



Consumer awareness as a complement to regulation

By Erik Lundin

Network industries, such as electricity and water distribution, are typically seen to require regulation to prevent excessive pricing. But new research shows how consumer awareness can also create competitive pressure among local network owners. Using a unique data set on publicly-owned water utilities in Sweden, the study finds that utilities set prices similar to those in neighboring networks despite the absence of alternative suppliers for consumers. Moreover, this “price mimicking” behavior is more pronounced in municipalities where local policy makers run a higher risk of being voted out of office.

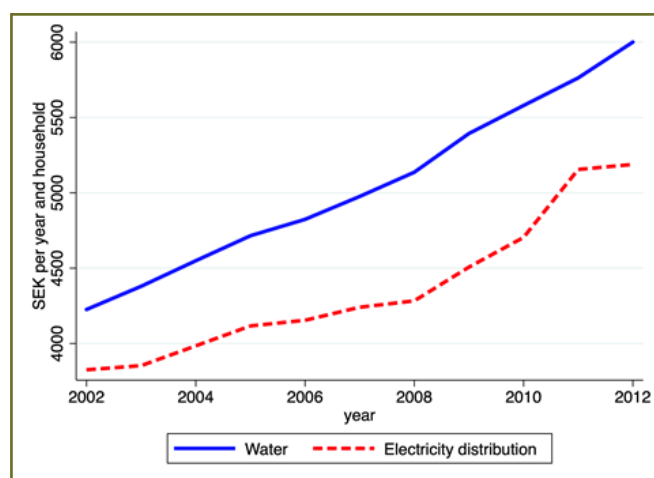
Network industries, such as electricity and water distribution, are natural monopolies. It is thus more cost efficient to allow only one network owner to serve every customer in a given region, instead of letting competing suppliers build their own parallel networks. Even though such government-granted local monopolies can enhance welfare, there is a need for mechanisms ensuring that firms do not abuse their dominant position through excessive pricing: when prices are far above costs, production becomes inefficiently low and wealth is transferred from consumers to producers. Moreover, the private and social incentives for investments and cost reductions are likely not aligned in such local monopoly markets.

Broadly, two types of mechanisms are used to mitigate excessive pricing. The first is public ownership, to let consumers have indirect control of the price setting mechanism as voters. The second is to allow for private ownership, but to regulate the industry. Many network industries are subject to both mechanisms, since public ownership is by no means a perfect remedy for mismanagement.

But regulation is never easy and it comes at a cost. The regulator has limited information about both the cost of providing the service, as well as the potential for efficiency improvements. For example, if the regulator allows for a predefined return on capital based on the firm's self-reported costs (so-called rate-of-return regulation), investments that would generate losses in a perfectly competitive market lead to higher profits for the regulated firm.

One way to mitigate the regulatory problem is to benchmark local monopolists with similar cost structures to each other, creating a type of artificial competition. For instance, a regulator might set each firm's maximally

Figure 1: Trends in water price and electricity distribution 2002-2012



Note: This graph depicts trends in the price of water and electricity distribution between 2002-2012. The unit of measurement is the total cost (fixed plus variable) in SEK for a typical household.

permitted price equal to the average self-reported cost of other similar firms in the industry. If a firm reduces costs relative to its sibling firms its profits increase, since it is not requested to lower its own price. Moreover, the firm has no incentive to over-report its own costs since this would not affect its own regulated price. Hence, incentives to increase efficiency are stronger than under rate-of-return regulation. Variants of benchmark regulation are becoming more frequently used by regulators. Examples include the water supply industry in the UK, Italy, and Portugal, and the electricity distribution industry in Norway and the UK.

Figure 1 depicts the evolution of the prices of water and electricity distribution in Sweden between 2002–2012. Like water distribution, electricity distribution is a natural monopoly, but rather than being publicly operated, ownership is mixed between public and private firms. In both markets, large investments have contributed to an increase in costs. There has been much attention in the public debate on the increases in the price of electricity distribution, which increased by 35 percent during this period, while the consumer price index only increased by 15 percent. But the even steeper increase in water prices, which increased by 42 percent during the period, suggests a need to focus on price formation also in this market.

Informal benchmarking can arise spontaneously

Regulation might be associated with costs such as administrative burdens and corruption. Thus, alternative mechanisms that mitigate abuse from local monopolies might be warranted. Indeed, another mechanism that can discipline utilities is pressure on local politicians by consumers as voters. This can arise if consumers actively compare the price they pay to prices in neighboring regions.

In recently published research, Lundin (2017) shows how such informal benchmarking seems to arise in a network industry that is not subject to a formal benchmark regulation. Specifically, Lundin shows how publicly owned water utilities in Sweden engage in “price mimicking” of their geographical neighbors. It is shown that prices of neighboring utilities are more similar than can be explained by regional-specific cost factors.

The quantitative effect of this mechanism is economically relevant: the study suggests that when the 10 closest neighbors raise their prices by on average 10 percent, the typical utility increases its own price by 1.4 percent on top of what can be motivated by common cost factors. The study also shows that price dependence declines with distance. That is, when additional neighbors' prices are included in the test, the estimated price dependence becomes less pronounced.

Hence, economic reasoning suggests that if utilities are able to increase efficiency relative to their neighbors they incur a profit just as under a formal benchmark regulation, creating incentives to increase efficiency. Put differently, the total value added created by a cost reduction could benefit both the utility and the local consumers, since part of the cost reduction is passed on to the



consumers, and part of the cost reduction translates into higher profits.

Voter influence and price mimicking

As mentioned above, the study adjusts for regional-specific cost factors when comparing prices. This is achieved by using a unique data set on the prices and technical characteristics of every water supply network in Sweden during 2002–2012, in combination with a statistical technique called the “spatial Durbin model”. This technique takes into consideration that there might be cost factors that the researcher cannot control for directly due to lack of data, but that can have the same degree of regional variation as the observed cost factors. Furthermore, price comparisons are made only on changes in prices across years, and not on absolute levels. Hence, permanent local similarities in price levels and cost structures do not influence the results. Therefore, the explanation for the observed price dependence is that price changes in neighboring regions in fact have an effect on the own price, indicating a type of price mimicking behavior.

The observed price mimicking is likely explained by voter influence. In Sweden, water services are provided by publicly owned utilities, independently organized by each municipality. The managers of the utilities are not politicians themselves, but local politicians are responsible for setting the price in their own municipality. The utilities are subject to a loosely monitored cost-of-service regulation stating that firms should be non-profit. Additionally, in a study of the utilities’ accounting practices, Haraldsson (2013) notes that 45 percent of the utilities do not adhere to any well-established accounting procedures, which complicates the possibility of verifying that utilities do in fact comply with the regulation. Many of the utilities also belong to publicly owned energy conglomerates, facilitating cross-subsidization between divisions. Hence,

utilities have a significant degree of discretion in pricing decisions.

But local politicians always face the risk of being voted out of office. Hence, if residents care about the price they pay relative to their neighbors, price mimicking should be more pronounced in municipalities with a politically unstable leadership, since these politicians face a higher risk of losing office when voters perceive them as inefficient. In line with this hypothesis, the study finds that price mimicking is substantially stronger in municipalities where voter support for the ruling coalition in the last elections was weak.

Why then are consumers comparing themselves primarily to their neighbors?

First, since costs are in fact often regionally specific, such a comparison is usually a decent approximation of the efficiency of the own utility. Further, some residents may simply believe that it is fair that they pay approximately the same as their neighbors.

“Consumer influence can yield incentives to refrain from excessive pricing.”

Informal benchmarking and the private sector

Numerous network industries across the world have undergone privatization during recent decades, with the expectation that this could lead to efficiency improvements. For example, Lundin (2016) shows that privatization of electricity distribution networks in Sweden did in fact lead to labor efficiency improvements of about 10–18 percent. If informal benchmarking is present also in privately controlled network industries, the need for regulation might be less pronounced than normally perceived.

It is hard to find empirical evidence regarding informal benchmarking by simply comparing prices, however, since most privatized network industries in the world are already subject to price regulations. One of the few exceptions is the Swedish market for district heating, which is still unregulated. Using data on customer complaints to district heating firms, Bonev et al. (2018) find that privately owned utilities do in fact reduce prices when they receive more customer complaints. The study also documents that firms receive more customer complaints when the price is high relative to neighboring networks. Even if most local district heating providers cannot be voted out of office (although some district heating networks are in fact still publicly owned), the authors argue that reduced prices lead to fewer complaints, thereby also reducing the threat of stricter regulation in the future.

Since informal benchmarking leads to better performing firms, it is desirable to find measures that promote this mechanism. An interesting proposal denoted “smart sunshine regulation” is suggested by Wolak (2014). The idea is that the regulator gathers as much information as is needed to thoroughly analyze the relative performance of firms, and makes the information readily available to the public. This allows consumers to compare prices and thereby to exert pressure on firms, whether it is by voting a local policy maker out of office or posting a complaint to the firm itself.

Conclusion

The studies discussed in this article suggest an important insight: price formation in network industries is not only a game between firms, regulators, and politi-

cians. Consumer influence can also create incentives to refrain from excessive pricing. This could lead to both improvements in short-run efficiency, for example by reorganizing the labor force, or in long-run efficiency, by investing in more efficient technology.

Another advantage is that informal benchmarking is not associated with the administrative costs of formal regulation. With formal regulation, there is also the risk that corruption within the regulatory agency itself leads to policies that promote a firm’s objectives instead of acting in the public interest (Laffont and Tirole 1991). When consumers themselves act as “informal regulators”, the risk of regulatory capture should be virtually non-existent.

Does this mean that formal regulations should be abandoned altogether? Most likely not, as the mechanisms described in this article are

”Adopt policies that strengthen the mechanisms behind informal benchmarking.”

a comparatively blunt way to enhance efficiency. But policy makers should adopt policies that strengthen the mechanisms behind informal benchmarking. For example, this can be achieved by allowing for a diversity of ownership across networks, and by making evaluations readily available to consumers. Overall, more research is needed to understand how formal and informal benchmarking interact, so that potential synergy effects between the two can be realized in a way that serves the public interest.

References

Bonev, Petyo, Matthieu Glachant and Magnus Söderberg (2018), “A Mechanism for Institutionalised Threat of Regulation: Evidence from the Swedish District Heating Market.” Economics Working Paper Series 1805, School of Economics and Political Science, University of St. Gallen.

Haraldsson, Mattias (2013), ”Särredovisning inom VA-branschen.” Rapport nr 2013–21, Svenskt Vatten, Stockholm.

Laffont, Jean-Jacques, and Jean Tirole (1991), “The Politics of Government Decision-Making: A Theory of Regulatory Capture.” *Quarterly Journal of Economics*, Vol. 106, No. 4, pp. 1089–1127.

Lundin, Erik (2017), “Price Mimicking under Cost-of-Service Regulation: The Swedish Water Sector.” *Journal of Regulatory Economics*, Vol. 52, Issue 3, pp. 313–332.

Lundin, Erik (2016), “Effects of Privatization on Price and Labor Efficiency: The Swedish Electricity Distribution Sector.” IFN WP No. 1139, Research Institute of Industrial Economics, Stockholm.

Wolak, Frank A. (2014), “Regulating Competition in Wholesale Electricity Supply.” In Nancy L. Rose (ed.), *Economic Regulation and Its Reform: What Have We Learned?* Chicago: University of Chicago Press.

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