Natural Monopoly, Public Trust and Vested Interests: Case of Power Sector in Pakistan

Naheed Zia Khan*

Abstract

The advent of neo-liberalism in the last quarter of 20th century was a landmark development in the modern history of economic activity. One of the major features of the neo-liberalist counter-revolution, as opposed to the Keynesian interventionist revolution, was privatization of public utilities which were globally operating as natural monopolies in the state sector. The biggest of the latter universally existed in the power sector. Notwithstanding the global wave of power sector reforms and persistent deficit of financial resources and public trust in the corresponding sector of Pakistan, reforms of GENCOS and privatization of DISCOs in the country remain an unfulfilled promise and a wishful thinking respectively. This paper looks into the factors justifying the privatization of state monopolies in the power sector world over and attempts to make a similar case for Pakistan, advocating a consistent, gradual and sustainable process of reforms to protect societal welfare, save on public resources and help boost up industrial production. It is argued that vested interests are having formidable strongholds in the power sector of Pakistan, while economic theory and universal empirical evidence no longer favor the monopoly in electricity generation and distribution. The findings of study lead to the conclusion that world of 21st century is being led by enterprising investors with bags full of money and a preparedness to welcome risk wherever the niche exists in the market. It is recommended that tangibly concrete efforts should be made to build up the confidence of domestic and foreign investors in the profitability potential of large scale industry of Pakistan; specifically, power sector reforms ought to be the frontline item of public policy agenda, given the current state of affairs regarding electricity supply to domestic and commercial users. - Author.

Introduction

The evolutionary process of universe is a continuum of energy transformations. The role of energy is no less significant in the evolution of human society and civilization on the home planet. Transformation of energy into electricity for household and commercial use is one of the major technological breakthroughs, following the Industrial Revolution in the 18th century. The electricity industry evolved world over as one of the major network utilities. Insofar as the latter represent the classic natural monopolies, the phenomena of consumer welfare and efficiency underscore their significance for economic policy. Theoretically, once a network utility is fully operational, the balance of the distribution of surplus should shift from producer to consumers because the networks are durable and fixed with large and sunk capital. But in reality, by manipulating supply to control the price, a network utility extends the producer potentially

*Dr. Naheed Zia Khan is Professor of Economics at Fatima Jinnah Women University, Rawalpindi.
Many of the South Asian and African countries are still having low levels of electricity consumption because of supply side problems. Management are the common features of electricity industry in these countries. Furthermore, network utilities in developing countries are mainly responsible for building up the public debt to unsustainable levels. On the other hand, developed countries have faced quite different kind of problems since their electricity demand started to taper off and the revenue generated was not sufficient to meet the rising cost and risk in the power sector caused by increase in regulation, growing environmental concerns and escalating capital investment burden of nuclear power plants [Dubash (2002); Karekezi and Kimani (2002); Williams and Dubash (2004); Williams and Ghanadan (2005); Sovacool (2008); Tagare (2011)].

Since after the neo-liberalist paradigm shift in economic policy, favoring privatization of State-owned network utilities, the institutional arrangements for power transmission and distribution networks have gone through drastic reforms almost everywhere in the world. Using inductive research method, this study first attempts to investigate the general perspectives pertaining to power sector reforms and then proceeds to probe into the specific case of Pakistan where,

1During 1980s, 25 percent of the total amount paid by the developing countries to service their external debt represented the foreign borrowing for power sector development projects, see, Jhirad, “Power Sector Innovation in Developing Countries.”
unfortunately, excessive and frequent power cuts threaten to undermine the wider economy, unless corrective measures are taken by the governance. The analysis begins in Part 1 with highlighting the major historical developments, while Part II presents a critical evaluation of the global reform process. Part III carries out an analysis of the role of public/private sector in the electricity industry of Pakistan, followed by Part IV which makes suggestions for reforms of electricity distribution companies (DISCOs) in the country.

Living in Rooms Full of Light

Historically, diverse patterns of electricity supply have existed over space and time. Widespread public ownership of electricity, generation, transmission and distribution remained, and at many places still remains, a common feature round the world. The significance of power sector for the governments is underscored by the World Power Conference held in London(1924), Berlin(1930), Washington D.C.(1936) London(1950), Vienna(1956), Melbourne(1962) and Moscow(1968); when its name was changed to World Energy Council(WEC) which met last in Montreal in 2010.

The first ever public use of electricity was made in 1881, by lighting the streets in Britain. For quite a long time, electricity did not have a viable market with eager buyers to pay the price ensuring profitability of an item requiring high fixed cost before the operations could begin. Even in the presence of willingness to pay by a small number of households, the market price levels in the initial phases remained the choke price for the largest part of potential consumers, not bringing producers enough revenue to smoothly operate with continuously decreasing average costs allowing increases in production. However, enterprising investors were willing to step in this new, risky and unpredictable market.

In Britain, many private investors were licensed to supply electricity at a limited scale to the households in densely populated major urban areas with their own generating stations and small distribution schemes. Later on, advances in transmission technologies, coupled with industrial use of electric power and further legal developments, helped set up power companies for supplying electricity to authorized distributors having economically viable connectivity outside large towns. Nonetheless, the industry was not organized on a...
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national basis to promote large scale generation and transmission until 1926, when the country’s Central Electricity Board implemented the measures to construct a national grid for interconnecting selected, mainly efficient, generating stations. Indeed, the private sector thrived in supplying electricity to domestic, industrial and commercial users up to 1940s. Given the rising tide of socialism, dollar gap crisis, and the Labor party government in office, it is hardly surprising that power was one of the major targets for nationalization. The move started with the Electricity act of 1947, under the pretentious desirability of integrating the whole supply industry, and on April 1, 1948, the British power sector became a State monopoly, taking over total assets originally worth about one million pound sterling.

In the United States of America (USA), the first central station power plant, started by Thomas A. Edison, became operative in 1882 with 59 customers. The electricity production initially evolved with competition between private firms serving household, business and government consumers, in various spatially limited markets. With electricity industry shifting to the larger scale after transition from DC to AC current system, municipal ownership was inaugurated to avoid monopoly pricing. Some municipal companies, however, succumbed to corruption and their irregularities paved the way, in 1907, for investor-owned utilities (IOUs) regulated by state governments. Theoretically, this arrangement was considered to increase consumer welfare with price controls, while simultaneously protecting the interest of IOUs by having a negotiated monopoly. By the 1920s, a new shape and organizational structure in the power sector had emerged with the establishment of holding companies which, unlike IOUs, were far more independent of the regulatory constraints.[Hirsh (1999)]. In 1952, the power sector had become the largest industry in terms of business investment in USA. The investment in the power sector, including generation, transmission and distribution, had reached above 33 billion dollars, of which more than 25 billion dollars was the private capital invested in IOUs and holding companies, while the municipal systems and federal projects contributed three and eight billion dollars respectively. In 1952 USA generated 42.5 percent of world power production. The federal projects largely targeted the electrification of rural establishments not receiving central station electric service. For rural electrification, some loans were even made to private investors. However, the government largely financed the program with federal rather than private capital on a cooperative basis. The Rural Electrification Administration helped farmers to form cooperatives [Hyman (1992)]. By 1952 co-operatives and private investors had brought central station electric service to most of the farm sector establishments including households and small industries. Finally, the government in USA has effectively played the role of supplier as well as
facilitator and regulator for ensuring competition and efficiency in the country’s power sector.\footnote{In California, for example, private utilities were required to sell some of their power plants to prevent concentration of market power, see, Timothy, Palmer and Martinez, “Alternating Currents: Electricity Markets and Public Policy.”}

Private ownership of electric supply concerns also existed in many other Western countries. Indeed, France nationalized her power sector two years ahead of Britain, in April, 1946. Before that, many electric supply companies existed in the French private sector. Initially, these companies operated as separate undertakings which were later organized in a number of large groups supplying electricity to different areas. After nationalization, the electricity supply industry in France was centralized, assuming the characteristics of State owned monopoly.

In Germany and Sweden on the other hand, the power sector was never completely nationalized or centralized. In both countries, private companies, public ownership and private/public partnerships have always existed side by side in the power sector [Heddenhausen (2007)]. During 1920s and 1930s, there were more than 600 electricity supplying small undertakings in the private sector of German economy. The country also had seven large companies which were responsible, with some State ownership and control, for construction of the main grid. In 1938, Germany was the world’s second largest producer of electricity after USA. Similarly, power sector in Sweden evolved with the close cooperation of State, municipal authorities and private companies. In the early 1950s, private sector generated 54 percent of the total electricity production of Sweden.

Spain is another major European country where power sector initially evolved largely in the private sector. Generation and distribution of electricity in Spain remained in the hands of a number of large private companies for a very long time. In 1944, 15 of the largest of these firms were producing 85 percent of the total annual electricity production of Spain. In contrast, the Italian government has always effectively controlled the country’s power sector. Italy fully nationalized her electricity industry early in 1965 by transferring 35 power companies in the private sector to the State owned company, Ente Nazionale per L'Energia Elettrica(ENEL).\footnote{“Italy: Headache of Nationalization,” \textit{Time}, Friday, January 08, 1965.} Until 1991, electricity sector in Italy remained a public legal monopoly with a vertically integrated structure [Tesauro (2001)].

Finally, the European electricity industry in its early stages was mainly based on regional private monopolies or collusive oligopolies. Such a pattern was considered to compromise both efficiency and welfare. After World War II, deliberate policy reforms in many European countries, instigated by economic, political and social reasons, created
highly regulated electricity markets which were mostly vertically integrated. Under the new arrangements, state or municipally owned companies largely remained in control as there was no third party access to the transmission grid.\textsuperscript{7}

In other parts of the world, the power sector largely evolved as a State owned natural monopoly. In Japan, for example, government created in 1951 ten vertically integrated utilities to serve different regions. Each of the ten companies was having monopoly power in its respective region. In 1995, these companies together supplied 88 percent of Japan’s total electricity consumption and owned three quarters of electricity generation capacity, along with having the monopoly power over transmission and distribution networks. Compared to the State owned power sector, wholesale electric utilities, selling to the government distributors, and private generators were lying on the margins of electricity production line [Jones and Kim 2013].

The other major Asian country, which represents the underdeveloped world, is India. Interestingly, 304 of the 465 authorized electricity companies in the Indian power sector were privately owned in 1947, at the time of India’s independence. Similarly, in Central and South America private electricity companies and some municipal power supply concerns were serving only the large towns in the early years.\textsuperscript{8}

Although in many countries electricity generation and distribution evolved in the early years in private ownerships, a large number of privately owned electricity companies were small, inefficient and poorly interconnected, mostly serving the large towns and/or densely populated areas. It is a textbook production situation where competition because of higher incremental cost offers smaller consumer surplus than that of the natural monopoly. Therefore, the concentration of electricity generation in large efficient stations with reliable interconnections was almost everywhere considered essential to progress, particularly in newly independent countries of Asia and Africa. The government sponsored power boards, which were initially created with varying functions in different countries, eventually moved on to nationalize the generation, transmission and distribution of electricity.

\textbf{The Glow that Illumines}\textsuperscript{9}

The reforms of world electricity industry, largely aiming at privatization and deregulation of the power sector, started in the so called \textit{rollback}

\begin{itemize}
  \item For a detailed history of Nationalization and consolidation of European electricity industry, see, Millward, \textit{Private and Public Enterprise in Europe}.
  \item In Part I of the paper, this information and all other information, not providing the source, has been taken from \textit{Encyclopaedia Britannica}, (1964), 257-68 and 278-84.
  \item Quote borrowed from James Thurber.
\end{itemize}
period of neo-liberalism and have continued in its rollout period, though with significant temporal, scalar and spatial variations.\footnote{The Reaganite and Thatcherite policies of 1980s were largely about rolling back of the government role in economic activity with privatization and deregulation, while during rollout period the neo-liberalist focus shifted to government restructuring to help support and suppress the new market arrangements and opposition movements respectively, see, Peck and Tickell, \textit{Neoliberalizing Space}; and Peck and Tickell, \textit{Conceptualizing Neoliberalism}.
\footnote{The private generators were relying on new innovations allowing small, cheap and modular gas turbine based electricity generation. The new technology in electricity generation challenged the conventional production theory by reversing the age old argument of large scale economies, see, Hunt and Shuttleworth, \textit{Competition and Choice in Electricity}.
\footnote{California experienced insolvent IOUs and black-outs, leading to loss of consumer surplus with higher market prices. Also see, ‘When the Lights Go Out.’ The

In Western countries the electricity industry was already providing reliable service to all within a well functioning system. However, their changing patterns of electricity demand and supply warranted a restructuring of the centralised network utility model. The revenue generated by the electricity demand in most of the developed countries was not sufficient to meet the rising cost and risk in the power sector caused by increase in regulation, growing environmental concerns and escalating capital investment burden of nuclear power plants [Patterson (1999); Dubash (2002); Williams and Dubash (2004)].

The reforms of world electricity industry, largely aiming at privatization and deregulation of the power sector, started in the so-called rollback period of neo-liberalism.\footnote{The first Western country to begin reform its power sector was USA. Since 1970s, there has been a gradual transition of the electricity industry of the country from a largely public utility system to the market place competition. The 1978 Public Utility Regulatory Policies Act (PURPA) required IOUs to buy electricity from private generators, if latter offered a price below incremental cost of operations by the former[Hirsh (1999); Williams and Dubash (2004)]. The 1978 PURPA in USA, therefore, was the first step towards globally prevalent wholesale and retail competition in electricity industry. In the 1980s, during Reagan presidency, the focus shifted to demand management programs to promote energy efficiency and conservation measures. Electricity industry reforms in USA have been carried out relatively smoothly in most of the states. However, some scandals also do exist, such as the dramatic failure of wholesale electricity markets in California [Solomon and Heiman (2001); Tesuaro (2001); Heiman and Solomon (2004); Considine and Kleit (2007)]. Moreover, while IOUs

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were required to divest about half of their generation capacity to private firms, no provision was made to prevent the latter from restricting supplies to manipulate prices [Eichenwald (2005)]. Nevertheless, various organizational innovations have helped reform the power sector. For example, in a few states an alternative, with redistributive benefits and without drawbacks of public ownership, has emerged in the form of community choice. The program, implemented in various places, potentially allows communities to determine their energy mix and to negotiate a price. Successful negotiations help realize the redistributive intent of community choice by lower retail electricity prices for consumers, especially small enterprises and households with a disadvantage in bargaining power [Littlechild (2008)]. Indeed, community choice may be considered characteristic of neo-liberalist agenda which Guthman (2008) identifies as choice, localism and the market mechanism.

In Europe, Britain was among the very first countries to begin reform the power sector in early 1980s. The process was spearheaded by Thatcherite ideology in favor of markets [Newbery and Green (1996)]. Indeed, British electricity industry reforms remain the most radical and comprehensive restructuring of a network utility anywhere in the world. The country started with an industry which was in State ownership since 1948. Before reforms, the British Central Electricity Generating Board operated all generation and transmission as a vertically integrated statutory monopoly, with 12 area boards acting as regional distribution monopolies. The Electricity Act of 1989 introduced a wholesale market for electricity supply industry (ESI) along with the complete separation of transmission activity from generation. Since 1990, the ESI has undergone drastic transformations. Three major forms of the latter include change in the ownership of all of the pre-existing nationalized companies from public to the private sector; a reallocation of assets, particularly in generation and transmission; and the creation of an industry specific regulatory framework. At the time of privatization ESI was the largest of British nationalized industries in terms of turnover and capital assets [Chesshire (1996)]. Electricity Act of 1989 outlined also the duties and functions of the new regulatory regime. It was initially suggested that market regulation should be a transitional period, in the development of the privatised ESI, to be phased out with increase in competition. However, this suggestion was outweighed by the counterarguments in favor of a firm and consistent regulatory framework to encourage and maintain competition in the foreseeable future, specifically for monopoly transmission and distribution business [MacKerron and Boira-Segarra (1996)]. British approach to power sector reforms can be summarized as vertical disintegration, privatization, gradual liberalization of consumers and strong role of the markets and regulators. Indeed, within the European Union (EU) only Britain deserves the credit for successfully and

_Economist, January 20, 2001, and ‘California’s Power Crisis: Sleepless Nights.’ The Economist, February 3, 2001._
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completely privatizing the State owned power sector with a regulatory framework conducive to competition. The British experience, therefore, is of great significance for appreciating the importance of competition in the electricity industry as well as for analyzing the role of regulatory authorities to ensure fair trading and keep a check on the market power [Tesauro 2001].

Notwithstanding the worldwide drastic reforms of network utilities, following the neo-liberalist paradigm shift in economic policy, many European countries continue to have State owned electricity companies. For example, Électricité de France (EDF) in France, Electricity Supply Board (ESB) in Ireland, ENEL in Italy, Statkraft in Norway, and Vattenfall in Sweden. Moreover, despite strong advocacy by the neo-liberalist reformers for unbundling of electricity companies (disintegration into generation, transmission and distribution), opening up of the electricity market for competition appears to be achieving paradoxical results: vertically integrated conglomerates are emerging fast in the electricity industry of Europe with horizontal expansion of generating companies which are also buying distribution companies for effective long-run control of supply outlets. Indeed, within EU, supra-national scope of operation in the power sector is paving the way for domination of the European electricity market by a few companies [OECD 1997; Tesauro 2001; Hall 2005; WEC 2010].

Insofar as their problems, compulsions and motivations are very different, power sector reforms have largely been cataclysmic in developing countries. The motivations largely included growing prospects of the availability of private investment, both domestic and foreign, for electricity generation along with a readily available template of reforms which was ideologically sound as well as convenient in the face of binding financial constraints of State owned network utilities. On the other hand, there was a wide range of problems faced by both suppliers and consumers of electricity in many Asian, African and Latin American countries. For example, electricity industry in many countries was having inefficient use of existing generation plants in the form of technical loses, and that in the presence of serious capacity constraints. Moreover, transmission and distribution arrangements were insufficient, thus providing limited access to the wider consumers, specifically in socially and economically marginalized areas. These problems coupled

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13Norway restructured her electricity industry without experimenting privatisation and with ensuring competition between State owned electricity supply companies, see, Midttun and Thomas, "Theoretical Ambiguity and the Weight of Historical Heritage."
World over the electricity industry is structured around four distinct segments including generation, transmission, distribution and retail. With inappropriate industry and market structure made the power sector regulation virtually ineffective.

The World Bank's 1993 policy was catalytic in the power sector reform process of developing countries. The Bank strongly advised countries to encourage private investment, privatise network utilities, and establish independent regulators [World Bank 1993]. Implicit in this advise were the conditions for continued funding, compelling the cash-strapped developing countries to implement the neo-liberalist reform paradigm. Moreover, the 1990s witnessed unprecedented growth rate of foreign direct investment (FDI) in developing countries, a large part of it in network utilities including electricity. Bacon (1999) reports a World Bank Survey of reform efforts in 115 developing countries. The findings show that 44 percent of the surveyed countries had privatized their electricity industry, with 40 percent allowing the entry of independent power projects (IPPs). The Survey also provided the evidence on restructuring of the power sector by 35 percent of the countries, including relaxation of entry barriers for private distributors, passing a new electricity law and establishing an independent regulator by 18 percent, 33 percent and 29 percent of the countries respectively. This was followed by another survey of 134-138 countries. Its findings revealed that, by 2004, private sector existed in generation and distribution of electricity of 47 percent and 36 percent of the countries respectively, while 51 percent had established an independent regulatory system [Estache and Coicoechea (2005)].

The Glare that Obscures

World over the electricity industry is structured around four distinct segments including generation, transmission, distribution and retail. These segments have different technological and economic characteristics. Retail is supply to the final consumers in household and industrial sector, while transmission and distribution are the high voltage network, and the middle and low voltage network respectively. Owing to the high overhead cost of networks, transmission and distribution inherently are the natural monopolies at the national or regional level. On the other hand, generation is widely considered to offer greater flexibility for competition in that the economies of scale in electricity production processes are not uniformly large. Similarly, as trading and marketing activities do not require high capital investment, retail supply is also potentially competitive.

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14Quote borrowed from James Thurber.
In 1947, the newly created state of Pakistan began with next to nothing power supply capability. The country inherited 60MW of power generation capability for a population of 31.5 million, yielding 4.5 units per capita consumption [OSEC 2011, P. 1]. Karachi Electricity Supply Company (KESC), was the major source in Pakistan for generation, transmission and distribution of electric energy. However, KE only served the industrial, commercial, agricultural and household consumers in Karachi and its suburbs.\textsuperscript{15} As electric power was one of the most critical of infrastructures for economic growth and sustainable development, the country created in 1959 Water and Power Distribution Authority (WAPDA), a state owned vertically integrated network utility with features inherent to the natural monopoly. The things went relatively smoothly for almost next two decades, as the country was in transition from a largely traditional to the modern economy and society. The household and commercial electricity needs were limited, with demand mainly confined to the small urban population. Similarly, power consumption in industry was not very large either. This scenario, however, changed afterwards: the Afghan War, globalization and escalating electricity shortages appear to have simultaneously engulfed Pakistan since 1980s. The state owned natural monopoly for power supply, WAPDA, supposedly the sacred public trust, is now widely reputed to have been hijacked by vested interests of various shades and forms, and is allegedly plagued with corruption and inefficiency. The \textit{horsemen of the electricity apocalypse} in Pakistan include Independent Power Producers (IPPs), welfare loss, inefficient DISCOs and circular debt.\textsuperscript{16}

Pakistan first became a customer in the Western countries’ electricity market by buying their turbines and generators. The international footloose capital made its way in the directly producing market of Pakistan with the neo-liberalist global wave in the 1980s. Power sector offered the most lucrative opportunity, with unparalleled and unprecedented incentives, to the foreign investors. The saga may be traced back to 1985 when the Government of Pakistan (GOP) jumped on the neo-liberalist bandwagon and invited the private sector for investment in electricity generation. The vertically integrated natural monopoly WAPDA thus opened up the electricity generation to

\textsuperscript{15}KESC started its life in 1913 as a private limited company which archives another three defining years so far: 1952, 2005 and 2008. By acquiring majority shareholding of KESC in 1952, Government of Pakistan continued to have its full control until it was privatized in 2005 and renamed as K-Electric (KE). Since 2008, the full management control of KE is with a holding company, Karachi Electric Supply (KES) Power Limited, owned by Abraaj Capital, holding 72.58 of its shares. In Pakistan, KE is the only vertically integrated power utility in private sector.

\textsuperscript{16}The metaphor is borrowed from CAEM (2005) where the electricity version of the four horsemen in USA includes the California crisis, the collapse of the Enron corporation, an enormous blackout in north-east of the country in August 2003, and high, volatile energy prices. This is the adaptation of four horsemen referred in the Bible, namely; plague, pestilence, drought and death [see, ‘This Week’s Insight, Review of Reviewed Item’, Centre for Advancement of Energy Markets (CAEM)].
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competition which, as it will be argued later, fared poorer than monopoly in terms of efficiency and benefits to consumers. Indeed, almost a decade before the creation of Private Power and Infrastructure Board (PPIB) in 1994, the introduction of reforms in electricity generation helped initiate in 1985 a power project, Hub Power Company (HUBCO), which was the first of its size and kind in the entire world [IGI Securities P. 12]. Within 12 years of its initiation, HUBCO became fully commissioned in 1997.

Three large multinational companies, International Power Plc of Britain and AES Power and Walter Power of USA, virtually control electricity generation in private sector of Pakistan. International Power Plc, the largest foreign investor, entered the power sector of Pakistan in 1994 with 17 percent stake in HUBCO under World Bank guarantees. This modest beginning was loaded with the kind of promise best realized when in 1995 the British Company effectively took control of the management of Kot Addu Power Company (KAPCO), Pakistan's largest power plant, built by WAPDA and privatized after completion. With its subsequent holdings in Uch Power Plant, Uch Power Plant I, HUBCO Narowal and HUBCO Laraib, Power International Plc of Britain owns and manages unmatched share of IPPs in Pakistan; and that with lucrative incentives including a luxurious cushion of tax break until 2006. Moreover, the terms of power purchase agreements (PPAs) signed with WAPDA, thirty years for HUBCO and 25 years for KAPCO, provide assurance of generous return on equity in foreseeable future.

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17The first HUBCO power plant is located at Hub, Lasbela District, Balochistan.

18Pakistan was the first country to welcome global business of IPPs, with financial backing of the World Bank, and still continues to have them. Majority of other countries, including India and China, who initially followed Pakistan, did not find IPPs suitable to their interests and left the trail at its hype.

19AES stands for Applied Energy Services.


21The Company’s annual report 2012 lists 36 percent, 17 percent, 17 percent and 69 percent shares in KAPCO, HUBCO, HUBCO Narowal and Uch power plant respectively, while its shares in the under construction HUBCO Laraib and Uch II are reported to be 17 percent and 100 percent respectively. See, http://www/annualreport2011.iprplc-gdfsuez.com/assets/downloads/pdfs/IP-2011-RR-Asia.pdf (accessed September 21, 2013).

22HUBCO’s PPA commenced from the date of its first commercial operation in 1997 and will end in 2027. As per the terms of agreement, there are two main components of tariff structure including the capacity purchase price (CPP) and the energy purchase price (EPP). The former covers the debt service element, the insurance cost element and the fixed cost operating cost element. The Agreement’s terms for EPP are even more generous as they provide the cover for fuel cost element along with the rupee variable and foreign currency variable operation and maintenance cost elements which, among other things, also include claimable
The Company’s Annual Report 2012 on Asian exposure records 12 percent increase in revenue, from 1,598 to 1,784 million Euros, with 6 percent increase in adjusted current income, from 305 to 324 million Euros. Although the Report does not list separate country accounts of revenue and income, universally unparalleled concessions granted by the GOP and sheer size of Company’s operations in the country underscore the significance of unacknowledged thanks owed to Pakistan.

Next giant in Pakistan’s private electricity generation industry is the USA based AES Power, having 30 years PPAs with WAPDA for both plants. Its first entrance with only two IPPs, AES Lalpir and AES Pakgen, boasted of an aggregated capacity of 720 MW in the 1990s. The Firm will have a combined installed capacity of 1,900 MW by 2015, after completion of an under construction 1,200 MW IPP which will need imported coal for operations.

On the other hand, the Oklahoma based Walters Power International is proven to have made a lateral entry in camaraderie with Pakistan Power Resources (PPR). The partners now have the ownership claims on at least two public sector and six private sector plants in Pakistan.

With persistent power cuts and escalating electricity price in the country, the glaring mistake on part of the GOP is obvious since IPPs are considered to increasingly cause rather than solve the problems in the power sector of Pakistan. Following proposition is made for the analysis needed to defend this position:

For multinational power companies with investment in IPPs, Pakistan is a gold pot designed by national and international vested interests.
Electricity, though sold in cents, is the most lucrative segment of 6 trillion dollars global energy market. It is not surprising, therefore, that big sharks in the electricity generation industry of the Western world found their way to countries like Pakistan where the profit margins of FDI were expected to be much higher owing to the factors like:

- Poor negotiating skills of the representatives of host country and their allegedly apathetic approach to the public trust;
- Overreliance of the government on International Financial Institution (IFIs);
- Rent seeking behavior of public servants including kicks in the back;
- Preference for politically convenient ad hoc solutions to the problems warranting a long run strategy to effectively, efficiently and sustainably serve the national interest.

In Pakistan, World Bank helped provide the foothold to FDI in electricity generation industry. As mentioned earlier, the process was initiated in mid 1980s, during 3rd and the longest military government of Pakistan which, owing to its active involvement in the proxy war in Afghanistan that USA was fighting with former Union of Soviet Supreme Republics, had earned unprecedented sympathies of IFIs.

The latter also helped set the guidelines of IPP business in Pakistan through private sector energy fund (PSED). Insofar as the foreign capital invested in Pakistan’s power sector was to have, and continues to have, the IFIs’ guarantees worth billions of dollars, the host country submitted to unprecedented terms of agreements including desired flow back of investors’ dollars to their home countries. The situation was made worse in the new millennium when, under the 4th military government, Rental Power Plants (RPPs) were added to an already uneven equation. A highly generous and recklessly negotiated tariff mechanism allows RPPs to exorbitantly charge buyers, the GOP owned power distribution companies.


28The governing principle of the International Monetary Fund (IMF) and the World Bank is one dollar one vote. The contribution made by USA to the Fund and the Bank is 25 percent of the total contributed by their entire membership.

29Rental power technology offers to meet short term needs of electricity. The rental period is five to seven years. The power generating unit can be brought up in the form of a kit and takes 4 to 6 months to install. The RPP’s single cycle standard incurs high fuel costs which keep on increasing. With a total capacity of 2734M,
An overwhelming majority of IPPs in Pakistan are oil-based thermal power plants and are underperforming by wide margins because of the lack of fuel. The pertinent question to ask here is the GOP’s justification for negotiating thermal single cycle RPPs in the presence of oil supply shortage and consequent underperformance of IPPs which now count for more than one third of total electricity generation of the country, as listed in Table 1 below.

Table 1
Power Generation in Pakistan: Installed Capacity

<table>
<thead>
<tr>
<th>Category</th>
<th>Capacity (MW)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hydel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WAPDA</td>
<td>6,481</td>
<td>30.97</td>
</tr>
<tr>
<td>2. Thermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WAPDA</td>
<td>4,900</td>
<td>23.42</td>
</tr>
<tr>
<td>KESC</td>
<td>1,955</td>
<td>9.34</td>
</tr>
<tr>
<td>IPPs</td>
<td>7,123</td>
<td>34.04</td>
</tr>
<tr>
<td>3. Nuclear</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>462</td>
<td>2.20</td>
</tr>
<tr>
<td>1+2+3</td>
<td>20,922</td>
<td>100</td>
</tr>
</tbody>
</table>

*As of June 2010

The comparable figures for the RPPs, 19 in all at different stages of processing, reveal a total capacity of 2734 MW. However, in 2011, their contribution to electricity generation was only 5 percent of the amount IPPs were producing [ICCI 2012].

Indeed, private foreign capital has been the real beneficiary of IPPs and RPPs in Pakistan. The kind of support these plants have been given by the GOP means that the public sector carries risk, while private investors enjoy guaranteed rate of return on their investment. Insofar as the private investors’ calculation of profit margins scarcely includes welfare of users, these GENCOs are partially responsible for welfare loss of electricity consumers in Pakistan. The electricity generated by IPPs and RPPs is purchased by WAPDA at a very high

about 19 RPPs currently listed in Pakistan are reported to be inefficient and obsolete. The Karkey Karadeniz Electrik Uretum of Turkey is the most expensive ship-mounted power plant in the country, charging about 41 rupees per unit. See, “The Crisis of Will,” Herald, July 8, 2013.
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price and major part of the burden is passed on to the consumers in frequent tariff rate increases and a suppressed demand with prolonged power cuts. Resultantly, in 2011, per capita energy consumption in Pakistan was only 15 percent of the world average and 54 percent of the average for Asia, excluding china [IEA 2013]. More importantly, the welfare loss borne by the consumers does not compensate for loss to the state which continues to subsidize both the electricity producers and users, as listed below in Table 2 for five years to 2009.

Table 2
Cost/Price Comparisons of Electricity in Pakistan

<table>
<thead>
<tr>
<th>Year</th>
<th>Average price</th>
<th>Average cost</th>
<th>Excess cost</th>
<th>Loss to the State (Rs. Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-05</td>
<td>4.0</td>
<td>4.2</td>
<td>0.2</td>
<td>13</td>
</tr>
<tr>
<td>2005-06</td>
<td>4.1</td>
<td>4.7</td>
<td>0.6</td>
<td>41</td>
</tr>
<tr>
<td>2006-07</td>
<td>4.5</td>
<td>5.1</td>
<td>0.6</td>
<td>39</td>
</tr>
<tr>
<td>2007-08</td>
<td>5.4</td>
<td>6.5</td>
<td>1.1</td>
<td>76</td>
</tr>
<tr>
<td>2008-09</td>
<td>7.3</td>
<td>8.2</td>
<td>0.9</td>
<td>62</td>
</tr>
</tbody>
</table>

Source: NEPRA (2010)

The obligation of state, as listed in column 5 of Table 2, may appear even more unwarranted while considering the energy sector reforms resulting in unbundling of WAPDA. Since January 2005, 15 different entities represent WAPDA including 4 GENCOS, thermal power generation companies, 10 DISCOs, distribution companies, and one TransCO, National Transmission and Dispatch Company Limited (NTDC). This process was carried out under the guardianship of Pakistan Electric Power Company (PEPCO), created in 1998, which presently is the holding company for these entities [ICCI 2012]. The excess cost is a loss to the state partly because of the GOP not agreeing to the higher electricity tariff rates determined by the National Electric Power Regulatory Authority (NEPRA), created in 1997, to introduce sound commercial principles in the power sector of Pakistan.

The argument in the following will reveal that DISCOs in Pakistan are apparently part of the problem rather than the solution for alleviating power supply bottlenecks. The size of technical and commercial losses of some of the DISCOs is a major factor not allowing to cover the cost of electricity. Rather than addressing the inefficiencies and malpractices in the power distribution system, PEPCO and NEPRA are largely focusing on renegotiating the electricity tariffs to cover the escalating cost of generation and distribution. Creation of DISCOs with unbundling of WAPDA has scarcely improved the poor state of power supply in Pakistan. Moreover, if high distribution losses resulting from electricity theft and poor collection of bills were the reasons justifying unbundling of WAPDA, high T&D losses of HESCO and PESCO, listed in Table 3, appear to weaken this justification.
In all fairness, inefficiency of DISCOs and lack of transparency in their systems are not the only factors responsible for T&D losses. The figures listed in Table 3, largely represent the distribution losses as the sources provide very little information on transmission losses. Insofar as the distribution losses are mainly caused by theft and non-payment of electricity bills, this scenario poorly reflects on the operational performance of DISCOs, specifically in terms of efficiency and transparency of their systems; the criteria which economic theory supports for unbundling WAPDA in order to avoid long run internal diseconomies arising from administrative loopholes of the large size of distribution. At the outset it appears that long run internal diseconomies of previously much bigger WAPDA remain persistent even after horizontal expansion of the hierarchy in 10 smaller units listed in the first column of Table 3. That said, the devil lies in details.

In all fairness, inefficiency of DISCOs and lack of transparency in their systems are not the only factors responsible for T&D losses listed in Table 3. These losses have always been there in Pakistan and DISCOs ought to be given some concession in the face of deteriorating law and order situation in Pakistan since after the so called war on terrorism. Table 4 provides the information on consumption and

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**Table 3**

T&D Losses in the Power Sector of Pakistan

<table>
<thead>
<tr>
<th>Electric Supply Company (ESCO)</th>
<th>T&amp;D losses (annual average) of total T&amp;D</th>
</tr>
</thead>
<tbody>
<tr>
<td>FESCO (Faisalabad)</td>
<td>10.85</td>
</tr>
<tr>
<td>GEPCO (Gujranwala)</td>
<td>11.09</td>
</tr>
<tr>
<td>HESCO (Hyderabad)+ SEPCO*</td>
<td>34.82</td>
</tr>
<tr>
<td>IESCO (Islamabad)</td>
<td>10.86</td>
</tr>
<tr>
<td>LESCO (Lahore)</td>
<td>13.11</td>
</tr>
<tr>
<td>MEPCO (Multan)</td>
<td>19.63</td>
</tr>
<tr>
<td>PESCO+TESCO (Peshawar +Tribal)</td>
<td>36.12</td>
</tr>
<tr>
<td>QESCO (Quetta)</td>
<td>20.89</td>
</tr>
</tbody>
</table>


*Sukkur Electric Power Company*

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According to an analysis, using data provided by NEPRA, published in The Express Tribune of June, 2013, there is a difference of Rs. 3.92 per unit (KWH) in the weighted average cost of electricity between the generation and distribution stage, with the cost being 7.97 and 11.95 rupees per unit at the former and latter stage respectively. The analysis, while appreciating the cost of T&D, blames more than half of the cost difference between generation and distribution on power theft.
generation of electricity since 1971 to the present times, taking gaps of 10 years. The difference between consumption and generation is considered the proxy for T&D losses.

Table 4

<table>
<thead>
<tr>
<th>Year</th>
<th>GWH Consumption (a)</th>
<th>GWH Generation (b)</th>
<th>T&amp;D losses (c) (b-a)</th>
<th>T&amp;D losses (Percent) (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971-72</td>
<td>5,332</td>
<td>7,572</td>
<td>2,240</td>
<td>30</td>
</tr>
<tr>
<td>1981-82</td>
<td>12,698</td>
<td>17,688</td>
<td>4,990</td>
<td>28</td>
</tr>
<tr>
<td>1991-92</td>
<td>33,879</td>
<td>45,439</td>
<td>11,560</td>
<td>25</td>
</tr>
<tr>
<td>2001-02</td>
<td>50,622</td>
<td>72,405</td>
<td>21,783</td>
<td>30</td>
</tr>
<tr>
<td>2011-12</td>
<td>76,761</td>
<td>95,365</td>
<td>18,604</td>
<td>20</td>
</tr>
</tbody>
</table>


Markedly lower losses in 2011-12, compared to all other years listed in Table 4, provide justification from economic theory for creation of DISCOs. The losses for 2001-02 extend support to this argument, as long run diseconomies may be partly responsible for a 5 percent increase in T&D losses of WAPDA in that year than that of 1991-92.

Moreover, the T&D losses do not provide the evidence for uniform performance of DISCOs. In Table 3, Minimum losses are listed for FESCO, IESCO and GEPCO respectively, showing that theft does not appear to be a major problem for these DISCOs and their performance should be regarded acceptable given the physics of power transmission over a wide radius. On the other hand, performance of HESCO+SEPCO and PESCO+TESCO compare very poorly with Faisalabad, Islamabad and Gujranwala, indicating the existence of serious problem of electricity theft. Insofar as the non-payment of bill happens to have the same effect in terms of cost recovery, theft is not the only problem. Federally Administered Tribal Areas (FATA) of Pakistan represent this case where, according to a recent report, only about 6 percent of the population paid their bills in 2012.\(^{31}\)

While considering a hypothetical case where DISCOs have the systems in place to effectively eliminate power theft and make the defaulters in the private sector to pay their electricity bills, one final and the major constraint to their efficient performance still remains in the form of unpaid bills belonging to the GOP which in this case includes federal, provincial and local governments and also the line departments. As of June 30, 2012, the unpaid bills of GOP were worth

\(^{31}\)In 2012, the T&D losses in FATA were around 29 percent, while the corresponding figure for Khyber-Pakhtunkhwa is 36 percent. See, The Express Tribune, June 3, 2013.
368 billion rupees. Considering this along with the problem of circular debt, power sector subsidies of GOP scarcely provide evidence of strategic public sector management.

Circular debt, though variously defined, in its effect is the amount of cash shortfall within WAPDA, the Central Power Purchasing Agency (CPPA), that it cannot pay to GENCOs. This shortfall is the outcome of insufficient payments by DISCOs to CPPA as the revenue of the former plus the subsidy do not add up to the actual cost of providing electricity. Moreover, the DISCOs consider their own cash flow needs more binding than timely meeting their entire obligations to CPPA. Resultantly, all links of energy supply chain, including GENCOs, fuel suppliers, refiners and producers are entangled in a web which begins to be woven with initial cash shortfall of WAPDA. Magnitude of the problem can be visualized by considering escalating size of circular debt since after the creation of DISCOs, as listed in Table 5. The reported amount depicts steep and uninterrupted rise in the stock of circular debt at the beginning of each of the seven years to 2012. The trend remains unchanged for end of the year scenario as registered in the last column of Table 5.

The factors responsible for circular debt remain an open question which has been variously debated. The ultimate losers, however, are the consumers and producers in Pakistan who face prolonged power cuts following supply shortages. The GENCOs in the public sector are shielded by the exchequer, while the IPPs get paid for their technical inefficiency with underutilized capacity: as per the terms of PPAs, the CPPA is obliged to compensate the IPPs in commensuration with capacity purchase price (CPP).

Notwithstanding power sector problems of Pakistan discussed in the foregoing, situation in the country is by no means as bleak as portrayed by the electronic and print media. In all fairness, a part of the users are responsible for power theft while another part shies away from fulfilling the social responsibility by not reporting those involved in this crime. Similarly, the media in Pakistan is more interested in gloom and doom mongering than responsible journalism which ought to identify problems, suggest workable resolutions and mobilize popular support in favor of projects promising efficient power supplies. Unfortunately, it happens to be a common mindset in Pakistan to hold government responsible for all wrongdoings.

Colors Seen by Candlelight

Table 5
Circular Debt in the Power Sector of Pakistan (2006-12)

<table>
<thead>
<tr>
<th>Year</th>
<th>Rupees in Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a)</td>
</tr>
<tr>
<td>Stock of debt*</td>
<td>Non-collection*</td>
</tr>
<tr>
<td>2006</td>
<td>84.07</td>
</tr>
<tr>
<td>2007</td>
<td>111.26</td>
</tr>
<tr>
<td>2008</td>
<td>144.99</td>
</tr>
<tr>
<td>2009</td>
<td>161.21</td>
</tr>
<tr>
<td>2010</td>
<td>235.65</td>
</tr>
<tr>
<td>2011</td>
<td>365.66</td>
</tr>
<tr>
<td>2012</td>
<td>537.53</td>
</tr>
</tbody>
</table>

*At beginning of the year.
†Includes: (1) DISCOs receivables from agricultural tube wells and other private consumers, FATA and federal/provincial/AJK governments. (2) CPPA receivables from KESC.
• Tariff and subsidy issues including: (1) Tariff determination and notification delays. (2) Fuel price adjustments. (3) Difference between tariff differential subsidy (TDS) claims of DISCOs and actual disbursements. (3) Difference between NEPRA allowed and actual T&D losses of DISCOs.


Borrowed from the verses by Elizabeth Barrett Browning.

The English Press in Pakistan, however, has taken up the power sector problems with some seriousness, but its readership is very small in the country. Hence very little impact on general awareness which is required to form organized pressure groups for advocacy of pragmatic resolutions.
deprivations and inefficiencies at all levels. It must, however, be appreciated that government everywhere in the world reflects the character of a country’s populace, specifically in modern times where the government personnel in line departments and lower cadres of ministries outnumber the strategic decision makers with a wide margin. Therefore, the alleged corruption in the power sector of Pakistan needs to be addressed more at the populace level than it is expected from the magic stick of government which is a nonentity while considering its representation by all within the wider structure of governance.  

The IPPs and unbundling of WAPDA may be considered flirting of the power sector in Pakistan with the neo-liberalist paradigm. So far so good. However, frequently and variously suggested privatization of DISCOs is synonymous to the marriage proposal which should be considered very carefully before taking the vows.

Insofar as DISCOs in Pakistan are publically providing an otherwise private good, the Companies are natural candidates for privatization. Moreover, unlike school education and primary health care, public provision of electricity distribution services cannot be justified with arguments from public economics; namely, externalities and social optimum. That said, electricity in contemporary times is not only one of the major items in household basic needs basket, it is also a critical industrial input. Therefore, the initiatives facilitating or interrupting power supplies have serious positive or negative implications respectively in terms of social welfare and economic efficiency. It does not, however, mean that the exchequer should continue to shoulder the burden of exorbitant and highly unjustified social opportunity cost caused by corruption and inefficiency of GENCOs and DISCOs.

What should be the way forward? Some of the evidence, including already mentioned Californian blackout, from round the world is not encouraging. Nonetheless, this should rather serve as the

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35 Anyone contesting this position should consider the state of apathy which even the highly educated suffer in Pakistan regarding the common good and public goods. Exceptions apart, the poor state of sensitization of the highly educated with respect to social responsibility can be verified by visiting public sector universities and other high offices: lights switched on in corridors and rooms in broad daylight; fans switched on even when no one is sitting in the room; air-conditioners not switched-off even when the load moves to the standby generator arrangement; heaters switched on and switched-off early and late in the winters respectively since, unlike air-conditioners, so far there is no regulated schedule for heating facility in the cold season. One wonders if Pakistan really faces the energy crisis.

36 See, for example, Ministry of Privatization Year Book 2010-11.

37 For example, Rio de Janeiro suffered repeated power cuts in 1997-98 after Brazil privatized one of her electricity company, Light, to a consortium of USA and French companies, Reuters, April 17, 1998, News item 3368. Similarly, in 1999, Edesur, the privatised Buenos Aires electricity power distributor, was responsible for consecutive
Insofar as DISCOs in Pakistan are publically providing an otherwise private good, the Companies are natural candidates for privatization.

How to begin? This brings into focus the potential private investors willing to take risk in a market with large number of buyers of different sizes and shades. On sellers’ side the market will inherently remain close to monopoly than perfect competition. Moreover, not only that the sellers can legally exercise price discrimination in electricity market, the regulation rather universally encourages them to do so in favor of conservation and biodiversity. The demand side is also highly favorable for the sellers, with inelastic demand of the rich households and commercial users and elastic demand of those lying on the margins. The economic theory suggests higher and lower price for the former and latter group respectively. Hence the optimal resolution of the trade-off between equity and efficiency.

Who should be invited to invest? Since after the advent of neoliberalist counterrevolution, FDI is in vogue, specifically in developing countries like Pakistan. The country is already carrying the deadweight of PPAs with foreign power companies, and that in a highly volatile and unreliable international oil market, even if the distortions internal to the system, like circular debt, do not exist. There is no dearth of entrepreneurial talent in Pakistan which was blatantly strangled by the nationalization policies of 1970s. Finding the niche in the market, these entrepreneurs should be willing to invest in the power sector of their

10 days power cut in large parts of the city, causing mob demonstrations. See, World Reporter, March 2, 1999, News item 3545.

38For example, in Brazilian Elections of 1998, some of the elected governors had cashed in on their opposition of the privatization of electricity companies, see, Privatisation International, January 1, 1999, News item 3563. Similarly, the 1999 Elections in New South Wales, Australia, rejected the Conservative party because of its support for electricity privatization. See, Hall, “Public Resistance to Privatization.” Electricity privatization has been strongly resisted in Thailand as well with protests from both unions and community groups, source: Inter Press Service, News Agency, www.ipsnews.net/thailand-labour-flexes-muscle-with-anti-privatisation, (accessed October 17, 2013).
country with even half of the incentives and support that GOP extends to the foreign investors.

Where to begin? The most eligible candidates are IESCO and LESCO. Justification in the following may support this position:

- Though the efficiency criteria suggests to initiate the privatization process of DISCOs with PESCO+TESCO and HESCO+SEPECO, current strategic and security imperatives do not allow the political economy to follow principles of economics;
- Investors are not philanthropist and target of profit making, without committing deceit and fraud, is their first and foremost responsibility [Friedman 1962]. It scarcely needs an intelligent guess that category of investors whose motivation Friedman supports should be unwilling to risk their capital in murky waters;
- Successful privatization of DISCOs certainly needs administrative and regulatory support as well as human resources with technical, concept and design skills. No other places promise availability of these critical inputs better than Islamabad and Lahore;
- Islamabad Consumer Protection Act 1995 and Punjab Consumer Protection Act 2005 accord the privilege to the consumers of IESCO and LESCO which should carry the responsibility tag of pioneering to welcome the private distributors of electricity;
- Privatization of DISCOs in Pakistan is a thousand miles journey and first step ought to be taken by those who enjoy the privilege and power associated with dwellings in metropolis compared to their counterparts in the periphery.
- Successful privatization of IESCO and LESCO will eventually pave the way for private distribution companies in other parts of Pakistan which will then offer a niche to new investors;

The upshot is that the holistic criteria including economic logic, social justice and common sense recommend to begin privatization of DISCOs representing the federal capital and the capital of the largest province in Pakistan.
Conclusion

Genius is the art of the limitations and politics is the art of the possible. Notwithstanding formidable limitations in the internal and external environment of PEPCO, redressing its imbalances is imperative for the Company and the nation. The incumbent government has given tangible proof of the art of the possible by eliminating the circular debt within first two months of its term in the office. While politics and times appear to take side of the power sector of Pakistan, her people ought to have the genius to work out the limitations. There are beneficiaries and losers in every deal involving competing claims. The electricity sector of Pakistan is infested with powerful vested interests compromising its efficiency, transparency and accountability, the three principles that universally underscore synergic organizational performance. Restructuring the power sector by privatizing DISCOs ought to reward the efficient and penalize the inefficient and corrupt, may they be PEPCO’s employees or electricity consumers. Public welfare and national development should be the ultimate targets. The resources of the exchequer saved by phasing out and eventually eliminating TDS should be invested in Hydel power projects to help reduce dependence on oil based thermal power companies. Even after successful privatization of its GENCOs and DISCOs, PEPCO will continue to make strategic contribution to the power sector in Pakistan both as a regulator and leader for exploring cost effective and environment friendly alternative energy sources. Finally, literature in economic sociology shows that public policies and corporate strategies and not the natural market forces are responsible for industrial restructuring [Fligstein 1990; Perrow 2002; Roy 1997]. The electricity industry of Pakistan warrants to be restructured and market deserves a chance since the item in this case is neither the merit nor the public good.

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39Quotations from Goethe and Bismarck respectively.
40In the last week of July 2013, the government cleared 480 billion rupees circular debt. Unfortunately, the circular debt has resurfaced in 2014, warranting drastic and consistent measures to ensure its effective elimination.
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