India – The evolution and corruption of licensing

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Abstract

Purpose – *This paper aims to review the licensing in India, including the development of universal licences and of the now infamous 2G spectrum scam.*

Design/methodology/approach – *This paper is a case study drawing on a side range of official documents, including inquiry reports, policies, licences and court judgements.*

Findings – *Liberalisation of the sector introduced opportunities for lobbying and corruption that lead to very unusual market structures, with many operators and too little spectrum.*

Research limitations/implications – *Interviews with the principals were impossible.*

Practical implications – *It is now necessary for the government to adopt good governance processes, especially in respect of 4G and th inevitable consolidation of operators in a fair and equitable manner.*

Social implications – *The governance systems are incapable of controlling the corruption in the telecommunications sector and require substantial redesign.*

Originality/value – *The paper is the first to relate corporate political activity and corruption to outcomes in the telecommunications sector in India.*

Keywords *India, Corruption, Governance, Telecommunications, Licencing*

Paper type *Case study*

Introduction

Time magazine ranked the Indian 2G spectrum scam – the sale of licences and of GSM spectrum at artificially low prices, with "kickbacks" to the minister – second to Watergate in its "top ten abuses of power" (Time, 2011). Debates in India about telecommunications policy have been almost free from ideology, with only rhetorical attention to economic and social development, instead focused on wrangling amongst vested interests over future revenues (Chakravartty, 2004). The telecommunications sector has contributed to the wealth of Indian billionaires, notably the Ambani and Ruia brothers, Sunil Mittal and Ratan Tata, who dominate the market through their better understanding of and engagement with the political system, with a limited presence of foreign operators. While corruption is a recognised feature of the global telecommunications market (Sutherland, 2012), the audacity and scale of the 2G spectrum scam justifies exploration. It adds to the stock of case studies exploring the relationships between corruption and the governance of telecommunications markets.

The endemic corruption in India was chillingly described in the novel *The White Tiger*, which illustrated its pervasiveness for individuals and its violence (Adiga, 2008). Transparency International (TI) ranked India 76th of 168 countries in its Corruption Perceptions Index (CPI), a result that varies according to the scale of recent scandals. Corruption has long been recognised as an obstacle to national prosperity (Vittal, 2003; Sen *et al.*, 2007; Bardhan, 2015; Kato and Sato, 2016). Although India boasts being the largest democracy and of its adherence to the rule of law, it has yet to make ministers and agencies accountable, or to contain the growth of corruption (Quah, 2008; Charron, 2010;

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Mehta, 2010). It is unsurprising that corruption is found in telecommunications, given patterns and traditions in other sectors.

China has long been the principal geopolitical rival of India, holding the economic lead, especially in manufacturing (Malik, 1995; Bruche, 2009; Manson, 2010; Lintner, 2015; Singh, 2015). In January 2000, several years after the introduction of mobile telephony into India, the number of customers reached a total of 5 million, at a time when China was adding that many in a good month. The rapid advances in its adoption of mobile telephony and in the capability of its manufacturers required an Indian response; a sequence of complex and far from transparent changes to licences and policies that created sufficient competition to meet much of the demand for telecommunications services, though with an enduring rural divide[1]. Success was proclaimed, with numbers growing, for a time, at a rate broadly comparable to China (Figure 1), though this has diminished, and a substantial gap has opened in 4G, a problem compounded by one quarter of the Indian population being illiterate[2]. The number of unique subscribers, removing those with multiple phones and SIM-cards, is markedly less, but better reflects the capacity for growth (Figure 2).

The telecommunications *licence raj*, created by often disjoint licence and policy changes, points to the absence of a national strategy and suggests that ministers had been pandering to vested interests. A critical feature was the nearly unlimited discretion of the Department of Telecommunications (DoT) in defining and issuing licences[3]. There has been no attempt to formulate a coherent set of interventions linked to economic, industrial

Figure 1 The rise of mobile telephony in the BRICS (UN, 2015)

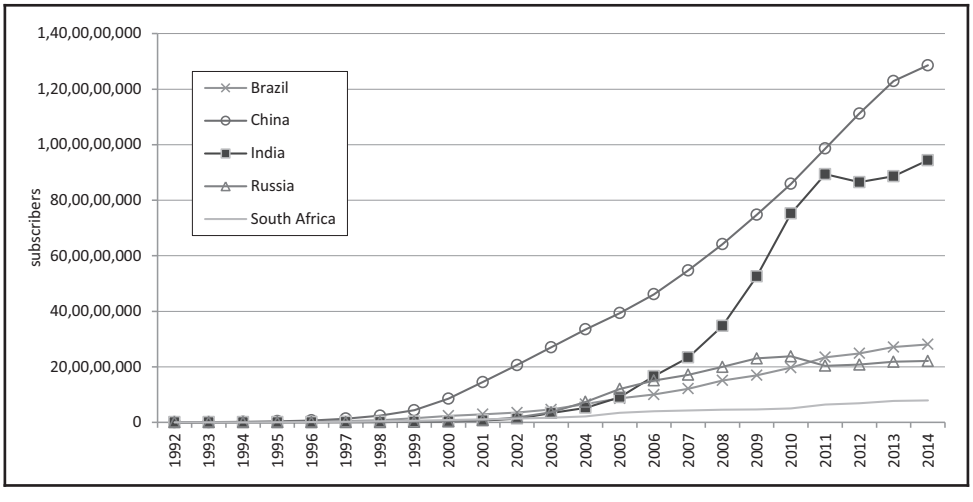
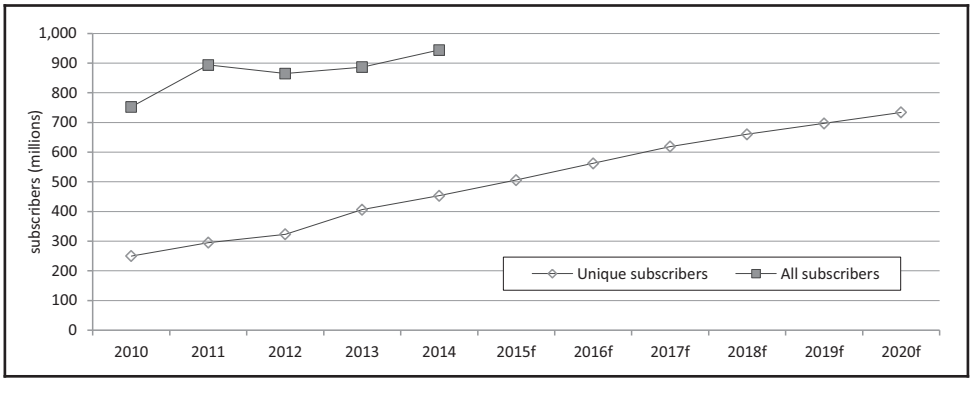


Figure 2 Actual and forecast subscribers in India (GSMA, 2015, p. 7; UN, 2015)



and social policies; instead, decisions were left to individual telecommunication ministers, rather than being taken by the cabinet.

It was non-governmental organisations, the Telecom Watchdog, the Indian chapter of Transparency International (TI), and the Centre for Public Interest Litigation (CPIL), together with Subramian Swamy (2011), that successfully argued for investigations into the 2G spectrum scam[4]. Whereas, the supposedly independent and critical voices of the academic community were silent, including the IIMs and IITs, as was LIRNE Asia, a regional research hub specialising in ICT policies, though aware of the dangers (LIRNE Asia, 2008). One contribution called mobile telecommunications an "unqualified success" (Gupta, 2015).

Yet, there are severe problems, notably the very slow transfer of spectrum from the army and broadcasters to mobile operators, creating an enduring shortage (Figure 3), made worse by high prices and inflexibility in its use (Mölleryd and Markendah, 2014; Prasad and Kathuria, 2014; Curwen and Whalley, 2013, pp. 67-88). There are remarkably low levels of revenue per user, low growth in operator revenues and high numbers of operators, with consolidation blocked by a cap on spectrum ownership and the spectrum fees payable when operators acquire a rival, leading to higher capital expenditure. The cap has the perverse effect of raising spectrum prices, as it limits economies of scale and encourages stockpiling, in anticipation of a future policy change that would allow resale to a major player. Moreover, operators have called for a roadmap to set out how spectrum needs will be met.

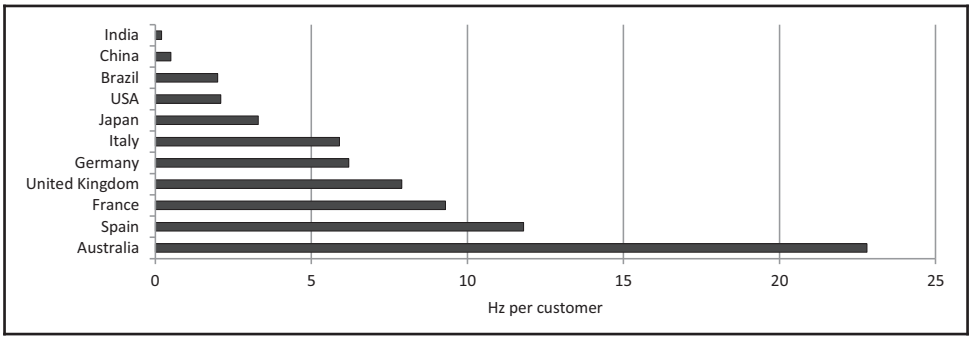
The next section addresses the problems of bribery, corruption and appropriate counter measures in general and introduces issues for India. This is followed by an examination of how liberalisation came to be adopted in India and the consequences including corruption. The complex process of the unification of fixed and mobile networks is described in the next section. The following section analyses the 2G spectrum scam and the administrative measures taken, followed by a section on the related criminal investigations. Finally, conclusions are drawn and issues identified for future research.

Bribery, corruption and counter measures

The global telecommunications sector shows significant patterns of bribery, cronyism and nepotism, with no possibility seemingly having been overlooked (Blackman, 2012; Sutherland, 2012, 2015). Under direct state provision, there was grand corruption associated with public procurement of equipment. Liberalisation of markets brought solicitations for and offers of bribes for licences, or to stop rivals from being licensed, reducing competition to increase prices and profits. Privatisation created opportunities for the theft of state-owned assets. Bribes have been paid in cash, in shares and in kind.

The international financial institutions (IFIs), International Telecommunication Union (ITU) and United Nations Development Programme (UNDP) advocated a global best practice

Figure 3 Availability of spectrum for mobile services (Ravi and West, 2015)



package of institutions, legislation and policies, including corporatisation then privatisation, liberalisation and market regulation (Intven *et al.*, 2000; Blackman and Srivastava, 2011). However, they did little to acknowledge, monitor or diminish the resulting increase in the risks of corruption. Anti-corruption was in another administrative silo, with its own agenda, which saw telecommunications as a low risk and was not alerted to the problems. The IFIs and UN agencies supported and funded adaptations and compromises in the governance of telecommunication markets, without the accountability and oversight necessary to contain the opportunities for corruption they were creating. Anti-corruption systems were often starved of resources or controlled by politicians, who knew whom not to prosecute.

For decades, the Indian economy operated under a system of state planning, initiated by Jawaharlal Nehru (Prime Minister, 1947-1964), with Soviet-inspired five year plans. The term *licence raj* was coined to describe the official and unofficial approvals needed for business activities in most economic sectors. It became notorious for its corruption, sometimes known as "briefcase politics", after a unit of measure for the cash payments (Jaffrelot, 2002), required by politicians who, finding elections less certain, had turned to buying votes, following the end of the overwhelming dominance of the Congress Party and the Nehru dynasty. The brazen and widespread corruption might suggest the country is dysfunctional, but politicians and businesses use the system with its well understood rules of engagement (Miklian and Carney, 2013).

There is a remarkable level of criminality in Indian legislatures, which political parties have been reluctant to address. The 2014 general election returned 34 per cent of members to the *Lok Sabha* with pending criminal cases, increased from 24 and 30 per cent in 2004 and 2009, respectively (ADR, 2014a). More surprising, given the "law and order" messages of the Bharatiya Janata Party (BJP), the new cabinet had 20 of its 64 ministers facing criminal charges, including one of attempted murder and another of bribery (ADR, 2014b). Aidt *et al.* (2011) found it "genuinely astonishing" that in contested elections voters would knowingly return so many criminals, more likely than others to win, proving especially successful in driving out incumbents. The electorate did not reject criminal candidates, with those who would have voted for rivals having been intimidated into staying away, perhaps a cheaper tactic than attracting swing voters. Becoming an MP in India has been shown to enhance your wealth (Bhavnani, 2012). Criminal candidates may be cheaper for political parties, often being self-funding, though they might have been selected because they had intimidated party rivals.

The early 1990s saw liberalisation of the economy, improving growth and productivity, led by Manmohan Singh as Finance Minister, spurred on by the International Monetary Fund and the World Bank (Ahluwalia and Little, 1998; Soo, 2008). The *licence raj* was gradually, if only partially, dismantled, giving businesses more freedom (Aghion *et al.*, 2008). India attracted significant back office processing and information technology enabled services, currently worth about US$150 billion annually, heavily reliant on telecommunications (Sharma *et al.*, 2005; Kumar and Chakraborty, 2013; Patil and Wongsurawat, 2015). Large Indian IT firms were amongst those lobbying for the liberalisation of leased lines and international telecommunications.

British India had been created in stages by the East India Company, until taken over by the British Government from 1857 to 1947, then broken up, with independence granted to Burma, Ceylon, India and Pakistan, the last being separated in a bloody and violent partition based on a religious cult. The end of the colonial administration opened the way to politicisation of the bureaucracy, with the Congress Party making overtly political appointments to the Indian Administration Service as part of its seizing control of the machinery of government (Kenny, 2015). There followed a long history of petty corruption in the solicitation of bribes across all levels of Indian government and agencies, including in the telecommunications sector, for example, to speed up the installation of fixed lines or the payment of accounts (Sutherland, 2011a).

The anti-corruption system is exceedingly slow, with cases seemingly stalled or drawn out over years and decades, during which individuals continue in post. Prosecutions require approval of the prime minister or chief ministers in states[5], which is often withheld, with ministers largely exempt from investigation, even following changes in government. The two principal agencies are:

1. the Central Bureau of Investigation (CBI), a police agency responsible for anti-corruption investigations; and
2. the Central Vigilance Commission (CVC)[6], which monitors all vigilance or anti-corruption activity under the central government.

However, the CBI has many of its allotted posts unfilled, impairing its efficiency (CBI, 2010, 2014).

Allegations of corruption were made against Polayil Joseph Thomas, relating to the period from 1991 to 1993 when he was a civil servant in Kerala. Although the case was never closed, he was promoted several times, moving to the Union government in New Delhi, and rising to be Telecom Secretary, the senior official in the DoT. A committee of the Prime Minister, Home Affairs Minister and the Leader of the Opposition, recommended promoting him to be Chief Vigilance Commissioner, to lead the CVC, but without considering the Kerala charge sheet. Although the President accepted this advice, his decision was overturned by the Supreme Court, which declared the recommendation not to have complied with the CVC Act and quashed his appointment (*CPIL & another* v. *Union of India & another* [2011] Writ Petition (C) No. 348 of 2010 with Writ Petition (C) No. 355 of 2010. Supreme Court of India (3 March 2011)).

Even when cases are investigated, the judicial system is so deprived of resources and so overwhelmed with cases that prosecutions take many years, effectively denying justice. For example, the investigation of Sukh Ram, a former minister of telecommunications, began in 1996, though he was only convicted of corruption in 2009, for taking bribes on procurement contracts (Sutherland, 2011b)[7]. The case continues today on appeal, though given his advanced age and allegedly poor health, it seems unlikely to be resolved in his lifetime. Ram has spent only a few hours in prison, otherwise being on bail for more than two decades.

From 1968, the Indian parliament intermittently considered bills to create a national ombudsman (*Jan Lokpal*) who would investigate cases of government corruption (Tummala, 2002). In April 2011, Kisan Baburao “Anna” Hazare, an elderly social activist, began a hunger strike unto death, in imitation of M K Gandhi, demanding that the government strengthen its Lokpal Bill (The Economic Times, 2011; Sitapati, 2011). After four days, the government capitulated, agreeing that he nominate members of a joint committee to draft a new Bill (Lokpal Bill Consultation, 2011). India Against Corruption was an idealistic movement, taking a position of moral righteousness, outside politics. The government version (GoI, 2011) took a further two years to become the Lokpal and Lokayuktas Act, 2013, considered to have been watered down to protect politicians, including the Prime Minister, senior judges and MPs when conducting their parliamentary duties (The Hindu, 2011). Investigations continue to rely on the CBI and CVC, greatly undermining their effectiveness, as does the lack of legal protection for whistleblowers.

Under pressure over the 2G spectrum scam and corruption in the construction of venues for the 2010 Commonwealth Games, the Prime Minister announced that India would finally ratify the UN Convention Against Corruption (Mohan, 2011). In the absence of new legislation, this was merely a gesture.

The policy changes in telecommunications created opportunities for bribery and corruption in an extension of the well-established *licence raj*. Despite the obviously increased risks and the well-known inability of the authorities to control corruption, no special measures

were taken, made more dangerous by the weak and ineffective general anti-corruption system, combined with obscure interactions between government and the operators.

Liberalisation of telecommunications

From before independence, telecommunications had been provided by the government, latterly through three state-owned enterprises, each originally a monopoly (Table I). All were closely bound to DoT, which showed little interest in them becoming corporations, let alone facing competition or privatisation, positions reinforced by powerful trades unions.

Nonetheless, as part of economic liberalisation and in line with international developments, reforms were made (Table II). The *licence raj* meant the terms of business were decided by the DoT, creating opportunities for lobbying and corruption. There has been little legislation and only episodic and ineffective parliamentary oversight, the preferred methods being decisions by individual ministers, groups of ministers or high level committees. A series of

Table I Indian state-owned operators

Company	*Area of activity*	*Corporatisation*
Bharat Sanchar Nigam Ltd (BSNL)	Domestic, except Bombay and Delhi	2000
Mahanagar Telephone Nigam Ltd (MTNL)	Domestic, only Bombay and Delhi	1986
Videsh Sanchar Nigam Ltd[a] (VSNL)	International	1986

Note: [a]Originally the Overseas Communication Service, VSNL was sold in stages to the Tata Group

Table II Liberalisation of telecommunications in India (Desai, 2006)

Year	*Body*	*Event*
1986	GoI	Separation of posts and telecommunications. Creation of MTNL and VSNL Liberalisation of markets for customer premises equipment and private branch exchanges
1989	GoI	Creation of the Telecom Commission (senior inter-departmental group of civil servants) responsible for approval and implementation of DoT policies and budgets[a]
1991	GoI	Adoption of New Economic Policy
1991	GoI	End of licencing of telecommunications manufacturing
1991	GoI	Athreya Committee was intended to instigate reforms, but its report proved badly divided and consequently not implemented
1992	DoT	Licensing of two private mobile operators in each of four "metros"
1994	GoI	ICICI (1994) Report on a future regulator
1994	GoI	Adoption of the National Telecommunication Policy (NTP, 1994) (GoI, 1994)
1994	DoT	Metro mobile licencing cleared by Supreme Court
1995	DoT	Licensing of two private mobile operators in each of the non-metropolitan circles
1997	Parliament	Cable Television Network (Regulation) Act
1996	DoT	Licensing of one private fixed network operator in each circle
1997	Parliament	Telecom Regulatory Authority of India (TRAI) Act
1998	GoI	Appointment of the Group of Ministers on Telecommunications
1999	GoI	Adoption of the National Telecommunication Policy (NTP 1999) (GoI, 2003)
2000	Parliament	Ordinance creating the Telecom Disputes Settlement and Appellate Tribunal (TDSAT)
2000	GoI	Communication Convergence Bill (lapsed)
2003	GoI	Revision to NTP 1999 (GoI, 2003)
2004	GoI	Broadband Policy (GoI, 2004)
2012	GoI	National Telecom Policy to achieve 100% voice telephony availability (GoI, 2012)
2015	GoI	Adoption of Digital India policy to create a digitally empowered society and knowledge economy (GoI, 2015)

Note: [a]Comprising the Telecom Secretary, the secretaries of the Departments of Finance, Industrial Policy Promotion, Information Technology and the Planning Commission

union ministers oversaw the policies and their implementation. Ram was convicted on one charge of corruption and of the possession of disproportionate assets, the implied proceeds of bribery. Singh resigned because of charges of bribery relating to a previous ministerial post of which he was cleared on appeal (*P.V. Narasimha Rao* v. *State through CBI* [2002] 2002 CriLJ 2401, 97 (2002) DLT 452, 2002 (63) DRJ 331. Supreme Court of India (15 March 2002)). Maran resigned from a subsequent post because of allegations relating to his time at DoT. Raja resigned and was later remanded in jail on corruption charges, which are before a special court.

The Rao administration published a terse National Telecommunications Policy (NTP,1994), aspiring to make telephones available "on demand" (i.e. without a waiting list), to provide one fixed line in each village and to establish India as a major manufacturer and exporter, all by 1997 (GoI, 1994). At that time, India had one of the worst telephone systems in Asia, a bottleneck to both modernisation and economic growth. Mobile telephony, seen as a niche market for the elite or higher castes, was to be opened to private operators, whereas fixed (or basic) telecommunications was to be kept under tighter government control. There was not to be privatisation of BSNL and MTNL, but foreign investment was to supplement the state, to meet ambitious fixed line targets (Swaminathan, 1997).

India was divided into 22 circles, each of about 50 million people, grouped into metropolitan and three levels of descending commercial attractiveness (Table III). In 1992, the DoT issued two GSM licences in each of the four metropolitan areas to private operators by a "beauty contest", though implementation was delayed for two years by litigation (*Tata Cellular* v. *Union of India* [1994] 6 SCC 651. Supreme Court of India (26 July 1994)). Two GSM licences were auctioned in each of the non-metropolitan circles in 1995, followed by one fixed licence in each circle.

A consolidated case was heard by the Supreme Court, challenging the granting of licences to non-state companies and the validity of specific assignments. Claims that NTP'94 endangered national security and did not serve the national economic interest were dismissed, upholding the possibility of private operators (*Delhi Science Forum & others* v. *Union of India & another* [1996] 2 SCC 405. Supreme Court of India (19 February 1996)). However, the defeat of the Congress Party in the 1996 general election introduced first a short-lived BJP government and then a 15-party coalition, neither committed to liberalisation.

In November 1995, the minister had controversially limited firms to a maximum of four circles for fixed networks and rejected all bids for ten circles, considering the prices too low. However, the second round received bids for only five of the remaining 13 circles, while a third round received a single bid[8]. Only six operators eventually signed licence agreements[9]. The results for customers were extremely disappointing, with new operators serving only a small fraction of those served by the state-owned operators, for which the minister was responsible, showing spectacular growth (Table IV)[10].

The negotiations between the government and the winning bidders, to define the licence conditions and the rates for interconnection with BSNL and MTNL, overran the prescribed timetable. HFCL, which had won four licences, declined to renew bank guarantees that

Table III The licensing circles

Metros	*Delhi, Bombay, Calcutta and Madras*
A	Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Tamil Nadu
B	Haryana, Kerala, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh (East), Uttar Pradesh (West) and West Bengal
C	Assam, Bihar, Himachal Pradesh, Orissa and North East

Note: Some smaller states were grouped together (e.g. North East), while Uttar Pradesh was split in two

Table IV Subscribers to fixed and mobile services in India (DoT, 2010; COAI, 2011)

Service provider	*1996-1997*	*1997-1998*	*1998-1999*	*1999-2000*	*2000-2001*	*2001-2002*	*2002-2003*
BSNL	11,530,276	14,394,956	17,927,526	22,479,721	28,108,976	33,218,498	35,932,877
MTNL	3,012,324	3,406,740	3,653,913	4,031,624	4,327,158	4,629,709	4,690,080
Bharti Telenet	–	–	13,980	91,967	115,212	180,989	370,973
Hughes Ispat	–	–	6,070	22,110	69,599	160,672	233,397
Tata Teleservices	–	–	–	26,713	58,736	150,400	365,190
Reliance	–	–	–	–	109	140	958,534
STL	–	–	–	–	8,998	27,150	82,265
HFCL	–	–	–	–	13,441	64,926	111,647
Total	14,542,600	17,801,696	21,601,489	26,652,135	32,702,229	38,432,484	42,744,963
Alternative operators (%)	0.00	0.00	0.09	0.53	0.81	1.52	4.96
GSM operators	339,031	882,316	1,199,578	1,884,311	3,577,095	6,430,814	12,687,637

Note: Financial year runs from 1 April to 31 March

were to expire, which the government proceeded to claim, arguing HFCL had withdrawn, while it counter-argued that DoT had failed to issue its licences. The Delhi High Court agreed with HFCL, restraining DoT from invoking the bank guarantees (*HFCL Bezeq Telecom Ltd.* v. *Union of India* [1997] Delhi High Court (19 September 1997)).

The DoT as policymaker, licensing and regulating authority, as well as the largest operator, had severe conflicts of interest. There were repeated announcements that an independent regulatory authority would be created, though it was only in 1997 that the Telecom Regulatory Authority of India (TRAI) Act was passed. This was amended in 2000 by an ordinance, which made clear that TRAI was limited to price controls, where it made very detailed regulations, but on major issues could only make recommendations to DoT, on its own initiative or prompted by DoT. These then passed to the civil servants of the Telecom Commission, from there to the minister and groups of ministers, these processes were susceptible to lobbying by operators for which there was no transparency.

The 1997 Act allowed appeals against TRAI to be heard by the Delhi High Court, which, unsurprisingly, proved very slow. The 2000 ordinance created the dedicated Telecom Disputes Settlement and Appellate Tribunal (TDSAT), with further appeals going directly to the Supreme Court, accelerating litigation and creating greater regulatory certainty and transparency. The Supreme Court instructed TDSAT not to limit itself to judicial review, but to consider the merits of cases (*COAI & others* v. *Union of India & others* [2002] Appeal (civil) 3123 of 2002. Supreme Court of India (17 December 2002)).

One of the first commercial operators was Hutchison Max Telecom Ltd, a joint venture of Hutchison Whampoa (Hong Kong) and the Max Group (India), which was licensed to operate in Bombay (1992), Delhi (1999), Calcutta (2000), and Gujarat (2000). Hutchison gradually acquired mobile interests in all the other circles to create a national service, while its ownership changed several times. In 2007, Hutchison Whampoa agreed to sell to the Vodafone Group its 67 per cent of what was then Hutchison Essar Limited for US$11.1 billion (Reddy *et al.*, 2014)[11]. Vodafone bought a further 7 and 26 per cent in 2011 and 2014, respectively, making it wholly owned. The Indian Income Tax Department claimed some US$2.5 billion from Vodafone in withholding tax on the 2007 transaction, alleging it involved the purchase of an Indian Company. Vodafone asserted that its Dutch subsidiary had bought a controlling interest in a Cayman Islands holding company of Hutchison Essar. The Supreme Court accepted it did not have jurisdiction and that the complex and long-standing corporate structures of both firms had not been created merely to avoid tax (*Vodafone International Holdings BV* v. *Union of India & another* [2012] Civil Appeal No. 733 of 2012. Supreme Court of India (20 January 2012)). Although pledging a non-adversarial tax regime, the government has used retrospective legislation to try again to impose a tax on Vodafone for the transaction (Ramakrishnan, 2016).

While the work of TRAI and TDSAT are conducted in public and are relatively transparent, the same cannot be said of DoT, which retains it serious conflicts of interest as licensing authority and owner of major operators, in addition to unreported lobbying of officials and ministers by private operators and their very powerful owners (Table V). More than half the market is held by four Indian families, with much of the rest held by the government, with Vodafone the only major foreign player, while the CR4 value is 75 per cent, combining BSNL and MTNL, while the HHI is about 1,900[12]. To date, there is neither a register of interests nor of lobbyists, not even of the donations to political parties made by operators or billionaires to parties and politicians.

Unified licensing

The new National Telecommunications Policy (NTP,1999) was prepared by a joint industry and government group, then adopted by Cabinet:

> [. . .] to facilitate India's vision of becoming an IT superpower and develop a world class telecom infrastructure (GoI, 1999).

The state-owned operators were to be granted GSM spectrum in all circles, bringing them into competition with commercial operators, with all the advantages of their fixed network assets, but without paying licence fees[13].

The DoT proposed and TRAI (2000) accepted the further opening of mobile markets, with a fourth GSM operator in each circle, despite the shortage of spectrum, and the associated poor quality of service, especially in metropolitan areas. These licences were auctioned in 2001, setting prices to be used for many years. Then, between 2004 and 2007, 73 new unified access service licences (UASLs), were awarded on a first-come first-served (FCFS) basis, each with initial GSM spectrum assignments at 2001 prices.

A single mention of wireless local loops (WLL) in NTP 1999 was used to trigger major changes, with fixed operators using a limited form of cellular technology (Jain and Sanghi, 2002)[14]. DoT diverted from its usual "meandering" pace to push through first limited mobility (LM or WLL-LM) and then full CDMA cellular services, followed by GSM overlay networks (Mukherji, 2009). In October 2000, DoT asked TRAI to consult on LM (TRAI, 2001a), which found that full and LM were different markets and that a "level playing field" – perhaps two separate fields – could be maintained, though without a formal antitrust or competition analysis. Within days DoT adopted new guidelines, confirmed by a group of ministers (GoM), then modified the fixed licences to allow provision of an LM service within a Short Distance Charging Area (SDCA), typically 80 to 200 km^2. Importantly, each of the four metropolitan circles was largely contained within a single SDCA. The *Lok Sabha* Standing Committee on Information Technology (2001) also supported LM.

Table V Revenue of the major service providers 2013/2014 (TRAI, 2014)

Service provider	*Owner*	*Revenues (INR bn)*	*Market share (%)*
Bharti	Sunil Mittal	5,490.8	26.1
Idea	Aditya Birla Group	2,617.9	12.5
Reliance	Ambani brothers	1,618.4	7.7
Tata	Ratan Tata	1,330.2	6.3
Aircel[b]	Maxis Communications (Malaysia)	1,054.7	5.0
Vodafone[a]	Vodafone Group plc (United Kingdom)	4,586.1	21.8
Total private	–	17,999.1	85.6
BSNL	GoI	2,799.6	13.3
MTNL	GoI	378.7	1.8
Total state-owned	–	3,028.2	14.4
Total	–	21,027.3	100.0

Notes: [a]Formerly partially owned by the Ruia brothers through Essar; [b]formerly C. Sivasankaran

TRAI (2001b) presented what amounted to a business plan for the LM operators, requiring them to offer services in urban, semi-urban and rural SDCAs in equal numbers in each phase of their roll-out obligations. Charges were fixed at INR 1.20 per 180 s for local calls, with higher rates for long distance and international calls, while monthly rentals were to be in the range INR 450-550. A fully refundable deposit of INR 10,000 could be charged on handsets or, if rented, a cap of INR 80 per month applied.

The Cellular Operators Association of India (COAI) argued LM would encroach on its market, whereas fixed operators argued consumers should benefit from "technological advances". Moreover, it alleged that TRAI was biased in favour of LM, which would prove a backdoor for additional mobile operators. COAI unsuccessfully appealed the TRAI recommendation in favour of LM, later adding the DoT guidelines and the revised fixed licences. On further appeal, the Supreme Court set aside the decision, sending it back to TDSAT for reconsideration (*COAI & others* v. *Union of India & others* [2002] Appeal (civil) 3123 of 2002. Supreme Court of India (17 December 2002)). However, the licence changes had not been suspended during litigation, allowing the fixed operators to acquire customers (Table VI).

In August 2003, TDSAT issued its new decision, but split 2:1 (*COAI* v. *Union of India* [2003a] Petition No 1 of 2001 (Majority opinion). Telecom Disputes Settlement & Appellate Tribunal (8 August 2003)). The majority favoured LM, seeing it as a technological advance and that the distinction from GSM would be maintained. In a minority opinion, the Chairman found against LM, observing that NTP 1999 did not permit the provision of spectrum without a fee and expressing concern that one business or a group of businesses would benefit unduly (*COAI* v. *Union of India* [2003b] Petition No 1 of 2001 (Dissenting opinion of D.P. Wadhwa). Telecom Disputes Settlement & Appellate Tribunal (8 August 2003)). He also noted the very poor performance of the fixed operators in delivering village public telephones, an important consideration, as rural coverage was a principal justification for LM.

COAI again appealed to the Supreme Court but soon withdrew its case, because of a deal on licence changes, under which its member were to move from licence fees to a euphemistic "revenue share", really a substantial sales tax on customers. The DoT asked TRAI for advice on "unified licensing", which now found that LM had increased competition with GSM (TRAI, 2003). Its recommendation was approved by DoT, by a GoM and then Cabinet, creating new technology neutral UASLs, requiring an amendment to the NTP (GoI, 2003). LM operators were to pay the 2001 GSM spectrum fees (TRAI, 2001a).

DoT decided to allow LM operators to apply for GSM spectrum as part of the licensing scheme, again based on a TRAI recommendation, though GSM operators were unable to obtain CDMA spectrum. They could build overlay networks on their existing infrastructure, giving them rapid and cheap deployment.

Reliance Infocomm was to pay a penalty of INR 4.85 billion. In December 2002, it had launched LM services across 17 circles, registering customers in several SDCAs and interconnecting them into a near national service, ignoring a DoT notice to desist (Indian Express, 2003). Reliance had used its political influence to convert its fixed licence, with

Table VI Growth of cellular and fixed lines 2002 to 2004 (millions)[a]

	2002				*2003*				*2004*
Technology	*Q1*	*Q2*	*Q3*	*Q4*	*Q1*	*Q2*	*Q3*	*Q4*	*Q1*
Fixed lines	38.33	–	39.10	39.86	41.48	41.38	41.74	42.09	42.84
WLL-LM	0.10	–	0.19	0.24	0.31	2.17	4.73	6.45	7.54
GSM	6.44	–	8.53	10.53	12.69	15.15	18.3	21.99	26.15

Notes: [a]Quarterly issues of TRAI's *The Indian Telecom Services Performance Indicators*; available at: www.trai.gov.in/Reports_list_year.asp?offset=40

limited prospects, into mobile services (Varghese, 2005), which grew to 100 million connections by 2010 (see Figure 4), to which it added GSM services.

By international standards, the processes followed (i.e. the toing and froing between two layers each of officials and politicians) and the outcomes achieved were unusual. A relatively careful, if overly cautious, approach to the staged introduction of competition in mobile telephony was cast aside, based on an almost passing reference to WLL in the NTP1999. The claim that LM was different from full mobility was disingenuous, as its immediate effect on competition showed, with many customers seeing it to be in the same market. The claim of technological advances was spurious, as WLL and LM were modifications of a cellular technology. Nonetheless, it provided sufficient smoke, while the consultations and appeals provided the mirrors, to achieve a significant policy change, without addressing the spectrum shortage, while greatly benefitting Reliance. The GSM operators were pacified by a new scheme turning their licence fees into a consumer tax that could be more readily passed on to customers.

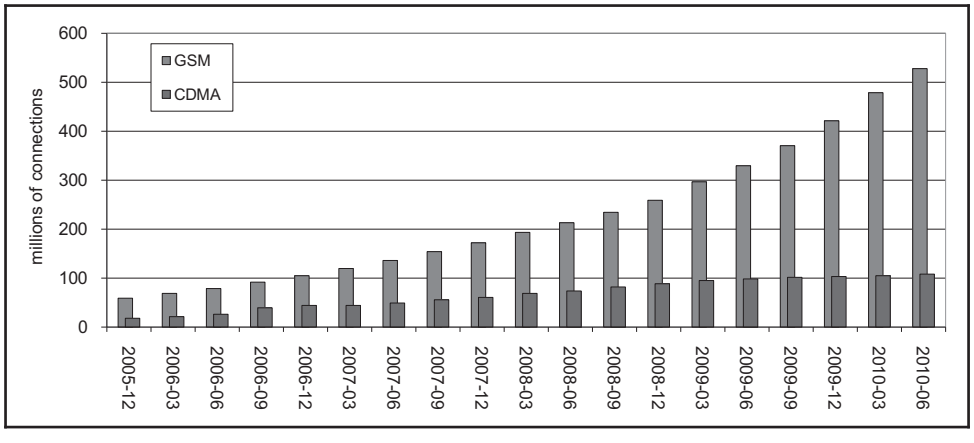
The 2G spectrum scam

Following the 2004 general election, a coalition government was formed by Congress and the *Dravida Munnetra Kazhagam* (DMK) party. Guided by Sonia Gandhi, Manmohan Singh as Prime Minister (Baru, 2014, p. 265) initially appointed Dayanidhi Maran as ICT Minister, moved in May 2007 to textiles, to be replaced by Andimuthu Raja, both from DMK[15]. Despite the change of government, there was no change in policy, with Raja persisting with FCFS to assign spectrum, rather than an auction or beauty contest. Acting on the advice of TRAI (2007a, 2007b), DoT removed the limit on the number of operators in each circle, despite the spectrum shortage, ignoring poor quality, low revenues and a global pattern of consolidation.

Raja announced that UASL applications would close on 1 October 2007. The following January the deadline was announced to have been 25 September 2007, causing 343 applications, received between 26 September and 1 October, not to be considered. The DoT maintained these were pending, though with little, if any, prospect of available spectrum.

All applicants, up to 25 September 2007, were invited to receive their Letters of Intent (LoIs) and, where spectrum was available, to pay their fees, at 2001 prices. Nominally, this was FCFS, but not from the date of application, but their registration in January 2008, called at absurdly short notice and requiring immediate proof of finance. The distribution of the LoIs is alleged to have been a mêlée contrived for and pre-notified to firms favoured by Raja. With its LoI, a firm could apply, under FCFS, for spectrum to the Wireless Planning and

Figure 4 The comparative successes of GSM and CDMA technologies in India (TRAI, 2009a)



Coordination wing of the Ministry of Communications, from which existing operators were seeking additional spectrum to improve their services.

One retrospectively excluded applicant petitioned the Delhi High Court to quash the changed deadline (*S. Tel Ltd* v. *Union of India* [2009] Writ Petition (Civil) No. 363/2008. Delhi High Court (1 July 2009))[16]. S Tel had applied for licences in 16 circles, between the press release and the October deadline. No comment had been made by DoT, with the applications apparently in order; moreover, it received six LoIs for applications made in July 2007[17]. The High Court complained that the government had "failed to answer the crucial question as to what was the rationale and basis for fixing 25.9.2007 as the cut-off date" and ordered DoT to consider the applications. DoT appealed to the Supreme Court, but during the hearings S Tel withdrew its licence applications, claiming commercial conditions had deteriorated. Although, the case then ceased, to consider applications received between 25 September and 1 October 2007 stood, so that all such applications ought to have been considered. The matter returned to the Supreme Court, when it was alleged that S Tel had been pressured into dropping its case. The DoT had announced it would cancel the six licences awarded to S Tel because of "security" concerns, only to recant when the appeal was dropped. The CBI was directed by the Supreme Court to investigate why S Tel withdrew (The Economic Times, 2011), though with very little progress.

The Comptroller and Auditor General (CAG, 2010) opened an inquiry into what had become known as the 2G spectrum scam, having received "innumerable" complaints from the public and having noted comments in parliament and in the press (Rai, 2014). He found that Maran had kept pricing out of the terms of reference of the GoM considering spectrum policy, focusing on clearing other users from the frequencies. In 2007, Raja rejected the Finance Ministry proposal that a GoM evaluate spectrum pricing. The Prime Minister, an economist, noting the unprecedented number of applications, had urged the use of auctions, which Raja also rejected, claiming that a change from FCFS would be "unfair, discriminatory, arbitrary and capricious". He maintained it was the established method, and that a "level playing field" required the use of the 2001 fees, despite dramatic changes in the market. The CAG found Raja had deviated significantly from FCFS, so that:

> The entire process followed lacked transparency and objectivity and has eroded the credibility of DoT (CAG, 2010, p. vii).

Moreover, the results were deeply flawed as:

> Eighty five out of the 122 licenses issued in 2008 were found to be issued to Companies which did not satisfy the basic eligibility conditions set by the DoT and had suppressed facts, disclosed incomplete information and submitted fictitious documents for getting UAS licenses and thereby access to spectrum (CAG, 2010, p. vii).

Substantial and controlling stakes in the firms holding were sold to Indian and foreign operators (Table VII), before being cancelled.

The CAG used different methods to estimate the value of the licences finding the presumptive loss to the Indian exchequer was in the range INR 577 to 1,766 billion. He concluded:

> The entire process of allocation of UAS licences lacked transparency and was undertaken in an arbitrary, unfair and inequitable manner. [. . .] the Department of Telecommunications, in 2008, proceeded to issue 122 new licences for 2G spectrum at 2001 prices, by flouting every cannon of financial propriety, rules and procedures. The DoT did not follow its own guidelines on eligibility conditions, arbitrarily changed the cut off date for receipt of applications post facto and altered the conditions of the FCFS procedure at crucial junctures without valid and cogent reasons, which gave unfair advantage to certain companies over others. (CAG, 2010)

Table VII Licences cancelled by the supreme court

Eventual operator	*Original recipient*	*Licences*	*Deemed ineligible by CAG*	*Indicted by CBI*
Etisalat (UAE)	Allianz Infratech Pvt Ltd	2	✓	✓
	Swan Telecom Pvt Ltd	13	✓	✓
Idea Cellular Ltd (India)	Idea Cellular Ltd	9	–	–
	Spice Communications Ltd	4	✓	–
Loop Telecom Private Ltd (India)	Loop Telecom Private Ltd	21	✓	✓
S Tel Ltd (India) in joint venture with Batelco (Bahrain)	S Tel Ltd	6	✓	–
Sistema Shyam (Russia)	Shyam Telelink Ltd	21	–	–
Tata Docomo (Indian and Japanese joint venture)	Tata Teleservices Ltd	3	✓	✓
Telenor India (Norway)	Adonis Projects Pvt Ltd	6	✓	✓
	Aska Projects Ltd	3	✓	✓
	Azare Properties Ltd	1	✓	✓
	Hudson Properties Ltd	1	✓	✓
	Nahan Properties Pvt Ltd	6	✓	✓
	Unitech Builders and Estates Pvt Ltd	1	✓	✓
	Unitech Infrastructures Pvt Ltd	1	✓	✓
	Volga Properties Pvt Ltd	3	✓	✓
Videocon (India)	Datacom Solutions Pvt Ltd	21	✓	–

In July 2011, Maran resigned from the Cabinet, following accusations by the CBI relating to his tenure as the ICT Minister (Times of India, 2011a, 2011b, 2011c). He was alleged to have forced Aircel to sell its interest in an operator to Maxis Communications, a Malaysian operator. This case has been making slow progress.

A one-man committee (OMC) of inquiry by a retired Supreme Court judge found the licensing procedure inconsistent with established policies, that the failure to issue guidelines for the new procedure was unfair and lacked transparency, and that bringing forward the closing date breached the principles of objectivity, fairness and transparency (Patil, 2011). Removal of the cap on licences in a circle had not been presented to the Telecom Commission that linked DoT to other ministries. The failure to revise licence fees had been contrary to policy and without the consent of the Finance Ministry, while the Ministry of Law and Justice had not given its consent to the draft licences. FCFS, by potentially excluding the most eligible applicants, was found to be "neither contemplated nor was it consistent with the NTP 1999, recommendations of TRAI and the Cabinet decision". The assignment of additional spectrum, once a designated minimum number of subscribers had been achieved by an operator, was neither consistent with policies nor had not it been considered by the Telecom Commission. The use of the 2001 fees was against the recommendation of TRAI and without the mandatory consent of the Finance Ministry. The published conditions for licensing had been broken in ways that could have resulted in arbitrary and selective decisions.

The CVC had also received complaints and began its own inquiry in January 2009, sending its report to the CBI for investigation. In October 2009, the CBI registered a First Information Report (FIR) against "unknown officials" of DoT and "unknown private persons/companies and others" for corruption offences, with a team of 15 officers raiding the DoT to seize papers (Times of India, 2009)[18]. It investigated the firms receiving the licences, the subsequent changes in ownership and the associated flows of money.

The BJP, then in opposition, all but stopped parliamentary business during November and December 2010, in efforts to obtain a parliamentary inquiry, only conceded by the Prime Minister the following February (Lok Sabha, 2011a). A Joint Parliamentary Committee (JPC) was appointed to examine licensing, including irregularities, and to make recommendations (Lok Sabha, 2011b). The JPC split along party lines and never adopted its draft report, which had tried to clear Singh, and thus Sonia Gandhi, blaming Raja for

having misled him (JPC, 2013). Separately, hearings into licensing were conducted by the Public Accounts Committee (PAC), which questioned the CAG, DoT and operators (Times of India, 2011). It criticised the Prime Minister, Finance Minister and Raja, but the PAC also split along party lines (Times of India, 2011), so that the report was not presented to the *Lok Sabha*, and even the minutes of evidence went unpublished, though much had been reported in the press[19].

Questions arose about which, if any, of the licences was valid and ought to be cancelled, because firms were ineligible or had failed to comply with deployment obligations. In 2010, DoT rejected recommendations from TRAI that many should be cancelled, asking for revised recommendations to cancel fewer (DoT, 2010). TRAI responded with an analysis of 145 licences, many not having been used, proposing that half be cancelled (TRAI, 2011)[20]. Before this was resolved, the Supreme Court intervened.

Swamy, having written repeatedly to the Prime Minister asking him to approve an investigation, unsuccessfully petitioned the High Court, asking that it order a CBI investigation[21]. However, he persuaded a special CBI court to rule that the complaint was "maintainable" (Hindustan Times, 2011). Swamy called for the cancellation of all the licences, the return of the money received and his appointment as the prosecutor of the minister (Subramanian Swamy v. Manmohan Singh & another [2010] SLP(C) No. 27535 of 2010. Supreme Court of India (31 January 2012)) (*Subramanian Swamy* v. *Union of India & others* [2011] Writ Petition (Civil) No. 10 of 2011. Supreme Court of India (2 February 2012)). Swamy (2011) produced many official documents obtained under the Right To Information Act.

The CPIL also sought to have Raja investigated, a petition initially rejected, but successfully appealed to the Supreme Court, which overturned the "serious error" of the Delhi High Court (*CPIL* v. *Union of India & others* [2010] STPL(Web) 1067 SC, Appeal Civil No. 10660 of 2010. Supreme Court of India (16 December 2010)) (*CPIL & others* v. *Union of India & others* [2012] Writ Petition (Civil) No. 423 of 2010. (Arising out of Special Leave Petition (SLP) (C) No. 24873 of 2010). Supreme Court of India (2 February 2012)). In March 2011, the Supreme Court directed that a special CBI court, subordinate to the Delhi High Court, be established to deal with cases arising from the 2G spectrum scam.

On 2 February 2012, the Supreme Court cancelled 122 telecom licenses granted in 2008 and directed that the associated spectrum be reclaimed and auctioned.

It has been argued that the effects of the scam were limited to the loss of revenues to government and that any bribes paid served as a sort of auction that ultimately assigned the licences to appropriate parties (Sukhtankar, 2015). This ignores the instability it caused in the government, as it struggled with corruption, and the reputational damage to the Prime Minister, his administration and India, where it reinforced the exclusion from the market of firms subject to effective anti-corruption laws. Some licences were never used, indicating the recipients were not serious players. The assignment of many licences being unlawful – even DoT conceded some ought to be cancelled – no reputable operator ought to have acquired shares in off-the-shelf companies holding such licences. Due diligence ought to have shown that the licences could well be cancelled, though the firms might have been advised that it would be unlikely ever to come to court. By examining only the period up to their cancellation, the effects of the disruption to the market through the ending of services were ignored. Consequently, the positive gloss on the illegal allocations disappears. Moreover, DoT could have auctioned the spectrum to existing operators, to improve the quality of service.

On 2 and 24 April 2010, the CBI charged, under the Indian Penal Code and the Prevention of Corruption Act, Andimuthu Raja, with the former Telecom Secretary and the Private Secretary to the Minister, plus a large number of directors of companies that had received

licences. Raja was, very unusually, remanded in gaol, but released after fifteen months, before completion of the trial.

In December 2012, the CBI filed charges against Hutchison Max (P) Ltd and Sterling Cellular Ltd, both now Vodafone India, and Bharti Cellular Ltd, alleging that the assignment of additional spectrum in 2002 had incurred a loss of INR 8,464 million to the government. Bharti and Vodafone unsuccessfully applied to have the charges separated from the 2G scam cases (Express News Service, 2015). However, the CBI Special Court dismissed the charges (CFO India, 2015), ordering the CBI to investigate how they had been brought, as:

> It's a false and fabricated charge sheet and there is no incriminating evidence against any of the accused so they are discharged. The charge sheet is full of distorted facts and an attempt has been made to mislead the court.

The court also cleared Shyamal Ghosh, who had been Telecom Secretary at the time.

In one of the more bizarre twists in the story, Antrix, the commercial division of the Indian Space Research Organisation has been ordered to pay US$672 million in damages to its commercial partner for having complied with a government order to terminate a contract (*Antrix Corp. Ltd* v. *Devas Multimedia*, 2013). It was alleged that the contract entailed the sale of spectrum in the S-band at below market value with officials engaging in corrupt dealing, matters presently being investigated by the CBI (2015). It is counter-argued that the corruption was merely an excuse for breaking the contract, which could have been terminated easily, as the commercial partner had been untruthful. Despite the usual variety of inquiries, it seems unlikely the truth will ever emerge.

The Supreme Court, more interventionist than many would like, took control by cancelling 122 licences and requiring the Government of India to auction the spectrum and to use auctions in future (Article 143(1) of the Constitution of India, 2012), which blocks some forms of corruption. The subsequent auctions were at high prices, apparently caused by the spectrum caps imposed by DoT, blocking established operators and encouraging additional operators, presumably stockpiling spectrum ahead of an eventual consolidation, when resale might prove lucrative. The principle is now to be applied to television white spaces.

Conclusion

Naively, it might be argued that a case study on telecommunication licensing in India is premature, that the various trials and appeals ought to be allowed to reach their conclusion, yet those processes will take years, some might never end, and other cases will surely be added[22]. Denial of justice through delay characterises the Indian legal system, a combination of sloth and a culture of impunity. Investigations into corruption continue to require approval, which if granted, result in prosecutions at a glacial pace, exemplified by the two decades of the Sukh Ram case, with the Raja case moving in a similar direction. Despite the campaign of Anna Hazare, there has been little progress in strengthening institutions to fight corruption, which is unsurprising given the criminal presence in both government and parliament, and the continuing requirement for money in politics.

The idea of India as a democracy is more mythological than real. Its parliament is ineffective and incapable of holding government ministers to account, except in brief bursts of catharsis and crisis (PTI, 2016). Admittedly, there is an appearance of accountability, through the work of the CAG, CBI, CVC, JPC, PAC and OMCs, but it is mostly for show, failing to put individuals behind bars, or even to provide complete analyses. For all the bureaucratic detail of the reports, they are strangely silent on the lobbying by billionaires and operators, which work extensively both individually and through their trade associations. Detailed records were discovered of the complex decision-making, including the many deviations from and infractions of policies and rules. However, there were only

fleeting glimpses of the lobbying, whether staff from operators briefing civil servants or billionaires chatting with prime ministers [e.g. Tata complaining to Singh about Maran (Baru, 2014, p. 83)], without records of campaign contributions to politicians or their parties. The absence of a lobbying paper trail is inexcusable, indefensible and leaves an enormous gap in our understanding, especially given the market power of a few Indian billionaires.

The adaptation of global best practice for governance of the telecommunications market in India failed to consider its weak institutional endowments. Liberalisation was in the hands of successive ministers, replicating the familiar *licence raj*, which politicians and industrialists exploited for commercial and, sometimes, corrupt ends. The central mistake was to leave the licensing powers with the minister, based on the 1885 Act, prepared by the eighth Viceroy of India, the Marquess of Dufferin. Had these been transferred to the regulatory authority, then the lobbying could have been made more transparent and the corruption might have been contained, through transparency and appeals. Alternatively, had the Chinese model of three competing state-owned operators been adopted, without any commercial presence, there might have been significantly better results.

While TRAI sits in plain sight it is less important than it might appear. Its recommendations, often instigated by DoT, pass to the Telecom Commission and from there, perhaps amended, they might go to the minister and then to a GoM. Issues and problems passed up and down between these four levels, all subject to lobbying out of public and parliamentary sight, allowing special pleading, issues to be avoided or decisions to be finessed. One omission was any sense of a national strategy, of the direction of telecommunications policy being for economic growth or social advancement. The other ministries that ought to be concerned with such matters were absent from the processes, with few roles for cabinet as coordinator of policies or for oversight by parliament.

India has chosen a somewhat exceptional path. Telecommunications is not a political issue, but one negotiated between ministers and operators, without the practice of good governance. The consolidation that has been a global force for, at least, a decade has been resisted by government. Prices for consumers were forced to very low levels, despite consumer taxes, causing poor quality of service and experience. India sits outside the systems of network governance that might have helped to improve its performance.

There is an almost obsessive use of the metaphor of the level playing field, perhaps intended to draw attention away from the changes being made to the rules of the game, which, at intervals, have been rewritten or reinterpreted to favour some operator or other. Whereas, there have been neither competition analyses nor definitions of markets. The conflicts of interest of the DoT as licensing authority and operator have been systematically ignored, indeed rarely mentioned. An obvious omission is that neither TRAI nor DoT used impact assessments to quantify the available options in terms of benefits and losses for various parties. Instead, they prefer the rhetoric of the level playing field.

Swaminathan (1997) described the NTP 1994 as exemplifying: "[. . .] an attempt at systemic reform that was so haphazardly conceived and implemented that it should not be replicated elsewhere in the developing world". What followed must be similarly condemned. Although the government can modify its telecommunications policy, it is incapable of formulating and revising appropriate and effective policies, in particular it lacks parliamentary oversight. Issues are passed to and fro between TRAI, the Telecom Commission (civil servants), individual ministers, groups of ministers and the Union Cabinet, until it became unclear who had taken or avoided a decision, and what any policy

might mean. It created endless opportunities for operators to lobby government to seek clarifications and propose changes.

The full scope of the 2G spectrum scam and the extent to which Raja personally profited may emerge in court, though it will be endlessly appealed. It cost the Indian exchequer a disputed number of billions of rupees in lost revenues, the delay in deployment of the spectrum and the associated tax revenues, plus the reputational damage of the scam and of the failure to clean up the mess. Firms subject to effective corruption laws, such as the US Foreign Corrupt Practice Act (FCPA), must think extremely carefully before entering the Indian telecommunications market. The revocation of some of the licences passed back and forth between DoT and TRAI, until the Supreme Court cancelled them all. This was an outcome operators must have considered in their due diligence, given they were buying second-hand licences from some very odd firms, many ineligible to receive licences.

A considerable number of areas of further research are opened up. India appears to have contributed the concept of universal licences to global best practice, which, given its origins in special pleading by one operator, requires further investigation. An evaluation of TDSAT seems overdue, as one of the few apparent successes among Indian institutions. The shortage of spectrum appears attributable to the military, but no explanation is available concerning the use, if any, being made, and why it cannot be freed, as it has in China and the USA. Given the continued presence of state-owned operators, examination of their performance and the distortions they cause on decision-making and on markets would be very useful. The movement of officials between DoT, BSNL, MTNL, TRAI and other institutions should be mapped and analysed. A study of corporate political activity in Indian telecommunications is essential; its scale, effectiveness and the boundaries to corrupt practices. The substantial volume of court judgements is a resource that has not yet been fully researched. An analysis of the business telecommunications market would be very interesting.

Notes

1. TRAI (2015) reported rural and urban teledensities of 48 and 149, respectively, while DOT estimated nearly 10 per cent of Indian villages had no mobile coverage as of March 2015.
2. China Mobile alone reported 250 million 4G customers in late 2015.
3. See s.4 of the Indian Telegraph Act of 1885.
4. The complaints were aided by the leak of wiretaps of telephone conversations of Nira Radia, a leading lobbyist, made for the Income Tax Department, some of which related to the 2G scam (DNA, 2010).
5. See s.19 of the Prevention of Corruption Act.
6. CVC Act, No. 45 of 2003.
7. The conviction was upheld in the Delhi High Court in *Runu Ghosh* v. *CBI* (21 December 2011). Ram surrendered himself to the lower court, but was almost immediately given bail by the Supreme Court, where his appeal has yet to be heard.
8. Remarkably, the bids for the fixed networks were worth six times those of the mobile networks.
9. These were in Andhra Pradesh, Gujarat, Madhya Pradesh, Punjab, Rajasthan and Maharashtra.
10. The CAG (2000) found that calls had not been billed from some exchanges for six years.
11. By means of a press note of 14 December 2005, the government had raised the ceiling for FDI to 74 per cent.
12. The four-firm concentration ratio measures the total market share of the four largest firms in an industry.
13. Nominally, they paid the fees, but GoI reimbursed them.
14. WLL is neither expanded not explained in the NTP 1999.

15. Unlike previous administrations no minister of state was appointed.
16. A joint venture of Siva Group and Batelco.
17. These were later amongst those cancelled by the Supreme Court.
18. FIR No. RC-DAI-2009-A-0045, 21 October 2009.
19. *Outlook Magazine* posted the final draft report and recommendations. Available at: www.scribd.com/OutlookMagazine
20. To reinforce its position, TRAI had obtained supporting opinions from two unnamed former judges of the Supreme Court.
21. Dismissed by Delhi High Court on 18 August 2010. Justices Deepak Mishra and Manmohan.
22. The dispute over the Reliance Jio move from ISP to 4G service provider.

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