Energy Policy 118 (2018) 298–311

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

The effect of default rates on retail competition and pricing decisions of competitive retailers: The case of Alberta

David P. Brown*, Andrew Eckert

Department of Economics, University of Alberta, Edmonton, Alberta, Canada T6G 2H4

ARTICLE INFO

JEL:
D43
L51
L94
Q40

Keywords:
Electricity
Retail markets
Market power
Regulation
Default rates

ABSTRACT

We investigate the impacts of default regulated products and their design on the development of competitive retail markets and retailers' pricing decisions. We analyze this question in the context of Alberta's competitive retail electricity market, using data on the prices and characteristics of both regulated and unregulated retail products from July 2006 to March 2017. Our analysis consists of a descriptive discussion of the evolution of market structure in the industry, followed by an econometric analysis of the effect of default prices on unregulated retail prices. We find that as the default product moved from being a long-term stable product, to one based on short-term forward market prices, the number of products and competitors increased substantially. Our econometric analysis of the pricing of unregulated contracts suggests that competitive retailers adjust prices upward in response to short-term increases in the regulated rate, even after controlling for changes in the costs of providing retail products.

1. Introduction

A key feature of electricity market restructuring worldwide has been the introduction of competition at the wholesale level. However, an often more controversial issue has been whether and how to introduce competition in electricity retailing. While many jurisdictions have opted to allow retail competition, others have maintained a regulated retail provider.[1] The role and design of retail choice has received renewed attention, as concerns of market power increase and markets adjust to facilitate increased integration of distributed energy resources (DERs) such as roof-top solar and electric vehicles. For example, after eighteen years of retail choice, New York regulators have made moves to eliminate retail competition over concerns of market power (NYPSC, 2016). Alternatively, California is investigating the role of expanded retail choice to expedite the entry of DERs (CPUC, 2017).

Jurisdictions introducing retail competition often establish a temporary default regulated electricity product, from which consumers can choose to switch to an unregulated offering. The existence of default regulated products during the transition to a competitive retail market poses difficult regulatory and market design questions. In particular, in choosing the rate structure and specific product offerings of the regulated provider, regulators must balance two conflicting goals: providing for a timely transition to competition, while at the same time protecting consumers from price hikes and volatility associated with market power. While regulated default products were meant to be temporary, the products often are offered long after retail competition has been introduced, raising concerns that it may impede competition (Tschamler, 2006; Blumsack and Perekhodtsev, 2009).

Despite the central role of regulated default products in competitive retail markets, there is limited evidence on the effects of these products on retail competition. Certain studies have assessed the evolution of retail competition through a description of market structure; see for example McFetridge (2012) for the case of Alberta, IPA (2015) for a discussion of the European Union, and AMEC (2015) and Willems and Mulder (2016) for assessments in the Australia and Dutch markets, respectively. Unfortunately, the usefulness of descriptive market structure analyses to understand the effect of a regulated default product on competition is limited. In part, this is because of the standard concerns regarding inferring market power from market structure. As well, a finding that market structure is suggestive of considerable market power is not informative regarding the role of the default product; if concentration is high, can this be attributed to the price or characteristics of the default product?

There exists an econometric literature examining the determination of retail electricity prices. Many of these studies infer market power or other distortions from the response of prices to costs; for example, see

* Corresponding author.
E-mail addresses: dpbrown@ualberta.ca (D.P. Brown), aeckert@ualberta.ca (A. Eckert).

[1] Retail competition has been introduced in numerous jurisdictions worldwide including Australia, Korea, New Zealand, Alberta Canada, Norway, and fourteen US States (e.g., Texas, New York, Pennsylvania) (Morey and Kirsch, 2016).

https://doi.org/10.1016/j.enpol.2018.03.049
Received 1 December 2017; Received in revised form 19 March 2018; Accepted 20 March 2018

Johnsen and Olsen (2008) for an analysis of asymmetry response in Nordic countries, Ofgem (2011) for the United Kingdom, Mirza and Bergland (2012) for Norway, Willems and Mulder (2016) for the Netherlands, and Heim (2016) for Germany. Other studies examine the relative importance of cost and demand factors (e.g., Salies and Waddams Price (2004) and Von der Fehr and Hansen (2010)). Finally, certain studies examine the interaction between retail electricity prices of different providers in the UK, including Giulietti et al., (2009, 2014), and Waddams Price and Zhu (2016).

While important, these studies leave important gaps in our understanding of the evolution of retail competition. First, to our knowledge there have been no econometric studies of the effect of regulated default products on pricing and competition in the unregulated side of the market. As well, a difficulty with studies that examine the time-series relationship between incumbent and entrant prices is that such an association could be picking up cost effects. Finally, retail electricity prices typically exhibit substantial rigidity, remaining constant for months at a time. While price rigidity and stickiness has been recognized and incorporated into studies of retail pricing in other industries, this is not the case for the literature on electricity markets.

The objective of this paper is to consider the relationship between unregulated and default RRO prices in a manner that addresses these concerns. Our analysis is conducted in the context of Alberta, which introduced retail competition in 2001, alongside a regulated default retail product (the Regulated Rate Option, or RRO) that remains available today with the majority of residential consumers enrolled. The design of the RRO changed from one that is based on long-term forward contracts and provided substantial price stability, to one that is more volatile and based on short-term forward market prices (MSA, 2017). Our focus is on understanding how RRO prices and how they are set impact competitive behaviour and the development of the market.

The data used in this paper consist of prices and characteristics of regulated and unregulated retail electricity products in Alberta from July 2006 to March 2017, along with data on the prices of forward contracts. Our analysis takes place in two stages. First, we provide a description of the evolution of retail market structure over our sample period, and how it is related to specific events in the industry. We follow this with an econometric analysis of the relationship between the RRO and unregulated retail pricing, to examine whether and how the RRO affects competition in the unregulated retail market. Specifically, we wish to determine whether RRO prices affect unregulated retail pricing once costs (in the form of forward wholesale costs) are controlled for. If so, this suggests that the existence of the RRO is affecting the evolution of the retail market, and that there may continue to be market power concerns. Our analysis will incorporate the pronounced degree of price stickiness in the industry, by focusing on how RRO pricing affects the timing of unregulated retail product price changes.

Our descriptive measures of retail market structure show that the number of products and firms increased in the time period after the default product transitioned to being based on short-term forward market prices. However, over half of residential households remain on the RRO, and residential consumers on unregulated products remain concentrated with the three largest firms; as a result our market structure analysis is inconclusive regarding the effect of the RRO on the unregulated market. Our econometric analysis of pricing suggests that changes in prices of the default product affect competitive retailers' price change decisions, even after controlling for changes in the cost of retailing. Increases in the RRO price are associated with a higher probability of price increases of the unregulated product. For one of the competitive retailers, this relationship is between unregulated prices and RRO price volatility as opposed to RRO price levels. These results are robust to the consideration of numerous other drivers such as increased risk of retailing, entry of large competitors, and more flexible responses to cost shocks.

Increased short-term volatility in the RRO increases consumers' demand to switch to a more stable competitive fixed-price product. A subsequent increase in the price of unregulated products could reflect a profit-maximizing response to this increased demand by firms possessing market power. These results demonstrate that regulators may face a trade-off in the design of the default rate. A transition to a shorter-term, more volatile, default rate can facilitate entry of competitive retailers as they provide risk-hedging services to risk-averse consumers. However, if competitive retailers are able to exercise a high degree of market power on consumers who switch to products with more-stable prices, prices may increase and the benefits to consumers is reduced.

Finally, our paper contributes to the literature on price rigidity. Although retail electricity prices in many jurisdictions exhibit a high degree of price rigidity, to our knowledge our paper is the first to incorporate this explicitly into the econometric approach, by examining the conditions under which a retailer adjusts its energy rate, and how this decision is affected by the RRO. Through this approach we are able to provide a more detailed understanding of the adjustment process of unregulated retail prices than can be achieved from simple linear models that ignore price rigidity.

The rest of the paper proceeds as follows. Section 2 provides an overview of retail markets and default products. Section 3 describes the evolution of the retail market in Alberta, with a focus on changes to the RRO and the development of retail competition. The theoretical framework for our analysis is described in Section 4. Section 5 presents our econometric analysis. Section 6 concludes.

2. Retail markets and default rates

Electricity provision in restructured markets proceeds through distinct vertical sectors. Electricity is generated and sold through a wholesale market (a power pool). The electricity passes through transmission and distribution to final consumers. Electricity retailers are the final step of the distribution chain. Retailers do not take physical distribution of the product, and need not be involved with generation, transmission, or distribution. Rather, retailers act as the interface between these stages of the distribution chain and the final consumer. Retailers provide customer care and billing services, and offer consumers different contracts regarding how they pay for the electricity they consume.

While electricity is a homogeneous product, a competitive retail electricity market can be viewed as offering differentiated products, based on the terms of the contracts offered to consumers (Hortacsu et al., 2017). In many markets, consumers can choose between contracts whose prices are floating (varying with the spot market price) or fixed over different time horizons (e.g., one to five years in Alberta). Retailers offering fixed rate contracts in effect offer different packages of insurance against wholesale electricity price variation, and include a risk premium in their rates for the price and volumetric risk they face for offering fixed-price long-term contracts (Eakin and Faruqui, 2000). As well, retailers offer “green” products and dual fuel electricity/natural gas combined products, under which the retailing services for both products are provided by a single firm through a single bill.

Restructured markets that transition to a competitive retail market often do so through the use of a temporary regulated default product (Kwoka, 2008; Blumsack and Perekhodtsev, 2009). Different approaches to designing and pricing the default product have been taken; see Tschamler (2006) and Blumsack and Perekhodtsev (2009) for summaries of the experiences of different jurisdictions. In Texas, after the initial phases of retail competition, regulators set default prices at high levels to entice unregulated suppliers to compete over consumers. These “price-to-beat” rates expired and the market operates with no regulated default rates (although there are mandated providers of last resort) (PUCT, 2015; Hortacsu et al., 2017). Other jurisdictions have adopted a model of wholesale price pass-through to set default rates (Tschamler, 2006). While this approach is intended to encourage risk-averse consumers to switch to unregulated retailers offering fixed-priced products, its benefits have been questioned in the literature