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The Potential for Segmentation of the Retail Market for Electricity in Ireland

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Using data from the Smart Metering Consumer Behaviour Trial carried out by the Commission for Energy Regulation, we investigate whether the availability of real-time electricity use data will allow electricity supply companies to identify and target their most profitable consumers. As the wholesale price of electricity varies sharply over the diurnal cycle, profitability will also fluctuate throughout the day. At present the typical electricity supply company knows its customers' monthly use, thus the availability of half-hourly electricity-use data via smart metering devices would constitute a revolution in data availability.

New competitors in the Irish retail electricity market wish to attract the more profitable consumer groups, leaving the less profitable consumers with the incumbent. This may be a cause of concern to the regulator if the less profitable groups are also the more vulnerable ones. Research carried out by the European Commission (European Commission, 2009) has indicated that older and less educated customers are less likely to switch electricity provider. However, electricity is seen as an essential good and there would be political pressure to ensure that the "vulnerable" (e.g., elderly, lower educated) do not pay "excessive" prices. It is important to analyse whether the availability of time-of-use data would lead to market segmentation, potentially having a negative impact on vulnerable consumers.

We estimate the gross margin from the supply of electricity to 4,232 households in Ireland, in the second half of 2009. We analyse how gross margin varies across customers, using their characteristics as revealed in a detailed user survey. We also run an OLS regression to establish which household characteristics are statistically significant in explaining gross margin. To the best of our knowledge, we are the first to do this for any country.

Two important results emerge from our analysis. The first is that detailed time-of-use data will *not* facilitate segmentation of the Irish retail electricity market. The most important factor determining gross margin is total electricity use, and not the time of day at which electricity is used. Electricity companies already know their customers' total electricity usage. The reason that it is total use and not time of use that matters is that, while total electricity demand varies significantly between different types of households, the daily pattern of consumption varies very little and not systematically with any observable characteristic.

The second important result follows from the first. As the main factor driving gross margin is total electricity use, this indicates that electricity conservation measures are not in supply companies' interests. In our analysis we find that conservation measures, such as having a lagging jacket, roof or external wall insulation, all have a significant negative impact on supplier profitability. This concurs with the results of Vine et al. (2003) who find that, in the case of the electricity suppliers, in order to maximise profits their objective will be to "maximize kWh sales".

In conclusion we find that smart metering data will not provide electricity supply companies in Ireland with any additional information on which groups of customers are the most profitable. In Ireland the pattern of electricity demand is highly similar across all households; this may evolve in the future as households adopt load-shifting devices, for example electric vehicles, at different rates. However, as current patterns of electricity demand stand, data on gross demand is as valuable to electricity supply companies as time-of-use data would be.

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