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A cross-country analysis of electricity market reforms: Potential contribution of New Institutional Economics☆

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ABSTRACT

The paper explores whether the question of why some countries are able to implement more extensive reforms is closely related to the question of why some countries have better institutions than others. We analyze this question by using an empirical econometric model based on Poisson regression with cross-section data covering 51 states in the US, 13 provinces in Canada and 51 other countries. In the course of the study, we check the validity of three important arguments of New Institutional Economics (NIE) for the power market liberalization process. The first argument is the "path-dependency". To test its impact on the reform progress, we try to explain whether the background of the chairperson of the regulatory agency when reforms started or that of the governor/minister responsible for energy policy at that time has an impact on the subsequent reform progress. The second argument is the impact of "democracy" as an institution on the reform progress. We look at the effect of two important indicators of democracy (i.e., civil liberties and political rights) on the reform progress. The final argument of NIE is about transaction costs. We concentrate on the level of corruption in a country as one of the key factors that determine transaction costs and try to explore its impact on the reforms. The results show that the backgrounds of the chairperson and the minister/governor, the level of democracy and corruption in a country are significantly correlated with how far reforms have gone in that country. The negative relationship between reform progress and civil liberties may indicate that reforms may be limited in democratic countries with strong civil society institutions such as trade unions or other organized structures in the society that may consider reforms as 'harmful' to their self-interest.

1. Introduction

One of the main objectives of any economic reform is to bring changes in the institutional arrangement so that economic activities can be performed more efficiently. Besides, reforming any sector in an economy requires changing the institutional environment, changing the organizational structure and modifying the governance mechanism. Since the late 1980s, power market reform has become the standard prescription of the multilateral donor agencies like the IMF and the World Bank and the reform program has been implemented vigorously for about three decades now. Although the content of each reform program has differed from one country to another, the policy of functional disintegration, the establishment of regulatory authorities, the formation of wholesale and retail power markets and the privatization of the electricity industry have been generally regarded as the natural components of a reform program without paying much attention to the institutional environment of the country.

Electricity market reform process takes place and is directly affected by the macro level institutional structure of the country in which the reforms are put into practice. The examples of macro level institutional structure of a country include its legal system, measures that guarantee security of property rights in this country, the degree of political and civil rights provided by the political regime, investment environment in the country and so on. Through reform measures, the pre-reform structure of a power market is transformed into post-reform structure. In general, pre-reform structure corresponds to public monopolies or regulated private monopolies and post-reform structure refers to a competitive electricity market where competition at retail or, at least, wholesale level is possible. Throughout the paper, the concept of "reform" refers to a specific process started in Chile in 1982 for the first time; so, we consider "regulated private monopoly" in pre-1982 period as a form of regulation, not reform. Usually, post-reform structure has some undesirable features that trigger further reforms in the power market. So, post-reform structure of the previous wave of reforms constitutes the pre-reform structure of the latter wave of reforms and the process goes on as such. These cycles of reforms produce

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economic, social, political and environmental impacts, which may have an impact on the decisions concerning the direction of reforms.

Today, most countries have initiated some reform of their power sector. In some countries, the reforms have progress a lot and transformed the structure of the industry fundamentally. However, the progress has been limited in many parts of the world, especially in developing countries. As reform pauses or progresses slowly, developing countries in particular face problems such as lack of adequate funding for new capacity addition, neglect of utility operation and management, and increase in government involvement in the management and decision-making of the industry, contrary to the expected objectives of the reform (Bhattacharyya, 2007).

The purpose of this paper is to find out whether the question of why some countries are able to implement more extensive reforms is closely related to the question of why some countries have better institutions than others. The interest and motivation for this topic arises from the relatively recent agreement that has emerged among scholars in regarding institutions as a key factor shaping the outcome of an economic transformation. This objective is pursued by discussing implications of the conceptual framework proposed by the New Institutional Economics for power market reform. Besides, evidence resulting from an econometric empirical analysis that investigates the relationship between institutions and reforms is presented as well.

The reform experience so far (especially in developing countries) suggests two consistent findings. First, institutional endowments of a country (such as judicial independence, integrity of the legal system, protection of property rights, legal enforcement of contracts and degree of polity) largely determine the extent of the reforms (Acemoglu et al., 2001, 2005, 2008; Robinson and Acemoglu, 2013). Second, despite the different approaches in the design of regulatory institutions, a separate agency from the government with reasonable levels of autonomy and technical expertise has emerged as the preferred model for a regulatory institution. Due to path dependency, the chairperson of electricity market regulatory agency when reforms started or were considered and the governor/minister responsible for energy policy at that time may play a critical role in the process. Therefore, in this study, we focus on general institutional endowments and backgrounds of the chairperson and the minister/governor as key factors explaining the differences in the extent of the reforms implemented in various countries.

We try to answer the following research questions: (i) do differences in institutional structures of countries play an important role in explaining how far reforms have gone in these countries? (ii) if they do, how do specific institutional endowments of a country affect its reform performance? (iii) does the background of the chairperson of the regulatory agency when reforms started or were considered or that of the governor or minister responsible for energy policy at that time have an impact on reform progress?

The paper proceeds as follows. The next section provides a conceptual framework and literature review. Section 3 develops research hypotheses. Section 4 summarizes the methodological framework and describes data. Section 5 presents empirical analysis. Following section discusses the results. The last section concludes.

2. Conceptual framework and literature review

In recent years the role of institutions in promoting and sustaining economic change has been an issue of interest for both theoretical and empirical analyses. The main question is "*what determines the divergent patterns of evolution of countries or economies over time?*" Africa's disappointing economic performance, the East Asian financial crisis, and the weak record of the former Soviet Union have also contributed to an increasing focus on the role of institutions in determining a country's economic growth and performance (Aron, 2000). Within this context, New Institutional Economics (NIE) has emerged as the body of economic thought that considers institutions to be relevant to economic theory, and criticizes the neo-classical mainstream for having pushed them out of the discipline; it deals especially with the nature, origin and evolution of institutions, and their effects on economic performance (Chavance, 2009).

The increasing focus on NIE is also evident in World Bank publications. World Bank (1997, 2002) recommends that states develop strong regulatory mechanisms to encourage legal accountability, minimize corruption, and foster competition via privatization. The World Bank regards privatization as a solution to rent-seeking behavior of corrupt officials. In response to the bureaucracy's drain on public resources, competition, it is argued, will raise the transaction cost of seeking protection and subsidy from the state, and henceforth promote efficiency between firms.

New Institutional Economics contributes to the analysis of power sector reforms in multiple ways. First of all, NIE underlines that institutions matter for any economic reform and electricity market reform is not an exception. In essence, electricity market reform is an institutional reform that necessitates de facto or de jure regime change, creation of new institutional structures and rearrangement or removal of existing ones. Institutions may determine the divergent patterns of evolution of reform processes in various countries over time. In the literature, the relationship between institutions and economic transformations has been investigated by many scholars. For instance, the link between political institutions and economic change is explored by Aghion et al. (2008), Alesina et al. (1996), Alesina and Rodrik (1994), Besley and Kudamatsu (2008), Caselli et al. (1996), Clague et al. (1996), Drury et al. (2006), Helliwell (1994), Isham et al. (1997), Mauro (1995), Persson and Tabellini (2008) and Scully (1988); while the impact of economic institutions on economic change is investigated by Assane and Grammy (2003), Barro (1991, 1996, 2000), Keefer and Knack (1997), Persson and Tabellini (1994), Spindler (1991) and Vanssay and Spindler (1994).

Second, while analyzing reforms in electricity markets, the standard neoclassical assumptions that we have perfect information and unbounded rationality and that transactions are costless and instantaneous should be abandoned. NIE implies that information during the whole reform process is rarely complete, and transactions related to reform process have costs associated with them, such as costs of finding out what and how to reform, of negotiating the reform direction with interested parties, of passing necessary legislation, and then of monitoring and enforcing it.

The third contribution of NIE is its suggestion that reformers should see institutions as means of reducing information and transaction costs related to reform design and implementation; and never forget that institutions may easily turn into critical constraints on reform performance if not taken into account properly. Fourth, NIE maintains that there is a fundamental relationship between property rights, transaction costs and institutions. When property rights are not clearly defined in the course of an electricity market reform, transaction costs increase and reforms may fail.

The fifth advice from NIE for electricity market reform is that policy makers should pay due attention to non-market transaction costs faced by the firms in the market and do their best to eliminate or, at least, minimize them. The sixth repercussion of NIE relevant to electricity reform is that the process of electricity market reform is largely path dependent, which may explain why some countries succeed and others do not in reforming their power sectors. So, getting the institutions right is critical to reform success as getting them wrong can lead to path-dependency, whereby inefficient electricity markets may persist. So, to prevent inefficient institutional structures in the subsequent reform phases, the utmost attention should be paid to arrangements at the very beginning of the reform programs. Right people should set up right structures. In this context, the chairperson of the electricity market regulator and the minister responsible for energy policy when reforms started may have an important impact on subsequent reform progress.