International Journal of Industrial Organization 42 (2015) 120–128

Contents lists available at ScienceDirect

International Journal of Industrial Organization

journal homepage: www.elsevier.com/locate/ijio

Putting on a tight leash and levelling playing field: An experiment in strategic obfuscation and consumer protection☆

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ARTICLE INFO

Article history:
Received 1 August 2014
Received in revised form 1 July 2015
Accepted 24 July 2015
Available online 5 August 2015

JEL classification:
C91
D18
D43
L13

Keywords:
Experiment
Obfuscation
Consumer protection
Behavioural industrial organisation

ABSTRACT

The paper reports the results of an experiment where asymmetric sellers of a product can obfuscate the market. We show that policy measures may have unintended effects of increasing obfuscation incentives. We find that policies that limit the effectiveness of obfuscation and policies that promote parity between firms can lead less prominent firms to increase their obfuscation efforts. Despite this unintended effect, however, the former type of policies is effective in boosting consumer welfare.

1. Introduction

It is well documented in a variety of markets that consumers often make sub-optimal choices.[1] On the other hand, the supply side of the market has been associated with strategies that are designed to exploit imperfection in consumer decision making. In particular, firms may deliberately increase the complexity in which relevant information is presented in order to confuse consumers. For example, in the retail financial industry, firms often use complex language or invent new terms in the description of their products. Such obfuscation strategies make it more difficult for consumers to compare available offers, and hence ease competitive pressure in pricing and can have substantial welfare consequences for consumers (Calvet et al., 2007; Campbell, 2006).

An important question in such a situation is whether traditional public policies can effectively discourage supply side obfuscation and protect consumers from such practice. To answer this question, we first analyse a simple game of strategic obfuscation and then test model predictions in a laboratory setting. To reflect observations in real markets, we allow the firms to differ in prominence, i.e., their ability in attracting naive consumers. In such a framework, we study the effects of two common policy measures: policies that directly protect consumers by hampering the effectiveness of obfuscation (Putting on a Tight Leash)[2] and policies that promote parity between firms (Levelling Playing Field).[3]

☆ We thank Volker Benndorf, Sen Geng, Claudia Möllers, Hans-Theo Normann, Martin Peitz, Rune Stenbacka, Fangfang Tan, Jonathan Tan, and Chris Wilson for helpful suggestions and discussions. We are grateful to the editors and two anonymous referees for their valuable comments and suggestions which have substantially improved the paper. We also thank seminar audiences at the Universities of Durham, East Anglia, Liverpool and Nottingham, participants at Asia-Pacific Regional Meeting of the Economic Science Association in Xiamen, MaCCI Conference in Mannheim, IIOC in Arlington and the Royal Economic Society Annual Conference in Cambridge for helpful comments. Julia Frison provided valuable research assistance.

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[1] Imperfect consumer decisions are well documented in telecommunication markets (Miravete, 2013), electricity markets (Wilson and Waddams, 2010), and in particular, retail financial markets where a number of reasons have been identified including cognitive limitations (Calvet et al., 2009), behavioural biases (Stango and Zinman, 2009) and insufficient knowledge (Lusardi and Mitchell, 2007; van Roij et al., 2011), among others.

[2] Such policies might include, for instance, policies that prohibit certain obfuscation tactics or educational programmes to directly improve consumer decision making.

[3] For example, in some economies, state owned firms play an important role and often enjoy a higher level of prominence or trust than privately owned firms. Privatisation, which may be proposed to address various objectives, can reduce asymmetry in firms' prominence levels. As another example, consider the case where continued persuasive advertising is required to maintain brand loyalty and the resultant superior prominence. Policies that impose spending limits on advertising thus can level the market in terms of prominence over time. We study the effects of such policies in relation to obfuscation.

http://dx.doi.org/10.1016/j.ijindorg.2015.07.008
0167-7187/

In our simple model with a binary choice of obfuscation, it is found that the more prominent firm always chooses to obfuscate. However, the incentives of the less prominent firm to obfuscate are ambiguous. The incentives to obfuscate depend on the extent of asymmetry, but also on the level of consumer protection policy. In the model, a stronger consumer protection policy reduces the effectiveness of firms' obfuscation strategies. This theoretical model yields two surprising hypotheses. First, an increase in the level of consumer protection policy may actually induce the less prominent firm to obfuscate. Second, policies that promote parity between the firms may also increase the propensity of obfuscation by the less prominent firm. To test these hypotheses, we design an experiment where in the base treatment two rather asymmetric firms compete in obfuscation and prices. We then implement two treatments where in the first, the level of consumer protection policy is strengthened, and in the second, firms are more symmetric than they are in the base treatment. It is found that our experimental evidence broadly supports the above two theoretical hypotheses.

Although both policy measures increase the propensity of the less prominent firm to obfuscate, our experimental results show that the effects on consumer welfare are very different. Policies that promote parity increase obfuscation. Hence, the share of naive consumers and product prices rise. This unequivocally harms consumers. However, we note that consumer protection policies are found to be effective in reducing the share of naive consumers and consequently the prices consumers pay, despite the increased propensity of obfuscation by the less prominent firm.

The literature on competition in the presence of behaviourally biased consumers is growing rapidly.[4] Piccione and Spiegler (2012) offer a framework of obfuscation where firms can choose different price frames. In an earlier version (Piccione and Spiegler, 2009), the authors also consider prominence such that when unable to compare offers their consumers buy from the incumbent. In equilibrium, the prominent firm (the incumbent) minimises comparability while the non-prominent firm (the entrant) does the opposite. In contrast, in our theoretical model firms directly choose obfuscation as in Carlin (2009), and the degree of prominence can vary continuously. Additionally, we study the impact of various policy measures in an asymmetric setting. Chioveanu and Zhou (2013) provide another analysis that allows for the distinction of frame complexity and frame differentiation. Spiegler (2014) offers a general duopoly framework that captures a variety of obfuscation strategies. Gu and Wenzel (2014) develop a theoretical model of strategic obfuscation and analyse the effects of consumer protection policies. The experimental setting of the present paper is built on this model.

Although most of the contributions so far are theoretical, there have also been a few experimental studies. Kalayci and Potters (2011) examine whether buyer confusion increases market prices and find results that support the effectiveness of buyer confusion. Kalayci (2015b) presents experimental evidence that a seller's complexity and price choices are positively correlated. This is in contrast to the findings in Sitzia and Zizzo (2011) where the authors are unable to detect a significant effect of product complexity on prices. Kalayci (2015a) investigates the effect of competition – captured by the number of sellers – on complexity choice. Contrary to theoretical predictions in Carlin (2009), Kalayci (2015a) finds that an increase in the number of sellers does not affect a seller's complexity choice. Normann and Wenzel (2014) present an experiment where sellers can coordinate shrouding of an add-on product and find that the shrouding does only occur in concentrated markets. Relatedly, Crosetto and Gaudeul (2014) report an experiment where sellers can choose a price format. They find that, if rival's behaviour is observable, firms are able to coordinate on shrouded formats. Finally, our paper is also related to Morgan et al. (2006) which studies price distributions in the presence of uninformed consumers.

The remainder of the paper is organised as follows. In Section 2 we describe the model that is used for our experimental setup. Section 3 specifies the design of the experiment and derives the hypotheses. In Section 4 we report the results of the experimental study. Finally, Section 5 concludes.

2. Theoretical background

2.1. Model

To provide guidance for the experimental design, in this section we outline a simplified model of strategic obfuscation following Gu and Wenzel (2014). We consider a market where two firms compete to supply a homogeneous product to a mass one of consumers each demanding one unit of the product when the reservation price of $r > 0$ is not exceeded. Consumers are either sophisticated or naive. Sophisticated consumers can compare prices and buy from the firm that offers the lowest price. Naive consumers, on the other hand, are unable to compare prices and buy at random with a distribution to be specified below.

Shares of respective consumers are influenced by firms' obfuscation choices and the consumer protection policy. Naturally, more obfuscation and low consumer protection lead to more naive consumers and accordingly, fewer sophisticated consumers. Departing from Gu and Wenzel (2014), here we treat obfuscation as a binary choice.[5] Specifically, let $I_i \in \{0, 1\}$ be an indicator variable that takes the value 1 if Firm i decides to obfuscate and 0 otherwise, and let $x \in (0, 1)$ be the level of the consumer protection policy. The share of naive buyers then is

$$\mu(x, I_1, I_2) = (1-x)\frac{I_1 + I_2}{2}. \tag{1}$$

The proportion of sophisticated consumers is thus $1 - \mu(x, I_1, I_2)$.

We allow the firms to differ in their abilities in attracting naive consumers.[6] Without loss of generality, Firm 1 is designated as the more prominent firm which captures a larger share, $\phi \in (\frac{1}{2}, 1)$, of naive consumers. Firm 2 receives the rest of those naive consumers $1 - \phi$. We normalise both firms' production costs to zero and we assume obfuscation is costless.

The timing of the game is as follows. In stage 1, the two firms simultaneously and independently decide on its own choice of obfuscation. After knowing each other's obfuscation choice, and hence the share of naive consumers, they compete in prices in the second stage.

2.2. Theoretical results

Since a more elaborated version of the model has been fully analysed in Gu and Wenzel (2014), we only highlight main results here.

In the second stage, there exists a unique Nash equilibrium in mixed strategies (Varian, 1980; Narasimhan, 1988). As the more prominent Firm 1 receives more naive consumers than Firm 2, its opportunity costs of competing aggressively for sophisticated consumers are higher. As a result, Firm 1 sets higher prices in equilibrium than Firm 2 in the usual stochastic order. As our first theoretical prediction, we note:

Proposition 1. *Firm 1 sets higher prices in equilibrium than Firm 2 in the usual stochastic order.*

Equilibrium profits are

$$E(\Pi_1) = \phi\mu r \text{ and } E(\Pi_2) = \frac{(1-\phi\mu)\phi\mu r}{\phi\mu + (1-\mu))}. \tag{2}$$

[4] See Spiegler (2011) for a textbook treatment and Huck and Zhou (2011) for an overview.

[5] An obfuscation strategy might, for instance, correspond to the use of different terms and language – as can be observed in financial markets – which makes it harder for some consumers to fully understand pricing and, hence, impedes comparisons between different offers.

[6] This reflects the observation that when unable to compare prices, consumers often resort to factors like past experiences, firm reputation, name recognition, etc.