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**Does Signaling Work in Markets for Information Services? An
Empirical Investigation for Insurance Intermediaries in Germany**

von

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Does Signaling Work in Markets for Information Services? An Empirical Investigation for Insurance Intermediaries in Germany

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Abstract

Insurance intermediation services are information services which exhibit strong information asymmetries. We empirically analyze whether signaling works in the German market for insurance intermediation services. For this a signal must increase service quality and be easily identifiable by consumers so that it pays for intermediaries to spend the related costs. By using OLS and logit estimations we test whether intermediary type, reputational activities and a variety of signaling instruments work as credible signals. Our findings confirm the main hypotheses derived from signaling theory as to the poor working of market forces in markets for information services. Accordingly, public policy regulation is necessary to mitigate the resulting problems.

Keywords: *signaling, insurance intermediation, information services*

JEL-classification: *D82, G22, L15, L86*

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1. Introduction

Anecdotal complaints about the poor performance of insurance intermediaries are a recurrent topic in everyday accounts of one's experiences when shopping for insurance. These impressions are confirmed by a number of descriptive and other studies (see section 5 below). It is well-established that incomplete, misleading or even false information by insurance intermediaries is one of the main problems in this industry.

Insurance products are very complex goods. It is difficult for consumers to correctly assess their characteristics before purchasing them. Therefore, insurance intermediaries assist consumers by economizing on search costs, in particular on information and transaction costs. Exclusive or independent agents and insurance brokers are the main distribution channels for insurance products. They not only act as agents for insurance companies in marketing and distributing their products, but also as agents for consumers in finding well-matching insurance products. However, also the quality of the information services provided by insurance intermediaries is not fully observable before purchase. Thus, these information services are experience and credence goods. Accordingly, for consumers, incomplete and asymmetric information about the quality of insurance products is replaced by incomplete and asymmetric information about the quality of the counseling services provided by insurance intermediaries.

According to information economics, such incomplete information may result in adverse selection and/or moral hazard behavior. Signaling theory shows that for experience goods and services there are means which allow firms to credibly signal that they provide high quality. In this case, market forces set incentives to invest in credible signals and thus reduce adverse selection (Riley 2001). In this paper we empirically analyze whether signaling works in the market for insurance intermediation services. Thus, we contribute to the empirical testing of signaling theory. Besides, since reputation is of particular importance in markets of expert services, we study in more detail its working in the market for insurance intermediation services.

The questions addressed in this paper are of interest not only from an academic perspective. They have wide ranging implications for consumers, insurance intermediaries, and public policy regulators. For consumers it is important to know which activities of insurance intermediaries do indeed credibly signal high service quality. For insurance intermediaries it is important to know which activities do not only credibly signal high service quality, but also

pay off in economic terms, since signaling is a costly activity. And finally, from a public policy point of view our analysis is of interest, since regulation is necessary only as far as market forces do not work in reducing information asymmetries.

The structure of the paper is as follows. In section 2 we shortly summarize the main reasoning of signaling theory and derive hypotheses to be tested empirically. Section 3 discusses the main signals applicable in the market for insurance intermediation services. Section 4 gives a short overview of the relevant empirical literature. Data, variables and estimation methods are presented in section 5, while the econometric results are discussed in section 6. Section 7 concludes and discusses the implications of our findings.

2. Signaling Theory and Hypotheses

Insurance intermediaries provide information and advisory services throughout all transaction stages for consumers when concluding insurance contracts (Eckardt 2007, 1-21). But consumers act under incomplete and asymmetric information about the true quality of an intermediary's services. These services are experience and credence goods (Nelson 1970; Darby and Karni 1973). A consumer cannot assess the service quality provided by competing insurance intermediaries in advance, but only after information and advice have been "consumed", i.e. after an experience. However, even this is often barely possible, thus credence is needed. Especially for long-term insurance products like old-age or disability insurance, the quality of the information and advice given can be evaluated only after the insured risk has actually occurred – which often takes place decades later. Common business practices, which have evolved over time, add to the lack of transparency. This holds true in particular for remuneration practices and disclosure requirements about business relations between intermediaries and insurance companies. Consequently, consumers have only very limited information about potential conflicts of interest and potential bias in the information and advice given by insurance intermediaries. As a consequence of the intermediary's privately held information, adverse selection and/ or moral hazard may occur, resulting in rather low service quality (Kurland 1995, 1996).

Signaling theory shows how providers of better service (or product) quality can mitigate such information asymmetries and lessen the resulting problems of adverse selection (Spence 1973, 2002; Ippolito 1990; Molho 1997, 61-80; Kirmani and Rao 2000; Riley 2001). The main signals discussed in the literature are investment in reputation, advertising, certificates and licensing, guarantees or warranties and low introductory prices (Kirmani and Rao 2000; Kreps 1990; Riley 2001). For a signal to be credible, so that it correctly communicates the provision

of high quality services, it is a necessary condition that it does not pay for low quality providers to imitate it. Only then a separating equilibrium occurs, where consumers can rely on a signaling firm indeed providing high quality services, while non-signaling firms will provide low quality services.

For a signal to be credible, firms have to make a commitment according to which they will lose money if falsely signaling high quality services, or that involves sunk costs which will be recovered only in case of repeated transactions. Up-front expenditures like investment in advertising or reputation will be recovered only if there are repeat sales in the future.¹ These, however, will take place only in case that a signaling firm indeed provides high quality services. Otherwise consumers will refrain from repeated purchases and perhaps even communicate their negative experiences to others. Accordingly, low quality firms would realize a loss over time when mimicking such costly signals. Therefore, signaling reduces information asymmetries, if high quality firms invest so much money in costly signals that imitating them does not pay off for low quality competitors.

According to Kirmani and Rao (2000, 72-73) there are four conditions which must be met for signaling to be successful. In the following we shortly discuss whether they apply to insurance intermediation services. A main condition is that there is *prepurchase information scarcity*. As we have already argued above, consumers have rather low information about insurance intermediaries' service quality. Nevertheless, they can be reasonably assumed to be quality-sensitive, in particular when they shop for long-term personal insurance like old-age, disability or health. A second necessary condition is that there is *postpurchase information clarity*. The experience and credence goods' characteristics of insurance intermediaries' services apply mainly to long-term insurance contracts. For these, consumers are not able to unambiguously assess the quality of the information services provided even after contract conclusion. Thus, signaling has to be assumed to work rather poorly in regard to these aspects. Thirdly, signaling models assume *payoff transparency*. While consumers are supposed to lack information about firms' true service quality, both firms and consumers are assumed to have perfect information about the relevant costs and payoffs and to fully understand the rationale behind investments made by firms to signal product quality. That is, consumers are assumed to correctly understand that up-front expenditures in signals, like reputation or advertising for example, will pay off only in case of repeated transaction. It is a

¹ The same holds for low introductory prices of new products.

rather strong assumption that consumers are able to correctly identify the economic rationale behind a firm's marketing strategy. However, for service markets it is well established that word-of-mouth is one of the most important mechanism to gain good reputation (Zeithaml and Bitner 2006, 67, 496, 551). Fourthly, for signaling to work there must be *bond vulnerability*. Only if consumers know and believe that the bond posted by a firm is truly at risk, if the firm does not live up to its promise of providing high-quality services, the signal will induce quality-sensitive consumers to turn to high-quality firms so that these can recover the related signaling costs. Again, this assumption makes strong claims on consumers being able to identify correctly the mechanisms that make signaling work. In addition, it is also implicitly assumed that *firms know what means will work well as credible signals* so that low-quality competitors will not imitate them, while consumers will easily identify them. However, designing signaling activities is one of a number of marketing activities, which is subject to trial-and-error like all other entrepreneurial behavior. Firms do not have an a priori knowledge of what strategies will indeed work as credible signals. Experimenting with different signals to find out about the most profitable ones is an important part of firms' marketing strategy.

Given these requirements, we expect that signaling works only poorly in the market for insurance intermediation services. To test empirically whether and what kind of signals work for these information services, we derive two hypotheses. For a signal to be credible it must correctly indicate better service quality for consumers. Therefore, our first hypothesis is:

Hypothesis 1: Intermediaries who use credible signals provide better (or above average) information service quality.

Secondly, for intermediaries to provide a signal, it must pay off to spend the related signaling costs. If a credible signal can be easily identified by quality-sensitive consumers, they will react to it by turning to those intermediaries sending it. As a consequence high quality intermediaries will realize a higher contract conclusion rate than their competitors. If consumers cannot identify whether an intermediary provides a credible signal or not, their choice of an intermediary will not be affected by a possible signal. Therefore, our second hypothesis is:

Hypothesis 2: Intermediaries who use easily identifiable credible signals realize a higher (or above average) contract conclusion rate.

In the following section we shortly discuss possible signals in the market for insurance intermediation services.

3. Signals in the Market for Insurance Intermediation Services

In general, signals can be distinguished according to whether they are default-independent or default-contingent, with the former requiring up-front expenditures before or during sales transactions (Kirmani and Rao 2000). Most of the signals discussed in the following are default-independent. This holds for (1) the intermediary type (that is the distribution channel an intermediary belongs to), (2) reputation, (3) advertising, (4) certificates and licensing as well as for (5) additional costly investment an intermediary incurs. Only (6) voluntary property liability insurance, which is akin to a warranty, is default-contingent.

(1) Intermediary Type

By deciding about its distribution channel, an insurance intermediary makes claims about the quality of his or her information services. The main distribution channels are exclusive agents, who distribute insurance products from a single insurance company, and independent agents, who offer insurance products from different companies, however, only from one company for each line of insurance. In addition there are insurance brokers, who are independent from insurance companies, thus providing products from potentially all insurers in the market. According to the respective market regulations, stricter rules usually apply to insurance brokers in regard of qualification as well as of liability rules, for example. Accordingly, being an insurance broker is an easily identifiable means to signal the provision of more comprehensive and more objective information about insurance needs and risks than being an exclusive or independent agent.

(2) Reputation

Reputation also serves as a signal for high quality services (Kreps and Wilson 1982; Milgrom and Roberts 1982; Shapiro 1982, 1983; Allen 1984; Wilson 1985; Stiglitz 1989a, 822-831; Biglaiser and Friedman 1999). Reputation disseminated through word-of-mouth is widely held to be one of the most important signaling instruments for services (Zeithaml and Bitner 2006, 67, 496, 551). It is difficult to imitate, but easily identifiable by consumers. Since it is built up over time, it requires multiple interactions over several periods. High quality services are assumed to require higher production costs than low quality services. When a consumer learns about a high quality intermediary, she will repeatedly use the same intermediary or communicate her experiences about his service quality to others. Due to word-of-mouth, reputation for high quality generates additional business and vice versa. However, building up a reputation takes time and requires extra costs, while it is lost by simply providing low

quality services. On the one hand, cheating on consumers by providing low quality reduces costs when producing the low quality service. On the other hand, however, it devalues the investment made so far in building reputation as being a high quality firm. While lower production costs can be realized only in the current period, the ensuing loss of reputation decreases demand over all future periods. Consequently, an intermediary has an incentive to permanently provide high quality services, if the discounted net value of the profits thus realized exceeds the one time profit from cheating by providing low quality services.

(3) Advertising

Advertising is another means of signaling high quality services to overcome adverse selection of experience goods due to asymmetric information (Schmalensee 1978; Klein and Leffler 1981; Shapiro 1983; Milgrom and Roberts 1986; Rogerson 1986). Advertising also leads to repeated sales only for high quality intermediaries, while for low quality ones it only increases sales in the current period. Therefore it does not pay for low quality intermediaries to spend the costs of advertising.

Public presentations and seminars on insurance matters are another marketing instrument to signal high quality services.² For example, an insurance intermediary may give a public presentation on the latest pension reforms and their consequences for old-age security. This comes rather close to informational advertising, since the intermediary shows publicly his knowledge and competence about the respective field. Thus, potential customers can gain some information about his service qualities. Like spending on advertising, such presentations also require additional costs (time and resources spent for preparing the lecture, rent for the lecture room etc.). Therefore, such activities only pay for high quality insurance intermediaries, who can reap gains from such activities over an extended time span.

(4) Certificates and Licensing

Certificates or licensing, provided by independent third parties, can also credibly signal high quality intermediary services (Spence 1973; Leland 1979a, 1979b; Shapiro 1986; Stiglitz 1989b).³ A wide-spread signal used in many professions is *education and training*. In revealing one's schooling and training background, an insurance intermediary expresses

² The same holds for the publication of articles about insurance topics, be it in the popular business press or in form of a newsletter, distributed for example through the internet.

³ According to Carlton and Perloff (2005, 448) a certificate is "a report that a particular product has been found to meet or exceed a given level on a standard."

information about an important input factor for producing high quality services. Deciding on the best insurance cover for a particular consumer's preferences and needs requires not only information about insurance product alternatives on the market, but also knowledge to correctly assess and evaluate the relevant information. Both formal schooling as well as further training in the respective fields of insurance economics and financial economics provide an intermediary with the necessary analytical skills and theoretical knowledge. This investment in human capital cannot be easily copied; at least not when it comes to government regulated formal qualifications, as it is the case with school or university diplomas.

The same holds true for vocational training and/or certificates issued by independent organizations, like professional associations. *Membership in a professional association* can therefore also serve as a signal, when such membership requires meeting certain standards, be it in terms of qualification, regular further training, and/or additional guarantees for clients like property liability insurance. Therefore, in case that such membership entails additional costs, it cannot be easily copied and thus can serve as a credible signal.

(5) Additional Costly Investment

In some markets lower introductory prices serve as a signal for high quality products (Schmalensee 1978). However, in the market for insurance intermediaries, price is not an action parameter, since it is customary that fees are negotiated between insurance companies and intermediaries. Usually they are not explicitly stated to consumers so that they act under a free-fee illusion. Besides, in most countries there is a ban on rebates. However, a similar effect may be realized by *additionally offering costly services for free*, which pay only if there are repeated transactions in the future. This may hold even for extraordinary comprehensive information and counseling services as well as for particular good service. Although intermediaries who provide only low quality services can imitate this signal, it would not pay off for them. After consumers have learned about the low quality these intermediaries provide, they will not turn to them again. Besides, they will communicate this experience to other consumers. As a result, a low quality intermediary cannot reap the future benefits from costly initial investment, because disappointing customers' expectations about one's service quality may lead to the generation of "bad" reputation.

In addition, it may pay for high quality intermediaries *to specialize in customer segments* where demand is less elastic, consumers' willingness to pay is higher, and/ or customer relationships may last longer (Farny 2000, 389-399). Given these conditions, chances are

higher than the initial losses of investment in extra skills, advertising or services for a particular customer segment pay off in the future. A lower price elasticity of demand is given when there are fewer substitution goods. This may hold true for example for self-employed persons or small and medium sized companies. These consumers simultaneously demand both personal and commercial insurance. They require more tailor-made coverage and, thus, more complex intermediation services. Insurance intermediaries have to invest in additional human capital to competently inform about the respective insurance. For an optimal contract conclusion, consumers of this target group must provide more detailed information, both about their private and their business lives. Thus, a more personal relationship between intermediary and client develops. As a consequence longer-term customer relationships and a lower elasticity of demand of this market segment compared to the average demand elasticity result.

(6) Voluntary Property Liability Insurance

In contrast to the other signals discussed so far, voluntary property liability insurance by an intermediary is a default-contingent signal. The signal sent to potential customers works as follows. By currently spending more resources in form of the property liability insurance premiums, the intermediary acknowledges the possibility that his services may lack quality and, thus, may cause the client damage. He assures his customers that for such a case he has undertaken the necessary precautions to compensate them.⁴ Voluntary property liability insurance serves as a credible signal of an intermediary's commitment to high quality services, since in case of low-quality provision the intermediary must pay higher premiums for his liability insurance coverage. Consequently, intermediaries providing low quality services have no incentives to imitate this signal.

To summarize, the signals discussed above all can correctly signal high-quality services in the market of insurance intermediation, although to a different degree. Voluntary property liability insurance is a rather weak means, since it is accompanied by rather high transaction and enforcement costs. Certificates are in principle a clear-cut signal. However, if the organization issuing the certificate has no reputation for itself being credible, the problem for consumers in determining the quality of an intermediary is only shifted to determining the quality of a certificate. By contrast, reputation seems to be a more appropriate signal. Since it

⁴ However, liability rules must exist which impose on intermediaries' legal liability, if they violate certain duties. See Spence (1977).

is rather expensive to build up, the necessary investment pays only for intermediaries who regularly provide high-quality services. Similar to that are costly additional services which also pay only if there are long-term customer relationships. While the same holds true for spending on advertising and on other promotional activities, they seem to be only second-best substitutes compared to investment in reputation. Finally, being an insurance broker rather than an exclusive or independent agent seems to be the most clear-cut signal of providing high-quality information services.

4. Overview of the Empirical Literature on Signaling Information Service Quality

While there is a large theoretical literature on signaling, there are only rather few empirical studies in the industrial organization literature (for an overview Riley 2001, 451-458). They provide evidence that warranties and brand names (i.e. reputation) work as signals for high product quality, while advertising and price show only a statistically weak correlation to product quality. The same holds for the marketing literature (for an overview Kirmani and Rao 2000, 74-76). Besides, following the seminal article of Spence (1973), there are a number of empirical studies in labor economics. They find mixed evidence (at best) that qualification or formal training, for example, work as credible signals (Riley, 2001, 459-467).

So far, we are not aware of any studies explicitly testing signaling theory in the market for insurance intermediation services. However, the empirical literature on insurance intermediation supports the view that due to information asymmetries information service quality is generally rather low. For Germany, there are a number of *descriptive studies on the information and counselling quality of different types of insurance intermediaries* (Cap Gemini Ernst and Young 2002; Evers and Habschick 2000; Ökotest 2004). They mostly concern personal insurance lines, in particular, provision for old-age income. Typically, these surveys are scenario-based interviews where the participants are questioned by trained interviewees, who pretend to be customers interested in insurance purchase (so-called 'mystery shopping'). According to these studies, insurance intermediaries' information quality is usually rather low. However, there are differences among different types of intermediaries with insurance brokers usually showing better performance. Studies which analyze *ethical problems of insurance intermediaries in the US* point in the same direction (Howe et al. 1994; Eastman et al. 1996). Cooper and Frank (2002) and Cooper et al. (2003) find that both in the US life insurance business and in the US property-liability insurance business the main issues deemed relevant are false or misleading information about insurance

products, failure to correctly identify and recommend matching insurance products for consumers' needs, and lack of knowledge or skills on the side of the intermediaries.

Besides, there are a number of studies analyzing quality differences between different intermediary types. They are rather heterogeneous in the level of analysis (individual intermediaries vs. insurance companies which use different distribution channels). However, they point in the same direction, that is, that the more independent insurance intermediaries are from insurance companies, the higher their service quality. There are also some econometric papers that study the *service quality provided by single insurance intermediaries*. The findings of Etgar (1976) do not support the hypothesis that independent agents provide overall better service quality than exclusive agents. They are significantly more active in claims settlement than exclusive agents, but there is mixed evidence on their service quality regarding assistance in risk analysis and in placing insurance applications. Cummins and Weisbart (1977) obtain similar results in a study on nearly 700 insurance intermediaries, which operate in three different US states in personal insurance lines. Again, independent agents are found to provide better claims settlement services and to review coverage more often, while they provide less service quality than exclusive agents in other dimensions. Eckardt (2002) provides a study based on a sample of 927 German exclusive agents and insurance brokers, who are mainly engaged in personal lines. Mean differences parametric tests reveal a number of highly significant differences in both quantitative and qualitative variables. They indicate that insurance brokers provide better information services than exclusive or independent agents. Trigo Gamarra (2007) confirms these findings for the German market in a study based on 608 German insurance intermediaries, using different quality indicators.

There is a relatively large strand of literature which analyzes the *coexistence of different distribution systems* in insurance markets from an agency or transaction cost perspective (Berger et al. 1997; Regan and Tennyson 2000; Eckardt 2007, 156-158). These studies do not explicitly deal with the quality of the services provided by single insurance intermediaries, but concentrate on differences in the relative efficiency of insurance companies that use different distribution systems. They focus primarily on the US insurance market, in particular regarding property-liability insurance. The units of analysis are not insurance intermediaries, but insurance companies. These studies show some support for the hypothesis that firms employing independent agents provide better service quality than exclusive insurers (Berger et al. 1997).

Several studies use *complaint data to regulatory bodies* as an indicator for the service quality provided by insurance intermediaries. They test the hypothesis that the more complaints there are, the less an insurance policy sold lives up to customers' performance expectations. Consequently, the insurance intermediary, who had sold the respective insurance policy, has provided inadequate information and advice. Doerpinghaus (1991) finds no statistically significant differences between the complaint ratios of direct writers and of independent agent insurers. In contrast, Barrese et al. (1995), who use a larger data set and a more comprehensive model, find evidence that independent agent insurers receive fewer complaints and, thus, provide better service quality compared to direct writers. Nevertheless, with increasing firm size this service advantage erodes.⁵

All in all, the empirical literature on signaling and on the quality of insurance intermediation services indicates that the distribution channel (type of insurance intermediary), reputation and certificates might work as credible signals for high quality services, while there is either no or contradictory evidence for other signals.

5. Data, Variables and Estimation Methods

Data

To test whether signaling works in the market for insurance intermediation services, we use data from a survey among 4,687 self-employed German insurance intermediaries, which was carried out in autumn 2001 (see also Eckardt 2002). As there is no legal duty in Germany to register for insurance intermediaries, the total population is unknown. Thus, the addresses of the interviewees were randomly chosen from online directories and from the yellow pages. 927 insurance intermediaries answered the questionnaire, implying a response rate of 20%. Among the respondents 423 are self-employed exclusive insurance agents, 67 are independent insurance agents and 437 are insurance brokers. Data was collected about individual and firm characteristics of the interviewed insurance intermediaries, the services offered, the intermediation process and general market conditions.⁶

⁵ Wells and Stafford (1995) show that complaint ratios are a reliable proxy for consumer satisfaction with insurance companies and, thus, also for the service quality provided by different distribution systems.

⁶ As the pretest showed a very low willingness to answer questions to remuneration patterns, costs, turnovers, and profits, they were omitted from the survey.

Variables

Information services are intangible, so that their quality cannot be measured in an objective way. The dependent variable *information index* is an input-oriented summary indicator. It captures the weight that an insurance intermediary attaches to 27 subjects about a customer's need for insurance protection, insurance products and coverage, policy design and contract terms.⁷ For each item the interviewee is asked how much importance he or she gives to it in his counseling interviews. Answers are measured on a five-point Likert scale with 1 = *totally unimportant* to 5 = *very important*. Then, for each intermediary the mean value is calculated, after summing up all 27 items. Since participants may overstate their true service quality, there might be response bias. However, it can be reasonably assumed to occur similarly for all interviewees (Etgar 1976). As a consequence our focus is not on the values of the coefficient estimates reported in the regressions, but on their signs, which indicate whether the independent variables lead to an increase or to a decrease of the dependent variable. Besides there might also be selection bias in that only intermediaries providing better service quality answered the questionnaire. However, since the population is unknown, it is not possible to detect a potential selection bias in the data.

To test hypothesis 2 we use the *contract conclusion rate* as dependent variable, which is a proxy for market performance and economic success. It indicates the percentage of counselling interviews an intermediary conducts that on average result in consumers actually concluding an insurance contract. Besides we calculate the dichotomous dependent variables *information index-di* and *contract conclusion rate-di*, with the value 1 indicating above average information quality respectively an above average contract conclusion rate.

In the following we present the independent variables used to test our hypotheses. The variable *intermediary type* distinguishes between the distribution channels to which an interviewee belongs (*exclusive agents, independent agents, insurance brokers*). The German market for insurance intermediaries is widely unregulated (Mauntel 2004; Rehberg 2003, 178-215).⁸ There are no formal entry restrictions other than having a trading license. To get such a license from the Trade Supervisory Office (*Gewerbeaufsichtsamt*) requires only having a certificate issued by the police stating that the holder has no criminal record. No registration,

⁷ These items result inter alia from interviews with experts on consumer protection in personal insurance. For more details on the single items, see Eckardt (2007, 166-184).

⁸ With the implementation of the EU Directive on Insurance Mediation in June 2007 there will be stricter regulations also for German insurance intermediaries, see Schönleiter (2005).

financial skills or financial guarantees are mandatory. Conduct regulation is also very weak. Disclosure regulations are of a rather general nature as well. It is neither prescribed in detail what information has to be passed to consumers, nor in what form has this to be done. However, exclusive and independent agents differ from insurance brokers in regard to their legal responsibilities with respect to the kind and amount of information provided to consumers. For exclusive and independent agents the respective insurance companies are held responsible in case an agent provides false or misleading information about policy benefits, terms and conditions, dividends or premiums. To insurance brokers more strict liability rules in case of professional negligence apply, although professional indemnity insurance is not compulsory.⁹ Therefore, being an *insurance broker* can be seen as a signal of providing better information services than being an *exclusive agent* or *independent agent* (hypothesis 1). Since the distribution channel is easily identifiable for consumers, we also expect a higher contract conclusion rate for *insurance brokers* compared to *exclusive agents* or *independent agents* (hypothesis 2).

The pretest showed that insurance intermediaries nearly unanimously held *reputation* to be of relevance for signaling high quality services. Therefore, we dropped this item from our survey. Instead we asked what impact different activities have for acquiring a positive reputation. It may result from activities intrinsically related to the provision of high quality information services, like comprehensive information about social and tax law, insurance products, or about financial products other than insurance products to cover one's risks. Besides, also investment in more costly activities like in advertising, regular and frequent customer contacts, or qualification might contribute to positive reputation. Finally, also the use of 'soft skills' like reliable and kind service and empathy might have a positive effect on one's reputation. Therefore, we test for a number of activities, which all contribute to gaining high reputation, whether they are credible signals and whether they are easily identifiable by consumers, so that it pays for insurance intermediaries to spend the related costs. Accordingly those intermediaries who strongly rely on them should provide better information service quality (hypothesis 1) and realize a higher contract conclusion rate (hypotheses 2). For eleven activities the participants in the survey indicated how important they perceive them for building a good reputation. Each item is measured on a five-point Likert scale with

⁹ In the case of long-term personal insurance like old-age insurance, usually consumers can discover the true quality of the information services provided by an intermediary only after contract execution, that is sometimes only after decades. Given this long time span, litigating insurance agents or brokers in court will not prove successful, since usually there will not be enough evidence available anymore

1=unimportant to 5=very important. These activities refer to one of the following three groups: offering information, providing good service, or relying on advertising.¹⁰

Besides, the interviewees were asked to indicate on a list what other signals they use to see what market participants regard as credible and profitable signals. In regard to hypothesis 1 we expect that *customer specialization* and *specialization on a particular insurance company* do not correctly indicate high quality information services. Neither are they strongly linked to the provision of high quality information, nor are they likely to exhibit large sunk cost. In contrast to that, undertaking *advertising campaigns*, giving *professional lectures or seminars*, holding a *membership in a professional association*, having *qualification certificates*, providing *objective information and counseling* or *good service* are strongly linked to the provision of comprehensive information or exhibit large sunk costs. Thus, they should credibly signal high-quality information services (hypothesis 1), although to a decreasing degree.

However, in regard to hypothesis 2 – that is for signals to result in a higher contract conclusion rate and thus to be economically profitable – we assume that *good service* and *objective information and counseling* of an intermediary are not easily identifiable by uninformed consumers, although they are hypothesized to be credible signals. Accordingly, we expect that these signals have no positive impact on the contract conclusion rate. The same holds for *customer specialization* and *specialization on a particular insurance company*. Besides, since there are quite a number of different professional associations which are largely unknown to the broader public, also *membership in a professional association* should not work as an easily identifiable quality signal for consumers, thus not leading to a higher contract conclusion rate. In contrast to these signals, *professional lectures or seminars*, *qualification certificates* and *advertising campaigns* are effortlessly to spot, so that they should be associated with a higher contract conclusion rate. However, in regard to *advertising campaigns* we doubt that the typical consumer employs the sophisticated rationale behind it to work as a credible signal (i.e., sunk costs as a commitment to high quality services which pay off only if there are repeated transactions). Accordingly, we hypothesize that it has no positive impact on an intermediary's contract conclusion rate.

Finally, to control for consumers' level of knowledge, we also inquired about the knowledge of an intermediary's customers on their *risk profile*, on the opportunities available for *old-age*

¹⁰ A factor analysis revealed these three groups, for more details see Eckardt (2007, 174-175).

provisions and on the *(dis-)advantages of insurance products*. Each item is measured on a five-point Likert scale with 1=*very low* to 5=*very high* level of knowledge. Generally, the more knowledge consumers have about the relevant subjects, the higher the information quality of an intermediary is likely to be. Otherwise, customers will be dissatisfied and turn to another intermediary.

Above that, we also controlled for the intensity of customers' demand on the *information provision* and on *additional services for free*, since differences in the demand of different customers might also result in differences in the information quality provided among insurance intermediaries. Again, each item is measured on a five-point Likert scale with 1=*very low* to 5=*very high* demand.

Table 1 shows the definition and measurement of the variables, while Table 2 presents the main descriptive statistics. Table 3 summarizes the hypotheses to be tested, the independent variables and the expected relations.

Estimation Methods

Hypotheses 1 and 2 are tested by using both OLS and logit estimations. The OLS estimations show whether the use of a particular signaling instrument leads to an increase in the value of the dependent variable (in information quality provided and/ or the contract conclusion rate). For the dependent variables *information index* and *contract conclusion rate* we perform linear OLS estimations. For the contract conclusion rate as dependent variable we apply a logistic function to account for the fact that it can range from 0% to 100% (Cooper/ Nakanishi 1988).

To test for the robustness of our OLS specifications, we also perform logit estimations. In contrast to the OLS estimations, the logit estimations indicate the probability of intermediaries providing above average information quality or realizing above average contract conclusion rates when using a particular signaling instrument. For this we use the dichotomous variables *information index-di* and *contract conclusion rate-di*.

To see whether the explanatory variables are interdependent, we proceed sequentially and observe coefficient reactions to additionally included groups of variables when using OLS (see table 2). All in all, we perform three specifications for each hypothesis. Specification I tests for the impact of the intermediary type and of reputational activities on the information service quality and on the contract conclusion rate, while specification II tests for the impact of other signaling instruments in addition to the intermediary type. Specification III also controls for consumers' knowledge and demand besides including all other signaling

variables.¹¹ The results, which are shown in Table 4 and 5, are discussed in the following section.¹²

Table 1: Definition and Measurement of Variables

Variable	Explanation and Measurement
Dependent Variables	
Information index	Continuous variable measuring the mean value of 27 items about the importance attached to different aspects in counseling interviews by the intermediary ranging from <i>1 = very low quality ... 5 = very high quality</i>
Information index-di	Dichotomous variable based on the information index variable measuring the information quality with <i>1=above-average information quality, 0= (below-) average information quality</i>
Contract conclusion rate	Continuous variable measuring the proportion of the average number of counseling interviews on all interviews that lead to contract conclusion
Contract conclusion rate-di	Dichotomous variable measuring economic performance with <i>1=above-average contract conclusion rate, 0= (below-)average contract conclusion rate</i>
Independent Variables	
Intermediary type	Set of dummy variables with <i>1 = intermediary type, 0 = other:</i> exclusive agent; independent agent; insurance broker reference class: insurance broker
Reputational activities	11 ordinal variables indicating the weight intermediaries attach to certain activities for gaining high reputation on a five-point Likert scale with <i>1 = no weight ... 5 = very high weight:</i> objective information on products; information on more favorable alternatives; product quality; qualification; regular information about tax law and social law; reliable and kind service; empathy; reliable and quick claims settlement; frequent and regular customer contacts; advertising efforts; reputation of the insurance company;
Other signaling instruments	8 dummy variables with <i>1 = signaling instrument is used, 0 = not used:</i> advertising campaigns; professional lectures and seminars; membership in a professional association; qualification certificates; objective information and counseling; good service; customer specialization; specialization on an insurance company
Customers' knowledge	3 ordinal variables indicating customers' knowledge on a five-point Likert scale with <i>1 = very bad knowledge ... 5 = very good knowledge:</i> risk profile; old-age protection provisions; (dis-)advantages of insurance products
Customers' demand	2 ordinal variables measuring consumers' demand on a five-point Likert scale with <i>1 = more modest ... 5 = more demanding about:</i> information provision; additional services for free

¹¹ Despite a large number of explanatory variables we find no evidence for multicollinearity in our data set.

¹² For specification I the results of our estimations are given by equations 1, 4, 7, 10, for specification II by equations 2, 5, 8, 11 and for specification III by equations 3, 6, 9, 12.

Table 2: Main Descriptive Statistics for Selected Variables

	Mean	Median	Minimum	Maximum
Information index	3.70	3.70	1.41	5.00
Information index-di	0.48	0.00	0.00	1.00
Contract conclusion rate	0.64	0.70	0.05	1.00
Contract conclusion rate-di	0.45	0.00	0.00	1.00
Intermediary type				
Exclusive insurance agent	0.45	0.00	0.00	1.00
Independent insurance agent	0.07	0.00	0.00	1.00
Insurance broker	0.47	0.00	0.00	1.00
Reputation				
Objective information on products	4.23	4.00	1.00	5.00
Information on more favorable alternatives	3.85	4.00	1.00	5.00
Product quality	4.29	4.00	1.00	5.00
Qualification	4.10	4.00	1.00	5.00
Regular Information about tax law and social law	3.22	3.00	1.00	5.00
Reliable and kind service	4.60	5.00	1.00	5.00
Empathy	4.46	5.00	1.00	5.00
Reliable and quick claims settlement	4.53	5.00	1.00	5.00
Frequent and regular customer contacts	3.85	4.00	1.00	5.00
Advertising efforts	2.37	2.00	1.00	5.00
Reputation of an insurance company	3.48	4.00	1.00	5.00
Signaling Instruments				
Advertising campaigns	0.05	0.00	0.00	1.00
Professional lectures or seminars	0.28	0.00	0.00	1.00
Membership in a professional association	0.77	0.00	0.00	1.00
Qualification certificates	0.95	1.00	0.00	1.00
Objective information and counseling	0.89	1.00	0.00	1.00
Good service	0.88	1.00	0.00	1.00
Customer specialization	0.25	0.00	0.00	1.00
Specialization on an insurance company	0.09	0.00	0.00	1.00
Customers' knowledge				
Risk profile	2.63	3.00	1.00	5.00
Old-age provisions	2.74	3.00	1.00	5.00
(dis-)advantages of insurance products	2.31	2.00	1.00	5.00
Customers' demand				
Information provision	4.02	4.00	1.00	5.00
Additional services for free	3.75	4.00	1.00	5.00

Table 3: Hypotheses, Independent Variables and Expected Relations

	Hypothesis 1: Intermediaries who use credible signals provide better (or above average) information service quality.	Hypothesis 2: Intermediaries who use easily identifiable credible signals realize a higher (or above average) contract conclusion rate.
Independent Variables	Dependent Variable and Expected Sign	
	Information Index(-di)	Contract Conclusion Rate(-di)
Intermediary type		
Insurance broker	+	+
Exclusive agent	-	-
Independent agent	-	-
Reputational Activities		
Objective information on products	+	+
Information on more favorable alternatives	+	+
Product quality	+	+
Qualification	+	+
Regular Information about tax law and social law	+	+
Reliable and kind service	+	+
Empathy	+	+
Reliable and quick claims settlement	+	+
Frequent and regular customer contacts	+	+
Advertising efforts	+	+
Reputation of an insurance company	+	+
Other signaling instruments		
Advertising campaigns	+	0
Professional lectures or seminars	+	+
Membership in a professional association	+	0
Qualification certificates	+	+
Objective information and counseling	+	0
Good service	+	0
Customer specialization	0	0
Specialization on an insurance company	0	0

6. Regression Results and Discussion

OLS Estimations

In the following, we firstly discuss the estimation results for the intermediary type, then for reputational activities, before we turn to the impact of other signals used by intermediaries. Finally, we discuss the impact of consumers' knowledge and demand.

As reasoned above, our findings confirm that the intermediary type is a clear-cut signal of the information service quality provided by an intermediary. Our estimation results give evidence that insurance brokers provide significantly better information quality than exclusive or independent agents. Like hypothesized, this also results in a significantly higher contract conclusion rate for insurance brokers. These results hold over all three specifications in equations 1 to 6.

When looking at activities to gain good reputation, in both equations 1 and 3 the same variables have significant coefficient estimates with the same signs, so that these results are quite robust. According to these estimates the following activities are in accordance with hypothesis 1. If intermediaries provide objective information on insurance products, if they provide information on more favorable alternatives or regular information about tax and social law, if they offer insurance products of high quality, provide reliable and kind service as well as reliable and quick claims settlement and show empathy, then they also provide significantly better information quality. However, in contrast to hypothesis 2 nearly none of these activities has a significantly positive impact on the contract conclusion rate (equations 4 and 6). Only relying on reliable and kind service and showing empathy as well as relying on high quality insurance products increases significantly an intermediary's contract conclusion rate. This is in line with anecdotal evidence that these factors are most important for the economic performance of insurance intermediaries. Quite in contrast to both hypotheses 1 and 2 is the finding that relying on advertising efforts or on the reputation of the insurance company, the products of which an intermediary distributes, has a significantly negative impact on the contract conclusion rate, while showing no significant impact on the information quality provided.

Equation 2 shows the results of specification II that is, testing only for intermediary type and other signaling instruments. Compared to equation 1, the overall quality of our regression for the information quality provided strongly decreases by nearly 32 percentage points. The same holds for the contract conclusion rate, albeit the adjusted R^2 in equation 5 decreases only by

around 4 percentage points compared to equation 4. Thus, our results confirm that reputational activities are more important than all other means to credibly signal high information service quality.

When looking at the estimates for the various signals tested, we find that qualification certificates as well as objective information and counseling, which both show a significantly positive impact on the information quality provided, and customer specialization and specialization on an insurance company, which are of no significant impact, are in line with hypothesis 1. This finding is also confirmed when we control for consumers' knowledge and demand in equation 3. However, it holds not for professional lectures or seminars and good service, since they have a significantly positive estimate only as long as not controlling for consumers' knowledge and demand. Contrary to hypothesis 1 the coefficient estimates for advertising campaigns and for membership in a professional association show no significantly positive coefficient estimates. Being member of a professional association even has a significantly negative impact when controlling for consumers' knowledge and demand.

With most of the signaling instruments tested having no significantly positive coefficient estimates in equations 5 and 6, hypothesis 2 is widely confirmed. As we have reasoned, most signals are not easily identifiable by consumers so that they do not result in a higher contract conclusion rate. The only exception is to give public lectures or seminars, which shows a significantly positive coefficient estimate and, thus, is in accordance with hypothesis 2. Again, contrary to hypothesis 2 is the finding that being member of a professional association significantly decreases the contract conclusion rate.

When controlling for customers' knowledge in equations 3 and 6, we find that higher knowledge of customers on their own risk profile and on the (dis-)advantages of insurance products has a significantly positive impact on an intermediary's information service quality. However, it does not significantly improve the contract conclusion rate. Only for intermediaries, whose consumers have a good knowledge on alternative options of old-age provisions, the coefficient estimate of the contract conclusion rate is significantly positive. In regard to consumers' demand, we find that only higher demand for additional services for free has a significantly positive effect on intermediaries' service quality. However, demand does not have a significant impact on the contract conclusion rate.

Table 4: Regression Results OLS

^a Dependent variable: *information index*; ^b Dependent variable: $\log(\text{contract conclusion rate}/(1 - \text{contract conclusion rate}))$; (*t*-values in parentheses)

Dependent Variable	Information Index ^a			Contract conclusion rate ^b		
	Eq.1	Eq.2	Eq.3	Eq.4	Eq.5	Eq.6
Constant	1.108*** (7.000)	3.410*** (34.870)	0.690*** (3.728)	-0.881** (-2.092)	0.957*** (3.986)	-1.019* (-1.953)
Intermediary type						
Exclusive agent	-0.224*** (-6.374)	-0.206*** (-5.409)	-0.245*** (-6.774)	-0.755*** (-7.812)	-0.721*** (-8.105)	-0.701*** (-6.845)
Independent agent	-0.124** (-2.190)	-0.081 (-1.163)	-0.136** (-2.503)	-0.390** (-2.401)	-0.453*** (-2.781)	-0.391** (-2.313)
Reputational Activities						
Objective information on products	0.119*** (5.511)		0.107*** (4.849)	0.061 (1.037)		0.066 (1.105)
Information on more favorable alternatives	0.121*** (6.392)		0.122*** (6.516)	-0.010 (-0.194)		-0.023 (-0.443)
Product quality	0.057*** (2.587)		0.049** (2.199)	0.102 (1.608)		0.135** (2.077)
Qualification	0.008 (0.427)		0.001 (0.076)	0.050 (0.972)		0.035 (0.657)
Regular Information about tax law and social law	0.115*** (5.806)		0.099*** (4.816)	-0.008 (-0.165)		-0.035 (-0.648)
Reliable and kind service	0.055** (2.166)		0.047* (1.750)	0.148* (1.941)		0.195** (2.448)
Empathy	0.073*** (3.273)		0.082*** (3.487)	0.173*** (2.750)		0.172*** (2.616)
Reliable and quick claims Settlement	0.099*** (3.244)		0.096*** (3.102)	0.088 (1.224)		0.094 (1.282)
Frequent and regular customer contacts	-0.008 (-0.416)		0.000 (-0.009)	-0.022 (-0.414)		-0.020 (-0.363)
Advertising efforts	0.006 (0.325)		0.000 (0.027)	-0.116** (-2.417)		-0.114** (-2.270)
Reputation of an insurance company	0.024 (1.399)		0.019 (1.087)	-0.096** (-2.099)		-0.096** (-2.033)

*, **, *** 10%, 5 % and 1% level of significance

Table 4: cont.

Dependent Variable	Information Index ^a			Contract conclusion rate ^b		
	Eq.1	Eq.2	Eq.3	Eq.4	Eq.5	Eq.6
Other signaling instruments						
Advertising campaigns		0.005 (0.053)	0.011 (0.156)		-0.200 (-1.029)	-0.111 (-0.561)
Professional lectures or seminars		0.106*** (2.685)	0.022 (0.639)		0.246*** (2.698)	0.273*** (2.860)
Membership in a professional association		-0.053 (-1.279)	-0.057* (-1.662)		-0.163 (-1.636)	-0.232** (-2.271)
Qualification certificates		0.158** (2.053)	0.149** (2.224)		0.140 (0.734)	0.036 (0.179)
Objective information and counselling		0.207*** (3.697)	0.093* (1.804)		0.154 (1.190)	0.089 (0.656)
Good service		0.107** (1.978)	-0.010 (-0.199)		-0.022 (-0.176)	-0.057 (-0.429)
Customer specialization		-0.033 (-0.809)	-0.042 (-1.257)		-0.111 (-1.137)	-0.119 (-1.180)
Specialization on an insurance company		-0.031 (-0.499)	0.012 (0.220)		0.001 (0.010)	-0.054 (-0.359)
Costumers' knowledge						
Risk profile			0.036* (1.646)			0.028 (0.451)
Old-age provisions			-0.022 (-0.978)			0.159** (2.431)
(dis-) advantages of insurance products			0.043** (2.117)			-0.050 (-0.859)
Customers' demand						
Information provision			0.033 (1.328)			-0.081 (-1.303)
Additional services for free			0.042** (2.237)			-0.023 (-0.469)
N	848	889	827	767	805	749
F-Statistics	40.863***	6.860***	21.859***	10.007***	9.439***	5.915***
adj R²	0.379	0.062	0.396	0.132	0.095	0.146

*, **, *** 10%, 5 % and 1% level of significance

Logit Estimations

To test for the robustness of our results we also performed logit estimations for the three specifications tested above. The OLS estimations in equations 1 to 6 analyzed whether a specific signaling instrument had a significant impact on the dependent variables. In contrast to that, the logit estimations of equation 7 to 12 in Table 5 in the Appendix show whether the use of a specific signal results in the provision of above average information quality or in an above-average contract conclusion rate. The results of our logit estimations are mostly in line with those of our OLS estimations thus confirming their robustness. In particular, again for specification I, which is tested in equation 7, the overall quality of our regression is by nearly 16 percentage points better than for specification II, which is tested in equation 8. It confirms that reputational activities are the most important means of signaling above average information quality.

Equations 7 to 12 show that also when performing logit estimations the intermediary type significantly influences both the probability of providing above average information service quality as well as realizing an above average contract conclusion rate. In regard to the probability of providing above-average information quality, equations 7 and 9 show the same results as the OLS estimations in equations 1 and 3. Contrary are only the findings in equations 10 and 12 that reliable and kind service has no significantly positive effect and relying on the reputation of an insurance company has no significantly negative effect on the probability of an intermediary to realize an above average contract conclusion rate.

When including other signaling instruments in equation 8, we find that only objective information and counseling significantly increases the probability that an intermediary provides above-average information quality. Besides, customer specialization shows significantly negative coefficient estimates in equations 8 and 9. Finally, equation 11 shows that, in contrast to the OLS findings, objective information and counseling significantly increases the probability to realize an above-average contract conclusion rate, while advertising campaigns show a significantly negative impact. All other coefficient estimates are in line with the findings of the OLS estimations.

Also when controlling for customers' knowledge the findings of the OLS estimations are confirmed. Contrary to the OLS estimates is only the finding in equation 9 that there is a significantly positive coefficient estimate only for customers with a high demand for information provision, but not for customers with a high demand for additional services for free.

Table 5: Regression Results logit

^a Dependent variable: *information index-di*; ^b Dependent variable: *contract conclusion rate-di*; (z-statistics in parentheses)

Dependent Variable	Information Index-di ^a			Contract conclusion rate-di ^b		
	Eq.7	Eq.8	Eq.9	Eq.10	Eq.11	Eq.12
Constant	-10.276*** (-9.563)	-0.618 (-1.553)	-12.831*** (-9.351)	-2.048** (-1.967)	0.047 (0.109)	-2.416** (-1.946)
Intermediary type						
Exclusive agent	-1.107*** (-5.561)	-0.781*** (-5.103)	-1.351*** (-6.135)	-1.285*** (-6.913)	-1.187*** (-7.258)	-1.153*** (-5.853)
Independent agent	-0.426 (1.441)	-0.280 (-1.020)	-0.566* (-1.817)	-0.581** (-1.976)	-0.614** (-2.113)	-0.498 (-1.610)
Reputational Activities						
Objective information on products	0.226* (1.900)		0.163 (1.295)	-0.027 (-0.231)		-0.011 (-0.087)
Information on more favorable alternatives	0.522*** (4.912)		0.552*** (5.045)	0.115 (1.170)		0.088 (0.867)
Product quality	0.277** (2.175)		0.243* (1.858)	0.183 (1.455)		0.249* (1.859)
Qualification	0.066 (0.647)		0.040 (0.366)	0.115 (1.091)		0.085 (0.774)
Regular information about tax law and social law	0.483*** (4.708)		0.453*** (4.141)	0.007 (0.063)		-0.057 (-0.496)
Reliable and kind service	0.244* (1.659)		0.208 (1.324)	0.085 (0.566)		0.199 (1.220)
Empathy	0.228* (1.888)		0.269** (2.107)	0.313** (2.423)		0.299** (2.184)
Reliable and quick claims settlement	0.410*** (2.823)		0.398*** (2.648)	0.105 (0.755)		0.145 (1.024)
Frequent and regular customer contacts	0.114 (1.052)		0.177 (1.517)	-0.142 (-1.405)		-0.142 (-1.338)
Advertising efforts	-0.052 (-0.522)		-0.067 (-0.609)	-0.235*** (-2.556)		-0.206** (-2.124)
Reputation of the insurance company	0.109 (1.198)		0.109 (1.139)	-0.088 (-0.988)		-0.091 (-0.993)

*, **, *** 10%, 5 % and 1% level of significance

Table 5: cont.

Dependent Variable	Information Index-di ^a			Contract conclusion rate-di ^b		
	Eq.7	Eq.8	Eq.9	Eq.10	Eq.11	Eq.12
Other signaling instruments						
Advertising campaigns		-0.201 (-0.579)	-0.309 (-0.674)		-0.694* (-1.752)	-0.512 (-1.333)
Professional lectures or seminars		0.238 (1.511)	-0.026 (-0.133)		0.463*** (2.723)	0.550*** (2.915)
Membership in a professional association		-0.101 (-0.603)	-0.160 (-0.843)		-0.294 (-1.608)	-0.414** (-2.122)
Qualification certificates		0.301 (0.969)	0.416 (1.074)		0.237 (0.693)	-0.013 (-0.035)
Objective information and counselling		0.561** (2.418)	0.307 (1.072)		0.441* (1.767)	0.0372 (1.355)
Good service		0.288 (1.336)	-0.123 (-0.434)		-0.176 (-0.768)	-0.200 (-0.761)
Customer specialization		-0.290* (1.743)	-0.344* (-1.750)		0.005 (0.027)	-0.033 (-0.173)
Specialization on an insurance company		-0.086 (-0.340)	0.054 (0.182)		0.229 (0.842)	0.102 (0.375)
Costumers' knowledge						
Risk profile			0.173 (1.352)			0.048 (0.400)
Old-age provisions			-0.080 (-0.608)			0.212* (1.707)
(dis-) advantages of insurance products			0.278** (2.302)			-0.072 (-0.635)
Customers' demand						
Information provision			0.330*** (2.625)			-0.163 (-1.307)
Additional services for free			0.125 (1.279)			-0.047 (-0.483)
N	848	889	827	775	814	757
LR-statistic	225.595***	44.086***	252.404***	105.692***	89.902***	123.784***
Mc Fadden R²	0.192	0.036	0.220	0.100	0.080	0.120

*, **, *** 10%, 5 % and 1% level of significance

7. Conclusions

The main objective of this paper was to analyze whether signaling works in the market for insurance intermediaries' information services. As possible quality signals, we investigated the type of intermediary, the strategies to gain reputation as well as a number of other activities to signal high quality information services.

According to our empirical findings, consumers can more reliably assume to be provided with high quality information services, if they turn to insurance brokers rather than to exclusive or independent agents. The same holds if an intermediary provides good service, objective information and counseling, uses his or her qualification level as a signal and gives public lectures or seminars. In addition, the following activities to gain a good reputation seem to work as signals of high information quality: provision of high product quality, objective information on products, regular information about tax and social law, information on more favorable alternatives, reliable and quick claims settlement, reliable and kind service as well as empathy.

However, our data show that, from the perspective of the intermediary, only few instruments or strategies are appropriate means to increase the contract conclusion rate and thus economic success: acting as an insurance broker, giving public lectures and seminars, and gaining reputation by reliable product quality, by empathy and by reliable and kind service. Together with the evidence on information quality, these findings imply that consumers have severe difficulties in easily identifying what signals are credible. Therefore they are not capable to distinguish between high and low quality intermediaries. In these cases, no separating equilibrium will result.

All in all, thus, our empirical evidence supports the reasoning that signaling theory, while assuming that consumers are not able to correctly distinguish between high and low quality products and services, makes too strong claims when it comes to consumers' ability to identify the economic rationale behind signals used by high quality firms. Accordingly, signaling theory needs to pay more attention to the cognitive constraints of consumers, not only when it comes to assessing the quality of the goods offered, but also when it comes to identifying credible signals sent by intermediaries.

In addition, our findings show evidence that market forces alone are only a weak mechanism to mitigate the informational asymmetries in the market for information services. Public policy regulation of entry as well as of conduct and disclosure are possible means to alleviate

the resulting problems of adverse selection and moral hazard. However, more research is necessary on appropriate public policy regulations to avoid unintended negative side-effects.¹³ With the insurance intermediation directive issued by the EU in 2005 to strengthen consumer protection, over the coming years more evidence should be available to evaluate the effects of public policy regulation for insurance intermediation services.

Besides, our findings indicate that investment in the financial literacy of consumers might significantly increase the quality of the information services provided. The more knowledge consumers have on insurance relevant matters, the better service quality intermediaries must provide to gain potential customers. Again, there has still much further research to be done on appropriate public policies of how to increase consumers' financial literacy (Braunstein and Welch 2002).

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¹³ See for example the negative experiences made in the UK with the so-called polarisation, according to which the distribution of insurance was strictly regulated according to type of intermediary. Introduced in 1986, it was abolished in 2002, because it showed large negative side-effects (FSA 2002, 2003).

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