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## The quality of insurance intermediary services: An analysis of conduct and performance in the German market of insurance intermediation

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**Thünen-Series of Applied Economic Theory**

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Working Paper No. 58

**The Quality of Insurance Intermediary Services – An Analysis  
of Conduct and Performance in the German Market of Insurance  
Intermediation**

von

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# **The Quality of Insurance Intermediary Services – An Analysis of Conduct and Performance in the German Market of Insurance Intermediation**

Martina Eckardt\*

## ***Abstract***

*Based on a sample of 946 German insurance intermediaries, the factors that affect the quality of the information services provided by them are studied using OLS-estimations. Applying a search theoretical approach, we analyze the impact of supply and demand side variables on service quality. Besides, the working of signaling devices (like reputation, advertising or certificates) to reduce asymmetric information with respect to the service quality of insurance intermediaries is examined. The results obtained support the main hypotheses derived from industrial organization theories as to the poor working of quality competition under incomplete and asymmetric information on the side of consumers. Thus, public policy should concentrate on increasing transparency about intermediaries' (in-)dependence from insurance companies and improve consumers' financial literacy to raise the overall quality of the information services provided by insurance intermediaries.*

*Keywords: Performance of Insurance Distribution Systems, Information Quality*

*JEL-Classifications: D83, G 22, L 15*

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## 1. Introduction

Adequate private insurance becomes more important for consumers even in countries like Germany with comprehensive social protection systems: This is due to the demographic changes ahead, reductions in public insurance coverage and de-regulation of insurance markets. To obtain the best insurance protection available given ones needs and preferences, consumers must make well-informed purchase decisions. Insurance intermediaries can help them to economize on information and transaction costs by providing comprehensive information on insurance-related issues. These tend to be high for such complex goods due to incomplete and asymmetric information on consumers' side.<sup>1</sup>

However, the market for insurance mediation is itself characterized by incomplete and asymmetric information about the quality of the services provided by insurance agents and brokers. Again and again, there are concerns about malpractices of insurance intermediaries which may induce consumers to buy inadequate insurance coverage. This raises the question as to the proper regulation of insurance intermediaries from a consumers' protection point of view.<sup>2</sup> Therefore, the objective of this paper is to provide more profound insights into the factors that influence conduct and performance in markets for insurance intermediation. In particular, we are interested in the factors that affect the quality of the information services provided by insurance intermediaries.

In the following, *section 2* gives a short overview of the related empirical literature. The hypotheses to be tested are stated in *section 3*, while *section 4* describes the data used and the methodology applied. The econometric results are presented and discussed in *section 5*. *Section 6* concludes.

## 2. Overview of the Empirical Literature

There is only a small strand of empirical literature which explicitly studies market conduct and performance of insurance intermediaries.<sup>3</sup> There are some rather descriptive studies which analyze *ethical problems of insurance intermediaries in the US*. Based on a survey in

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<sup>1</sup> There is a vast literature that deals with the problems resulting from asymmetric information on the side of insurance companies, see for example Dionne/ Doherty/ Fombaron (2000).

<sup>2</sup> After years of discussion, in 2002 the EU finally passed a directive on insurance mediation which should have been implemented by the member states by 2005. However, so far not all countries have done that.

<sup>3</sup> See Regan/ Tennyson (2000) and Eckardt (2005, 147-154) for a more detailed account.

which intermediaries and other insurance professionals are asked what ethical dilemmas they face or what they hold relevant for their profession, Cooper/Frank (2002) find that 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. High competitive pressure both to the intermediaries and to insurance companies is seen as a major factor, which prevents ethical behavior. This is in line with similar surveys by Howe/Hoffman/ Hardigree (1994) and Eastman/ Eastman/ Eastman (1996).

Although these studies may be burdened with non-response and social desirability bias, their results are in accordance with the findings of *'mystery shopping' interviews carried out in Germany on the information and counseling quality* of different types of insurance intermediaries (Cap Gemini Ernst & Young 2002; Evers/ Habschick 2000; Ökotest 2004). They mostly concern personal insurance lines, in particular provision for old-age income. They show that most intermediaries fall short of attaining the benchmarks which are set in advance of the scenario-based interviews. However, insurance brokers usually show better performance than exclusive agents.

Doerpinghaus (1991) and Barrese/ Doerpinghaus/ Nelson (1995) use *complaint data to regulatory bodies* as an indicator for the service quality provided by insurers with different distribution systems. They test the hypothesis that better consumer service should lead to lower complaint ratios for direct writers and independent insurers. While Doerpinghaus (1991) finds no statistically significant impact of different distribution systems, Barrese/ Doerpinghaus/ Nelson (1995) find some evidence for this hypothesis for independent insurers.

There are also a few *econometric studies that analyze more comprehensively the services provided by insurance intermediaries*. The findings of Etgar (1976) do not support the hypothesis that independent agents provide overall better service quality than exclusive agents. However, 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/ 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 860 German exclusive agents and insurance brokers, who are mainly engaged in personal lines. Mean differ-

ences parametric tests reveal a number of highly significant differences in both quantitative and qualitative variables. For example, insurance brokers devote a significantly larger share of their total time budget to information acquisition and processing, while exclusive agents spend more time with counseling interviews. However, in absolute terms counseling interviews of insurance brokers take significantly longer. Besides, in counseling interviews insurance brokers put significantly more weight on information about products for risk provision and on contract design as well as on product design. Overall, they realize a significantly higher contract conclusion rate and experience significantly less competitive pressure than exclusive agents. There are no significant differences in the share of the time budget spent on claims settlement. Exclusive agents even put significantly more weight on informing their customers about claims settlement issues than insurance brokers. This is in contrast to the findings of Etgar (1976) and Cummins/ Weisbart (1977). However, these studies use a more detailed qualitative specification to measure engagement in claims settlement services than the time share spent on it. Therefore, it may well be the case that independent agents and brokers are simply more productive in claims settlement services than exclusive agents.

Studies that analyze the *impact of compensation schemes* on the information provision of intermediaries do not support the hypothesis that outcome-oriented compensation schemes have a negative impact on information provision about unfavorable product characteristics (Kurland 1995, 1996; Cupach/ Carson 2002; Zweifel/ Ghermi 1990; Laslett/ Wilsdon/ Malcolm 2002; Cummins/ Doherty 2005).

The vast majority of empirical studies concentrates on *differences in the relative efficiency of insurance companies that use different distribution systems* (Berger/ Cummins/ Weiss 1997). The unit of analysis are not the insurance intermediaries, but insurance companies. The impact of exclusive versus independent intermediaries on insurance companies' performance is analyzed by including a dummy variable which accounts for the main distribution system used. Therefore, these studies do not allow any statements about quality differences between single intermediaries. Moreover, they are not concerned with market behavior and performance of intermediary firms. However, they provide a lot of arguments that attempt to explain the persistence of different distribution systems due to differences in the services provided by either direct writers or independent insurers. For example, independent agents seem to be better suited for tailoring insurance coverage to consumers' needs than exclusive agent and for mitigating agency problems between shareholders and policyholders which result from organ-

izational form.<sup>4</sup> There is also evidence for the US market that independent agents are less beneficial for larger insurance firms and larger market size and for those in which long-term relations are valued and relation-specific investment is more important (for example Berger/ Cummins/ Weiss 1997; Hosely 1996; John/ Weitz 1989; Regan/Tennyson 1996, 2000; Regan 1997; Regan/Tzeng 1999).

To summarize, empirical studies which analyze the co-existence of different distribution systems provide a lot of arguments that attempt to explain their persistence. However, they focus primarily on the US insurance market, in particular for property-liability insurance. To what degree these findings can be generalized remains an open question until more empirical research for different countries and different lines of insurance is available. Nevertheless, empirical evidence suggests that different distribution systems provide different services with respect to shareholders, insurance companies and policyholders. This is in line with the few econometric studies, which explicitly use insurance intermediaries as the unit of analysis. Many of the studies, which analyze intermediaries' service provision, are descriptive in nature and/ or focus on a rather narrow set of behavior. We are not aware of any comprehensive industrial organization studies. In particular, detailed empirical analyses of the determinants which influence the information services provided by insurance intermediaries on market conduct and performance are missing.

### 3. Hypotheses to be tested

In insurance markets, intermediaries act as match-makers (Eckardt 2005, 1-20). They coordinate supply and demand by providing information and advisory services, bargaining services and administrative services. Since information is essential for all services that intermediaries offer in the different stages of an insurance transaction, we concentrate on the quality of their information services in the following empirical analysis (*figure 1*).

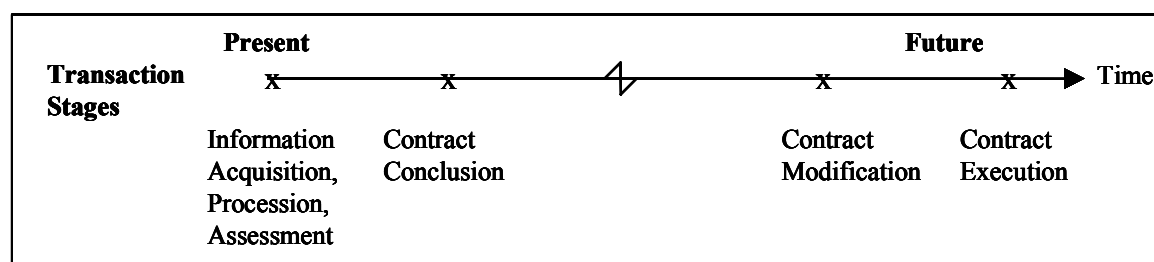
Information services are intangible, so that their quality cannot be measured in an objective way. Therefore, we use two indicators to measure the performance of insurance intermediaries.<sup>5</sup> The first one is an input-oriented information index which refers to the content of the information services provided. The second one is the average contract conclusion rate as a

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<sup>4</sup> Note, however, that the findings show just the contrary when comparing the dominant distribution systems for stock companies and mutuals in the US respectively in the UK (Baranoff/ Sager 2003; Kim/ Mayers/ Smith 1996; Mayer/ Smith 1981 for the US and Ward 2003 for the UK).

<sup>5</sup> For details see *section 4* below.

more subjective output-oriented indicator being also a proxy for insurance intermediaries' economic success. Market outcomes result from the efforts spent on the supply side to produce high quality information services, but also from demand side variables. Besides, it is also influenced by competitive activities of the intermediaries who have to take into account the particularities of markets for information services (mainly incomplete and asymmetric information on consumers' side). Therefore, we derive a number of hypotheses which concern the supply side, the demand side and competition under asymmetric information.



- |                          |   |  |
|--------------------------|---|--|
| <b>Information about</b> | <ul style="list-style-type: none"> <li>• individual need for old-age security (incl. risk profile)</li> <li>• products for risk provision</li> <li>• insurance product variants</li> <li>• product design</li> <li>• contract design</li> </ul> | <ul style="list-style-type: none"> <li>• loss settlement, policy participation</li> <li>• contract modification and termination</li> </ul> |
|--------------------------|---|--|

**Figure 1:** Relevant Information in the Transaction Stages

### Supply Side Hypotheses

Hypotheses about the production of information services by insurance intermediaries are derived from a search theoretic model.<sup>6</sup> According to it, consumers can either personally search for information about insurance relevant topics or turn to insurance intermediaries who sell such information. It can be shown that a consumer's 'make-or-buy'- decision on information search is a function of her willingness to pay, the minimum quality level guaranteed by an insurance intermediary and the fee charged for it. For an intermediary to find the profit-maximizing quality and fee of his services, he has to take into account consumers' make-or-buy decision which affects the size of the market and the costs associated with producing a certain level of information service quality. These costs mainly depend on the search technology applied.

Insurance intermediaries spend time and resources to gather, process and assess information relevant for consumers. Search for information about insurance products requires first and

<sup>6</sup> For a detailed formal analysis see Eckardt (2005, 45-92); Rose (1999).



foremost time and human capital. That is, an intermediary must know what information to search for, where to find it and how to process it, so that it becomes relevant for a specific customer. Generally, *hypothesis 1* states that the information quality provided by an intermediary is the higher, the more effort is spent to produce it. More precisely, it is contended that the higher investment in human capital is and the more time is spent on searching and processing information and on counseling customers, the higher is the information quality provided.

*Hypothesis 2* takes into account that the underlying information distribution from which an intermediary gains his information also influences the quality of the information services. The more the sources to which an intermediary has access contain relevant information, the lower are the costs of producing a certain quality level. Accordingly, *hypothesis 2* states that the better the information sources are, the higher is the information quality provided.

The quality of the information services also depends on the content of the information provided in counseling interviews. Thus, according to *hypothesis 3* the more information about relevant subjects is provided, the higher the information quality is.

Division of labor and specialization can also positively influence the information quality since they reduce search costs for producing a particular quality level of information services. Depending on firm size and structure it is assumed that the higher the number of employees are and the higher the number of agents or brokers employed by an insurance intermediary are, the more each intermediary can specialize on his original tasks and, thus, realize gains from specialization and division of labor. Besides, there might be positive spill-overs due to information sharing among the intermediaries of the same firm. Accordingly, *hypothesis 4* states that larger insurance intermediary firms or a larger number of intermediaries provide better information quality.

Besides, insurance companies try to induce intermediaries by vertical restraints as well as through their compensation schemes to distribute mainly their products, no matter whether these are the best matching ones for a particular customer (Eckardt 2005, 127-136; Katz 1989; Perry 1989; Zeithaml/ Bitner 2003). Thus, *hypothesis 5* states that the more independent an insurance intermediary is from a particular insurance company, the higher is the information quality he provides. Economic and legal independence of insurance intermediaries depend primarily on the distribution channels in which they are engaged. Accordingly, exclusive agents should be expected to provide lower information quality than independent agents or insurance brokers.

## **Demand Side Hypotheses**

The search theoretic approach to insurance intermediation contends that consumers' willingness to pay affects market outcomes positively (Eckardt 2005, 106-108). Since a higher willingness to pay results in a higher demand for high quality information, this should lead to better information services provided by insurance intermediaries (*hypothesis 6*).

Insurance intermediary markets are characterized by consumers having incomplete information on insurance intermediaries' service quality. With only uninformed consumers about insurance relevant matters it does not pay for intermediaries to provide costly high quality information. However, this is not the case if at least part of the consumers are informed, that is, have a high level of knowledge. Thus, by applying a modified version of Salop/ Stiglitz (1977) it can be argued that the higher consumers' level of knowledge about insurance relevant topics is, the higher is the information service quality provided by intermediaries (*hypothesis 7*).

## **Competition under Asymmetric Information**

Markets of insurance intermediaries are characterized by profound information asymmetries with intermediaries being better informed than their clients about the true quality of the services they provide. The principal-agent literature discusses a number of signaling instruments (like reputation, advertising, certificates, membership in a professional association) which may enable agents to credibly signal their quality to consumers and, thus, limit the scope of adverse selection (Riley 2001; Kirmani/ Rao 2000; Eckardt 2005, 117-126). To test whether these signaling instruments work in the market of insurance intermediaries, we hypothesize that an insurance intermediary using signaling instruments provides high quality information services (*hypothesis 8*).

Additionally, the intensity and kind of competition in the market of insurance intermediaries influences its outcomes in terms of the information quality provided. Markets for insurance intermediaries are monopolistically competitive with usually low costs of market entry. However, it can be shown that due to consumers' positive search costs an increase in competition does not lead to the provision of higher information quality by insurance intermediaries (*hypothesis 9*) (Eckardt 2005, 103-105 following Salop/Stiglitz 1977).

However, by product differentiation or by other competitive strategies, an insurance intermediary may realize a monopolistic position where competition is less intense. Therefore, we test *hypothesis 10* that a particular competitive strategy (like improving information quality or

specializing on particular customer segments) leads to the provision of better market performance.

*Table A.1* in the *Appendix* summarizes the hypotheses to be tested, the independent variables and the expected relationships. Hypotheses H 1 to H 5 refer to supply side aspects, hypotheses H 6 and H 7 to demand side specificities, while hypotheses H 8 to H 10 concern competitive behavior under asymmetric information.

#### 4. Data and Methodology

Data is obtained from a survey among 4,687 self-employed German insurance intermediaries, which was carried out in autumn 2001. As there is no legal duty to register for insurance intermediaries in Germany the total population is unknown. Thus, the addresses of the interviewees were randomly chosen from online directories and from the yellow pages. 945 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.<sup>7</sup> Data was collected about individual and firm characteristics of the interviewed insurance intermediary, the services offered, the intermediation process and general market conditions.<sup>8</sup>

#### Dependent Variables

We estimate two different performance measures in markets for insurance intermediation. To explain the information quality provided, we use an *information index* as the dependent variable. To analyze economic success more generally, we use the *contract conclusion rate* as a proxy since we have no data on profits or revenues.

The 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.<sup>9</sup> Half the items deal with the particularities of private old-age insurance. This is justified by the fact that this

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<sup>7</sup> The sample represents the regional demographic distribution of the German population well (Federal Statistical Office 2004, 26). It also captures the main distribution channels, which account for two thirds of the total premium income gained in the German insurance market (GDV 2002).

<sup>8</sup> As the pretest showed a very low willingness to answer questions to remuneration patterns, costs, turnovers, and profits, they were omitted from the survey.

<sup>9</sup> For more details on the single items, see the variables underlying the factor analysis in *Tables A.3* in the *Appendix*.

insurance line makes for the largest share of insurance intermediaries' income. For each item the interviewee is asked how much importance he 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. Although this input-oriented variable is concerned with the content of the information provided, it makes neither statements about the actual information provided nor whether the information provided is accurate from an objective point of view since participants may overstate their service quality. However, response bias can be reasonably assumed to occur similarly for all interviewees.<sup>10</sup>

A second measure is the *contract conclusion rate* variable that we use as a proxy for market performance and economic success. It indicates the percentage of counseling interviews an intermediary conducts that on average result in consumers actually concluding an insurance contract. Note that this success rate is not a profitability measure since the *contract conclusion rate* provides no information on the premiums of the contracts concluded nor the revenues gained by them. However, this output-oriented variable can be also interpreted as a more subjective indicator of the information quality provided. It indicates that customers are satisfied with the information and advice given by an intermediary during a counseling interview. Accordingly, the higher an intermediary's contract conclusion rate is, the better is his information quality as subjectively perceived by consumers. In this sense, a higher share of satisfied customers indicates better market performance.

### **Independent Variables**

The behavior of insurance intermediaries may differ according to their (in-)dependence from insurance companies and because of different regulatory rules. 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).<sup>11</sup> 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, financial skills or finan-

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<sup>10</sup> Thus, focus should be on the sign of the coefficients reported in the regressions, which indicate whether the independent variables lead to an increase or to a decrease of the service quality provided, not on their absolute values. See also Etgar (1976).

<sup>11</sup> With the implementation of the EU Directive on Insurance Mediation there will be stricter regulations also for German insurance intermediaries, see Schönleiter (2005).

cial guarantees are mandatory. Conduct regulation is also very weak. Exclusive and independent agents differ from insurance brokers regarding the legal responsibilities in case of 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. Nevertheless, professional indemnity insurance is not compulsory. 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 this has to be done. Finally, there is a general ban on rebating commissions both for insurance agents and brokers. That is, for insurance intermediaries, resale price maintenance is legally sanctioned.

The questionnaire inquired about human capital variables and the inputs used for producing information services. Besides *age* and investment in human capital (*formal education, (additional) training, university degree, work experience, further training*), the participants were asked which percentage of their total *time budget* they spend on different activities (information acquisition and processing, counseling interviews, further training, claims settlement, sales efforts). The larger the proportion of time devoted to information acquisition and processing or to counseling interviews is, the more information about insurance products and their characteristics as well as about the specific needs of the clients can be gathered and the higher the information quality would be. Besides, the average duration of counseling interviews in absolute terms is used to account for the quantitative input to information production (*duration\_interviews*).

The quality of the information provided depends also on the quality of the information sources used. To gain information about this aspect, we calculated the variable *information source* as the product of the importance of a certain information provider (like an insurance company or a rating agency) to an intermediary and the objectivity the latter attaches to it. For further trainings there is no variable that shows the credibility attached to it as a reliable information source. Therefore, *source\_further training* indicates only the importance of this information source without making statements about its perceived objectivity by an intermediary. We expect that intermediaries, who rely strongly on more credible information sources, provide better information quality to their customers.

To account for the *information content* provided, the interviewees were asked which weight they give to 27 different aspects in counseling interviews that are relevant from an objective

point of view for consumers to decide rationally about insurance coverage (see above *information index*).<sup>12</sup> It is assumed that an intermediary informs his customers more extensively about those aspects to which he attaches more weight. Together with general information, product information and information on contract design, the interviewees were questioned about particular topics relevant for old-age insurance. Furthermore, as the participation in surplus is an important sales argument for life assurances, different items were asked about this subject to see how much weight intermediaries put on informing consumers about the components of the calculations normally used. The 27 items were measured on a five-point Likert scale. By performing a factor analysis, seven factors were extracted which are used as independent variables to account for the information content provided (*Tables A.3 and A.4 in the Appendix*).<sup>13</sup> They comprehend *general aspects, insurance products, contract design, information on old-age insurance, calculation of participation rates*.

To capture the impact of specialization effects in producing information services, we included variables which account for firm size and structure (*employees\_number, intermediaries\_number*).

Differences in consumers' own knowledge about insurance matters can also lead to differences in the information quality provided. Generally, the more knowledge consumers have about the relevant subjects, the higher the information quality of an intermediary is likely to be. Otherwise, customers would be dissatisfied and turn to another intermediary. The same holds true for differences in the demand for information and other services. Again, we expect a positive relationship between the level of demand and the information quality. *Customers' demand* and *customers' knowledge* are both measured on five-point Likert scales with lower values indicating lower levels of knowledge respectively demand.

In order to capture the impact of insurance intermediaries' behavior under asymmetric information, we include a number of signaling variables. 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 factors have for acquiring a positive *reputation*. For eleven activities the participants in the survey indicated how important they perceive them for building a good reputation. Each

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<sup>12</sup> Since the dependent variable *information index* is based on the same 27 items, the following variables are only used as regressors on the *contract conclusion rate*, see equations 4 to 6 in *table 2* below.

<sup>13</sup> Although factor analysis assumes interval data, Jaccard and Wan (1996, 4) summarize in a recent review of the literature on this topic that with ordinal Likert scale items "for many statistical tests, rather severe departures (from intervalness) do not seem to affect Type I and Type II errors dramatically."

item is measured on a five-point Likert scale with 1= *unimportant* to 5= *very important*. According to the factor analysis we performed, the most important factor comprehends activities, which concern the provision of high information quality (*Tables A.5 and A.6 in the Appendix*). By contrast, items that load high on the service provided by an intermediary or on his sales efforts are of less importance.

To see whether signaling instruments are credible in that they indicate higher information quality, the participants were asked what *other signaling instruments* they use, like advertising campaigns, customer specialization or membership in a professional association.

Finally, to test the impact of competition we asked about the *competitive pressure* perceived by an intermediary. Since no data concerning the number of competitors, market shares or profits for the intermediation market are available, we use this as a proxy. The higher the subjectively perceived competitive pressure is, the more an intermediary will act as if facing intense competition. Thus, whether this perception is true or not plays no role with respect to the consequences in terms of market conduct in an objective sense. Moreover, in order to analyze the impact of different reactions to strong competitive pressure on market performance, we asked what *competitive strategies* an intermediary follows.

*Table 1* summarizes the definition and measurement of the variables. The main descriptive statistics of the variables included in the following estimations are reported in *Table A.2 in the Appendix*.

The hypotheses are tested by using OLS-estimations.<sup>14</sup> For the dependent variable *information index* we perform linear OLS-estimations. For the *contract conclusion rate* as dependent variable we apply a logistic function (Cooper/ Nakanishi 1988). This accounts for the fact that when starting from a low level increases in inputs first result in disproportionately high and then in disproportionately low increases in the contract conclusion rate. To see whether the explanatory variables are interdependent, we proceed sequentially and observe coefficient reactions to additionally included groups of variables. All in all, we perform three specifications for each dependent variable. Equations 1 and 4 concern supply side variables, equations 2 and 5 also account for demand side variables, while equations 3 and 6 additionally capture signaling and competition variables. The results are discussed in the following section.

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<sup>14</sup> For the assumptions of the linear OLS regression, see Greene (2000, 210-264). The estimations are corrected for heteroscedasticity where necessary.

**Table 1:** Definition and Measurement of Variables

Variable	Explanation and Measurement
<b>Dependent Variables</b>	
Information index	Continuous variable measuring the mean value of 27 items <sup>15</sup> 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>
Contract conclusion rate	Continuous variable measuring the proportion of the average number of counseling interviews on all interviews that lead to contract conclusion
<b>Supply Side Variables</b>	
<b>Distribution Channel Variable</b>	Intermediary type
	Set of dummy variables with 1 = intermediary type, 0 = other: exclusive agent; independent agent; insurance broker reference class: insurance broker
<b>Human Capital Variables</b>	Age
	Continuous variable measuring the age of the interviewed intermediary in years
	Formal education
	Set of dummy variables with 1 = highest degree of formal education, 0 = other: lower secondary school; intermediate leaving certificate; certificate of aptitude for specialized short-course higher education; general certificate of aptitude for higher education reference class: general certificate of aptitude for higher education
	(Additional) Training
	Dummy variable with 1 = (additional) training, 0 = none
	University degree
	Dummy variable with 1 = university degree, 0 = none
	Work experience
	Continuous variable measuring work experience in years
	Further training_number
	Continuous variable measuring the number of further training courses, conferences etc. frequented during the last 12 months
<b>Information Production Variables</b>	Time budget
	5 continuous variables measuring the share of the time spent for a certain activity on the total time budget: information acquisition and processing; counseling interviews; further training; claims settlement; sales efforts
	Duration_interviews
	Continuous variable measuring the average duration of general counseling interviews in minutes
	Information source
	7 continuous variables measuring the importance of an information source used by an intermediary with its attached objectivity on a 25-point rating scale with <i>1 = very subjective and not at all important source ... 25 = very credible and very important source</i> : insurance companies; professional associations; rating agencies; consumers' associations; science; specialist publications; general media

<sup>15</sup> For the single items see *Table A.3* in the *Appendix*.



**Table 1:** Definition and Measurement of Variables (cont.)

	<b>Variable</b>	<b>Explanation and Measurement</b>
	Source_further training	Ordinal variable measuring the importance attached to further training as an information source measured on a five-point Likert scale with <i>1 = not at all important ... 5 = very important</i>
	Information content	7 continuous variables measuring the factor scores extracted by a factor analysis from 27 items which indicate the importance attached to different aspects in counseling interviews by the intermediary: <sup>16</sup> old-age security in general; calculation of participation rates; contract design; personal risk profile and needs; policy design; private old-age insurance products; claims settlement
<b>Specialization Variables</b>	Employees_number	Continuous variable measuring the number of employees in an intermediary's firm
	Intermediaries_number	Continuous variable measuring the number of agents and brokers employed by an intermediary's firm
<b>Demand Side Variables</b>		
	Customers' demand	2 ordinal variables measuring consumers' demand on a five-point Likert scale with <i>1 = more modest ... 5 = more demanding</i> about: information provision; additional services for free
	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
<b>Signaling and Competition Variables</b>		
<b>Signaling Variables</b>	Reputation	3 continuous variables measuring the factor scores extracted by a factor analysis from 11 items indicating the importance attached to different aspects to gain high reputation: <sup>17</sup> information; good service; sales efforts
	Other signaling instruments	10 dichotomous variables with 1 = signaling instrument is used, 0 = not used: none; advertising campaigns; customer specialization; good service; public lectures, seminars; qualification, specialized knowledge; objective information and counseling; specialization on certain insurance companies; membership in a professional association; miscellaneous
<b>Competition Variables</b>	Competitive pressure	Ordinary variable measuring the extent of competitive pressure on a five-point Likert scale with <i>1 = none ... 5 = very strong</i>
	Competitive strategies	8 dichotomous variables with 1 = competitive strategy pursued by an intermediary, 0 = not pursued: more advertising campaigns; better counseling quality; cost reduction; consultation time savings; customer specialization; additional services for a fee; additional services for free; miscellaneous

<sup>16</sup> For more details see *Tables A.3* and *A.4* in the *Appendix*.

<sup>17</sup> For more details see *Tables A.5* and *A.6* in the *Appendix*.

## 5. Regression Results and Discussion

The empirical results of the linear OLS regression equations are reported in *Table 2* below.

### Hypothesis 1 – Efforts Spent

According to equations 1 and 4 investment in human capital shows no impact on market performance, neither with regard to the quality of the information services provided nor to the share of contracts concluded by an intermediary. Only *age* has a significant negative impact on the contract conclusion rate. All in all, this is in contrast to hypothesis 1. Since the variables on *formal education*, *(additional) training*, *university degree* and *work experience* showed no statistically significant impact across the various specifications, we dropped them from the other regressions reported. They do not qualitatively change any major results.

When using the *information index* as the dependent variable, the coefficient estimates for the percentage of time spent on *further training*, *claims settlement* and *counseling interviews* are positive for all specifications, with the estimates for further training and claims settlements being significant across all equations. These results are consistent with hypothesis 1 that more efforts spent on activities which are related to the production of information services increase the quality provided. However, the coefficient estimate for the time spent on *information acquisition and procession* has a negative impact on the information quality provided. Obviously, insurance intermediaries gain specific knowledge about what topics and what information is relevant for consumers mainly through investment in further trainings and by claims settlement. These two activities exhibit large fixed costs. Besides, information about claims settlement is highly specific. It entails consumer-specific information about the likelihood of damage and insurance company-specific information about the consequences of specific contract terms for claims settlement as well as insurance companies' handling in case of loss. Thus, these results also support the hypothesis that intermediated search has advantages, which cannot be attained through personal search by consumers. For a single consumer neither the high costs of attending insurance intermediaries' further trainings would pay off nor does she have the chance to acquire the activity-specific knowledge resulting from claims settlement.

The coefficient estimates of nearly all *time budget* variables show a negative impact on the *contract conclusion rate*, with the coefficient estimate for the percentage of time spent on *sales efforts* being statistically significant across all equations. Compared to the findings for the *information index* variable, time spent on further trainings and on claims settlement has a negative impact on the contract conclusion rate. However, the coefficient estimate for the per-

centage of time spent on counseling interviews shows a positive impact for all equations. This is confirmed by the estimate for the *duration\_interviews* variable, which is statistically significant across all equations. Accordingly, time spent for counseling seems to enhance both the information quality provided as well as the percentage of contracts concluded.

All in all, our data provides no evidence that investment in human capital and most other activities necessary to provide intermediary services have a positive impact on an intermediary's market performance, be it in terms of the information quality provided or of the contracts concluded. Therefore, our evidence does not confirm hypothesis 1.

### **Hypothesis 2 – Information Sources**

The estimation results for equations 1 to 3 indicate that intermediaries, who rely strongly on *insurance companies, rating agencies, consumers' associations, the science and specialist publications* as sources of credible information, provide significantly higher information quality across all equations.<sup>18</sup> In comparison, estimation results suggest that intermediaries who perceive the *general media* as a very important and credible information source produce lower information quality. Information in the general media are published for a broad audience. It is necessary for them to simplify matters, so that the information thus disseminated is of a rather unspecific nature. Therefore, the general media usually is merely an insufficient source for acquiring the highly specialized information needed to give profound advice on insurance coverage. All in all, our evidence supports hypothesis 2 that the information quality provided depends on the underlying information sources.

However, this does not hold with respect to the contract conclusion rate. Equation 4 shows that the underlying information source has no significant impact so that we omit these variables in equations 5 and 6.

### **Hypothesis 3 – Information Content**

To test hypothesis 3 we include variables on the *information content* of counseling interviews in equations 4 to 6. Our data reveals a mostly statistically significant positive impact on the contract conclusion rate if an intermediary puts weight on informing his customers on their *personal risk profile and security options*, on the *calculation of participation rates* and on the particularities of *private old-age insurance products*. In contrast to that, providing information about *contract design* and *policy design* results in a lower contract conclusion rate. However,

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<sup>18</sup> Only when including signaling and competition variables the impact of rating agencies as a credible information source becomes insignificant.

the coefficient estimates are insignificant. There seems to be a conflict for intermediaries between economic success as measured by the contract conclusion rate and providing detailed information about relevant contractual aspects of insurance coverage. Thus, our evidence suggests only mixed support for hypothesis 3.

#### **Hypothesis 4 – Division of Labor and Specialization**

The coefficient estimates for firm size measured by the *employees\_number* variable and for firm structure measured by the *intermediaries\_number* variable employed in a firm, show no significant impact on the information quality provided. Since this holds true for all other specifications, we drop these variables from the reported regressions (equations 2, 3 and 5). This does not qualitatively change any of our major results. Only when including signaling activities and controlling for competitive pressure and related behavior in equation 6 firm size shows a significant positive impact on the contract conclusion rate. Obviously, successful signaling and competitive strategies exhibit some form of fixed costs which do not influence the quality of the information services.

All in all, our findings do not confirm hypothesis 4 that division of labor has a positive impact on the information quality provided. Acquiring and processing information about topics relevant for concluding an insurance contract seem to exhibit divisibilities among members of the same agency.<sup>19</sup>

#### **Hypothesis 5 – Independence from Insurance Companies**

Compared to being an insurance broker, being an exclusive or independent agent and, thus, more dependent from insurance companies has a negative impact both on the information quality provided and on the contract conclusion rate. The coefficient estimates for the *intermediary type* variables are significantly negative. When controlling for signaling activities and competitive behavior (equations 3 and 6), the coefficient estimate for the information quality provided by exclusive agents becomes even higher, while the impact of being an exclusive agent on the contract conclusion rate is lessened. This may be due to the fact that exclusive agents realize on average more competitive pressure than insurance brokers and usually also provide lower information quality (Eckardt 2002).

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<sup>19</sup> This is in line with findings of Cummins (1977) that there are no scale economies for independent insurance agents.

### **Hypothesis 6 – Customers’ Demand**

We find a positive relationship between *customers’ demand for information* and the information quality actually provided by an intermediary. Interestingly, the same holds true with respect to *customers’ demand for additional services*. Its coefficient estimate is significant as long as we do not include variables in the regression that account for signaling behavior and competition (equations 3). In contrast to that, the coefficient estimates are negative with respect to the contract conclusion rate (equation 5). But since they are not significant, we omitted them from equation 6. All in all, our data provides only weak support for hypothesis 6.

### **Hypothesis 7 – Customers’ Knowledge**

The evidence on the impact of *customers’ knowledge* on the *information index* is somehow mixed. The coefficient estimates for customers’ knowledge about their *risk profile* and about the *(dis-)advantages of insurance products* compared to other financial assets are positive. In contrast, the coefficient estimate for customers’ knowledge about *old-age protection provisions* is negative and statistically significant as long as we do not control for signaling and competitive behavior. This suggests that intermediaries provide only additional information and thus higher information quality, if their customers have a low level of knowledge about protection for old-age security. In case of customers with low financial literacy concerning their risks and the particularities of insurance products, intermediaries provide only low information quality.

There are two possible answers to this finding. On the one hand, this seems to be a quite straightforward result since half of the items summarized in the dependent variable *information index* concern old-age protection. It would be rather superfluous for an intermediary to put much weight on such topics if his customers already have a high level of knowledge about them. On the other hand, insurance intermediaries rely strongly on income from selling life insurance policies and other products concerning old-age security. Accordingly, they should have an interest in increasing consumers’ knowledge about exactly such insurance products. This is in line with the finding that insurance intermediaries do not provide high quality information to customers with low knowledge on the disadvantages of insurance products compared to other financial assets which can be used as substitutes.

The regression results for the *contract conclusion rate* confirm these findings (equations 5 and 6). They indicate that intermediaries significantly profit from customers with a high level of knowledge about old-age protection provisions in terms of the contracts concluded. However,

a high level of knowledge about the disadvantages of insurance products leads to a lower contract conclusion rate.

Thus, taken together, our data is consistent with hypothesis 7. Insurance intermediaries put only more emphasis on providing high quality information to customers with low knowledge if it is necessary to induce them to conclude an insurance contract.

### **Hypothesis 8 – Signaling Activities**

The inclusion of the demand side variables in equations 2 and 5 increased the overall quality of our regression only to a very low degree. In comparison, adding variables that account for the impact of signaling activities and competition raises the adjusted  $R^2$  of the specification estimated in equation 3 by 21 percentage points and by nearly 12 percentage points in equation 6. Thus, signaling activities and competition behavior seem to be more relevant for differences in the information quality provided than demand side variables.

Our data supports hypothesis 8 that intermediaries, who believe that providing high quality *information services* and *good service* is relevant for gaining a positive reputation, do provide significantly better information quality. This also holds for the contract conclusion rate. Thus, reputation proves to be a credible signaling instrument for high quality performance.

The other signaling instruments included in the regressions show mixed results. While *qualification* has a significant positive impact on the *information index*, giving *public lectures* on insurance coverage or related subjects leads to a significant increase in the *contract conclusion rate*. In contrast to that, the coefficient estimate for *membership in a professional association* dummy is significantly negative both in equations 3 and 6. This may indicate that these intermediaries use their membership in a professional association as a substitute for the actual provision of high quality information. The resulting reduction of their overall efforts then, in turn, has a negative impact on their overall market performance. All other signaling activities show no significant coefficient estimates. This underlines the difficulty of sending credible, that is reliable and not easy to copy, signals to reduce information asymmetries in markets for intangible goods.

### **Hypotheses 9 and 10 – Competition**

The variable *competitive pressure* has a negative, but not significant impact on the information quality, but a strong statistically significant negative impact on the contract conclusion rate. It indicates a plausible relationship between the intensity of competitive pressure and individual market performance. This is only partly consistent with hypothesis 9. Note, how-

ever, that the contract conclusion rate is only a very indirect measure for the quality of the information services provided.

Our data shows no clear results for hypothesis 10. The coefficient estimate for *consultation time savings* shows a strong significant negative impact on the information quality, but a strong positive impact on the contract conclusion rate. Thus, given strong competitive pressure to improve market performance it pays for insurance intermediaries to follow a high turnover strategy while reducing overall information service quality. Compared to that, *customer specialization* and the provision of *additional services for free* significantly increase the information quality provided. However, they have no significant positive impact on market performance in terms of the contracts concluded. Obviously, there is no single strategy, which proves successful in reducing competitive pressure for insurance intermediaries while at the same time increasing the quality of the information services provided.

## 6. Conclusions

Despite their importance as match-makers in insurance markets, so far, there are only few empirical studies which analyze the factors that affect behavior and performance of insurance intermediaries in more detail. Based on a survey among German exclusive agents, independent agents and insurance brokers, we analyze what determinants influence the quality of the information services provided as well as the economic success of insurance intermediaries.

Our econometric results confirm the main theoretical findings as to the poor working of competition in markets which are characterized by profound information asymmetries. On the supply side general investment in human capital shows no significant impact. It is mainly the time spent on customer-specific activities like claims settlement, further training and the time spent for counseling interviews that lead to the provision of high quality services. Overall, there are also no gains from division of labor and specialization. On the demand side, consumers' knowledge has a positive influence on market outcomes in terms of the service quality offered. When looking at competition under asymmetric information, we find evidence that only reputation works as a credible signal. Besides, neither competitive pressure nor particular competitive strategies do improve market outcomes in terms of the information quality provided.

However, intermediaries' dependence from insurance companies, be it in legal or economic terms, shows a significant impact. In addition to our above results, Eckardt (2005, 174-198) finds that independent product range choice by intermediaries and customer specialization

explains some of the differences, while compensation schemes have no significant impact on market outcomes. Accordingly, since competition does not automatically improve market performance in terms of the service quality provided, regulation should concentrate on increasing transparency for consumers about intermediaries (in-)dependence from insurance companies. Besides, raising consumers' *financial literacy* should also increase overall information quality in the market for insurance intermediation services.



**Table 2:** Regression Results *Information Index* and *Contract Conclusion Rate*<sup>a</sup> Dependent variable: *information index*<sup>b</sup> Dependent variable:  $\log(\text{contract conclusion rate}/(1 - \text{contract conclusion rate}))$   
(*t*-values in parentheses)

Dependent variable	Information Index <sup>a</sup>			Contract Conclusion Rate <sup>b</sup>		
	Equ. 1 ( <i>N</i> =637)	Equ.2 ( <i>N</i> =696)	Equ. 3 ( <i>N</i> =636)	Equ. 4 ( <i>N</i> =545)	Equ. 5 ( <i>N</i> =663)	Equ. 6 ( <i>N</i> =586)
<i>Constant</i>	<b>2.650</b> (13.286***)	<b>2.368</b> (12.188***)	<b>2.795</b> (12.435***)	<b>1.835</b> (3.485***)	<b>2.030</b> (4.407***)	<b>2,579</b> (4.831***)
<b>Hypothesis 1 – Efforts Spent</b>						
<i>Age</i>	<b>0.002</b> (0.711)			<b>-0.020</b> (-2.232**)	<b>-0.018</b> (-3.438***)	<b>-0.012</b> (-2.316**)
<i>Formal education</i>						
Lower secondary school	<b>0.105</b> (1.313)			<b>-0.037</b> (-0.190)		
Intermediate leaving certificate	<b>0.048</b> (0.915)			<b>0.098</b> (0.749)		
Certificate of aptitude for specialized short-course higher education	<b>0.059</b> (1.050)			<b>0.163</b> (1.129)		
<i>(Additional) Training</i>	<b>0.027</b> (0.398)			<b>-0.262</b> (-1.439)		
<i>University degree</i>	<b>-0.031</b> (-0.582)			<b>-0.088</b> (-0.662)		
<i>Work experience</i>	<b>-0.001</b> (-0.136)			<b>0.003</b> (0.296)		
<i>Time budget</i>						
Information acquisition and Processing	<b>-0.002</b> (-1.030)	<b>-0.001</b> (-0.810)	<b>-0.002</b> (-1.162)	<b>-0.005</b> (-1.069)	<b>-0.004</b> (-0.950)	<b>-0.006</b> (-1.533)
Counseling interviews	<b>0.002</b> (1.612)	<b>0.001</b> (1.029)	<b>0.001</b> (0.869)	<b>0.004</b> (1.079)	<b>0.001</b> (0.433)	<b>0.001</b> (0.240)
Further training	<b>0.007</b> (2.046**)	<b>0.009</b> (3.058***)	<b>0.006</b> (2.445***)	<b>0.001</b> (0.118)	<b>-0.001</b> (-0.130)	<b>-0.004</b> (-0.554)
Claims settlement	<b>0.007</b> (2.819***)	<b>0.006</b> (2.698***)	<b>0.005</b> (1.979**)	<b>-0.004</b> (-0.609)	<b>-0.000</b> (-0.029)	<b>-0.005</b> (-0.777)
Sales efforts	<b>-0.001</b> (-0.275)	<b>-0.003</b> (-0.947)	<b>-0.001</b> (-0.551)	<b>-0.035</b> (-3.463***)	<b>-0.038</b> (-4.846***)	<b>-0.023</b> (-2.813***)
<i>Duration_interviews</i>	<b>0.002</b> (2.935***)	<b>0.001</b> (2.778***)	<b>0.001</b> (1.861*)	<b>0.004</b> (2.794***)	<b>0.005</b> (3.361***)	<b>0.004</b> (2.535***)
<i>Further training_number</i>	<b>0.001</b> (0.193)			<b>-0.020</b> (-2.210**)	<b>-0.013</b> (-1.527)	<b>-0.009</b> (-1.107)
<b>Hypothesis 2 – Information Sources</b>						
<i>Information source</i>						
Insurance companies	<b>0.008</b> (1.952**)	<b>0.007</b> (1.989**)	<b>0.009</b> (2.693***)	<b>0.007</b> (0.713)		
Professional associations	<b>0.005</b> (1.458)	<b>0.005</b> (1.672*)	<b>0.003</b> (0.808)	<b>-0.003</b> (-0.373)		
Rating agencies	<b>0.009</b> (2.501***)	<b>0.007</b> (2.135**)	<b>0.004</b> (1.293)	<b>0.008</b> (0.937)		
Consumers' associations	<b>0.011</b> (2.802***)	<b>0.012</b> (3.322***)	<b>0.009</b> (2.803***)	<b>0.014</b> (1.303)		

**Table 2:** Regression Results *Information Index* and *Contract Conclusion Rate* (cont.)

Dependent variable	Information Index <sup>a</sup>			Contract Conclusion Rate <sup>b</sup>		
	Equ. 1	Equ.2	Equ. 3	Equ. 4	Equ. 5	Equ. 6
Science	<b>0.014</b> (3.470***)	<b>0.011</b> (3.085***)	<b>0.010</b> (2.865***)	<b>-0.009</b> (-0.914)		
Specialist publications	<b>0.011</b> (2.601***)	<b>0.012</b> (2.881***)	<b>0.007</b> (1.763*)	<b>-0.011</b> (-1.074)		
General media	<b>-0.007</b> (-1.542)	<b>-0.009</b> (-1.908*)	<b>-0.006</b> (-1.504)	<b>0.000</b> (0.016)		
<i>Source_further training</i>	<b>0.029</b> (1.325)	<b>0.029</b> (1.516)	<b>-0.016</b> (-0.904)	<b>0.068</b> (1.379)		
<b>Hypothesis 3 – Information content</b>						
<i>Information content</i>						
Old-age security in general				<b>0.003</b> (0.069)	<b>0.020</b> (0.441)	<b>-0.062</b> (-1.279)
Calculation of participation rates				<b>0.081</b> (1.597)	<b>0.124</b> (2.842***)	<b>0.001</b> (0.032)
Contract design				<b>-0.030</b> (-0.584)	<b>-0.016</b> (-0.364)	<b>-0.046</b> (-1.020)
Personal risk profile and security options				<b>0.143</b> (2.914***)	<b>0.140</b> (3.271***)	<b>0.132</b> (2.798***)
Policy design				<b>-0.040</b> (-0.719)	<b>-0.004</b> (-0.089)	<b>-0.031</b> (-0.604)
Private old-age insurance products				<b>0.029</b> (0.590)	<b>0.067</b> (1.564)	<b>0.075</b> (1.734*)
Claims settlement				<b>0.050</b> (0.990)	<b>0.036</b> (0.808)	<b>0.059</b> (1.297)
<b>Hypothesis 4 – Division of Labor and Specialization</b>						
<i>Employees_number</i>	<b>0.000</b> (0.027)			<b>0.022</b> (0.965)		<b>0.039</b> (1.905*)
<i>Intermediaries_number</i>	<b>0.002</b> (0.227)			<b>0.006</b> (0.189)		<b>-0.027</b> (-0.895)
<b>Hypothesis 5 – Independence from Insurance Companies</b>						
<i>Intermediary type</i>						
Exclusive agent	<b>-0.173</b> (-3.580***)	<b>-0.173</b> (-3.997***)	<b>-0.222</b> (-4.900***)	<b>-0.678</b> (-4.846***)	<b>-0.636</b> (-5.504***)	<b>-0.495</b> (-3.906***)
Independent agent	<b>-0.017</b> (-0.230)	<b>0.013</b> (0.185)	<b>-0.046</b> (-0.708)	<b>-0.245</b> (-1.344)	<b>-0.335</b> (-2.005**)	<b>-0.233</b> (-1.363)
<b>Hypothesis 6 – Customers' Demand</b>						
<i>Customers' demand</i>						
Information provision		<b>0.049</b> (1.445)	<b>0.029</b> (1.014)		<b>-0.051</b> (-0.773)	
Additional services for free		<b>0.080</b> (3.300***)	<b>0.033</b> (1.556)		<b>-0.030</b> (-0.601)	
<b>Hypothesis 7 – Customers' Knowledge</b>						
<i>Customers' knowledge</i>						
Risk profile		<b>0.037</b> (1.373)	<b>0.019</b> (0.761)		<b>0.048</b> (0.771)	<b>0.051</b> (0.803)
Old-age protection provisions		<b>-0.062</b> (-2.055**)	<b>-0.031</b> (-1.140)		<b>0.111</b> (1.648*)	<b>0.110</b> (1.624*)
(Dis-) Advantages of insurance products		<b>0.032</b> (1.190)	<b>0.034</b> (1.437)		<b>-0.082</b> (-1.381)	<b>-0.088</b> (-1.445)

**Table 2:** Regression Results *Information Index* and *Contract Conclusion Rate* (cont.)

Dependent variable	Information Index <sup>a</sup>			Contract Conclusion Rate <sup>b</sup>		
	Equ. 1	Equ.2	Equ. 3	Equ. 4	Equ. 5	Equ. 6
<b>Hypothesis 8 - Signaling activities</b>						
<i>Reputation</i>						
Information			<b>0.206</b> (9.970***)			<b>0.107</b> (1.960**)
Good service			<b>0.142</b> (6.955***)			<b>0.207</b> (3.987***)
Sales efforts			<b>0.017</b> (0.894)			<b>-0.014</b> (-0.296)
<i>Other signaling instruments</i>						
Advertising campaigns			<b>0.046</b> (0.704)			<b>-0.240</b> (-1.187)
Customer specialization			<b>-0.062</b> (-1.539)			<b>-0.052</b> (0.642)
Good service			<b>0.026</b> (0.439)			<b>-0.208</b> (-1.479)
Professional lectures, seminars			<b>0.015</b> (0.410)			<b>0.282</b> (2.889***)
Qualification			<b>0.155</b> (1.977**)			<b>0.248</b> (1.137)
Objective information and counseling			<b>0.063</b> (1.082)			<b>0.079</b> (0.571)
Specialization on insurance company			<b>-0.063</b> (-0.995)			<b>-0.170</b> (-1.035)
Miscellaneous			<b>0.045</b> (0.876)			<b>-0.195</b> (-1.567)
Membership			<b>-0.097</b> (-2.242**)			<b>-0.360</b> (-3.270***)
<b>Hypotheses 9 and 10 – Competition</b>						
<i>Competitive pressure</i>						
			<b>-0.014</b> (-0.708)			<b>-0.317</b> (-6.734***)
<i>Competitive strategies</i>						
More advertising campaigns			<b>0.036</b> (0.797)			<b>-0.010</b> (-0,094)
Better counseling quality			<b>0.023</b> (0.495)			<b>-0.098</b> (-0.842)
Cost reductions			<b>-0.023</b> (-0.382)			<b>-0.015</b> (-0.098)
Consultation time savings			<b>-0.282</b> (-2.527***)			<b>1.467</b> (2.751***)
Customer specialization			<b>0.103</b> (2.663***)			<b>0.017</b> (0.182)
Additional services for a fee			<b>0.134</b> (2.572***)			<b>-0.030</b> (-0.220)
Additional services for free			<b>0.041</b> (1.168)			<b>0.099</b> (1.061)
Miscellaneous			<b>0.020</b> (0.313)			<b>0.179</b> (1.160)
<b>F-Statistics</b>	<b>5.511***</b>	<b>9.225***</b>	<b>11.503***</b>	<b>3.791***</b>	<b>7.090***</b>	<b>6.360***</b>
<b>adj R<sup>2</sup></b>	<b>0.156</b>	<b>0.199</b>	<b>0.410</b>	<b>0.145</b>	<b>0.168</b>	<b>0.283</b>

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## Appendix

Table A.1: Hypotheses

	Independent Variables <sup>1)</sup>	Expected Sign Dependent Variables	
		Information index	Contract conclusion rate
H 1	The more efforts an intermediary spends on the production of information services, the better is his market performance.	+	+
		+	+
		+	+
		+	+
		+	+
		+	+
H 2	The better the information sources used by an intermediary are, the better is his market performance.	+	+
H 3	The more information about relevant subjects an intermediary provides in counseling interviews, the better is his market performance.		+
H 4	Division of labor leads to better market performance.	+	+
H 5	The more independent an insurance intermediary is from a particular insurance company, the better is his market performance.	+	+
H 6	The higher consumers' level of demand for information is, the better is an intermediary's market performance.	+ / -	+ / -
H 7	The higher consumers' level of knowledge on insurance relevant topics is, the better is an intermediary's market performance.	+	+
H 8	If an insurance intermediary uses signaling instruments, then his market performance is better.	+	+
H 9	Intensity of competition among insurance intermediaries does not influence an intermediary's market performance.	0	0
H 10	If an insurance intermediary uses a particular competitive strategy to lessen competitive pressure, then his market performance is better.	+	+

1) For definition and coding of variables see *Table 1*.

**Table A.2:** Main Descriptive Statistics for Selected Variables

	Mean	Median	Minimum	Maximum	Standard Deviation
<b>Information index</b>	3.71	3.70	1.41	5.00	0.53
<b>Contract conclusion rate</b>	0.65	0.70	0.05	1.00	0.23
<b>Intermediary type</b>					
Exclusive insurance agent	0.46	0.00	0.00	1.00	0.50
Independent insurance agent	0.07	0.00	0.00	1.00	0.26
Insurance broker	0.47	0.00	0.00	1.00	0.50
<b>Age</b>	43.15	42.00	20.00	64.00	8.96
<b>Work experience</b>	16.11	14.00	1.00	48.00	8.33
<b>Time budget</b>					
Information acquisition and processing	21.36	20.00	0.00	70.00	12.42
Counseling interviews	36.88	35.00	0.00	87.00	15.61
Further training	11.57	10.00	0.00	35.00	6.62
Claims settlement	11.14	10.00	0.00	50.00	7.54
Sales efforts	6.18	5.00	0.00	70.00	5.70
<b>Duration interviews</b>	56.57	60.00	10.00	180.00	31.46
<b>Information source</b>					
Insurance companies	11.09	10.00	1.00	25.00	5.76
Professional associations	12.13	12.00	1.00	25.00	5.71
Rating agencies	11.31	12.00	1.00	25.00	6.24
Consumers' associations	8.04	8.00	1.00	25.00	5.35
Science	9.16	9.00	1.00	25.00	5.47
Specialist publications	13.80	12.00	1.00	25.00	5.47
General media	6.63	6.00	1.00	25.00	4.46
<b>Employees number</b>	3.81	3.00	1.00	30.00	3.86
<b>Customers' demand</b>					
Information provision	4.01	4.00	1.00	5.00	0.75
Additional services for free	3.75	4.00	1.00	5.00	0.93
<b>Customers' knowledge</b>					
Risk profile	2.75	3.00	1.00	5.00	0.76
Old-age protection provisions	3.00	3.00	1.00	5.00	0.75
(Dis-) advantages of insurance products	2.33	2.00	1.00	5.00	0.86
<b>Other signaling instruments</b>					
Advertising campaigns	0.04	0.00	0.00	1.00	0.20
Customer specialization	0.24	0.00	0.00	1.00	0.43
Good Service	0.86	1.00	0.00	1.00	0.35
Professional lectures, seminars	0.27	0.00	0.00	1.00	0.44
Qualification	0.93	1.00	0.00	1.00	0.26
Objective information	0.87	1.00	0.00	1.00	0.34
Specialization on insurer	0.08	0.00	0.00	1.00	0.28
Membership	0.76	1.00	0.00	1.00	0.43
<b>Competitive pressure</b>	3.33	3.00	1.00	5.00	1.00
<b>Competitive strategies</b>					
More advertising campaigns	0.21	0.00	0.00	1.00	0.40
Better counseling quality	0.80	1.00	0.00	1.00	0.40
Cost reductions	0.09	0.00	0.00	1.00	0.29
Consultation time savings	0.01	0.00	0.00	1.00	0.08
Customer specialization	0.46	0.00	0.00	1.00	0.50
Additional services for a fee	0.10	0.00	0.00	1.00	0.30
Additional services for free	0.57	1.00	0.00	1.00	0.50



**Table A.3:** Factor Analysis *Information Content* – Rotated Component Matrix

Variables	Components						
	1 <i>Old-age Security in General</i>	2 <i>Calculation of Participation Rates</i>	3 <i>Contract Design</i>	4 <i>Personal Risk Profile and Security Options</i>	5 <i>Policy Design</i>	6 <i>Private Old-age Insurance Products</i>	7 <i>Claims Settlement</i>
Tax advantages	.809						
Occupational pension schemes vs. private old-age insurance	.708						
Taxation and social policy regulation	.686						
Performance of insurance companies	.525						
Investment funds	.499						
Disadvantages of Zillmering	.417						
Surplus and interest rate changes		.782					
Non commitment		.709					
Guaranteed performance		.702					
Surplus determinants		.619					
Past effective surplus		.615					
Termination options			.845				
Contract period			.789				
Procedures of contract modification			.658				
Costs of contract modification			.585				
Type and coverage of the insured risks				.725			
Individual security gaps				.695			
Insurance and product types				.609			
(Dis-) advantages of different security options				.533			
Premium design					.778		
Price-performance tests					.762		
Cost components					.593		
Capital sum life insurance vs. <i>Riester</i> policy						.776	
Cost calculation by change of policy						.774	
Specific rest life insurance vs. capital sum life insurance						.606	
Claim settlement							.710
Conflict settlement							.602

Extraction Method: Principal component analysis.

Rotation Method: Varimax with Kaiser-normalization.

**Table A.4:** Factor Analysis *Information Content* – Sampling Adequacy and Total Variance Explained

*Measure of sampling adequacy* by the Kaiser-Meyer-Olkin (KMO) statistics 0.889

*Total variance explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.658	28.361	28.361	7.658	28.361	28.361	2.876	10.654	10.654
2	1.884	6.976	35.337	1.884	6.976	35.337	2.758	10.215	20.868
3	1.754	6.496	41.834	1.754	6.496	41.834	2.652	9.823	30.691
4	1.513	5.605	47.439	1.513	5.605	47.439	2.374	8.792	39.483
5	1.415	5.242	52.681	1.415	5.242	52.681	2.209	8.181	47.664
6	1.252	4.638	57.319	1.252	4.638	57.319	2.004	7.421	55.085
7	1.076	3.985	61.304	1.076	3.985	61.304	1.679	6.219	61.304
8	.795	2.944	64.248						
9	.781	2.891	67.139						
10	.754	2.791	69.930						
11	.729	2.702	72.632						
12	.697	2.580	75.212						
13	.648	2.399	77.611						
14	.620	2.297	79.909						
15	.573	2.121	82.029						
16	.549	2.034	84.064						
17	.505	1.870	85.934						
18	.491	1.817	87.751						
19	.459	1.700	89.451						
20	.430	1.593	91.044						
21	.420	1.558	92.601						
22	.397	1.470	94.072						
23	.373	1.370	95.451						
24	.350	1.298	96.749						
25	.319	1.180	97.930						
26	.301	1.116	99.046						
27	.258	.954	100.000						

Extraction Method: Principal Component Analysis.

**Table A.5:** Factor Analysis *Reputation* – Rotated Component Matrix

Variables	Components		
	1 <i>Information</i>	2 <i>Good Service</i>	3 <i>Sales Efforts</i>
Objective information on products	.733		
Information on more favorable alternatives	.675		
Product quality	.653		
Qualification	.615		
Regular Information about tax law and social law	.570		
Reliable and kind service		.768	
Empathy		.720	
Reliable and quick claims settlement		.653	
Frequent and regular customer contacts		.564	
Advertising efforts			.785
Reputation of the insurance company			.641

Extraction Method: Principal component analysis.

Rotation Method: Varimax with Kaiser-normalization.

**Table A.6:** Factor Analysis *Reputation* – Sampling Adequacy and Total Variance Explained

*Measure of sampling adequacy* by the Kaiser-Meyer-Olkin (KMO) statistics 0.742

*Total variance explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.996	27.238	27.238	2.996	27.238	27.238	2.254	20.493	20.493
2	1.534	13.946	41.184	1.534	13.946	41.184	1.942	17.651	38.144
3	1.190	10.820	52.004	1.190	10.820	52.004	1.525	13.859	52.004
4	1.023	9.302	61.306						
5	.779	7.082	68.388						
6	.715	6.501	74.889						
7	.655	5.958	80.847						
8	.607	5.522	86.369						
9	.555	5.043	91.411						
10	.506	4.599	96.010						
11	.439	3.990	100.00						

Extraction Method: Principal Component Analysis.