On the efficacy of imperfect public-monitoring of seller reputation in e-commerce

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Abstract

Reputation is crucial in promoting exchanges in on line markets since it may overcome information inefficiency through successful signals of sellers' quality to less informed customers. For this purpose, I study web sellers' reliability in business-to-consumer online transactions with reference to reputation games. Customers can gather information in on line market places like e-Bay through public feedback systems. Differently, without a centralized reputation system, it is not clear how potential buyers form their beliefs. In the latter case, I provide empirical evidence on perceived reliability and its determinants for some virtual shops operating worldwide in the clothing retail sector.

1. Introduction

Electronic commerce means no physical meeting of sellers and (potential) buyers, incomplete information about the seller, inability to directly verify the quality of a product and to monitor sellers' behavior in the stages of packing, shipping, etc. In the absence of perfect information, a buyer perceives a risk related to the likely seller's opportunistic behavior and reputation is crucial in promoting seller's reliability and facilitating online transactions.

Reputation can be theoretically analyzed in terms of reputation games with a long run seller and several short run buyers. It may be interpreted as a successful signal of sellers' quality to less informed potential customers. The latter ones form their beliefs in several ways by means of some imperfect public monitoring devices, which are strictly influenced by the characteristics of on line transactions.

Online transactions are managed in most cases by means of on line market places like e-Bay, Ali-Baba, Yoonx, etc. and information gathering is centrally managed by the webmaster of the market place. Electronic market places are characterized by the simultaneous presence of several sellers, after registering their account, whose transactions can be evaluated by buyers and sellers with feedbacks. Customers can get a seller transaction history through a public feedback system. A feedback consists of a general rating of positive, neutral, or negative for a transaction. In addition to leaving general ratings, buyers can rate specific aspects of the transaction: a buyer may review item quality to verify if it matches the item received, may rate the degree of satisfaction about seller's communication, the time it took to mail the item, the shipping and handling charges.

Recently, several enterprises have experienced alternative channels of e-commerce. Increasing diffusion of independent e-commerce web sites directly implemented by sellers is observed. In these web sites no public feedback systems are available. In the absence of an independent and well recognized public reputation system, which elements drive the repositioning of confidence on the part of potential buyers?

From a theoretical perspective, I study reputation in on line transactions as a reputation game with imperfect public monitoring and asymmetric information related to seller's quality (adverse selection). The analysis mainly focuses on the role of reputation devices in stimulating the formation of buyers' beliefs.

Reputation mechanisms enable efficient transactions in the presence of post-contractual opportunism (moral hazard) and adverse selection. Moral hazard appears when each party in a contract may have the opportunity to gain from acting differently from the agreed conditions. In on line transactions, buyers typically send money to sellers before receiving goods. They then could be tempted to keep money and not ship the requested goods, or to ship lower quality goods than those advertised. Adverse selection is present in situations where sellers have more information than buyers (or vice versa) about some aspect of their ability or product quality they supply. Specifically, sellers may have different characteristics or/and may sell high-low quality goods, etc. Since sellers do not have an incentive to advertise both positive and negative characteristics, consumers cannot be certain about the true quality offered by each seller until they have actually bought some items. Knowing this, consumers will assume that all sellers are of average quality and will not be willing to pay more than the average price. Akerlof (1970) shows that in such a situation the highest quality sellers exit the market, while the lowest quality ones keep selling on line.

Reputation mechanisms can deter moral hazard by acting as sanctioning devices. They can limit negative effects of adverse selection by acting as signaling devices. The role of reputation mechanisms in moral hazard settings is to constrain behavior of the best informed party, whereas the role of such mechanisms in adverse selection settings is to induce learning behavior of the least informed one (Dellarocas, 2006). In real-life transactions, moral hazard and adverse selection considerations are often simultaneously present. By concentrating the study of e-transactions to the formation of buyers' beliefs, I need to consider reputation mechanisms which are able to foster learning effects. This justifies my choice of modeling on line transactions in terms of reputation games in the adverse selection framework.

From an empirical point of view, I provide some empirical evidence on the determinants of perceived buyers' reputation. By browsing an e-commerce web site, consumers can get some information. I refer to this source of information as *advertising signals*. Moreover, online consumers also evaluate sellers' reliability by gathering independent information from social communities. I define these sources of information as *social signals*. In this case, I empirically test if potential buyers exploit publicly available information to promote information circulation from i) virtual shops websites (advertising signals); ii) from the most widespread social communities (social signals).

Previous evidence confirms that reputation effects are important in transactions conducted on web market places. Specifically, reputation profiles are predictive of future performance, though eBay's net feedback statistic is not the best predictor available (Resnick and Zeckhauser, 2002). Cabral and Hortacsu (2004) show that negative feedbacks reported in e-Bay lower weekly sales growth rates, and exit probability is increasing the lower is reputation. However, it is not clear if and when reputation acts as a sanctioning device or a signaling one. When concentrating on buyers' perspective, it

has already stated that the longer is a seller's transaction history, the higher is the buyer's willingness to pay (Resnick et al., 2006). Reputation effects are magnified in the case of heterogeneous goods (Melnik and Alm, 2005). This confirms that perceived sellers' reliability in on line sales includes signaling mechanisms and calls for further investigation on which factors are involved in the formation of beliefs.

In independent e-commerce web sites, though no publicly recognized feedback systems exist, I provide some empirical evidence on the way sellers signal their type to potential customers and how customers form their perceived sellers' reputation. Up to now, no research has been done on this issue for the best of my knowledge.

First, a survey has been conducted to identify all sources of information, both internal and external, with reference to some e-commerce business to consumer web sites operating worldwide in the clothing sector. Second, this paper attempts to quantitatively assess the importance of both types of signals in the construction of perceived reputation by potential buyers. Provided that no transaction history is available, I use survey data to estimate the probability of e-seller reputation levels by a probit model. The role of seller's and social factors on the perceived reputation of the e-seller is stated.

The paper is organized as follows. In section 2, a reputation game with imperfect public monitoring is presented. Section 3 describes stylized facts about some e-commerce web sites involved in business to consumer in the clothing sector. I also describe the survey conducted on a sample of potential buyers on perceived sellers' reputation and their sources of information, which is considered as relevant in the formation of reputation. The econometric analysis is developed in section 4 and conclusive comments are reported in section 5.

2. A model of reputation in e-commerce with imperfect public monitoring

This section presents a stylized model of reputation. I consider the adverse selection approach, which assumes asymmetric information related to seller's quality, by strictly following Mailath and Samuelson (2006).

In each period, the seller can either exert high effort (H) or low effort (L); the buyer can decide either to buy (B) or not (NB). When effort is high, the buyer receives a gross utility of U>0, zero otherwise. Net utility is obtained as gross utility less price, which is equal to R. Revenues are equal to R if the buyer decide to buy, independently of the effort exerted by the seller. Costs are equal to C when high effort is given, zero otherwise. Figure 1 shows players' payoffs.

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BUYER

		B	NB
		B	NB
SELLER	H	R-C; U-R	-C, 0
	L	R; -R	0, 0

FIGURE 1: The one-stage reputation game

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Low effort L is strictly dominant for the seller, while higher payoffs for both players are achieved if the seller exerts high effort. In the perfect monitoring game of complete information (L, NB) is the unique equilibrium outcome. The equilibrium outcome may change to (H, B) if the game is infinitely repeated, provided that the seller is sufficiently patient.

The adverse selection approach allows the situation where the buyer is uncertain about seller's payoffs. Incomplete information implies that past behavior influences expectations of future behavior and can be interpreted as an investment on reputation. Specifically, the seller develops a "reputation" for playing H, if she persistently plays H. This may be initially costly for the seller if the buyer is not immediately convinced that

she will play H and hence plays NB for some time. However, the subsequent payoff could make this investment worthwhile for a sufficiently patient seller.

Suppose there is a positive probability assigned by the buyer to the seller being a "commitment type" who always plays H. Even a tiny probability of a commitment type introduces a necessary link between past play of H and expectations of future play[1].

The next step requires the specification of the commitment type's behavior since the seller chooses to develop a reputation for behaving as the most favorable type. Under general conditions, the incomplete information is a short-run phenomenon in imperfect monitoring games. The buyer must eventually learn seller's type and the continuation play converges to an equilibrium outcome of the complete information game. To have a long run reputation model, some mechanism to incorporate uncertainty about types is needed. Long run player's type can be described by a stochastic process: the probability that the seller is replaced by a new seller with random type is positive (unobservable replacement) or buyers' posteriors about the seller are bounded away from certainty (bounded memory).

In the repeated game, I view the buyer as a continuum of small and anonymous players. Thus, a device describing the way of coordinating their actions is required, which I define monitoring technology. Monitoring technology can be assumed as perfect public, private or imperfect public.

If consumers receive common signals from *perfect public* monitoring, there is no difficulty in using public bad signals to trigger punishments, even if consumers are confident the seller exerted high effort. In this case, the game converges to the equilibrium outcome of the complete information game (H, B), provided that the seller is sufficiently patient.

If consumers receive idiosyncratic signals from *private* monitoring technology, a bad signal brings a buyer no information about what other buyers have seen, preventing buyers' coordination that is essential for effective incentives. In this case, multiple belief-free equilibrium outcomes arise, so that the probability of choosing B does not depend on any signals about the play of the seller.

If consumers receive idiosyncratic signals from an *imperfect public* monitoring technology, different consumers receive different realizations since each observes only her own signal. When monitoring is imperfect and public, we can show that a belief-based equilibrium exists. In this case, the probability the buyer assigns to the seller exerting high effort in period t depends on the set of all signals from period 0 to period t.

To see how the game theoretic framework can be applied to the analysis of trustworthy behavior in on line sales, we first consider a simplified game with imperfect public monitoring, which is repeated for a finite number of periods. This model allows to identifying which characteristics are essential in promoting on line transactions: features and related probability distribution of seller's types, buyers' beliefs.

Then, an infinitely repeated game is considered to study how and which factors influence investment decisions on reputation: buyers' beliefs and costs related to high quality efforts.

2.1 FINITELY REPEATED GAME

I now present a finitely repeated reputation game with imperfect public monitoring, by limiting it to two periods for simplicity.

The set of public signals is given by $Y = [y_L, y_H]$. The signal depends only on the seller's action $a_S = [H, L]$ according to the distribution

$$\rho(y_H|a_S, a_B) = \begin{cases} p \ if \ a_S = H \\ q \ if \ a_S = L \end{cases}$$

where ρ is the probability to observe public signal y_H and $0 < q < p < 1$. Buyer's actions are public, while the type of the seller is unknown to the buyer. We assume that there are only two types: the normal type and the commitment type (who plays H in every period)[2]. The buyer's prior belief about the seller's type at the beginning of the game is given by a probability μ_H^0 if the seller is thought to be a commitment type. The seller of the normal type is expected to choose H with probability γ. If $\gamma = 1$, the commitment and normal types play identically and signals reveal no information. For any $\gamma < 1$, the commitment type is more likely to generate signal y_H and hence $\varphi(\mu_H|y_L) < \mu_H^0 < \varphi(\mu_H|y_H)$, where $\varphi(\mu_H|y_i)$ is the updated posterior that the seller is a commitment type following a signal y_i, $i = L, H$. In the second period the prior probability that the seller is a commitment type μ_H^1 is given by this updated posterior calculated at the end of the first period stage game, therefore it is a function of p, q, γ and μ_H^0.

The two-period game can be solved by backward induction. The second period equilibrium is strictly influenced by belief revision, which is the updated probability that the seller is a commitment H type:

Preposition 1: *In the second period, the commitment type chooses H and the normal type chooses the strictly dominant action L. The buyer's best response is B if $\mu_H^1 > \frac{1}{2}$, NB if $\mu_H^1 < \frac{1}{2}$ and a mixed strategy if $\mu_H^1 = \frac{1}{2}$.*

First period behavior depends on the buyer's prior probability that the seller is a commitment type μ_H^0. We define μ' as the prior probability that implies a zero probability for the normal player to choose H in the first period and the observation of a signal y_H.

We also define μ'' as the prior probability that implies a zero probability for the normal player to choose H in the first period and the observation of a signal y_L. It is easy to show that $\mu' = \frac{q}{p+q} < \frac{1}{2}$ and $\mu'' = \frac{1-q}{2-p-q} > \frac{1}{2}$.

Preposition 2: *In the first period, the normal type chooses the action L when $\mu_H^0 > \mu''$ and when $\mu_H^0 < \mu'$. The normal type chooses the action H with probability $\gamma = 1$ when $\mu_H^0 = \frac{1}{2}$, with probability $\gamma = \gamma'$ when $\mu_H^0 \in [\mu', \frac{1}{2})$ and with probability $\gamma = \gamma''$ when $\mu_H^0 \in (\frac{1}{2}, \mu'']$, where the probability $\gamma'(\gamma'')$ is obtained by imposing the buyer's posterior after y_H (y_L) to be 1/2.*

For a proof of prepositions 1 and 2, see chapter 17 of Mailath and Samuelson (2006).

2.2 INFINITELY REPEATED GAME

When explicitly modeling reputation an infinite horizon is required. In this framework it is interesting to consider a modified version of the two-period game presented in section 2.1. A reputation game is proposed with a long lived seller and a short lived buyer, with the latter representing either a succession of players who live for one period or a continuum of small and anonymous players who live infinitely.

In the infinitely repeated game with complete information, the normal type chooses H, when she is sufficiently patient. In this case, a "reputation" for playing H is associated to the normal type, who is interested in separating her type by the commitment type. In this case, the commitment type always plays low effort L and is referred as *inept*

type. Therefore, the signaling scheme of a high effort type is changed with respect to the two-stage game.

With incomplete information, a seller receives revenues that depend on the distribution of consumer's beliefs about the seller's effort. Consumers observe their own signals and update beliefs about the type of seller. Finally, there is a positive probability of seller's replacement. When consumers receive idiosyncratic signals from an imperfect public monitoring technology, the probability the buyer assigns to the seller exerting high effort in period t depends on the set of all signals from period 0 to period t. Again, the positive probability of an inept type introduces a necessary link between past play and expectations of future play.

Since the commitment type is a bad type, the normal type wants to separate, and it can be shown that a pure strategy equilibrium in which the normal seller always plays H exists only if the cost of high effort (c) is not too large. The upper bound cost depends on the (positive) probability of an inept type replacement λ[3].

Preposition 3: *Suppose $\lambda \in (0,1)$. There is $\bar{c} > 0$ such that for all $0 \leq c < \bar{c}$, there exists a high-effort equilibrium.*

3. Monitoring technologies in on line transactions

Empirical evidence confirms that the equilibrium outcome depends on seller's transaction history and reputation effects are important in the case of transactions conducted on web market places (Cabral and Hortacsu, 2004; Melnik and Alm, 2005; Resnick et al., 2006). With reference to e-commerce web sites directly managed by sellers - called 'virtual shops' - I have not found any papers providing evidence on the determinants of perceived web sellers' reputation.

As to on line virtual shops, no public transaction history is seemingly available. In the absence of a centralized reputation system, it is not clear how potential buyers form their beliefs. They can use either private or (imperfect) public monitoring technologies. Thus, the research question is the following: which is the monitoring technology used by potential buyers in such circumstances? If signals are idiosyncratic, we should view that the probability of choosing option 'buy' does not depend on any signals. If it depends on some signals received by the seller, a private monitoring technology is applied. Otherwise, if it also depends on some signals received by other buyers, we can state that an (imperfect) public monitoring technology is adopted to encompass the coordination problem and a reputation game with imperfect public monitoring is an appropriate theoretical framework to think about the interaction between the seller and the buyer.

I empirically evaluate what determines the perceived reputation in such framework, by considering two information sets. The first source of information is directly given by virtual shops and the other set includes all signals received by buyers.

With the purpose of identifying what type of information is given by the seller, I did a preliminary investigation of the main web sites operating in the clothing retail sector[4]. Web sites report some information related to several aspects of the potential transaction. These characteristics can be classified into 5 categories: product description, order and shipping details, payment conditions, customer care services, and feedback systems. These elements are defined as *advertising* signals.

As to signals received by other buyers when a public feedback system is not implemented, we can see that there are other user-generated contents developed in on line world. A potential buyer can simply insert the name of the seller and the word 'opinion' in any search browser to find them. I identified five different on line communities reported in descending importance for my sample: blogs, web sites

collecting reviews (e.g. bestshopping.com), review videos (e.g. YouTube), question-answer web sites (e.g. Yahoo! Answers) and forum. These elements are defined as *social* signals.

As a second step, I collected individual data on perceived reputation and signals of potential web buyers by means of a survey based on a sample of 286 web users. Respondents are 18-55 years old, with an average of 26; 47.6% of the sample are male and 52.4% are female. All web respondents bought clothes on line at least once. The questionnaire was created to collect information about virtual shops explicitly excluding market places like eBay. Questions were related to the perceived overall reliability of a virtual shop, to a set of control variables (number of years as web user, number of hours of Internet use by day, professional status, education level), and to the evaluation of advertising and social signals.

4. Econometric analysis and comments

The econometric analysis using survey data evaluates the correlation of overall perceived reputation with advertising and social signals. Perceived high and low levels of reputation are obtained by exploiting answers related to the degree of reliability assigned by an on line buyer to a web store where he/she bought some product. A dummy *REL* takes value 1 when reputation is high and 0 when reputation is low. As to advertising signals, I consider the evaluation of the presence of images and product description; order and shipping details are evaluated in terms of free shipping condition, first purchase discount, delivery tracking, free returned product; payment conditions mean the possibility to use Paypal or to pay cash on delivery; customer care services are considered by asking how much are important call centers and feedback systems, such as social networks or comment sending on seller web site. As social signals I refer to respondents' scores

measuring the importance of blogs, web sites collecting reviews, review videos, question-answer web sites and forum.

The probability of perceiving a high reputation is estimated by using the probit model[5]

(1) $$ln\,\mu_H = ln\,Pr\big(REL_j = 1\big) = a_0 + \sum_{c \in C} a_c X_{cj} + \sum_{i \in I} a_i X_{ij} + \sum_{s \in S} a_s X_{sj} + \varepsilon_j$$

where X_c, $c \in C$, are control variables (years as web user, hours of Internet use by day, dummies for professional status and education levels), X_i is an advertising signal, and X_s is a social signal. Table 1 reports marginal effects for all variables.

It is confirmed that potential web buyers consider both internal and external signals: estimated effects on the perceived reputation are all significant. Well explained product characteristics and direct contact with the seller improve the probability of seller's high reliability, as well as opinions and reviews of previous buyers or opinion leaders (e.g., bloggers). It can be argued that an (imperfect) public monitoring technology is adopted to encompass the coordination problem.

Some differences emerge when splitting the sample into two groups by education level. When education is low, old and highly intensive web users show less confidence on virtual sellers. Moreover, some advertising elements, such as first purchase discount, free shipping and free returned product affect negatively seller's reliability. Feedback systems through social networks are more important than direct contacts with the seller. As to social signals, browsing of question-answer sites positively affects reputation. When education is high, delivery tracking and Paypal payment promote the construction of high quality reputation, while payment by cash on delivery and the presence of a call center decrease the probability of perceiving a high level of reputation. Feedback systems by sending comments on seller web site positively affect such reputation. Blogs are considered good social signals, while videos are bad ones.

5. Conclusion

Reputation has several determinants in on line transactions, which are very similar when the seller operates through a site of e-commerce or in a marketplace.

When assuming heterogeneity of on line sellers' reliability, reputation works as a mean for agents to signal their type. Beliefs' formation is studied in a reputation game with imperfect public monitoring. Theoretical interpretation of reputation as a signaling device is confirmed by data. Besides information provided by the seller, potential buyers always consider social signals in the process of learning unknown seller's characteristics. In virtual shops, web users exploit other web buyers' opinions disseminated in social communities such as blogs and question-answer web sites.

With reference to survey data collected for a sample of 252 web users, who bought clothes in virtual shops at least once, I state a positive effect on reputation of some services provided by the seller, such as careful product description, safe electronic payment, and the presence of feedback systems. In addition, blogs and question-answer sites are considered important social signals for high quality reliability.

An interesting future study could consider an empirical evaluation of perceived reputation in other sectors in which virtual shops are growing up. Specifically, it could be interesting to study the role of contractual complexity in influencing sellers' incentives in investing in reputation and in turn the effects of reputation on contractual outcomes, as suggested by Benerjee and Duflo (2000).

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Appendix: Data collection

Table A1: List of virtual sellers operating in clothing retail sector

Virtual shop	Company name	Country of origin	Year of foundation	Link:
Asos	Asos.com Ltd	UK	2000	www.asos.com
Boohoo	Wasabi Frog Ltd	UK	2006	www.boohoo.com
Chicnova	Hermes Holding Limited	China	2012	www.chicnova.com
Chicwish	Chicwish Limited	Hong Kong	2010	www.chicwish.com
Choies	Nowee E-commerce Co. Ltd	China	2006	www.choies.com
Daisy Street	Daisy street Ltd	UK	2011	www.daisystreet.co.uk
Fashion Union	Fashion Direct Group Limited	UK	2008	www.fashionunion.com
Front Row Shop	Shanghai Front Row e-Commerce Co., Ltd.	China	2012	www.frontrowshop.com
Glamorous	Kacoo Fashion Ltd	UK	2007	www.glamorous.com
Inlovewithfashion	Love You UK Ltd	UK	2010	www.inlovewithfashion.com
Jollychic	Zhejiang Jolly Information Technology Co., Ltd	China	2008	www.jollychic.com
Missguided	Missguided Limited	UK	2009	www.missguided.co.uk
Nasty Gal	Nasty Gal Inc.	USA	2006	www.nastygal.com
Oasap	Oasap Limited	Hong Kong	2011	www.oasap.com
Own The Runway	Own The Runway Clothing LTD	UK	2010	www.owntherunway.com
PersunMall	Persun Garment CO.,LTD.	China	2010	www.persunmall.com
PrettyLittleThing	Wasabi Frog Ltd	UK	2011	www.prettylittlething.com
Princess Polly	Pink Lemonade Media Pty Ltd	Australia	2012	www.princesspolly.com.au
Romwe	Reiyi Internet Technology Co. Limited	China	2009	www.romwe.com
Sabo Skirt	Larry and Luke Pty Ltd	Australia	2012	www.saboskirt.com
Sheinside	Qingdao Bothwin co.,ltd	China	2008	www.sheinside.com
She Likes	Shelikes Ltd	UK	2011	www.shelikes.com
Storets	Cyber Storets Us	South Korea	2009	www.storets.com
Unestab	Project Venture PTE. LTD.	Singapore	2013	www.unestab.com

Table 1: Perceived reputation and signals, marginal effects

Variable	All data		Low education		High education	
	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.
Web user years	-0.043**	0.019	-0.111***	0.028	0.011	0.037
Internet hours by day	-0.010	0.028	-0.087**	0.041	-0.072	0.043
Advertising signals						
Image	0.095**	0.044	0.183***	0.064	0.010	0.067
Free shipping	-0.015	0.042	-0.113**	0.054	0.036	0.053
First purchase discount	-0.119**	0.047	-0.145***	0.052	-0.066	0.072
Delivery tracking	0.029	0.048	-0.089	0.073	0.205***	0.070
Free returned product	-0.046	0.039	-0.127**	0.053	0.081	0.062
Paypal	0.092**	0.037	0.075*	0.043	0.119**	0.047
Cash on delivery	-0.022	0.037	-0.018	0.044	-0.121**	0.048
Call center	-0.025	0.040	0.056	0.063	-0.175***	0.071
Social network contact	0.039	0.031	0.173***	0.042	0.089	0.047
Direct contact	0.111***	0.039	0.038	0.044	0.224***	0.065
Social signals						
Blog	0.073**	0.033	-0.008	0.034	0.193***	0.060
Video	-0.064*	0.035	-0.085*	0.046	-0.118**	0.050
Question-answer web site	0.071*	0.037	0.182***	0.047	0.048	0.045
Forum	-0.034	0.040	0.014	0.056	-0.097	0.060

Probit estimates with robust variance and dummies for professional status and education levels; ***1%, ** 5%, * 10% significant coefficients

Notes:

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[1] A commitment type always plays a specified repeated game strategy. If she plays the same stage-game action in every period, regardless of history, we refer to her as a *simple* commitment type. In this paper, the simple commitment type is the seller who always exerts high effort. Other commitment types may be committed to more complicated sequences of actions (random actions, tit-for-tat, etc.).

[2] A *normal type* plays the game strategy that maximizes the average discounted value of payoffs (PAGE 463). For a definition of commitment type, see footnote 1.

[3] For further details see chapter 18 of Mailath and Samuelson (2006).

[4] I found 24 business-to-consumer companies that sell on-line through their web sites, operating in the clothing sector since 2000. The origin countries are Australia, China, Singapore, South Korea, UK, and USA. See table A1 in Appendix for details.

[5] A preliminary analysis has been conducted with reference to a multinomial variable considering all possible degrees of reputation reported by respondents (null, low, medium and high reputation). An ordered probit model was estimated using the same explanatory variables as probit specification (1). Results show that the impact of advertising and social signals is homogenous for all cases reporting at least a medium score, while coefficients have opposite signs for the remaining responses. Detailed results are available upon request.