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Can indifference make the world greener?

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ABSTRACT

We conducted a natural field experiment to evaluate two resource conservation programs. One intervention consisted of a moral appeal message asking university employees to cut back on printing in general, and to use double-sided printing whenever possible. The other intervention tested whether people's tendency to stick with pre-set alternatives is applicable to resource use: at random points in time we changed the default setting on the university printers, from single-sided to double-sided printing. Whereas the moral appeal had no impact, the default change cut paper use by 15 percent. Further analysis adds two important insights. First, we show that defaults influence behavior also in the longer run. Second, we present results indicating that resource efficient defaults have the advantage of avoiding unintended behavioral responses. Overall, our findings send a clear message to anyone concerned about resource conservation: there are potentially large gains to be made from small interventions.

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Introduction

Depletion of natural resources, such as water, food and forests, constitutes a severe threat to the global environment, and to sustained economic growth (United Nations, 1992; European Union, 2011). In order to address this threat policy makers need to understand what types of actions will have an impact on resource conservation, and what types of actions are ineffective. In recent years, non-price based behavioral interventions that preserve choice – the so-called nudges – have gained increasing attention, both from academic scholars and among politicians (Thaler and Sunstein, 2008; Shafir, 2012). It has been argued that nudges have a particularly important role to play within the environmental domain, not least since regular price adjustments have been difficult to implement (Allcott and Mullainathan, 2010; Carlsson and Johansson-Stenman, 2012; Sunstein and Reisch, 2014). However, empirical evidence is still scarce, and to the extent that it does exist the results are mixed.¹

In this paper, we provide new evidence by studying the causal effect of two different behavioral interventions aimed to lower the consumption of paper. The activity that we consider is universal, frequent, and consumes a vast amount of resources every year: document printing. Estimates suggest that U.S. office workers use roughly five million metric tons of paper annually, amounting to around 20 million metric tons of wood. To illustrate the potential, reducing this amount by

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¹ Allcott and Rogers (2014) show that when using feedback to reduce energy consumption it is crucial to repeat the treatment, since otherwise the effect decays quickly. Furthermore, Kallbekken et al. (2013) find that disclosing information on lifetime energy costs can affect purchases of durable goods, but only for certain product categories and when the information is coupled with training of the sales staff.

only five percent would save roughly six and a half million trees, free 6500 acres (5000 football fields) of forest for other productive use, and prevent the annual greenhouse gas emissions equivalent to that of 140,000 cars.²

When sending a document to a printer, a user can typically choose whether to print on both sides of a sheet of paper (duplex) or to print on only one side (simplex). Duplex printing reduces the number of sheets in the production of a document and is thus less resource intensive. We use this functionality in a field experiment at a large Swedish university to evaluate two different paper saving programs. One of the interventions tests whether moral appeal increases environmental responsibility. We designed an e-mail campaign, in collaboration with the university, which encouraged employees to cut back on paper use in general and to use duplex printing whenever possible. The other intervention examines the importance of how alternatives are presented. A common feature of most modern printers is the existence of a default option – a pre-set alternative that people obtain if they do not actively make another choice. By randomly changing the default, from simplex to duplex printing, we test whether people's tendency to stick to the pre-set alternative can help save resources.

There are several motives for studying these two interventions. Seminal (observational) studies have documented substantial default effects on retirement savings (Madrian and Shea, 2001) and on organ donor registration (Johnson and Goldstein, 2003). However, it is still an open question whether, and to what extent, these effects carry over to the environmental domain. Löfgren et al. (2012) is, to the best of our knowledge, the only published paper that experimentally tests if default rules influence people to behave pro-environmentally. The authors find that the pre-set alternative is completely irrelevant when participants at a conference in environmental and resource economics are asked whether they want to offset travel-related CO₂-emissions or not.³ Researchers are currently acquiring a better understanding of the limitations of defaults (see e.g., Beshears et al., 2010), and there could be many potential factors behind this specific null result. There are, however, reasons to expect attenuated default effects when it comes to environmental issues in general and resource conservation in particular. One reason is the wide-spread public debate concerning the environmental threats the world is currently facing. Environmental awareness is likely to be high, and people may have strong motives for their current behavior. It could also be that the warm-glow that comes with behaving pro-environmentally is enough to move borderline decision makers – who are likely to drive default effects – from passively accepting default options to making an active choice. Notably, strong intentions have been shown to reduce the default effect (Bronchetti et al., 2013). Another reason to suspect smaller effects of mandated “green” default options, especially in settings like ours, is that people and businesses in charge of setting default options already face economic incentives to consume less of the resource. Thus, economic agents who have actually chosen a more wasteful default option presumably have good reasons to do so, and their underlying behavior cannot be expected to be easily altered by a change in the default option. There is, however, a large literature on what has been referred to as “the energy paradox” and “the energy-efficiency gap”, which suggests that people are not taking full advantage of improvements in energy efficient technology (Jaffe and Stavins, 1994). If this assertion is correct, changes in default options could potentially affect resource conservation. In addition to these concerns, it might also be that people adapt their behavior in response to resource efficient defaults by using more of the resource (Khazzoom, 1980). A relevant example capturing this kind of perverse behavior is Catlin and Wang (2013), who report an increase in paper use when the possibility to recycle is introduced. Currently, there is limited knowledge about the long-run impacts and unintended consequences of using green defaults, which is a serious concern given that default options (and other behavioral interventions) are increasingly being seen as valuable complements to traditional policy tools (Sunstein and Reisch, 2014). Our default intervention will provide coveted insights from a natural setting and thus shed light on the validity of the points outlined above.

The moral appeal treatment is included in the study for two main purposes. First, it provides a natural baseline: it is the intervention first chosen by the university, and similar messages are commonly used in many everyday settings. Examples include appeals to hotel guests to reuse towels during their stay, and reminders about waste disposal in public parks. The common use of moral appeal messages suggests that policy makers perceive them as effective (or that they simply lack better alternatives). The second, and more substantive, reason for including the moral appeal treatment is that it can help us address some of the drivers behind a potential default effect. For example, it is often proposed that people follow the default option because it provides information about how to behave (McKenzie et al., 2006; Altmann et al., 2013). If this is the case in our setting, giving explicit information about how employees are expected to print should be enough in itself.

The effect of the two interventions differed sharply. Using moral appeal to encourage people to act responsibly had no impact on paper use, not even the day the message was communicated. In contrast, we document a substantial and immediate effect of changing the default option. Daily paper consumption dropped by 15 percent on average, implying that the default alternative determined the layout of one third of all printed documents. Two other findings are important in light of the increasing interest in behavioral interventions. First, the default effect was equally large six months after the implementation. Second, the absence of unintended adverse behavior in our experiment suggests that it is possible to introduce resource efficient defaults without the risk of backfiring. Overall, the results suggest that people stuck to the default option to avoid thoughtful considerations and a tiny switching cost, which showcases the importance of carefully

² The figures and the estimated impact come from the Environmental Paper Network (www.papercalculator.org).

³ There are results from unincentivized hypothetical choice experiments showing that people are more prone to choose green energy (Pichert and Katsikopoulos, 2008) and compact fluorescent light bulbs (Dinner et al., 2011) if these options are presented as the default alternative.

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