

Abstract

The electricity sector in many countries went through a restructuring process that began in the decades of the 80s and 90s, whose aim was to reorganize the functioning of the electricity sector, improving its efficiency, thus providing long-term benefits to consumers, such as reducing the price of electricity. In Spain, this process started in practice with the approval of Law 54 of the Electricity Sector in 1997, which established the outlines of the restructuring sector activities and also, marked a target of 12% of primary energy consumption from renewable sources in 2010. Law also contained a special bonus scheme to support these technologies. This goal was a great stimulus to increase the share of renewable in the generation structure of the country, which went from 2% of the total installed capacity in 1998 to 29% in 2012.

Considering the situation of renewables in Spain throughout the period of its electricity sector restructuring, this thesis aims to find out the economic impact of these sources of energy in the average retail price of electricity during this period. The selected tool was the comparative analysis in similar environments for some variables and in different environments for other variables, to identify the effect of these variables in the average retail price of electricity in the UK, California, Brazil and Spain.

In this thesis we used the average retail price of electricity as a parameter to assess the effects of electricity sector restructuring instead of using the domestic or industrial electricity price, because the aim was to analyze the behavior of this commodity in the country as a whole and not for a specific class of consumer. The average retail price of electricity was determined by considering the real costs of electricity each year. The purchasing power parity (PPP) was used in order to compare the prices between different countries. The PPP is a conversion factor of currency exchange that converts nominal prices to international dollars, and equalizes the purchasing power of the considered countries, eliminating the differences in price levels between them.

The data for the proposed analysis have been collected from various sources covering a time horizon of 30 years. Localization, verification and approval of these data, that comes from different sources is one of the novel and fundamental aspects of this thesis. From these data, the curves of average retail price of electricity and of the variables that could have some influence on this were developed, and then correlations between price and each variable were made. The hypothesis was that the increase in renewable generation in Spain had a measurable impact on prices, while in the other analyzed countries this impact was negligible. So that, the comparative analysis of the correlations between the curves of average retail price of electricity and the curves of the variables identified, allowed for segregating the specific influence of renewable in the restructuring of the Spanish electricity sector.