pradesh	B	6.2	10.0	4.4	8.0		
Maharashtra	A	6.2	10.0	6.2	9.8		
Mumbai	Metro	9.2		10.0	4.4		12.4
North East	C	4.4	10.0	4.4			
Orissa	C	8.0	10.0	4.4	4.4		
Punjab	B	7.8	6.2	6.2		7.8	
Rajasthan	B	6.2	8.0	6.2	6.2		
Tamil Nadu	A	9.2	10.0	7.2	4.4		
Uttar Pradesh (East)	B	6.2	10.0	8.0	6.2		
Uttar Pradesh (West)	B	6.2	10.0	6.2	8.0		
West Bengal	B	6.2	8.0	6.2			

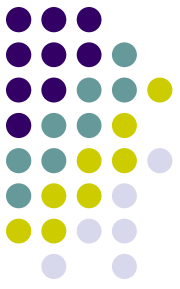
2G GSM Wireless Spectrum allocation to New Operators



Service Area	Category	RCOM	Datacom (Videocon)	TTSL	Unitech	Loop (BPL)	Aircel
Andhra Pradesh	A	4.4	4.4	4.4	4.4	4.4	4.4
Assam	C	6.2					6.2
Bihar	C	8.0					4.4
Chennai	Metro	4.4		4.4	4.4	4.4	8.6
Delhi	Metro	4.4					4.4
Gujarat	A	4.4					4.4
Haryana	B	4.4					4.4
Himachal Pradesh	C	6.2					4.4
Jammu & Kashmir	C	4.4					4.4
Karnataka	A	4.4	4.4	4.4	4.4	4.4	4.4
Kerala	B	4.4	4.4	4.4	4.4	4.4	4.4
Kolkata	Metro	6.2					4.4
Madhya Pradesh	B	6.2					4.4
Maharashtra	A	4.4					4.4
Mumbai	Metro	4.4				10.0	4.4
North East	C	6.2					4.4
Orissa	C	6.2	4.4	4.4	4.4	4.4	4.4
Punjab	B	4.4	4.4				4.4
Rajasthan	B	4.4					4.4
Tamil Nadu	A	4.4		4.4	4.4	4.4	9.8
Uttar Pradesh (East)	B	4.4					4.4
Uttar Pradesh (West)	B	4.4					4.4
West Bengal	B	6.2					4.4



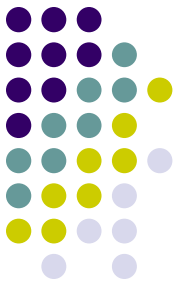
2G



- Purely administrative mechanism of allocation
- Spectrum Management Committee of the DoT and the Wireless Planning Commission on Spectrum Pricing
- Spectrum allocation is linked to subscriber numbers and not usage; misreporting, hoarding
- No policy for spectrum beyond 10 MHz
- No more spectrum in the 900 Mhz
- Spectrum getting 'stuck' in lower value uses
- Absence of mechanisms to put under-utilised spectrum to a better use



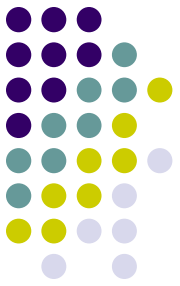
2G



- ITU recognises a total of 110 MHz in 2G and 2.5G
- Average 35 MHz (a range of 25-50 MHz)
- Another 31 MHz will be required to provide spectrum to the new licensees
- About 34 MHz of spectrum for growth in 2G and 2.5G services
- Ministry of Defence is yet to clear about 20 MHz of this 34 MHz.
- Average assignment has come down from 2 x 6.8 MHz to 2 x 5.7 MHz after the spectrum was assigned to new licensees post-2008
- Fragmented ownership of spectrum; issue of efficiency



2G+ and 3G



- TRAI recommendations-Allocation and pricing of spectrum for 3G and broadband wireless access services on 27th September, 2006
- 12th November 2007 issued guidelines on BWA services and identified 2.3-2.4 GHz, 2.5-2.69 GHz and 3.3-3.4 GHz bands for allocation for BWA
- Identified these bands for BWA services, however, the availability of spectrum for these services is still not clearly known



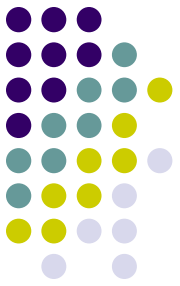
3G



- Results of the efforts made by the WPC to get the required spectrum bands vacated/re-farmed from the incumbents are not available in the public domain
- Reservation Price, back and forth between DoT and MoF
- TRAI against allowing new players? Legacy issues
- Auctions postponed
- January 16, 2009 - 3G spectrum auctions scheduled
- January 30, 2009 - 3G spectrum auctions scheduled
- December 07, 2009 - 3G spectrum auctions scheduled (this too has been postponed as IM has not been prepared)
- Design of Auctions? A complicated exercise
- Only objective revenue maximization
- Against a target of 20 million broadband subscribers by 2010, 6.22 million only



Going Forward



- Move away from an administratively determined criteria to a market-driven approach
- Any new UAS licenses not carry with them any eligibility for start-up spectrum
- Do away with escalating spectrum charges
- Allow to discover the optimal number of operators, merger/transfer/sharing of spectrum
- Exploiting the digital dividend (strategic review of spectrum allocation across various bands (both licensed and unlicensed bands))
 - Harmonization with ITU allocated bands
 - Policies and plans for government use of spectrum
 - Instruments and institutions for managing towards a more commercial use of spectrum

