



Consumer myopia, competition and the incentives to unshroud add-on information[☆]



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ABSTRACT

This paper studies unshrouding decisions in a framework similar to [Gabaix and Laibson \(2006\)](#), but considers an alternative unshrouding mechanism where the impact of advertising add-on information depends on the number of unshrouding firms. We show that shrouding becomes less prevalent as the number of competing firms increases. With unshrouding costs a non-monotonic relationship between the number of firms and unshrouding may arise.

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1. Introduction

For the functioning of markets, information and transparency on the consumer side are essential. The degree of consumer information can be heavily influenced by firm strategy, often to the detriment of consumers. One popular business strategy in this respect is to hide information over add-ons with the aim to charge unaware consumers overpriced fees. Prominent examples for this strategy, for instance, include the pricing of printer and corresponding cartridges or the pricing of current accounts and overdraft fees as add-on.¹²

In a recent paper, [Gabaix and Laibson \(2006\)](#), henceforth GL, analyze firms' incentives to shroud such add-on information in a competitive environment. They show that if the number of myopic consumers, who do not foresee high add-on prices or underestimate add-on consumption, are sufficiently high, an equilibrium with high add-on fees and shrouding of add-on information exists. Base good prices, however, are low as firms want to attract many consumers who buy the overpriced add-on. In this equilibrium, consumers who are aware of this pricing strategy (sophisticated consumers in the terminology of GL) substitute away from add-on consumption. In GL, the existence of such a shrouding equilibrium is independent

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¹ In practice, consumers might often be informed about the (high) prices of printer cartridges, but might underestimate their importance and, hence, underestimate the total costs of buying a certain printer. In this context, an unshrouding strategy by a firm might include the disclosure of the total cost of printing, for example, by providing typical consumer examples.

² See [Armstrong and Vickers \(2012\)](#) for a discussion of such strategies in the retail banking industry.

of the number of firms competing in a market, leading to the conclusion that intensifying competition does not improve information on the consumer side.

In GL, unshrouding of add-on information has two effects. Firstly, sophisticated consumers can now observe the add-on price. Secondly, if at least one firm decides to unshroud a fraction of myopic consumers is educated and becomes aware of the add-on. In this paper, we propose an alternative unshrouding mechanism where the number of myopic consumers who become educated by unshrouding increases with the number of unshrouding firms. The reason for this modification is that it is more likely that a myopic consumer picks up that information and becomes aware of the add-on if more firms send out advertising messages.

We characterize the equilibrium of the shrouding game and provide two arguments why in markets with many competitors shrouding of information may be less prevalent. Firstly, unshrouding equilibria exist for a wider range of parameter values if the number of competing firms increases. The reason is that, in our setup, a strategic complementarity in unshrouding incentives arises (Bulow et al., 1985). The more firms unshroud add-on information, the larger are the incentives for other firms to unshroud as well as less myopic consumers, who can be fooled by high add-on prices, remain in the market. This result is in contrast to GL. Secondly, as in GL, under a wide range of parameters multiple equilibria exist (all firms shrouding and all firms unshrouding). Thus, equilibrium selection is an issue. As the number of firms increases, unshrouding equilibria become more favorable in terms of risk considerations making it more likely that firms coordinate on the unshrouding equilibrium. In particular, we show that the parameter range, where the unshrouding equilibrium is picked according to risk dominance (Harsanyi and Selten, 1988) and to global games (Carlsson and van Damme, 1993), becomes larger as competition intensifies. Given these two reasons, this paper therefore argues that shrouding of add-on information may be less likely to be observed in competitive markets, and fostering market entry may be an effective tool to raise market transparency and consumer information.

The paper is also related to recent work by Heidhues et al. (2012) who analyze a model with perfect substitutes where firms may shroud one price component (instead of an add-on). The authors demonstrate that shrouding does only take place in concentrated markets. However, with positive unshrouding costs an unshrouding equilibrium ceases to exist. We also show that intensified competition decreases incentives to shroud, however, in contrast, in our framework an unshrouding equilibrium can also exist in the presence of unshrouding costs.

More generally, the paper is related to the literature that analyzes competition in the presence of behaviorally biased consumers and on firm strategy how to exploit such imperfect behavior.³ For instance, Spiegler (2006) considers a model where complicated products have multiple price elements which all need to be evaluated to infer a product's total price, but consumers only base their purchase decision on one single element. Piccione and Spiegler (2012) and Chioveanu and Zhou (2013) develop models where consumer can be confused by different price frames. Carlin (2009) and Gu and Wenzel (2013) study firm's incentives to use obfuscation strategies to impede consumers' ability to compare different offers.

2. The model

The model is based on Gabaix and Laibson (2006), but differs in the effect of unshrouding. In contrast to GL, the share of myopic consumers who becomes educated due to unshrouding depends on the number of unshrouding firms.

We consider an oligopoly market where $n \geq 2$ firms offer a base good and an add-on. Each consumer demands at most one unit of the base good and one unit of the add-on where the add-on can only be purchased from the firm where the base good has been bought. All firms produce the base good and the add-on at no costs.

Base good prices, p_i , are observable by all consumers. Add-on prices, \hat{p}_i , however, can only be observed if firms advertise them. There are two types of consumers: myopic and sophisticated consumers. Sophisticated consumers are aware of the add-on and form beliefs about add-on prices if they are shrouded. Myopic consumers are completely unaware of the add-on and, hence, base their purchase decision solely on base-good prices.⁴ Initially, the share of myopic (sophisticated) consumers is $\alpha (1 - \alpha)$, where $\alpha \in (0, 1)$.

Firms can unshroud add-on information, that is, advertise their add-on fees. Unshrouding has two consequences. Firstly, if a firm decides to unshroud, sophisticated consumers learn the add-on price charged by this firm. Secondly, by unshrouding some myopic consumers become aware of the add-on and behave like sophisticated consumers. In contrast to GL, we assume that the fraction of consumers that becomes sophisticated depends on the number of unshrouding firms. Define $\mu(k)$ as the share of myopic consumers who remain myopic if k firms decide to unshroud. We assume that $\mu(k)$ is a decreasing function of the number of unshrouding firms, $\partial\mu(k)/\partial k < 0$. Conversely, if k firms unshroud, a fraction $(1 - \mu(k))$ of myopic consumers becomes sophisticated.

There are several reasons why a larger number of unshrouding firms increases the number of sophisticated consumers. Firstly, if unshrouding firms send out advertising messages randomly to consumers it is more likely that a consumer receives an advertising message if more firms advertise. Secondly and alternatively, suppose that not all myopic consumers pay attention to add-on prices even if they receive disclosure information. For instance, this could be because some consumers do not

³ A survey on the impact of competition in markets where consumers exhibit behavioral biases is provided by Huck and Zhou (2011) and a textbook treatment is provided by Spiegler (2011).

⁴ Kosfeld and Schüwer (2011) analyze a variant of GL where firms can (imperfectly) discriminate between sophisticated and myopic consumer.

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