GREEN WHITE GOODS PUT CONSUMERS IN THE RED: Lifetime cost of energy-efficient fridges higher than power-hungry equivalents

Swiss consumers who buy energy-efficient white goods, rather than their power-hungry equivalents, more often lose money over the lifetime of the device, according to research by Marcel Stadelmann, to be presented at the annual congress of the European Economic Association in Geneva in August 2016.

While energy-efficient models use less electricity, they are often sold at a higher price. The author compares the price and running costs of 40 refrigerators, 22 fridge-freezers, 12 freezers and four tumble dryers that were available in both energy-efficient and standard models. He then adds the cost of lifetime power consumption to the purchase price, both the recommended price and a cheaper internet price.

Using the internet price, and allowing for a discount rate of 10%, only 36% of energy-efficient products work out cheaper – although the market share for energy-efficient goods is much higher.

‘This number suggests that the majority of efficient appliances cannot be praised with cost savings in addition to their environmental merits’, the author concludes. ‘For current electricity prices in Switzerland, energy-efficient white goods are often not the financially favourable option.’

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Contrary to common belief, purchasing highly energy-efficient household appliances is often not worthwhile from a purely financial perspective in Switzerland. Manufacturers’ list prices of efficient appliances vastly exceed prices of inefficient appliances – a difference that cannot be recouped by lifetime energy cost savings. In online shops, the price differences are generally much smaller, making the efficient appliances financially favourable in some cases.

Sales figures show that some inefficient appliances are sold even if they are clearly unfavourable from a financial perspective. These findings confirm the existence of a so-called ‘energy efficiency gap’ – but the gap in households’ purchases of white goods is smaller than generally accepted.

This study focuses on white goods because they provide an invaluable advantage: the existence of ‘twin’ products – that is, two products that share identical characteristics except for energy efficiency and price.

The fact that twin products only differ with respect to these two aspects allows for a straightforward calculation to determine the financially favourable option: for each product, expected lifetime energy costs are added to the purchase price to determine total costs. The product with lower total costs is the financially optimal choice. Any purchase of an inefficient product despite higher total costs portrays an energy efficiency gap.

From the Swiss market of white goods, this study identifies 40 refrigerators, 22 fridge-freezers, 12 freezers and four tumble dryers as twin products. Expected lifetime energy
costs are calculated based on generally accepted average values for usage, electricity cost and product lifetime.

In a first step, the author refrains from discounting future monetary flows to calculate an upper bound for the favourability of efficient appliances. Yet using manufacturers’ list prices to calculate total costs, efficient twin products are never the financially favourable option even at the upper bound.

Using lowest available online shop prices as purchase prices changes the picture significantly: for three out of four twin pairs, the efficient product is now the financially favourable option.

Introducing a reasonable private rate of 10% to discount future monetary flows roughly halves the share of favourable efficient products to 36%. This number suggests that the majority of efficient appliances cannot be praised with cost savings in addition to their environmental merits.

Interestingly, the share of financially favourable efficient products remains constant when the discount rate is raised to 40, because the price premium for the efficient twin is either very small or even negative, which is the case for 25% of the twins. For these pairs of products, the efficient appliance is financially favourable regardless of the assumptions about the discount rate, the price of electricity and the lifetime of the product (as long as they are positive).

In a small sample of actual sales figures, the study shows that a high share of efficient products is sold, even if they are more costly than the inefficient ones, suggesting that households hold environmental preferences. But in some cases, inefficient products are bought despite being more costly than the efficient ones, which constitutes an energy efficiency gap.

In sum, this study shows that for current electricity prices in Switzerland, energy-efficient white goods are often not the financially favourable option. Thus, the energy efficiency gap in purchases of white goods in Switzerland is not as large as commonly accepted. Future analysis of more extensive sales figures and other product categories would help to clarify whether the problem of an energy efficiency gap is significant enough to warrant policy measures.

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Is There an Energy Efficiency Gap in Households’ Purchases of White Goods in Switzerland?

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