Multistakeholder Governance in Spectrum Management: The case of Telecom Regulatory Authority of India

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Abstract

This case study reviews multistakeholder governance in the field of spectrum management in India from the lens of the Advocacy Coalition Framework. The study focuses on the multistakeholder processes adopted by the Telecom Regulatory Authority of India (TRAI) in developing non-binding policy recommendations for the consideration of the Central Government. Since any multistakeholder process is inherently complex due to the multiplicity of actors involved, the present study uses advocacy coalitions, operationalized by grouping actors on the basis of common beliefs as the appropriate unit of analysis. In this case study, we perform a content analysis of 144 testimonies submitted by various stakeholders over a period of 8 years in response to public consultations by the telecommunications regulator.

The resulting analysis finds strong evidence for existence of advocacy coalitions and a high degree of conflict on contentious policy issues between these coalitions. We use these advocacy coalitions to explore the role of collective action in a multistakeholder process. We further review how such coalitions use different instruments and resources to influence and dominate a multistakeholder process. We further evaluate the factors that affect the perceived legitimacy of a multistakeholder process followed by TRAI.

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I. Context/Introduction

This case study focuses on the multistakeholder process adopted by the Telecom Regulatory Authority of India (TRAI) in developing non-binding policy recommendations for the Government of India in the area of spectrum policy. The institutional arrangement of TRAI, and the processes that it follows, constitute a unique variant of multistakeholder governance unlike that in any other jurisdiction and any other policy domain. We use this opportunity to describe the process in detail and highlight its strengths, weaknesses and areas for improvement.

Since multistakeholder processes are inherently complex due to the multiplicity of actors involved, we adopt a theoretical lens to view the structure and define constructs. Specifically, we adopt Sabatier's (1988) Advocacy Coalition Framework, a theory that provides structure to the policy process by grouping actors in a policy subsystem on the basis of common core beliefs. We use these advocacy coalitions to explore the behavior of various stakeholders over a period of eight years from 2008 to 2015.

While TRAI deals with a wide range of policy issues in the area of telecommunications policy, we specifically focus on the issues concerning spectrum management in this case study. Spectrum management refers to the policy issues arising from the use and allocation of spectrum for provision of wireless telecommunications services. Spectrum management includes policy issues such as spectrum allocation, valuation, harmonization, trading, sharing, liberalization, re-farming etc.

The case study is structured as follows. First, we briefly describe the multistakeholder process adopted by TRAI in the area of spectrum policy. Next, we provide our analysis of the process and evaluate the perceived legitimacy of this multistakeholder process. Next, we analyze the process from the lens of the Advocacy Coalition Framework. Finally, we provide a few recommendations and suggestions for improving the current process and share our learnings for the benefit of other jurisdictions and policy domains.

II. Brief Overview
A. Formation and Functions of TRAI

India liberalized the telecommunications sector with the National Telecom Policy of 1994, which opened the sector up to private participation. Prior to 1994, the state was the sole provider of telecommunications services. After the introduction of private players, the state played the role of both incumbent telecommunications service provider and regulator of private competition, creating a conflict of interest. Recognizing the conflict in the dual roles performed by the state, the apex court in India, pursuant to litigation by the private players, stressed a need for an independent regulator.[1]

Subsequently, the Telecom Regulatory Authority of India (TRAI) was established by the parliament in 1997 through the Telecom Regulatory Authority of India Act of 1997. In 1999, amidst a financial crisis amongst the private players in the telecommunications

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[1] *Delhi Science Forum* vs *Union of India,* AIR 1996 SC 1356

sector, the government further liberalized the sector to support and promote the private industry by way of the New Telecom Policy of 1999. In 2000, an amendment to the TRAI Act was passed to account for change in policy and to address ongoing litigation surrounding the role and scope of TRAI's powers.

As a result of the 2000 amendment, TRAI was divided into two entities. Its adjudication powers were given to a new entity known as the Telecom Disputes Settlement and Appellate Tribunal (TDSAT). This new entity focused on disputes between telecom service providers, and disputes between the Central Government and telecom service providers.

The post-amendment TRAI had two types of functions: regulatory and recommendatory. The TRAI Act clearly demarcates the subjects for both functions. In its regulatory capacity, the TRAI is required to ensure that all telecommunications service providers comply with the terms and conditions of license agreements, ensure revenue sharing, and maintain interconnection between telecom service providers, etc.

In its recommendatory role, the TRAI performs as a technical body that makes non-binding policy recommendations to the Government. This recommendatory power of the regulator extends over a number of issues, including policy governing efficient management of the spectrum.

The TRAI has been mandated by the legislation to be "transparent" while discharging this role.[2] To operationalize transparency, the TRAI has initiated an open multistakeholder process in developing recommendations.

B. Overview of the Multistakeholder Process

The TRAI follows a multistakeholder consultation process for developing policy recommendations. The process is initiated either *suo motu* or at the request of the Central Government. There is no formal process for private actors to initiate consultations in a bottom-up manner. In certain cases, private stakeholders like telecom service providers and their associations privately approach the regulator about pending issues, requesting the regulator to initiate a consultation and open the issue up for further discussion.

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[2] Section 11(4), Telecom Regulatory Authority of India Act 1997 (as amended in 2000)
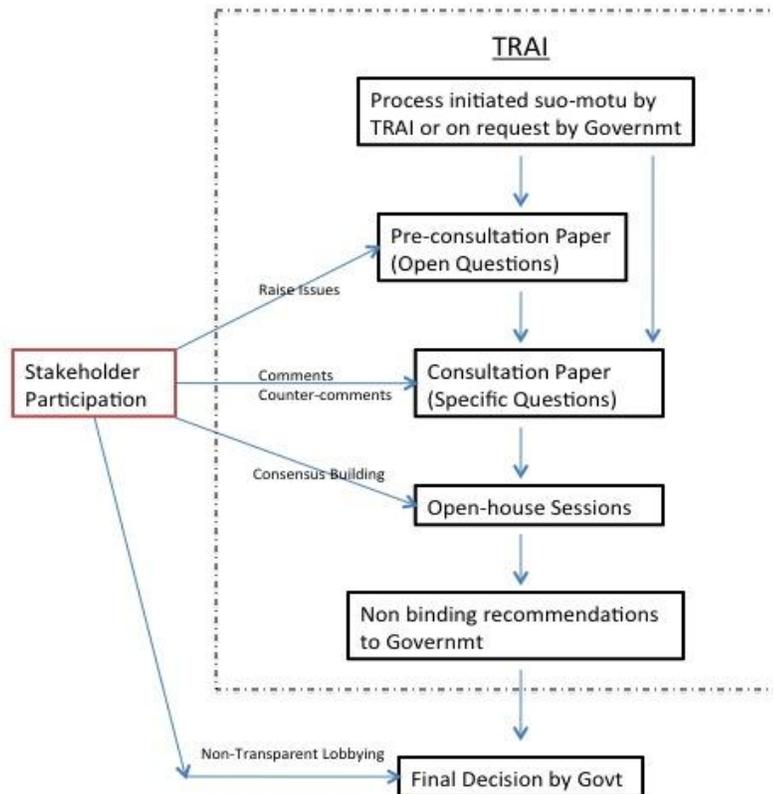
In a majority of the cases, the multistakeholder consultation process begins with a consultation paper released by TRAI. This consultation paper describes the policy issue in detail and raises specific questions around that policy issue. This consultation paper is published on the TRAI website.[3] Any interested person can submit comments in response to the consultation paper, and submit counter-comments in response to comments sent by any other actor.

Since the process is open to all, the TRAI often receives comments from heteronomous and diverse actors. The consultation paper sets a time window in which the comments are to be submitted. Stakeholders are required to send their comments to a designated email address. Once the time window ends, all comments are uploaded to the TRAI website. Thereafter, a time window is opened for receiving counter-comments in response to any comment. After the close of this time window, all counter-comments are also published on the TRAI website.

In the comments, actors respond to questions raised by the telecommunications regulator and express their policy preferences and suggestions along with reasons where possible. In the counter-comments, actors usually state their agreements and disagreements to the comments submitted by other actors.

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[3] http://www.trai.gov.in/

Often, the TRAI releases a pre-consultation paper before preparing the consultation paper. Although not a frequent practice, in the pre-consultation paper the regulator asks open-ended questions, enabling the stakeholders to raise issues they find important. The pre-consultation paper follows a format similar to the consultation paper. Comments and counter-comments are invited in response to the pre-consultation paper and published on the TRAI website.

The introduction of a pre-consultation paper allows actors to raise issues in a bottom-up manner. The pre-consultation paper empowers not just the stakeholders to voice their opinion, but also enables the regulator to gain new insights, to identify new issues, and to understand concerns and challenges the stakeholders face prior to framing the issues in the consultation paper. This reduces the possibility of missing important issues from the consultation paper or biased framing of any issue. At the same time, it gives space to dismiss certain issues as irrelevant or non-urgent, thus improving the overall validity and legitimacy of the decision-making process.

After the comment period on the consultation paper is closed, the regulator organizes "open houses." Just like the consultation papers, these events are advertised on the TRAI's website, inviting all interested stakeholders to attend and participate in the discussion. Remote participation is presently not facilitated. The aim of these open houses is for the regulator to seek clarification and for various stakeholders to reach consensus. These discussions help the regulator to formulate the final document with policy recommendations. In cases where a consensus between the different stakeholders and competing parties can't be reached, the regulator makes a unilateral decision on the basis of its own analysis.

Once the consultation process is closed, the TRAI decides on the final recommendations document. All decisions are accompanied with a reason and explanation, thus grounding policy recommendations in transparency and logic, which enhances trust in the regulator as the policy broker. However, no public feedback is invited on the final document. The regulator often summarizes all comments received and incorporates not just the comments of the "elite actors" but also those of academics, consultants and private individuals.

Even though the policy recommendations of the TRAI are non-binding on the Central Government, these recommendations play a significant role in developing the policy discourse. The overall transparency in the multistakeholder process followed by the TRAI over the years has enhanced the trust in the final recommendations developed by the TRAI, making it increasingly difficult for the Central Government to reject the recommendations of the TRAI. The overall openness of the process has proved to be valuable not just in resolving issues per se, but also in timely and efficient addressing and approach to current and pressing concerns.

As the regulator, procedurally, can only give non-binding recommendations, the final policy decision is made by the executive body—the Telecom Commission. Since the

recommendations of the TRAI are non-binding, the TRAI tries to achieve consensus on as many issues as possible so that there is minimal opposition before reaching the Telecom Commission. The executive as a venue of decision-making, is not required to publish a reasoned decision, and therefore lacks transparency. This also leaves space for lobbying and raises the question of output legitimacy. There have been numerous occasions in the early history of the TRAI wherein the recommendations of the TRAI have been not accepted or have been substantially modified by the Telecom Commission.

C. Actors/Stakeholders

As the issues covered by TRAI are extremely technical, it is expected that only those with a high degree of specialization and expertise in the field would make substantive contributions. As a result, most of the comments in response to the consultation papers are from the telecommunications operators. This is because the telecommunications operators are the ones that have most interest, resources and knowledge to participate in the process. In addition to the individual telecom operators, their collective associations––the Cellular Operators Association of India (COAI) and the Association of Unified Telecom Service Providers of India (AUSPI) also play a dominant role.

These associations are important in the policy process, as they represent the views and opinions of the telecom providers on issues of importance. As the analysis will show, they have power to influence the policy processes.

The key objective of the associations is to address and contribute to the resolution of issues its members face, as well as to serve as a focal point for interaction with the government, regulators, policy makers, academics and other public bodies. Depending on their particular organizational structure, they act in concert when facing contentious policy issues using variety of mechanisms and tools for decision-making and conflict resolution.

Besides these major actors in the consultation process, other participants and stakeholders are also involved. Often, consultants, academics, civil society groups and individuals provide comments, although not to the same extent and frequency as the service providers and associations. Cross-industry associations such as the Confederation of Indian Industry (CII), The Associated Chambers of Commerce and Industry of India (ASSOCHAM) and Federation of Indian Chambers of Commerce and Industry (FICCI) also get involved when larger issues are at stake. Associations of Internet Service Providers such as the Internet Service Providers Association of India (ISPAI), associations representing larger international interests such as the GSM Association (GSMA), and a few manufacturers like Qualcomm also sometimes take interest.

D. Perceived Legitimacy of the Multistakeholder Process

The need to establish legitimacy is important for multistakeholder processes because they

fall outside the traditional paradigms of governance. We use the Perceived Legitimacy Framework (Jain & Dara, 2015)[4] to evaluate the perceived legitimacy of the multistakeholder process adopted by the TRAI. This framework identifies the parameters on the basis of which stakeholders assess the legitimacy of a process. The parameters identified by the framework are categorized into four aspects covering the life cycle of any process: (i) participation; (ii) agenda-setting and decision-making processes; (iii) accountability; and (iv) outcomes.

1. Participation

a. Openness to Participation: The TRAI (pre-)consultation paper and open houses are open to participation by all interested stakeholders. As a result, the TRAI policy process is perceived to have higher legitimacy compared to alternate processes that exclude important stakeholder groups.

b. Diversity and Representativeness of Participation: In our analysis of the TRAI consultation process, we found that telecom service providers dominate the comments received by the TRAI. While the TRAI receives a few responses from academics, consultants and civil society members, these are usually fewer in number than the responses received from telecom service providers and their associations. Additionally, government actors do not actively engage in the consultation process, thus significantly reducing its perceived legitimacy. The TRAI consultation process is not advertised in newspapers and social media. As a result, stakeholders may not be aware of the consultations initiated by the TRAI. This lack of advertisement can influence the inclusiveness and thus the legitimacy of the process since it decreases the number of potential participants, especially individuals and end-users of the services. The convening of wide group of stakeholders is preferable, especially on issues where the outcome will greatly affect them (for example quality and price of services). But at the same time, as the issues are highly technical, a significant topical connection and knowledge is essential for the effectiveness of the debate and the outcomes.

c. Barriers to Participation: Even though participation in the TRAI process is formally open, barriers (in terms of knowledge, language, location, funding and capacity) to participation contribute to the perceived legitimacy. In this regard, we note that the TRAI consultation papers are only available in English and translations are not published in the 18 national languages of India. However, it is reasonable to expect that most people specializing in this highly technical field would be familiar with English as most technical documentation is available in English. Further, open houses are organized only in the capital city Delhi and participation through video conferencing is not facilitated. This may be a serious barrier to participation for those not based in Delhi. Another barrier to participation is the highly-technical nature of the issues discussed. Knowledge asymmetry between, for example, the representatives of the industry and the individuals, influences the diversity of stakeholders actively participating. It limits not just the scope

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http://iitcoe.in/download.php?file=paper/73A%20Model%20for%20Internet%20Governance%20and%20Implications%20for%20India-encrypt.pdf&hits=22&id=73 (Pg 41)

of the participation and the quality of the suggestions, proposals and critiques, but also discourages non-technical actors from further participation.

2. Agenda-Setting and Decision-Making Processes

a. Agenda-Setting: The TRAI consultation process can only be initiated by TRAI or the Central Government, and therefore the agenda is set from the top-down. However, in many instances TRAI floats a pre-consultation paper that allows interested stakeholders to raise issues related to the policy problem in a bottom-up manner. While initiation of the process is mostly top-down, stakeholders are given the opportunity to suggest solutions in a bottom-up manner through the comments period.

b. Resolution: An outcome based on consensus or compromise is perceived to have more legitimacy in comparison to a process wherein the decisions of dominant stakeholders prevail. The TRAI process attempts to generate consensus in open houses, but resolution is often entrusted to the policy broker, the TRAI. Since conflicting telecommunications associations represent commercial and monetary interests, a neutral third-party bureaucrat is trusted to make the right decision.

c. Preparedness and Level of Discussions: The level of discussion is detailed and advanced in most comments received by TRAI. The comments often involve statistical and technical analysis of problems and solutions. This advanced level of preparedness and discussion greatly enhances the legitimacy of the TRAI consultation process.

3. Accountability:

We examine the following dimensions:

a. Transparency: In the TRAI consultation process, while all comments and counter-comments are put online for the sake of transparency, little is made public about the process by which a consultation is first convened and how recommendations are finally developed. However, the TRAI ensures that all recommendations are backed with publicly documented reason and grounded in logic. Unfortunately, transparency further decreases as the recommendations are passed from the regulator to the executive, where there is little requirement to give reasoned decisions for why recommendations are rejected, accepted, or modified.

b. Capture: A process that is prone to capture by a stakeholder group to the exclusion of others is viewed with low legitimacy, while a process that can avoid capture or has not been captured is viewed with higher legitimacy. Processes that do not have sufficient checks and balances to prevent capture are not perceived to be legitimate. Since the TRAI process is primarily dominated by telecom service providers, a single stakeholder category, capture is a serious cause for concern. However, fragmented views between telecom service providers on essential policy matters often deter such capture.

4. Outcomes

a. "Bindingness" or Adoption Rate: The TRAI process produces non-binding recommendations. However, these recommendations have had varying rates of adoption by the executive. A process in which the outcome is either binding on the participants or

if non-binding, has a high voluntary adoption rate is seen to have higher legitimacy. While in many instances these recommendations have been rejected or sent back to the TRAI for reconsideration, the recommendations always set the tone and ground for the policy discourse on the subject. The legitimacy of the TRAI recommendations has increased since the 2G spectrum scam, in which the Supreme Court criticized the government for disregarding and refusing to implement previous recommendations of the regulator. As a result of the pressure by the media and the court, the government released a new telecommunications policy in 2012 that codified the previous recommendations of the telecommunications regulator, and thereby strengthened the role of the telecommunications regulator.

    b. Constructiveness: A process which produces tangible outputs is viewed with greater legitimacy than a process that does not produce actionable results. The TRAI recommendations produced concrete implementable recommendations, thus substantially increasing the perceived legitimacy of the process.

III.   Theoretical Lens
A. Advocacy Coalition Framework

We use Sabatier's Advocacy Coalition Framework (ACF) as a theoretical framework in order to further analyze the operation and role of collective action in the TRAI multistakeholder process over time. Since a multistakeholder process deals with a multiplicity of stakeholders, this theory provides structure to the policy process by grouping actors in a policy subsystem into advocacy coalitions on the basis of common policy core beliefs. As we saw previously, the telecom providers and associations are dominant in the decision-making and policy processes regarding spectrum management. Gaining insight into how they form advocacy coalitions and operate can provide valuable knowledge of how the policy process is both influenced and conducted.

The ACF considers the policy subsystem, and not any particular government actor or institution, as the most useful aggregate unit of analysis because over time policy issues have become so complex that they require specialization by actors for influencing policy. Within the policy subsystem, the ACF considers advocacy coalitions as the best unit to deal with the multiplicity of actors in the policy subsystem. In this particular case, advocacy coalitions are composed of telecommunication providers and associations that share policy core beliefs and act in concert. There are typically two to four conflicting advocacy coalitions in every subsystem[5], which proves to be the case here as well. TRAI, as the policy broker, is concerned with finding a reasonable compromise between conflicting coalitions. The end result of the compromise is a policy output in the form of a recommendation paper.

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[5] Weible, C. M., Sabatier, P. A. and McQueen, K. (2009), Themes and Variations: Taking Stock of the Advocacy Coalition Framework. Policy Studies Journal, 37: 121–140. doi: 10.1111/j.1541-0072.2008.00299.x

In order to view how the coalitions are formed, we employed content analysis of 144 comments submitted by 13 actors (telecommunication providers—both private and state-owned—and associations) over a period of eight years, from 2008 to 2015, in response to 9 public consultations held by the TRAI (See Table 1). These comments contain a wealth of information that help capture the stated beliefs of elite policy actors. A coding frame comprised of 40 variables was developed, and the response for each variable was captured on a five-point scale. Each variable represented a contentious policy issue and was used to capture the stated belief of an actor in a comment. Codes of 1 and 5 represented extreme opposing positions of the contentious policy issue. Variables that were not addressed in a comment were coded "0" to represent missing or unmentioned data.

The analysis relies on four composite scales derived from these 40 variables. Each composite scale represents a policy core belief, and each comprising variable represents a secondary belief. Extreme values of "1" and "5" represent the extreme policy positions for that belief. The four core beliefs analyzed were: "Level Playing Field" relating to concerns that the present regulations are favorable to the incumbent GSM telecommunications service providers; "Market Based Practices" relating to the idea that the spectrum should be managed through market-oriented practices in contrast to command-and-control or administrative practices; "Preferential Treatment of Public Sector Units" relating to the regulatory treatment of government owned public sector units (PSUs); and "Growth Path for CDMA Providers" relating to concerns that the outlook for CDMA is limited and suffers from a poor ecosystem with an oblique future.

The values for each of the variables is captured in Tables 2.1, 2.2, 2.3 and 2.4.

IV.   Identification of Stakeholders and Coalitions
A. Homogeneity of Beliefs between Actors Over Time

"Homogeneity of beliefs" provides insight into how advocacy coalitions are formed and how they can influence a multistakeholder policy processes.

Checking for resistance of beliefs over time, the results (Table 3) demonstrate that the beliefs of stakeholders did not change over time—the difference in beliefs of any given actor was not statistically significant between the two time periods. Thus time resistant beliefs are also a good parameter for grouping actors in a multistakeholder process.

According to the framework, actors are expected to take sides on contentious policy issues concerning the policy subsystem. We checked if there was a statistically significant difference between the positions of competing actors in a given time period, and then identified the subsets of actors with homogeneous beliefs. For this we used a one-way Analysis of Variance test (ANOVA) followed by a Tukey post-hoc test to determine which groups differ from each other. The analysis showed that for each of the composite scales, actors were divided into two opposing sides. In Table 4, we identify two major homogeneous subsets of actors for both time periods.

B. Operationalizing Advocacy Coalitions

In order to operationalize and identify advocacy coalitions, a cluster analysis was performed using the policy core beliefs captured by the composite scales. A cluster analysis displays the proximity of different actors depending on their expressed beliefs.

1. Time period of 2008 to 2011

For this time period, a hierarchical cluster analysis was performed using the composite scales capturing "Level Playing Field" and "Market Based Practices." The dendrogram in the figure below is a graphical representation of the cluster analysis.
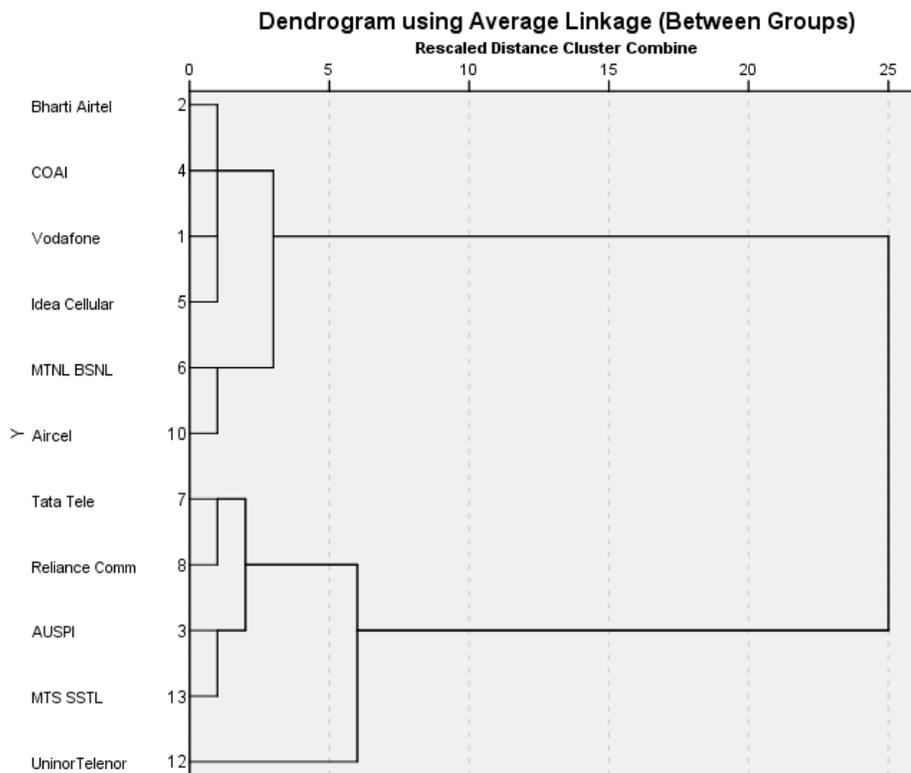
From the dendrogram, there is clear evidence of at least two advocacy coalitions at loggerheads during this time period. The first advocacy coalition, the Coalition of Incumbent GSM Operators, is comprised of incumbent GSM operators with spectrum in the 900 MHz band including Airtel, Vodafone, Idea, Aircel and MTNL/BSNL. These operators have collectively opposed any moves to create parity in the present playing field, and also lean towards market-based practices for spectrum allocation.

The second advocacy coalition, the Coalition of Unified Service Operators, is comprised of pure CDMA operators like MTS and dual technology licensees like Tata Tele and Reliance Communications. These operators have argued in favor of creating a level

playing field with the incumbent GSM operators, and also favor administrative practices for allocation of the spectrum.

The COAI, the association that represents the interests of incumbent private GSM operators, falls into the first coalition. Likewise, AUSPI, the association that represents the interests of CDMA operators and dual technology licensees, falls into the second coalition.

2. Time Period of 2012 to 2015

The year 2012 has been chosen as the starting of the new time period because of a subsystem altering event in which the Supreme Court of India, while deciding on a matter related to irregularities in spectrum allocation, ruled that spectrum should only be allocated through fair and transparent mechanisms, such as auctions. The Supreme Court also cancelled a number of previous licenses such as those held by Uninor, MTS and Videocon, amongst others.

For this time period, a hierarchical cluster analysis was performed using the composite scales capturing "Level Playing Field," "Market Based Practices" and "Growth Path for CDMA Providers." The dendrogram in the figure below is a graphical representation of the cluster analysis.

Dendrogram using Average Linkage (Between Groups)
Rescaled Distance Cluster Combine
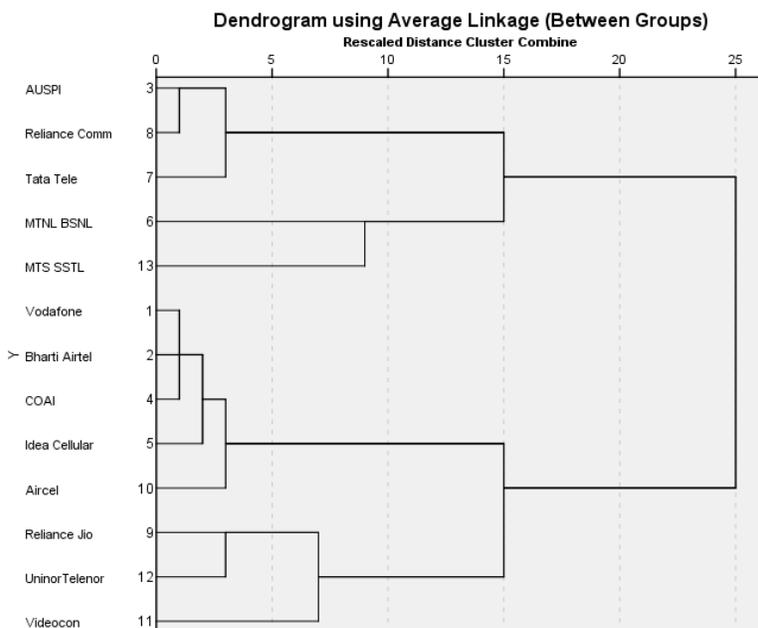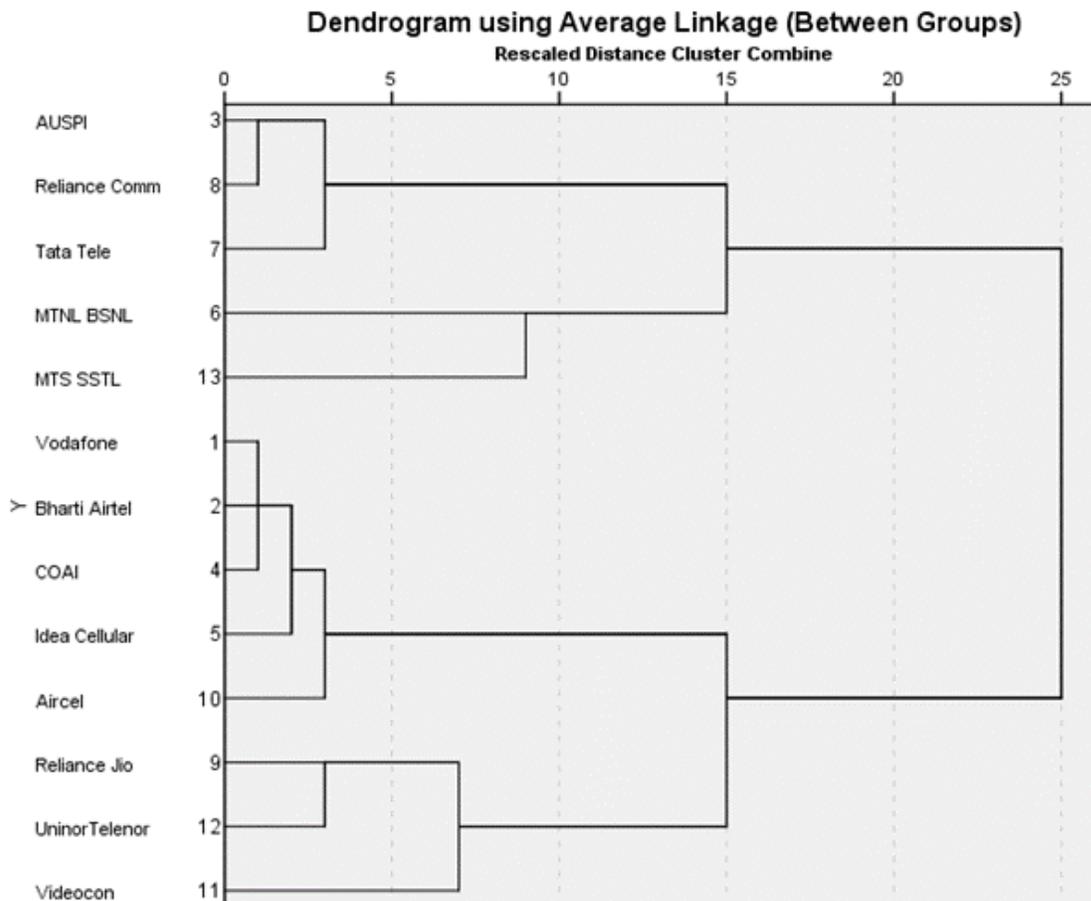
In this time period, we can see how the advocacy coalitions have evolved from the previous time period. The dendrogram shows evidence of sub-coalitions emerging in the policy subsystem. It can be seen that the Coalition of Incumbent GSM Operators, as identified in the previous time period, remains strong and cohesively bound. We can see evidence of a new coalition—Coalition of New Entrants—emerging comprised of Reliance Jio, Uninor and Videocon. They form a distinct coalition because their position is neither aligned with the incumbent operators nor aligned with the dual technology operators.

Coincidently, the members of the Coalition of Incumbent GSM and the members of the Coalition of New Entrants are all collectively organized as COAI. Similarly, members of the Coalition of Unified Service Operators are organized as AUSPI. In Table 6, we perform a one-way Anova to check which beliefs are homogeneous across the constituent members of COAI and AUSPI.

The results show that COAI members are united in support of market-based practices for allocation of spectrum and are also united in support of changing the growth path for CDMA services. However, COAI members are divided on the issue of a level playing field. Therefore, the internal rules within COAI for resolving these differences and reaching consensus would have been under strain in this time period. Until now, the

official submissions of COAI in public consultations have clearly aligned with the Coalition of Incumbent GSM Operators, highlighting the possible dissidence of the Coalition of New Entrants within COAI.

The results also show that AUSPI members are united on issues of level playing field and in maintaining the current growth path for CDMA services. However, AUSPI members are divided on the issue of market-based practices.

Although members of the associations take collective actions and have internal decision-making processes for producing consent on highly contentious issues, membership in an association does not by default imply supporting a policy recommendation or solution to a particular issue. This might be due to the organizational structure of the association. For example, COAI's decisions are "exclusive," meaning that decisions are made at a higher level—the committees and working groups—although all members can participate in the discussions and contribute to the process.

C. Coalition Resources and Events

In the previous section, we grouped multiple stakeholders into two dominant advocacy coalitions using common beliefs. In this section, we review how these advocacy coalitions utilize collective action to influence the TRAI multistakeholder process. We found that the ability of coalitions to translate events into policy depended on the constraints and resources of coalitions. Evidence was found for numerous types of coalition resources: formal legal authority to make policy decisions, public opinion, information, active troops, financial resources, and skillful leadership. Coalitions mobilized these resources in order to convert their common policy core beliefs into policy outputs.

For example, to counter the issue of spectrum re-farming, or the act of reassigning spectrum for newer technologies, the Coalition of Incumbent GSM Operators hired the services of Analysis Mason to prepare a report on the costs of re-farming and its effect on consumer tariffs.[6] Similarly, the Coalition of Incumbent GSM Operators also hired the services of PriceWaterhouseCoopers to prepare a report on the implications of high reserve prices on consumer tariffs.[7] These reports were used by the Coalition of Incumbent GSM Operators to generate media attention and build public opinion on the TRAI recommendations. These reports were also used as advocacy material before the executive and cited in future submissions to the TRAI.

We found evidence that internal and external shocks played an influential role in the TRAI multistakeholder process. These shocks were internalized by the advocacy coalitions to further their beliefs. For example, two internal shocks helped the Coalition

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[6] http://timesofindia.indiatimes.com/home/India-The/articleshow/13846802.cms

[7] http://www.pwc.in/press-releases/coai-and-pwc.jhtml

of Incumbent GSM Operators convince the telecommunications regulator to maintain low reserve prices. The first was the failure of the auction in 2012 wherein no bidders expressed interest in the 800 MHz band, and substantial spectrum in the 1800 MHz band remained unsold. The second was the failure of the auction in 2013 wherein no bidder expressed interest in the 900 MHz and 1800 MHz bands. The Coalition of Incumbent GSM Operators was able to successfully channel the second shock to convince the telecommunications regulator to reduce the reserve price.

V.   Conclusions and Suggestions

In this case study, we reviewed the multistakeholder process adopted by the Telecom Regulatory Authority of India (TRAI) in developing non-binding policy recommendations for the Government of India in the area of spectrum policy. We found that the process followed by TRAI constitutes a unique variant of multistakeholder governance and documented its strengths and shortcomings.

We evaluated the TRAI process against various parameters that affect the perceived legitimacy of any multistakeholder process. The need to establish legitimacy is important for multistakeholder processes, as they fall outside the traditional paradigms of governance. In the case of TRAI, the perceived legitimacy is particularly important as its recommendations are non-binding on the Central Government. This helped us identify the strengths and shortcomings of the process followed by TRAI.

We found that the consultation process and open houses allowed stakeholders to raise issues in a bottom-up manner and provided a venue to voice concerns. The transparent and open nature of the process followed by the TRAI has created a benchmark that is often cited as an example for other processes in India. Further, the public archiving of all comments and counter-comments played an essential role in knowledge management beyond increasing transparency.

However, we found that even though the process was open, there were numerous barriers to participation that needed to be overcome. Further, the process is dominated by one stakeholder group, and diversity needs to be increased. The level of transparency and involvement of stakeholders decreased at the decision-making stage, thus reducing the perceived legitimacy of the process.

We found that TRAI needed to advertise its consultations through newspapers and other media in order to increase the diversity of participation. Also, enabling distant participation in the open houses by live-streaming would have contributed towards greater participation. Further, the TRAI needed to engage in capacity building amongst civil society and academia as participation required a high degree of specialization and technical knowledge. Additionally, TRAI needed to publicly share greater information about its internal decision-making processes in order to increase output legitimacy and increase trust in its recommendations. Finally, the opaque lobbying at the level of the

executive circumvented the transparency at TRAI. This needed to be overcome in order to increase the legitimacy of TRAI recommendations.

The case study also makes an important methodological contribution by using a theoretical lens to deal with the multiplicity of actors involved in a multistakeholder process. The theoretical lens helped bring structure by grouping telecom service providers into advocacy coalitions and thus reducing the inherent complexity of dealing with the large number of actors participating in the TRAI process. We found policy core preferences to be an effective parameter for grouping actors. Further, we identified some of the resources used by these actors to influence the multistakeholder policy process and convert their beliefs into policies.

VI.   Annexure 1 – Tables and Data

Table 1. Actors and consultations they participated in (2008-2015)

Year	Consultation	Vodafone	Bharti Airtel	AUSPI	COAI	Idea	BSNL	MTNL	Tata Tele	Reliance Comm	Jio	Aircel	Videocon	Uninor / Telenor	MTS SSTL
2009	Consultation Paper on Overall Spectrum Management and review of license terms and conditions	*	*	*	*	*	*	*	*	*		*		*	*
2010	Pre-Consultation paper on IMT-Advanced (4G) Mobile wireless broadband	*		*	*				*	*				*	*
2011	Consultation Paper on IMT – Advanced Mobile Wireless Broadband Service	*	*	*		*			*	*	*				*
2012	Pre-Consultation Paper on Allocation of Spectrum in 2G band in 22 Service Areas by auction	*	*	*		*	*		*				*	*	*
2012	Consultation Paper on Auction of Spectrum	*	*	*		*			*	*	*		*	*	*
2013	Consultation Paper on Valuation and Reserve Price of Spectrum	*	*	*	*	*		*	*	*	*	*	*	*	*
2013	Consultation Paper on Reserve Price for Auction of Spectrum in the 800 MHz Band	*	*		*	*		*	*	*				*	*
2014	Consultation Paper on Allocation and Pricing of Microwave RF carriers	*	*	*		*	*	*	*	*	*		*	*	*
2014	Consultation Paper on Valuation and Reserve Price of Spectrum: Licences expiring in 2015–16	*	*	*	*	*		*	*	*	*	*	*	*	*

Table 2.1: Values for the composite scale Level Playing Field

	Vodafone	Bharti Airtel	AUSPI/ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Videocon	Uninor/ Telenor	MTS SSTL
2008-2011	4.6 (5)	5 (4)	1.4 (5)	5 (3)	4.33 (3)	5 (2)	4 (1)	1.16 (6)	1.12 (8)		5 (2)		1.5 (2)	1 (3)
2012-2015	4.84 (13)	4.72 (11)	1.23 (13)	4.83 (6)	4.5 (6)		4 (6)	1.8 (10)	1.25 (12)	1.62 (8)	3.5 (4)	1.42 (7)	1.85 (7)	1.69 (13)

Table 2.2: Market based practices

	Vodafone	Bharti Airtel	AUSPI/ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Videocon	Uninor/ Telenor	MTS SSTL
2008-2011	1.18 (11)	1.33 (15)	2.77 (9)	1.11 (9)	1.28 (7)	1.42 (7)	4 (5)	4 (13)	3.72 (11)	2 (1)	2.12 (8)		1.55 (9)	2.77 (9)
2012-2015	1.53 (15)	1.2 (10)	4.5 (8)	1 (3)	2.12 (8)	1 (2)	2.5 (4)	3.44 (9)	4.55 (9)	3.33 (6)	1.5 (2)	1 (4)	2.25 (4)	1.66 (6)

Table 2.3: Preferential Treatment of Public Sector Units

	Vodafone	Bharti Airtel	AUSPI/ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Videocon	Uninor/ Telenor	MTS SSTL
2008-2011		1 (1)	1.66 (3)	1 (1)		5 (3)	5 (1)	1 (1)	1 (1)		2 (2)		1 (2)	
2012-2015	2 (2)	1 (1)	4 (1)	2 (2)	1 (1)		5 (3)		4 (3)	5 (1)				

Table 2.4: Growth Path for CDMA Providers

	Vodafone	Bharti Airtel	AUSPI/ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Videocon	Uninor/ Telenor	MTS SSTL
2008-2011	2 (1)			2 (1)	2 (1)			4 (1)	4 (1)		2 (1)		2 (1)	

| 2012-2015 | 1.81 (11) | 1.71 (7) | 4.87 (8) | 1.37 (8) | 2 (5) | | 4 (2) | 4.33 (6) | 4.83 (12) | 2.33 (3) | 1.5 (2) | 1 (1) | 1.75 (4) | 4.63 (11) |

Table 3: Homogeneity of Beliefs across Time

3.1 Level Playing Field

	Vodafone	Bharti Airtel	AUSPI / ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Video con	Uninor /Telenor	MTS SSTL
2008-2011	4.6 (5)	5 (4)	1.4 (5)	5 (3)	4.33 (3)	5 (2)	4 (1)	1.16 (6)	1.12 (8)		5 (2)		1.5 (2)	1 (3)
2012-2015	4.84 (13)	4.72 (11)	1.23 (13)	4.83 (6)	4.5 (6)		4 (6)	1.8 (10)	1.25 (12)	1.62 (8)	3.5 (4)	1.42 (7)	1.85 (7)	1.69 (13)
Anova	NS	NS	NS	NS	NS	-	NS	NS	NS	-	NS	-	NS	#

NS = Not Significant (>0.1); # = Significant at 0.1; * = Significant at 0.05; ** =
Significant at 0.01; *** = Significant at 0.001

3.2 Market Based Practices

	Vodafone	Bharti Airtel	AUSPI / ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Videocon	Uninor / Telenor	MTS SSTL
2008-2011	1.18 (11)	1.33 (15)	2.77 (9)	1.11 (9)	1.28 (7)	1.42 (7)	4 (5)	4 (13)	3.72 (11)	2 (1)	2.12 (8)		1.55 (9)	2.77 (9)
2012-2015	1.53 (15)	1.2 (10)	4.5 (8)	1 (3)	2.12 (8)	1 (2)	2.5 (4)	3.44 (9)	4.55 (9)	3.33 (6)	1.5 (2)	1 (4)	2.25 (4)	1.66 (6)
Anova	NS	NS	*	NS	NS	NS	NS	NS	NS	-	NS	-	NS	NS

NS = Not Significant (>0.1); # = Significant at 0.1; * = Significant at 0.05; ** =
Significant at 0.01; *** = Significant at 0.001

Table 4. Homogeneity of beliefs Between Actors

We used a one-way ANOVA to determine if there is statistically significant difference between groups and then performed a Tukey post-hoc test to identify homogeneous subsets.

4.1 Level Playing Field

	Vodafone	Bharti Airtel	AUSPI / ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Videocon	Uninor / Telenor	MTS SSTL	Anova
2008 - 2011	4.6 (5)	5 (4)	1.4 (5)	5 (3)	4.33 (3)	5 (2)	4 (1)	1.16 (6)	1.12 (8)		5 (2)		1.5 (2)	1 (3)	***
2012 - 2015	4.84 (13)	4.72 (11)	1.23 (13)	4.83 (6)	4.5 (6)		4 (6)	1.8 (10)	1.25 (12)	1.62 (8)	3.5 (4)	1.42 (7)	1.85 (7)	1.69 (13)	***

NS = Not Significant (>0.1); # = Significant at 0.1; * = Significant at 0.05; ** = Significant at 0.01; *** = Significant at 0.001

Homogeneous Subsets for 2008-2011

Tukey HSD

Actor	N	Subset for alpha = 0.05	
		1	2
MTS SSTL	3	1.0000	
Reliance Comm	8	1.1250	
Tata Tele	6	1.1667	
AUSPI	5	1.4000	
Uninor	2	1.5000	
Idea	3		4.3333
Vodafone	5		4.6000
Airtel	4		5.0000
COAI	3		5.0000
Aircel	2		5.0000
BSNL	2		5.0000
Sig.		.888	.601

Means for groups in homogeneous subsets are displayed.

Homogeneous Subsets for 2012-2015

Tukey HSD

Actor	N	Subset for alpha = 0.05		
		1	2	3
AUSPI	13	1.2308		
Reliance	12	1.2500		
Videocon	7	1.4286		
Jio	8	1.6250		
MTS	13	1.6923		
Tata Tele	10	1.8000		
Uninor	7	1.8571		
Aircel	4		3.5000	
MTNL	6		4.0000	4.0000
Idea	6		4.5000	4.5000
Bharti	11			4.7273
COAI	6			4.8333
Vodafone	13			4.8462
Sig.		.749	.097	.288

a. Uses Harmonic Mean Sample Size = 3.196.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 7.804.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

4.2 Market Based Practices

	Vodafone	Bharti Airtel	AUSPI / ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Videocon	Uninor / Telenor	MTS SSTL	Anova
2008 - 2011	1.18 (11)	1.33 (15)	2.77 (9)	1.11 (9)	1.28 (7)	1.42 (7)	4 (5)	4 (13)	3.72 (11)	2 (1)	2.12 (8)		1.55 (9)	2.77 (9)	***
2012 - 2015	1.53 (15)	1.2 (10)	4.5 (8)	1 (3)	2.12 (8)	1 (2)	2.5 (4)	3.44 (9)	4.55 (9)	3.33 (6)	1.5 (2)	1 (4)	2.25 (4)	1.66 (6)	***

NS = Not Significant (>0.1); # = Significant at 0.1; * = Significant at 0.05; ** = Significant at 0.01; *** = Significant at 0.001

Homogeneous Subsets for 2008-2011

Tukey HSD

Actors	N	Subset for alpha = 0.05		
		1	2	3
COAI	9	1.1111		
Vodafone	11	1.1818		
Idea	7	1.2857		
Bharti	15	1.3333		
BSNL	7	1.4286		
Uninor	9	1.5556		
Aircel	8	2.1250	2.1250	
AUSPI	9	2.7778	2.7778	2.7778
MTS	9	2.7778	2.7778	2.7778
Reliance	11		3.7273	3.7273
MTNL	5			4.0000
Tata Tele	13			4.0000

Homogeneous Subsets for 2012-2015

Tukey HSD

Actors	N	Subset for alpha = 0.05	
		1	2
COAI	3	1.0000	
BSNL	2	1.0000	
Videocon	4	1.0000	
Bharti	10	1.2000	
Aircel	2	1.5000	
Vodafone	15	1.5333	
MTS	6	1.6667	1.6667
Idea	8	2.1250	2.1250
Uninor	4	2.2500	2.2500
MTNL	4	2.5000	2.5000
Jio	6	3.3333	3.3333
Tata Tele	9	3.4444	3.4444
AUSPI	8		4.5000

Sig.		.124	.162	.553

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 8.692.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Reliance	9		4.5556
Sig.		.210	.059

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.582.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

4.3 Growth Path for CDMA Providers

	Vodafone	Bharti / Airtel	AUSPI / ABTO	COAI	Idea Cellular	BSNL	MTNL	Tata Tele	Reliance Comm	Jio / Infotel	Aircel	Videocon	Uninor / Telenor	MTS SSTL	Anova
2012-2015	1.81 (11)	1.71 (7)	4.87 (8)	1.37 (8)	2 (5)		4 (2)	4.33 (6)	4.83 (12)	2.33 (3)	1.5 (2)	1 (1)	1.75 (4)	4.63 (11)	***

NS = Not Significant (>0.1); # = Significant at 0.1; * = Significant at 0.05; ** = Significant at 0.01; *** = Significant at 0.001

Homogeneous Subsets for 2012-2015

Tukey HSD

CDMA2012Actor	N	Subset for alpha = 0.05			
		1	2	3	4
COAI	8	1.3750			
Aircel	2	1.5000			
Bharti	7	1.7143			
Uninor	4	1.7500			
Vodafone	11	1.8182			
Idea	5	2.0000	2.0000		
Jio	3	2.3333	2.3333	2.3333	
MTNL	2		4.0000	4.0000	4.0000
Tata Tele	6			4.3333	4.3333
MTS	11				4.6364
Reliance	12				4.8333
AUSPI	8				4.8750

Sig.		.913	.066	.066	.952

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.601.

b. The group sizes are unequal. The harmonic mean of the group sizes is used.

Type I error levels are not guaranteed.

Table 5. Coalitions regarding level playing field and market based practices (2008-2011)

Coalition of Incumbent GSM Operators		
	Level Playing Field	Market Based Practices
Bharti Airtel	5 (4)	1.33 (15)
COAI	5 (3)	1.11 (9)
Vodafone	4.6 (5)	1.18 (11)
Idea	4.33 (3)	1.28 (7)
BSNL	5 (2)	1.42 (7)
MTNL	4 (1)	4 (5)
Aircel	5 (2)	2.12 (8)
Anova	NS	*** (Including MTNL) NS (Excluding MTNL)
Coalition of Unified Service Operators		
	Level Playing Field	Market Based Practices
Tata Tele	1.16 (6)	4 (13)
Reliance Comm	1.12 (8)	3.72 (11)
AUSPI	1.4 (5)	2.77 (9)
MTS SSTL	1 (3)	2.77 (9)
Uninor	1.5 (2)	1.55 (9)
Anova	NS	** (Including Uninor) NS (Excluding Uninor)

NS = Not Significant (>0.1); # = Significant at 0.1; * = Significant at 0.05; ** = Significant at 0.01; *** = Significant at 0.001

Table 6. Homogeneity of beliefs across the constituent members of COAI and AUSPI (2012-2015)

COAI and COAI Members – Coalition of Incumbent GSM Operators and Coalition of New Entrants			
	Level Playing Field	Market Based Practices	Growth Path for CDMA Providers
Vodafone	4.84 (13)	1.53 (15)	1.81 (11)
Bharti Airtel	4.72 (11)	1.2 (10)	1.71 (7)
COAI	4.83 (6)	1 (3)	1.37 (8)
Idea	4.5 (6)	2.12 (8)	2 (5)
Aircel	3.5 (4)	1.5 (2)	1.5 (2)
Reliance Jio	1.62 (8)	3.33 (6)	2.33 (3)
Uninor	1.85 (7)	2.25 (4)	1.75 (4)
Videocon	1.42 (7)	1 (4)	1 (1)

	*** Post-hoc test using Tukey provided below	* (Including Reliance Jio) NS (Excluding Reliance Jio) Post-hoc showed entire set as homogeneous subset using Tukey	NS
AUSPI and AUSPI Members – Coalitions of Unified Service Operators			
	Level Playing Field	Market Based Practices	Growth Path for CDMA Providers
AUSPI	1.23 (13)	4.5 (8)	4.87 (8)
Reliance Comm	1.25 (12)	4.55 (9)	4.83 (12)
Tata Tele	1.8 (10)	3.44 (9)	4.33 (6)
MTS	1.69 (13)	1.66 (6)	4.63 (11)
	# Post-hoc showed entire set as homogeneous subset using Tukey	** (Including MTS) NS (Excluding MTS)	NS

NS = Not Significant (>0.1); # = Significant at 0.1; * = Significant at 0.05; ** = Significant at 0.01; *** = Significant at 0.001

Homogeneous Subsets for Level Playing Field for COAI

Tukey HSD

Coalition1Level2012Actor	N	Subset for alpha = 0.05		
		1	2	3
Videocon	7	1.4286		
Reliance Jio	8	1.6250		
Uninor	7	1.8571		
Aircel	4		3.5000	
Idea	6		4.5000	4.5000
Bharti	11			4.7273
COAI	6			4.8333
Vodafone	13			4.8462
Sig.		.911	.086	.970

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.885.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.