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Institutional Determinants of Power Sector Reform in Pakistan

Kafait Ullah[1], Maarten J. Arentsen[2], Jon C. Lovett[3]

[1] US-Pakistan Centre for Advanced Studies in Energy (USPCASE), National University of Science and Technology (NUST), 44000 Islamabad, Pakistan. Email: kafiatullah@gmail.com, +925190855283

[2] CSTM, Faculty of Governance and Behaviour Studies (BMS), University of Twente, the Netherlands

[3] School of Geography, University of Leeds, UK and CSTM, Faculty of Governance and Behaviour Studies (BMS), University of Twente, the Netherlands

Abstract

The electricity supply sector in Pakistan has performed poorly in recent years. Reforms were introduced in mid 1990s to improve the sector, but progressed slowly with no significant impacts on pre-reform performance. This study uses new institutional economics as a theoretical basis to elucidate reasons for the failure of power sector reforms in Pakistan to make improvements. Interviews with 23 experts using Q-methodology generated 215 statements that were used as the Q concourse. Of these, 51 statements were selected for the Q sample and ranked by 34 respondents depending on their importance. Analysis revealed four important discourses on the determinants of power sector reform failure in Pakistan. These included weak governance structure, country and sectoral endowments, inefficient regulator and unspecified political institutions or unfriendly political contexts. The study recommends establishment of institutions that support a market based power supply sector and improvements to the contractual arrangements between stakeholders to reduce opportunistic behaviour.

Keywords: New Institutional Economics, Power Sector, Reforms, Pakistan, Determinants, Q Methodology

1. Introduction

The reason why some countries manage to reform their power supply sector quickly and effectively, whereas other countries only take initial steps over long periods of time, has been the subject of intensive study. Inconsistency in reform progress between countries has been ascribed to dissimilarities in economic, social and political circumstances at national level and differences of endowments at sectoral level (Hunt, 2002, Joskow, 2006, Bacon and Besant-Jones, 2001, Kopsakangas-Savolainen and Svento, 2012, Besant-Jones, 2006).

Reviews of power sector reforms in developing countries, with the exception of Latin American countries[1], has shown slow progress in reforms and their impacts (Erdogdu, 2013, Gratwick and Eberhard, 2008b). Pre-reform problems in those developing countries with limited change consisted of lags in generation capacity shortages, insufficient financing, subsidized prices, high transmission and distribution losses and inefficient public management of the power sector. These problems not only still prevail in many reforming countries, but have even worsened. For example Pakistan adopted the UK electricity reforms' model with advice from the World Bank but without improving performance (Kessides, 2013). These reforms progressed slowly and until recently have only moved to third of eight steps of reforms' model (Newbery and Pollitt, 1997). Slow movement of reforms is considered as one of the reasons for prevalence of pre-reform problems. In this paper we attempt to answer the question why the intended improvement of Pakistan's power sector's organization and performance did not occur, leading to failure of the reforms. In particular, we analyse why later steps of reforms' model such as privatization, wholesale and retail markets, etc. could not initiated.

Analysing the causes of the slow progress of reforms is not easy in a country like Pakistan where statistical data for energy sector reforms is incomplete. In order to avoid this barrier, we collected original interview data using Q-methodology. This methodology utilizes both qualitative and quantitative methods for data collection and analysis to minimise researcher bias. We used New Institutional Economics to frame our research focus and research design to address the research question: which institutional factors caused the failure of the power sector reform in Pakistan?

[1] Latin American countries were ranked among developing countries at the time when power sector reforms started; however economic, social and institutional indicators in some of the Latin American countries were almost similar to developed countries. Chile has been the global flag bearer of power sector reforms.

Institutions in this sense are the formal and informal laws, regulations and social norms that govern the incentive structures of society and under which organisations form and operate (North, 1994a, Williamson, 2000).

The paper is organised as follows. Section 2 presents an overview of the power sector in Pakistan. It explains the pre-reform structure, need for reforms, reform models implemented and progress of reforms so far. Section 3 briefly elaborates the perspective of New-Institutional Economics in relation to reforms. This perspective guided development of the questionnaire for the expert interviews. Section 4 explains research design and methods. Section 5 presents and discusses the results. The paper concludes with recommendations in Section 6.

2. Overview of power sector reforms in Pakistan

2.1. Reform model

By the early 1980s, poor performance of vertically integrated electricity sectors motivated many countries (developed and developing) to implement reforms towards market oriented institutional frameworks (Bacon and Besant-Jones, 2001, Erdogdu, 2012, Jamasb, 2002). Prior to reforms, developed countries faced surplus capacity, an expensive generation mix, high prices and inefficient production; while developing countries suffered from capacity shortage, inefficient production, subsidies and poor governance of utilities (Pollitt, 2009, Bacon and Besant-Jones, 2001, Bacon, 1995). Despite differences in institutional and sectoral endowments, it was presumed that market driven institutional arrangements in the power sector would help overcome pre-reform problems (Joskow, 2006, Joskow, 1996).

International development partners instructed the Government of Pakistan to adopt a general template of reforms, which was mainly designed for early reforming countries such as Chile, the UK and the US (Joskow, 1996, Newbery, 2002, Bacon, 1995, GOP, 1994). The general template of reforms focused mainly on restructuring, privatization, regulation and competition, which were assumed to improve the efficiency, financing, sufficiency, reliability and sustainability issues in the sector (Alexander and Estache, 1999). During the initial round of reforms, less attention was given to institutional frameworks in the host countries. Developed countries that had better institutional frameworks for market based transactions were able to fix early problems of reforms, thus enabling them to reform the reforms (Joskow, 2006, Gratwick and Eberhard, 2008a). In

contrast, developing countries were characterised by weak democratic and market institutions and lacked capacity to absorb reforms in accordance with their institutional frameworks and vice versa. Therefore, in the initial round of reforms, performance in the power sector even worsened in some developing countries (Bacon and Besant-Jones, 2001).

Following recurrence of problems after the initial round of reforms, developing countries were asked to adopt incremental reforms starting from establishment of a revised institutional environment and governance structure favouring a market based institutional framework for the power sector (Besant-Jones, 2006, Sioshansi, 2008, WorldBank, 2003). The incremental model of reforms mainly included enactment of electricity law, formation of an independent regulatory authority, unbundling of vertically integrated power sector utilities, entry of independent power producers (IPPs) in generation, corporatization, privatization (divestiture) of distribution and generation utilities, wholesale market, retail market, and access (negotiated, regulated and open) to transmission (Bacon, 1995, Joskow, 1996, Newbery, 2002, Pollitt, 2004). Based on early experiences, developing countries were advice to follow these steps in order to attain better results.

2.2. Electric power reforms in Pakistan

2.2.1. Pre-reform structure of electricity industry

Pre-reform organisation and performance of the power sector in Pakistan faced several challenges. Electricity infrastructure consisted of two vertically integrated state utilities in two distinct regions. The Water and Power Development Authority (WAPDA) controlled electricity supply infrastructure in Pakistan, except Karachi and its peripheries which were served by the Karachi Electric Supply Co. (KESC). All the segments of the infrastructure such as generation, transmission and distribution and retail sales were the sole responsibilities of these two utilities (GOP, 1994). Both utilities were characterized by financial and technical inefficiencies that left them unable to generate sufficient funds for maintenance and expansion of power infrastructure to meet consumer needs (WorldBank, 1994). As a result, the utilities remained dependent on state resources for their capacity addition investment requirements. However, government financial meltdown in the late 1980s and early 1990s; high pressure for investments in other social arenas; and reduced interest of international development partners such as the World Bank and Asian Development Bank (ADB) (which were main financiers of the power sector earlier) for investing

in publicly owned utilities, eroded the government's capacity in financing the loss making (public) power entities. This situation stimulated the government to open the sector to private investment and create markets at different nodes of the electricity infrastructure (WorldBank, 1993).

2.2.2. Implementation of reforms

Reforms in the power sector of Pakistan started under a textbook template, but with a different sequence than that proposed in the model. Implementation of a different sequence was mainly due to stakeholder requirements and impending needs of the sector. Electricity reforms in Pakistan started with IPP entry under the plan for restructuring and privatization of WAPDA (WorldBank, 1994). This plan basically laid the foundation of the 1994 Power Policy, which formalized involvement of IPPs in power generation (GOP, 1994). In addition to IPP entry in power generation, this policy also included the government plan to disintegrate the vertically integrated monopolies and form a separate regulatory authority to regulate the restructured power market.

Consequently, the power regulator, National Electric Power Regulatory Authority (NEPRA), was established by a 1995 presidential ordinance approved by parliament in 1997 (NEPRA, 2010). WAPDA (one of the two vertically integrated electric utilities) was disintegrated by separating generation, transmission and distribution segments. Each segment was further broken down through horizontal restructuring into more entities with the distribution sector divided into 8 DICSOs[2], the generation sector divided into 4 thermal GENCOs and a group of 14 hydro projects. Thermal generation of WAPDA was entrusted to four public limited thermal companies (GENCOs), whereas tasks relating to the development and management of hydro projects remained with WAPDA. The transmission segment was handed over to a single and newly established transmission operator, the National Transmission and Dispatch Company (NTDC). Although unbundling started slowly, it was completed by 2002. In addition to vertical and horizontal breakup of WAPDA into several companies, a new entity, the Pakistan Electric Power Company (PEPCO), was established within WAPDA to enhance the process of reform. PEPCO oversaw control of the affairs of the newly established transmission company (NTDC), 4 thermal

[2] Recently the number of DISCOs has reached to 10: Tribal Electric Supply Co (TESCO), Peshawar Electric Supply Co (PESCO), Islamabad Electric Supply Co (IESCO), Gujranwala Electric Power Co (GEPCO), Faisalabad Electric Supply Co (FESCO), Lahore Electric Supply Co (LESCO), Multan Electric Power Co (MEPCO), Sukkur Electric Power Co (SEPCO), Hyderabad Electric Supply Co (HESCO), Quetta Electric Supply Co (QESCO)

GENCOs and 8 DISCOs in order to prepare those companies for privatization. After completing the assigned tasks, it was required that PEPCO dissolve itself by 2006. However, PEPCO was unable to complete the assigned tasks and became deeply involved in internal matters of the entities such as procurement, appointments at key posts and finance. PEPCO even indulged in mobilising employees of the unbundled utilities to stage protests and demonstrations against the power sector reforms. This created resistance within the utilities against reforms. Consequently, government disbanded PEPCO by April 2012 under the pressure of the development partners (ABD and the World Bank)[3].

The second vertically integrated public utility, KESC, was not unbundled. It was put forward for privatization at the time reforms started in the power sector. Government only succeeded in 2006 to sell KESC to the Abraaj group of UAE as a vertical utility including all its generation, transmission and distribution assets (Ullah, 2013).

2.2.3. Post-reform electricity industry

Since formation of the regulatory body, a Single Buyer Model is in place in the electric industry under which the Central Power Purchase Agency (CPPA/NTDC) acquires electricity from all the producers[4] and sells it to 10 distribution companies under the PEPCO system and KESC. Implementation of the electric power sector reforms has been slow and are still in the early phases after more than twenty years. No major milestone has been achieved other than IPP entry in generation and unbundling of WAPDA. Other steps in the reforms template are still to be accomplished. For example, corporatization of unbundled utilities has still not been realized, despite several efforts from the federal government, because the heavy financial burden of these entities (in the form of circular debt) is shared by the public exchequer. Another unfinished agenda of the reforms is inability of the electric regulator to establish its independence in ascertaining rights of all the stakeholders. The regulator (NEPRA) is frequently challenged about independently performing its assigned tasks, such as determination of tariffs for generators, transmitters, distributers and the consumers. Unless the regulator acts independently and all state owned entities

[3] http://www.brecorder.com/top-stories/0:/1179463:pepco-stands-dissolved/?date=2012-04-19

[4] including WAPDA hydro projects, 4 public sector thermal projects (GENCOs), the Pakistan Atomic Energy Commission (PAEC), International Power Producers (IPPs), Small Power Projects (SPPs) and Rental Power Projects (RPPs).

including generation and distribution are privatised, the introduction of markets at the wholesale and retail level remains challenging.

Consequently, performance of the post-reform power sector is similar to the pre-reform situation. There is capacity shortage, high transmission and distribution (T&D) losses, inefficient pricing structures, costly and ineffective subsidies, electricity theft, governance issues, circular debts and an inefficient resource mix in generation (Kessides, 2013, Malik, 2012, Malik et al., 2009, Munir and Khalid, 2012). These problems already existed before the 1990s, the period that Pakistan reformed its power sector with the intention of solving these problems. However, the problems were not solved by the institutional reforms. The assumption analysed in this paper is that the continuation of the poor functioning of Pakistan's power sector is caused by poor and incomplete design of the institutional reform and slow pace of implementation of the reforms (Munir and Khalid, 2012, Malik et al., 2009).

3. A Neo-Institutional explanation of power sector reform failure in Pakistan

Institutional Economics introduced institutions into mainstream economic literature by asserting that basic assumption of classical economics i.e. bounded rationality actually is difficult to realise in real world (Commons, 1931, Furubotn and Richter, 2005). Early attempts of instilling institutional concept into mainstream economic theory was objected by classical economists due to lack of rigorous theoretical background. New Institutional Economists such as Coase (1937), Hayek (1937), Alchian and Demsetz (1972), Chandler (1962), Arrow (1963), Williamson (1971) and North (1979) have built their theoretical perspectives on the assumptions of Classical Economics. They did not negate New Classical Economics but refined by discussing situations which it could not explain well. New Institutional Economics (NIE) led by Douglass North emphasized that western countries did not achieve high economic growth merely on the basis of having high industrial production but also because they got better institutions than less developed countries. Western countries transformed their economic, political, social and legal institutions over centuries which helped achieve fast economic growth. Hence, we conclude from NIE that for developing entire economy or a sector of the economy requires suitable set of institutions.

We uses the work of Douglass North and Oliver Williamson related to institutional reforms to analyse power sector reforms in Pakistan (North, 1990, Williamson, 1998a, Williamson, 1981).

From a Neo-Institutional perspective, reforming the power sector involves reorganising governance and regulatory frameworks towards market-based demand and supply conditions by gradually reducing the monopolistic characteristics of production and supply of electricity. It requires changing the institutional environment and governance structures by adapting and creating laws, regulation and organizations compatible with exposure to market conditions (Bhattacharyya, 2007). Multiple institutional arrangements that are incompatible, and those that do not favour market-based supply, are likely to reduce the impact of sectoral reforms. In this study we investigated if incomplete power sector reforms, or incompatible institutions and organizations originating from reforms, have contributed to exacerbating power sector inefficiencies in Pakistan.

The first condition tested is that the social embeddedness (or informal institutions) and legal institutional environment (or formal institutions) of the country in general and power sector in particular, should favour the reform model, as this requires a supportive institutional framework to create a competitive market or a market for competition. Embeddedness and institutional environment are also known as the institutional endowments of a country (Spiller and Tommasi, 2008). Embeddedness of society impacts the nature of formal rules (of all types) and their enforcement mechanism or governance structure (Williamson, 2000). The institutional environment consists of upper level formal rules such as the meta-constitutional rules, constitutional rules and the rules emanating from them such as political, economic, social and legal institutions of a country. These institutions help set the tone of political, economic and legal systems. Successive formal rules are specifically designed to meet the transactional requirements of organizations, markets and individuals. It requires that institutional endowments including the societal rules, formal rules and rule making institutions should align with the reform model (or reform philosophy) adopted in the power sector.

The second condition tested is that institutional arrangements or governance structures should also be favourable to the reform model. Institutional arrangements concern organizations, contracts and transactions. In a state-led utility model, transactions normally take place within a vertically integrated utility that reduces the costs of transacting among different segments of the value chain (Williamson, 1998b). However, in a market driven utility model, the quantity of external transactions accelerates thus increasing the costs of transactions among different organizations or stakeholders in the economic sector. Thus, keeping the requirements of a post-reform utility model

in view, relevant organizations, efficient contracts and information flow need to be established in order to lessen the transaction costs. However, when information is constrained, and when perfect rationality is difficult to realize, prospects for the completeness of contracts and lower transaction costs are reduced. This situation thus diminishes competition prospects in the market and requires the existence of a market regulator to protect stakeholders' interests. The regulator is required to be independent and powerful enough to oversee the functioning of newly created organizations under the new reform rules. Thus a sustainable institutional arrangement requires appropriately relevant organizations, transparent information abundance, completeness of contracts among organizations and relevant stakeholders, lower transaction costs and an independent as well as effective sector regulator.

Thirdly we examine conditions related to wages, costs, rates, prices, subsidies and other temporary arrangements provided when the market lacks a competitive pricing mechanism. Institutional reforms that move away from state monopolies require a restructuring of prices to make them more market driven and cost reflective. Subsidies would need to be made more targeted or abolished; and similar decisions enacted on other monetary fronts to enable industry to thrive in a self-sustaining market environment.

Fourthly we explore the direction of institutional change that is determined by path dependence (North, 1994b). Agents of change from within and outside the power sector may favour institutional reforms. At the same time, if some people foresee that a new setup will jeopardize their interests, they may create hurdles to any change in the institutional framework of the sector. If the second group gets stronger, the system may follow its previous track and may resist the reform. Institutional and economic endowments, as well the background of agents and opponents, may determine the strength of path dependence. If endowments are strong enough, then they may help to resolve the problem of path dependence in a more immediate timeframe, otherwise dependency may be prolonged and convert into a gridlock situation that may require revolutionary measures to overcome (North, 1990).

4. Data and Methodology

The four Neo-Institutional theoretical concepts were examined in Pakistan by using Q Methodology (Stephenson, 1993) to interview people who were knowledgeable about the power

supply sector. Q methodology consists of six distinct and inter-related steps. It starts from identification of theme of investigation and the relevant sources that could contribute to build a population of statements known as a concourse. The theme for this study is "determinants of institutional change in the power sector of Pakistan". This was used to create the concourse by extracting statements from primary and secondary sources. We selected 23 respondents linked with the power sector as primary sources (Table 1) and relevant literature including newspaper articles, journal articles, television talk shows, magazines, etc. as the secondary source.

Table 1: List of expert categories and the number interviewed in each category for Concourse building

- Academics (Economists), (4)
- Institutional Lawyers, (2)
- Employees of the Utilities, (1)
- Experts from Regulatory Authority (NEPRA), (3)
- Experts from Ministry of Finance and Planning Commission, (4)
- Members of the Parliament, (2)
- Experts from Research Organizations, (3)
- Businessmen, (3)
- Members of power sector unions, (1)

In the second step, objects of the investigation related to the topic (such as pictures, notions, ideas, statements, etc.) are collected to form the concourse. In this study we took statements as the objects of investigation by utilising the four Neo-Institutional concepts. Semi-structured interviews (or open discussions) were conducted with the 23 experts. In addition to the information from interviews, secondary sources were used to collect statements on the theme. In this way, a total of 215 statements covering a range of dimensions on the theme were collected to build the Q concourse.

A small and manageable number of statements for Q sorting were then selected from the concourse ensuring that all the important dimensions of the concourse are covered (Van Exel and de Graaf, 2005, Brown, 1980). This is called the Q set (or Q sample). The number of statements in a Q sample normally falls between 40 and 60 (Van Exel and de Graaf, 2005). This number may vary in different studies; however Barry and Proops (1999) argue that a Q sample of 36 statements is easily manageable for both researchers and stakeholders. In this study, we selected a Q sample of 51 statements. These were chosen using the following criteria.

Firstly, we included statements referring to the institutional aspects emphasized in our theoretical underpinnings. These consisted of statements highlighting country and sector specific institutional embeddedness, institutional environment, institutional arrangements or governance structure and market operations on prices, costs, wages, subsidies, etc. in the case of market imperfections. Statements concerning path dependence, transaction costs and different change elements also became part of the Q sample.

Secondly, we included statements relevant to respondents who were likely to be involved in the next level of the methodology i.e. ranking the statements of Q sample on a Likert scale. Since some of those participants had given their viewpoints on the topic during the initial round of interviews for concourse building; therefore a scoring of the strengths of their opinions on the key topics of their interest were possible to include in the Q sample.

Thirdly the statements selected included those that the respondents could agree with, disagreed with, and which were neutral. Fourthly was the criterion as to whether the statement was referring to a barrier inside the power sector or to a barrier outside the power sector. We included both types of statements. We adjusted the original wording of several statements to make them more understandable for the respondents, before they were printed on cards. The cards were numbered in a random order from 1 to 51. In total we asked 34 respondents (i.e. our P set) to sort the Q sample.

The 34 respondents were asked to rank the Q statements on a Likert scale in the presence of the researcher according to their own thinking/knowledge or belief. Some studies use Likert scale between -5 to +5 (mostly disagree to mostly agree) or even wider to flatten the distribution. But we considered that this widening might increase confusion among participants, so in order to retain clarity, we used a Likert scale of -4 to +4. Since respondents were very busy so we took early appointments for Q sorting. We applied a free choice sorting, allowing respondents to put any number of statements under any rank on the Likert scale, as sorting methods have no influence on the final results (Brown et al., 1999, Coogan and Herrington, 2011). After sorting, the respondents were interviewed to discuss reasons behind ranking different statements. In this way we collected 34 rankings from the 34 respondents along with sufficient information for placing different cards under different numbers.

The rankings (Q sorts) of the statements by the respondents were then analysed (Van Exel and de Graaf, 2005). We used PQ Method software for this study. This quantifies the degree of divergence between respondents' viewpoints by putting similar and dis-similar rankings of statements in an inter-correlation matrix. In order to identify the natural groupings, the inter-correlation matrix was factor analysed with the help of Principal Component Analysis (PCA). This analysis showed how each statement was ranked by the respondents' loading in different discourses. This level identified eight groups or discourses which we rotated. Different rotation methods such as Varimax or Judgmental are used. Since, these methods can only shift the angle of observing the Q sorts and are not able to impact the perceptions carried through individual Q sorts and relationships among the Q sorts (Van Exel and de Graaf, 2005). Therefore, we used Varimax method to extract fewer but more meaningful discourses.

Discourses were selected on the basis of two criteria. Firstly, eigenvalues of the discourses were required to be greater than 1; and secondly each discourse had to be loaded on at least by two Q sorts (Brown, 1980, Watts and Stenner, 2005). At significance level $P < 0.01$, the significant loadings of a discourse can be measured by the equation $2.58(1/\sqrt{N})$ where N is the number of statements in the Q sample (Brown (1980). This implies that all the factor loadings in this study will be significant if they are greater than or equal ($\geq$) to the value $[2.58(1\sqrt{51})] = \pm 0.36$. Discourses extracted from this analysis represent clusters of statements that are highly associated internally.

5. Results and Discussion

Four dominant discourses were recognized following factor analysis. Table 2 presents loading of each statements for four discourses A, B, C, and D with eigenvalues greater than 1 and supported by at least two Q sorts of respondents. Table 3 presents loadings of different respondents on each discourse. We have only utilized statements with significance level of $P < 0.01$ to interpret our results.

Table 2: Determinant score (from -4 to +4) for each discourse

No	Statements	Discourses			
		A	B	C	D
1	Lack of rules and regulations to invoke competition	2	0	2	1
2	Weak political parties to raise public support	-2	-3	-2	0
3	Lack of skills and education in minister and utilities heads	-1	2	2	3
4	Utilities depend on public subsidies	-1	-2	2	-2
5	Lack of commitment in Govt. due to fear of losing public support	3	-2	1	4
6	Implementation was not compatible with inst. endowments	2	3	1	2

7	Minister and utilities' heads lacked will to reform	-2	3	0	3
8	Insufficient laws on property rights and contracts	2	-4	0	0
9	Threat of army intervention decreased commitment to reforms	-4	-4	-3	-4
10	Shortage of regulations for attracting new technologies	1	1	2	1
11	Strong unionism among employees of utilities	3	-3	-1	3
12	Lack of accountability mechanism in regulatory agency	1	-1	3	1
13	High cost of doing business	-2	-2	-2	-2
14	Regional geopolitical situation	-1	-3	1	-3
15	Culture of electricity theft and non-payment of utilities bills	4	4	3	3
16	Less educated and trained staff in regulatory authority	0	2	4	2
17	Deficiency of necessary safeguards for regulatory freedom	2	3	2	1
18	Deadlock during different phases of the reform	3	4	1	2
19	Insufficient rules for conflict resolution mechanism	0	1	-1	-2
20	Less integrated financial sector with the power sector	0	0	-4	-1
21	Poor planning for electricity infrastructure due to no census	-1	-2	-4	-1
22	Slow process due to external involvement in implementation	-3	2	0	-2
23	Weak performance of the regulatory authority due to political involvement	1	2	4	2
24	Economic, social and cultural differences among people	-1	3	-4	2
25	Weak commitment among legislator due to rent seeking	-3	-3	-2	-4
26	Ethnic and sectarian polarization	-2	0	-1	-3
27	Delays in legislation due to insufficient rules of business	-3	-1	-3	-4
28	Poor reforms due to demonstration effects in regional states	-3	0	-3	-3
29	Loss of enthusiasm due to poor law and order situation	-1	-3	-1	-1
30	Non clarity of roles among organizations due to unclear rule	1	-1	1	0
31	Inefficient laws to inhibit power theft	3	2	4	2
32	Lengthy and costly process of enforcement of contracts	4	2	1	3
33	Obstacles in feedback learning to reforms' implementers	0	0	-1	1
34	Inefficient communication of regulatory agency and utilities	0	-1	0	-1
35	Incoherency between reform design and implementation	-2	1	-1	-2
36	Reversal of economic policies and reforms	-1	0	0	1
37	Corruption and inefficiency in utilities and ministries	3	2	3	4
38	Politically motivated over staffing in utilities	4	-1	2	4
39	Incongruence of reforms package with sector’s starting conditions	2	4	2	-1
40	Weak interactions among different stakeholders	2	-2	0	0
41	Non cost reflective and non-remunerative tariffs	-4	-4	2	-2
42	Historical baggage of poor institutions from colonial power	-4	-1	0	-3
43	Low level of GDP per capita	0	1	2	-1
44	Varied perception of net economic gains and losses	2	-2	-2	1
45	Insufficiency and inefficiency of electricity law	0	1	2	-1
46	Information constraints for business transactions	1	-1	-2	0
47	Lack of strong coalitions in the governments	-3	-2	-4	-3
48	Top- down approach for reforms' implementation	-2	1	-2	-2
49	Shortage of skilled legislators to draft right set of reform	-2	2	1	-1
50	Overlap in judicial and administrative authorities of regulatory agency with	1	1	-2	0

51	Misunderstanding of reforms due to low literacy rate	1	-1	-1	2

Note: Table 2 specifies the score assigned to each notion within each discourse. Reading the table by column gives the scores of statements with respect to a particular discourse. Reading the table by row reveals the scores of a particular statement across all the discourses. For example moving downward on discourse A shows that statement 1 received score 2, statement 2 as -2 and statement 3 as -1 for discourse A and so on. While if we read along the lines then notion 1 got a score of 2 for discourse A, 0 for B, 2 for C and 1 for D discourse.

Statements such as 33 and 36 scored across the discourses from -1 to 1 with 0 included were not considered important because they did not impress respondents sufficiently to be noticeably ranked. The results also showed that some statements were ranked profoundly differently among a given discourse and other discourses. In addition to notable statements, there were also a list of consensus and disagreement statements. Consensus statements carry similar scores among all discourses, whereas disagreement statements may receive opposite scores under different discourses; and these demonstrate severe disagreement among all the discourses on a given statement.

Table 3: Experts' loadings on each discourse

Experts	**Discourses**			
	A	B	C	D
Academics (Economists)	4	1	2	3
Institutional Lawyers	1	1	1	2
Employees of the Utilities	1	2		
Experts from Regulatory Authority (NEPRA)	2	1		
Experts from Ministry of Finance and Planning	3		1	2
Member of Parliament	3			3
Experts from Research Organizations	3			4
Businessmen	4			
Members of power sector unions	2	3		

Note: Table 3 explains the experts' loading on each discourse. All experts load at least in one discourse which shows the clear patterns of factor loading by every stakeholder's group. For instance, academics load on discourse A, B, C and D, similarly, experts from Ministry of Finance and Ministry of Planning load on discourse A, C and D. Member of power sector's labour unions load on discourse A and B. It is evident that discourse A is heavily loaded by all the respondents as compared to other discourses.

Based on the statement loadings, the following names were assigned to the discourses based on the conditions described in Section 2.

- Weak governance structure
- Mismatch with sector endowments
- Weak regulatory authority

- The political context

The following sections describe each discourse in turn.

5.1. Weak governance structure

The first discourse (A) contains 23% of the explanatory variance and focuses on weak governance structure as one the main causes of the poor electricity reforms in Pakistan. This is supported by statements that mention the existence of weak institutional arrangements or governance structures as one of the major institutional causes for reform failure.

Table 4: Statements supporting discourse A

Distinguished	Strongly agreeable	Strongly disagreeable
3, 4, 7, 14, 16, 24, 40, 42, 49, 51	15, 32, 38	9, 41

Statements given in Table 4 build this discourse in the following manner. Information constraints exist among different stakeholders, such as the regulator, firms, consumers and the government, that may weaken stakeholder mutual interactions. Such constraints may impact the behaviour of some stakeholders differently. Some may utilize these constraints for their own benefit, while others may create other types of complexities for the governance structure. For example, information constraints among general consumers who are also not well informed about the benefit of reforms reduce their support for reforms; whereas information constraints among firms, regulator and government contributes to lowering their mutual interactions. These constraints also increase uncertainty and thus opportunistic behaviour among some stakeholders, such as politicians and utility employees, which might contribute to increasing transaction costs. High transaction costs impact the time and overall costs attached to contract enforcement. This leads to weakening of the governance structure in the power sector. Weak governance structure is an important factor responsible for poor performance of the institutional reforms in the Pakistan power sector.

5.2. Mismatch with sectoral endowments

Discourse B contains 10 % of the variance and implies that the design of institutional reforms in the power sector of Pakistan did not account for pre-reform conditions (supported by statements in Table 5).

Table 5: Statements supporting discourse B

Distinguished	Strongly agreeable	Strongly disagreeable
1, 5, 8, 11, 22, 28, 29, 35, 38, 47, 48	15, 18, 39	8, 9, 41

Firstly, pre-reform conflicts over the distribution of resources were never resolved while designing and implementing the reforms. For example, conflicts among provinces and the federal government over the utilization of natural resources such as water, gas and coal remained unresolved, which then affected the overall reform process. This also contributed to restriction of private investments in production projects based on indigenous fuels, which then increased the proportion of expensive electricity in the overall electricity generation capacity due to high dependence on more costly imported fuels.

Secondly, the pre-reform power sector was endowed with a culture of electricity theft and non-payment of utility bills by different state-level organizations and the general public. In addition, electricity prices were highly subsidized on the basis of politically motivated economic and social arguments. These issues created financial problems for the government and needed to be resolved before reforms were implemented in order to offer attractive contracts to private companies under a new post-reform market-based mechanism.

Thirdly, respondents believed that reform implementation in a top-down hierarchy did not match with the sector's internal circumstances. Implementation of the reforms, which was designed to challenge the existing public sector vertical monopoly, could not be achieved by the actors of the pre-reform power sector, who were re-employed at different positions in the post-reform power sector entities. These actors resisted change to the institutional framework because this threatened their personal and organizational interests.

5.3. Weak regulatory authority

Discourse C contains 7% of the variance. The weakness of the regulatory authority showed in political interference in the regulators activities and decisions, which then undermined the independent position of the regulatory authority.

Table 6: Statements supporting discourse C

Distinguished	Strongly agreeable	Strongly disagreeable
4, 5, 11, 12, 14, 18, 20, 21, 22, 24, 41, 43, 50	16, 23, 31	47

For example, involvement of polity in below-cost tariff setting for the sake of public support created imbalance between electricity costs and prices, which is balanced through tariff differential subsidies (TDS). The failure of government to release subsidies at the right time increased the volume of circular debt, which affected the performance of the whole production chain of electricity and discouraged investors. A second weakness that impairs the performance of the regulatory agency is the shortage of highly educated and skilled experts to conduct regulatory affairs while employing the latest regulatory instruments. A third point emphasized by the respondents is the lack of an accountability mechanism for the regulatory agency to check the resoluteness of their regulatory decisions in order to improve governance, but not at the cost of independence. So a balance is required between independence and accountability of the regulatory agency.

Due to these weaknesses, the regulatory agency has not played its role properly. Firstly, as an advisory body on power sector legislation, it has not helped the government to draft an effective law against power theft. Secondly, it has not devised an applicable formula for tariff determination for electricity projects based on different resources such wind, solar, etc. Its role in tariff determination for different segments of the value chain is also not satisfactory; and the regulatory agency has not been effective in utilizing its judicial authority for enforcing all terms of the operating licenses granted to different stakeholders in the value chain.

5.4. Political contexts

Discourse D contains 15% of the variance and reveals that the political context has been central in reducing the impact of power sector reforms in Pakistan.

Table 7: Statements supporting discourse D

Distinguished	Strongly agreeable	Strongly disagreeable
2, 19, 26, 39, 42, 49, 51	5, 37, 38	9, 25, 27

Politicians have intervened in the sector's internal affairs, particularly in the recruitment of staff and in tariff setting for the sake of public support. Political affiliations of the employees also contributed to a rise in corruption in utilities. Respondents did not favour the concept of politicians' involvement in rent seeking from the power sector. The discourse has also suggested that there was a failure in the rules of business for the parliament and a lack of efficient parliamentarians for enacting a good law on power sector reforms. This discourse maintains that political involvement in the sector is primarily to protect public support. In addition, the discourse strongly disagrees with the notion that the military, which has interfered in political matters, also interfered in power sector reform matters of Pakistan.

In conclusion, discourse analysis on the determinants of institutional reforms in the power sector of Pakistan, confirms our assumptions that the institutional framework of the country and the sector, including embeddedness, institutional environment and the governance structure, were not adapted according to the neo-institutional theoretical expectations. It showed that Pakistan was unable to create the necessary institutional conditions for power sector reform. It also confirmed our assumptions on the process dynamics of the institutional reforms. We found that the actors of the reform, within the electricity sector as well as associated sectors, used their positions to influence the reform process and outcomes according to their own interests. It showed that the interests and loyalties of the entrepreneurs were in favour of the old, pre-reform institutional setting of the power sector in Pakistan.

6. Conclusion and policy implications

Power sector reforms have progressed slowly in Pakistan. This paper provides an institutional explanation of why reforms in the Pakistan power sector failed. We based our analysis on expert judgements with the help of Q-methodology, which demonstrated that the experts agreed on four institutional causes of the reform failure: weakness of the governance structure, weakness of the regulatory authority, sectoral endowments and resisting actors in political institutions.

We suggest the following changes that would have the potential to facilitate effective uptake of the reforms. Although this is a major undertaking and a slow process at the country level, the endowments of the country and the sector should be made compatible to the market led

institutional framework. Institutional endowments of the country comprising constitution, legal, administrative, economic and political institutions and the ideology should be transformed using the sequence of change from Williamson's framework. These institutions should be internally coherent and avoid duplication of purpose in order to remove dualism. The constitutional clauses on electricity services should be adapted to the new framework and include the concept of electricity as a market commodity rather than a right. This ideological change on electricity usage should be assimilated in other institutions such as laws of contract and property rights and then to the rest of the institutions relating to the power sector. The judicial system for enforcing property rights and contracts should also follow a new framework to create increased coherence between institutional endowments and the judiciary. Recently, many decisions by the judiciary have proved unfavourable to the power sector's progress due to the dualistic nature of the institutions.

Progress can be faster at the sector level. A nation-wide electricity law should be created with a consensus of the provinces to clarify its operating jurisdiction and create coherence with regional electricity laws. All the utilities in the country should be regulated by a single regulatory authority. The law should clarify the operating rules for the electricity markets, and nature of regulatory institutions comprising regulatory governance and regulatory substance[5]. In addition, the law should contain instruments for effective control of opportunistic behaviour from within and outside the power sector; strict laws against power theft for both the employees of the utilities and the consumers; effective rules for the performance evaluation of the utilities; efficient rules for tariff determination for all the segments and innovative technologies; and an efficient mechanism for conflict resolution.

Our study also suggests that the governance structure of the power sector should be improved. The relationship among utilities, government, regulator and the consumers should be clearly identified. These relationships are determined by the contracts offered by the regulator to the utilities. In this context, contracts should increase the certainty of transactions among stakeholders in order to lower transaction costs. Higher transaction costs among utilities will discourage unbundling activities and increase the chances of vertical integration once again. Therefore, the regulator

[5] Pakistan needs to change regulatory substance to increase efficiency based generation, transmission and distribution. Pakistan is one the few countries of the world that retains cost recovery regulations for the generation, distribution and transmission of the power sector.

should frame contracts carefully by explaining the range of possible transactions among the stakeholders and making that information accessible in order to reduce the problem of information constraints. Constrained information would tend to increase opportunistic behaviour by some stakeholders against others. In addition to framing efficient contracts, the mechanism of contract enforcement should also be efficiently improved within the regulatory agency. If contracts and mechanism of their enforcement are efficient,, then the power sector reform will be able to achieve its targets

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