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FROM INTENT TO INERTIA: EXPERIMENTAL  
EVIDENCE FROM THE RETAIL ELECTRICITY  
MARKET

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# From Intent to Inertia: Experimental Evidence from the retail electricity market

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## Abstract

I study consumers' choices in the retail electricity market. By conducting a large-scale survey experiment with 3% of the Danish working-age population, I have gathered data on respondents' factual knowledge of the retail electricity market, their beliefs, preferences, and intentions to switch providers. Crucially, I can link their intentions with actual switching behaviors using nationwide smart meter data. My findings reveal a substantial gap between switching intentions and actions. This gap is exacerbated by my experimental interventions which 1) provide information about savings and switching costs and 2) decrease switching costs by offering free access to a switching service. While my interventions have large and significant effects on switching intention, they have only minor effects on actual switching behaviors. I calculate that a majority of consumers leaves money on the table by not switching. The low switching rates cannot be explained by biased beliefs or high switching costs. Demographics do not explain switching behavior, however, personality traits such as risk aversion, trust, and a tendency to avoid procrastination matter. The observed intention action gap can be explained by present-biased individuals who procrastinate and quickly forget to switch. Based on these findings, I suggest that simply drawing attention to information or educating consumers is unlikely to stimulate market activity. I recommend for policymakers to consider implementing smart defaults, for which I find strong citizen support in my research.

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# 1 Introduction

Attentive and active consumers that respond to prices and market signals a key component of healthy markets. And yet, in many consumer markets such as electricity, health insurance, mortgages, credit cards or auto insurance, consumers are highly inactive, leaving substantial amounts of money on the table by not switching to a better contract. The documented inertia on these markets has fueled dozens of economic and policy papers trying to understand why consumers just won't switch despite evidently low switching costs and moderate to high monetary gains. Understanding why consumers are inactive is important if we want to design policies that increase consumer action and thus improve competition on these markets.

When the European Union mandated the liberalization of the European energy markets over 20 years ago, one of the main aims was to improve competition on the retail energy markets through consumer engagement and thus lower prices. Across Europe, retail electricity prices have been increasing over the years since the liberalization and household switching rates are lower than desired by regulators and lower than economic theory would predict. Most consumers stay with their default provider for years (Brennan 2007) and despite stating a preference for green contracts, most households do not switch unless defaulted into a new contract (Kaenzig et al. 2013, Kaiser et al. 2020, Fowlie et al. 2021).

Previous work on inertia in utility markets has either inferred the decision making process from observed decisions (Hortaçsu et al. 2017, Dressler & Weiergraeber 2023, Heiss et al. 2023) or, in the case of surveys (Ziegler 2020, Schleich et al. 2019, He & Reiner 2017), has asked consumers to rationalize their past decisions. Structural approaches can often exploit natural variation, but require several assumptions about the decision making process.<sup>1</sup> Surveys provide insights into the reasoning of consumers, but cannot establish causality.

Did consumers make an informed choice and decided to stay with their current provider? Or are they unaware of the opportunity to switch or relevant information needed in the decision making process and are therefore not switching? Studying whether consumers considered the decision to switch and what information they used when making a decision is difficult because of data requirements. Ideally, we would observe 1) whether consumers are considering the choice, 2) which inputs go into the choice and 3) the final choice.

To address these challenges, I've constructed a unique data set. This data set links responses from a custom survey, targeting a large and representative sample of the Danish population, with detailed administrative smart meter data. It also includes various back-

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<sup>1</sup>Similar approaches have also been conducted in the health insurance market and will be further discussed in section 1.1 (Abaluck & Adams-Prassl 2021, Heiss et al. 2021, Drake et al. 2022, Bischof et al. 2022)

ground variables, such as income, education, and household characteristics. This approach enables a distinct observation of both the intentions to switch and the actual switching behaviors within the Danish electricity market. I measure knowledge, beliefs and preferences of consumers and how they influence the switching decision. Using an information experiment, I can causally test for the effect of attention to relevant information, such as predicted savings and switching costs, on the switching decision. In a second experimental treatment, I measure whether reducing switching costs significantly, by outsourcing switching to a broker, impacts intentions to switch and switching. The survey experiment encompasses a random 3% of the Danish working population, amounting to 103,000 observations. Using a passive control group (100,000 additional observations), I can also measure whether receiving an invitation to a survey on electricity choices, and thus exogenously varying attention to electricity markets, has an effect on switching. My random sample effectively covers 5% of the entire consumer electricity market of Denmark.

The Danish market is the ideal setting for conducting this study. Market liberalization started in 1999 and by now there are several dozen firms and hundreds of contracts for consumers to choose from. Despite the competition, electricity prices in Denmark are some of the highest in the world, and the highest in the European Union.<sup>2</sup> There is significant price variation on the market and switching costs are as low as they could be while still letting consumers choose for themselves. The government hosts a free, ad-free and transparent website, [elpris.dk](http://elpris.dk), that makes price comparisons easy. Consumers only need to provide their postal code and type of housing and are then shown all available contracts sorted from cheapest to most expensive. Using the website and its switch buttons, the full switching process takes around 5 minutes. Regulation ensures that customers cannot be bound to a contract for more than 6 months and that switches need to happen within three weeks. New suppliers need to cancel the old contract on behalf of their new customer. Since the end of 2020, all households in Denmark have smart meters installed which allow consumers to switch to dynamic pricing and which allows me to monitor their electricity consumption as well as their provider on a monthly basis. Using social security numbers, I can match survey responses to this household smart meter data.

Despite these favorable conditions on the Danish market, consumers are highly inactive. Figure 1 presents consumer behavior on the Danish electricity market between February 2021 to November 2022. The blue bars show the monthly switching rates of consumers in percent, which are around 1.3% per month with some seasonal variation. The dark blue line shows the average monthly electricity prices for consumers including all tariffs and

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<sup>2</sup>A large share of the price is due to taxes and does not vary by supplier, but the overall high price should therefore incentivize consumers not to pay more than necessary in mark-up to suppliers.

taxes in øre (100 øre = 1 DKK).

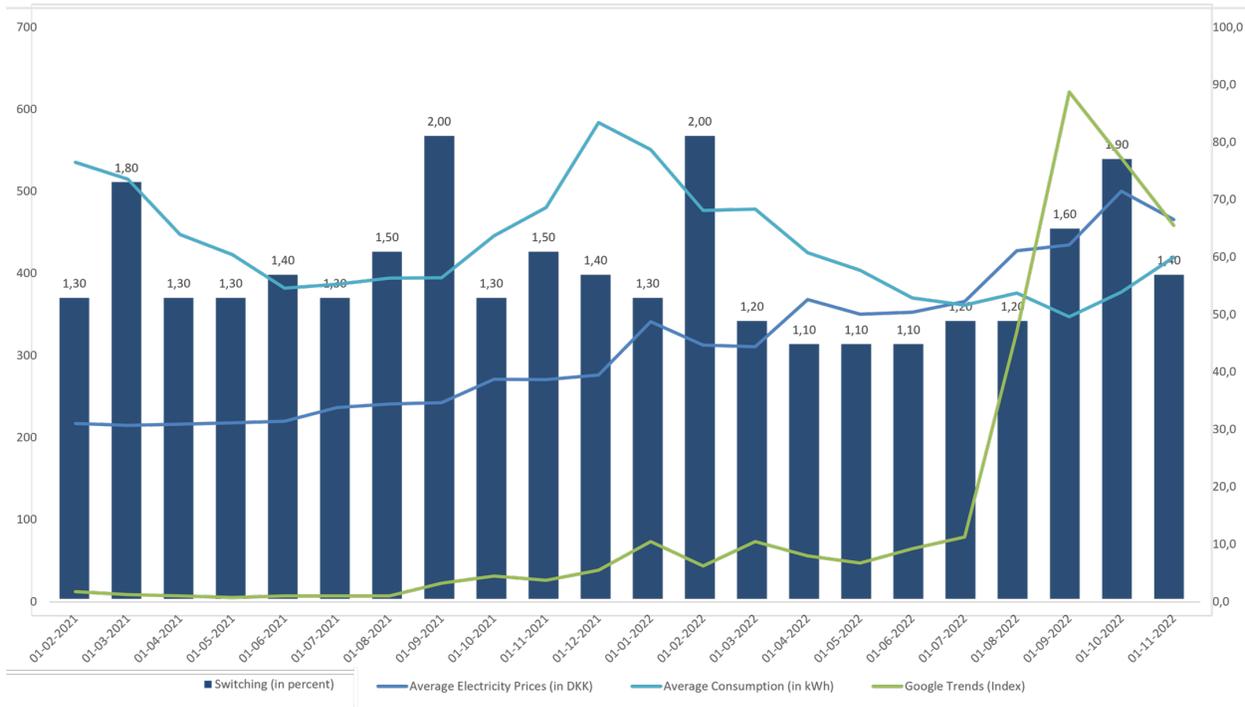
The Russian invasion of Ukraine on the 24th of February 2022 serves as a natural experiment in terms of a shock to European energy markets. It accelerated the increase in electricity prices in 2022 with the highest point in October 2022, and created significant media attention to electricity and gas supply in Europe in the second and third quarter of 2022. Even if consumers did not pay attention to the media, they should have noticed a significantly higher electricity bill, something that has been suggested as a driver for considering and switching electricity contracts (Hortaçsu et al. 2017). The light blue line shows the average electricity consumption of consumers in kWh with seasonal fluctuations, but no strong decrease in response to the energy prices. The lack of reaction to a change in prices is perhaps not surprising, given the overall lack of reaction to changes in electricity prices by households (Fabra et al. 2021). In line with the hypothesis that increasing prices increase attention, search volume about electricity prices increased, as evidenced by the Google search index for the search term "el priser" (electricity prices) (green line in Figure 1). Switching rates, however, are the lowest of this two year period at around 1% and even the spike in October is lower than the comparable spike in September 2021. Based on this descriptive evidence, it seems that at least at first, increased attention to electricity markets and higher prices deterred consumers from switching suppliers.<sup>3</sup>

If attention seems to have the opposite effect to what is predicted in the literature, then what is it that affects switching in the consumer electricity market? In May 2022, I sent survey invitations to a random sample of 103,046 Danes to invite them to a survey experiment on the Danish electricity market. 22,260 decided to take part in the survey answering questions about their electricity contracts, their perception of the market, their beliefs about saving potential and switching cost, their preferences about supplier features and a number of personality traits. Most importantly, I asked them whether they were planning to switch within the next three months following the survey. I then compare their intentions to switch with the administrative switching data three and six months after the survey. Exploring the rich data from the survey and the background characteristics from the administrative data, I analyze which factors are predictive of intending to switch, having switched prior to the survey and switching. Before I elicited their intentions to switch, I randomized participants into three treatment groups. A control group, an information group and a broker group. The information group received 1) targeted savings information

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<sup>3</sup>The decrease in switching cannot be explained by a decrease in national migration during these months, as migration was stable and if anything, slightly higher than at the beginning of the year. It also cannot be explained by a change in switching or search costs. Statistics on Energinet show that "large consumers", over 100 MWh/year, so no private households, have very different switching patterns. Close to 90% switch in January with an increasing trend of number of switchers from 2021 to 2023.

Figure 1: Average amount of switching per month



The left Y-axis shows kWh for electricity consumption and Danish øre for electricity prices. The right Y-axis shows the Google trend index. Switching rates in percent are presented on top of the blue bars. The switching rates and the average consumption are calculated by the author using administrative data from Energinet. The data only shows switching between suppliers not within a supplier. The average prices are taken from the official statistic by the Danish regulator calculated from Energinet and Elpris.dk. Google trends data is for the search term "el priser" (electricity prices).

based on what information they had provided earlier in the survey, 2) the information that switching was possible and free for everyone and 3) a step by step instruction including the information that on average it takes 5 minutes to switch. In the broker group, the information was the same, but an additional page introduced a private brokerage service that would switch consumers to the cheapest offer on their behalf for a small monthly fee. If they participated through the survey, the first month was free and they could cancel any time. While the information treatment tests the causal effect of attention to information, the broker treatment was meant to reduce the hassle costs of switching. The control group was only made aware of the possibility of using the free comparison website.

I find a significant intention to action gap. In the control group 8.5% of individuals plan to switch providers within the next three months. The information treatment increases the intentions to switch to 29.5% (21 percentage points), a 247% increase in switching intentions. The impact of the broker treatment is even larger with an increase to 36% of respondents reporting the plan to switch (27.5 percentage points), a 324% increase in switching intentions compared to the control. The effects are highly significant and robust to adding controls. When looking at actual switching behavior though, the effects are several magnitudes smaller. The information treatment marginally increases switching

by 0.8 percentage points. That is an increase of 31% percent compared to the control group at 2.54% switches within a three month period. When I add controls, the effect becomes insignificant. The broker treatment leads to a statistically significant effect of 1.3 percentage points increase in switching, which corresponds to a 52% increase compared to the baseline. This result is robust to including controls. The large gap suggests that people intend to switch, but do not follow through.

Perhaps consumers plan to switch and then realize that switching is not worth it? While I cannot calculate the exact switching costs and savings for my observations individually as this would require contract data from all electricity suppliers, I estimate that switching costs would need to be over 200 USD to justify staying with the current supplier for a majority of participants. Given the Danish market setting this seems implausibly high.

Using the rich survey and administrative background data, I investigate what factors predict intentions to switch and what predicts switching and the mechanisms through which the treatments affect either outcome variable.

My results can be grouped into the following categories: 1) Factors we would assume to predict switching but don't, 2) Consumers do care mostly about low prices and do not seem satisfied with their current supplier, 3) There are "switching types"

1) Using the rich administrative data including information on gender, age, income, education, family size, housing type and employment status, I find that demographics explain almost nothing in terms of switching and even for intentions the effects are very small and mostly insignificant. The only robust significant difference I find is that respondents between 56 and 65 are less likely to switch than those between 25 and 35. Further, I do not find any evidence that being more informed about your electricity consumption or about the electricity market affects switching, excluding those who have recently switched. Expectations about how the market will develop or the type of current contract is also mostly not predictive of switching.

2) The treatments increase the intentions to switch, but even in the control group switching intentions are higher than observed switching for a passive control group. I interpret the high intentions to switch in all groups as evidence that consumers do not stay with their providers because they prefer them. The problem with observed choices is that researchers cannot disentangle whether consumers considered to switch and decided not to because they are happy with their contract or whether they did not consider switching at all. Looking at intentions and choices allows me to back out whether people want to stay with their provider because they prefer them. 46% of the respondents in the control group say that they intend to switch suppliers in the next year, despite not having received any new information. So clearly, it is not that the non-switchers are intentionally staying with

their provider because they are satisfied. Further evidence that consumers would like to switch comes from the high agreement with a question whether they would use a free and transparent service that would switch them to the cheapest supplier by default. A quarter of my respondents are 99-100% sure that they would use such a service, if it was available.

3) Individuals who report having switched electricity providers in the prior six month, are significantly more likely to switch again. This finding suggests that there might be "switching types". However, I do not find any differences whether the last switch was triggered by an external event such as a move to a new residence or a decision by the consumer such as wanting a green contract or a cheaper price. Therefore, switching might be less about information and more about following through with intentions. Further evidence that there are personality types who switch comes from my elicitation of preferences. Individuals who are more risk-seeking are more likely to intend to switch and switch. Respondents higher on the trust scale are not more likely to intend to switch, but are significantly more likely to switch. Those who self-identify as being procrastinators are significantly more likely to intend to switch, but are not more likely to switch after the survey. The same personality traits predict who has switched prior to the survey experiment. However, these individuals are significantly less likely to identify as procrastinators. Further, I find that those who say they have contemplated switching in the past 6 months, but have forgotten about it or haven't gotten around to it, which is indicative of procrastination, are also more likely to switch following the survey. Interestingly, those who plan to never switch have generally the opposite personality traits to the switchers. They are far more risk averse, less trusting and significantly less patient. Therefore, it appears that two key sets of preferences predict switching behavior: 1) a combination of risk-aversion and trust, and 2) the tendency to procrastinate.

I show that the treatments affect switching probability by accelerating when individuals plan to switch. In the control group only 0.1% plan to switch "today". This number increases 10-fold for the info and broker groups (1.22% and 1.13% respectively). Planning to switch today is highly predictive of switching. Those who say that they will switch today are 24 percentage points more likely to switch than those who plan to switch between 3 and 6 months. These findings are in line with a theory of procrastination with forgetting (Ericson 2011), which I discuss further in section 10.1. Unless consumers decide to switch immediately, they forget and never switch, despite higher intentions. I provide evidence that this acceleration cannot only be explained by individuals being more certain of their choice or updating of beliefs.

The paper has important policy implications. In contrast to the predictions of the recent structural literature and much of the survey literature, I present causal evidence that

increasing attention, correcting biased beliefs and decreasing switching costs, can increase switching intentions, but will not significantly increase switching to efficient market levels. Exacerbating the gap between intentions and actions might actually decrease consumer welfare. In my setting it is hard to imagine how switching costs could practically be lowered further while still giving people agency to choose. My results bring up the important question whether individuals *should* be required to choose. If many consumers are present-biased, mandating active choice would be deeply problematic and difficult to implement. Energinet, the Danish electricity distribution company, will not turn off electricity to force an active choice of supplier, so most people would continue with the default and not much would change. Instead, my results suggest that policy makers should consider smart defaults in the form of switching clubs, electricity brokerages or local auctions that switch consumers on their behalf into the cheapest contracts with the possibility to opt-out. These suggestions imply a reconsideration of the market structure of liberalized electricity markets across the world.

## 1.1 Related Literature

My paper makes both methodological contributions to the literature on consumer switching, as well as providing new results and insights on consumer behavior in electricity markets. The paper also relates to the information experiments literature in general.

**Methodology** The main methodological novelty of my paper is to 1) combine survey evidence about knowledge, preferences and beliefs about the electricity market with administrative smart meter data for the same individuals and to 2) causally vary both the available information as well as the hassle costs of switching to measure the impact of attention, information and search and switching costs on switching.

Structural papers such as Giulietti et al. (2014), Hortaçsu et al. (2017), Dressler & Weiergraeber (2023) and Heiss et al. (2023) observe changes in the administrative data and rely on natural experiments for variation in attention, information and switching costs and have to make assumptions about the decision process of individuals from observe choices, thus missing whether consumers had contemplated switching. Papers using administrative data often use averages from neighborhoods about income or other demographics to make inference about who is more likely to respond to a policy (Hortaçsu et al. 2017, Heiss et al. 2023). Using individual level data allows for more precise estimates. Survey papers such as Giulietti et al. (2005), Ziegler (2020), He & Reiner (2017) and Schleich et al. (2019) have a deeper insight into thought processes, but only elicit stated preferences, knowledge and past decisions, and do not observe future choices and thus cannot establish causality. The only

paper I am aware of that combines administrative data and survey data for the same individuals is Deller et al. (2021). They survey participants who had signed up for a switching auction - a setting where suppliers made offers to consumers for new contracts, reducing the search costs significantly compared to before. The most important methodological difference to my paper is that they survey individuals nine months after the switching decision, while I survey (most) individuals before their decision to switch and can compare them to those who have switched. Further, I have experimental variation in the information provided and switching costs, which allows for causal inference.

**The role of attention on switching** My paper contributes and questions the recent literature on the role of attention in switching. I find a cleanly estimated null effect from sending a survey on electricity choices to my sample. While the survey invitation did not encourage switching, it did mention consumer choices in electricity markets and has a response rate of approximately 20%, thus acting as an intention to treat.

My information and broker treatments increased switching to 3.34% and 3.85% for a three month period, compared to the 2.54% baseline, which corresponds to a 31% and 52% percent increase. In that sense my results are similar to information interventions in the field such as Domurat (2021) who observed a 16% increase in insurance uptake from informational reminders or to typical nudging interventions in the field which have an average of 1.4 percentage points increase (DellaVigna & Linos 2022).

These field findings are several magnitudes smaller than what has been estimated by structural models that have looked at switching in both electricity and health insurance markets (Waddams Price & Zhu 2016, Hortaçsu et al. 2017, Ho et al. 2017, Abaluck & Adams-Prassl 2021, Heiss et al. 2021, Dressler & Weiergraeber 2023, Heiss et al. 2023, Drake et al. 2022, Bischof et al. 2022). These papers argue that because the observed choices in electricity and health insurance markets would imply implausibly high hassle costs to rationalize the inertia given the savings potential from switching it must be that consumers are inattentive. Therefore, increasing attention will increase switching.

Waddams Price & Zhu (2016) predicted that if consumers could save around £100 per month by switching to a different supplier for several different services including electricity contracts, this would motivate a majority of consumers (about 80%) to engage in search and switch activities. While I cannot reject that estimate, I find no evidence that those who say that they believe that they can save that much switch.

More comparable in estimates are the following structural papers in electricity and health insurance markets. Hortaçsu et al. (2017) look at the liberalized electricity market in Texas and estimate that by increasing attention to the switching decision there are substantial consumer surplus gains, depending on the percentage of customers induced

to search. They assume that between 50% and 75% of consumers would be encouraged to search and switch following a low-cost information intervention, like adding a flyer to energy bills. Heiss et al. (2021) estimate that interventions to remove inattention in the Medicare D market could be as effective as those removing switching costs, with an estimated switching probability increase to nearly 68%. However, in their preferred model they find that realistically one can expect switching rates of 25% to 29.6% when inattention is reduced. Similarly, Heiss et al. (2023) estimated an increase in switching probability from an unconditional 24% to a much higher 56% when attention is paid. They investigate a binary choice in a water tariff decision situation. Drake et al. (2022) conclude that eliminating inattention and hassle costs in a health insurance market place could drastically reduce inertial plan choice, potentially by 55 percentage points. However, the reduction from addressing either source of inertia in isolation is estimated at around 20 percentage points. Also estimating inattention in the Medicare D market, Bischof et al. (2022) report that under full attention, 70% of consumers would choose financially superior health care plans, and about 60% could increase their consumer surplus, indicating a significant potential for interventions targeting attention. Finally, Dressler & Weiergraeber (2023) calculate average benefits of around 0.05 USD per month and household from an information campaign that is aimed to increase switching. This number might be more in line with the effect I find from my information intervention. However, they estimate substantial search and effort costs that minimize the effect of attention, so it is not directly comparable.

In summary, while these structural papers predict substantial effects of increasing attention on consumer switching behavior, my experimental research finds far more modest increases. Interestingly, the impact of the information intervention on *intentions* is similar to the estimated effects in the literature. Information provision leads to an increase in switching intentions by 21 percentage points and the opportunity to use a broker to reduce switching costs leads to an increase in switching intentions of 27.5 percentage points compared to control group switching intentions of 8.5 percentage points. If individuals would act on their intentions, then these findings could be reconciled. Given the identified gap, the resulting policy suggestions thus differ substantially, which I will discuss more in section 11.1.

**The role of demographics and preferences on switching** The evidence on what predicts switching in terms of demographics and personality traits is very mixed.

In terms of questions asked, my paper is closest to Giulietti et al. (2005) who focus on perceptions of switching costs and expected gains from switching. They also differentiate between those who have switched and those who consider switching and find meaningful differences in beliefs. Similar to me they find that those who believe it is easy to switch and

think it will take less time are more likely to switch. They find that those who care more about the reputation of a supplier are less likely to switch, while those who focus on lower prices are more likely to switch. They find that awareness of being able to switch increased having switched. There is a problem of causality here, since having switched should also increase awareness of being able to switch.

This causality problem is also evident in other surveys. Pure survey studies can only ask about having switched in the past or intentions to switch, without verifying these answers. This makes it harder to understand causality of preferences and knowledge on switching. For example He & Reiner (2017) find that those who have difficulty understanding their bills are more likely to have switched. They explain this finding as those who have switched to have looked at their bills and realized that they are difficult to understand. Those who have switched might also be more informed about their current contract because they have recently engaged with it, so any correlation between knowledge and switching might be due to having switched. The benefit of my design is that I can look both at those who have switched and the ones who are planning to switch and can compare beliefs and preferences. I find several differences between the groups, for example in their estimation about the time it takes to switch and that those who have switched in the past six months are significantly more informed about their electricity usage (Chi2 p-value<0.001). In line with my results, He & Reiner (2017) find very little predictive value of demographic information on switching.

Ziegler (2020) and Schleich et al. (2019) focus on behavioral factor for switching. This is something I also explore in this paper, but compared to these two studies, I only use non-incentivized elicitation such as the preference module by Falk et al. (2023). Ziegler (2020) hypothesizes that being patient, risk-seeking and trusting should predict switching, but only finds support for being patient. Schleich et al. (2019) on the other hand find evidence for risk aversion being negatively correlated with switching, but no evidence of time preferences affecting switching. I find that risk-preferences have the strongest predictive value of intending to switch and switching in my sample compared to all other personality traits. Being impatient predicts never planning to switch in my sample, but not actual switching. Trust has a significant positive effect on having switched and switching. Neither papers measure the self-reported tendency to procrastinate, which I find to also be predictive of behavior.

I do not find evidence that income, education or living in a house vs. an apartment predicted switching (Ek & Söderholm 2008, Ziegler 2020, Schleich et al. 2019). Neither can I confirm that males are more likely to switch than females, although they report higher intentions to switch.

Similar to Deller et al. (2021) I find that even in very favorable conditions only a small amount of individuals switch providers, even when the savings are considerable. Like me, they find very minor differences in demographics between switchers and non-switchers. Interestingly, similar to my sample, many non-switchers say that they did not switch because they did not get around to it during the time of the auction. Thus, they also seem to find some evidence that there is an intention to action gap when it comes to switching.

Overall, my findings confirm the consensus of the literature that demographics are not predictive of switching, but that personality traits matter. My unique data set allows me to directly compare those who have switched and those who end up switching and thus confirms concerns in the literature that reverse causality could affect inference from surveys.

**Information Experiments** Finally, the paper also speaks to the recent literature on survey experiments and information treatments (see Haaland et al. (2020) for an overview). Many papers measure changes in beliefs induced by information treatments, or, they measure a direct behavioral outcome such as clicking on a link (something I also measure in my experiment) or making a small donation to a cause. The assumption being that changed beliefs will lead to changed behavior in the long-run. The large treatment effect of my information treatment compared to the marginally significant change in behavior challenges the assumption that a change in belief carries over to a change in behavior. This certainly depends on the chosen context, but is in line with findings by Campos-Mercade et al. (2021) who also do not find any increase in vaccinations from their information treatment, with the caveat that it also did not increase intentions to vaccinate. The nudges increased intentions slightly and also do not result in an increase in vaccinations.

## **2 Market barriers to switching**

If we want to understand whether a fully attentive, time-consistent consumer would switch, we first need to establish that 1) switching is possible in terms of available options and legal framework, 2) that search and switching costs are reasonably low, and 3) that there are meaningful monetary gains from switching.

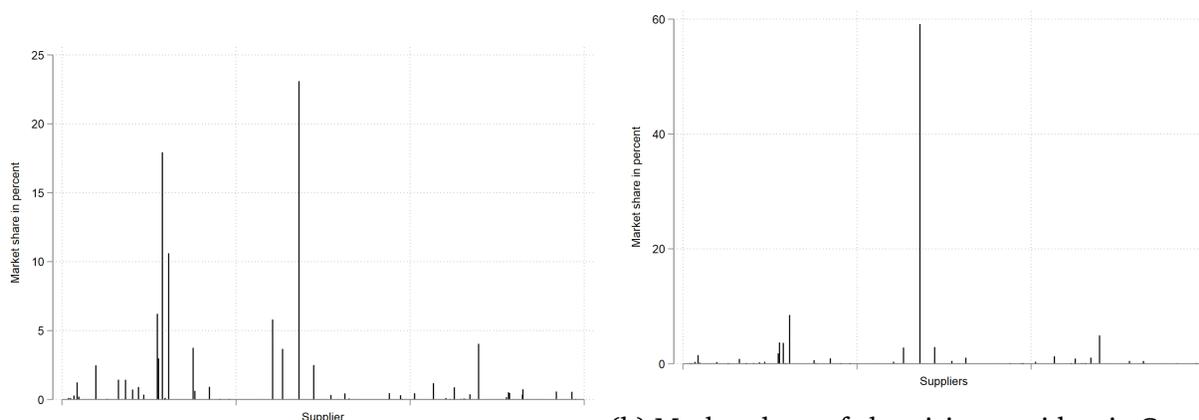
### **2.1 Liberalization of the Danish electricity market has made switching possible for all consumers**

For a long time, the Danish electricity sector, similar to most electricity sectors in the world, lacked competitive incentives due to monopoly conditions. Electricity companies owned all

links in the electricity value chain, from generation to transmission and to the final distribution to consumers. However, as a part of a general liberalization trend in Europe and following demands from the EU, a large reform of 1999 started to liberalize the sector. The reform entailed that neither consumers or suppliers had any ties to specific electricity plants and that electricity companies no longer had monopoly status within certain geographically areas. All consumers thus became free to buy electricity from any commercial electricity supplier on the free electricity market. In 2005, Energinet was established to distribute electricity across the country and across Danish borders. Energinet is solely responsible for running the transmission network and the electricity system in Denmark. Their core service is ensuring a balance between consumption and production such that the electricity grid always maintains the electrical voltage. On the wholesale market, producers offer their electricity via balance managers on the electricity stock exchange (NEMO) and balance managers buy it on behalf of the electricity suppliers, who then sell the electricity to consumers. To increase transparency, since 2016, consumers receive one electricity bill that includes all costs of electricity, tariffs and fees. The smart meter data I am using in this paper comes directly from Energinet.

By 2020, all European member states were required to implement smart metering for at least 80% of all consumers to allow for flexible/dynamic pricing (i.e., the price varies by hour). Most households in the world still have a non-dynamic electricity price. Non-flexible pricing is socially inefficient because the marginal cost of electricity tends to vary substantially by hour (Ito et al. 2023). In a country such as Denmark with a high share of wind energy, flexible pricing could also incentivize use of green electricity. Denmark started the transition to national coverage of smart meters in 2014 and finalized the installation during 2020. The installation of the technology, however, does not mean that all households have contracts that allow for flexible pricing, even if consumption is measured on an hourly basis. There are no official numbers available how many households have switched to flexible pricing, but unless consumers actively switched, they are still on the old non-dynamic contracts. In my sample, the share is around 13% of respondents who are on flexible pricing. In April 2022, the Danish market had around 50 retail electricity companies and around 250 contracts. These numbers vary slightly by region. While there is some product differentiation between the firms in terms of apps or customer service, the electricity supplier only re-sells electricity to the consumers and is not responsible for the transmission, as this is the sole responsibility of Energinet. Thus, there are no differences in reliability of power transmission, the energy mix or other features of the delivered electricity.

Figure 2: Market share of electricity providers without those for whom I have less than 10 people in my sample.



(a) Market share of electricity providers in Den-hagen region (postal codes 1 and 2) in January 2022  
 (b) Market share of electricity providers in Copenhagen region (postal codes 1 and 2) in January 2022

## 2.2 There is high market concentration within each region

Despite the liberalization reform more than 20 years ago, there is a high market concentration with a few companies having a majority of the market in different regions. Across Denmark a 50% share is held by the 5 largest suppliers (see Figure 2.) In Copenhagen region, the largest supplier has 58% of the market with the second largest supplier having less than 9% of the market.<sup>4</sup> In more rural areas or islands such as Bornholm, some incumbents still hold around 90% of the market.

## 2.3 Are switching costs too high?

The restructuring of the retail energy sector has led to low search and switching costs. The Danish Utility Regulator runs a free comparison website, [elpris.dk](http://elpris.dk), which presents all available electricity contracts in an easy to search database. Consumers can search by price, contract type, green energy share and several more contract features. The website is comprehensive and there is no advertising. To search, consumers choose one of four housing categories<sup>5</sup> or their yearly electricity consumption and their postal code. By default, the contracts are sorted by average price per kWh. The list also shows expected total electricity

<sup>4</sup>This share is very similar to Hortaçsu et al. (2017) who find that the incumbent holds 60% of the market four years after liberalization.

<sup>5</sup>The categories are small apartment (up to 80sqm and 2000kWh), large apartment (over 80sqm and 3000kWh), small house (up to 130sqm and 4000kWh) and large house (over 130sqm and 6000kWh). If consumers know their annual electricity consumption, they can put in the correct amount.

costs for six months for a household of the chosen size/consumption. If a consumer clicks on a contract, they see standardized details of the different price components such as subscription costs and transport fees, which additional fees and conditions might apply and how the price has developed during the past six months compared to the spot price on the Danish energy exchange.<sup>6</sup> See Figure 33 for screenshots of the platform.

The website does not only inform consumers and thus minimize search costs, but also aims to reduce switching costs (a relevant distinction as Dressler & Weiergraeber (2023) have found). At the top of each page a "Switch to this product" button sends the consumer directly to the supplier's sign up form for the chosen contract (see Figure 34 for a screenshot). Dressler & Weiergraeber (2023) highlights this as an important feature for reducing switching costs. Since all Danes and people legally living in Denmark have a social security number connected to their address, smart meter and the bank account, a supplier needs very little information to set up a new contract. Theoretically, switching is possible immediately, but in most cases, the switch happens at the end of the calendar month. All suppliers are legally obliged to automatically cancel the contract with the old supplier on the behalf of the new customer. This is stated both on the website and on the sign-up forms. Taken together, if a consumer wanted to switch to the cheapest eligible contract on the market, the whole process from opening up the elpris.dk website to having switched would take around 5 minutes. This claim is confirmed by our survey respondents. 78% of those who have switched said it took them less than 15 minutes to switch and fewer than 2% said it took them over an hour.<sup>7</sup>

It is illegal for suppliers to charge fees for changing suppliers (Elleveringsbekendtgørelsens § 8). However, in practice, for fixed-price contracts and some variable price contracts the customer can be required to pay a compensation if the contract is broken before six-months or the running month plus one month. This can be up to 1500DKK (250 USD). Therefore, to be on the safe side, consumers should ideally switch every six months unless they know their contract details.

## 2.4 Are savings too low?

The average consumer could save hundreds of dollars a year by switching. Figure 3 shows the average price distribution for contracts offered on elpris.dk, in April 2022, right before

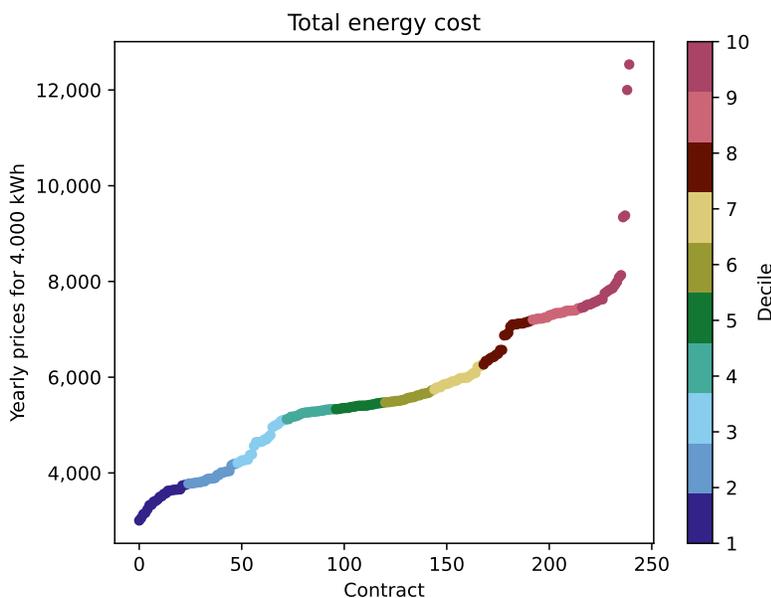
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<sup>6</sup>A caveat is that older contracts might no longer be available on the website, so a consumer cannot directly compare their old contract to new contracts on the website. However, they could compare recent prices from their current supplier to other suppliers.

<sup>7</sup>Additional switching cost could come from installing a new provider app or providing information for a refund from the former provider, if some fees have been paid in advance. Neither of this is necessary though and would take a few minutes at most.

our survey.<sup>8</sup> For a household with a yearly consumption of 4000kWh per year, the maximum difference was 9160DKK (\$1300) per year. Average savings (switching from the average contract to the cheapest at the time of the survey) are between 946DKK and 2399DKK, depending on household size. The average Danish employee earns ca. 185DKK per hour after tax, so 47 DKK per 15 minutes, a generous estimate for switching. As this back of the envelope calculation shows, even for households on the lower end of the price distribution, switching to the cheapest contracts would be optimal for most consumers.

Figure 3: Distribution of contract prices in April 2022

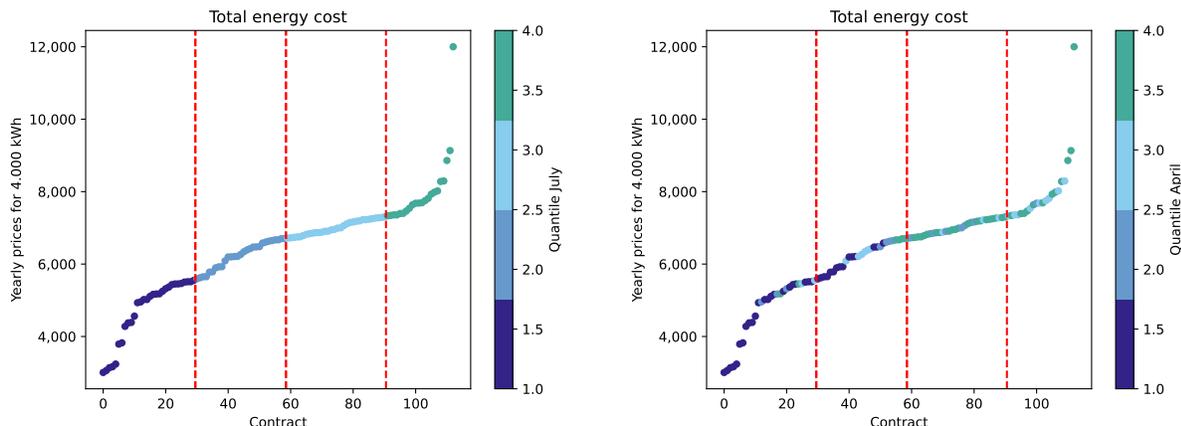


Contract prices have been scraped from Elpris.dk

How can it be that average prices are so different, if many suppliers provide customers with the spot price from the energy exchange? A large part of the variation comes from subscription costs (from 0 up to 299 DKK per month), fees on top of the spotprice ("spottillæg") (up to 20 øre/kWh), fees for sending invoices (up to 500 DKK per year), additional customer service or green or social contributions (around 4 øre/kWh). Variation also comes from the difference in fixed prices versus variable or flex prices. With fixed prices, consumers pay a fixed amount per kWh for several months, regardless of the time the energy is consumed. These are on average higher than the variables prices, similar to fixed and variable mortgages to price in the reduced risk. Variables prices are prices that are fixed for a shorter amount of time, between one month and one day. Flex prices are prices that follow the

<sup>8</sup>I use average prices rather than marginal prices as several studies have found that this is what consumers respond to (Ito et al. 2023).

Figure 4: Change in the distribution of electricity contracts between April and July 2022



(a) Energy prices distribution July 2022, by quartiles  
 (b) Energy price distribution July 2022, by April 2022 quartiles

spot exchange price on an hourly basis. Customers pay based on the hour they consume the electricity in. The cheapest prices are so-called intro prices for new customers that turn into a more expensive contract after 6 months. Sometimes these are joined with a store discount or a physical welcome gift. A rationally attentive consumer should thus switch between intro contracts every 6 months, collect the welcome gifts and realize large savings compared to staying with an existing contract. If one wants to minimize switching costs and is concerned about forgetting to switch, there are contracts with zero subscription costs and zero invoice fees that provide the energy exchange price with only minor spot price fees (around 6 øre/kWh).

While there is some fluctuation in the order of contracts in terms of how expensive they are, most companies stay in their quartile. Figures 4a and 4b show the same contracts for July 2022. 4b shows in which price quartile each contract was in April 2022. So a dark blue contract which is in the first quartile in July was also in the first quartile in April. There are very few contracts who move a lot of ranks and very cheap and very expensive contracts stay in their place. This makes sense because subscription fees and other fees mostly stay the same. A more detailed example of savings from switching can be found in section 5.3.

### 3 Measuring the causal effect of attention on switching

The descriptive evidence from switching on the electricity markets in Figure 1 showed that increased media attention and rising prices in the spring of 2022 did not increase switching rates. To understand whether attention to savings potential and the size of the switching

costs has a causal effect on switching, I conduct an experiment, that exogenously varies this information and separates the intention to switch from the switching decision. The following sections describe the experimental design, the survey and my data sources in more detail.

I conduct a survey experiment with a representative sample of the Danish population in which I collect detailed information about their knowledge, beliefs and preferences and their intentions to switch electricity suppliers. I then match the survey data using unique social security numbers to nationwide household smart meter data including electricity suppliers and consumption data to measure switching. Finally, I add demographic information from the Danish register data to test for heterogenous effects.

### **3.1 Administrative data**

I use two main data sources from Statistics Denmark. The first source is smart meter data provided by Energinet for which Statistic Denmark has added address identifiers, so that the data can be linked with individuals. This data mainly contains smart meter IDs, an address identifier, monthly electricity consumption and which supplier the smart meter is connected to in each month.<sup>9</sup> Due to the installation of smart meters, the data is available since 2020, but according to Energinet only fully reliable since February 2021, which is the starting point of what I use in this paper. I construct a panel data set for 2021 and 2022 and construct switching dummies that indicate whether there was a change in suppliers in the following month.

The second data source provides me with demographic information about the individuals, such as level of education, income, household size and type of housing. Using the social security numbers (assigned either at birth or when legally registering in the country), I can link this background data to my survey responses.

### **3.2 Survey Sample**

I conducted a large-scale survey experiment in May 2022. I sent survey invitations to a representative sample of 103,046 respondents, registered with a social security number in Denmark, randomly selected by Statistics Denmark. The respondents were 25 to 65 years of age at the time of the survey. This number corresponds to 3% of the Danish working

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<sup>9</sup>The administrative data only records the provider, not the contract at the provider since this is company data. I will thus not be able to see whether individuals switch to a different contract within a provider. Most suppliers have 2-3 different contracts consumers can choose from. All suppliers that have a fixed price contract also have a variable price contract, but not always a flexible price contract.

age population. I chose this age range to maximize the chances of surveying individuals who could choose their electricity contracts themselves (i.e. not students or elderly living in shared housing). Respondents could be native Danes or foreigners residing legally in the country. Since the survey was only available in Danish, they at least needed to understand the language to participate.

My survey method uses an official channel of communication of the Danish public authorities with citizens. The invitations were sent through the secure website “Digital Post”, which is used to receive and read mail from public authorities. By law, all citizens older than 15 have to have and regularly check an electronic mailbox where they receive information from public institutions, for example tax and health authorities. Communications may also come from private companies, for instance, salary statements from employers or account statements from banks. The use of this official channel of communication, together with the University of Copenhagen stamp, likely increased the credibility of my survey and experiment, which sets the setting apart from lower stakes survey environments. It further allows me to access a population who have not self-selected into market research panels or online platforms. To incentivize the respondents, they were told that those who completed the entire survey would be entered into a lottery for 30 gift cards with a value of 1000 DKK (\$140) or 3 gift cards with a value of 2500 DKK (\$345) each. The survey was programmed with QuestionPro.

### 3.3 Survey Outline

The survey consists of eight blocks of questions. Below, I summarize the blocks and the questions relevant to this paper. The survey is available in full in Appendix A.1. In addition, the survey started with a consent page informing respondents about their use of responses in accordance with the General Data Protection Regulation of the European Union and the possibility to opt-out of the survey.

**Segmentation Block** The first block contains questions on gender, postal code, size of the housing and whether they or someone in their household was the one paying for the electricity contract. The questions on postal code and housing size were used to calculate the potential savings that we provided in the two treatments. Postal code was re-coded to East and West Denmark, as electricity prices are different in the two regions due to different transmission fees.

**Electricity contracts** Next, I asked about their electricity contracts. I asked who set up their current electricity contract, themselves, a household member or a former inhabitant, as it is common that consumers will take over an existing contract when they move in. I

then asked who their electricity provider is and whether they have a fixed, variable or flex price contract and whether it is for green energy.

**Electricity consumption** The next block asked about the electricity consumption and electricity costs per month. I anticipated this to be the most difficult block for participants to answer. Therefore, I prefaced it with the note that it might be difficult to give a precise number, but that respondents should do their best and that after each number there would be the opportunity to indicate how sure they were of this number. The first question was "Think about the last 12 months (April 2021-April 2022) how much does your household pay on average per month for electricity?" I then calculated the average payment per six months, by multiplying their answer by six and then asked "You say that you pay "Payment 6 Months" per six months. How sure are you about your answer?". Using a slider from 0 to 100% they could indicate their confidence. The second question asked about their average monthly electricity consumption in kWh in the same way. Next, I asked them how much they think they would be able to save in the next six months by switching to the cheapest supplier on the market and reminded them what they said how much they pay currently during six months. Again, I use a slider to ask how sure they are about their answer. To understand whether they might have special electricity contracts or an unusual amount of electricity consumption, I ask them whether they own or lease an electric car, have installed a heat pump, or have solar panels on their house. If they answered yes, to any of these questions, they will be excluded from the analysis. As an attention check, in the middle of the survey, I then asked which was the biggest source of renewable energy in Denmark, wind or nuclear power. Wind, is the easy and correct answer.

**Contract switching** The next block contains questions about when respondents last changed their electricity contract. This is both important to understand the characteristics of people who have switched before and it is important to select out individuals who have switched within the last 6 months and would potentially incur costs for early dissolution of a fixed price contract. I asked participants when they last switched either to a new supplier or to a new contract at their old supplier. If they answered that they had switched within the past year, then they were funneled into a series of questions on their switching experience. If they answered that they had not switched within the past year, then they received further questions to understand why not. If they had switched, I asked what their main reasons for switching was, how long it took to switch and whether they were happy with their new contract. If they had not switched, I asked when they had last thought about switching, what their main reason for not switching was, how long they anticipated the switching to take and whether renewable energy was a must for them when switching to a new contract or whether they would rather go with the cheapest option. This last question was necessary

to calculate the correct savings for the treatments, as green contracts are usually slightly more expensive than non-green ones. Using six sliders, I then asked them to indicate the likelihood of them switching providers in the next four weeks, if they would be able to save 1, 5, 10, 20, 30, 40% of their electricity bill.

**Market Perception** The next block focuses on their perception of the Danish electricity market. To understand how much consumers care about choosing a provider themselves I asked them to imagine a free and reliable tool that would switch them automatically into the cheapest contract and their likelihood of using such a tool. Next, I showed them the development of electricity prices for the past two years prior to the survey from March 2019 to March 2022. I then elicit their beliefs about how the electricity prices will develop in the next six months and how sure they are about their estimate. And finally, to proxy market knowledge I ask them what they think it means when a company says that they provide green electricity.

**Personal questions** Then I ask them a series of personality questions using the Falk et al. (2023) modul including trust, patience, risk preferences and altruism on a 10-point Likert scale and two similar questions on their tendency to procrastinate and self-control.

**Experiment** After the survey part was completed the participants were randomized into three groups, unless they had previously responded that they have switched within the past six months, which sorted them into another branch of the survey and asked them about their switching experience.

*Control group:* The control group is asked whether they are planning to switch providers in the next three months and how sure they are about their answer. If they say that they are planning to switch, I then ask them in what time interval they plan to switch, from the day of the survey up until 2-3 months after the survey. If they answer that they do not plan to switch in the next 3 months, then I ask them whether they plan to switch in a later time interval or never. Then the survey concludes with the final page (see below).

*Information treatment:* In the information treatment, the participants are shown an information page that tells them that switching providers takes five minutes and that it is legal and free of charge to change providers after six months.<sup>10</sup> Then, according to their house size, region and whether a green contract is a must, they are shown average savings for a household their type.

Since there are four housing sizes, two regions and green and non-green contracts, there are 16 possible saving amounts that can be shown. Saving were calculated in the following

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<sup>10</sup>The information treatment was inspired by the policy simulation by Hortaçsu et al. (2017). Their idea: “The State of Texas has created a website [www.powertochoose.com](http://www.powertochoose.com) where you can see all the options available to you. It’s quick. It’s easy to use. And you can switch your retailer at no cost to you in 15 minutes or less.” While they focus on switching costs, I also focus on savings.

Figure 5: Survey Treatments



(a) Screenshot of Information Treatment

(b) Screenshot of Broker Treatment

way. I received the average electricity prices per kWh for April 2022 for four consumption levels (2000, 3000, 4000 and 6000 per year<sup>11</sup>) and the two Danish regions from the Danish Energy Agency. I then calculated the average price for the four household sizes for 6 months. Then I calculated the average savings for each of these groups by subtracting the expected costs of the current cheapest offer on elpris.dk for each group. The calculation was done two days before the launch of the survey to make the savings as accurate as possible. Expected savings ranged from 806 DKK (108€) and 2399 DKK (321€) per 6 months. Further, the page showed a three step guide on how to switch providers and that a link to elpris.dk would be provided at the end of the survey. They were also told how I had calculated the savings from the provided information. Figure 5a shows a screenshot of the information. The savings would be filled in depending on the respondent.

Then the questions were identical to the questions in the control group.

*Broker treatment:* The broker treatment started out with the same page as the information treatment. On a second page, respondents were then informed that if they did not want to switch providers themselves, they could use a broker called GoSwitch. GoSwitch is a company that charges a small monthly fee (29DKK / \$4) and in exchange switched consumers into the cheapest electricity contracts on the market every six months. This eliminates all switching costs for consumers and eliminates the risk to be moved into an

<sup>11</sup>These consumption level correspond to the default housing categories presented on the elpris.dk website. Unless individuals know their exact consumption, they can choose their house or apartment size and are presented with the corresponding offer.

expensive contract after a cheap introductory period. To make the hassle costs as close to zero as possible, we offered to pay for the first month of GoSwitch for respondents through a link in the survey. They were free to cancel the service at any time. So they could have used the service to be switched once to the cheapest provider. Participants were informed that Copenhagen University had no affiliation with GoSwitch and that no personal information was shared with the broker. In the Broker treatment, there is also the link to GoSwitch.dk, to make use of the coupon.

I then asked the identical questions to the control and information group. However, to understand why or why not individuals might choose a broker, I further asked a few questions about whether they would use GoSwitch and if not, why not. Figure 5b shows a screenshot of the second page of the broker treatment.

*Had switched:* If respondents had switched in the last six months, they received the same questions as the control group with the minor difference that I asked whether they were planning to switch again.

**Final page** The survey ends with the chance to provide comments and a link to Elpris.dk, the official government electricity contract comparison website, also mentioned in the treatments. I track whether individuals click on the link to the website. They were also informed that if they were selected to win a gift card for participation, this would be sent to them by the end of the month.

### 3.4 Creating the analysis sample

I received social security numbers for 204,505 individuals. When linking the background information to the survey and control population, I lose a few observations for whom I do not have background information. This results in 203,910 observations after merging and cleaning a few duplicates. I then have 102,761 whom I have sent the survey and a passive control group of 101,149 who have not received any communication.

I drop individuals who are in the passive control group and who live with someone else who is also in the survey sample (N=5603), as their partner might get treated by the survey. This results in 95,546 in the passive control group and 102,761 who were sent the survey. Gender in the survey and in the background data is different in 124 cases, but roughly equally mis-classified. 55 invited men answer as female and 69 invited females answer male. I keep the observations and use the gender provided in the survey if the person lives at the same address (Full sample).

After asking for consent, their postal code, their gender and the size and type of their housing, I asked participants who paid their electricity bill. If they answered that either they

or someone in their household paid the bill, they moved on to the first block of questions. However, if they answered that their landlord paid or that they didn't know, they moved into a side survey (N=592).<sup>12</sup> To change electricity contracts, consumers needed to be the ones who had the opportunity to change the contract. The final analysis sample of respondents analyzed in this paper is therefore deliberately selected on whether they have a choice in their electricity provider and (can) have direct contact with them.

As preregistered in the AER trial registry (AEARCTR-0009352), I drop respondents who drive an electric car, heat with electricity or have solar panels (N=5505), as they might have special electricity contracts that prohibit them from switching to the cheapest offer.<sup>13</sup> For the main analysis, I drop individuals who have switched within the last six months, as I cannot be certain that they can switch providers without a fee before six months are up (N=1191) and they are therefore not treated. I conduct an additional analysis on these individuals in section 6.2 (Switched Sample). This process results in 191,019 observations.

For my main analysis, I keep, as preregistered, only individuals who were treated in the survey. That is, they got to the treatment part of the survey, but might not have completed the survey. I use this sample, as very eager consumers might leave the survey to go to elpris.dk after being treated. I drop 181,972 observations: passive control group, those who didn't start or didn't consent and the ones who drop out before the treatment.

This gives me a final sample of 9,047 observations for my survey data and the "intent to switch" analysis (Intent Sample). Since I am missing electricity data for 1,257 of these individuals, I have 7,790 observations for the switching analysis (Switching Sample).

53.64% of the sample (Intent Sample) lives in East Denmark and the rest in the West. My sample is perfectly split by gender - 49.60% of the sample are women. Around 39.71% state that they have a variable price subscription, 31.68% have a fixed price and the rest do not know. 13.70% say that they have signed up for a flex price subscription (this means that they have switched after January 2020). Around a quarter of participants say that have a contract that is at least partially green energy (26.17%). The largest group of respondents live in a house larger than 130sqm (37.84%) and 22.55% in a house smaller than 130sqm. Then comes the small apartment with less than 80sqm (20.66%), and more than 80sqm (18.96%)

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<sup>12</sup>The results of this side survey will be published in a complementary paper.

<sup>13</sup>The main results hold when including these individuals, but are smaller. This is mainly driven by individuals with solar panels switching significantly less. Results available upon request.

## 4 What are consumers knowledge and beliefs about the electricity market?

To understand whether the information intervention could have an effect on consumer behavior, it is important to measure the ex-ante knowledge of consumers about their electricity contracts, their knowledge about the market and their beliefs about the amount of money they can save by switching and how long it takes to switch.

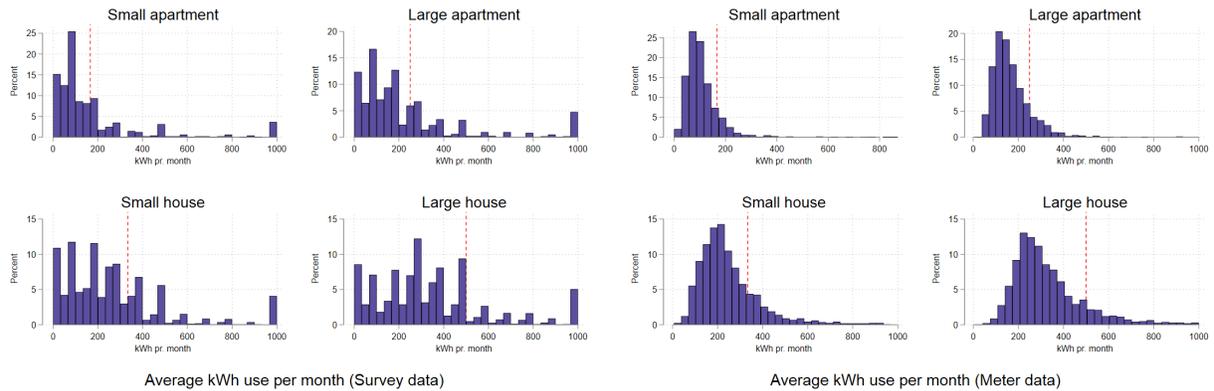
### 4.1 Are people informed about their electricity consumption?

I asked survey participants to estimate how many kWh they consume in a month on average and can compare this to their actual meter data. There is some seasonal variation in usage (as evident from Figure 1), but smaller households do use less electricity on average and even for large households, the variations is usually between ca. 200kWh per month. As Figure 6 shows, stated consumption (Panel A) and actual consumption (Panel B) are similar, but on average individuals assume that they use more electricity than they actually do. We see that the meter data is, as expected, closer to a normal distribution, while the survey data has rounding spikes. The graphs are truncated at 1000kWh for the ease of exposition, as some consumers have unreasonable high beliefs.

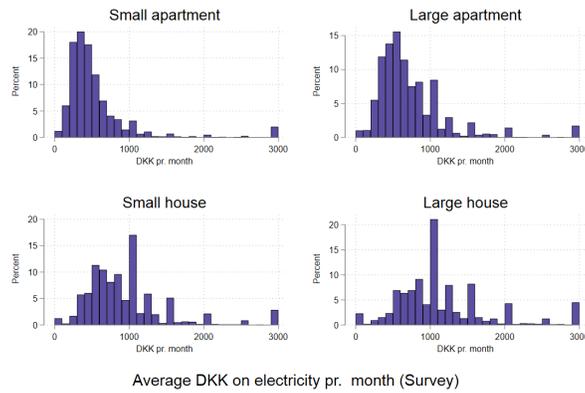
I find that 31% of my sample's guesses are within +/- 50 kWh of their meter data and 46% are within +/-100 kWh. When asked how sure they are about their answer 39% say they are less than 10% sure about their answer while ca. 21% say that they are more than 90% sure of their answer. The average is 42% sure. 44% of those who say they are more than 90% sure of their answer, I classify as being within +/- 50kWh of their meter data. This question is also the place in the survey, where we see the largest drop out rates (see Figure 31 in the Appendix for detailed information in drop outs). While I cannot test this formally, it seems likely that those, who have less knowledge about their electricity consumption are more likely to drop out here, which would bias the sample towards those with more knowledge. In sum, there is a wide variation in knowledge about personal electricity consumption in the population and my sample.

I further elicited how much they pay for electricity per month. Since I do not know what they really pay (this is company data and not available in the data from Energinet), I cannot do the same comparison. Here, only 8% say that they are less than 10% sure how much they pay and more than 25% say they are more than 90% sure how much they pay. The average is also higher than for the kWh data (67% vs. 42%). This difference indicates that many consumers know their monthly expenses, but not how these costs result from their

Figure 6: Knowledge of electricity consumption and costs



(a) Stated consumption of electricity per month (b) Actual consumption of electricity per month



(c) Stated energy costs per month

usage.

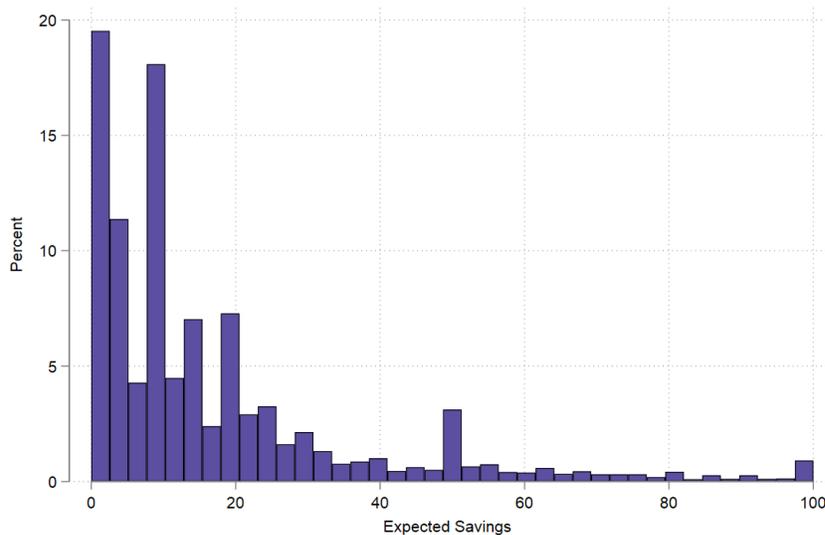
## 4.2 What are consumers beliefs about savings and the time it takes to switch?

Theory would predict that given the observed inertia, consumers have low expectations about the savings potential from switching compared to their beliefs about switching costs. They should not be deliberately leaving money on the table if they think the savings are considerably higher than the switching costs. So I elicited their beliefs about both. I asked respondents to guess how much they would be able to save if they switched to the cheapest provider on the market at the day of the survey (see Figure 7). On average, respondents believe that they can save 17% of their electricity bill. In May 2022, the time of the survey, a household using 4000kWh per year would have on average been able to save 20% of their

electricity bill by switching from the average to the cheapest supplier. Thus, on average, savings expectations are correct. There is substantial variation in the beliefs, with around 20% of respondents believing that they can save nothing. 25% of the respondents say that they believe they could save more than 20% of their electricity bill by switching. So there is room for an information treatment to affect beliefs in both directions. Overall, the uncertainty is again high. On average, respondents report to be 33% sure about their estimate, with more than 35% being 10% or less sure about their answer. So, even though many are in the right range of savings, the information might help confirm their beliefs. I control for their expectations in my analysis.

I cannot check how much an individual could save, as I do not know which contract they are on, so for some, it could be true that they can save more than the average, as we have seen from Figure 3. They might be on the high end of the distribution. I can be fairly certain that those who say they can save nothing are incorrect as they cannot be on an intro contract if they haven't switched in the past six months.

Figure 7: Expected Savings

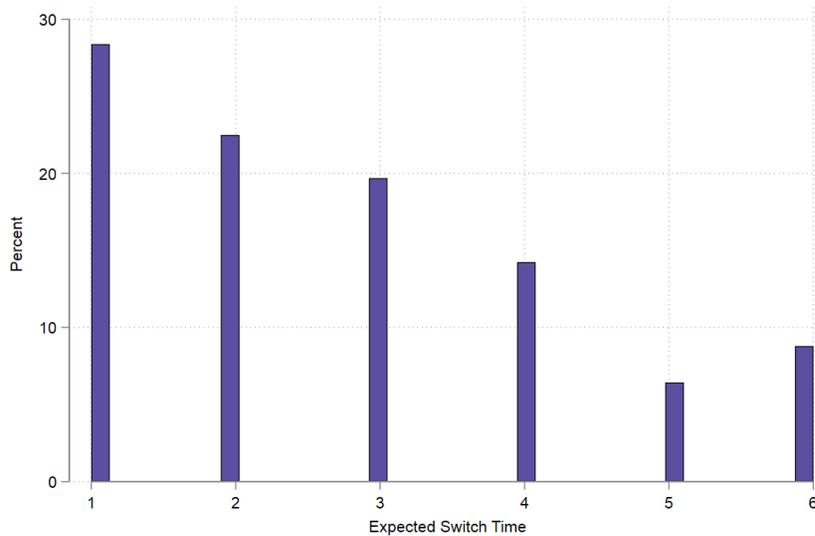


How much do you think you could save if you switched to the cheapest supplier on the market today?

How long do individuals believe it takes to switch providers? 71% of my respondents believe that it takes less than 30 minutes to switch and only 9% believe that it takes over 2 hours to switch (see Figure 8). Thus, the majority believe that the switching time is reasonable, even though they overestimate the time it takes compared to the actual time it takes to switch, which is 5 minutes. There is room for around a third of the participants to significantly revise their beliefs downward with the treatment.

In my analysis, I will control for expected savings and expected switching time to see if the differences in beliefs affect intentions to switch and switching.

Figure 8: Expected time it takes to switch

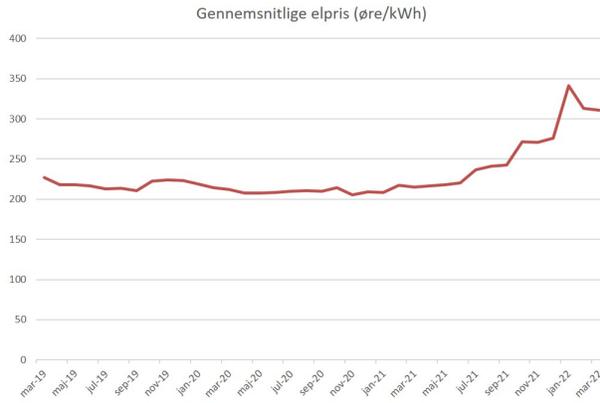


How long do you think it would take to switch suppliers? Less than 10 min, 10-15min, 15-30 min, 30-30 min, 60-120 min, more than 120 min

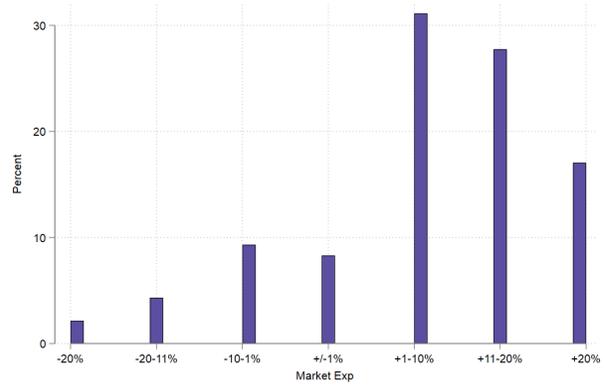
### 4.3 How do participants expect the market to develop?

Another important belief when deciding whether to switch or not is how the consumers expect prices to develop in the future. I showed participants the development of the electricity prices over the three years prior to the survey (Figure 9a) and then asked them for their expectations about how the prices will develop over the following 6 months. Prices had been stable for around two years with a significant increase since around July 2021. Respondents could answer between "fall more than 20%" to up to "increase more than 20%". As Figure 9b shows, the majority of respondents expect the prices to rise in the following months, with a majority expecting a price increase between 1% and 20%. I control for price expectations in the analysis.

Figure 9: Price development and consumer expectations



(a) Price development presented in the survey



(b) Consumer expectations about price development in the following six months

## 5 The effect of information and hassle cost reduction on switching intentions and switching

Do the interventions affect the intention to switch electricity provider and actual switching behavior up to three months later? I compare switching intentions and switching in each of the two treatment conditions, Information and Broker, to the switching in the control condition using a linear probability model as preregistered.<sup>14</sup>

My "intent to switch" variable is a dummy variable which is equal to 1 if the individual answered that they were planning to switch electricity providers during the next 3 months and 0 if not. For the broker treatment, I include the answers if they were planning to make use of the broker (0/1) instead of switching themselves.

My "switch" variable is calculated based on whether I observe the household having a new supplier in June, July or August, which means that they have switched in May, June or July. It is possible that I would already observe the new supplier in May, if they switched immediately, but usually, a switch is only registered by the end of the month.

I regress my outcome variables  $y_i$  on a set of treatment dummies and control variables:

$$y_i = \beta_0 + \beta_1(T - Information)_i + \beta_2(T - Broker)_i + \beta_3 + X_i + e_i \quad (1)$$

where  $y_i$  is either intention or switching,  $(T)_i$  has a value of 1 if participant  $i$  is in treatment condition T and a value of 0 otherwise,  $X_i$  is a vector of control variables (consisting of house size category, average electricity consumption in 2022, household size, region dum-

<sup>14</sup>Using a probit model gives very similar results.

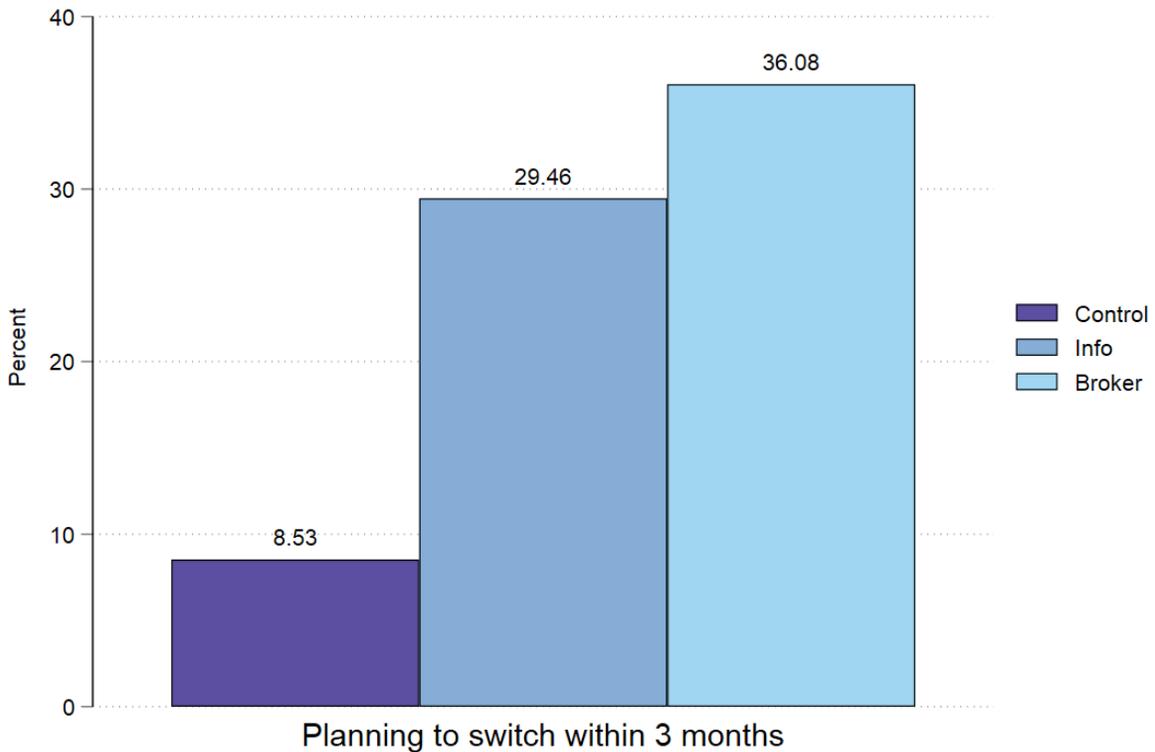
mies (east/west), current contract type (fixed, variable, flex, green), market expectations, gender dummy, age dummies (10 years each), employment status, income percentile and education level), and  $e_i$  is an individual specific error robust to heteroscedasticity. For some regressions, deviating from the pre-analysis plan, I also control for expected savings and expected time it takes to switch, as these vary substantially between individuals.

Randomization into treatments worked perfectly as the balance table, Table 7, in the appendix shows.

## 5.1 Switching Intentions

Figure 10 shows the pure treatment effect without any controls (N=9,047). In the control group 8.5% of individuals plan to switch providers within the next three months. The information treatment increases the intentions to switch to 29.5% (21 percentage points), a 247% increase in switching intentions. The impact of the broker treatment is even larger with an increase to 36% of respondents reporting the plan to switch (27.5 percentage points), a 324% increase in switching intentions compared to the control.

Figure 10: Switching intentions per treatment



The treatment effects are highly significant and very robust. Table 1 shows that the treatment effects are not influenced by adding controls (columns 2-4). Living in a large house, having a variable or a green contract increases the intentions to switch significantly, while individuals who live in East Denmark compared to the West, who are female and who already have a flexible price contract are less likely to state that they intend to switch in the next three months.

I preregistered that I would also look at treatment effects separately for those who said that green energy was non-negotiable, given that these individuals would have a smaller set of possible contracts and possible lower savings. As column 5 shows, there are only minor differences between the groups. Thus it does not seem that the amount of contracts to choose from or the exact savings is a constraint for switching intentions.

I also looked at clicking at links to elpris.dk or to GoSwitch as a behavioral proxy for switching. Clicking on a link has been often used in survey experiments to measure behavior (Haaland et al. 2020). I find that the treatments significantly increased clicking on a link, though at low levels. The analysis can be found in Appendix section A.1.

## 5.2 Switching

When looking at actual switching behavior though, the effects are several magnitudes smaller (see Figure 11). The information treatment increases switching by 0.8 percentage points, that is an increase of 31% percent compared to the control group. The effect is significant at the 10% level. The broker treatment leads to a statistically significant larger effect of 1.3 percentage points and 52%. The treatments are not significantly different to each other. The difference between the effects of the intentions and the actual switching rates points to a large intention-action gap. Far more people say that they plan to switch than actually switch in the three months following the survey.

As Figure 12 and Table 2 show, these estimates are generally robust to the inclusion of various control variables. The marginally significant information effect becomes insignificant. The estimate for the broker treatment stays significant on the 1% level. I also find that my control variables are mostly not predictive of switching. The only robust findings are that the oldest category of respondents (55-65 years old) are less likely to switch than the youngest category (25-35) and that those in a larger apartment compared to a smaller apartment are more likely to switch. However, this does not hold for those in small houses.

Interestingly, for those who say that green energy is a must, the information treatment has a large and significant (5% significance level) effect on switching. They are 1.9 percentage points more likely to switch than those who say green is a must in the control

Table 1: Switching Intentions

	(1) Intend	(2) Intend	(3) Intend	(4) Intend	(5) Intend Green
Info	0.209*** (0.010)	0.211*** (0.010)	0.205*** (0.011)	0.205*** (0.011)	0.205*** (0.018)
Broker	0.276*** (0.010)	0.275*** (0.010)	0.279*** (0.011)	0.279*** (0.011)	0.275*** (0.019)
Apartment big		0.015 (0.015)	0.013 (0.015)	0.015 (0.015)	0.023 (0.024)
House small		0.018 (0.014)	0.014 (0.016)	0.020 (0.016)	0.011 (0.025)
House big		0.032** (0.015)	0.030* (0.016)	0.035** (0.016)	0.042 (0.027)
Household size		0.007 (0.004)	0.008* (0.005)	0.007 (0.005)	0.003 (0.008)
West DK		0.043*** (0.009)	0.041*** (0.010)	0.041*** (0.010)	0.024 (0.017)
Female		-0.034*** (0.009)	-0.030*** (0.010)	-0.032*** (0.010)	-0.043** (0.017)
Age 36-45		-0.032** (0.015)	-0.040** (0.016)	-0.038** (0.016)	-0.015 (0.028)
Age 46-55		-0.033** (0.014)	-0.034** (0.015)	-0.029* (0.015)	-0.023 (0.026)
Age 56-65		-0.092*** (0.014)	-0.090*** (0.015)	-0.083*** (0.015)	-0.097*** (0.025)
Employed		-0.021 (0.014)	-0.024 (0.015)	-0.024 (0.015)	-0.059** (0.026)
Income		0.005** (0.002)	0.005* (0.003)	0.005* (0.003)	0.010** (0.004)
Education		0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000 (0.000)
Avg Consumption			-0.000 (0.000)	-0.000 (0.000)	-0.000*** (0.000)
Fixed Price			-0.027** (0.012)	-0.027** (0.012)	-0.024 (0.020)
Don't know contract			-0.014 (0.012)	-0.015 (0.012)	-0.015 (0.021)
Flex Contract			-0.007 (0.015)	-0.006 (0.015)	-0.041* (0.024)
Green Contract			0.017 (0.011)	0.019* (0.011)	-0.003 (0.017)
Market Exp				-0.005 (0.003)	-0.009 (0.006)
Expected Savings				0.001*** (0.000)	0.001** (0.000)
Expected Switch Time				0.010*** (0.003)	0.017*** (0.005)
Constant	0.085*** (0.005)	0.050*** (0.019)	0.064*** (0.022)	0.035 (0.028)	0.086* (0.049)
Observations	9047	8949	7705	7669	2617
R <sup>2</sup>	0.075	0.090	0.092	0.097	0.105

Standard errors in parentheses  
 \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

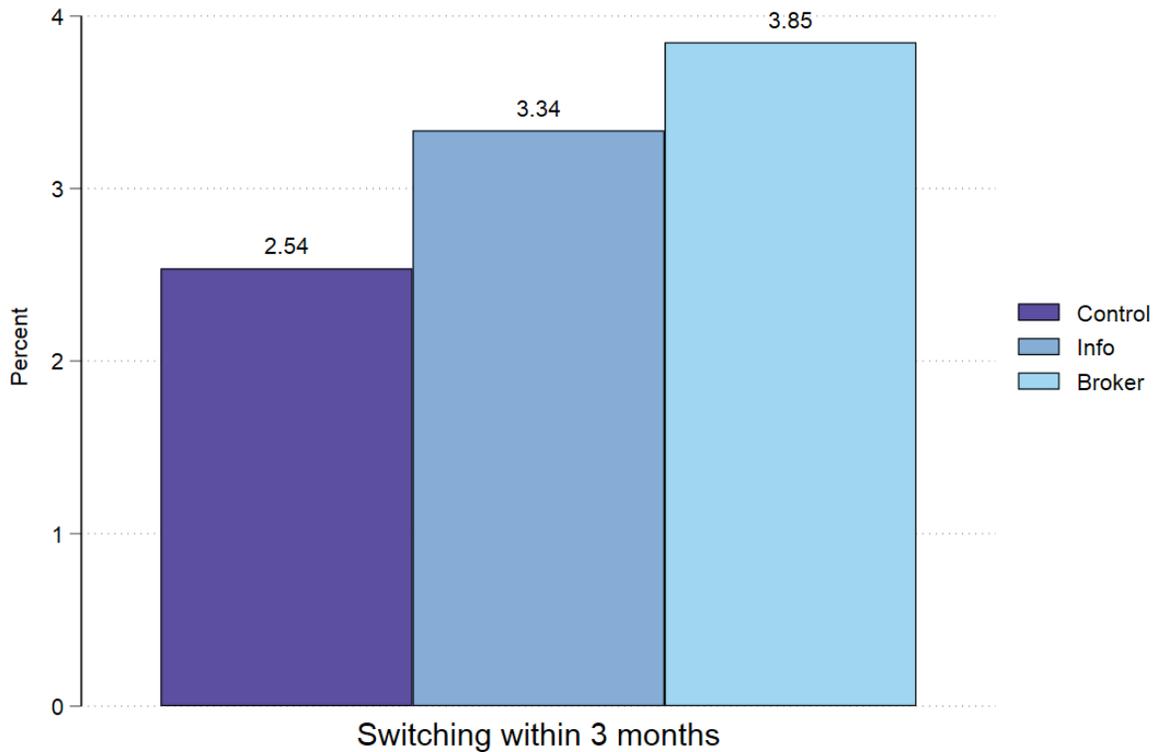
Table 2: Switching within 3 months of the survey

	(1) Switched	(2) Switched	(3) Switched	(4) Switched	(5) Switched Green
Info	0.008* (0.005)	0.008 (0.005)	0.007 (0.005)	0.007 (0.005)	0.019** (0.008)
Broker	0.013*** (0.005)	0.013*** (0.005)	0.013*** (0.005)	0.013*** (0.005)	0.011 (0.008)
Apartment big		0.015** (0.007)	0.015** (0.007)	0.015** (0.007)	0.014 (0.011)
House small		0.007 (0.007)	0.007 (0.007)	0.007 (0.007)	0.000 (0.012)
House big		0.011 (0.007)	0.010 (0.007)	0.010 (0.007)	0.009 (0.013)
Household size		-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.003)
West DK		0.007* (0.004)	0.007 (0.004)	0.007 (0.004)	0.007 (0.008)
Female		-0.005 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.008 (0.008)
Age 36-45		-0.003 (0.007)	-0.002 (0.007)	-0.002 (0.007)	0.015 (0.013)
Age 46-55		-0.005 (0.007)	-0.004 (0.007)	-0.003 (0.007)	-0.001 (0.011)
Age 56-65		-0.019*** (0.007)	-0.019*** (0.007)	-0.018*** (0.007)	-0.001 (0.012)
Employed		0.001 (0.007)	0.001 (0.007)	0.001 (0.007)	0.019* (0.011)
Income		-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.003* (0.002)
Education		0.000** (0.000)	0.000** (0.000)	0.000*** (0.000)	0.000** (0.000)
Avg Consumption			-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Fixed Price			0.000 (0.005)	-0.000 (0.005)	-0.002 (0.008)
Don't know contract			-0.008 (0.005)	-0.007 (0.005)	0.000 (0.009)
Flex Contract			0.003 (0.007)	0.002 (0.007)	0.008 (0.011)
Green Contract			0.003 (0.005)	0.002 (0.005)	0.001 (0.008)
Market Exp				-0.002 (0.002)	-0.002 (0.003)
Expected Savings				0.000** (0.000)	0.000* (0.000)
Expected Switch Time				-0.003*** (0.001)	-0.002 (0.002)
Constant	0.025*** (0.003)	0.024*** (0.009)	0.025** (0.010)	0.035*** (0.013)	0.009 (0.020)
Observations	7791	7706	7705	7669	2617
R <sup>2</sup>	0.001	0.005	0.005	0.007	0.012

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Figure 11: Average Switch per Treatment



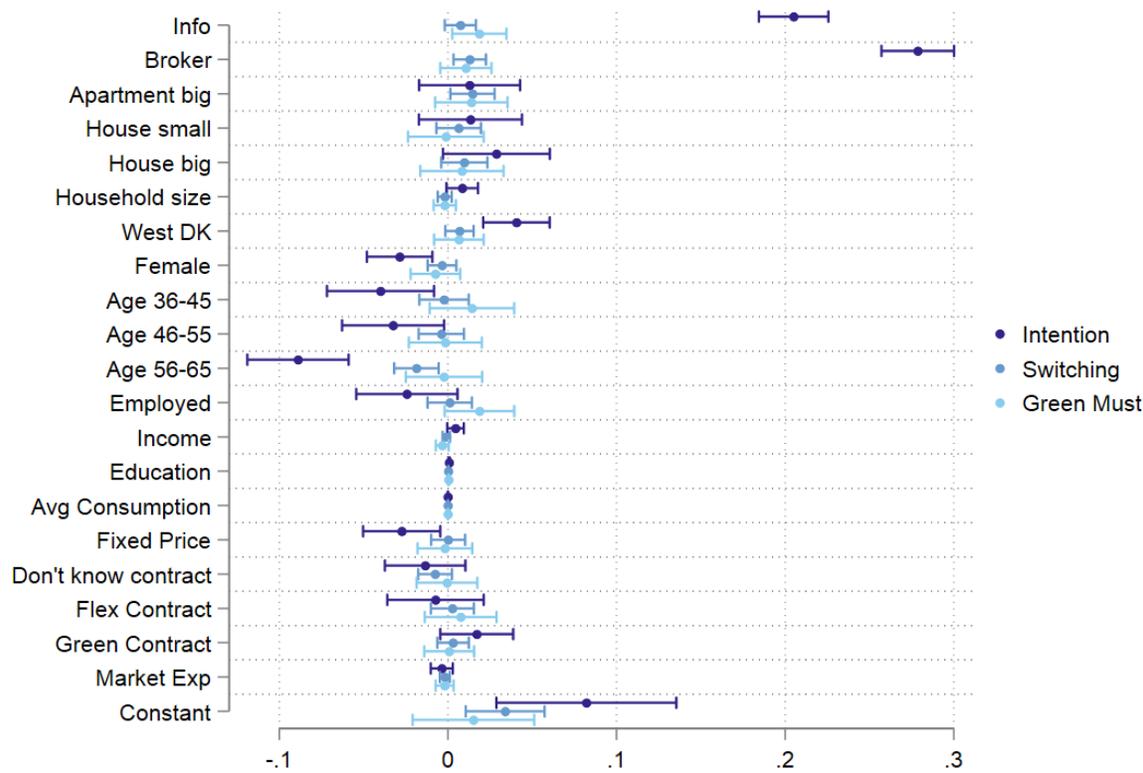
treatment. For this group, there is no effect of the broker treatment, as the broker would switch households into the cheapest providers regardless of whether they supply green or grey energy.

Taken together, it is possible to increase switching through providing information and the option to use a broker, but the majority of individuals say that they plan to switch, do not end up switching. It is also interesting to note that demographics, contract characteristics and market expectations have no measurable impact on switching. This points to the decision to switch to be more complex than a simple cost-benefit calculation of comparing potential savings with search and switching costs. The results also provide evidence in contrast to the recent literature estimating that low-income or low SES households are less likely to switch.

### 5.3 Are consumers leaving money on the table by not switching?

I find that the majority of consumers do not switch, despite having intentions to switch. So an important question to ask is whether those who end up not switching are leaving money

Figure 12: What predicts switching?



on the table. In a researcher’s fantasy world, I would be able to identify the electricity suppliers in my smart meter data and match this data with the price data from elpris.dk. Then I could calculate expected saving for each survey participant using their answers about the type of contract they have. For competition reasons, Denmark Statistics only provides anonymized electricity suppliers.

Therefore, I do the second best. I chose two representative regions in Denmark with high market concentration, the capital region with the highest population density and Bornholm, a small island, for a case study analysis using price data from January 2024.<sup>15</sup>

In the capital region, 58% of consumers are supplied by one company, which I will call company  $M_C$  for market leader. In Bornholm, 87% of consumer are supplied by one company, which I call  $M_B$ . I compare their prices to the price of  $E$  for entrant.  $E$  has been the winner of an auction every year since at least 2022 to supply the around 23,000 members of the Danish elforbundet.dk, a collective bargaining and switching club. The club is open to everyone and does not cost anything. Companies can submit bids to supply the

<sup>15</sup>All three contracts have also existed in May 2022. However, my historic price data does not show all details, so I choose to use a recent comparison.  $E$ ’s contract seems to be identical to May 2022.  $M_C$  have increased their subscription costs from 1280 øre/kWh in 2022 to 1800 øre/kWh in 2024.

members in a collective agreement. I do not know the market share of  $E$ , but know that it cannot be larger than 8.5% in each of the two regions, as the second largest supplier in the Copenhagen region has a market share of 8.5% in the area.

The three suppliers are comparable in terms of customer service and in the level of green energy they supply (one "green leaf" out of two possible, meaning that the companies buy certificates for renewable energy in relation to the electricity consumed). Consumers from all over Denmark could purchase electricity from  $E$ . While there are even cheaper contracts on the market, they are often time limited offers that increase in price after a while and thus not directly comparable to the contracts of the market leaders.

In my calculation, I compare flex pricing (dynamic pricing) for all three companies for a house that consumes 4000kWh per year. Flex pricing means that consumers pay the spot price on the Danish energy exchange plus a "spot price fee" that the companies determine themselves. The final price consists of these spot prices, the additional spot price fee, green contribution fees, transport fees and taxes, which vary by region, and VAT. On top of that come the subscription costs and possible invoicing costs. Around 50% of the final price is fixed by the state and does not vary across suppliers. Flex pricing is usually the cheapest expected price at each supplier, so comparing this price rules out the problem of consumers optimally switching to a different contract within their supplier. I do not consider invoicing fees or late payment fees in my calculation.

Table 3: Electricity Contracts Comparison - January 2024

	$M_C$ 58%	$M_B$ 87%	$E$ max 8.5%
Approximate market share	58%	87%	max 8.5%
Monthly Subscription	1800 øre	2900 øre	0 øre
Exp. Price w/o sub, w taxes/fees	217.69 øre/kWh	307.00 øre/kWh	187.33 øre/kWh
Exp. Total Price per Year for 4000 kWh	8923.60 DKK	12628.00 DKK	7493.20 DKK
$M - E$	1430.40 DKK	5134.80 DKK	-

As table 3 shows there are substantial differences in the expected yearly costs for 4000kWh of energy. The difference between  $M_C$  and  $E$  is 1430 DKK (210 USD) and between  $M_B$  and  $E$  is 5134 DKK (756 USD).

It is less clear how much consumers could save by switching from a fixed price to a flex price since this depends on when they signed the fixed price contract (prices are fixed for a maximum of 6 months). However, choosing between signing a fixed price contract today with  $M_C$  compared to a flex price at  $E$ , the expected savings would be 3125.20 DKK (460 USD) and 8054.80 DKK (1185 USD) for  $M_B$ .

My data shows that less than 13.70% percent of all respondents are on a flex price subscription at the time of the survey, so for most consumers the savings would be higher

than what I have calculated in table 3.

## 5.4 Should my survey respondents have switched?

In my analysis sample I have 502 respondents in my info treatment, 493 in my broker treatment and 479 in control who state that they are customers of  $M_C$  and who live in the capital region.<sup>16</sup> So even with the very conservative assumption that only consumers in the capital region switch and that there is only switching from  $M_C$  to  $E$ , I should observe switching for around 995 consumers after they receive information about average savings and how to switch, if their switching costs are below 210 USD. That is not accounting for the possibility that there are more expensive contracts than  $M_C$ , which there are, and that there is no switching from suppliers that are cheaper than  $M_C$ , but more expensive than  $E$ . Further, for some individuals it could be optimal to make use of the 6 months intro contracts that are usually even cheaper than  $E$ .

176 respondents in the info and 206 in the broker treatment stated that they plan to switch, compared to only 36 who planned to switch in the control group for this subgroup. That is an increase in switching intentions of 488% and 572% respectively for these groups, which is even larger than the effects for my full analysis sample. I interpret these intentions as evidence that a large share of individuals understand that they could save money by switching. However, in line with my general results, I find that only 16 (info) and 22 (broker) respondents switch away from  $M_C$  in the three months following the survey, compared to 11 who switch in the control group. While technically, the broker treatment leads to a 100% increase in switching, the overall number is low. Only 3.8% of those who could have saved several hundred dollars by switching, make the switch. I take this as strong evidence that consumers are leaving money on the table - and that many of them know that they do.

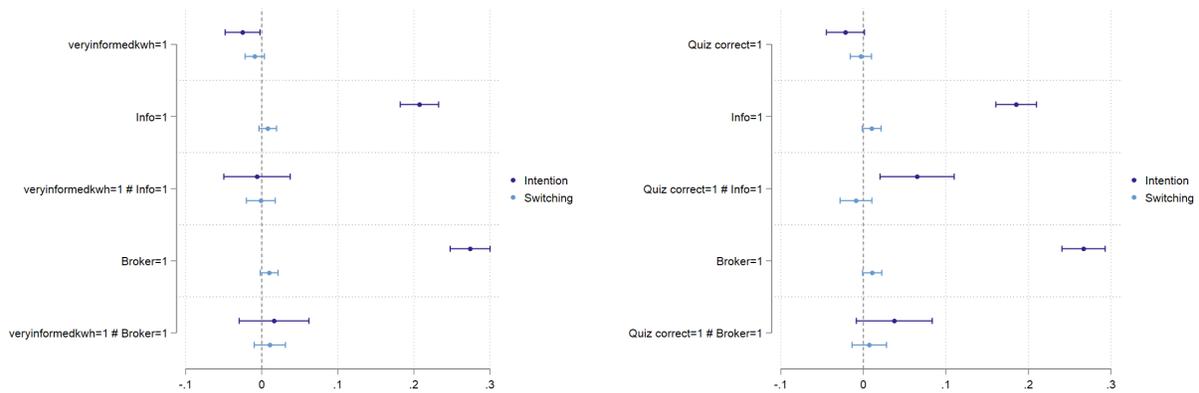
## 6 Who are the individuals who switch?

While a large share of respondents plans to switch after seeing the treatments, the majority does not follow through with their intentions. In the following sections, I use my detailed survey data on knowledge, beliefs and preferences to show what does and does not differentiate those who do switch from the ones who only plan to switch or do not even plan to switch. I then show how that the treatments affect the timing of the intention to switch, which seems to be the key to understanding who follows through.

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<sup>16</sup>The numbers for Bornholm are too small to report, as only 48 of my participants live there.

Figure 13: Treatment effects by knowledge level



(a) Are the treatment effects different for those who are informed? kWh measure

(b) Are the treatment effects different for those who are informed? Quiz measure

## 6.1 Being informed does not predict switching

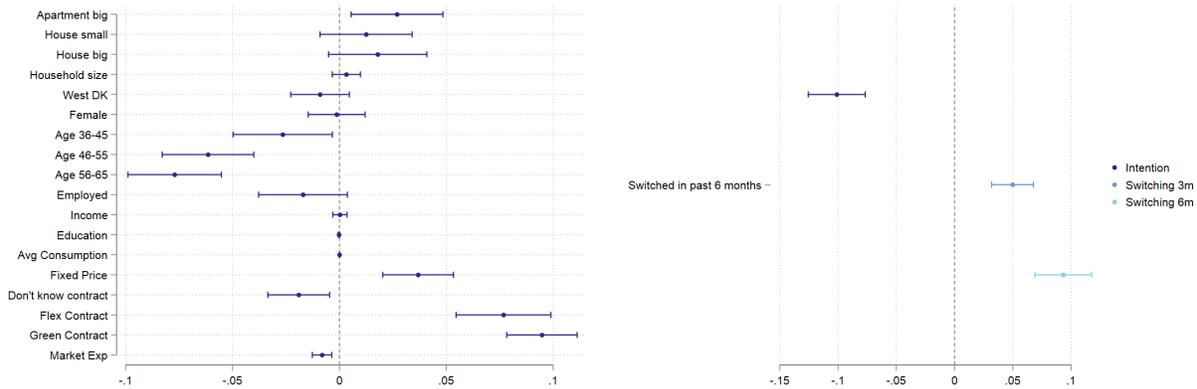
Section 4.1 showed that there was substantial variation in the beliefs about how much electricity respondents consume each month. So the question is, are those who are better informed about their consumption more responsive to the treatments and thus more likely to switch? I classify those, who are within +/- 50kWh to their true consumption as very informed and interact this dummy with the treatments. As Figure 13a shows, highly informed individuals in the control group are less likely to plan to switch, but do not differ in switching. The interaction effects are precisely zero, meaning that the treatments do not have a different effect on those who are informed about their consumption and those who are not. As a second proxy for being informed, I use the two quizzes from the survey. If they answered both correctly, I classify them as being informed. There are also no significant differences on intentions or switching between those who get the quizzes correct and those that do not.

## 6.2 What can we learn from those who have switched?

1191 respondents, have answered that they have switched within the last six months prior to the survey. From them, we can learn their reasons for having switched and see whether they are different to those who have not yet switched. These individuals are not randomized into treatments, but I ask them about their experience with switching and whether they would switch again. The majority of questions are the same.

The majority of these respondents has "external" triggers for switching: 30% of those who have switched, have done so because they have moved. 17% switched because they

Figure 14: Respondents who have switched in the prior 6 months



(a) What predicts having switched in the prior 6 months? (b) Will they switch again in the next 3 or 6 months?

received a marketing offer, 1% received a recommendation from a friend, and 7% were switched because their prior subscription was discontinued and 0.2% switched because of a new hybrid/electric car. Around 37% switched without an external trigger.: 28% switched because they wanted a cheaper product. Only 5% switched because they wanted a greener product, 2% because they wanted a dynamic/flex contract and 2% wanted better service. Other reasons, make up the last 8%.

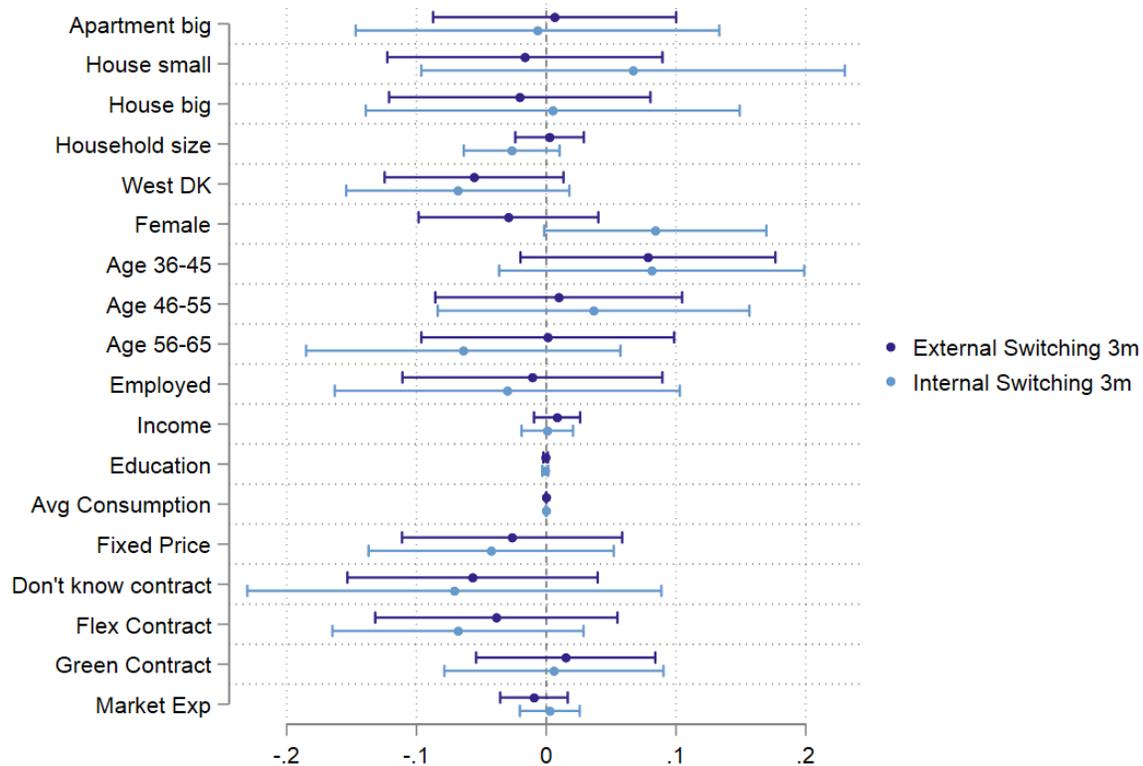
65% switched to a different provider and 31% switch to a different contract at their provider. The rest state that they don't remember. Over 94% say that they feel neutral or happy about their new contract, which shows that there is very little regret.

When it comes to demographics, there are no significant differences compared to those who have not yet switched, except, as we have already seen, those who are older are less likely to switch compared to the youngest group (see Figure 14a). Significant differences in types of contracts are as expected. Those who have recently switched are significantly more likely to have a dynamic/flex or a green contract, as these contracts are quite new on the market. They are also more likely to have a fixed price subscription and know what type of contract they have.

Estimating regression (1) and including those who have already switched, I find that they are, unsurprisingly, less likely to plan to switch within the next 3 months, but actually, they are still more likely to switch again within the next three months (14b).

All in all, there are no meaningful demographic differences between those who have switched and those who have not switched. Separating the individuals into those who have switched for external reasons and for internal reasons, also does not yield any interesting insights, although the sample size is getting low (see Figure 15). It thus does not seem to

Figure 15: Are internal or external switchers different when it comes to switching in the next 3 months?



be the case that individuals are "nudged" to switch, which then leads to learning. I cannot rule out though, that those who have switched for internal reasons the last time they have switched have not had external reasons for switching at an earlier point.

### 6.3 Why didn't respondents switch earlier?

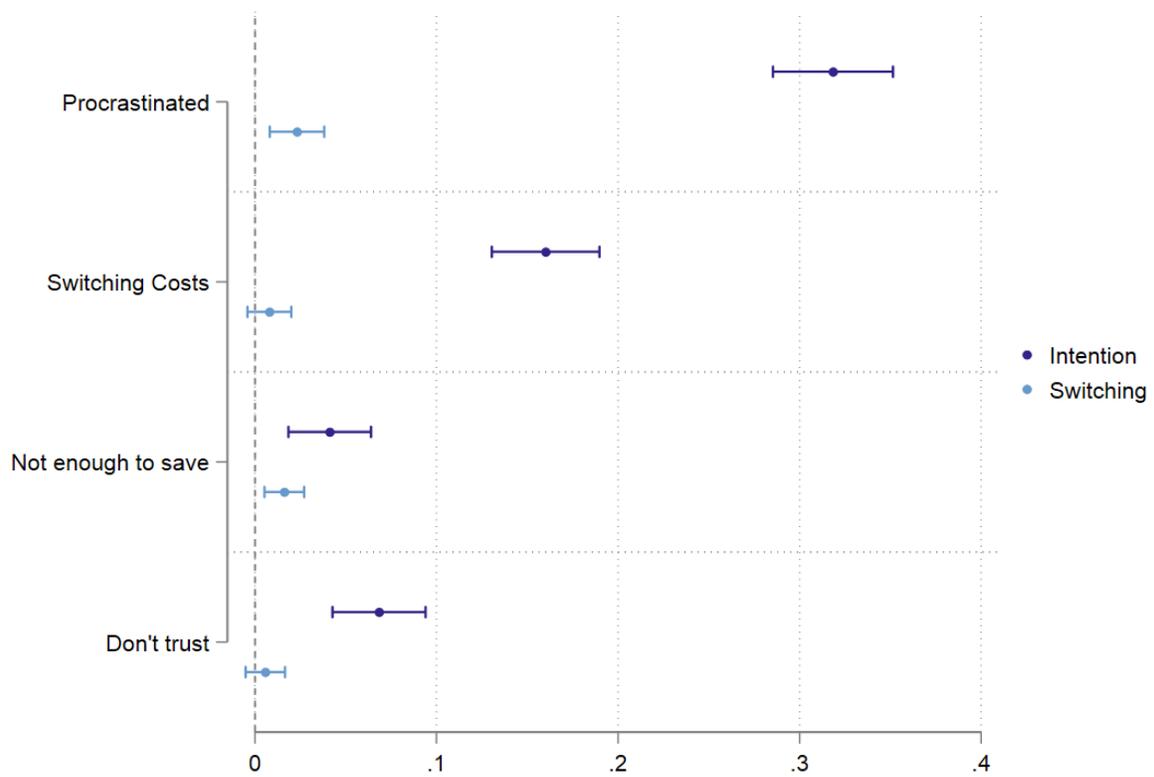
Prior to the treatments, I ask the respondents who did not switch in the prior 6 months why they didn't switch earlier. Figure 16 shows the responses to the question what their main reason was for not switching earlier. Around a quarter report a reason related to savings. 22% think that they cannot save much by switching and 5% are waiting for a better offer. Close to 15% report a concern that has to do with switching costs (9% think there are too many options and 5% report that they don't know how). Both of these concerns are addressed in my information intervention. 13% report that they have either planned to switch and forgotten or not yet gotten around to it. These reasons I classify as procrastination. Surprisingly, 18% say that they are afraid of getting cheated, which points to low trust in the market. Finally, 27% report "other" as a reason for not switching.

Figure 16: Stated reasons for no switching earlier



When regressing reasons for not switching on switching during the three months after the survey, I find that those who have reported that they did not switch previously because of procrastination are significantly more likely to intend to switch and actually switch after the survey (Figure 17) compared to the ones who had "other" reasons for not switching. Those who said that they thought there was too little to save are also more likely to switch in the three months after the survey. The estimate of the intention to switch when saying that they procrastinated is roughly four times as high as the estimate for not thinking that the savings are large enough. Those who said gave a reason related to switching costs and low trust in the market are not more likely to switch after the survey. In my estimation, I control for everything in regression (1) as well as beliefs about switching time and expected savings.

Figure 17: The relationship between reasons for not switching earlier and switching



## **6.4 Those who plan to switch *today* are significantly more likely to switch**

Following up on the procrastination mechanism, I explore when individuals plan to switch and how that might affect switching. If they tend to procrastinate then those, who plan to switch earlier should also be the ones who end up switching.

In addition to asking whether they want to switch in the next 3 months, I also asked them when within that period they planned to switch and if they didn't plan to switch in the next three months, whether they were planning to switch at a later time or never.

Figure 18 show the regression results correlating the point of time they say they plan to switch with switching. The base category is planning to switch between 3-6 months. The earlier they say they will switch, the more likely they will switch. This is especially true for those who say they will switch immediately. Those who say that they will switch today are 24 percentage points more likely to switch than those who plan to switch between 3 and 6 months. Given that those who say they will switch after 2 months, might not show up in my dummy variable of having switched within 3 months, I run a second regression checking whether they have switched during 6 months following the survey and the results are very similar. I control for everything in regression (1) as well as beliefs about switching time and expected savings.

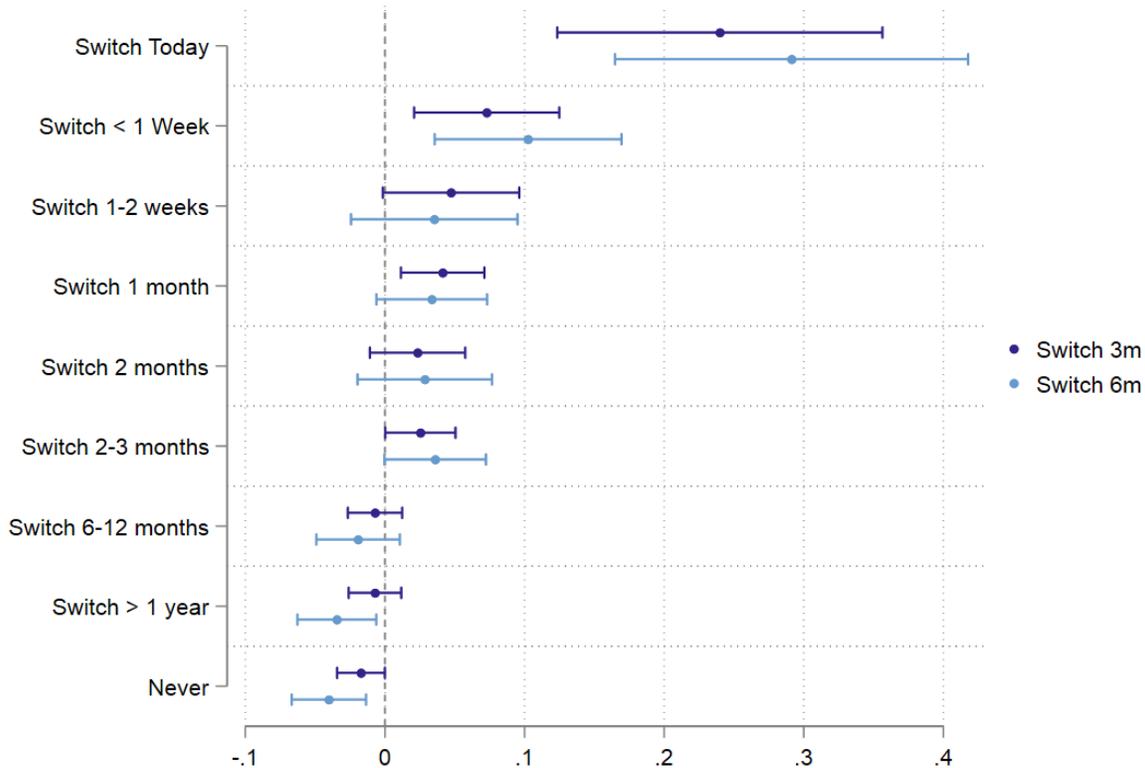
## **6.5 The treatments accelerate switching**

So far, I have presented correlations between prior reasons for not switching, choices of timing and preferences. However, I do find that the treatments have a strong effect on the intentions to switch and a moderate effect on switching. So how do the treatments affect choices? As Figure 19 shows, the treatments have seem to accelerated the plan to switch and have reduced the amount of individuals who say that they plan to never switch from 54% in the control group to 36% and 40% in the information and broker treatments, respectively.

There thus seems to be two types, 1) those who would otherwise plan to never switch and who have been convinced to at least consider it and 2) those who had been planning to switch, but who now plan to do it earlier. In the control group only 0.1% plan to switch "today". This number increases 10-fold for the info and broker groups (1.22% and 1.13% respectively). Those individuals, as we have seen in section 6.4 are then, in turn much more likely to switch.

After asking them whether they plan to switch in the next three months, I asked them how sure they were about their answer. The median person is 50% sure that they will ac-

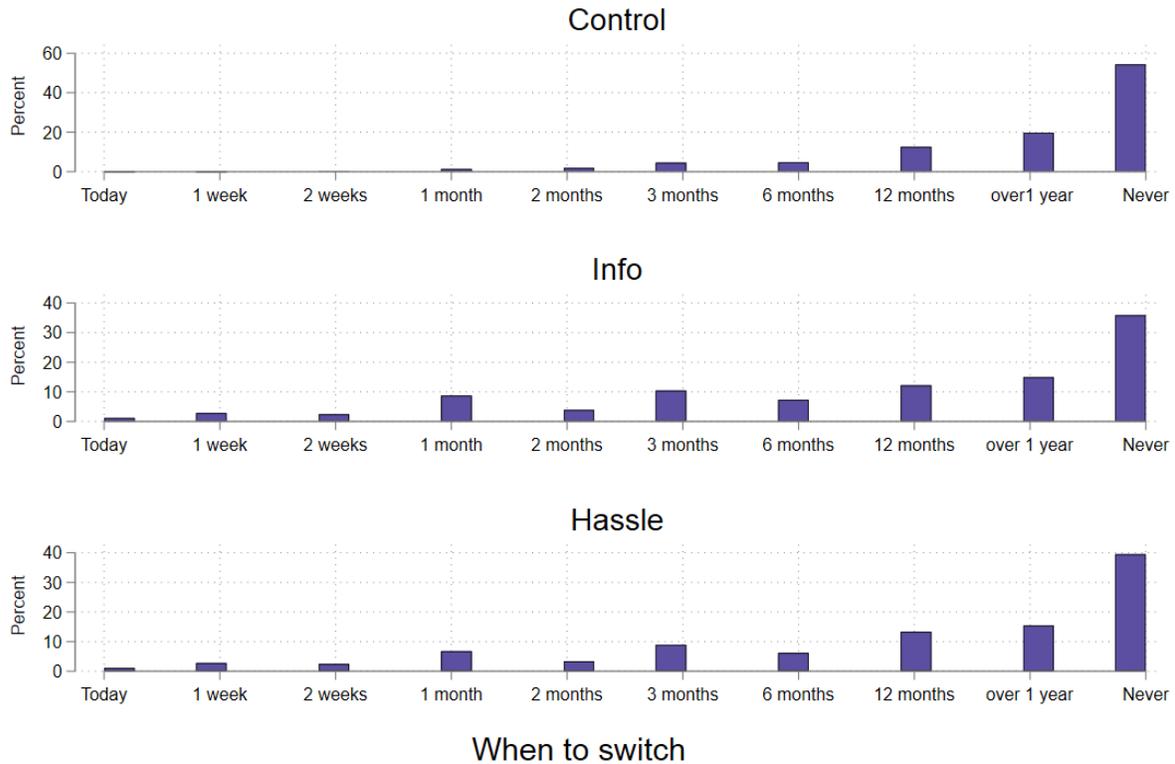
Figure 18: Relationship between planned switching time and switching controlling for treatments



tually switch. One could imagine that those who are in the treatments are more certain that they will switch because of the information they received or that their beliefs were confirmed. This does not seem to be the case (see Figure 20). There are no significant differences between the distributions stating how sure they are that they will switch (ranksum tests  $z > 0.31$ ). The effects on switching seem to come from choosing an earlier point in time to switch. This is confirmed by Figure 21. The interaction effects between both the information and the broker treatment and the timing are significant for the time frames within the first month.

Put differently, being very certain (top quartile of certainty) that one will switch in the next 3 months predicts choosing to intend to switch "today" (see Figure 22a). Independently, being in one of the treatments, also predicts choosing to switch "today". However, when looking at the relationship between these variables and actual switching, it is evident, that the effect is mainly driven by those who chose to switch today and there is no longer an additional effect of the treatments on switching (Figure 22b). There is still a significant effect of being very certain that one will switch on switching.

Figure 19: Planned Timing of Switches by Treatment

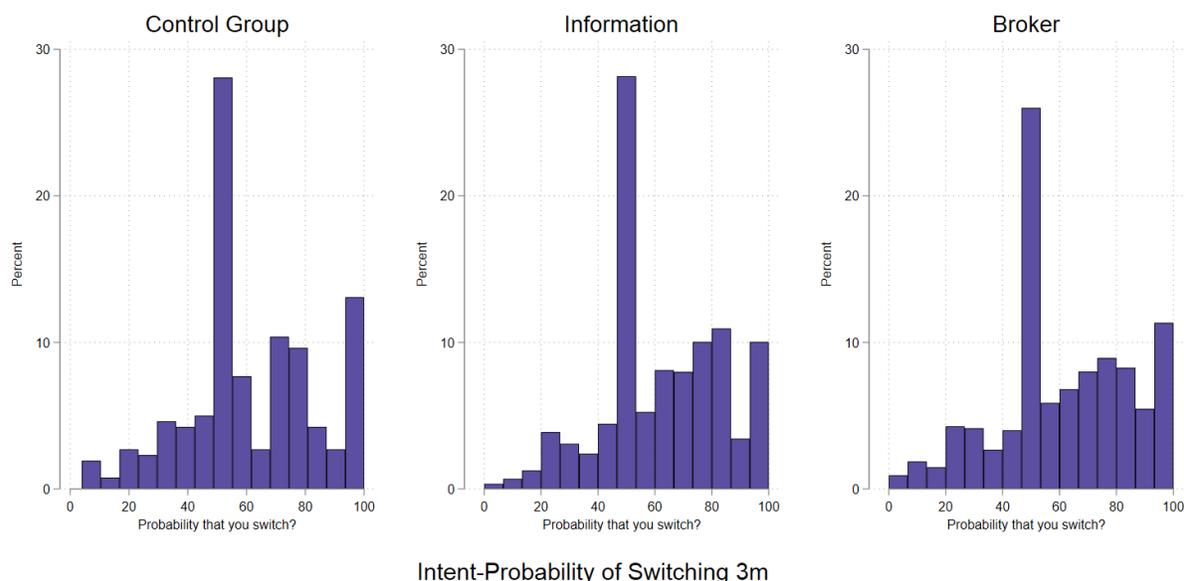


Further evidence that it is not information that is driving the treatment effects on switching is shown in Figures 23a and 23b, where I interact savings expectations and expectations on time spent. I create a dummy variable that is one if individuals said that they 100% would switch at a given percentage of savings and if the saving expectations I give them in the treatment is a higher percentage than that. So if they say they are 100% certain they would switch if they could save 30% of their bill and the calculated savings are larger than 30% of what they have stated earlier that they are paying for electricity, then the variable would be 1. Further, I create a dummy equal to 1 if they believe switching takes more than 10 minutes. These individuals are a bit less likely to switch than the ones who believe it takes less than 10 minutes to switch. I find that while intentions to switch increase when savings are larger than expected, this does not carry through to switching.

For the information treatment, I find a marginally significant effect of being told that switching only takes 5 minutes on switching. So this might explain some of the marginally significant treatment effect of information. Being told that switching costs are slightly lower than expected through the information treatment marginally increases switching.

In summary, there are no differences between the treatments in the certainty of switch-

Figure 20: Stated probability of switching during the next 3 months by treatment



ing during the next three months. While there is a strong correlation between choosing to switch immediately and being certain about switching, this is not different for the treatments. So it seems that while the treatments accelerate switching, they do not, in addition to that, have an effect on the certainty of switching.

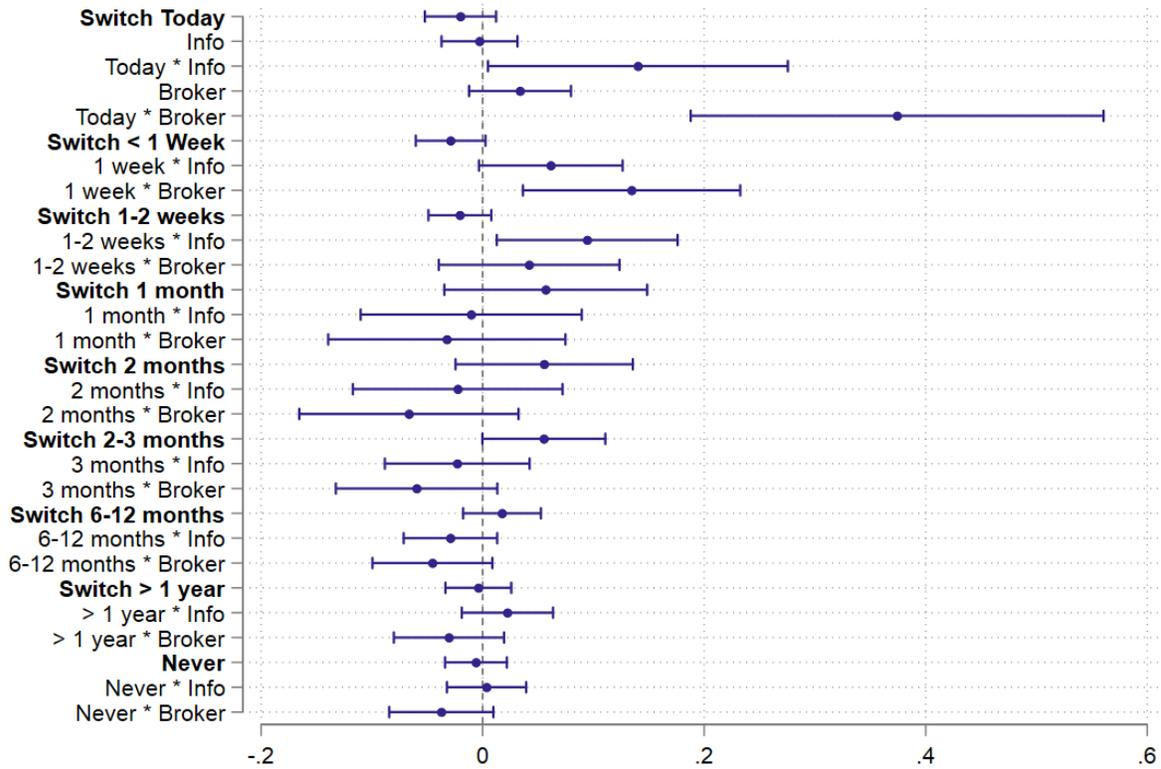
## 7 The role of preferences in predicting switching

Clearly, it is not exogenous when consumers plan to switch. The chosen timing might be a symptom of some uncertainty that consumers believe might resolve itself in the future or it could be evidence for sophisticated present-biased individuals. I define sophisticated present-biased individuals as those who know that they should switch now or that they will forget about it.

Using the Likert scale questions from the Falk et al. (2023) preference module on risk preferences, patience, trust and altruism as well as two additional scales on self-control and procrastination, I elicited a number of preferences of the survey participants.

Figure 24a shows the relationship between the elicited preferences and the intention to switch within 3 months, link clicks (proxy for behavior) actual switching within 3 months and within 6 months and having switched prior to the survey. My findings indicate that risk-seeking tendencies, patience, and a propensity to procrastinate are positive predictors of the intention to switch. Conversely, a lack of self-control negatively impacts this intention.

Figure 21: Interaction of timing and treatments on switching



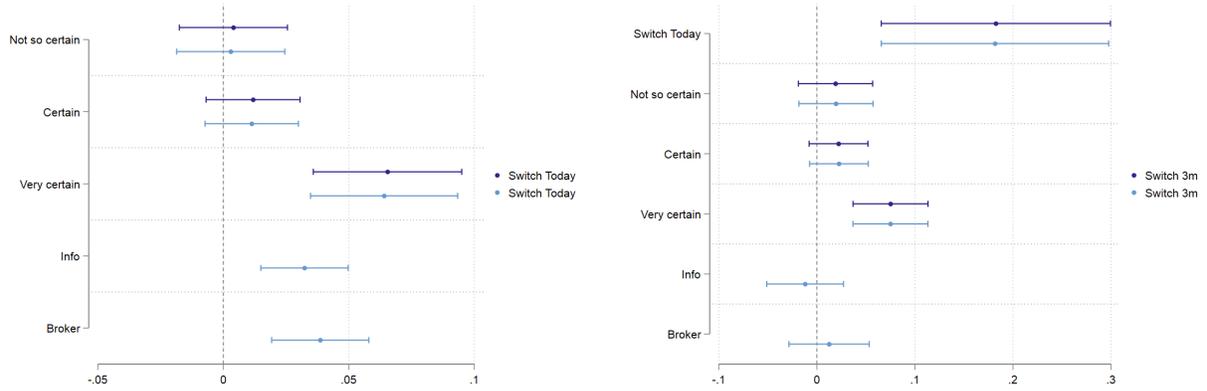
Being trusting and altruistic has no effect on the intention to switch. Being trusting, risk-seeking, and more self-controlled positively predict switching. Patience does not seem to play a predictive role in switching.

When we zoom in on the results for self-reported procrastination 24b, we see an interesting pattern. Those who report being more likely to put off things that they planned to do are more likely to intend to switch and even click on the link, but then there is no significant effect on switching within 3 or 6 months, but the estimate gets negative. Those who have switched are significantly less likely to procrastinate than the ones who have not yet switched.

Therefore, it appears that two key sets of preferences predict switching behavior: 1) a combination of risk-aversion and trust, and 2) the tendency to procrastinate. The importance of trust fits with the result that 18% of individuals said their main reason for not switching earlier is being afraid that they might get cheated.

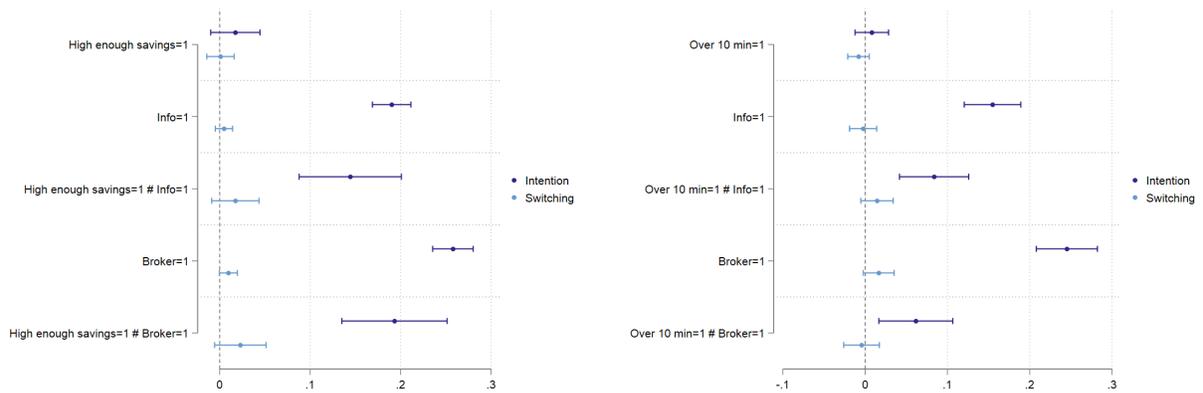
These findings underscore that individuals who procrastinate are likely to plan but not act on switching, affirming that the observed inertia may not stem from a lack of attention, but from a tendency to delay action on their intentions.

Figure 22: How certainty relates to intentions and switching



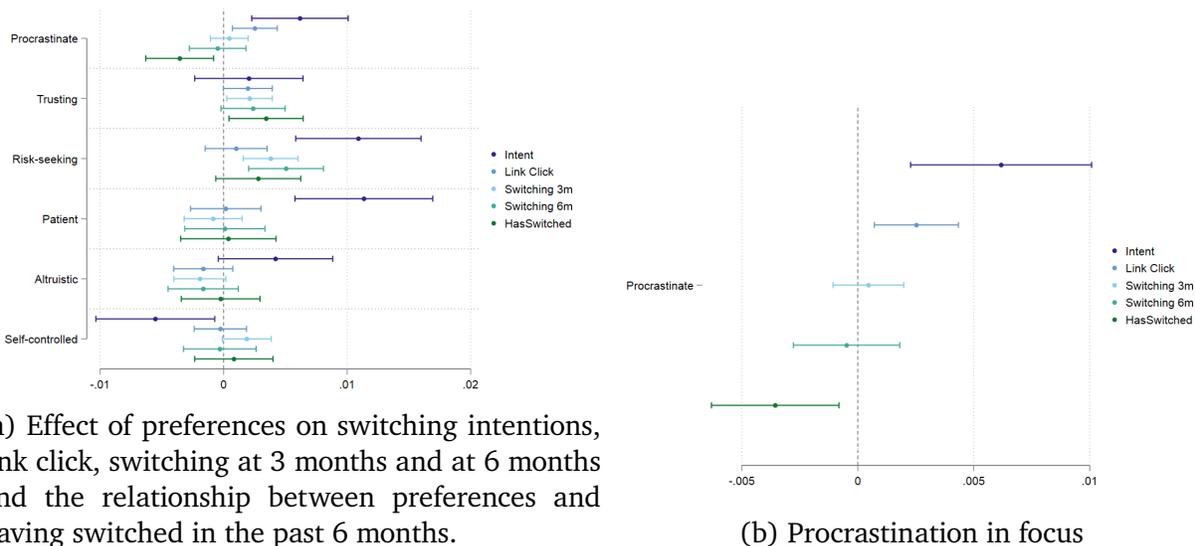
(a) Being certain that one will switch correlates with planning to switch today  
 (b) Intentions to switch today and high certainty predict switching

Figure 23: Treatment effects by knowledge level



(a) Do consumers update on expected savings?  
 (b) Do consumers update on expected time?

Figure 24: The relationship between time, risk and social preferences and switching



(a) Effect of preferences on switching intentions, link click, switching at 3 months and at 6 months and the relationship between preferences and having switched in the past 6 months.

(b) Procrastination in focus

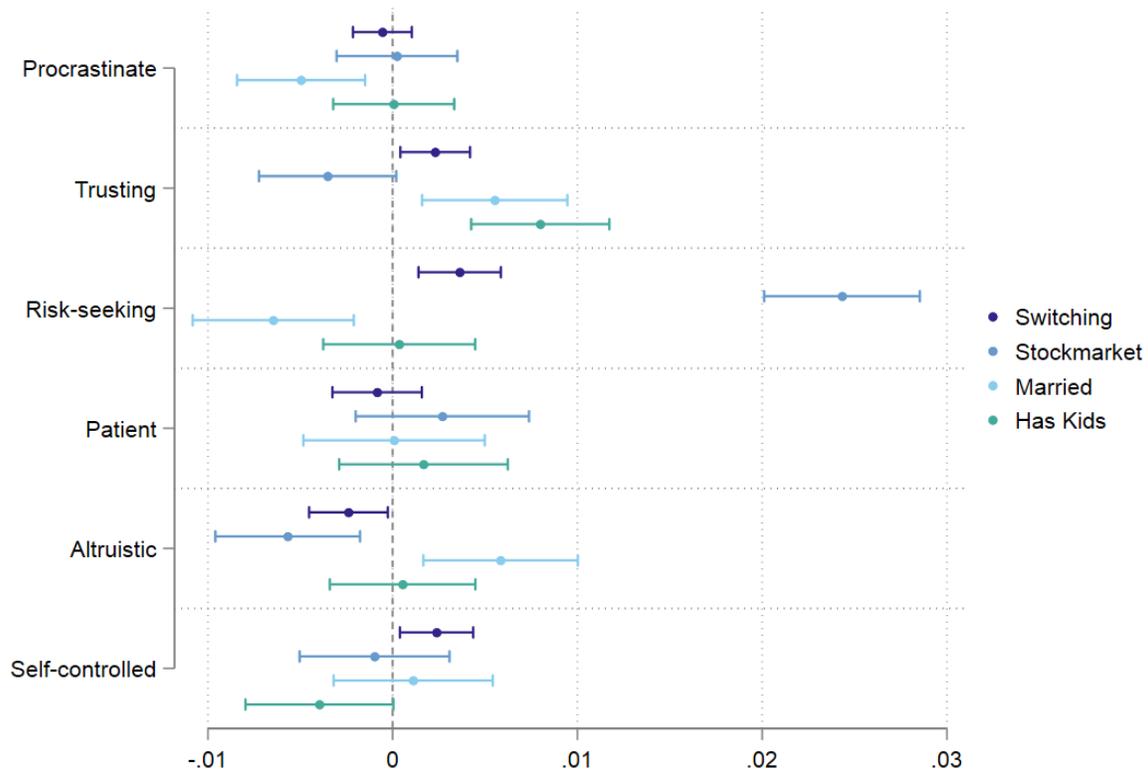
To benchmark the predictive value of the elicited personality traits on switching compared to arguably more important choices in life that involve preferences, I run the same regressions, but with "Being active in the stock market", "Being Married" and "Having Kids" as outcome variables. I get these outcome variables directly from the administrative background and tax data, so they are highly reliable. Except for the strong predictive relationship of being risk-seeking on taking part in the stock market, most estimates are of a similar magnitude as the estimates relating to switching.

For example, the effect size of trust on switching (0.2 percentage points) is about half of the effect size of being married (0.5 percentage points) and a quarter of the effect of trust on kids (0.8). My elicitation for patience is not predictive of any of these outcomes.<sup>17</sup>

It seems surprising that patience does not seem to predict any decisions, given that we normally assume that time preferences are relevant for life decisions. So as a robustness check I investigated the relationship between these preferences and current total wealth (something we know exists based on Epper et al. (2020) )and find a significant positive relationship between wealth and patience (see Appendix Figure 32). So I can rule out that my patience measure is not predictive in general.

<sup>17</sup>In the regressions presented in Figure 24 I control for the same background characteristics of my respondents as in my main specification (1), but not for contract details to make the estimates comparable to the relationship between preferences and the other outcome variables. Therefore the standard errors are slightly different to Figure 24a.

Figure 25: Comparing effect sizes to other life decisions



## 8 What about those who never intend to switch?

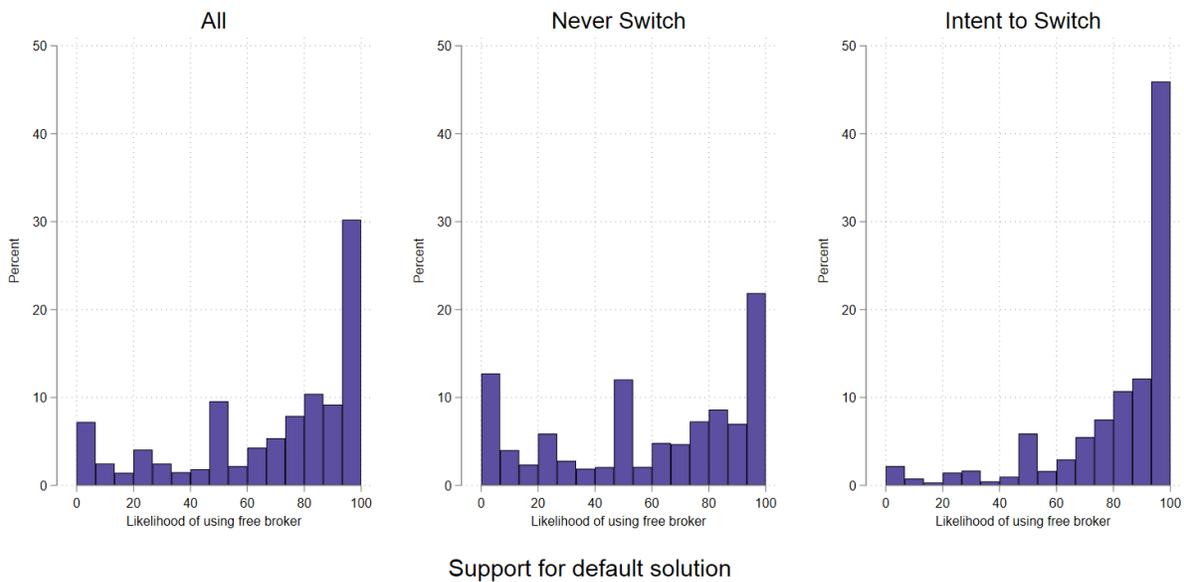
Even with the broker treatment, approximately 40% of participants expressed no desire to switch providers. While part of this can be attributed to individuals in buildings with a jointly chosen supplier – who should have selected out of the survey – a significant portion consists of those who have the option to switch but choose not to. The treatments evidently shifted a substantial number of participants from a stance of never planning to switch to considering it in the future, suggesting that switching is indeed a viable option for these individuals.

### 8.1 Do they prefer the incumbent?

Some papers have argued that consumers do not want to switch because they like their current provider, i.e. they have a brand preference for the incumbent (Hortaçsu et al. 2017, Drake et al. 2022). To investigate this explanation, I asked individuals what the likelihood is that they would use a free, transparent and trustworthy service that would switch them to the cheapest supplier by default. Fewer than 10% of the respondents say that for them

the likelihood of using such as service is below 20%. This also confirms the assumption that most people are able to switch out of the ones who say they never plan to switch. A quarter are 99-100% sure that they would use it. On average consumers are 66% sure they would use such a service. Even among those who say that they never plan to switch the support is fairly high as Figure 26 shows. Among those who plan to switch the large majority would prefer such a service. As other papers have concluded, brand preference for their current supplier or the desire to choose a supplier based on anything else than price does not seem to be a strong reason for inertia.

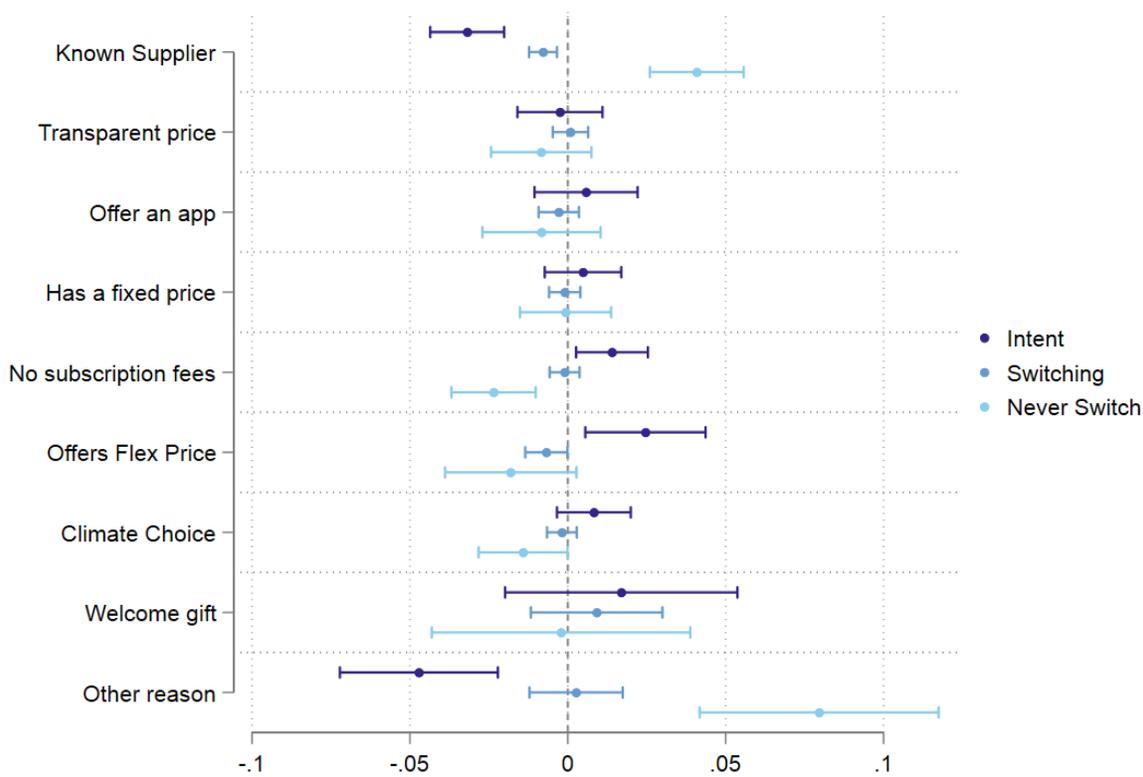
Figure 26: What is the likelihood that you would use a smart default to the cheapest contract?



## 8.2 What do they care about when choosing a supplier?

Nevertheless, I find some evidence that those who never plan to switch are more likely to say that being with a known supplier is one of their top three reasons of choosing a supplier. Some people might mistakenly believe that the incumbent will be more reliable when providing electricity (Figure 27). Given that there are several big and well-know suppliers in the country, they can choose from, this concern should not exclude switching to a better contract. Those who never plan to switch are less likely to care about flex pricing and climate choices and whether there are subscription fees compared to a low price per kWh (the base category). Those who switch care less about having a known supplier compared to low price per kWh. Generally, respondents claim that they do not

Figure 27: Top three aspects consumers care about when choosing a supplier



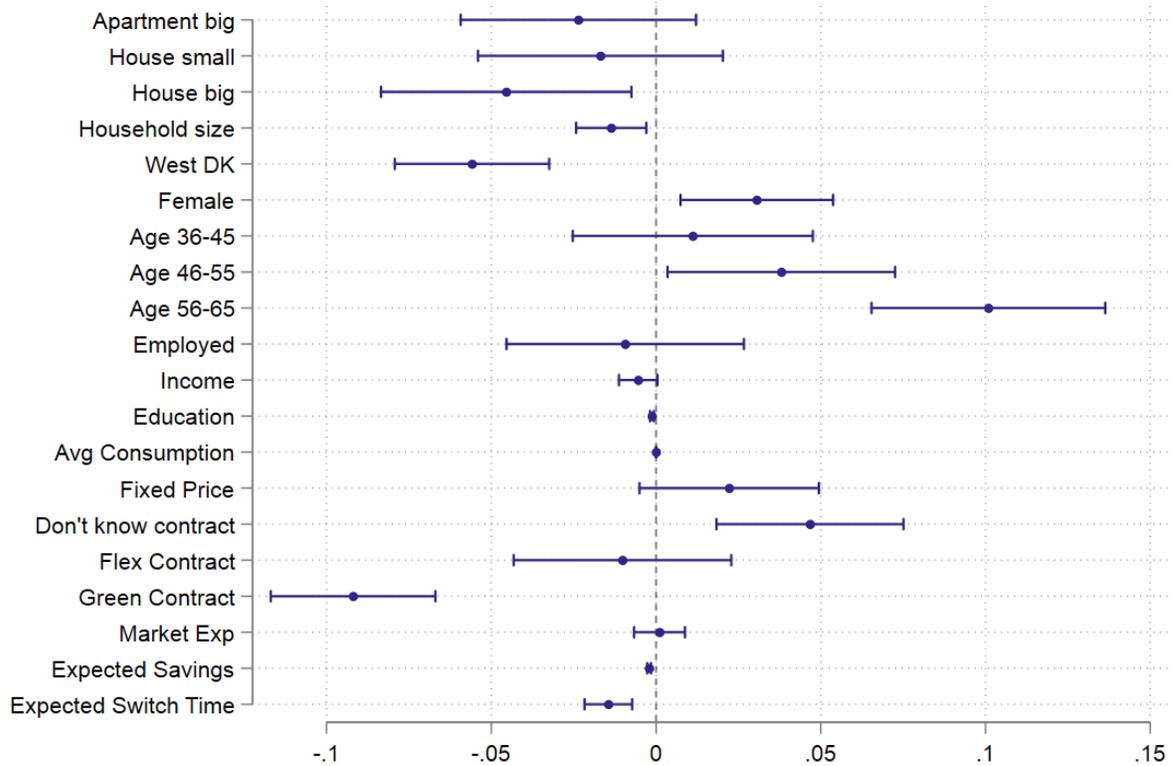
care about most factors that electricity suppliers try to use to differentiate themselves, such as providing an app or having a welcome gift. Not switching also correlates with "other reason" in what they care about in a supplier, so for some, there might be some switching constraints I have not taking into consideration.

While individuals who plan never to switch are similar in observables (see Figure 28), they generally are the opposite of those who do plan to switch (and switch) in terms of personality (see Figure 29). Especially notable is that they are much more risk averse and less patient than those who plan to switch and those who switch. While only marginally significant ( $p$ -value = 0.097), they are also less trusting than those who plan to switch. Rather than explaining switching intentions through information or attention, it seems that preferences play an important role when it comes to intentions and follow through.

## 9 Switching rates based on survey participation

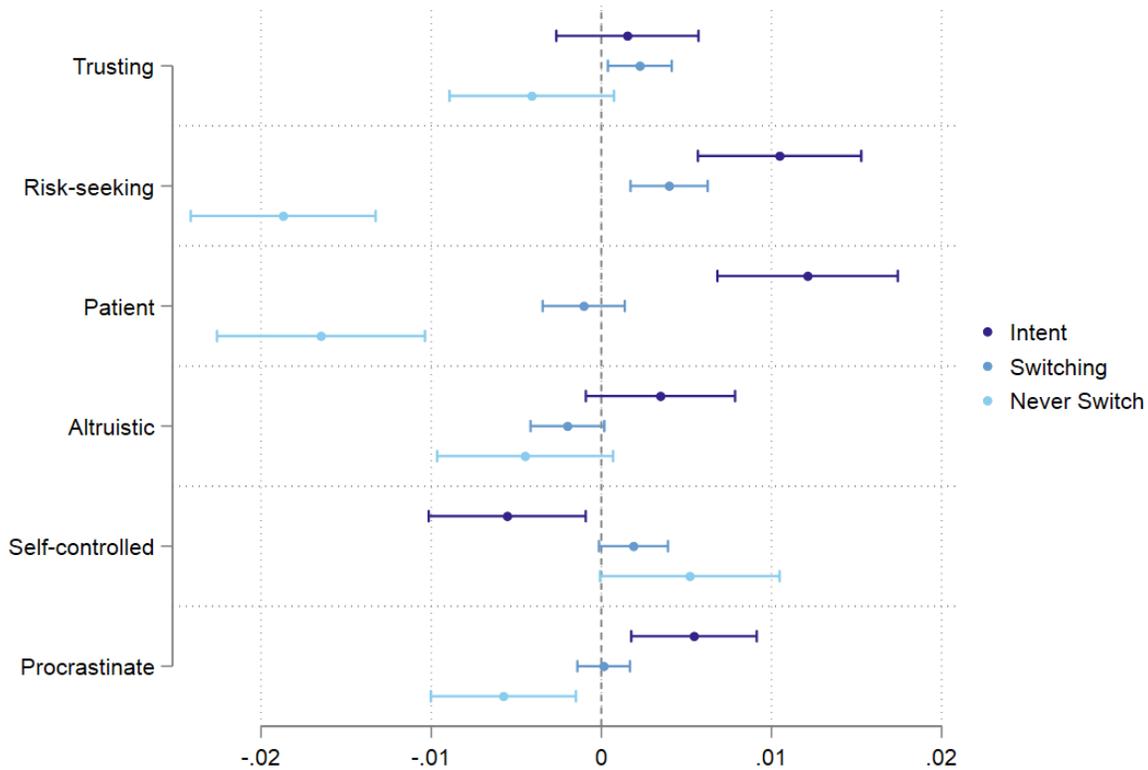
Since there is selection into the survey which could bias my results, I look at switching rates based on selection into the survey. Table 4 shows switching rates for different types during

Figure 28: Personality traits of individuals who plan to never switch compared to those who plan to switch at some point



the months May to July for the year of the survey, 2022, and for the previous year, 2021. There is no significant difference between the switching rates in the passive control group and those who did not open the survey. It is interesting to see that those who did self-select into the survey had slightly lower switching rates in the same period the year before than the passive control group, which would also explain the lower switching rates in the survey control group compared to the passive control. The difference is not significant, though, in a Chi2 test ( $p=0.15$ ). The information treatment brings these individuals to the level of the passive control group ( $p=0.87$ ) and only the broker treatment has a significant higher switching rate compared to the passive control ( $p=0.01$ ). The number in this table do not exactly match the numbers in Figure 11, as I do not drop individuals who have an electric car, solar cells or heat pumps, as I do not have this information for those not in the survey. The last column shows that those who have switched in the past 6 months are also significantly more likely to have switched in the same period the year before and are significantly more likely to switch again after the survey. Another indication that there could be "switching types" - once someone has switched once they are more likely to switch

Figure 29: Personality traits of individuals who plan to never switch compared to those who plan to switch at some point



again.

Table 4: Switching rates in 2021 and 2022 for 3 month period

	Passive	Did not open	Did not consent	Dropped out	Control	Information	Broker	Had Switched
May - July 2021	3.16	3.09	3.42	2.90	2.88	2.76	2.48	7.77
May - July 2022	3.12	3.08	2.17	2.73	2.70	3.16	3.95	8.37
N	85038	66782	644	5378	3779	3666	3668	1840

I also test whether receiving the survey itself had an effect on switching over the next three months. I use regression (1), but instead of controlling for treatments, I use a survey dummy and I only use control variables that I get from the administrative data (average electricity consumption in 2022, household size, gender dummy, age dummies, employment status (employed/self-employed vs. unemployed), income percentile and education level).

Confirming the descriptive results from Table 4, Table 5 shows a cleanly estimated zero effect of receiving the survey on switching. I find that older age groups and employed or self-employed individuals are significantly less likely to switch. There are no effects of income

percentile, education level, gender or average electricity consumption (N = 163,407).<sup>18</sup> The invitation to the survey did not mention switching electricity suppliers. It invited recipients to participate in a "Research project on consumer behavior in the electricity market" with the aim to inform policy making through better understanding consumer decision making. Thus, the invitation drew attention to the electricity market, but did not aim to "treat" individuals. I can be sure that every recipient read at least the headline of the invitation, as it is required by Danish law to read letters that are sent to the digital mailbox. Nevertheless, this attention intervention did not have any effect on switching.

## 10 What are the possible mechanisms that explain inertia?

Most model-based approaches of passivity discussed in section 1.1 focus on decision making "frictions", such as search costs, switching costs and, more recently, (rational) inattention.

All of these papers predict that given reasonably low switching costs compared to potential gains (as is the case in my setting) reducing inattention by "waking consumers up" (Abaluck & Adams-Prassl 2021) would lead to a large reduction in inertia. These models assume that consumers are not switching, because they are either inattentive to the decision or inattentive to particular features of the decision. My survey and information treatments "wake consumers up" and yet the effect on switching is several magnitudes smaller than the structural estimations. Interestingly, my findings in intentions to switch are fairly in line with the predictions of the attention models. So what are they missing when it comes to observed behavior?

### 10.1 Consumers procrastinate and forget

Most structural models make the standard economic assumption that consumers are maximizing a utility function and, given that they find a switch to be optimal, will switch. They focus on the inputs into the decision function (second stage) or whether the decision function is even considered (first stage) (see for example Heiss et al. (2021), Abaluck & Adams-Prassl (2021) or Hortaçsu et al. (2017)).

But what if the wedge between what people decide to do and what they actually do isn't in whether and how they process the available information, but between what they decide to do and whether they act on these intentions? In psychology, the assumption that an

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<sup>18</sup>This sample is slightly lower than the full sample, as I cannot match smart meter data to all observations.

Table 5: Survey Pure

	(1) Switched
Survey	0.001 (0.001)
Household size	0.001*** (0.000)
Female DST	-0.001 (0.001)
Age 36-45	-0.005*** (0.001)
Age 46-55	-0.010*** (0.001)
Age 56-65	-0.015*** (0.001)
Employed	-0.005*** (0.001)
Income	0.000 (0.000)
Education	-0.000* (0.000)
Avg Consumption kWh	-0.000*** (0.000)
Constant	0.042*** (0.002)
Observations	163,727
$R^2$	0.001

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

decision/intention to act only increases the likelihood of an action, but doesn't guarantee it (even in the absence of external obstacles), has been standard for decades since the seminal paper by Ajzen (1985). Maybe consumers know they should switch electricity contracts to save money, but they haven't gotten around to it? And maybe health insurance patients are upset every time they have to pay a larger than before co-payment for their medication, but by the time they get home, they are preoccupied with other things until the next time they go to the pharmacy? Handel & Schwartzstein (2018), in their review of "frictions" vs. "mental gaps" in processing information, mention present-bias (Laibson 1997, O'Donoghue & Rabin 1999) only in a side note as another possible mechanism for why consumers don't seem to make correct use of the available information. If individuals are present-biased, they are overly impatient in the short run relative to their long-run preferences, which creates a gap between intentions and actions. Despite a genuine intention to switch, they procrastinate to act on their intentions and never get around to it.

Through the lens of present-bias, other results could be explained. For example, Heiss et al. (2023) shows that there is substantial inertia even when consumers only have to make a binary choice between two water tariffs, thus ruling out "choice overload" or search costs as explanations for inertia. Consumers get several letters explaining how to switch by calling their provider, so inattention to the possibility of switching also seems improbable. Present-biased individuals might intend to call, but keep procrastinating and thus look like they are inattentive, when they were meaning to switch.

I am aware of only one paper (Heidhues et al. 2021) that theoretically discusses present-biased consumers as a source of inertia in switching markets such as the electricity market. In their model, they show that increased competition and marketing can paradoxically lead to higher prices by facilitating consumer procrastination. Naively present-biased consumers expect to switch when a better offer comes along, which results in them never switching and staying with a too high starting offer that they have chosen under the belief that they will soon switch away. Firms can exploit this perpetual procrastination (Gabaix & Laibson 2006).

I have elicited respondents perception of the number of firms on the market and do not find evidence that assuming that there are more providers to choose from reduces switching, but nevertheless, the general idea that switching is not "urgent" and that better offers might come along and therefore one can procrastinate on it holds for my setting.

My methodology puts me in a unique position to measure intention action gaps compared to the existing literature. I am able to separate the decision making process from the actual decision because I observe consumers both at the point of time of considering a switch and when they act on the decision or not. Pure surveys and structural models

and even those that have both survey and observational data, but conduct a post-switching survey (Deller et al. 2021), cannot detect this gap.

Intention action gaps in itself are strong indicators of present-bias. In addition, I find several other pieces of evidence that would support this explanation. Those who have previously contemplated switching but say that they didn't get around to it or forgot were more likely to switch after they received the survey. For them, the survey might have acted like a reminder (Damgaard & Gravert 2018). Further, I find that those who have switched self-report as being less likely to procrastinate and those who do self-identify as procrastinators are more likely to intend to switch, but don't end up switching. Finally, those who plan to switch immediately are more likely to switch.

I cannot clearly distinguish whether individuals perpetually procrastinate, but remember the decision or whether they procrastinate and forget (Holman & Zaidi 2010, Ericson 2011, Tasoff & Letzler 2014, Ericson 2017, Bronchetti et al. 2020). Given that those who had planned to switch earlier are more likely to switch after the survey and that there is a steep drop in switching for those who have planned to switch after more than a week, forgetting seems plausible. Further, I do not see any switching at the self-set deadlines (O'Donoghue & Rabin 1999). I find evidence of "now or never" behavior (Damgaard & Gravert 2017). Either they switch immediately or not at all.

Heidhues et al. (2021) have also considered forgetting and show in an extension of their model how forgetting helps explain switching if consumers have varying transaction costs. They assume that the consumer has varying switching costs that depend on her outside option. So when standing in a pharmacy and picking up medicine, the opportunity costs of switching health insurance are high and the consumer will form the intention to switch later. But when the switching costs are low, the consumer might not recall the intention to switch. They predict that present biased, naive individuals believe that they will remember the task in the future, when their switching costs are low. Sophisticated present-biased individuals might therefore choose to switch early to avoid forgetting. That would explain the immediate switchers in my sample and the ones who are aware that they have failed to switch when they last intended to. However, my empirical evidence suggests that the majority of consumers who plan to switch could be classified as naive.

For policy making it is of immense importance to understand whether inertia is a result of frictions and inattention or of intention action gaps that result from present bias and forgetting. In the former case, lower search and switching costs and consumer education could lead to higher switching rates as consumers make more informed decisions.

If the majority of individuals is naively present-biased, then even frequent reminders will not change behavior. Instead reminders could induce annoyance costs and guilt and lead

to individuals avoiding the situation altogether as shown by Damgaard & Gravert (2018). In this case, consumers would be better off, if they were defaulted into low-cost contracts. I discuss potential policy approaches in section 11.1.

## 10.2 Other mechanisms

In addition to present-bias, there are a few other mechanisms that could explain consumer inertia and that have been proposed in the literature.

**Mental gaps:** A smaller group of model-based approaches to passivity focuses on "mental gaps" instead of "frictions" (Handel & Schwartzstein 2018). Mental gaps relate to psychological distortions in information gathering, attention, and processing. These gaps occur when consumers neglect important information or use an incorrect model for decision-making, leading to a discrepancy between what people think and what they should rationally think, given the costs involved. Notably, these models also focus on the use of information and assume that a decision will be acted on.

Brot-Goldberg et al. (2023) for example provide evidence that inertia in health insurance market in the US can be better explained by mental gaps than frictions. Consumers might have a misunderstanding of the consumers' choice environment such as their agency over choices or what their plan options are. They show that most people stay with their default health insurance plan despite a large variation in savings from switching and individuals switching costs. In essence, they reject the frictions model, as that implies that those who can benefit the most from switching should be the first to switch. In line with Brot-Goldberg et al. (2023), I also find that most consumers stick with their default, and not because they actively decided to. However compared to them, my design allows me to identify and separate those who plan to switch, to those who do not and find that there is a group of individuals who decide not to switch despite potential savings. Further, I use a random subset of the Danish working age population compared to their low-income, older and sicker population, so my results cannot be driven by those with higher cognitive costs. I also do not find any evidence that miscalibrated beliefs affect switching or that "fixing" these beliefs with the information treatment has a significant impact on switching, even though it has a significant effect on intending to switch. Nevertheless, since the "mental gap" category is quite vague, (Brot-Goldberg et al. (2023) define it as everything "independent of material incentives") I cannot reject that my results would fit into this quite general category. Like them, I do not find any evidence that material incentives are the main driver for switching.

**Choice Overload:** The concept of "choice overload" suggests that an abundance of options can paradoxically lead to fewer decisions or switches (Iyengar & Lepper 2000, Chernev

et al. 2015). For instance, offering a greater variety of retirement funds appears to reduce participation (Sethi-Iyengar et al. 2004). When faced with too many options, individuals may become less inclined to make a choice. However, choice overload cannot explain why those who plan to switch earlier in my survey are more likely to do so, as the number of options remains constant over time. Additionally, using the online tool at elpris.dk simplifies the process. The site initially displays only a few contracts on the first page, sorted by price. It also highlights options for green energy and allows search by contract type. Therefore, once consumers begin their search, the likelihood of choice overload is small, despite the extensive array of contracts. I do find that those who want a green contract are more likely to switch - green contracts are a subset of all contracts. Given that almost all electricity in Denmark comes from wind energy (some days 100%), there are not many "grey" contracts on the market. Therefore, the difference in choices only reduces marginally (148 to 87 contracts in January 2024).

**Loss Aversion:** My findings show that offering a switching broker, who effectively defaults consumers into the cheapest contracts, significantly increases consumer switching rates. In a sense, it is surprising, because the actual hassle costs of using the broker are not that much lower than switching yourself. The broker switches individuals to the cheapest contract on the market for the price of 174 DKK for 6 months, equalling one switch. The same switch could be done in 5 minutes by using elpris.dk, choosing the first contract on the list and essentially entering the same information as when signing up with Go Switch. So what does the broker provide that the consumer values? First, it reduces the intention-action gap by providing a deadline. If respondents signed up through the survey, then they would save the 29 DKK (4 USD) fee for the first month. Signing up with the broker, commits consumers to switch, reducing the tendency to procrastinate. In the broker treatment more consumers decide to switch immediately.

However, another explanation is that one can delegate the decision to a broker. For some individuals, delegating the choice to a broker might also reduce regret aversion of making a bad choice. This explanation is related to Pagel (2018) who finds that some investors prefer to hire someone to manage their portfolio for them to avoid receiving bad news. Steffel & Williams (2018) also find that that people delegate difficult decisions, not just because of the potential for poor outcomes, but mainly to avoid the responsibility and regret associated with making a wrong choice. They find that providing the option to delegate can make individuals less likely to avoid difficult decisions altogether. Those consumers who are regret averse might be better off delegating the decision to a broker.

Recent research by Karle et al. (2023) also identifies loss aversion as a potential cause of inertia. They argue that reducing the difficulty of switching may not necessarily encour-

age it, especially if there's uncertainty about the new firm's prices and quality. Loss-averse consumers face psychological barriers to switching, influenced by the scale of a loss. Their theoretical model suggests that loss-averse consumers might avoid seeking information if they anticipate that switching could decrease their utility compared to the current situation. In my study, participants were involuntarily exposed to new information, which makes testing this theory challenging. However, by informing participants of the average savings they could achieve, I forced them to consider a potential loss relative to their current situation. Loss-averse consumers should therefore be more likely to act. Since the likelihood of switching did not vary significantly with the amount saved, it appears that larger perceived losses do not necessarily increase the probability of switching.

I do observe a strong negative correlation between risk aversion and switching. While Karle et al. (2023) clarify that their concept of loss aversion is distinct from risk aversion and is applicable even to risk-neutral consumers, the two preferences are related.

While present-bias could explain the difference between intentions and actions, risk aversion could explain part of the lack of intentions to switch, despite the possible financial gain. Which is in line with my findings from section 7.

**Experimenter Demand Effects:** Finally, one might question if the intention-action gap observed in my study is influenced by experimenter demand effects, where respondents indicate a willingness to switch to align with what they believe the researcher expects. While I cannot definitively rule this out, it's not critical to my conclusions regarding the impact of attention, information provision, and brokerage services on switching behaviors. Participants were unaware that their switching decisions could be tracked post-survey, eliminating any motivation to switch solely for the researcher's benefit. Additionally, the survey's experimental nature was not disclosed, and the specific question about switching intentions was one among many, reducing the likelihood of participants identifying it as key to the researcher. As noted by De Quidt et al. (2019), there's limited evidence that experimenter demand effects significantly drive experimental results. However, it's conceivable that consumers might perceive switching as the "right" action, not to please the researcher, but due to their own beliefs. Similar surveys on smoking cessation, weight loss, or savings enhancement might also reveal high intentions but low action rates, driven not by experimenter demand effects, but by present-biased preferences.

## 11 Policy Recommendations

In this paper, I investigate what affects intentions to switch and switching. While theoretically, both dimensions are interesting, for policy makers, it ultimately matters whether

consumers switch, if a switch would be welfare improving.

The majority of literature on inertia in electricity and health care markets highlights the importance of increasing consumer attention and reducing switching costs for market efficiency. Notably, Waddams Price & Zhu (2016) targets policymakers, advocating strategies that emphasize potential gains and minimize anticipated switching time to boost consumer activity. Similarly, Dressler & Weiergraeber (2023) suggest alleviating frictions in liberalized retail electricity markets, such as simplifying the contract switching process, and recommend incorporating a switching button on price comparison websites—a feature already implemented in my study’s setting. As discussed previously, this assumes that the decision to switch will result in a switch.

### **11.1 Consumers should not be forced to choose**

In the market I study, it seems unclear how policy makers could significantly decrease switching costs. Perhaps, using AI technology, consumers could upload their electricity bill and have an AI broker suggest a better contract given the available ones on the market and then switch consumers. While this tool could possibly reduce the fees of the type of broker used in my study, it would still require consumers to find and upload their electricity bill to the tool. Since most Danes use automatic payment, they might not even know where their bill can be downloaded. A further challenge with this approach is the legal framework for such a tool and whether it can make contracts on behalf of individuals.

Considering the significant price of electricity contracts, a minimal time investment for contract review is prudent to prevent accidental switching. The idea of ‘one-click’ contract signing, akin to e-book purchases or app installations, seems irresponsible for such transactions. But if there is substantial present-bias, then even very small immediate switching costs will outweigh the savings one or two months later. As with the broker in this study, any approach reducing switching costs would only affect switching by a few percentage points.

Policy makers should thus consider more radical changes in the market. One possible solution could be mandating active choice. Heiss et al. (2021) explore the impact of mandating active choice, finding that such enforcement can significantly influence switching rates, potentially more than eliminating switching costs. While they argue that active choice increases attention, I argue that it does more than that because it also prompts immediate decision-making and thus curbs procrastination. However, the potential downsides of active choice, as cautioned by Handel & Schwartzstein (2018), include increased processing costs and potential welfare losses for consumers. If consumers are loss-averse and/or

present-biased then mandating active choice could have dire consequences for some and would require a huge bureaucratic process to follow up on all the non-switchers, as well as penalize those who haven't switched, akin to a fine for not submitting a tax return. In situations where active choice has been successful, such as choosing a retirement plan before starting a new job, those implementing the active choice had close contact and control over the ones having to make the choice.

This dilemma raises a fundamental question: Why should consumers actively choose? The argument for active choice versus defaults is convincing when policymakers might not understand consumer preferences enough to set 'smart defaults'. This could be because consumer preferences are very heterogeneous, when it is unclear what dimensions of the outcome are most important to consumers or when there is the possibility that policy makers cannot be trusted to act in consumers' best interest (Sunstein 2017). For example, Abaluck & Adams-Prassl (2021) propose smart defaults in Medicare D, but caution that it might be difficult to find optimal contracts for individuals as policy makers do not know people's medical status.

My study in the Danish electricity market indicates a clear consumer preference for low prices and very little brand or "feature" preferences, suggesting that a well-implemented default might be feasible and more beneficial than forcing active choice. Few consumers will miss the "fun" of choosing an electricity provider and if they do, they can easily opt-out of a default. The preference for having someone else choose is also confirmed by the relative popularity of the broker. Compared to health insurance, it is not necessary to set individual defaults (except perhaps by level of consumption). Defaults could be set by postal code or municipality. In such a managed competition (as suggested by Heidhues et al. (2021)) consumers could initially be assigned to the cheapest provider, with the option to switch later if desired. Municipalities purchase electricity on behalf of residents and default households into the cheapest contracts. Another option would be to introduce a free, non-profit broker to which households could sign up to or opt out of.

In Denmark, there is a switching club called Elforbundet.dk (electricity association). The club states on its website that it has 23,000 members (0,008% of Danish households). Every year in November there is an auction where suppliers can offer to deliver electricity to all the members of the club for the following year. Currently (January 2024), the members pay zero subscription fees and a comparably small spot price fee for receiving the hourly spot price from the energy exchange, thus essentially achieving marginal pricing. Fun fact, the Chief Advisor of the Danish Energy Agency has chosen the same contract. Unfortunately, members need to re-opt in every year in November to be part of the joint agreement as they have had a few members hit with compensation fees if they have switched to a different

contract and had forgotten about their membership. This problem could be prevented if switching was done on municipality level.

In Ohio in the US, municipalities have been buying electricity on behalf of their residents unless they want to choose themselves. Most households stayed on the assigned contracts and had lower average prices compared to many other regions in the US (Joskow 2003).

The benefit of "smart defaults", resulting from collective switching, would also be an acceleration of the adoption of dynamic pricing contracts which are necessary to set incentives to adjust energy consumption based on price mechanisms and which usually are the cheapest option for consumers. Currently, only around 13% of consumers are on these contracts, despite them being available for more than five years. A significant increase in electricity demand response could generate substantive efficiency gains in the Danish electricity grid. As (Fowlie et al. 2021) have shown, even those defaulted into dynamic pricing compared to those who opted in voluntarily show a reaction in electricity consumption in response to higher prices.

If "smart defaults" are not feasible, policy should focus on emphasizing the low risk of switching and understanding the lack of trust in the market. Communication strategies however, will might mostly only affect intentions to act.

## 12 Conclusion

In this paper, I show that there is a large intention-action-gap between planning to switch electricity suppliers and switching. Combining survey and administrative smart-meter data with an information experiment allows me to elicit consumers knowledge, beliefs and preferences and their switching plans as well as whether they follow through on these plans. I can causally test the effect of information and hassle cost reduction on switching. The intention action gap is increased through the experimental informational and hassle cost reduction treatment as they increase intentions, but only have minor effects on actions. However, the treatments accelerate when consumers plan to switch providers, which has a large effect on switching. The intention action gap is evidence that most consumers do not intentionally stay with their default provider. I find that personality traits such as trust, risk preferences and a tendency to procrastinate predict switching, while demographics explain almost none of the variation in switching. My results reject the common conclusions from the literature that increasing attention and reducing switching costs would significantly increase switching. Given that my survey respondents self-select into the survey one can assume that there is at least a minimum interest in the electricity market and while knowledge about electricity consumption and prices is very heterogenous, even those who are

well-informed do not end up switching. Educating consumers about the electricity market does therefore not seem like a productive strategy to decrease inertia. If the aim is to create competition on the retail electricity market, then policy makers should rethink the market design and consider smart defaults to move consumers to cheaper contracts and thus create meaningful competition between suppliers on the retail market.

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## **A Additional Results**

### **A.1 Clicking on information link**

In all three groups, I provided a link to elpris.dk on the final page, so individuals could go to the comparison website and potentially switch providers. In many survey experiments, a link click to a website with more information is used as a behavioral outcome (Haaland et al. (2020)). In the Broker treatment, there was also a link to GoSwitch. Figure 30 shows the effect of the treatments on clicking the the link to elpris.dk or clicking either of the two links. The information treatment and the broker treatment significantly increases the likelihood of clicking on the link to elpris.dk or the link to GoSwitch. We can thus conclude that the treatments had a first round behavioral effect on our switching proxy. In addition to increasing stated intentions, individuals were also more likely to take the first step towards switching. I find that 394 participants clicked on at least one link - 343 the elpris.dk link and 90 clicked the GoSwitch link.<sup>19</sup>

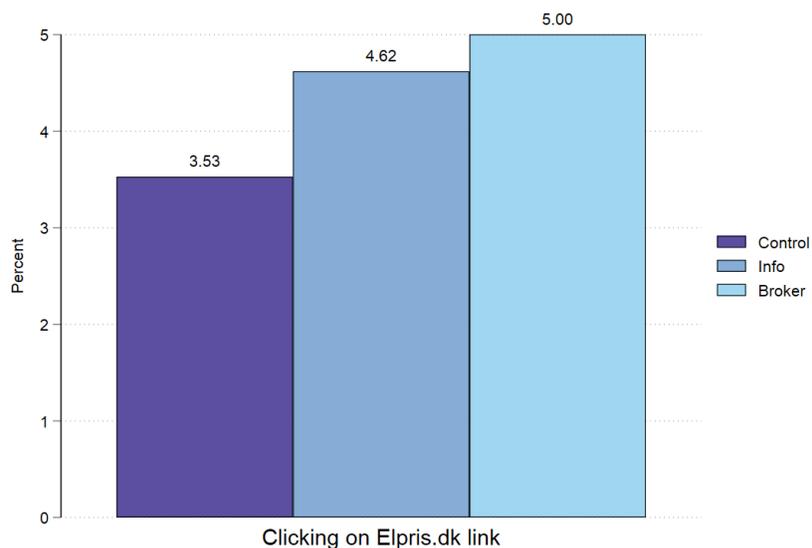
### **A.2 Testing for Selection into the Survey and Attrition**

Using the administrative data, I can analyze selection into the survey. I have background characteristics of the full population, the passive control group, respondents who chose not to participate, those who participated and those who have switched providers in the past 6 months. Summary statistics are shown in Table 6. Overall, my sample is of slightly higher

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<sup>19</sup>These numbers are an underestimation of the true link clicks. GoSwitch recorded 272 clicks to their site using the survey link which resulted in a final purchase of 33 subscriptions. It seems likely that the true elpris.dk clicks are also closer to 1000 clicks. The programming of the survey was not able to capture right clicks. Nevertheless, the treatment effects should be unaffected by this technical problem.

Figure 30: Behavioral proxy - Clicking on elpris.dk link at the end of the survey



socio-economic status than the general population and slightly older. In terms of gender, it is representative, as well as in geographic location.

### A.3 When do respondents drop out of the survey?

Out of the 103,046 people invited from the population 23,040 clicked on the personal link in the invitation. 22,260 provided consent and 21,668 stayed in the main survey, while 592 were funneled into the side survey, as they cannot change their electricity provider. Figure 31 shows at which point in the survey respondents drop out. By far the biggest drop happens when I ask individuals about how much they pay for electricity and how much they consume. When I ask them about features of their electricity contract I still have 20,953 observations, which reduces to 16,095 after asking about monthly electricity costs and to 14,712 when asking about monthly consumption. Even though I wrote that it was not important to know this information and that their best guess would be sufficient, I lose a quarter of my sample. There is another small bump in drop outs when I ask them to rank what they cared about when choosing providers. Because they were supposed to drag and drop responses, it is likely that a few dropped out due to technical difficulties. After that the drop out is linear and mostly reflects running out of time.

## B Tables and Figures

Table 6: Main survey: Summary Statistics

	Full popula- tion	Passive Control	Didn't do Survey	Survey	Have Switched
Female DST	0.49	0.49	0.49	0.50	0.47
Age	44.62	44.46	44.23	48.00	44.94
Married	0.48	0.47	0.47	0.51	0.47
<u>Income position</u>					
Bottom 10 pct.	0.10	0.10	0.10	0.06	0.07
20-50 pct.	0.40	0.40	0.41	0.34	0.36
50-90 pct.	0.40	0.40	0.39	0.48	0.47
Top 10 pct.	0.10	0.10	0.10	0.12	0.11
<u>Education</u>					
Primary edu.	0.17	0.17	0.18	0.11	0.12
Upper secondary edu.	0.07	0.08	0.07	0.07	0.07
Vocational edu.	0.33	0.32	0.33	0.33	0.34
Short cycle higher edu.	0.06	0.06	0.06	0.07	0.07
Bachelor programs	0.22	0.22	0.21	0.25	0.22
Master + phd programs	0.15	0.15	0.15	0.18	0.19
<u>Socio Economic Status</u>					
Self-employed	0.04	0.04	0.05	0.03	0.04
Employee	0.71	0.71	0.71	0.76	0.73
Unemployed	0.02	0.02	0.02	0.02	0.02
Not in work force	0.19	0.19	0.19	0.16	0.19
Others	0.04	0.04	0.04	0.02	0.02
<u>Regions</u>					
Copenhagen	0.10	0.10	0.10	0.09	0.09
Sealand	0.23	0.22	0.23	0.23	0.22
Southern Denmark	0.20	0.20	0.20	0.22	0.24
Middle Jutland	0.33	0.33	0.33	0.34	0.32
North Jutland	0.14	0.14	0.14	0.13	0.14
Observations	203,910	101,149	86,426	9,047	1,191

Figure 31: Drop out rates over time of the survey

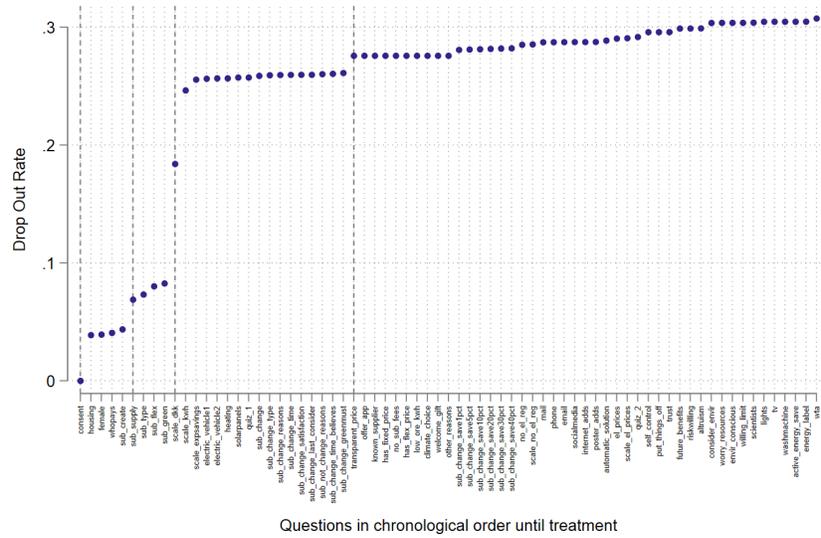


Figure 32: Correlation between personality traits and total wealth

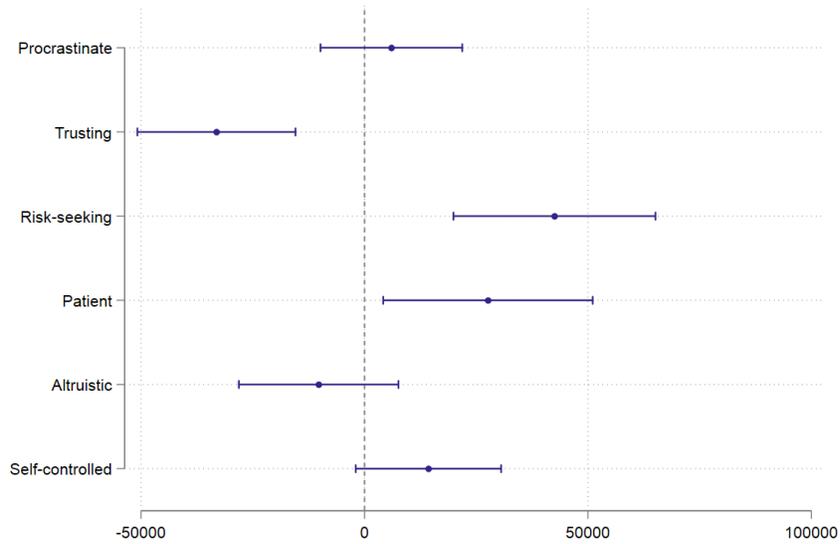
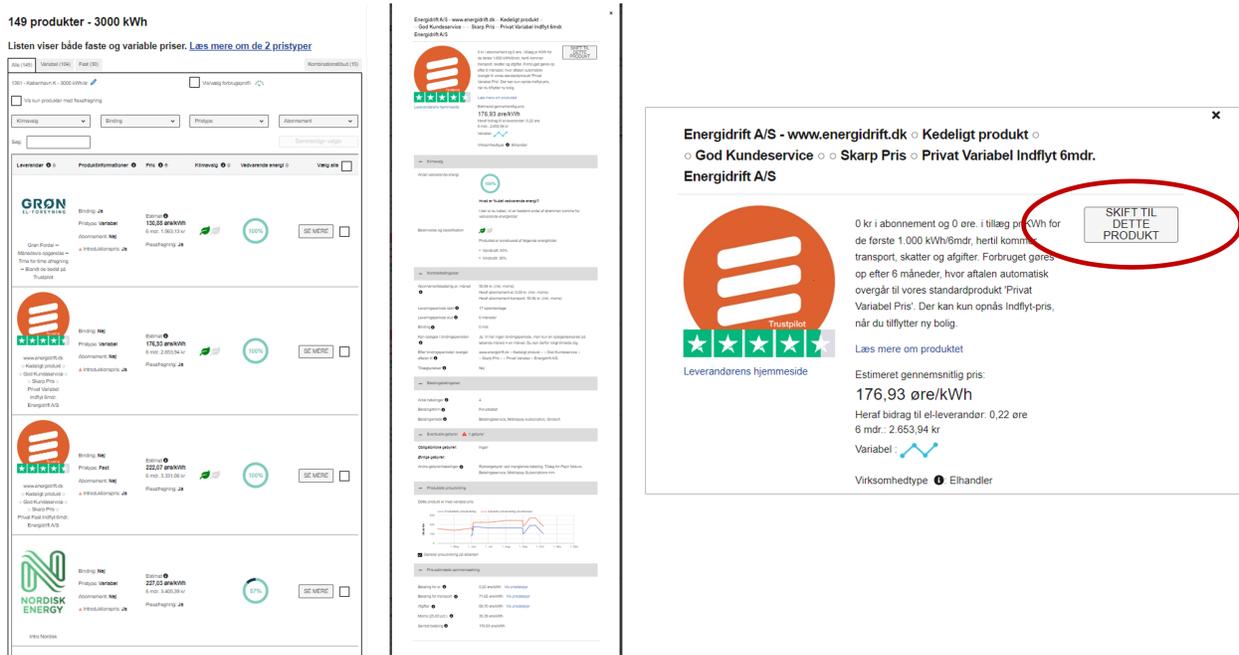


Table 7: Balance Table

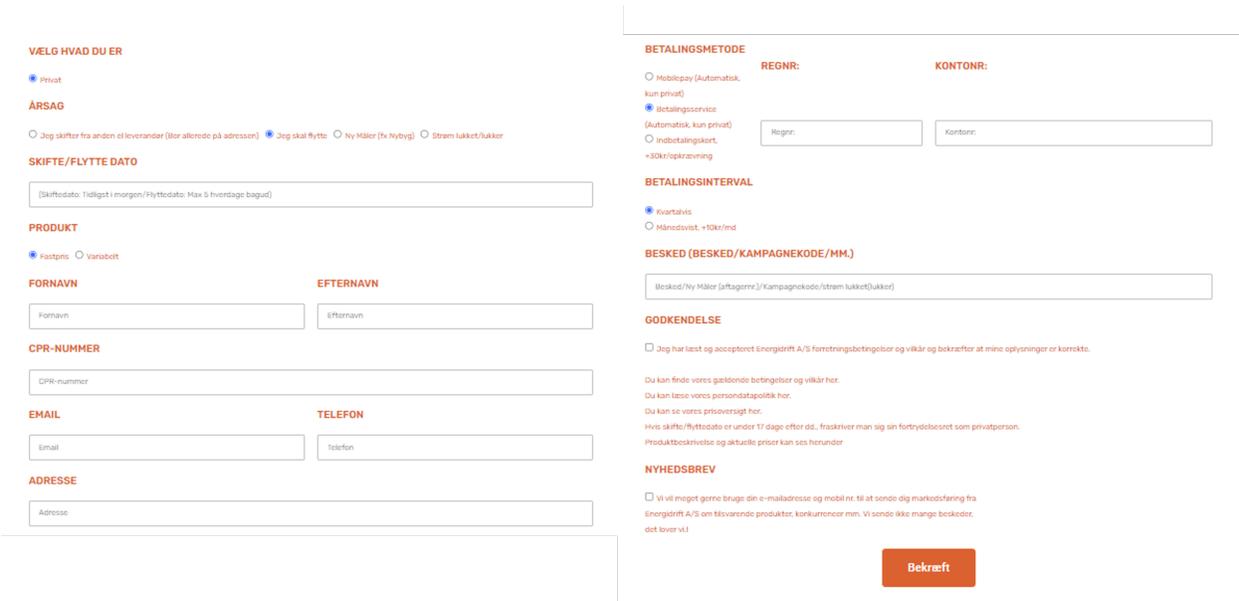
Variable	(1) Control Group	(2) Info	(3) Broker	(4) Diff C-I	(5) Diff C-B
WestDK	0.459 (0.498)	0.463 (0.499)	0.468 (0.499)	0.004 (0.774)	0.009 (0.475)
Female	0.499 (0.500)	0.504 (0.500)	0.485 (0.500)	0.005 (0.697)	-0.014 (0.268)
Age 36-45	0.193 (0.395)	0.200 (0.400)	0.201 (0.401)	0.007 (0.486)	0.009 (0.397)
Age 46-55	0.296 (0.457)	0.287 (0.452)	0.289 (0.454)	-0.010 (0.405)	-0.007 (0.556)
Age 56-65	0.320 (0.467)	0.327 (0.469)	0.323 (0.468)	0.007 (0.565)	0.003 (0.784)
Employed	0.797 (0.402)	0.798 (0.401)	0.793 (0.405)	0.001 (0.898)	-0.004 (0.709)
Income Percentile	6.119 (2.763)	6.163 (2.727)	6.159 (2.749)	0.044 (0.529)	0.041 (0.565)
Education	42.566 (20.297)	42.465 (20.357)	42.194 (20.539)	-0.100 (0.848)	-0.371 (0.480)
Small Apartment	0.216 (0.411)	0.198 (0.398)	0.206 (0.405)	-0.018* (0.088)	-0.010 (0.362)
Large Apartment	0.183 (0.386)	0.195 (0.396)	0.191 (0.393)	0.013 (0.212)	0.008 (0.399)
Small House	0.226 (0.418)	0.233 (0.423)	0.217 (0.413)	0.008 (0.482)	-0.008 (0.435)
Large House	0.376 (0.484)	0.374 (0.484)	0.385 (0.487)	-0.002 (0.847)	0.009 (0.449)
Observations	3,061	2,987	2,999	6,048	6,060

Figure 33: Elpris.dk website interface



The picture shows the an example from elpris.dk. After clicking on "see more", the detailed screen pops up. At the top a "switch now" button leads to the supplier's sign up page.

Figure 34: Sign-up form example



The picture shows the an example from elpris.dk. After clicking on "see more", the detailed screen pops up. At the top a "switch now" button leads to the supplier's sign up page.

## Consumer Behaviour in the Electricity Market

Welcome to the survey about consumer behaviour in the electricity market.

Do you want to participate?\*

- Yes
- No

Questions marked with a \* are required. You can read more about the survey and the University of Copenhagen's privacy policy at [econ.ku.dk/cebi/experiments](http://econ.ku.dk/cebi/experiments).

You have stated that you do not want to participate in the study.

Your participation would help us learn more about consumer behaviour in the electricity market.

Are you sure you do not want to participate?\*

- I do not want to participate
- I want to participate

What is your zip code?\*

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Which category best describes the size of your primary residence?\*

- Apartment up to 80m<sup>2</sup>
- Apartment greater than 80m<sup>2</sup>
- House up to 130m<sup>2</sup>
- House greater than 130m<sup>2</sup>

What is your gender?\*

- Male
- Female
- Other/Do not wish to answer

Do you or someone you live with pay your household's electricity bills?\*

- Yes, I pay it myself
- Yes, a member of my household pays it
- No, my landlord pays
- Don't know

We will now ask you some questions about your electricity plan.

The purpose is, among other things, to understand what consumers know and do not know about their electricity plan and the Danish electricity market.

Your answer is therefore important, regardless of how much you know, if you give your best bid.

You do not need to have your electricity bill in front of you to answer the questions.

Who created your current electricity plan?\*

- Me
- Another member of my household
- I inherited it from a previous owner or occupant
- I don't know

Which electricity supplier provides power to your primary address?\*

- |  |   |   |
|--|---|---|
| <input type="radio"/> AURA El-handel A/S                   | <input type="radio"/> Kibæk Elhandel A/S                  | <input type="radio"/> True Energy                     |
| <input type="radio"/> Barry                                | <input type="radio"/> (Samstrøm)                          | <input type="radio"/> Velkommen A/S                   |
| <input type="radio"/> Blue Energy A/S                      | <input type="radio"/> Langelands Elforsyning A/S          | <input type="radio"/> Vestforsyning                   |
| <input type="radio"/> Bornholms Energi & Forsyning         | <input type="radio"/> MES Elhandel A/S                    | <input type="radio"/> Verdo Go Green A/S              |
| <input type="radio"/> DCC E                                | <input type="radio"/> Midtjysk Elhandel                   | <input type="radio"/> Videbæk Elhandel A/S (Samstrøm) |
| <input type="radio"/> Elektron A/S                         | <input type="radio"/> Modstrøm Danmark A/S                | <input type="radio"/> Vindstød A/S                    |
| <input type="radio"/> Energi Fyn Handel A/S                | <input type="radio"/> Natur-Energi A/S                    | <input type="radio"/> VTV Elhandel A/S (samstrøm)     |
| <input type="radio"/> Energi Hurup Elhandel A/S (Samstrøm) | <input type="radio"/> Nef Strøm A/S                       | <input type="radio"/> Ørsted                          |
| <input type="radio"/> Energi Ikast                         | <input type="radio"/> NettoPower Aps                      | <input type="radio"/> Aal Elhandel A/S                |
| <input type="radio"/> Energi Viborg Strøm                  | <input type="radio"/> NGF Nature Energy                   | <input type="radio"/> Aars Elforsyning A/S            |
| <input type="radio"/> Energi Danmark (Erhverv)             | <input type="radio"/> Norsk Elkraft Danmark A/S (Erhverv) | <input type="radio"/> Other                           |
| <input type="radio"/> Eniig                                | <input type="radio"/> Norstrøm A/S                        | <input type="radio"/> Don't know                      |
| <input type="radio"/> E.ON (Erhverv)                       | <input type="radio"/> NRGi Elsalg A/S                     | <input type="radio"/> Den Glade Eltavle ApS           |
| <input type="radio"/> EWII Energi                          | <input type="radio"/> OK                                  | <input type="radio"/> Energinord A/S                  |
| <input type="radio"/> Forskel                              | <input type="radio"/> RAH Elhandel A/S                    | <input type="radio"/> Fauna Energi A/S                |
| <input type="radio"/> Forsyning Helsingør                  | <input type="radio"/> Samstrøm A/S                        | <input type="radio"/> Goenergi A/S                    |
| <input type="radio"/> Frederikshavn Elhandel A/S           | <input type="radio"/> Scanenergi A/S (erhverv)            | <input type="radio"/> Grow Energy A/S                 |
| <input type="radio"/> Gasel.dk                             | <input type="radio"/> SEAS-NVE Strømmen A/S               | <input type="radio"/> Lokal Energi Aps                |
| <input type="radio"/> GEV Elhandel A/S (Samstrøm)          | <input type="radio"/> SE                                  | <input type="radio"/> Norlys Energi A/S               |
| <input type="radio"/> GNPower                              | <input type="radio"/> SEF Energi A/S                      | <input type="radio"/> Power4U ApS                     |
| <input type="radio"/> Gul Strøm A/S                        | <input type="radio"/> SK Energisalg A/S                   | <input type="radio"/> Enkelt                          |
| <input type="radio"/> Hjerting Elhandel A/S (Samstrøm)     | <input type="radio"/> Strømliet                           | <input type="radio"/> Clever                          |
| <input type="radio"/> Main Survey Electricity              | <input type="radio"/> Struer Energi                       | <input type="radio"/> Go Strøm                        |
| <input type="radio"/> Hudya                                | <input type="radio"/> Sunds Elhandel A/S (Samstrøm)       | <input type="radio"/> Elektron                        |
| <input type="radio"/> Jysk Energi                          | <input type="radio"/> Tarm Elhandel A/S (Samstrøm)        | <input type="radio"/> Elkraft                         |
|  | <input type="radio"/> Thy-Mors Energi                     |   |

Do you know what type of electricity plan you have?\*

**Fixed price** is an electricity plan characterized by the future standard price being fixed for a period of at least 3 consecutive months, and it is thus known in advance by the customer.

**Variable price** is an electricity plan where the price changes continuously according to a well-defined electricity exchange and is valid for a period of less than 3 months.

- Fixed price
- Variable price
- Don't know

Have you changed your electricity plan to flexible billing?\*

Flex billing means that your power consumption is recorded and billed for the hour you use it.

The price of electricity is determined every hour based on supply and demand.

- Yes
- No, but it is possible for my residence
- No, it is not possible for my residence
- Don't know

Do you subscribe to "green" electricity?\*

- Yes, 100% green electricity
- A mix
- No
- Don't know

We understand that the next questions might be difficult to answer, so you will get some information in advance.

You will be asked to enter a specific number, after which you will be asked how confident you are that the number is correct.

This way you can tell us yourself how confident you are of your answer.

If you are fully confident, you can enter 100%, and if your guess is completely random, you can enter 0%.

You can choose any number from 0 to 100 that best corresponds to your level of confidence in your answer.

Think about the past 12 months (April 2021 - April 2022). How much does your household pay for electricity on average per month in your primary residence?\*

\_\_\_\_\_ DKK

You state that you pay \_ DKK for electricity over the course of 6 months. How sure are you of your answer?



Think about the past 12 months (April 2021 - April 2022). How many Kilowatt-hours (kWh) does your household use on average per month in your primary residence?\*

\_\_\_\_\_ Kilowatt-hours (kWh)

You state that your household uses \_ kWh of electricity over the course of 6 months. How sure are you of your answer?



If you changed electricity supplier today to the cheapest plan on the market, how much do you think you could save over the next 6 months compared to your current contract?\*

You have stated that you pay \_ DKK over course of 6 months.

How sure are you of your answer?

Do you or anyone in your household drive an electric or hybrid car?\*

- Yes
- No
- Don't know

If yes, do you own or lease it?\*

- Own
- Lease
- Don't know

Is your house heated with electricity (i.e., electric heating or heat pump)?\*

- Yes
- No
- Don't know

Have you installed solar panels?

- Yes
- No

What is the biggest source of renewable energy in Denmark?\*

- Wind power
- Nuclear power
- Don't know

When did you or someone in your household last change your electricity plan? Either to a new electricity provider or to a new contract at the old electricity provider?\*

- Within the last month
- Within the last 2-3 months
- Within the last 3-6 months
- Within the last 7-12 months
- Within the last 1-2 years
- More than two years ago
- Never
- Don't remember

Did you change to a new contract or a new provider?\*

- New provider
- New contract at the old provider
- Don't know

What was your main reason for changing electricity plan?

- Moving
- Received a marketing offer (gift, coupon, discount, special offer, etc.)
- Wanted to change to a greener alternative
- Wanted to change to a cheaper alternative
- Wanted to use hourly billing/flex billing
- Changed contract due to new electric/hybrid car
- Changed automatically because our old plan was terminated
- Received a recommendation from a friend/colleague/family member, etc.
- Wanted better service
- Other

Please explain

---

How long time did it take to change to subscription plan?

- < 10 minutes
- 10-15 minutes
- 15-30 minutes
- 30-60 minutes
- 60-120 minutes
- > 120 minutes

How satisfied are you with your new subscription?



*Very dissatisfied*



*Dissatisfied*



*Neutral*



*Satisfied*



*Very Satisfied*

You indicate that you have not changed your electricity plan in the past year. When was the last time you considered changing your electricity plan?\*

- Within the last month
- Within the last 1-3 months
- Within the last 3-6 months
- Within the last 7-12 months
- I have not considered it within the last year

What was your main reason for not changing plan?\*

- Haven't had it done yet

- Forgot it again
- To many options
- Don't know how
- The payoff was to small
- Worried to get scammed
- Waiting for a better offer
- Other

How long time do you think it will take you to change to a new electricity plan?

- < 10 minutes
- 10-15 minutes
- 15-30 minutes
- 30-60 minutes
- 60-120 minutes
- > 120 minutes

If you were to change your electricity plan, would it be a recruitment that the product provides 100% renewable energy?\*

- Yes, 100% renewable energy is a requirement
- No, not if I can save money by choosing another alternative

Please choose the three most important factors when you choose electricity provider. You can drag and drop the answer to the right and place the most important option on top.

Most Important 

Drag your choices here to rank them

Least Important 

- |                       |                             |                           |
|-----------------------|-----------------------------|---------------------------|
| ▪ Transparent price   | ▪ Provides Fixed Price      | ▪ Climate friendly choice |
| ▪ Provides an app     | ▪ Low price<br>(in Øre/kWh) | ▪ Giving a welcome gift   |
| ▪ Well known provider |                             | ▪ Other                   |

How likely is it, that you change electricity plan over the course of the next four weeks, if you save...

1% of your electricity bill



10% of your electricity bill



30% of your electricity bill



5% of your electricity bill



20% of your electricity bill



40% of your electricity bill



We will now ask you a few questions about the Danish electricity market in general.

How many electricity plans do you think you can choose from in your region? (Please enter an amount)

Please note, that one electricity provider might have multiple plans.

How sure are you of your answer?



How often do you receive advertisements for electricity plans?

	Weekly	Monthly	Quarterly	Yearly	Never
By mail	<input type="radio"/>				
By phone	<input type="radio"/>				
By email	<input type="radio"/>				
On social media	<input type="radio"/>				
On websites	<input type="radio"/>				
On posters	<input type="radio"/>				

Imagine a solution that automatically changes your electricity plan to the cheapest alternative every six months, without you having any influence on the choice. You can rely on the solution to find the cheapest subscription. The solution is free and does not require any effort from you. How likely is it that you want to use this solution?



Below are the consumer prices for electricity for the past three years (March 2019-March 2022).

Average electricity price (Øre/kWh)



How much do you think the electricity prices will change over the next 6 months compared to March 2022?

- Decline more than 20%
- Decline 11-20%
- Decline 1-10%
- Decline with +/- 1%
- Incline 1-10%
- Incline 11-20%
- Incline more than 20%

How sure are you of your answer?



What do you think it means when a provider sells “100 percent green electricity”?\*

- The electricity in my residence comes exclusively from renewable energy sources
- The electricity in my residence comes from various sources, but the electricity provider only buys electricity from renewable energy sources
- The electricity in my residence comes from different sources, and the electricity provider buys mixed electricity, but they also buy certificates from green energy producers, corresponding to their customers’ consumption.
- Green electricity is nothing but marketing.
- Don’t know

We will now ask you a few questions about you as a person.

How much do you agree with the following statements? (on a scale from 1 to 10)\*

	Totally disagree					Totally agree					Don’t know
	1	2	3	4	5	6	7	8	9	10	
I exercise good self-control in my actions and decisions.	<input type="radio"/>										
I often postpone things that I don't like doing.	<input type="radio"/>										
I assume that people have the best intentions.	<input type="radio"/>										

How willing are you to the following (on a scale of 1 to 10)?\*

	Not willing at all					Very willing					Don’t know
	1	2	3	4	5	6	7	8	9	10	
How willing are you to sacrifice something that benefits you today in order to benefit more from it in the future?	<input type="radio"/>										

How willing or unwilling are you to take risks?	<input type="radio"/>										
How willing are you to give to charitable causes without expecting anything in return?	<input type="radio"/>										

How much do you agree with the following statements? (on a scale from 1 to 10)\*

	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree	Don't know
I consider the possible environmental consequences of my actions when making decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider it important whether our planet's resources are wasted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would describe myself as environmentally responsible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to constraint myself to consume more environmentally conscious.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scientists will find a solution to global warming without people having to make major lifestyle changes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often...

	No, almost never	Yes, rarely	Yes, sometimes	Yes, often	Yes, almost always	Don't know
Do you turn off the light when you leave a room?	<input type="radio"/>					
Do you turn off the television if no one really watches it?	<input type="radio"/>					
Do you only wash with a full washing machine?	<input type="radio"/>					
Do you actively try to save energy in your residence?	<input type="radio"/>					
Do you look at the energy labels when buying electronics?	<input type="radio"/>					

This survey is part of a larger project, and we may therefore ask you to participate in another questionnaire at a different time. What is the minimum amount you would accept to complete another 10-minute survey a second time? The scale shown below extends from 0 DKK to more than 200 DKK. If you are willing to participate in another 10-minute survey for free, you can set the marker at 0 DKK. If you are willing to complete a survey for 50 DKK, you can set the marker at 50. Your answer does not mean that we will necessarily contact you again or that you necessarily will be paid the selected amount.\*



Are you planning to change electricity provider again in the next 3 months?\*

- Yes
- No

We understand that there is always some uncertainty involved when making decisions. On a scale from 0% to 100%, how likely do you think you are to switch electricity provider again during the next 3 months?\*



When do you think you will change electricity provider?\*

- Today
- 1 day to 1 week
- 1 to 2 weeks
- Within 1 months
- Within 2 months
- 1 to 3 months

You state that you do not plan to change electricity provider within the next 3 months. Are you planning to change electricity provider later?\*

- Yes, in 3 to 6 months
- Yes, in 6-12 months
- Yes, after 1 year from now
- No, never

We highly appreciate feedback and comments to the questionnaire.

If you have any comments, you can add them below.

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Thank you very much for your time. The questionnaire is over when you click “done”.

If you want to go to [elpris.dk](http://elpris.dk) to change your electricity provider, you can click here: [ElPris.dk](http://ElPris.dk).

If you are one of the winners of a gift card, you will receive the gift card by Digital Post after the 31<sup>st</sup> of May 2022.

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### ***HAVE SWITCHED***

Are you planning to change electricity provider again in the next 3 months?\*

- Yes
- No

We understand that there is always some uncertainty involved when making decisions. On a scale from 0% to 100%, how likely do you think you are to switch electricity provider again during the next 3 months?\*



When do you think you will change electricity provider?\*

- Today
- 1 day to 1 week
- 1 to 2 weeks
- Within 1 months
- Within 2 months
- 1 to 3 months

You state that you do not plan to change electricity provider within the next 3 months. Are you planning to change electricity provider later?\*

- Yes, in 3 to 6 months
- Yes, in 6-12 months
- Yes, after 1 year from now
- No, never

We highly appreciate feedback and comments to the questionnaire.

If you have any comments, you can add them below.

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Thank you very much for your time. The questionnaire is over when you click “done”.

If you want to go to elpris.dk to change your electricity provider, you can click here: [ElPris.dk](https://elpris.dk).

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### ***INFORMATION TREATMENT***

#### **Information about changing electricity plan**

It takes about **5 minutes** to change your electricity provider.

Changing electricity provider is free if you have not changed provider during the last 6 months.

A household like yours can on average expect

to save around **\_\_ DKK**

during the next 6 months, if you change to the cheapest plan today.

How to change:

- 1) Go to elpris.dk and find all electricity plans in your postal area
- 2) Klick on “Change to this electricity provider” and fill out relevant information
- 3) Hereafter your new electricity provider will send you a digital document to be signed

The remaining will be done by your new electricity provider. You do not need to cancel your old plan.

There will be a direct link to elpris.dk at the end of the questionnaire.

The amount is calculated by comparing the average subscription price with the cheapest offer at elpris.dk for your residence size. If you have stated that 100% renewable energy is a requirement, it is included in the saving.

Are you planning to change electricity provider again in the next 3 months?\*

- Yes
- No

We understand that there is always some uncertainty involved when making decisions. On a scale from 0% to 100%, how likely do you think you are to switch electricity provider again during the next 3 months?\*



When do you think you will change electricity provider?\*

- Today
- 1 day to 1 week
- 1 to 2 weeks
- Within 1 months
- Within 2 months
- 1 to 3 months

You state that you do not plan to change electricity provider within the next 3 months. Are you planning to change electricity provider later?\*

- Yes, in 3 to 6 months
- Yes, in 6-12 months
- Yes, after 1 year from now
- No, never

We highly appreciate feedback and comments to the questionnaire.

If you have any comments, you can add them below.

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Thank you very much for your time. The questionnaire is over when you click “done”.

If you want to go to [elpris.dk](http://elpris.dk) to change your electricity provider, you can click here: [ElPris.dk](http://ElPris.dk).

If you are one of the winners of a gift card, you will receive the gift card by Digital Post after the 31<sup>st</sup> of May 2022.

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### ***BROKER TREATMENT***

#### **Information about changing electricity plan**

It takes about **5 minutes** to change your electricity provider.

Changing electricity provider is free if you have not changed provider during the last 6 months.

A household like yours can on average expect

to save around \_\_ DKK

during the next 6 months, if you change to the cheapest plan today.

#### How to change:

- 4) Go to elpris.dk and find all electricity plans in your postal area
- 5) Klick on “Change to this electricity provider” and fill out relevant information
- 6) Hereafter your new electricity provider will send you a digital document to be signed

The remaining will be done by your new electricity provider. You do not need to cancel your old plan.

There will be a direct link to elpris.dk at the end of the questionnaire.

The amount is calculated by comparing the average subscription price with the cheapest offer at elpris.dk for your residence size. If you have stated that 100% renewable energy is a requirement, it is included in the saving.

If you do not want to change electricity provider **yourself**, you can subscribe to **GoSwitch** – an independent service that automatically moves your household to the cheapest offer on the market.

GoSwitch costs 29 DKK per month and you can unsubscribe whenever you want.

If you signup using the link at the end of the questionnaire, you will get the first month for **free**.

This means that you will be moved to the current cheapest offer on the market.

#### How it works:

- 1) GoSwitch scans the electricity market and calculates your expected savings.
- 2) You register and authorize GoSwitch to change power provider on your behalf.
- 3) GoSwitch changes to the cheapest plan while your job is to pay the bill.
- 4) GoSwitch monitors the electricity market and concurrently changes between the cheapest electricity subscriptions.

The link is personal to your household and must not be shared with others.

**The University of Copenhagen has no affiliation with GoSwitch, and no personal data will be shared with GoSwitch.**

Are you planning to change electricity provider again in the next 3 months?\*

- Yes
- No

We understand that there is always some uncertainty involved when making decisions. On a scale from 0% to 100%, how likely do you think you are to switch electricity provider again during the next 3 months?\*



When do you think you will change electricity provider?\*

- Today

- 1 day to 1 week
- 1 to 2 weeks
- Within 1 months
- Within 2 months
- 1 to 3 months

You state that you do not plan to change electricity provider within the next 3 months. Are you planning to change electricity provider later?\*

- Yes, in 3 to 6 months
- Yes, in 6-12 months
- Yes, after 1 year from now
- No, never

Will you use GoSwitch? \*

- Yes
- No

How likely is it that you will use GoSwitch?\*



Why do you not want to use GoSwitch?

- Too difficult
- Too expensive
- I do not trust the company
- I do not trust the solution
- Appears hard to opt-out of again
- I want to choose my own plan
- Other

We highly appreciate feedback and comments to the questionnaire.

If you have any comments, you can add them below.

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Thank you very much for your time. The questionnaire is over when you click “done”.

If you want to go to [elpris.dk](http://elpris.dk) to change your electricity provider, you can click here: [ElPris.dk](http://ElPris.dk).

If you want to go to GoSwitch to register, you can click here: [GoSwitch](http://GoSwitch)

If you are one of the winners of a gift card, you will receive the gift card by Digital Post after the 31<sup>st</sup> of May 2022.