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The prospects for smart energy prices: observations from 50 years of residential pricing for fixed line telecoms and electricity

EPRG Working Paper 1611

Cambridge Working Paper in Economics 1622

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Active consumer participation is essential for harnessing demand flexibility, improving the integration of intermittent solar and wind renewable energy resources and achieving low carbon power systems without excessive costs related to network reinforcement and the provision of reserve generation and storage capacity. One way to achieve this active consumer participation is through smart energy pricing – the pricing of energy in real or near-real time – made possible by effective data communication between suppliers and consumers. Potentially, the option of smart pricing can promote the use of dynamic pricing (i.e., time of use pricing), and can trigger or improve efficient energy use among consumers. Consumers' response to smart pricing, such as real- or near-real time tariffs, can further be promoted by smart appliances, which can be connected to a system that remotely controls the operations of such appliances with minimal or no end-user intervention. Smart pricing is about information and involves the integration and/or reinforcements of energy networks with information technology.

This paper reviews the evolution of business models and pricing strategies in telecoms and energy in the last 50 years and what we can learn from history in order to examine the prospects for smart energy pricing by 2050, based on the past behaviour of firms and their customers. We have seen changes in business models from the traditional services business models (i.e., offering calls and messages in telecoms and energy supplies in energy sector) to more dynamic, integrated and complex business models. These new business models include managed services provider model, bundled services model, and prosumer business model,

among others.

We find that in residential electricity there has been no increase in the number and degree of time or location varying prices, though there has been some increase in the number of products on offer. In fixed line voice calls, however, there has been increase in the degree of time-varying prices, though there has been decrease in the degree of location varying prices. We conclude that a multi-period single electricity tariff that reflects time of use is possible with the rollout of next generation of electricity meters (smart and advanced meters). The experience from the pricing of fixed line telecoms products to date suggests the possibility of having a multi-periods electricity tariff rate that reflects time of use. However we observe that in telecoms there is a lot less use of multiple prices than might be expected for a given product, suggesting that smart electricity tariffs will use a limited number of price points.

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Publication March 2016
Financial Support EPSRC Autonomic Power System Project