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# The impact of ownership on price-setting in retail-energy markets—The German case

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## ABSTRACT

This paper analyzes whether public ownership has an impact on providers' price-setting. Under the assumption of more efficient energy provision which benefits customers a large number of former energy monopolists have been privatized in line with the liberalization of energy markets in Germany at the end of the 1990s. However, current re-municipalizations are justified by similar arguments in the public debate.

Based on a dataset on the ownership structure of energy providers we find that public property or private property itself is not the decisive factor for lower retail and wholesale prices. Rather, a high ownership concentration leads to low prices, regardless of the type of owner. As public investors often seek total ownership of a provider, households, which are less willing to switch, benefit at least indirectly from public ownership. Tests for robustness of our results applying different owner and concentration measures confirm the results independently from the underlying estimation specification.

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## 1. Introduction

Energy markets in Europe have been liberalized during the 1990s. Since this time, new competitors try to enter energy markets and challenge former public monopolists in production and, in particular, in retail energy provision markets. Additionally, also former regional retail monopolists enter the markets of other former regional retail monopolists trying to increase competition apart from their home markets. As competition for private customers develops very hesitantly and, therefore, most customers stay with the former monopolists in Continental Europe, regional governments seek to re-increase their shares in former monopolists. So-called re-municipalization describes the repurchase of formally (partially) privatized public companies, the repurchase of grids or licenses (or the startup of public companies). According to a survey by the [Institute for Public Finances and Public Management of the University of Leipzig \(2009\)](#) more than 20 percent of the municipalities in Germany plan such a step. Proponents further justify this trend with the objective of a cheaper and safer energy provision as well as the objective of providing more renewable energy.

With more than 800 regionally separated submarkets, Germany provides a micro-picture of European energy markets. While public ownership in energy providers is an ongoing topic in political discussions, there seems to be no empirical evidence on the impact of the ownership structure on different stages of the

supply chain for the end-consumer. In this paper, we investigate whether public ownership of the utility provider has an impact on the energy price. We focus on standard contracts, as the majority of household customers are still served with this contract type (in Germany on average 51 percent of all households following the regulator [Bundesnetzagentur, 2010](#)).<sup>1</sup>

Only a few papers empirically investigate the impact of ownership in energy markets. In particular, the importance of ownership of individual energy providers has been mostly ignored. We pursue the classical theoretical literature and discuss two explanatory attempts about the impact of public ownership vs. private ownership, from which we derive hypotheses on their impact on the business' behavior and, therewith, the price-setting for household customers.

Following the Principal Agent argumentation for public enterprises, the management is, to a far extent, better informed about the circumstances of the business than the owners and their political representatives. Besides business objectives, managers follow own objectives, which might be in conflict with those of the owners and, thus, reduce efficiency. In contrast to the private companies, in public companies the multiplicity of objectives of elected representatives additionally influences the Principal Agent

<sup>1</sup> Besides the standard contract, the utility provider also offers alternative (cheaper) contracts in order to keep customers which are ready to switch. Since the liberalization in 1998, following the 2008 report of the German energy regulator ([Bundesnetzagentur, 2009](#)) only about 6 percent of all household customers have chosen an alternative energy provider, the rest of households is still provided by the incumbent.

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problem: First, managers are more informed than public representatives and, second, elected representatives follow a set of multiple objectives, which provides more degrees of freedom in decisions for managers of public energy companies. As private energy demand is highly price-inelastic (the majority of households has not switched its contracts more than ten years after the liberalization), energy providers can pass on inefficiencies to customers.

On the other hand, the question of how ownership concentration has an impact on the behavior of a company is in close connection with the Corporate Governance literature. Following this strand of literature, one should expect that owners with a high involvement are able to enforce their interests over-proportionally in contrast to owners with less involvement and seek, above all, long-term business objectives due to their interest in having a say. In contrast, owners with less involvement have difficulties exerting strategic influence and should therefore rather seek short-term performance objectives with their investments. Transferring these expectations to the particular situation of standard contracts in retail energy markets, companies with a lower ownership concentration should choose higher retail prices ignoring more customers switching to competitive contracts. On the other hand, providers with a higher ownership concentration choose lower retail prices internalizing customers' switching behavior in their price choice.

Energy providers have to pay distribution grid operators a regulated charge, the distribution charge, for getting access to retail energy consumers. According to the regulator, this fee determines one fourth of the standard contract price. We approach the analysis of wholesale and retail price influences estimating a two-equation system. To investigate the relevance of indirect effects of distribution grid ownership on end-consumer prices, we choose a simultaneous estimation approach in which we take the distribution charge as an endogenous variable in the price equation. Distribution charges are explained by multiple grid and regional characteristics and the ownership structure of the grid owner.

In doing so, we find that the end-consumer price and also the distribution charge do not significantly differ due to public or private ownership. In contrast, using ownership concentration instead of measuring ownership shares, we find that a higher ownership concentration promotes lower prices for end-consumers whereas the distribution charge does not react to ownership concentration. This shows that regulation effectively mitigates ownership influence on the distribution charge.

The paper is organized as follows. The next section describes the German electricity sector with a specific focus on regional distribution markets, the average composition of the standard contract price and regional differences. In Section 3, we consider the existing literature and derive hypotheses on the impact of the participation structure and the participation concentration on the retail and the wholesale price. Prior to a multivariate analysis, we provide a comprehensive overview over the data used in Section 4. As coherences concerning proprietary rights in the German energy economy have, to our knowledge, not been scientifically investigated yet, we consider the ownership situation and the relation of the retail incumbent and the grid operator in this section. Afterwards, in Section 5, the results of several multivariate estimation models are considered and compared to each other. Section 6 summarizes the main results and derives policy implications.

## 2. Energy markets in Germany

Energy markets can be divided into five vertically interrelated market stages: production, wholesale, transmission, distribution and delivery to the consumer (for bulk purchasers and small consumers). About 80 percent of the capacity of electricity generation in Germany is controlled by the four compound

companies E.On, EnBW, RWE and Vattenfall.<sup>2</sup> The remaining 20 percent are power plants of municipal utilities and private energy producers. While the transmission grid is also controlled by four transmission grid operators, there are about 850 regional distribution grids which are controlled by local grid operators, usually by municipal utilities and regional energy providers.<sup>3</sup> Each of these distribution grids determines a regional submarket with one grid operator each, in which energy suppliers provide electricity with different contract conditions for household consumers. Fig. 1 depicts the geographical distribution of the regional submarkets in Germany. Western German markets are heavily subdivided with a number of submarkets in the Rhine-Ruhr metropolitan area. The Eastern German markets, however, are characterized by geographically significantly larger submarkets.

Providers, which do not produce energy themselves or have to cover peak demands are able to purchase electricity on the energy exchange EEX in Leipzig, where a variety of products, such as short-term, day ahead, futures etc., are offered. In addition, over the counter (OTC) trade allows long-term bilateral contracts between producers and suppliers. The major part of the energy demand is based on bilateral contracts with the stock exchange price as the underlying. Only about 15 percent of the energy needed was traded on the EEX in 2008 (Ockenfels et al., 2008) but the number increased substantially in the last couple of years. In the following, we focus on the last two stages of the value chain, energy distribution and household supply. On average, about 40 suppliers provide energy contracts to household customers in a regionally delineated market. This high number of alternative providers should, however, not be considered as evidence for a high intensity of competition as the switching rate to alternative suppliers after the liberalization until the period under consideration (2008) was still very low with 6 percent on average across all regional markets (Bundesnetzagentur, 2009).

In order to deliver energy to end consumers, energy providers use the regional distribution grid of monopolistic grid providers. These are, however, often vertically integrated into the former, regional and monopolistic energy providers.<sup>4</sup> To avoid possible distribution charge discrimination, the so-called distribution charge, is regulated.<sup>5</sup> Furthermore, vertically integrated businesses with more than 100,000 customers are obliged to divide their grid activity and their energy provision activity into two legally separated partial businesses. Energy companies with less than 100,000 customers are allowed to be vertically integrated.

Standard contracts are successive contracts for the former, monopolistic contracts, through which household customers were supplied prior to the liberalization. They have to be offered due to legal guidelines by the largest energy provider of a region to those customers whose current energy provider left the market unexpectedly (substitute provision, §38 Energiewirtschaftsgesetz (EnWG), the German Energy Act) or who, after the liberalization, have neither changed their energy provider nor their contract. Compared to alternative contracts of standard contract providers and, in particular of competitors, according to Bundesnetzagentur (2010) the standard contract is usually the most expensive contract.<sup>6</sup> Standard contract providers argue that this contract type is more expensive than competitive contracts due to the risk of substitutive energy

<sup>2</sup> Bundeskartellamt, Sector Inquiry Energy Production and Wholesale Trade (2011).

<sup>3</sup> Transportation grids were initially integrated into the business of the four compound companies. However, they have sold their transmission business.

<sup>4</sup> About 75 percent of the former monopolists are even completely vertically integrated with the regional distribution grid operators.

<sup>5</sup> Since 2009, grid access is organized by incentive regulation (c.f. Cullmann, forthcoming).

<sup>6</sup> We do not consider contracts for electricity from renewable energy, which may be more expensive than standard contracts.

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